

Canadian Railway and Marine World.

December, 1913

The Railway Viaduct Along the Toronto Waterfront.

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

Most of the trains entering Toronto come in on the Esplanade, along the waterfront, crossing most of the streets in the central portion of the city at grade. This has been a menace to street traffic which the city has been agitating for years to have remedied. This, in conjunction with a new union station, which it was desired to have built at the same time, was considered by the Board of Railway Commissioners early in 1909, and the Board passed an order in June, 1909, ordering the elevation of the tracks along the waterfront, as well as the building of a new station for the joint use of the G.T.R. and C.P.R. The time limit set by the board was two years, the cost to be borne equally by the two railways and the city.

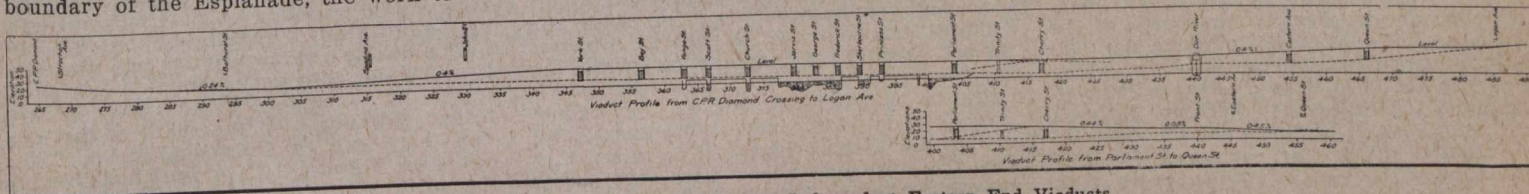
This original order called for a four track viaduct from west of John St. to near Berkeley St., with three tracks each side of the viaduct on the Esplanade level, with all necessary crossovers, the centre line of the viaduct to be located on the southern boundary of the Esplanade, the work to be

appealed the matter to the Board, which in May, 1912, again ordered the viaduct to be built under the original order, with a further extension of two years for its completion, the original two years having by then expired. At the same time, the board approved the G.T.R. plans as the more desirable, and ordered that they be followed, instead of the plans submitted by the C.P.R. for the same proposition. These plans, as ordered to be followed, were described in detail in Canadian Railway and Marine World for Aug., 1912.

Last year, the Toronto Harbour Commission was formed to take over all the waterfront properties of the city and formulate plans for a comprehensive harbour scheme. As the proposed viaduct would follow the waterfront through practically its full length, this commission was vitally interested in the manner in which the railways would develop that section, and in consequence the two railways, the city and the commission decided to consult each other in formulating of plans that would, in the

west, to Logan Ave. on the east. The grade separation work in the west end of Toronto, undertaken by the G.T.R. in 1910-12, terminates at the C.P.R. diamond crossing west of Bathurst St., which is the ruling point on that section of the work, the diamond remaining at its former elevation. From that point easterly the tracks through the city will be elevated, with a consequent rearrangement of many of the yard tracks and spurs.

The principal variation in the route through the city from that laid down in the former plans, is in the section from Yonge St. easterly to the Don River, which will follow a straight line, instead of the sweep northerly along the Esplanade. To do this, a large portion of the land south of the present right of way will have to be expropriated, and as the new line will run across water lots, there will be a great deal of filling. The principal advantage in the new route will be the facility offered to the construction parties in carrying forward the work uninter-



Profile of Viaduct Scheme, Including Independent Eastern End Viaducts.

undertaken jointly by the G.T.R. and C.P.R. with the city. Independently of this, the C.P.R. was ordered to elevate two tracks from the easterly end of the foregoing viaduct to near Queen St., with necessary viaducts over intervening streets. The corresponding section of the G.T.R. line was also ordered elevated on a two track viaduct from the same point to Logan Ave., crossing the intervening streets on viaducts. All the tracks in this whole length of viaduct as ordered, with the exception of the two crossings at John St. and Spadina Ave., which cross on bridges, have the streets passing beneath the tracks. The city was ordered, in addition to paying one third of the cost of the viaducts, both the joint and the separate, to bear the same proportion of the expense of elevating the C.P.R. passenger car yard, the G.T.R. Don sorting yard, the bridges at Spadina Ave., John St., and Eastern Ave., and the substructures for the new union station. In addition to these liabilities on the part of the city, the latter could collect no damages for city property taken for the proper carrying out of the project. Any question of damages between the two companies was to be taken before the Board for adjustment.

At that time, the C.P.R. management spoke of removing a large portion of its passenger service to a union station to be built in conjunction with the Canadian Northern Ontario Ry. in the northern section of the city, on its West Toronto-Leaside line, and thus release itself from the congestion and crossing troubles in the lower part of the city. In view of this, the C.P.R. took exception to being included in the viaduct and union station project, and

combined opinion of the four parties, make for a better viaduct scheme. The result of a series of conferences was the preparation of an entirely new set of plans which it was considered would meet the city's requirements more satisfactorily and work in with the general harbour scheme then being evolved by the commission. The scheme as developed was approved by the four parties, an agreement, dated July 29, 1913, being drawn up on the basis of the new plans.

These substitute plans were presented to the Board of Railway Commissioners, and as it appeared that the works agreed to be undertaken by the four contracting parties of the agreement would be performed on the terms and in the time specified therein, and as all the parties were making application to the board for their approval, the board passed order 19926, July 31, 1913, giving full effect to the agreement and authorizing and approving the construction and maintenance of the works provided in the agreement. Briefly, the order approved the substitution of the new plans for the viaduct for those accompanying the original order 7200, ordering that the work be completed within three years from July 29, 1913. Also, all questions reserved for ultimate determination under former orders 7200, 13568, 16019 and 17033, as well as the necessity for amendments to or rescission of the whole, were reserved for further consideration by the board on hearing the parties. All changes in the plans as may be required must be approved by the board.

The plans as approved are shown in the accompanying sectional illustrations, which show the scope of the work, from the C.P.R. diamond crossing west of Bathurst St. on

ruptured from the necessity of maintaining the regular train service as would be required if the former right of way were followed. As the route at present followed is comparatively narrow, with both sides occupied through the greater part of the route by buildings where it would be impossible to secure temporary space for use during construction, it would be practically an impossible task to elevate the tracks and at the same time maintain the service without serious interruptions. With an entirely new right of way through the more difficult section, this phase of the work is simplified. Another advantage to the new line is that the through tracks will follow a tangent from Spadina Ave. on the west to Parliament St., nearly $1\frac{1}{4}$ mile.

From the west, the grade revision completed to that end of the city, brings the tracks on a descending grade of 0.25% to the C.P.R. diamond crossing, continuing on the present grade to a point midway between Strachan Ave. and Bathurst St. From this point to near Bathurst St., the line is through the old cutting, with no change from the present conditions. In consequence, the bridge across the tracks at Strachan Ave. will not be done away with, but it is said that the present wooden bridge will be replaced by a more modern steel structure, but this will be apart from the viaduct proposition. From there to just east of Bathurst St., there will be no change in existing conditions, the steel bridge across Bathurst St. remaining.

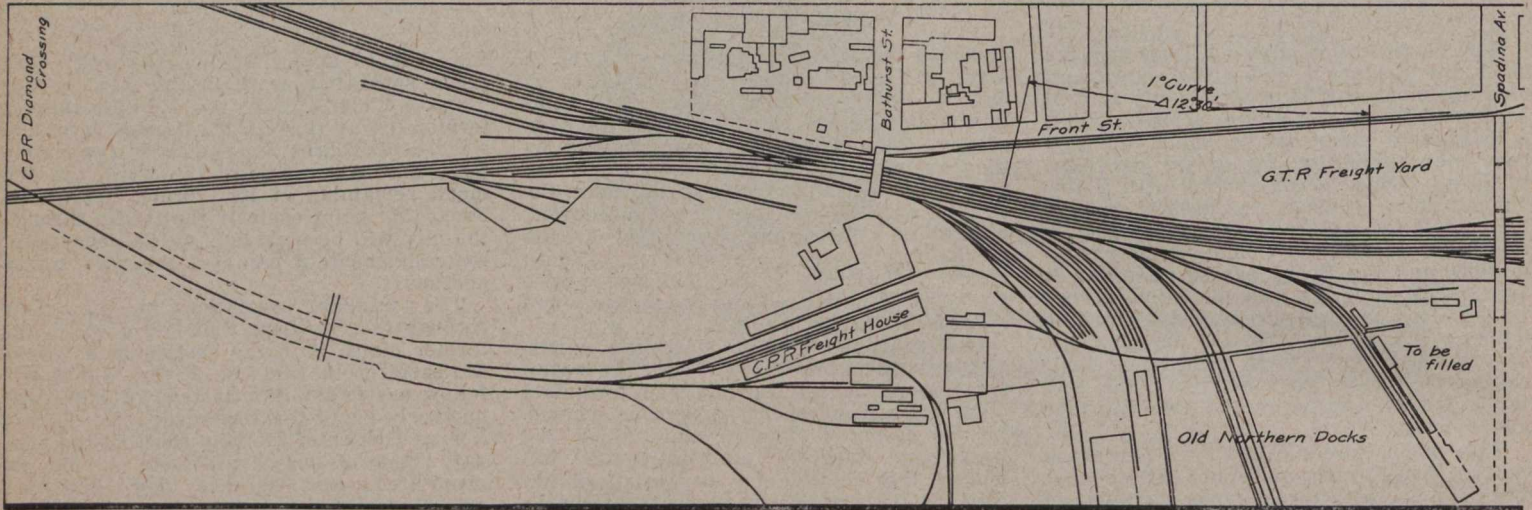
To this point the line will be a tangent, changing there to 1 degree curve through $12\frac{1}{2}$ degrees, terminating at Spadina Ave., from which point the line will be again

tangent. From the point of curvature at Bathurst St., the line will commence to ascend to the viaduct on a 0.4% grade, reaching elevation 26.5 at York St., from which point easterly to the Don River the line will be level at an elevation of 18 ft. above the present base of rail.

From Strachan Ave. to Bathurst St. there are four tracks, but just west of Bathurst St., the G.T.R. old main line and the C.P.R. main line join from the west, there being 7 tracks under the bridge. East of this the lines will diverge to the different yards and

width of the tracks, eliminating the steep ramp from the south side of the bridge to the grade over the through tracks. This new arrangement will call for a complete change at this point, as the old arrangement of crossing the tracks at grade was necessitated by the slip at the foot of the street coming right up to the tracks, making impossible an overhead bridge approach at that end under existing conditions. The new bridge will be about 770 ft. long, leading off from the higher ground to the north at practically the same level, and descend-

doubtedly more convenient for making up the trains, with no ramps to negotiate, but the principal reason lay in the disposing of York St., which will be carried under the tracks in a long subway. Under this scheme, all the tracks at York St. will be carried over the street. Were the yards on the level, all the tracks leading into the yard from the east would be crossed at grade, reducing the effectiveness of the whole grade crossing elimination project. The shunting of cars in the making up of trains would be a constant source of danger,



Plan of Viaduct Scheme from C.P.R. Diamond Crossing to Spadina Avenue. (Section 1.)

sidings, requiring long highway bridges to carry Spadina Ave. and John St. over the tracks. The present G.T.R. freight yard and shop arrangement to the north of the tracks between Bathurst and John Sts. will require rearrangement, the plans for which have not yet been drawn. To the immediate north of the tracks between Spadina Ave. and York St. the new scheme calls for an elevated passenger car yard for the G.T.R., consisting of 12 tracks, approached by a ladder track from each end. From Bathurst St., along the south side of the viaduct, there will be a surface track leading to the old Northern Ry. docks and the different industries located along the harbor front.

Under the existing arrangement, the Spadina Ave. bridge, which is 700 ft. long, only crosses the yard tracks to the north

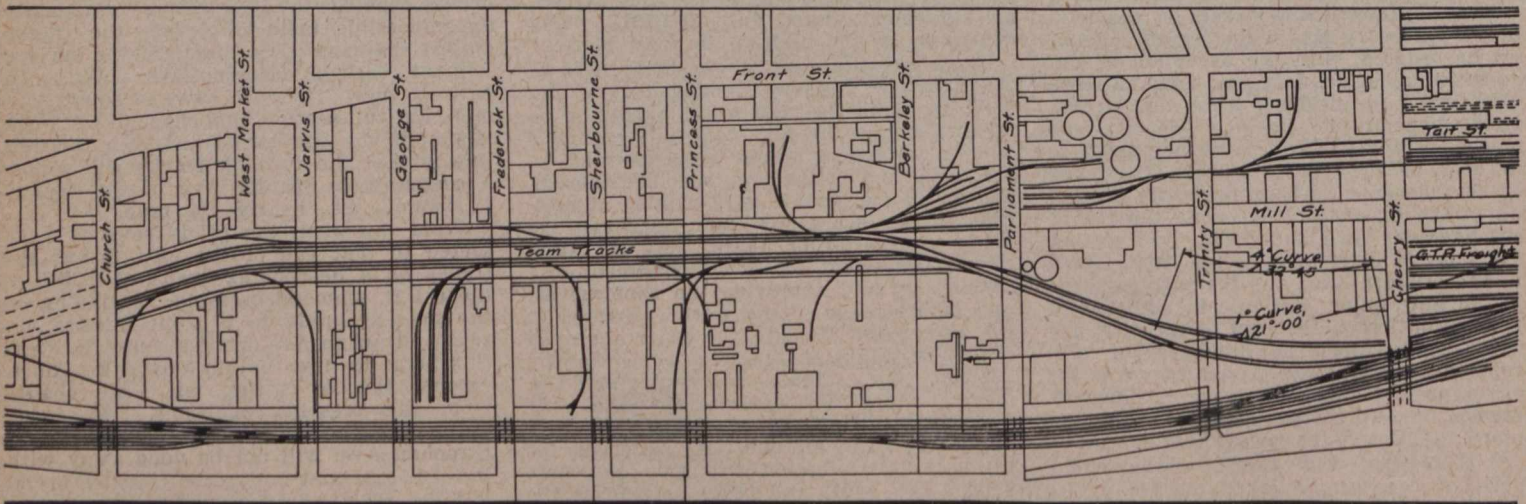
ing on the south on a light ramp, filling in the slip of the city wharf to the south. This extended roadway will connect with the Lake St. extension, which the city proposes to put through in conjunction with the scheme. The John St. bridge will not require to be extended, but as the viaduct level is to be 11 ft. above the present level at that point, the bridge will be raised that distance, the approaches from the south connecting to the Lake St. extension.

At John St., between the through tracks and the G.T.R. passenger car yard, the station tracks will lead off in a double ladder, the plans calling for 10 passenger and 2 freight tracks through the station. At John St. also the leads to the C.P.R. freight and passenger car yards will branch off to the south. This yard will be on the same level as the viaduct. The plans for the elevation

and from the railway standpoint, the yard accommodation would be materially reduced by the breaking up of trains at the crossing.

The double ladder leading into the station will be approached from the through tracks by crossovers to the west of the ladder approach. To the south of the station there will be 4 through tracks. The Canadian Express Co.'s present building on the north side of the station tracks at the foot of York St. will be approached by a ramp along the north side of the G.T.R. passenger car yard, requiring a concrete retaining wall along that side, as the building is on the ground level.

Bay St. will be carried under the easterly end of the station tracks and the through tracks, in a subway, the tracks for the C.P.R. freight and passenger car yards branching off on the viaduct at this point.



Plan of Viaduct Scheme from Between Scott and Church Streets to Don Freight Yards. (Section 3.)

of the through tracks, which, as in the new scheme, pass along the south side of the yards. The ascending grade of the viaduct will necessitate the raising of this bridge 5 ft., and it will be extended to span the full

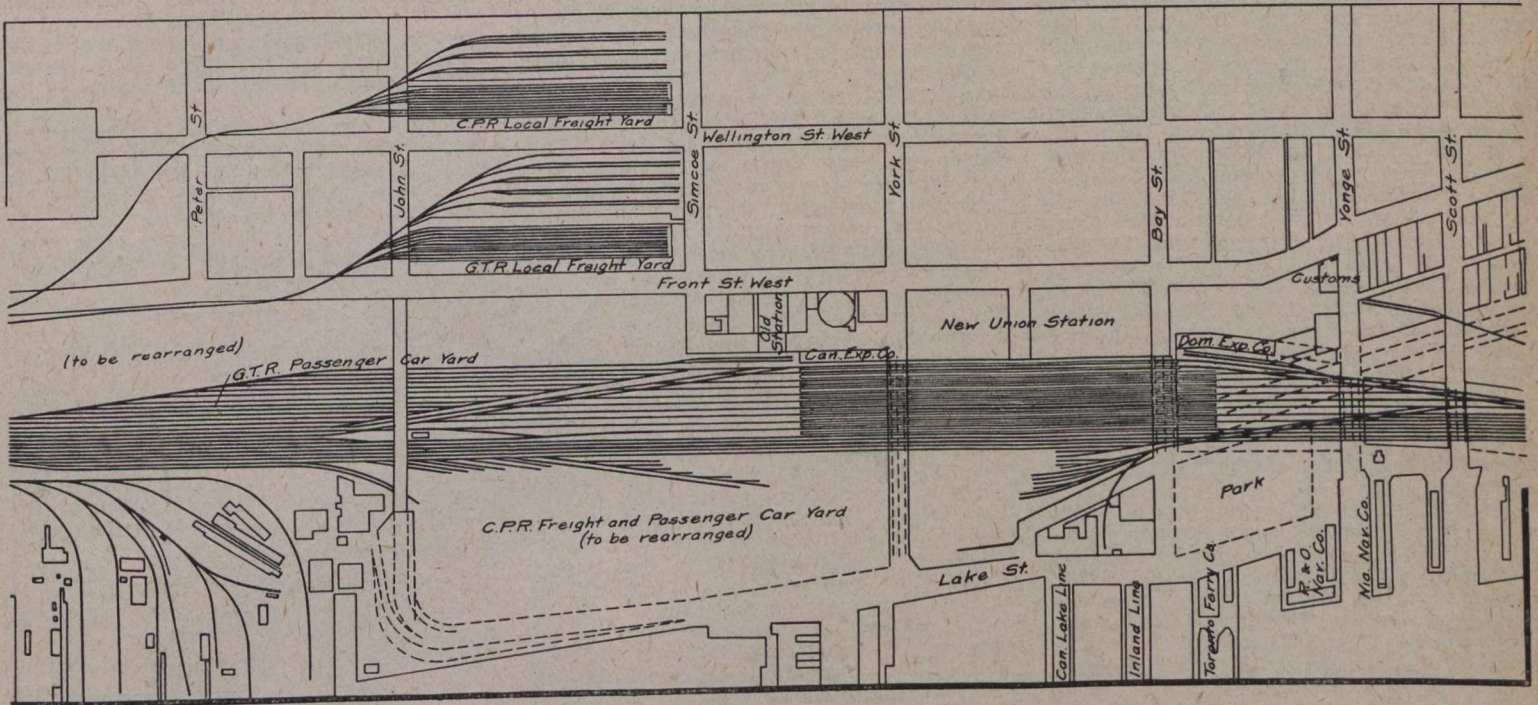
and rearrangement are not yet outlined, but can be cared for apart from the general scheme. Various considerations entered into the reasons for elevating this yard. In the first place, such an arrangement is un-

From Bay St., the station tracks will converge through double ladders to the northerly of the through tracks at Church St., east of which there will be crossovers. The only portion of the entire viaduct to be built

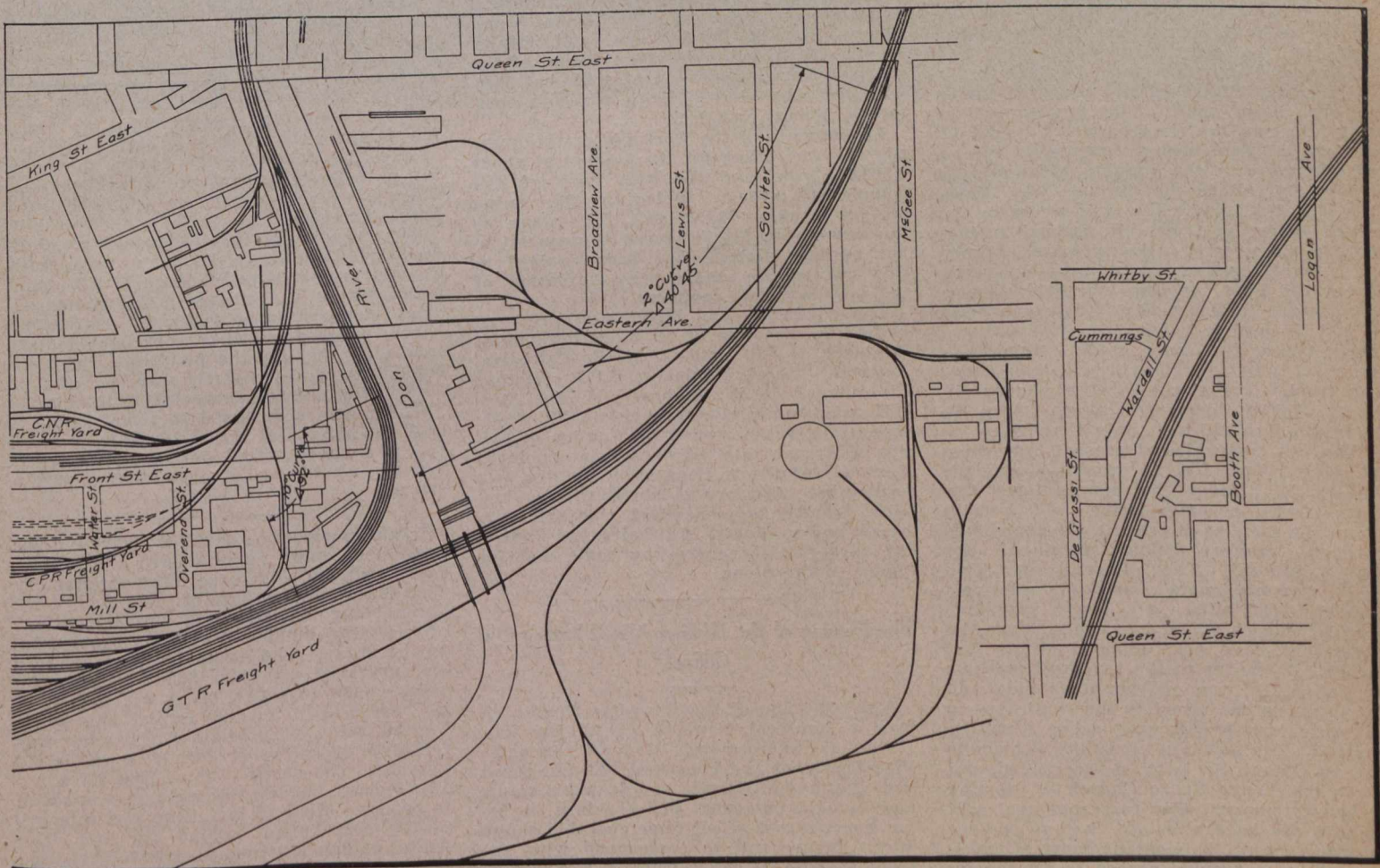
with concrete retaining walls will be between Yonge and Scott Sts., the balance will all be earth embankments. From the station east there are to be 6 through tracks, crossing all the streets on viaducts.

looped south at Cherry St. The right of way secured across these water lots is 230 ft. wide, as compared to 200 ft. of the present right of way. Through this new right of way there will be 6 tracks, with an em-

seemingly wanton destruction of property works in admirably with the harbor improvement scheme of the Toronto Harbor Commissioners. It is proposed to fill in the slips, and extend the bulkhead line consid-



Plan of Viaduct Scheme from Spadina Avenue to Between Scott and Church Streets. (Section 2.)



Plan of Viaduct Scheme from Don Freight Yards to Eastern Ends. (Section 4.)

It is from the station easterly that the new viaduct plans differ from those originally ordered, the line instead of following the general trend of the Esplanade, striking across the wharves to where the old lines

bankment width at the top of 85 ft. The property damages under normal conditions to expropriate this property would be enormous, as practically the whole wharf frontage will be rendered useless. But this

erably further out into the harbor, this arrangement making possible a better wharfage arrangement.

From Parliament St., the line will follow a 1 degree curve through an angle of 21

degrees, again following a tangent to the Don River. At Cherry St. the old G.T.R. right of way will be again struck, the through tracks following the south side of the former right of way, as the new arrangements provide for a new Don exit for the C.P.R. line. In the existing arrangement, the G.T.R. and C.P.R. diverge at Berkeley St., the G.T.R. sweeping southerly to the Don River, and the C.P.R. following approximately a straight line through to the northerly turn at the Don River. In the new arrangement, the two lines will continue together to near the Don, the C.P.R. branching north along the west bank at that point. As mentioned, the right of way between Cherry St. and the Don will be slightly south of the present one, as the C.P.R. has its own line from Cherry St. east, there being crossovers from the common line just west of Cherry St.

To the south of the parallel sets of tracks will be the G.T.R. Don freight yard, from which the additional width for the right of way will be taken. It is proposed to rearrange this yard, but plans have not yet been prepared.

The 2 track C.P.R. line will sweep to the north on a 10 degree curve through 92 degrees, along the west side of the Don, following the right of way of the old G.T.R. Belt Line to its former right of way just south of Queen St. The line will commence to descend at Cherry St. on a 0.44% grade, easing to 0.09% around the curve, increasing to 0.45% to the former grade at Queen St. Queen St. is at present carried over the tracks on a bridge, and at Eastern Ave. the plans call for an overhead bridge, probably of the same type as that at Queen St., bridging the river, through tracks, and freight yard approach tracks to the west.

The 5 G.T.R. tracks will continue across the Don River, south of the former right of way, crossing the river on a 120 ft. double girder, slab floor bridge, carrying 18 tracks, to accommodate the freight yard approach tracks as well as the through line. From the Don bridge, the line will swing to the north as far as Queen St. through a 40% degree angle on a 2 degree curve, thence on a short tangent to a reverse curve. From the Don, the line will ascend on a 0.4% grade to Queen St., from which point it will be level to Logan Ave., where it will again reach its former grade. Both Eastern Ave. and Queen St. will be carried under the tracks, the street level at Queen St. being slightly depressed. From Queen St. north the line will have only 4 tracks.

The two companies at present have most of their team freight tracks along the Esplanade. Under the new scheme this team track accommodation will remain about the same as at present, the abandoned through tracks being retained for this purpose. The Board of Railway Commissioners' original order expressly prohibited all grade crossings west of Church St., and in consequence the old tracks have been stopped off at that street. Entrances to the two fruit markets at Yonge St., one on the north side and the other on the wharf to the south, are to be made over trestle approaches from the viaduct. The trackage along the Esplanade east of Church St. is to be rearranged, and while the Yonge St. to Church St. portion is being removed, this rearrangement will make a trackage equal to that at present provided there. This arrangement of trackage will also provide access to all the industrial sidings along the old line. The approach to the viaduct will be over the old G.T.R. right of way, up a ramp that reaches the C.P.R. separate tracks where they diverge at Cherry St. All the tracks in this district will cross the streets at grade, with the exception of Trinity St., on the ramp approach, which will be carried

under the tracks. With the exception of the approach tracks, all the tracks along the Esplanade will be stopped off at Parliament St., and in order that the grade crossing feature may not present its objectionable feature, the Board's original order provided that on all surface tracks there should be no movement of cars except during specified hours at night, or, if the freight be perishable, when the train was preceded by a brakeman on foot. This Esplanade team track arrangement will have decided advantages over the accommodation provided in the last plans drawn up. In that there were three tracks at grade on each side of a concrete retaining wall viaduct to serve as team tracks and approaches to the present industrial sidings. The closeness of the surface tracks to the mouth of the subways would make them a menace to the public crossing.

From the C.P.R. line at Queen St. there will remain the present C.P.R. entrance, which will be used solely for entering the C.P.R. and Canadian Northern Ontario Ry. east end freight sheds. To serve industries located along the present line between the freight sheds and the Esplanade, there will be a single track line crossing the intervening streets. It will thus be seen that except for a little shunting of cars there will be no train movement on the level.

Most of the street crossings will be by subways. As mentioned, Bathurst St., Spadina Ave., Eastern Ave. and Queen St. will pass over the tracks on bridges. Yonge and Bay Sts. will have 80 ft. subways; York, Scott, Church, Jarvis, George, Frederick, Sherbourne, Princess, Parliament and Cherry Sts., 66 ft. subways, and Trinity St., two 30 ft. subways. The design of the subways has not been completed, but they will likely be of steel, with concrete abutments, facings and deck.

An estimate of the work places the quantity of earth filling for the viaduct at about 3,500,000 yds., and the total cost of the completed project, including the union station, at about \$14,000,000. The plans for the new station are in course of preparation, but nothing definite has been decided in this connection pending the formation of the new terminal company.

The viaduct plans have been prepared under the direction of H. R. Safford, Chief Engineer, G.T.R., and J. M. R. Fairbairn, Assistant Chief Engineer, C.P.R. Eastern Lines, by J. R. W. Ambrose, M. Can. Soc. C.E., who was in charge of the G.T.R. grade separation work through the southwest portion of Toronto, and who has been appointed Engineer of Grade Separation for the two companies. We are indebted to Mr. Ambrose for the data on which this article is based, and to Messrs. Fairbairn and Safford for authority to secure the same and for copies of the plans.

The Passing of Sir William Van Horne's Old Office.

The old room at the Canadian Pacific offices in Montreal, in which Sir William Van Horne, as, successively, General Manager, Vice President and President, sat and pored over the map of Canada and drew his plans, and thought out great undertakings, is being knocked out of all rememberable shape of its former self to correspond with the great scheme of reconstruction.

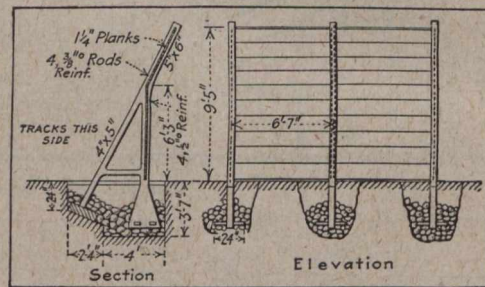
In this room Sir William used to receive his visitors, varied as to importance and distinction. The great ones of the earth have foregathered in the old room which has almost an historic significance. Men like Sir Henry Irving, Matthew Arnold, Lord Alverstone (as Sir Richard Webster), Lord Iveagh, Prince Arthur, His Royal

Highness the Duke of Connaught and many others belonging to the old world aristocracies and Illuminati, have chatted in the old room where Sir William, getting down the maps before him, used to evolve his policies of extension and consolidation—when he had time to think of more general things than the paying of the wages—in the early days.

Some of the older officials, who remember the room so well, and the many times they have appeared before the President to discuss large things with him, as well as to enjoy his epigrams (when he had a moment to spare for them), feel a little sentimental regret that its glory has departed.—From the daily press.

Reinforced Concrete Snow Fences.

Snow fences for the Italian State Railways have been built of reinforced concrete along the Termoli-Campobasso line on the east coast of the peninsula. This branch is in mountainous country subject to heavy and continuous snow fall, which fills up the cuts beyond the power of the equipment to



remove. About five years ago a start was made toward the construction of snow fences along the most unprotected sections of the line, following the design shown in the accompanying illustration. Since then the whole line has been so protected, with great success.

The fence comprises reinforced concrete standards spaced 6 ft. 7 in. c. to c., with an intervening fence made up of 3 in. pine plank, fitting into grooves in the standards. Each standard is of the size and slope shown and is founded on rock ballast filled into a pit dug for the purpose. The reinforcement of the posts is made up of four round rods tied together with 1/8 in. wire.

The fence is designed to resist safely a uniform horizontal thrust of 20 lb. per sq. ft., or a concentrated horizontal thrust of 660 lbs. at the top of each section of the fence.

Tank Locomotives of the 2 : 12 : 2 Class have been built for the Java State Railways, and are said to be more satisfactory than Mallet duplex ones of the 2 : 6 : 6 : 0 class, being less liable to slip on account of the large number of wheels coupled into one group. The locomotives can operate on curves of 460- and 500-ft. radius, the track gauge (3 1/2 ft.), being widened a little over 9-16 in. for the former and 3/4 in. for the latter. The original trial order was followed by an order for a considerable number. The design was at first for a 2 : 12 : 0 class, but the trailing axle was added in order to allow of increasing the capacity of the coal bunker behind the cab. The length of driving wheelbase is 20 1/2 ft., and special provision is made for lateral movement of the axles on curves. On the sharpest curves this movement may be as much as 1 3/32 ins. for the first driving axle, and 3/4 to 2 1/4 ins. for the truck axles, the latter having radial axle boxes. All the wheels have flanged tires, but the flanges are smaller than usual on the two middle driving axles.

Railway Mechanical Methods and Devices.

Air Motor Grinder at Grand Trunk Railway Toronto Shops.

The G.T.R. Toronto shops are used almost exclusively for the manufacture and repair of track parts, such as frogs, switches and points. In the working of these parts, the saw forms a very import-



Air Motor Grinder for Sharpening Rail Saws.

ant piece of equipment, and requires special means of sharpening to keep in condition. The machine shown in the accompanying illustration is used in these shops for saw sharpening, and is located alongside of the horizontal miller which is used for sawing the rail parts.

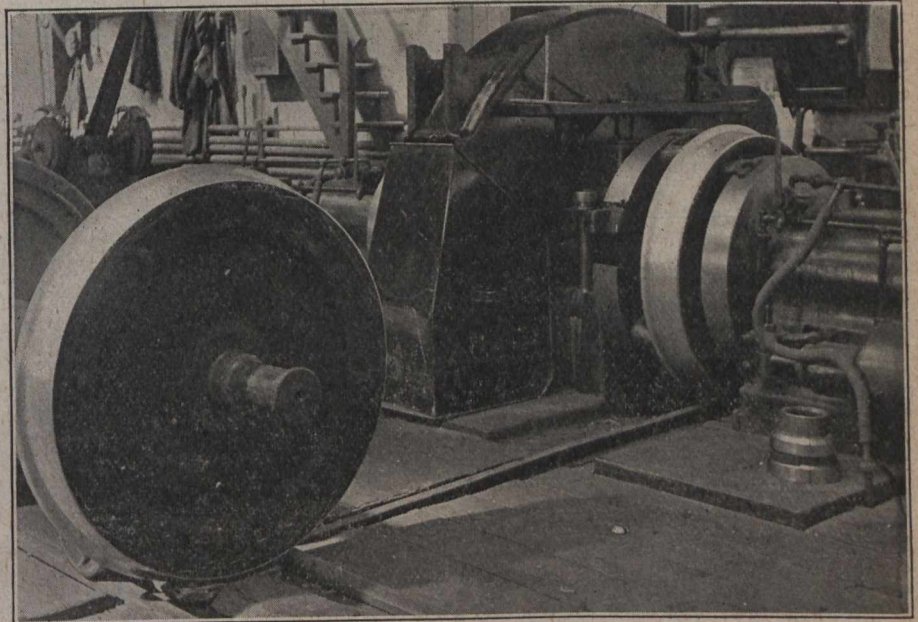
The power end of the grinder consists of a small air turbine, mounted on a belt topped grinder stand, with the shaft of the motor carried in bearings on either side of the motor casing, the bearings being an integral part of the grinder frame. A valve in the air pipe to the rear regulates the air, and varying speeds may be obtained by changing the applied pressure, as recorded on the gauge shown.

The jig for sharpening the saw is attached to an arm projecting from the grinder frame alongside one of the grinding wheels. The jig consists of a flat table, level with the centre line of the shaft, this table having ribs on its under side fitting into the frame of the jig, guiding the table in a path which may be either across the face of the grinding wheel or at a slight angle to it, the position of the jigframe being adjustable. The saw to be sharpened is attached to the face of the table by a clamp, and adjusted to sharpen each tooth of the saw. E. Logan is General Foreman of these shops.

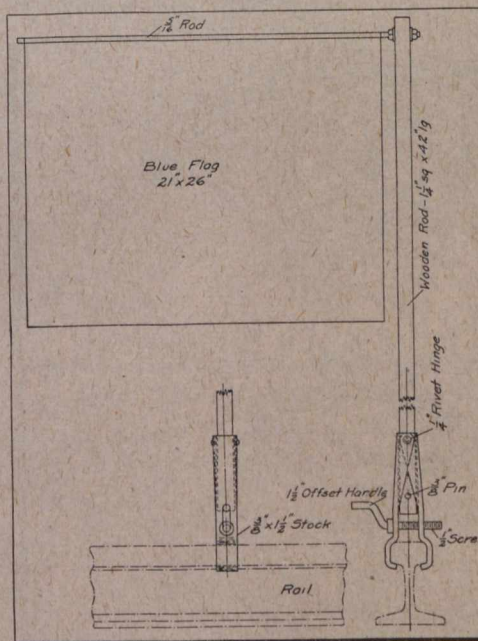
Mounting Wheels in Lathe at Canadian Pacific Railway West Toronto Shops.

In the C.P.R. passenger car shops at West Toronto the passenger car wheel lathe is fitted with an attachment for quickly mounting the wheels in the lathe for turning. In front of the lathe there is a narrow gauge track, served by a small car fitted for carrying the pairs of mounted wheels, the wheels being run on the car from the

storage tracks nearby. Running into the lathe, there is a standard gauge on which the wheels are run from the small service track car as shown in the accompanying illustration. These two rails of the standard gauge track are secured at the service track end, the other ends being attached to the upper end of air cylinder pistons, the cylinders being bedded under the lathe. The



Attachment for Mounting Wheels in a Wheel Lathe.



Simple and Secure Blue Flag Stand.

wheels to be turned are run into position in the lathe on the tracks, and by means of the air cylinders, the inner ends of the rails are raised, lifting the wheels in line with the lathe centres, which are then run into position. The rails are then lowered to normal position. This attachment makes possible a quick mounting of the wheels in the lathe.

Vanadium steel castings differ in composition from ordinary steel castings only by the presence of from 0.16% to 0.25% of vanadium.

Blue Flag Stand at Canadian Northern Railway Winnipeg Shops.

In view of the widespread interest that has lately been fostered in the safety first movement, any little devices that will promote this movement are in demand. The use of the blue flag in repair yards, for pro-

tecting the ends of standing cars while undergoing repairs, is general on all lines in Canada and the U.S., and has proved most efficacious in preventing yard locomotives and shunting trains from bumping the ends of cars that are undergoing repairs, or under which workmen may for the time being be working. This has reduced one of the most prolific causes of accident.

The difficulty in the use of the blue flag has been in the careless manner in which workmen whom the blue flag is to protect, place it at the end of the car or string of cars that are being worked on. It not infrequently happens that the flag is placed in the rung of the car ladder, where a breeze, or a workman climbing to the top of the car, might quite easily knock it to the ground, where it would in all probability not be seen by an approaching train or locomotive. Again, it is often stuck in the ground at the end of the car, where it is easily knocked over with a like result. Numerous accidents have occurred from this very cause. When repair car accidents occur, and an enquiry is being conducted to ascertain the cause, cases have been known where the train crew of the offending train have deliberately knocked down the flag after the accident in order to make a false claim that the flag was down as the train approached, and that in consequence, they were not responsible for the accident.

Realizing all these difficulties, A. McCowan, General Car Foreman, Canadian Northern Ry. Shops, Winnipeg, devised the flag stand shown in the accompanying illustration. The base of the stand consists of a couple of pieces of $\frac{3}{8}$ by $1\frac{1}{2}$ in. bar stock, formed to fit the head of the rail at the lower ends, and drawn out and curved at the tops to fit around the end of a $1\frac{1}{4}$ in. wooden rod, the two pieces being hinged together with $\frac{1}{4}$ in. rivets as shown. Connecting the two hinged arms, there is a $\frac{1}{2}$

in. screw, one arm having a clearance hole, and the other tapped to receive it. A $\frac{1}{2}$ in. screw, with stop shoulder and having a $1\frac{1}{2}$ in. offset handle, is used to tighten the two arms on the rail. A $1\frac{1}{4}$ in. square rod 42 ins. long, with pin in the lower end to keep from drawing out of the clamp, carries on the upper end, a 5-16 in. rod, to which is attached a 21 by 26 in. blue flag.

The clamp is attached to the rail at the exposed end of the car under repair, and on account of the sturdy nature of the clamp, nothing short of an accident can knock it over. The men are compelled to see that the flag pole is placed in position before proceeding with their work. In the event of an accident occurring through a train crew neglecting the signal, the train on knocking the end of the car under repair must of necessity pass over the flag pole, crushing it to the rail, leaving incriminating evidence so that the blame may be properly placed.

Device for Turning Piston Rings.

The accompanying illustration shows a turning device for locomotive piston rings. The appliance is so constructed that two piston rings may be turned at the same time. The letters marked on the drawing refer to the various parts of the device and rings. A A are the piston rings in position to be turned. B is the expansion ring which is interchangeable with other rings of larger or smaller diameters, according to the size that the rings may require to be turned. C is the main body to which the other parts are attached. D is the cone for expanding the adjustable expanders E E. F is a set screw used for preventing expanding pins from turning around. A slot is adapted to receive the screws. G is the

Tire Mounting Shed at Canadian Pacific Railway West Toronto Shops.

The C.P.R. passenger car shop at West Toronto has recently installed a plant for mounting passenger car wheels, to the design of H. R. Naylor, General Foreman, the details of which are shown in the accompanying illustration. The plant is installed in a small frame building outside the pas-



Tire Heating and Mounting Shed with Convenient Facilities.

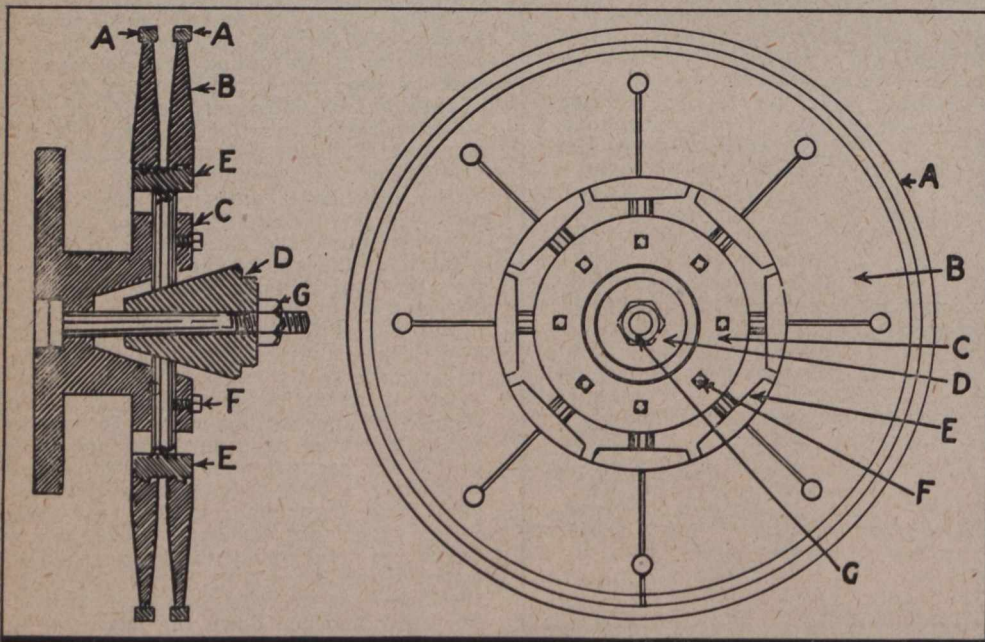
come from the back of the shed to about a third of the shop depth from the front. Just in front of the rear end of the raised rails there is a vertical air cylinder, buried in the ground, used to raise the mounted wheels. In the channel sides of the rear end of the raised rails there are slotted bars, free to move about 6 ins., which, when the wheels are raised on the air jack, can be pulled out, and the axle lowered thereon. The T head of the rail ends is cut away so that the upper surface of the end pieces is flush with the rail top, the axles as lowered on the projecting ends being run along the raised rails.

Forming a U loop from the rear of the shed over top of the standard gauge rails and looping around the rear end, there is a rail suspended from the roof, on which a small trolley operates. At the rear of the shed, to the left of the raised rail, there is a tire heating furnace of a type recently described in these columns, the tires being mounted in a pile and encircled by a sheet of metal, an oil flame being directed down through the centre of the pile, thereby heating them in batches of about 6. From this pile of heated tires the tires can be lifted on the overhead trolley, and transported to the awaiting wheel centre for mounting. The whole layout of the plant makes for convenience and speed in operation.

Diesel Electric Motor Cars on Swedish State Railway.

Diesel electric motor cars have been in operation on the Swedish State Railways for about a year past. Two such cars were built. The power equipment of each car is a 75 h.p. Diesel engine running at 700 r.p.m., driving a direct-current dynamo of 50 k.w., producing 440-volt current. Two 30 h.p. motors are connected to the main or driving axles, although a third axle is fitted under the machinery compartment, which is at the extreme end of the car. The Diesel engine is a four stroke machine with six cylinders and eight compressor cylinders. Besides driving its own fuel pumps, etc., the engine also drives a small compressor for the air brakes. The engine is started with compressed air stored in steel containers. The engine exhaust goes through a muffler under the car and then to an exhaust pipe over the roof. The cooling water is taken from a tank on the ceiling of the baggage room (just behind the engine compartment) and after going through the engine is carried through a copper radiator on the roof, being circulated by a small pump geared to the engine. Two oil tanks in the engine room provide fuel capacity for about 800 miles of run with two trailers. The fuel consumption is stated to be about 0.8 lb. of oil per mile for the motor car alone and about 1.2 lb. per mile for the motor car with 30 ton trailer, at an average speed of 20 to 30 miles an hour. The car is geared for a maximum speed of 40 miles an hour, and as to tractive power is designed for two 30 ton trailers, the motor car itself weighing 26 tons. Current for illumination is supplied by a 28 cell accumulator under the car, which also furnishes current for a small motor used for shifting the governor of the Diesel engine for different speeds of car. Heating in cold weather is done by passing the circulation water of the engine through radiators in the car. These cars are said to be giving satisfactory service. They were built in 1911, and were put into service in the summer of 1912.

It is said that stoker fired locomotives operate with only from one third to one tenth the amount of smoke produced by hand fired locomotives.



Device for Turning Piston Rings.

adjustable nut for the operation of the cone in tightening the expanders. This device nearly doubles the daily output of locomotive piston rings.—J. G. Koppell, Montreal, in *Railway and Locomotive Engineering*.

A characteristic feature of both lignitic and sub-bituminous coals is their liability to heat in the pile or bunker, and to take fire spontaneously. This difficulty is experienced with many of the bituminous coals as well, but is not so uniformly encountered with such coals as with the lower grade fuels.

senger car machine shop, where tire and wheel repairs are made, combining convenience in facilities with convenience in sequence of operations.

The frame building, open on two sides, contains two bays, that on the left for storage, and that on the right for the tire mounting operations. The tire mounting bay contains standard tracks on the ground level as shown, running the length of the shed, with a pair of raised rails at about $3\frac{1}{2}$ ft. centres, at an elevation that will just clear the wheels from the ground rail when mounted on its axle. The elevated rails

Power Interlocking and Signalling at Windsor Street Station, Montreal, Canadian Pacific Railway.

As the extension to the C.P.R. terminal at Windsor St., Montreal, is nearing completion, a question of general interest to railway men, and one of great importance in the efficient operation of the terminal, is that of the scheme of signalling employed. As in all similar cases, owing to the extent of track area to be controlled, and to the necessity for quick and safe handling of traffic, power interlocking was decided upon. The accompanying plan shows the terminal tracks as signalled by C. W. Parker, Signal Engineer, C.P.R., under whose specification and supervision the work is being executed.

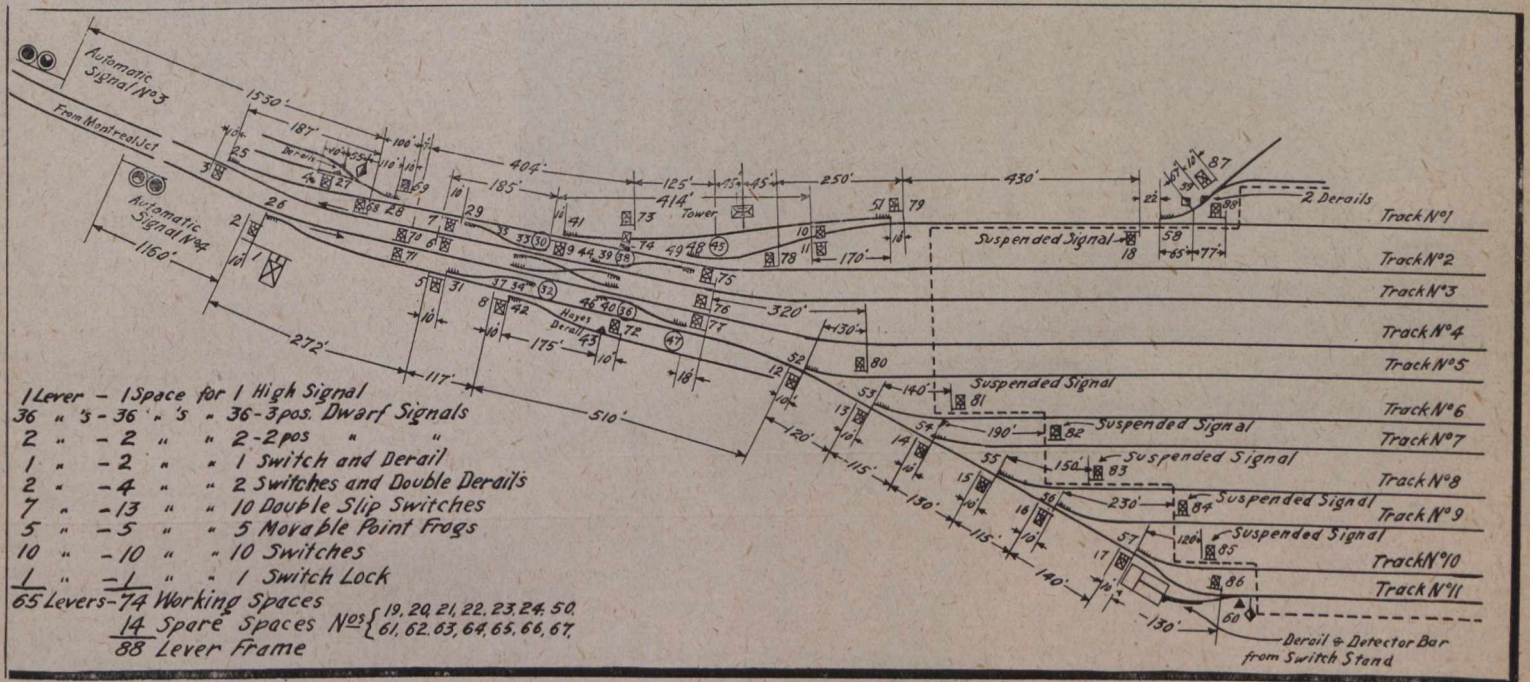
The interlocking cabin, which is located on the north side of the plant, about 400 ft. beyond the train shed, was built by the railway company, and is a three story brick structure of 30 by 18 ft. floor area. Owing to its being located on the side of the track elevation, opportunity is given for the three stories without having it unduly high, and

clearance lines, the placing of the signal close to the switch controlled. The signals located in the train shed are of the suspended type, and are fixed to the steel arch directly above the track governed.

Each of the station tracks within the train shed is divided into two track sections, and the third or 90° position of the entering signal is secured only when the entire track is unoccupied. In other words, if a train is standing in the farthest section of a station track the entering signal for that track will let a train in only on 45°, or caution, indication. The remainder of the plant is divided up into a number of independent track sections, so arranged as to secure the necessary detector locking, viz., the prevention of operation of any switch within a definite track section when same is occupied by a train. It is used to replace the familiar mechanical method of detector bars, as it is more positive in its operation, gives uninterrupted protection over any prede-

vice is a metallic case about 12 ft. by 3 ft. high, placed behind and above the interlocking machine in plain view of the operator. The front of this case is opaque, except in a broad outline of the actual track arrangement. Small electric lamps are assembled in reflectors and mounted inside in sets, corresponding each to its track section on the ground. When the whole diagram is lighted the clear outline of the tracks is visible and when a train enters the interlocking limits the diagram becomes dark, corresponding to the section occupied. By this diagram the operator is able to set up for movements with the least loss of time, since, when the signal governing the route has been put normal, releasing the mechanical locking between levers, he may change his switches as soon as they light up again behind a train.

The track sections, relays, repeating indicators and lever locks are all energized from two sets of six cells of storage battery of 120-A.H. capacity, one set feeding relays and locks and the other the track circuits. In supplying the track the continuous track loop is used, which means that both the positive and negative sides of battery are



Plan of Signalling Installation, Windsor Street Station and Yard, Canadian Pacific Ry., Montreal. Not to Scale.

without the cost of excessive excavation. The basement is used for the power apparatus, storage batteries and a small repair shop; the middle floor, which is on the track level, for relay room and office, and the top floor for the operating room, making a very satisfactory arrangement.

As will be seen by reference to the track plan entrance to the terminus is on one inbound main track up to signal 1, at which point, by means of signals 1 and 2 and their consequent signals, selection is made to any of the 11 station tracks.

The signals on the plant are all three position upper quadrant, non automatic, except nos. 68 and 69, which are controlled jointly with the advance signal 3, and are slotted through the intervening track, and signals 70 and 71, which are two position, operating from horizontal to 45° only. With the exception of signal 1, which controls a relatively high speed inbound movement, all movements on the plant are treated as slow speed and are controlled by dwarf signals. This method, not only affords all necessary protection, but does away with expensive overhead bridge construction, and allows, by keeping within the equipment

terminated length of track, and affords a means of indicating the exact position of any train within the interlocking limits.

Each track section has a 4 ohm relay, either carried directly into the interlocking cabin, if the distance is not over approximately 500 ft., or repeated into the cabin by means of an indicating relay. All the levers in the interlocking machine controlling the switches are equipped with electric locks, which must be energized before movement of the switch can be made in either direction. Now by energizing all the locks on the switch levers of a given section through the track relay, or its repeater, for that section, it is readily seen that when a track is occupied by a train its relay is deenergized, and therefore the energizing circuit on the switch lever locks is cut off, thus locking all the levers for that section. This is detector locking.

Again, if current is supplied through the energized contacts of these track relays, or their repeaters, to independent lamps, an indication is given of the occupancy of any track section, if the lamp is burning the track is unoccupied. This is what is done in the illuminated track diagram. This de-

led out over the entire plant to the feeding points and back to its own side again. This is done to afford additional safeguard against interruption by broken track circuit, since, should a break occur between battery and a given track circuit, there is always a second path for the current round the other side of the loop. Taps, of course, are taken off both positive and negative loops at each feeding point. Variable resistances are placed in these track taps to allow for the necessary track voltage adjustment.

The interlocking machine, which is installed in the upper floor of the cabin is the all electric unit lever type made by the General Railway Signal Co. and has a capacity of 74 working levers, and 14 spare spaces. As above mentioned, all the switch levers are equipped with locks. The interlocking machine in an all electric system is merely a series of switches mechanically interlocked and controlled by the necessary indications and safety magnets.

Battery is supplied on buss bars on the machine from storage battery at 110 volts, and is led through the lever controllers or switches to the functions to be operated by rubber covered insulated wire, each signal

blade and pair of switch points being operated independently by a motor through a suitable gear.

In an electric interlocking system, inasmuch as there is no manual force needed to operate the various functions, nor any rigid connection between the lever and the part operated, as in mechanical interlocking, it is necessary to make special provision that the function moves in accordance with its lever, and also that a switch must have

from the proper source tends to hold the contacts closed, and current from any improper source opens the contacts and releases the circuit breaker on the operating switchboard, cutting off all operating current from the buss bars, until the cross has been removed.

The switch mechanisms used are the General Railway Signal Co.'s model 4, and the signal mechanisms are all the model 2A motor type. Power for the operation of the

the motor generator sets for charging the storage battery.

The charging switches are mounted on a panel in the power room, with the necessary voltmeters and ammeters, and so arranged to permit flexibility in the charge and discharge of the two low voltage sets. The high voltage battery can be charged, of course, without interruption to the operation of the interlocking plant. In case of failure of the commercial current the signals can be lighted from the 12 volt lock battery.

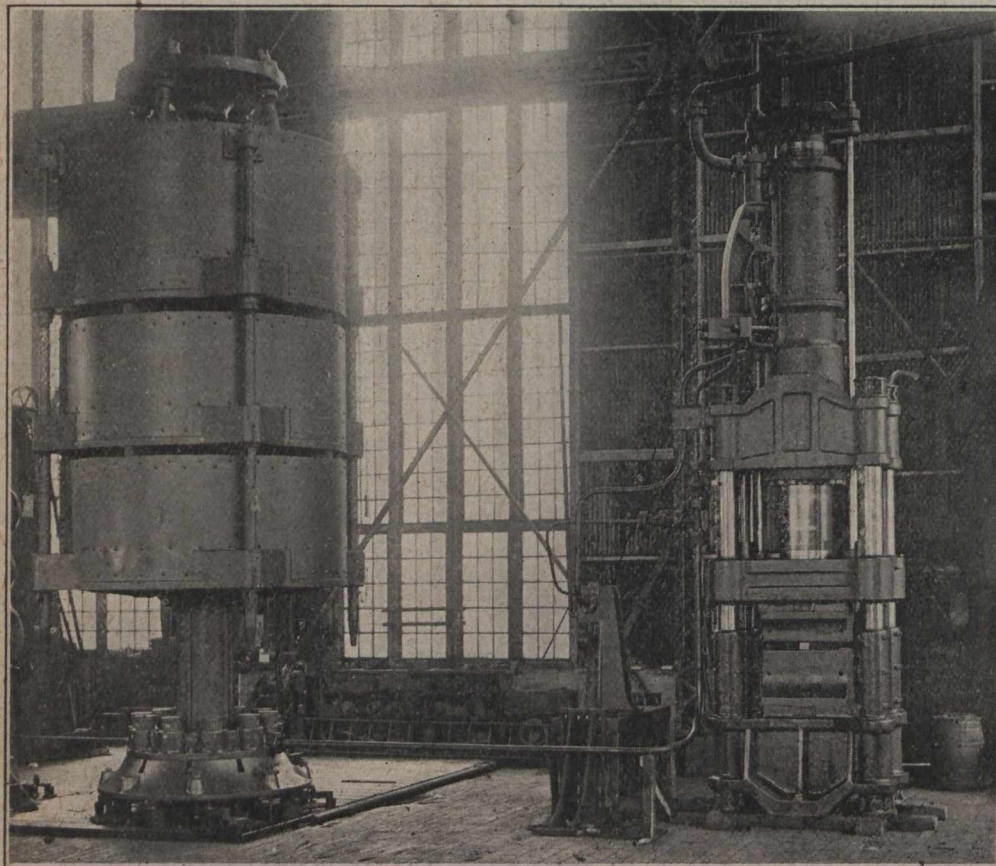
The wires are run to all the functions in wood trunking above the surface of the ground, and are enclosed in conduit inside the train shed. Insulated copper wire is used throughout.

The contract is being carried out by the General Railway Signal Co. of Canada, Ltd., Lachine, Que., of which V. I. Smart is Vice President and General Manager, and R. G. Gage is Chief Engineer.

Hydraulic Forging Press in the Canada Forge Company's Plant.

In the Canada Forge Co.'s plant at Welland, Ont., there is a hydraulic forging press of a design that is unique in this country, and which is shown in one of the accompanying illustrations. It is of German design, built on the Astfalck system by the Wm. Tod Co., Youngstown, O. The unique feature of the press is the size of the work that can be handled, and the speed with which it operates.

The press is of 500 ton capacity, and has a 30 in. plunger that operates at from 80 to 120 strokes a minute on billets up to 32 ins. diameter, the supplied hydraulic pressure being 3,000 lbs. It is of the one lever type, that is to say one lever movement controls the movements of the plunger. The tremendous pressures handled make necessary the design of all the parts particularly strong. The valve design is interesting from the fact that both wearing parts of the valve are made of hardened steel, as the effect of the high pressure water passing over the mating surfaces causes the latter to become badly scored. The accu-

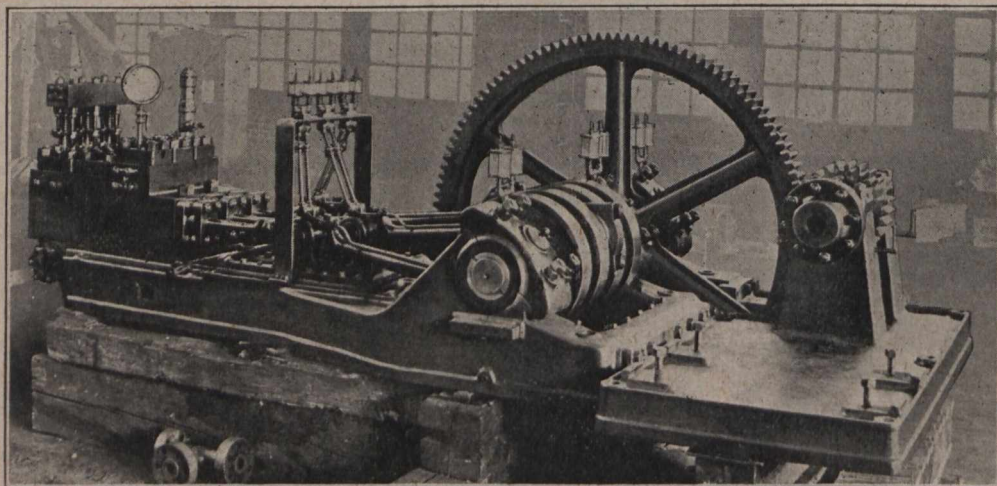


500 Ton Hydraulic Forging Press with Accumulator.

completed its movement and been locked before the controlling lever can complete its stroke and, therefore, release the locking between levers. The first of these essentials is secured by a reversible switch or pole changer located out at the switch and operated by the switch movement, so that the normal or reverse control contacts must be in agreement with the normal or reverse contacts on its controlling lever. The last is obtained by means of the indication current and magnet.

When a switch motor finishes its stroke and the locking plunger is through the lock rod, the operating current is cut off and the motor continues to run a few revolutions, due to its own momentum, and acts as a generator. The current thus generated returns to the interlocking machine over the indication wire and energizing the indication magnet, releases the lever and allows the stroke to be completed. The indication current comes from the function being operated and only after it has finished its stroke and is locked. In the case of a signal an indication is given only when it returns to the normal or position of greatest protection.

In order to prevent the operation of a signal or switch from any incorrect source, due to crosses in the wires between the interlocking machine and function, cross protection is provided by means of polarized relays mounted on a terminal board below each lever and also by the circuit breaker on the operating switchboard. These relays are so connected that the operating current



Three Plunger Motor Driven Hydraulic Forging Press Pump.

interlocking plant is furnished from 57 cells of storage battery of 120-A.H. capacity.

It is proposed to instal a system of intercommunication between the operating room in the interlocking cabin and each station platform.

Power is supplied from the city circuit at 220 volt, 60 cycle, 3 phase, and is transformed to 12 volts for lighting the track diagram and signals. The signals are all equipped with 5 watt tungsten lamps. The commercial current is also used for driving

accumulator for maintaining a uniform supply of high pressure water is shown adjoining the press. It is of the pick up weight design, of a steel construction throughout. The pick up device is capable of quick adjustment, and enables the press to be operated at various pressures as required by the work.

The pump shown herewith is of the horizontal three plunger type, driven by a 110 h.p. direct connected electric motor mounted on the base attached to the pump base.

The cylinder portion of the pump is novel, consisting of a solid steel forging, in which the three cylinder bores, as well as all the valve seats, have been machined from the

solid. It delivers at a 3,000 lb. pressure. The weight of the press is 90,000 lbs., and the installation complete, without the accumulator weighs, 200,000 lbs.

motor connections in the usual manner, without stopping the engine, which always rotates in the same direction. This allows the car to be brought to a halt quickly, independently of the brakes in an emergency. All the levers are located within convenient reach of the operator. The radiators are placed on the roof and circulation for cooling the engine is maintained by the thermo siphon system.

Gas Electric Car on Victoria and Sidney Railway.

Canadian Railway and Marine World for September and November contained some brief particulars of a gas electric car which has been placed in operation on the Victoria and Sidney Ry. on Vancouver Island. This line, of 16.26 miles, runs from Victoria to Sidney, from which point there is a ferry service to the British Columbia mainland. It traverses the Saanich Peninsula, a particularly picturesque and fertile portion of the lower east end of the island, which is becoming closely settled and requires a more frequent service than was possible with steam operation. The car is said to be averaging 110 miles a day, and on two days a week a 30 ton trailer is handled.

The Great Northern Ry. ordered two of these gas electric cars, which are shown in the accompanying illustration. One of them is being operated on the Victoria and Sidney Ry., and the other on a G.N.R. branch line in the State of Washington. They made the journey from Chicago to the Pacific Coast with their own power.

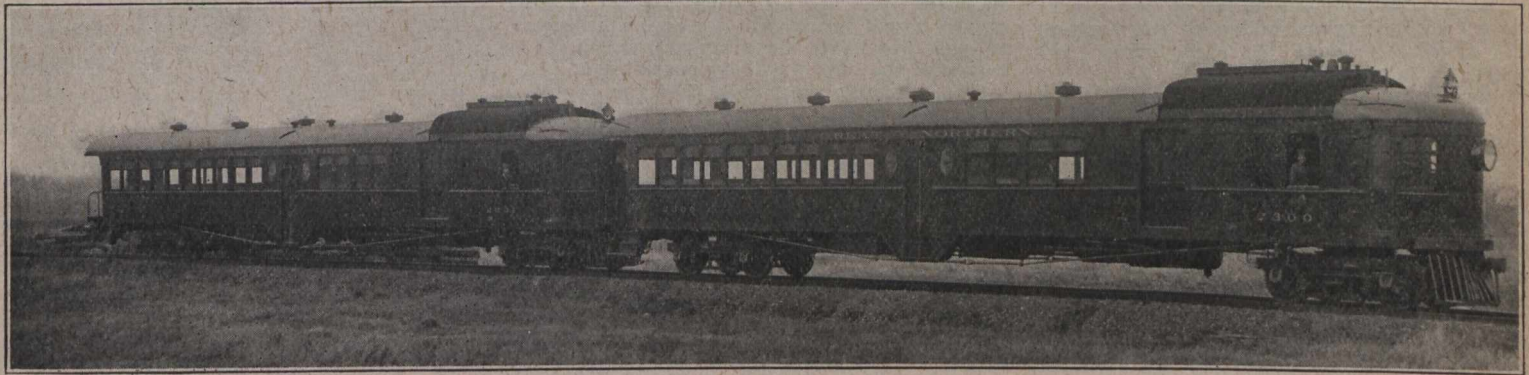
Each car is of the combination passenger, smoking and baggage compartment type. It measures 71 ft. 8 ins. long over bumpers,

of the body is finished in green. The windows are fitted with plate glass; the seats are made long enough to accommodate three persons, are covered with friezette plush in the passenger compartment and with genuine Spanish leather in the smoking room, and the entire car is lighted with electric incandescent fixtures.

The generating unit is located above the floor line of the cab, free from dust and dirt and under immediate observation of the engineer. It consists of an 8 cylinder, 4 cycle gas engine of the V type, direct connected to a 600 volt, commutating pole electric generator, designed to meet the special conditions the service demands. Flexibility of control and economy of operation are assured through electrical transmission of the power. Starting the engine is effected by compressed air taken from the main reservoirs of the air brake system, which are built with surplus capacity for this purpose. The main air compressor is driven from the crank shaft of the main engine, and is fitted with an automatic governor which maintains a constant pressure. The engine can rotate at normal speed, irrespective of the

The controller is also arranged for governing the motors by shunt field control. This auxiliary method of control assures greatly increased operating efficiency through uniform saving of power, economy effected by decrease in the weight of the equipment and an available increase in the service capacity. Two extra points are provided in the controller for final speed acceleration in parallel, whereby the motor fields are shunted and weakened. The resulting higher armature speeds permits the use of smaller pinions, and full utilization of the power input is secured throughout the entire speed range, from start to full speed.

The trucks are of the heavy swing bolster type with elliptic bolster and coil equalizer springs. The bearings, treads and flanges of the wheels and axles conform to M.C.B. standards. The brake equipment includes hand brakes in addition to the combined straight and automatic air brakes. A high power incandescent headlamp and reflector, an air whistle and a pneumatic gong are provided; and a hot water heater, coal fired, is installed for heating the car. To prevent



Gas Electric Cars Built for Great Northern Ry., One of Which is Operating on Victoria and Sidney Ry.

10 ft. 5 ins. wide, and is partitioned into four compartments: one 27 ft. 11 ins. long for passengers; a smoking section, 12 ft. 5 ins. long; a baggage room, 10 ft. 11 $\frac{1}{8}$ ins. long; and the engine cab, 11 ft. 11 ins. long, containing the power plant apparatus. The net weight of the car is approximately 51 $\frac{1}{2}$ tons, and it has a total seating capacity for 86 passengers. A centre vestibule with side entrances runs crosswise between the passenger and smoking compartments. There is also a rear platform entrance leading into the passenger compartment. The smoking section provides for 26, and the passenger compartment for 60 of the total seating capacity. The car is essentially a locomotive and car combined in one unit. The motive power centres in an internal combustion engine, generator and the motors. But one motorman and one conductor are required to operate the car.

All steel construction, except the interior finish, prevails throughout. The frame consists of steel I beams and channels, strongly cross braced, and steel plates form the outside sheathing. The underfloor is of wood, sheathed with sheet iron on the lower side. Between this and the floor proper a heavy felt lining is inserted, and the car sides are also interlined with felt. The interior trim is of mahogany, highly finished, and the ceiling is sheathed with three ply wooden veneer, painted straw yellow with green stenciling and gold striping. The exterior

speed of the car, and deliver its maximum power, a feature of great advantage on grades, in the case of snow storms, or in the event of emergency conditions. An auxiliary equipment is also provided, consisting of a 2 cylinder, 4 cycle gas engine, direct connected to a single cylinder air compressor and lighting generator. The function of this set is to supply an initial charge of air for starting the main engine and to deliver power for lighting the car. This set is started by hand.

The method of control is simple, substantial and similar to that of any standard electric trolley car. The car is equipped with motors of 200 h.p. capacity. Mounted on the axles of the forward truck are two GE 205, 600 volt, box frame, oil lubricated, commutating pole railway motors of 100 h.p. each. By means of a special controller they are placed progressively in series and parallel connection.

Energy is transmitted directly without the intervention of mechanical change speed gearing. The voltage is governed by varying the strength of the generator field, which is accomplished by the movement of a single handle on the controller, and the resultant speed changes of the motors produce a smooth and rapid acceleration without rheostatic power losses or gear changes. Separate handles are provided for throttling the engine and for reversing the car. The latter is accomplished instantly by changing the

freezing in cold weather when the car is lying idle, the heater circulation may be connected to the engine cooling system. A 150 gallon gasoline supply tank is suspended underneath the car. While the car is running, the gasoline is pumped automatically by the engine; and when first starting, by a hand pump.

Both the cars referred to were built by the General Electric Co. at Schenectady, N. Y. They are of the same type but larger than the gas electric car which has been operated on the Quebec and Lake St. John Ry. during the last two years. The dimensions of the last mentioned car, which will be interesting for comparison, are as follows:—Length, 58 $\frac{1}{2}$ ft., width, 10 ft. 5 ins. It has the same number of compartments, viz., general passenger, 25 $\frac{1}{2}$ ft. long; smoking, 10 ft. long; baggage, 6 ft. long, and engine cab, 12 ft. long. The net weight is 39 $\frac{1}{2}$ tons, and the seating capacity 76 people.

Union Stock Yards, St. Boniface, Man.—These yards, which are operated by the Canadian Pacific, Grand Trunk and Grand Trunk Pacific Railways were fully described in Canadian Railway and Marine World for September, when a ground plan of them was given. A photograph was not then available, but has since been secured, and two illustrations made therefrom are given on pages 568 and 569.

Canadian Northern Railway Company's Annual Report.

The following directors' report, over the signature of Sir Wm. Mackenzie, was submitted at the annual meeting on Toronto, Nov. 24.

The results of the company's operations for the fiscal year ended June 30 are as follows:—

GROSS EARNINGS	
From passenger traffic.....	\$ 3,749,498.35
From freight traffic.....	18,561,026.90
From express, mail, telegraph, dining and sleeping cars, interest and profits from elevators and other subsidiary companies, investments, premiums, etc.....	2,216,953.22
	<u>\$24,527,478.47</u>
WORKING EXPENSES, (including taxes etc.....)	
	17,503,610.57
Net earnings.....	\$7,023,867.90
Deduct: fixed charges.....	5,190,924.12
Surplus.....	1,832,943.78
From this deduct interest at 5% per annum paid on income charge convertible debenture stock outstanding.....	988,214.49
Net surplus for year.....	\$ 844,729.29

The gross earnings show an increase of \$3,417,384.84, or 16.38%, and the net earnings of \$892,822.79, or 15.18%, over the preceding year. The working expenses were 74.64% of the gross earnings of the railway proper and 72.10%, including taxes, of the gross earnings from all sources, compared with 73.82% and 71.81% respectively last year.

During the year 236 miles of newly constructed tracks were added to the system, the average mileage operated being 4,297 miles.

Land sales during the year were 19,755 acres for \$291,193.18, an average of 14.74 an acre, after making certain adjustments in respect to sales in previous years. The actual average price per acre during the current year was \$15.36, compared with 55,111 acres for \$836,084.37, an average of \$15.17 the preceding year. Whilst your directors have not made any special effort to sell its own lands, the policy of colonizing Dominion Government farm lands has been continued, and over two million acres were entered upon by settlers. The effect of this policy is now being seen in the increased movement of agricultural products of all kinds.

Favorable weather having prevailed during the ripening and harvesting period, it is confidently expected that the 1913 crop in the provinces of Manitoba, Saskatchewan and Alberta will exceed that of any previous year in point of quality and abundance of yield. The marketing of grain from the territories served by your railway has commenced considerably earlier than last year, and the quantity of uniformly high grade grain shipped to the lake ports at the date of this report is very much in excess of any previous year at the same date. This early return in cash to the farmer is already being reflected in increased activity in the industrial centres, with corresponding satisfactory traffic figures to your company. Recognized authorities conservatively estimate the yield for the three provinces as follows:—Wheat, 220,000,000 bushels; oats, 224,000,000 bushels; barley, 34,000,000 bushels; flax, 15,000,000 bushels.

The earnings derived by your company from this great crop would have been very greatly increased if its transcontinental line was in operation, and your directors have the satisfaction of reporting that excellent progress has been made during the year in its construction and are now able to state that by the close of the present year connection will have been established at Port Arthur with the eastern lines, and that the last link in the chain, namely, the line through the Rocky Mountains will be con-

nected early in 1914. A second transcontinental railway between the industrial east and the fertile west is not only an event of importance to your company but marks an interesting era in the history of Canada. The fact that commerce and business interests between eastern and western provinces continue to grow in satisfactory volume, the assured prospect of increased immigration in the future and the knowledge that the territory through which the new railway is built abounds in valuable natural resources waiting only railway facilities for development, guarantees to your company a very large measure of traffic in the immediate future.

Four per cent. perpetual consolidated debenture stock to the amount of £1,438,356 was sold during the year and five per cent. income charge convertible debenture stock to the amount of £2,057,612 was also sold, the proceeds of both issues being applied to the construction, improvement and equipment of the line.

The Dominion Parliament granted during the year to the C.N. Ontario Ry. and the C. N. Alberta Ry., parts of the C.N.R. system, a cash subsidy of \$15,640,000, which with those previously granted have been or will be expended on construction, improvement and equipment. All moneys also received from the sale of land grants or raised by securities have been expended in the same manner. The increase of \$7,000,000 in the capital stock represents the amount issued to the Dominion Government under the terms of the subsidy above mentioned.

The following statement shows in concise form the company's growth during the past ten years:—

	1903	1913
Mileage operated.....	1276	4552
Passenger traffic.....	\$ 389,170.00	\$ 3,749,500.00
Freight traffic.....	1,896,380.00	18,561,026.00

COMMODITIES

Flour (sacks).....	332,096	3,047,478
Grain (bushels).....	12,367,110	59,380,957
Live stock (head).....	23,775	239,133
Logs of lumber (feet).....	85,551,000	448,351,000
Coal (1909) (tons).....	326,591	1,111,865
General merchandise (tons).....	173,379	1,371,927

EQUIPMENT PURCHASED

Locomotives.....	73	534
Sleeping and dining cars.....	1	76
Passenger cars.....	22	376
Baggage, mail and express cars.....	10	135
Freight cars, all kinds.....	2,507	23,759

Having regard to the mileage operated, the development of traffic, the necessarily heavy and continued expenditures for the betterment of the service in every department, including the purchase of equipment of all kinds, these figures are submitted as testimony of the wisdom shown in the location of your various lines.

The Canadian Northern Ontario Ry. has been connected between Toronto and Ottawa, and a regular service will soon be established between Toronto, Ottawa, Montreal and Quebec. The completion of this section, together with the section connecting with the Western Lines at Port Arthur in a few months, will enable your company to retain a large volume of traffic originating on its lines in the east and west which it is now compelled to hand over to other companies, and it will also open up a large traffic producing territory which, while of first importance to the Canadian Northern Ontario Ry., will be of substantial advantage to the system as a whole.

Your directors are pleased to report very satisfactory progress in the construction of the tunnel through Mount Royal, which is to give the lines of your railway and other allied companies access to the centre of the city of Montreal. When completed—it is hoped concurrently with the inaugura-

tion of a transcontinental service between Montreal and Vancouver—your company will enjoy a terminal situation in Montreal second to no other railway company.

The accounts and statistical tables appended were submitted by D. B. Hanna, Third Vice President:—

CONDENSED GENERAL BALANCE SHEET

ASSETS	
Cost of railway and equipment.....	\$221,257,996.74
Acquired securities (cost).....	8,294,006.87
Advances to other companies.....	3,344,896.97
Advances to lines under construction.....	9,590,268.47
Value of material and supplies on hand.....	\$3,286,680.10
Due from agents, station balances, etc.....	987,868.19
Deferred payments and accrued interest on land sales.....	7,834,174.42
Cash with National Trust Co., account of land sales.....	2,962,310.93
	<u>4,274,548.29</u>
Cash Account—	
With Dominion Government.....	836,579.12
With province of Manitoba.....	18,830.61
With province of Saskatchewan.....	805,218.40
With province of Alberta.....	1,142,100.02
Cash on hand.....	2,507,029.06
	<u>5,309,757.21</u>
	<u>\$262,867,959.90</u>

In addition to the above assets, the company owns approximately 850,000 acres of land in Manitoba and Saskatchewan.

LIABILITIES

Capital stock.....	\$77,000,000.00
Bonds and stock (guaranteed by government).....	54,633,824.53
4% perpetual consolidated debenture stock.....	46,464,715.83
5% income charge convertible debenture stock.....	25,000,000.00
Land grant bonds.....	
1899.....	\$2,000,000.00
1909.....	3,664,113.38
	<u>5,664,113.38</u>
Car trust obligations.....	19,501,500.00
Current liabilities—	
Unpaid pay rolls.....	1,248,977.91
Unpaid audited vouchers.....	2,343,126.18
Due to other companies.....	4,355,339.38
	<u>7,947,443.47</u>
Coupons and dividend warrants due July 1 (since paid).....	1,926,406.72
Accrued interest on bonds equipment securities.....	511,988.18
	<u>2,438,394.90</u>
Equipment replacement fund.....	508,748.13
Surplus—	
Surplus: land account.....	16,930,835.01
Railway account.....	6,778,384.65
	<u>23,709,219.66</u>
	<u>\$262,867,959.90</u>

INCOME ACCOUNT

Operating expenses.....	\$17,327,743.49
Taxes, railway.....	112,858.65
Taxes on company's land.....	63,008.43
Interest on bonds, etc.—	
Consolidated debenture bonds guaranteed by Government of Manitoba.....	\$486,237.93
Ontario division debenture bonds, guaranteed by Government of Manitoba.....	230,670.26
Winnipeg terminal bonds, guaranteed by Government of Manitoba.....	120,000.00
3% debenture stock, guaranteed by Dominion.....	280,799.86
3½% debenture stock, guaranteed by Dominion.....	276,380.51
4% debenture stock, guaranteed by Government of Manitoba.....	114,399.96
4% debenture stock, guaranteed by Government of Saskatchewan.....	271,783.24
4% debenture stock, guaranteed by Government of Alberta.....	127,400.00
Consolidated debenture stock.....	1,768,063.77
Qu'Appelle, Long Lake and Saskatchewan Ry. 4% debenture stock.....	202,056.02
Land grant 4% bonds.....	150,224.25
	<u>4,028,015.80</u>
Rental of Leased Lines—	
Northern Pacific & Manitoba Ry.....	225,000.00
Minnesota & Manitoba Rd.....	13,960.00
	<u>238,960.00</u>
Interest on equipment securities.....	923,948.32
Accrued interest to June, 1913.....	511,988.18
Less accrued interest to June, 1912, paid during current year.....	459,090.25
	<u>52,897.93</u>
Interest at 5% per annum paid on income charge convertible debenture stock outstanding.....	988,214.49
Balance of income account.....	6,778,384.65
	<u>\$80,514,031.76</u>

Balance of income account, June 30, 1912, as per annual report.....	\$5,986,553.29	
Gross earnings, viz.:		
Passenger earnings.....	\$3,749,498.35	
Freight earnings.....	18,561,026.90	
Express, mail and miscellaneous earnings.....	1,966,953.22	24,277,478.47
Part of premium received from sale of 5% income charge convertible debenture stock applicable to the first half year's dividend on said stock.....		250,000.00
		\$30,514,031.76

GROSS EARNINGS		
Class	1913	Per cent.
Passenger.....	\$3,749,498.35	15.44
Freight.....	18,561,026.90	76.45
Mails.....	132,376.46	00.55
Express.....	499,794.11	02.06
Miscellaneous.....	1,334,782.65	05.50
Total.....	\$24,277,478.47	100.

OPERATING EXPENSES		
Class	1913	Per cent.
Maintenance of Way and structures.....	\$3,224,929.82	18.42
Maintenance of equipment.....	3,301,164.83	18.86
Traffic expenses.....	427,951.40	02.45
Transportation expenses.....	9,701,203.97	55.42
General expenses.....	848,360.55	04.85
Total.....	17,503,610.57	100.

SUMMARY OF EARNINGS AND EXPENSES		
Class	1913	Per cent.
Gross earnings.....	\$24,277,478.47	
Operating expenses.....	17,503,610.57	72.10
Net earnings.....	6,773,867.90	27.90

DESCRIPTION OF FREIGHT CARRIED		
	For year ended June 30 1913	1912
Flour, sacks (100 lbs. ea.).....	3,047,478	2,854,136
Grain, bushels.....	59,380,957	53,441,149
Live stock (all kinds) head.....	239,133	188,669
Logs and 'umber, feet.....	448,351,000	405,395,000
Firewood, cords.....	233,248	227,030
Coal, tons.....	1,111,865	804,803
Immigrants' effects, cars.....	4,628	5,154
Building material (lime, stone, brick, sand, etc.) cars.....	57,367	53,425
Miscellaneous, tons.....	1,371,927	1,203,887

PASSENGER TRAFFIC		
	1913	1912
Passengers carried (earning revenue).....	1,984,978	1,681,760
Passengers carried one mile.....	157,225,910	158,400,017
Passengers carried one mile per mile of road.....	36,590	40,741
Average distance carried.....	79.21	94.18
Total passenger revenue.....	3,590,313.39	3,349,317.00
Average amount received per passenger.....	1.80.87	1.99.16
Average amount received per passenger per mile.....	.02.284	.02.115
Total passenger train earnings.....	\$4,381,668.92	\$4,012,475.55
Passenger train earnings per train mile.....	1.28.088	1.21.074

FREIGHT TRAFFIC		
	1913	1912
Revenue tons carried.....	6,821,811	5,970,449
Revenue tons carried one mile.....	2,366,393,799	2,024,003,946
Revenue tons carried one mile per mile of road.....	550.708	520.577
Average distance haul of one ton.....	346.88	339.00
Total freight revenue.....	\$18,261,130.13	\$15,337,533.95
Average amount received for each ton of freight.....	2.67.687	2.56.891
Average revenue per ton per mile.....	.00.772	.00.758
Total freight train earnings.....	\$18,561,026.90	\$15,567,998.17
Freight train earnings per train mile.....	2.83.240	2.37.492

PASSENGER AND FREIGHT, ETC.		
	1913	1912
Gross earnings per mile of road.....	\$5,649.87	\$5,365.25
Operating expenses per mile of road.....	4,073.45	3,852.64
Net earnings per mile of road.....	1,576.42	1,512.61
Amount required per mile of road to pay fixed charges, including leased lines.....	993.01	1,008.17

TRAIN MILEAGE		
	1913	1912
Mileage of passenger trains.....	3,420,821	3,314,063
Mileage of freight trains.....	6,553,100	6,555,157

EXPENSES PER TRAFFIC TRAIN MILE		
	1913	1912
Maintenance of way and structures.....	32.33	26.44
Maintenance of equipment.....	33.10	33.06
Traffic expenses.....	04.29	03.65
Transportation expenses.....	97.26	81.19
General expenses.....	08.51	07.43
Total.....	\$1.75.49	\$1.51.77

SUMMARY OF EQUIPMENT		
	1913	1912
Locomotives.....	534	430
Sleeping and dining cars.....	76	64
Passenger cars.....	376	307
Baggage and mail and express cars.....	135	99
Business cars.....	16	14

Freight, refrigerator and stock cars.....	23,759	18,675
Conductors' vans.....	396	257
Boarding, tool, auxiliary cars, steam shovels and snow equipment.....	701	594

The total mileage owned and operated, including leased lines at June 30 was 4,552.76, located as follows:—Ontario, 356.60; Manitoba, 1,833.75; Saskatchewan, 1,851.56; Alberta, 467.15; Minnesota, 43.70. The average mileage operated during the year was 4,297 miles.

Birthdays of Transportation Men in December.

Many happy returns of the day to:—
 E. T. Agate, M. Can. Soc. C.E., District Engineer, Canadian Northern Ontario Ry., Sudbury-Port Arthur Line, Sudbury, born at Pittsford, N.Y., Dec. 7, 1874.
 E. Alexander, Assistant Secretary, C.P.R., Montreal, born in Yorkshire, Eng., Dec. 3, 1862.
 J. H. Barber, M. Can. Soc. C.E., Engineering Department, C.P.R., Montreal, born at Cobourg, Ont., Dec. 20, 1856.
 H. E. Bissell, Right of Way and Claims Agent, Grand Trunk Pacific Ry., Winnipeg, born near Noyan, Que., Dec. 31, 1867.
 N. E. Brooks, M. Can. Soc. C.E., Engineer of Maintenance of Way, Western Lines, C.P.R., Winnipeg, born at Sherbrooke, Que., Dec. 25, 1866.
 Harold Browning, steamship agent, etc., Windsor, Ont., born at Stamford, Lincolnshire, Eng., Dec. 2, 1864.
 T. C. Burpee, M. Can. Soc. C.E., Superintending Engineer, Canadian Government Railways, Moncton, N.B., born at Sheffield, N.B., Dec. 11, 1852.
 W. W. Butler, Vice President, Canadian Car and Foundry Co., Montreal, born at Danville, Ohio, Dec. 9, 1862.
 M. M. Campbell, Building Inspector, G.T.R., Montreal, born at Bridgeton, N.B., Dec. 17, 1879.
 H. Foster Chaffee, Passenger Traffic Manager, Richelieu and Ontario Navigation Co., Montreal, born at Knowlton, Que., Dec. 18, 1868.
 A. H. Chave, Purchasing Agent and Assistant to First Vice President, Canadian Car and Foundry Co., Montreal, born at Williamsbridge, N.Y., Dec. 26, 1872.
 W. H. Gardiner, City Freight Agent, C.P.R., and District Freight Agent, Esquimalt and Nanaimo Ry., Victoria, B.C., born there Dec. 6, 1859.
 H. H. Gildersleeve, Manager, Western Lines, Richelieu and Ontario Navigation Co., Toronto, born at Kingston, Ont., Dec. 15, 1865.
 A. S. Goodeve, member Board of Railway Commissioners for Canada, born at Guelph, Ont., Dec. 15, 1860.
 A. J. Gorrie, ex-General Superintendent, Canadian Northern Quebec Ry., Quebec, born at Raith, Kirkcaldy, Scotland, Dec. 10, 1868.
 R. S. Gossett, Auditor of Disbursements, Canadian Northern Ry., Toronto, born there, Dec. 28, 1879.
 W. H. Grant, Manager of Construction, Mackenzie, Mann and Co., Ltd., Toronto, born at Acton, Ont., Dec. 8, 1858.
 F. P. Gutelius, M. Can. Soc. C.E., General Manager, Canadian Government Railways, Moncton, N.B., born at Mifflinburg, Pa., Dec. 21, 1864.
 D. B. Hanna, Third Vice President, Canadian Northern Ry., Toronto, born at Thornliebank, Scotland, Dec. 20, 1858.
 J. J. Hennigar, General Agent, Richelieu and Ontario Navigation Co., Hamilton, Ont., born at Topeka, Kan., Dec. 21, 1884.
 E. W. Holton, General Passenger Agent, Northern Navigation Co., Sarnia, Ont., born at Belleville, Ont., Dec. 15, 1872.
 S. P. Howard, ex-General Freight Agent, Eastern and Lake Superior Divisions,

C.P.R., Montreal, born there, Dec. 30, 1865.
 A. J. Isbester, Assistant District Engineer, Port Arthur District, Canadian Northern Ry., Port Arthur, Ont., born at Ottawa, Dec. 18, 1879.
 R. Johnson, Night Locomotive Foreman, C.P.R., Sortin Yard, Montreal, born at Quebec, Que., Dec. 24, 1863.
 B. B. Kelliher, M. Can. Soc. C.E., Chief Engineer, Grand Trunk Pacific Ry., Winnipeg, born in Ireland, Dec. 26, 1862.
 J. T. McGrath, ex-Superintendent of Motive Power and Equipment, Chicago and Alton Rd., Bloomington, Ill., born at Toronto, Dec. 6, 1869.
 A. T. McKean, City Freight Agent, C.P.R., Winnipeg, born at St. John, N.B., Dec. 18, 1886.
 A. E. Macdonald, General Claims Agent, Canadian Northern Ry., Winnipeg, born at Woolwich, Eng., Dec. 11, 1870.
 L. Macdonald, Division Freight Agent, G.T.R., Toronto, born at Montreal, Dec. 10, 1871.
 A. D. MacTier, General Manager, Eastern Lines, C.P.R., Montreal, born at Blairgowrie, Scotland, Dec. 27, 1867.
 J. Niblock, ex-Superintendent, C.P.R., Victoria, B.C., born in York County, Ont., Dec. 21, 1849.
 A. Price, Assistant General Manager, Eastern Lines, C.P.R., Montreal, born at Toronto, Dec. 6, 1861.
 G. D. Robinson, Assistant Export and Import Freight Agent, C.P.R., Toronto, born at St. John, N.B., Dec. 7, 1877.
 Collingwood Schreiber, C.M.G., Hon. Mem. Can. Soc. C.E., General Consulting Engineer to Dominion Government, Ottawa, Ont., born at Bradwell, Essex, Eng., Dec. 14, 1831.
 F. P. Smith, Secretary, Richelieu and Ontario Navigation Co., Montreal, born there, Dec. 23, 1873.
 C. E. F. Usher, Passenger Traffic Manager, C.P.R., Montreal, born at Niagara Falls, Ont., Dec. 29, 1857.
 H. H. Vaughan, M. Can. Soc. C.E., Assistant to Vice President, C.P.R., Montreal, born at Forest Hill, Essex, Eng., Dec. 26, 1868.
 R. C. Vaughan, Assistant to Third Vice President, Canadian Northern Ry., Toronto, born there, Dec. 1, 1883.
 A. P. Walker, M. Can. Soc. C.E., Division Surveyor, Ontario Division, Toronto, born at West Hartlepool, Eng., Dec. 9, 1860.
 E. H. Wood, Division Car Foreman, Ontario Division, C.P.R., Toronto, born at St. John, N.B., Dec. 30, 1880.
 W. Wood, Locomotive Foreman, C.P.R., Sortin Yard, Montreal, born at Montreal, Dec. 6, 1863.

New Locomotive Design.—Another radical departure in locomotive design is being made in a large locomotive under construction for the Erie Rd. This unique locomotive is articulated in three parts, the weight of the tender being utilized as one section. The locomotive proper has a pair of pilot wheels, followed by two sets of four pairs of drivers, with the wheel arrangement under the tender the same as the leading locomotive section reversed. The intermediate section carries a pair of high pressure cylinders, with low pressure cylinder pairs on the front section and the tender. Locomotive and tender will weigh 800,000 lbs., and will develop 160,000 lbs. tractive force. The weight on one of the locomotive section drivers will be 480,000 lbs., and on the other, 260,000 lbs.

Thermal cracks exist commonly, if not invariably, in brakeshoes, and as the conditions of exposure of the shoe and tire are the same for the time being, under brake application the same tendencies necessarily exist for the formation of thermal cracks in each, but more accentuated in the shoe.

Canadian Pacific Railway Lake Superior Division Shops at North Bay.

The C.P.R. divisional shops at North Bay, Ont., having become inadequate to meet the requirements of the heavy traffic, the company set about enlarging the shops and mechanical yards to meet the new demands. This work was commenced last spring, and its extent is shown in the accompanying plan.

The shops prior to this change consisted of a 23 stall locomotive house, with small machine and blacksmith shops attached to the west end, and a freight car repair shed separate from these other buildings, some distance to the west. All these old buildings are shown in light or dotted lines, indicating the old shops that have been left or removed.

The locomotive house and machine shop annex have been retained, but to the west of them there is being added a combined machine and erecting shop, served by a transfer table running along the west frontage of the shop. The erecting shop will be 70 by 208 ft., and 43 ft. high, of a steel frame construction with brick walls, the whole resting on concrete foundations. The width of the shop is spanned by steel trusses, rest-

the machine shop, connecting with the outside yard tracks through turntables. Both these tracks will facilitate the handling of parts through the shop. The new machine shop will be connected with the existing blacksmith shop and the present machine shop by means of a triangular annex. The present machine shop will be remodelled so as to provide additional boiler accommodation, as well as a new tool room and lavatory. Electric lighting and a hot air fan with heating ducts will be installed in both the new erecting and machine shops.

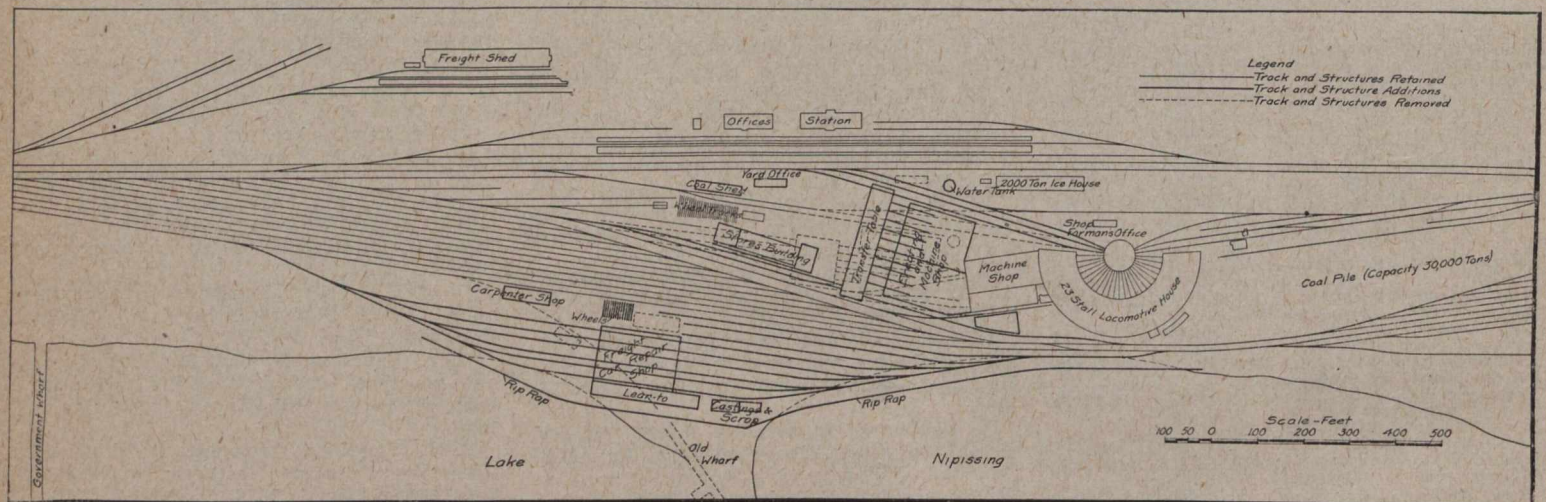
The transfer table along the front of the erecting shop will connect with the several erecting shop tracks with the main inbound track from the locomotive house and the yard runaround track, so that locomotives may be brought in from either side of the yard. The track alongside the stores building will also continue to the transfer table, facilitating the handling of the material to the machine and erecting shops. The transfer table will run on four tracks. The side walls of the transfer table pit will be composed of 8 in. square timbers resting on sills, and the ends of 2 in. planking and

The roof will be of mill construction, composed of heavy purlins, with 2 by 3 in. planks laid on edge and finished with a 4 ply tar and gravel roof. The flooring will be of cinder. Electric lighting will be used, and hot air for the partial heating of the building, from a fan and engine located in the boiler room leanto.

There will be 6 standard gauge tracks in the shop, two in each bay, running the full length of the car repair yard, and connected by ladder tracks at each end to the main yard. Between each pair of these tracks, there will be a 2 ft. gauge service tracks connected together and to the wheel storage yard by small turntables and cross tracks. The repair yard tracks will be equipped with air, steam, and water pipes, and will be electrically lighted. The leanto will contain offices and auxiliary rooms.

The data on which the foregoing article is based was supplied by J. W. Orrock, Principal Assistant Engineer, and R. McKillop, Assistant Engineer, through the courtesy of J. M. R. Fairbairn, Assistant Chief Engineer.

Car Failures.—A writer in a contemporary sums up his observations on the reasons for and manner of overcoming freight car failures by suggesting the following means of relief: 1. Reinforcing the older types of



Plan of Shops and Mechanical Yards, Canadian Pacific Railway, North Bay, Ont.

ing on columns at 20 ft. centres. The shop will have a 5 ton travelling crane serving the full length of the building. The runways will be composed of 15 in. I beams with 56 lb. rails on top. The roof will be of mill construction, with 8 by 14 in. purlins at 8 ft. centres carrying a 3 in. plank roof surfaced with tar and gravel.

There will be 10 tracks in the shop, each equipped with a locomotive pit, with one of the pits provided with an electric locomotive lift. Over the main walls of each pit the flooring will be of heavy 6 in. planking, about 3 ft. wide, to provide a solid jacking surface under the sides of the locomotive. The balance of the floor will be covered with 3 in. planking laid on cedar sills. The machine shop, to the rear of the erecting shop, and of the same length, 208 ft., will be 80 ft. wide, and 23 ft. high, of a similar construction to the erecting shop, except that steel I beams on steel columns at 26 ft. centres will be used. The floor will be of 3 in. planking on cedar sills. The shop will have all the necessary equipment in the way of tools, machines, and other mechanical devices, most of which will be mounted on concrete foundations.

One of the erecting shop tracks will extend through the machine shop and connect with the existing blacksmith shop track, while another will run longitudinally through

round cedar posts.

The old stores building will be moved to the new location shown, remodelled and placed on concrete foundations, with an extension added to the west end. The extended building will be 170 by 40 ft., with a basement the full length of the building. There will be an 8 ft. platform along the track side, with a 38 ft. platform on the side nearest the erecting shop.

The changes in the buildings around the locomotive house necessitated the removal of the old water tank to the new position to the north of the former location. The additions to the locomotive department buildings necessitated the removal of the car department buildings to a new site, which was formed along the south side of the yards by the reclamation of a portion of the frontage on Lake Nipissing, all the tracks in the lower portion of the yard, shown in heavy lines, being laid on made ground. The new freight car repair building will be 156 by 120 ft., and 30 ft. high, with a leanto annex 237 by 30 ft., and 13½ ft. high. The walls will be of frame construction, composed of 2 by 6 in. studs and lined on the outside only, and set on cedar sills. The main posts carrying the wooden trusses rest on solid concrete foundations. The shop will be divided into three 40 ft. bays, with the trusses at 19½ ft. centres.

cars that will not stand the expense of a steel underframe, with a long metal draught arm that extends through and over the body bolster; this in turn to be reinforced or backed up with good heavy compression timbers. 2. On such cars as will permit of the expenditure, the application of a carefully designed steel underframe. 3. In all cases apply the draught gear that will destroy the greatest amount of shock with the entire elimination of recoil. 4. The adoption of a standard specification for the testing of draught gear to determine its shock absorbing capacity and amount of recoil, before purchasing. 5. Substitute for the wooden roof an all metal one as soon as it has been determined what the proper construction should be.

In general, the cost of oil in the tank, coal in the bin, or natural gas delivered, is used as the sole criterion of the economic status of a shop furnace plant; but the fallacy of this is demonstrated when it can be shown that the fuel cost is only a part of the total cost of successful burning, the labor charges in the different processes varying. Comparing oil and producer gas in a fair sized plant, the net cost of the heat units generated from producer gas are twice as costly as from oil, on account of the greater labor costs in the former.

Extension to Canadian Pacific Railway West Toronto Passenger Car Shops.

The four track addition to the existing C. P.R. passenger car repair shop at West Toronto, built last year, has in the short intervening time proved entirely inadequate to the requirements, calling for a further extension, which is now under way. The last addition was made to the north end of the existing shop, extending the shop to the northerly limit of the C.P.R. property. Along the front of this extended portion and the older portion, there is a transfer table, making possible the building of a further shop unit across from the present shop.

The addition now under way is being built on the north end of the transfer table, directly across from the last addition. It is a five track building, 114 by 137 ft., facing the narrow way on the transfer table frontage. The front portion, 105 ft. deep, will be for passenger car repairs, and the rear portion, 32 ft. deep, will house the bench work for all the shops, relieving the present mill building to that extent, as the latter is overcrowded.

The tracks are at 24 ft. centres, entered by jack knife doors in front. The roof is 24½ ft. high at the front, sloping back to 16 ft. over the bench work section. Over each of the four southerly tracks there is a 60 by 10 ft. monitor, equipped with ventilators. The building itself is of a red brick construction on concrete foundations. The roof is carried on the walls and 8 cross rows of 10 in. square wooden columns, at 15 ft. centres, the depth of the shop. The location of the columns is unique; in place of the usual location centrally between the tracks, making necessary the addition of light columns to which the adjustable platforms are attached, the main columns are placed in the location of the usual platform columns, dispensing with central ones, the adjustable platforms being secured in the usual manner to these columns. While the columns are larger than would be required for platform purposes alone, it leaves the central alley clear, and as far as shop space is concerned, the large columns occupy no more room and have the additional advantage of a clear alley. At the rear of the main part of the shop building there is a cross service track, over which the material from the mill is brought into the shop. This leads out a side door, and over a service track along the south side of the building to the transfer table. Mastic flooring is used throughout.

This new addition will increase the total capacity of the West Toronto shops to 20 cars. With this accommodation the shop capacity will be in the neighborhood of 80 cars a month. H. R. Naylor is General Foreman of the passenger car repair shop.

Pacific Great Eastern Railway Company's Annual Report.

Following are extracts from the report presented by J. W. Stewart, President and Chairman of the Board, at the annual meeting in Vancouver, B.C., recently:—

On June 28 last, an agreement was entered into with West Vancouver Municipality and with the property owners along the north shore of Burrard Inlet, and the English Bay, for the inauguration of an inter-urban service between Lonsdale Ave. and Dundar Ave. during the present year and a continuation of such service as far as Horseshoe Bay, on Howe Sound, before July 1, 1914.

By an agreement dated Nov. 7, 1912, the Howe Sound and Northern Ry. was acquired, the total capital stock being transferred to

your company, which nominated the following directorate:—D'Arcy Tate, K.C., A. H. Sperry, A. H. Douglas, R. L. Reid, K.C., and D. S. Wallbridge. It is the intention that the Howe Sound Co. be wound up in due course, and absorbed into your company, as soon as separate corporate existence of that company becomes unnecessary.

During the past summer the Lieutenant-Governor, the Premier of British Columbia, the Attorney General, the Minister of Lands and the members for Vancouver in the Provincial Legislature made a trip of inspection of your line of railway from Vancouver to the crossing of the Cheakamus River and looked over the situation at the head of Howe Sound, where your railway from the north first meets tide water. They all expressed their satisfaction with what they had seen of the condition and progress of the undertaking. It is deemed worthy of mentioning the interest evinced in your project by the visit of John Scrimgeour, a London financier, who through the courtesy of P. Welch, in placing at the disposal of our local Vice President his private yacht, was enabled to make the trip up Howe Sound to Newport (as the place is now called). Mr. Scrimgeour was also shown over your property and the holdings of the development company at the head of the Sound and appeared to share your directors' expectations for the future development of that port.

On March 13 last, in pursuance of authority given at a special general meeting of shareholders, your fiscal agents in London brought out an issue of £1,000,000 4½% first mortgage guaranteed debenture stock at £99%, which was well received. On June 10 last, upon the recommendation of your fiscal agents in London, your directors authorized a further issue by private sale of £500,000 stock, of which to date £300,000 has been sold at prices ranging from £97 to £98.3%. When the sale of the balance authorized, viz., £200,000 has been effected, there will remain of the above stock £1,736,345, which will form the subject of a new issue.

Your directors have pleasure in reporting most satisfactory progress in the work of construction being prosecuted by the general contractor, P. Welch, and there are now between 3,000 and 4,000 men and a large plant engaged on the work. We have the contractor's confident assurance that it will be finished well within contract time. Your Chief Engineer has completed the location of the line between North Vancouver and Clinton, about 210 miles, and he now has four locating parties in the field between Clinton and Fort George. Lands have been secured, and it is proposed to establish yards and terminals at the head of Howe Sound and on the north shore of Burrard Inlet.

The Canadian Pacific Railway's Dining and Sleeping Car Departments.

One of the passenger department's bulletins states the company has 4,000 men employed in its sleeping and dining car departments. The bulletin says:—"The company takes especial care of its dining and sleeping car employes, and in many respects has gone further in this direction than any other line on the continent. All possible precautions are taken to see that all these employes are physically healthy and clean, and, with this end in view, a chain of homes for the men has been established across the continent. The C.P.R. is the only railway corporation today which provides this class of employes with free lodging and bed when away from their own homes. At all the large terminals, such as Toronto, Winnipeg, Moose Jaw, Calgary and Van-

couver, the men are housed by the company, and the system is such that the company is able to positively assure the public that the men are free from disease, being subjected to periodic medical examination, and it being impossible for a dining or sleeping car employe to go out on his run without having first taken a bath and had his clothes freshly cleaned and pressed, absolutely without cost to himself.

"One of the most difficult problems which confronts the dining car department is the securing of sure and permanent sources of supply for its provisions, etc.; partly to attain this end, and also to show the farmers in various districts what could be done with their land if worked scientifically, demonstration farms have been established at various points, and the supplies regularly obtainable from these farms are constantly increasing in quantity. Soon the company will be able to secure fresh milk and cream in whatever quantities it desires—the milk and cream are not handled in bulk, but, after being pasteurized, are placed in sealed bottles with the date of milking shown thereon, and these bottles are opened only in the presence of the passenger. Sufficiently large numbers of poultry can be kept to supply all fowls and eggs possibly required for the table; to ensure fresh eggs for the dining cars, the eggs as gathered from the nest are stamped with the date, packed in cartons and sealed for the commissary stores, to turn over to the dining cars as needed. Other demonstration farm products are handled with equal care.

"It has been decided to establish a chain of C.P.R. bakeshops at such terminal points between Halifax and Vancouver as will ensure a complete restocking of dining cars with fresh bread, cakes and pastry every 15 hours—Montreal, Toronto, Winnipeg, Moose Jaw, Calgary and Vancouver will be among the points provided for in this way."

Edison Uses His Old Telegraph Instrument Again.

At the meeting of the old time Telegraphers' Historical Association of the United States at Mount Clemens, Mich., recently, T. A. Edison sent a message over the wire to President Wilson. The occasion was of special interest, because Mr. Edison stood upon the same site where he stood when he sent his first message as a telegraph operator, and used the same instrument he used 51 years ago when, as a boy of 14, he sent his first message over the G.T.R. lines.

Back in the pre-telegraphic days, when Edison was only a newspaper boy on the G.T.R., he showed his youthful enterprise by printing and selling a small newspaper containing the news along his route. He kept a little font of type in the baggage car and printed the paper on the train, so its items were strictly up to the minute. It was during this period that a trainman lifted him by the ears, later causing the deafness that now blurs his hearing.

Renewals of Crown Stays or Stay Bolts.
—The Board of Railway Commissioners has issued the following circular:—"In connection with order 14,115, re inspection of locomotive boilers, it is found on checking over reports received, that few of the reports show renewals of either crown stays or stay bolts, as per question 8 of the monthly and 17 of the annual reports. As the intent of these questions is to show how these repairs are being kept up, it is important that all these renewals be shown when made either at the time of inspection or repair."

Orders by Board of Railway Commissioners for Canada.

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 hearings 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.

20497. Oct. 4.—Authorizing G. T. Pacific Ry. to build spur and sidings for Pembina Coal Co. in Secs. 19 and 30-53-7, w. 5 m., Alta.

20498. Oct. 6.—Extending express collection and delivery area in Ottawa.

20499. Oct. 6.—Authorizing C. N. Ontario Ry. to build bridge across Ottawa River at Fitzroy Harbor, mileage 37.32 west of Ottawa.

20500. Oct. 1.—Authorizing C. N. Ontario Ry. to cross, at grade, Metcalfe, John, Harvey, Bourke, Jane, Durrill, Copeland, Bell, William, McIntyre, Timmons and Nipissing Sts., North Bay, and certain streets and avenues by subways; to build across and divert Marion St.; closing of Cedar St. to be conditional on the extension of McLaren St. from Klock Ave. to Home Ave.; the closing of Fraser St. to be conditional on the building of a subway 10 ft. clear width and 8 ft. high through station and under tracks; station to be located in centre of Fraser St.; of similar design to the one at Belleville, and company to be responsible for any damages property owners affected may be legally entitled to recover, and all subways to be satisfactorily drained.

20501. Oct. 6.—Extending, to Dec. 31, time within which C.P.R. was required to build subway at Dun-

tion of its Cutknife Branch between Battleford and Rossman station, mileage 0 to 33.6, Sask.; speed of trains not to exceed 15 miles an hour.

20514. Oct. 6.—Ordering Michigan Central Rd., within 60 days, to install illuminated electric sign and improved type of automatic electric bell at highway crossing at Townsend station, Ont., 20% of cost of installation to be paid out of the railway grade crossing fund.

20515. Oct. 7.—Approving revised location of Canadian Northern Ry. Delisle-Alsask Branch in s. e. ¼ Sec. 9-26-17, w. 3 m., Sask., mileage 62.5.

20516. Oct. 6.—Amending order 19731, July 3, to provide that Winnipeg, Selkirk and Lake Winnipeg Ry. operate its cars across C.P.R. from 6 a.m. to 11 p.m., instead of 9.45 a.m. to 2 p.m. and 12.30 a.m. to 6.30 a.m.

20517. Oct. 7.—Authorizing C. N. Ontario Ry. to build bridge over White's Creek, mileage 64.9 from Toronto.

20518. Oct. 11.—Approving G. T. Pacific Ry. station site and station of G. T. P. Ry. at Fort Fraser, mileage 372.8, Prince Rupert East, B.C.

20519. Oct. 9.—Authorizing G. T. Pacific Branch Lines Co. to build its Tofield-Calgary Branch across highway at mileage 196.6, South Alberta District.

20520. Oct. 14.—Authorizing G. T. Pacific Ry. to build across 2 highways at mileage 370 and 373, Prince Rupert East, B.C.

20521. Oct. 8.—Amending order 20402, Sept. 24, by substituting G. T. Pacific Branch Lines Co.'s Regina-Boundary Branch for G. T. Pacific Ry., re highway to be built by Saskatchewan Government.

20522. Oct. 7.—Authorizing G. T. Pacific Branch Lines Co. to operate its trains over crossing of C.P.R. Calgary to Edmonton Branch, in Calgary,

rescinding order 19472, June 4, in same connection.
20535. Oct. 9.—Authorizing C.P.R. to build siding for D. L. Straight at Islington, Ont.

20536. Oct. 8.—Authorizing C.P.R. to use bridges 35.8, 26.6 and 28.8, Farnham Subdivision, Que.

20537. Oct. 9.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge over Smithfield Creek, near mileage 93.7, Ont.

20538. Oct. 14.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station in Clarke Tp., at mileage 143.03 from Glen Tay, Ont.

20539, 20540. Oct. 10, 9.—Authorizing C.P.R. to build spurs for City of Moose Jaw, Sask., and for J. K. McInnis, Regina, Sask.

20541. Oct. 10.—Authorizing C.P.R. to build bridge 117.42, Shuswap Subdivision, B.C.

20542. Oct. 10.—Authorizing C.P.R. to build spurs for Imperial Oil Co. and Calgary Brewing and Maltng Co., Bassano, Alta.

20543. Oct. 13.—Authorizing C.P.R. to build at grade its passing track and leg of Y across road allowance between Secs. 35 and 36-14-13, w. p. m., Minnedosa Subdivision, Man.

20544. Oct. 6.—Authorizing C.P.R. to build at grade, extension to town siding at Ekoba, across public road, McDonald Tp., Algoma District, Ont.

20545. Oct. 9.—Approving C.P.R. plan, as amended by the Board's Chief Engineer, showing interlocking plant to be installed on temporary trestle at Pitt River, bridge 109.7, Cascade Subdivision, B.C.

20546. Oct. 13.—Authorizing Esquimalt and Nanaimo Ry. to open for freight traffic portion of its line from McBride Jct., to Courtenay, Vancouver Island, 8.5 miles; speed of trains limited to 12 miles an hour.

20547. Oct. 8.—Authorizing Canadian Northern Ry. to open for freight traffic its line from St. Al-



Panoramic View of Union Stock Yards, St. Boniface, Man. See opposite page.

das St., Woodstock, Ont.

20502. Oct. 6.—Approving revised location of C.P.R. double track, Moose Jaw Subdivision, Sask., from mileage 59.6 to 60.45; and authorizing it to build road diversion across Blocks 147, 148, 149 and 150, Sec. 21; Blocks 143 and 144, Sec. 28, and across Sec. 27-18-15, w. 2 m., and to build at grade across same and town crossing.

20503. Oct. 6.—Authorizing Saskatchewan Government to build highway across C.P.R. Swift Current Northwesterly Branch.

20504. Oct. 7.—Amending order 20190, Aug. 26, re location of C.P.R. station at Conrad, Alta.

20505. Oct. 6.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station yard northwest of Haskell St. and southeast of Fox St., Port Hope, Ont., mileage 125.70 from Glen Tay.

20506. Oct. 6.—Approving location of C. N. Ontario Ry. station grounds at Master, mileage 111.05, and Kathmore, mileage 115.5, from Ottawa.

20507. Oct. 6.—Ordering C.P.R. to build additional track to present siding for Dodge Mfg. Co., West Toronto; to be completed within 60 days.

20508. Oct. 7.—Authorizing C.P.R. to build, at grade, spur to Broadacres ballast pit across highway between Secs. 7 and 8, Con. 36, R. 21, w. 3 m., on its Kerrobert Northeastly Branch.

20509. Oct. 7.—Authorizing C.P.R. to use bridges 27.4 and 13.9, St. Stephen Subdivision, N.B.

20510. Oct. 7.—Authorizing C.P.R. to build bridge 15.6, for double track, over Eagle River, Shuswap Subdivision, B.C.

20511. Oct. 7.—Authorizing C.P.R. to use bridge 30.5, Gibson Subdivision, N.B.

20512. Oct. 7.—Extending, to Dec. 31, time within which G.T.R. shall install interlocking plant at Paris Jct., Ont., as approved by order 18734, Feb. 18.

20513. Oct. 7.—Authorizing, temporarily, G. T. Pacific Branch Lines Co. to carry traffic over por-

Alta., pending installation of interlocking plant.

20523. Oct. 9.—Authorizing G. T. Pacific Ry. to build across highway and make road diversion, mileage 15.8, Round Valley Rural Municipality 410, Sask.

20524. Oct. 8.—Authorizing C.P.R. to use bridges 36.5, 43.8, 43.4, 43.3, 34.4, 34.8, 30.7 and 32.2, Farnham Subdivision, Que.

20525. Oct. 6.—Authorizing C.P.R. to operate its trains over crossing of London St. Ry., at Adelaide St., London, Ont., without previously stopping.

20526. Oct. 7.—Authorizing C.P.R. to build double track across St. Francois-Xavier and Jacques Cartier Sts., Farnham, Que.

20527. Oct. 11.—Authorizing C.P.R. to build crossing over its line at Ensign, Alta.

20528. Oct. 8.—Authorizing C.P.R. to open for traffic portion of double track between mileage 70 and Herbert, mileage 81.9, Swift Current Subdivision, Sask.

20529. Oct. 10.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to divert road in Lot 26, Con. 1, Bedford Tp., between Cons. 1 and 2, to a crossing at mileage 23.71, authorized under order 16758, June 15, 1912, work, with exception of fencing, to be done by Bedford Tp. and completed by July 31, 1914.

20530. Oct. 14.—Approving location and revised location of C.P.R. Weyburn-Stirling Branch, from mileage 24.74 to 64.34.

20531. Oct. 14.—Authorizing C.P.R. to build bridge 19.8 over Chambly Canal, St. Johns, Que.

20532. Oct. 14.—Extending, to May 1, 1914, time within which C.P.R. shall build spur for Coquitlam Terminal Co., Vancouver, B.C.

20533. Oct. 14.—Authorizing C.P.R. to build at grade its gravel pit spur at Waldeck, Sask., across two highways.

20534. Oct. 7.—Authorizing C.P.R. to build spur for Calgary Stock Yards Co., Calgary Alta., and

bert, westerly to mileage 22, 22 miles, Alta.

20548. Oct. 14.—Approving clearances as shown in plan of Moose Jaw Cold Storage Co.'s building on C.P.R. at Moose Jaw, Sask., subject to conditions that men keep off sides of cars; and that speed of cars on siding be limited to 4 miles an hour.

20549. Oct. 6.—Approving location of C.P.R. station at Uptergrove, mileage 55.64, Port McNicoll Subdivision, Ont.

20550. Oct. 14.—Authorizing Osgoode Tp., Ont., to build highway crossing over C.P.R. gravel pit spur in Lots 27 and 28, Con. 1.

20551. Oct. 9.—Authorizing Toronto, Hamilton and Buffalo Ry. to open for traffic portion of second track from Welland River to Fenwick Station, mileage 22 from Ottawa, approved by order 17342, Aug. 27, 1912.

20552. Sept. 18.—Dismissing complaint of certain residents of March and Torbolton Tps., Ont., against location C.N. Ontario Ry. station at mileage 22 from Ottawa, approved by order 17342, Aug. 27, 1912.

20553. Oct. 11.—Extending, to Dec. 1, time within which British Columbia Electric Ry. shall complete work at crossing of Esquimalt and Nanaimo Ry. near Russell, B.C., as required by order 18733, Feb. 18.

20554, 20555. Oct. 10.—Relieving Red Mountain Ry. (G.N.R.) from fencing certain portions of its right of way from International boundary, south of Patterson, to Rossland, B.C., and relieving Vancouver, Victoria and Eastern Ry. and Navigation Co. (G.N.R.) from fencing certain portions of its right of way from Midway to International boundary, west of Bridesville, B.C.

20556. Oct. 10.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to build across 15 highways in Alberta.

20557. Oct. 9.—Ordering G.T.R. to build farm

crossing for C. Ellis in Lot 45, Front Range, Rama Tp., Ont.

20558. Oct. 13.—Authorizing G.T.R. to rebuild bridge 278, at mileage 73.75, District 13, over Notawasaga River, near Beeton, Ont.

20559. Oct. 14.—Authorizing G.T.R. to build siding for Canada Brick and Fireproofing Co. in Esquesing Tp., Ont.

20560. Oct. 13.—Authorizing G.T.R. to rebuild bridge 101, at mileage 309.14, District 32, Ottawa Division, Ont., over Joe Creek.

20561. Oct. 10.—Authorizing G.T.R. to operate over swing bridge across Welland Canal and railway crossing at Port Colborne, Ont., without their first stopping trains.

20562. Oct. 14.—Authorizing C.P.R. to take all that portion of s.e. $\frac{1}{4}$ Sec. 8, Tp. 12, r. 19, w. 2 m., for building a reservoir.

20563. Oct. 13.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station northwest of Beech St. and east of Brock St., Whitby, mileage 164.17 from Glen Tay, Ont.

20564. Oct. 8.—Rescinding order 20245, Aug. 30, re Supplement 17 to Tariff C.R.C. W-1615.

20565. Oct. 9.—Authorizing C.N. Ontario Ry. to build across and divert Second Ave., North Bay.

20566. Oct. 6.—Relieving Michigan Central Rd. from maintaining cattle guards at crossing of Plymouth Road, Welland, Ont.

20567. Oct. 15.—Extending to Dec. 1, time within which C.P.R. shall install bell at highway crossing, mileage 0.91 from St. Martins Jct., Que., as required by order 19905, July 25.

20568. Oct. 8.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station at Overton, mileage 53 from Glen Tay, Ont.

20569. Oct. 7.—Approving location of C.N. Ontario Ry. station grounds at Remi, Que.

20570, 20571. Oct. 8.—Establishing Dominion Ex. Co. collection and delivery limits in Kelowna, B.C.,

by Supplement 28 to C.P.R. Tariff C.R.C. E-2141, and Supplement 18 to G.T.R. Tariff C.R.C. E-2374.

20585. Oct. 15.—Approving location of Lake Erie and Northern Ry. from station 4+50 to George Ave., station 36+60.5, Brantford, Ont.

20586. Oct. 16.—Rescinding order 17885, Oct. 29, 1912, in so far as it authorized crossing by C.N. Ontario Ry. of highway between Lots 118 and 119, St. Laurent Parish, Que.

20587. Oct. 16.—Extending to Nov. 18, time within which C.P.R. shall install bell at Miller crossing, $\frac{3}{4}$ mile west of Kingsbury, Que., and extending to Oct. 30, time within which bell at crossing of river road, about 3 miles east of Kingsbury, between Melbourne and Windsor Mills, Que., be installed.

20588. Oct. 16.—Approving Canadian Northern Ry. plan of Sept. 10, substituted for plans approved by order 20058, authorizing building of spur across n.e. $\frac{1}{4}$, Sec. 15, and n.w. $\frac{1}{4}$, Sec. 14-37-5, w. 3 m., Sask., and ordering that order 20058, Aug. 11, be amended accordingly.

20589. Oct. 15.—Authorizing C.P.R. to build siding for Canadian Wire Co., Ltd., Montreal.

20590. Oct. 4.—Authorizing G.T.R. to rebuild bridge 202, over Big East River, mileage 150.75, District 12, near Huntsville, Ont.

20591. Oct. 16.—Authorizing G.T. Pacific Ry. to build across and divert highway in Charles Indian Reserve, mileage 317, Prince Rupert East, Coast Dist., B.C.

20592. Oct. 16.—Approving location C.N. Ontario Ry. station grounds at Isle Jesus, mileage 38.95, Hawkesbury East, Que.

20593. Oct. 17.—Authorizing C.P.R. to use Canadian Northern Ry. spur to Government Elevator at Port Arthur, Ont.

20594, 20595. Oct. 17.—Authorizing C.P.R. to build at grade an extra track across road allowance between Secs. 27 and 34-21-31, w.p.m., at Langenburg, Sask., and to build ballast pit spur at grade

20608. Oct. 17.—Removing speed restriction of 15 miles an hour over C.P.R. Wilkie Southeasterly Branch from Wilkie to Kelfield, Sask., mileage 0 to 35.3.

20609. Oct. 15.—Approving revised location of Campbellford Lake Ontario and Western Ry. (C.P.R.), Glen Tay to Cobourg Line; rescinding order 15289, Sept. 22, 1911, approving original location; authorizing it to take portions of C.N. Ontario Ry. right of way tracks; authorizing City of Belleville to lay water pipe under C.N.O.R. at foot of Mary St., and dismissing rest of city's application.

20610. Oct. 17.—Amending order 20318, Sept. 12, re C.P.R. siding for D. Silver at s.w. $\frac{1}{4}$ Sec. 26-21-20, e.p.m., Man.

20611. Oct. 9.—Authorizing C.P.R. to install temporary interlocking appliances, until June 30, 1914, at crossing of Quebec, Montreal and Southern Ry. at mileage 18.81 from Farnham, Que.

20612. Oct. 21.—Authorizing City of Regina, Sask., to build its municipal railway over C.P.R. Bulyea and Colonsay Branch at intersection of 4th Ave., Eastview, Regina.

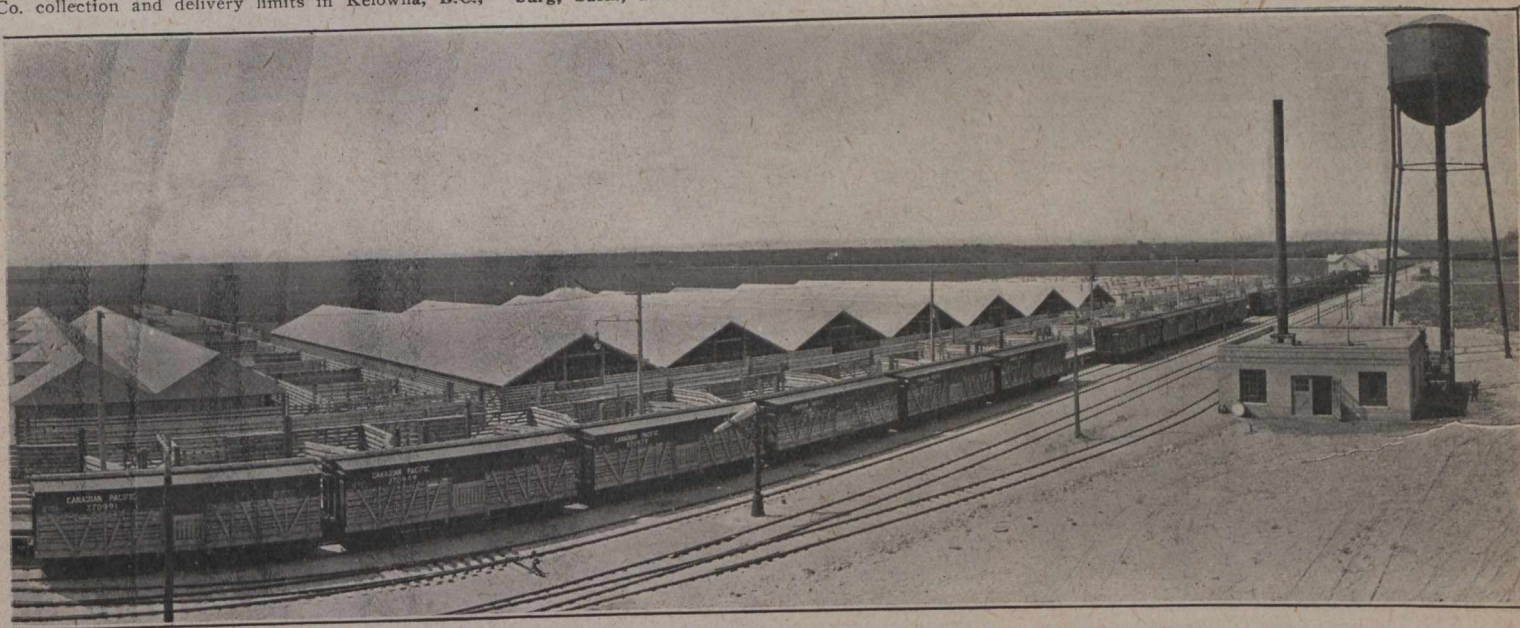
20613. Oct. 17.—Authorizing Ancaster Tp., Ont., to build Broadway Ave. across Toronto, Hamilton and Buffalo Ry. in West Hamilton, Ont., and dismissing application as to other crossings.

20614. Oct. 17.—Authorizing G.T. Pacific Ry. to build spurs across Vickers St., Fort William, Ont., to its proposed freight yards and approving location of proposed freight station.

20615. Oct. 17.—Amending order 19248, June 4, re Lake Erie and Northern Ry. construction.

20616. Oct. 21.—Authorizing Hamilton St. Ry. to operate over Toronto, Hamilton and Buffalo Ry. crossing at intersection of Main and Trolley Sts.; interlocking plant to be installed by Nov. 30.

20617. Oct. 18.—Authorizing G.T.R. to operate jointly with C.P.R. the latter's branch to Canada Foundry Co., north of Royce Ave., Toronto, G.T.R.



Panoramic View of Union Stock Yards, St. Boniface, Man. See opposite page.

and Knowlton, Que.

20572. Oct. 15.—Authorizing C.P.R. to make diversion in Sec. 30-22-26, w. 3 m., Sask.; and to build its Swift Current Northwesterly Branch across same at mileage 90.13.

20573. Oct. 15.—Authorizing C.P.R. to build at grade across Government Road, in Lot 2567 (Provincial Government Survey), Kootenay District, B.C., at mileage 42.37.

20574. Sept. 11.—Approving location of C.P.R. station at Empress, Sask.

20575. Oct. 7.—Authorizing C.P.R. to build siding for Canadian Connecticut Cotton Mills Co., Sherbrooke, Que.

20576. Oct. 7.—Authorizing C.P.R. to relocate siding for J. A. Villemare, Campbell Tp., Que.

20577. Sept. 23.—Amending order 16671, re G.T.R. Cannon St. yard, Hamilton, Ont.

20578. Oct. 14.—Authorizing Kettle Valley Ry. to build bridge over Fraser River at Hope, B.C.

20579. Oct. 7.—Authorizing Quebec, Montreal and Southern Ry. to build siding for Mount Royal Brick Co., Varennes Parish, Que.

20580. Oct. 15.—Approving City of Toronto plans 28 and 31, showing viaduct carrying Bloor St. across C.P.R., C.N.R. and G.T.R., authorized by order 20437, Sept. 23.

20581. Oct. 8.—Authorizing Canadian Northern Ry. to connect with Manitoba and Saskatchewan Coal Co.'s spur near Bienfait, Sask.

20582, 20583. Oct. 15.—Approving deviation of Lake Erie and Northern Ry. between stations 745 and 793, Townsend Tp., and authorizing it to build across highways between stations 771+97.5 and 772+60.5, and at station 613.3.

20584. Oct. 16.—Suspending, pending determination of matter by Board, cancellation as from Nov. 1 of inter-warehouse arrangement for completion of carload shipments of grain, notice of which is given

across road allowance in north half of Sec. 5-7-19, w. 4 m.

20596, 20597. Oct. 17.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge 121.29 across road allowance between Lots 22 and 23, Con. A, Hamilton Tp.; to build across Sinclair St., Cobourg, by an undercrossing, at mileage 120.6, and rescinding order 19093, Apr. 19, in so far as it authorizes crossing of Sinclair St. at grade.

20598. Oct. 15.—Ordering G.T. Pacific Ry., within 10 days, to build crossing opposite Lot 384, Queen St., Fort William, Ont.

20599. Oct. 16.—Ordering Canadian Northern Ry. to move loading platform at Bryant station, Sask., to a point convenient to west end of yard, and to grade driveways to loading platform.

20600. Oct. 17.—Approving plan and specifications of Fleming-Wigle drain, to be built under Windsor, Essex and Lake Shore Rapid Ry.

20601. Oct. 18.—Authorizing G.T.R. to build temporary additional track across road allowance between Cons. 1 and 2, Brantford Tp., Ont.

20602. Oct. 18.—Removing speed restrictions of 20 miles an hour over portion of C.P.R. Kerrobert Northeasterly Branch, Sask., from mileage 0 to 25, and of 15 miles an hour from mileage 25 to 26.1.

20603. Oct. 18.—Approving location of G.T.R. station at Seagrave, Ont., to replace one burnt.

20604. Oct. 8.—Approving C.N. Ontario Ry. plan D 29-1 of subway to be built at Wylde St., North Bay.

20605. Oct. 17.—Authorizing G.T.R. to rebuild bridge 58, at mileage 146.42 from Black Rock, 2.11 miles east of Clinton station, Ont.

20606. Oct. 18.—Approving location of Esquimalt and Nanaimo Ry. station at Qualicum Beach, Vancouver Island, B.C.

20607. Oct. 18.—Authorizing C.P.R. to build spur for Continental Oil Co., Winnipeg, Man.

to pay a yearly rental equal to interest at 6% per annum, on half the cost of construction and maintenance.

20618. Oct. 21.—Ordering G.T.R., within three months, to install gates to cover all tracks and sidings at crossing of first highway east of Clarkson station, Ont., to be operated by day and night watchmen; apportionment of cost reserved for further consideration; if gates are not in operation within three months, expense of watchmen employed will be borne by G.T.R. until gates are installed.

20619. Oct. 17.—Authorizing G.T.R. to build siding for Quinlan & Robertson on Lot. 10, Con. 9, Huntingdon Tp., Ont.

20620. Oct. 21.—Ordering G.T.R. to install, within 90 days, improved type of automatic electric bell at crossing on Third line, immediately west of Etobicoke River, between Lots 5 and 6, Con. 2, south of Dundas St., Toronto Tp.; 20% of cost to be paid out of the railway grade crossing fund.

20621. Oct. 18.—Ordering G.T.R. to build siding for St. Marys Portland Cement Co., Blanshard Tp., Ont., and to connect same with existing siding and spurs, and rescinding order 19365, May 21, in same connection.

20622. Oct. 21.—Authorizing C.P.R. to build diversion in s.w. $\frac{1}{4}$ Sec. 6-5-17, w. 4 m., at McNabb, Alta.

20623. Oct. 21.—Extending, to Dec. 15, time within which C.P.R. shall install electric bell at crossing of Main St., Milverton, Ont.

20624. Oct. 22.—Relieving C.P.R. from providing further protection at crossing known as Cote du Sud, mileage 11 from Place Viger station, Montreal.

20625. Oct. 16.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build tracks, for nine months from date, over portion of forced road running through Lot 24, Con. 8, Camden Tp., at mileage 46.3.

20626. Oct. 22.—Authorizing Toronto, Hamilton and Buffalo Ry. to open for traffic portion of second track from Welland to Welland River, Ont., mileage 0.49 to 1.35.

20627. Oct. 22.—Dismissing Toronto, Hamilton and Buffalo Ry. application for order declaring it to be senior of City of Hamilton, Ont., at crossing of Birch Ave.

20628, 20629. Oct. 22.—Authorizing G.T.R. to rebuild bridges across Wellington and John Sts., Stratford, Ont., respectively.

20630. Oct. 22.—Authorizing Canadian Northern Ry. and G.T. Pacific Ry. to operate over crossing at Camrose, Alta., without first stopping trains.

20631. Oct. 22.—Approving location and details of Canadian Northern Ry. station at St. Boniface, Man.

20632. Oct. 22.—Rescinding order 20024, Aug. 13, 1913, re construction of C.P.R. Don viaduct, near Donlands, Ont.

20633. Oct. 22.—Approving location of C.P.R. station at Neptune, Sask.

20634. Oct. 21.—Authorizing C.P.R. to build spur for Whitworth Bros., Pilot Butte, Sask.

20635. Oct. 22.—Authorizing C.P.R. to build its Lacombe-Easterly Branch across 23 highways, mileage 155.63 to 180.61, Alta.

20636. Oct. 21.—Authorizing C.P.R. to build tracks to freight sheds at Peterboro, Ont., and to change alignment and grade of other two tracks across King St.

20637. Oct. 22.—Rescinding order 17667, Oct. 4, 1912, in so far as it relieves Kingston and Pembroke Ry. (C.P.R.) from fencing from mileage 6.8 to 7.6 on east side of track; portion of right of way from mileage 6.8 to 7.6 on east side of track to be fenced, and fences on west side of track to be put in proper state of repair; work to be completed within 30 days.

20638. Oct. 22.—Ordering C.N. Ontario Ry. to build farm crossing for L. O. Christmann, Beachburg, Ont.

20639. Oct. 22.—Authorizing Niagara, St. Catharines and Toronto Ry. to operate over G.T.R. crossing at Welland Ave., St. Catharines, for construction purposes only, for 2 months from date.

20640, 20641. Oct. 22.—Authorizing C.N. Ontario Ry. to build across Dawes Road, between Scarborough and York Tps., and across public road between Lots 34 and 35, Con. C, York Tp.

20642. Oct. 23.—Authorizing C.N. Ontario Ry. to build across Don Mills Road in Lot 1, Con. 3 F.Y., York Tp., without prejudice to the township's right to apply at any time for a subway.

20643. Oct. 23.—Authorizing City of Toronto to rebuild bridges across G.T.R. and C.P.R. at Strachan Ave., reserving leave to city to apply for order requiring contribution from the companies, in so far as any additional expense for new tracks is concerned.

20644. Oct. 22.—Authorizing G.T. Pacific Ry. to build spur on Twenty-first St., between Short Ave. and C.N.R. right of way, in Edmonton, Alta.

20645. Oct. 23.—Authorizing G.T. Pacific Branch Lines Co. to build highway across its Tofield-Calgary Branch at mileage 58.8, Alta.

20646. Oct. 23.—Authorizing G.T.R. to rebuild overhead bridge carrying town line road between Guelph and Eramosa Tps., over its line at milepost 44.61, Rockwood, Ont.

20647. Oct. 23.—Approving deviation of Lake Erie and Northern Ry. between stations 538+52.8 and 553+19.3, South Dumfries Tp., Ont.

20648. Oct. 22.—Authorizing Saltfleet Tp., Ont., to maintain Cochrane Road across Toronto, Hamilton and Buffalo Ry., and dismissing application to build Rosseyay Road across T.H. & B. Rd.

20649. Oct. 23.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to take certain lands for diversion of road allowance in Lot 34, Con. 8, Camden Tp., in accordance with order 18696, Feb. 13.

20650. Oct. 23.—Authorizing C.P.R. to change grade crossing in road allowance between Lots 24 and 25, Con. 3, Scarboro Tp., Ont., and to build additional track across same at mileage 87.9.

20651. Oct. 23.—Authorizing C.P.R. to build road diversion in Lot 32, Con. 1, Scarboro Tp., Ont., and to cross same at grade, at mileage 90.4.

20652. Oct. 23.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station at Lonsdale, at mileage 63.87 from Glen Tay, Ont.

20653. Oct. 23.—Authorizing C.P.R. to change grade crossing on road allowance between Lots 34 and 35, Con. 1, Scarboro Tp., and to build additional track across same at mileage 91.2.

20654. Oct. 23.—Authorizing C.N. Ontario Ry. to build across Third St., North Bay.

20655. Oct. 22.—Dismissing application of Brechin Village, Ont., for order directing C.P.R. to move its station nearer the village.

20656. Oct. 22.—Authorizing C.N. Ontario Ry. to build across Eglinton Ave. between Lot 1, Con. 4, and Lot 5, Con. 3, York Tp.

20657. Oct. 24.—Authorizing Canadian Northern Ry. to open for traffic portion of its line from Macrorie to Tichfield, 6 miles, and from the junction between Macrorie and Tichfield to Elrose, 50 miles, Sask.; speed of trains limited to 18 miles an hour.

20658. Oct. 24.—Extending, to Dec. 31, 1914, time within which Quebec Oriental Ry. shall complete ballasting its line from Matapedia to New Carlisle, with a complete lift of 6 ins. of ballast; and renewing fences, gates, wooden culverts and all decayed portions of trestles.

20659. Oct. 23.—Rescinding order 19702, June 27, and approving Montreal and Southern Counties Ry.

Standard Passenger Tariff of Maximum Tolls, C. R.C. 4, on basis of 2½c. a mile, to apply between stations south of St. Lawrence River.

20660. Oct. 24.—Dismissing Clifton Sand, Gravel and Construction Co.'s application for order fixing rates on sand, gravel and concrete material between Stamford, Ont., and surrounding points in Ontario, including Niagara Falls, Chippewa, Welland, Port Colborne, Thorold, Merrittton, St. Catharines, Hamilton and Toronto and intermediate points.

20661. Oct. 24.—Authorizing Town of Sarnia, Ont., to build highway across Pere Marquette Rd. right of way at south limit of the town, P.M.R. to raise its tracks level with highway and keep cars 75 ft. back from edge of crossing on each side, and to install and maintain improved automatic electric bell at crossing, the town to reimburse company the cost of installing the bell.

20662. Oct. 24.—Authorizing C.P.R. to build road diversion in n.w. ¼ Sec. 8-11-9, w. 4 m., Alta, and to build across same.

20663. Oct. 24.—Amending order 18110, Nov. 23, 1912, re G.T.R. siding and spurs for Canadian Rumely Co., Toronto.

20664. Oct. 21.—Ordering that cost of installing new diamond, backup derails and derails necessitated by double track at crossing of G.T.R. by C. P.R. in w. ½ of Lot 14, Con. 2, Trafalgar Tp., Ont., mileage 32.56 from Toronto, be paid by C.P.R., and cost of maintaining additional protection be paid half by C.P.R., and half by G.T.R.

20665. Oct. 27.—Amending order 180, July 6, 1904, to provide further protection at crossing of Dundas St., London, Ont., by G.T.R. and London St. Ry.

20666. Oct. 25.—Authorizing C.P.R. to open for traffic portion of double track from Pilot Butte to Regina, Sask., mileage 84.7 to 92.

20667. Oct. 25.—Authorizing C.P.R. to use bridge 46.9, Megantic Subdivision, Que.

20668. Oct. 24.—Recommending to Governor in Council for sanction agreement of June 2, 1913, between C.P.R. and Kettle Valley Ry. re interchange of traffic.

20669. Oct. 24.—Authorizing C.P.R. to build siding for F. T. Proctor, Toronto, at mileage 24.5, Orangeville Subdivision, Ont.

20670. Oct. 23.—Authorizing C.P.R. to build at grade its ballast pit spur across road allowance between Indian Reserve and Thessalon Tp., Ont.

20671. Oct. 24.—Approving location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) station at Bowmanville, Ont.

20672. Oct. 25.—Authorizing C.N. Ontario Ry. to take for construction purposes portion Lot 13, Con. 1, Nipigon Tp., paying compensation to parties entitled thereto.

20673. Oct. 24.—Approving C.N. Ontario Ry. revised location through York Tp. and part of Toronto, mileage 2.23 to 6.16 from Yonge St., and dismissing application for level crossing of C.P.R.

20674. Oct. 27.—Authorizing Canadian Northern Ry. to open for traffic its line from Alsack to Hanna, 93 miles; and from Hanna to Munson, 40 miles.

20675. Oct. 25.—Authorizing Canadian Northern Ry. to build across Leitchfield Ave., Athabasca, Alta.

20676. Oct. 23.—Dismissing application of residents of La Conception, Que., for order directing C.P.R. to employ agent there and ordering C.P.R. to provide telephone connection at that station with agent at Mont Tremblant, also with station at Labelle, conductors to sell tickets at flag stations, on same basis as at organized stations.

20677. Oct. 24.—Ordering C.N. Ontario Ry. forthwith to build live stock pass under its line for W. R. Kirk, Foresters Falls, Ont.

20678. Oct. 27.—Rescinding order 19468, June 4, and declaring Lake Erie and Northern Ry. to have seniority as to trains over Brantford St. Ry. at point of crossing.

20679, 20680. Oct. 23.—Authorizing Ottawa Electric Co. to erect poles and wires across C.P.R. on River Road, south of Hurdman's Bridge, and private road from River Road south to Convent of Grey Nuns, near Hurdman's Bridge, Ottawa, Ont.

20681. Oct. 27.—Ordering C.P.R., pending extension and operation of Canadian Northern Ry. to Estevan, to file through freight tariff of class rates from Estevan, via Midale, to those points on C.N. R. to which such rates, via Midale, are filed by C. P.R. from Weyburn, Sask., said through rates from Estevan not to exceed sums of filed local rates of C.P.R. to Midale and of C.N.R. from Midale to Weyburn destinations, provided so long as Midale transfer continues a non-agency, C.P.R. be permitted to consolidate l.c.l. shipments by holding them at Estevan until they approximate a carload of 20,000 lbs. for transfer to C.N.R., without breaking bulk; tariff to be made effective by Nov. 20.

20682. Oct. 27.—Authorizing clearance as shown on plan of door openings at Canada Wire and Cable Co.'s factory, Leaside, Ont.

20683. Oct. 27.—Approving plan showing method of temporarily reinforcing piers of New Brunswick Coal and Ry. Co.'s bridge 44.7 over Salmon River, near Chipman, N.B.

20684. Oct. 31.—Authorizing C.N. Ontario Ry. to connect, temporarily, with G.T.R. near Pembroke, Ont., C.N.O.R. to pay expenses of construction, maintenance and removal of connection.

20685. Nov. 3.—Approving C.N. Ontario Ry. general plan of crossing of G.T.R. over Muskrat River, and detail plans of substructure of proposed bridge.

20686. Oct. 27.—Dismissing application of Port Hammond and District Improvement Association, Port Hammond, B.C., for order requiring C.P.R. to give week-end fares from Port Hammond to coast cities as now in effect from Vancouver to Port Hammond.

20687, 20688. Oct. 27.—Authorizing Esquimalt and Nanaimo Ry. to cross line of Wellington Colliery Co., or Canadian Collieries (Dunsmuir), Ltd., near Trent River, to build safety switch near station 290 W.C. Co.'s line, all trains to be flagged over crossing, companies each to pay half the cost; and authorizing Wellington Colliery Co. to cross Esquimalt and Nanaimo Ry. at mileage 5.924.

20689. Oct. 30.—Establishing collection and delivery limits of Canadian and Dominion Ex. Cos. in Owen Sound, Ont.

20690. Oct. 29.—Authorizing C.P.R. to build spurs for Fort William Starch Co. on Island 2, Fort William, Ont.

20691. Oct. 29.—Authorizing C.P.R. to operate trains over branch line, crossing C.N.R. adjoining Neebing Ave., Fort William, pending installation of half interlocking plant.

20692. Oct. 29.—Authorizing C.P.R. to build spur for Rutley Lumber Co., Regina, Sask.

20693. Oct. 27.—Approving location of C.P.R. station at Oakshela, Moose Jaw Subdivision, Sask.

20694. Nov. 3.—Authorizing C.P.R. to build temporary spur for Carter-Halls-Aldinger Co., Winnipeg, Man.

20695. Oct. 30.—Authorizing C.P.R. to open for traffic portion of double track from mileage 25.5 to 28.0, Broadview Subdivision, Sask.

20696. Oct. 28.—Authorizing C.P.R. to build sidings for Toronto Structural Steel Co., Toronto.

20697. Oct. 30.—Amending order 10127, Apr. 25, re G.T.R. sidings for International Harvester Co., Hamilton, Ont., and extending time for construction to 3 months from date.

20698. Oct. 30.—Extending for 90 days from date, the time within which G.T.R. shall complete siding and spurs for Toronto Structural Steel Co. on Lot 9, Con. 5, York Tp., Ont.

20699. Oct. 31.—Approving plans and specifications of Bogart Drain, where same crosses G.T.R. on n. ½ Lot 9, Con. 4, Elgin Tp., Ont.

20700. Oct. 31.—Approving G.T. Pacific Ry. station site and station at Tyee, mileage 26.5, Prince Rupert East, B.C.

20701. Oct. 31.—Amending order 19215, May 6, re G.T.R. subway at crossing of Thompson Rd., Bertie Tp., Ont.

20702. Oct. 31.—Authorizing G.T.R. to build siding for Gidley Boat Co., Penetanguishene, Ont.

20703. Oct. 30.—Amending order 19759, July 4, re Hamilton St. Ry. crossing of Toronto, Hamilton and Buffalo Ry. spur, Hamilton, Ont.

20704. Oct. 30.—Amending order 19764, July 4, re Toronto, Hamilton and Buffalo Ry. crossing of Hamilton Radial Ry. at Burlington St., Hamilton, Ont., and extending, for 3 months from date, time for completion of work.

20705. Nov. 3.—Approving location of Canadian Northern Ry. third class station at Bengough, Sask.

20706. Oct. 31.—Approving revised location of Canadian Northern Ry. Greenway Branch through Secs. 2 and 3, Tp. 3, R. 23, w. p. m., Man., from mileage 78.95 to 80.21.

20707. Oct. 31.—Approving location of C.N. Ontario Ry. station grounds at Deseronto, at mileage 134 from East Don.

20708. Oct. 31.—Authorizing Michigan Central Rd. to build siding for American Cyanamid Co. in Stamford Tp., Ont., and authorizing clearances as shown on plan; siding to be completed in 3 months from date.

20709, 20710. Nov. 3, 4.—Authorizing C.P.R. to build spurs for Renfrew White Granite Co. at Haley's station, Ont.; and McCormick Manufacturing Co. in Lot 9, Con. 1, London Tp., Ont.

20711. Oct. 28.—Authorizing Toronto, Hamilton and Buffalo Ry. to build spur, with two branches, for Canadian Westinghouse Co., Hamilton, Ont.

20712. Nov. 3.—Approving locations of C.N. Ontario Ry. station grounds at Alice, mileage 96.65, and Hiam, mileage 91.6, from Ottawa.

20713, 20714. Oct. 28.—Authorizing Canadian Northern Ry. to build across 11 highways on its Alsack southeasterly line, and approving location of station at Chandler, Sask.

20715. Nov. 4.—Authorizing Canadian Northern Ry. to build across 5 highways on its Calgary-Macleod Branch, Alta.

20716. Nov. 3.—Authorizing C.N. Ontario Ry. to take portion of Lot 22, Con. 9, Fitzroy Tp., for diversion as approved by order 19871, July 22.

20717. Oct. 30.—Approving revised location of Canadian Northern Ry. Maryfield Branch through Tps. 5 and 6, and R. 25 to 29, w. 2 m., Sask., from mileage 194.82 to 224.58.

20718. Nov. 3.—Amending order 20469, Oct. 1, re C.P.R. spur for G. F. Stephens and Co., St. Boniface, Man.

20719. Oct. 28.—Approving location of C.P.R. station at Outram, Sask.

20720. Nov. 4.—Authorizing Canadian Northern Ry. to build spur for P. Hrynyczuk, Rosser, Man.

20721. Nov. 3.—Extending, to Dec. 1, time within which C.P.R. shall complete diversion of Nine Mile Road, South Gower Tp., Ont.

20722. Nov. 4.—Authorizing C.P.R. to build extension to siding at West Mimico, Ont., for W. Booth Lumber Co., Toronto.

20723. Nov. 4.—Authorizing C.P.R. to build spur at Pembroke, Ont., for Steel Equipment Co., Ottawa.

20724. Nov. 4.—Authorizing C.P.R. to open for traffic portion of its double track from Ernfold to mileage 70.0, Swift Current Subdivision, Sask.

20725. Oct. 29.—Authorizing C.P.R. to build double track bridge at Napier St., Iberville, Que.

20726, 20727. Nov. 4.—Authorizing C.P.R. to build at grade two extra tracks across Devere Ave., Taber, Alta.; and to build bridge 35.92 near Goldie, Ont.

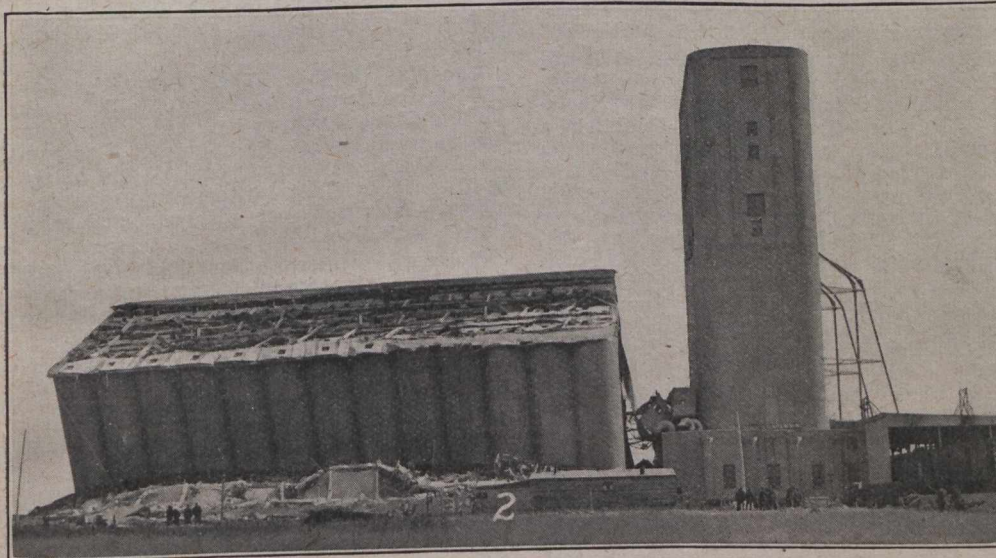
The Failure of the Canadian Pacific Railway's Grain Elevator at Transcona.

The failure of the C.P.R.'s grain elevator at Transcona, Man., by which the reinforced

tion shown in the accompanying illustrations was briefly referred to in Canadian Railway

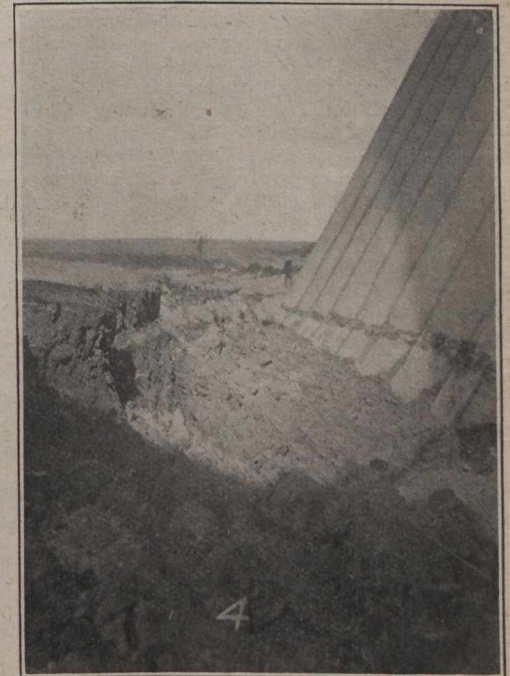
noticed on the bridges between the working house and the binhouse. By 1 p.m. the binhouse had settled about 1 ft. The ground for 25 to 30 ft. on the north, west and east sides of the binhouse heaved up 4 or 5 ft. In the afternoon the settlement became a little more rapid on the west side, producing a list to the west. The building continued to settle and list for about 24 hours, until noon, Oct. 19. Its final position is at an angle of about 28° from the vertical. The east side of the house is raised about 5 ft. above normal level, while the west side is some 30 ft. below normal. The conveyor cupola and roof structure slid off the binhouse when the tilt became too great, which occurred about midnight Oct. 18. The structure of the binhouse shows practically no damage in its visible part, except for a few small hair cracks. The displacement of the underlying strata of earth is well shown by the upheaved ridges of earth around the elevator. The detail view, no. 4, gives some idea of the surface disturbance. This shows the ridge along the east of the binhouse, seen sharply outlined in view 1.

The elevator was built in the summer of 1912. It consists of a working house, seen in the views standing undisturbed just south of the displaced structure, and a reinforced



concrete bin house settled into the ground, by the crushing out of the foundation subsoil, and at the same time tilted to the posi-

and Marine World for November. On Oct. 18, between 11 a.m. and noon, the elevator then being practically full, movement was



concrete binhouse. The latter consists of 65 circular bins of 14 ft. 4 in. inside diameter and 90 ft. deep, arranged in 5 rows of 13 bins each (5 along the working house, 13 in the direction at right angles to it). The 48 interspaces between the circular bins were also used for grain storage. The binhouse was 10 ft. north of the working house, and structurally distinct from it, being connected with it only at the conveyor level, just above the top of the bins, where the conveyor which operates in the low cupola over the binhouse is carried across to the working house. The principal machinery floors of the working house are above the conveyor level.

The soil at the site is soft clay ground. Rock is 45 to 50 ft. below the surface. The binhouse was founded on a reinforced concrete slab, 77 by 195 ft., about 12 ft. below the surface of the ground. In excavating for the construction of this foundation, the upper 5 or 6 ft. of ground were found rather soft. Below this, however, a fairly stiff clay was struck. Load tests were made at the time, and they indicated that the soil was well able to bear a load of 4 to 5 tons per sq. ft. The maximum loaded weight of the

binhouse averaged a little over 2½ tons per sq. ft. The foundation was put in during July, 1912, and the soil was perfectly dry, with no indication of water. Barnett-McQueen Co., Ltd., of Minneapolis, designed and built the elevator.

Rafts or floating foundations of the kind used in this case are commonly used for elevator foundations in the Winnipeg territory. The working house of the present elevator rests on a similar slab foundation.

The question of saving the grain in the elevator occupied first attention. The binhouse held nearly its full capacity of 1,000,000 bushels. The bins were tapped through the sides and a temporary conveyor erected alongside for taking the grain to railway cars, and the removal when started progressed at the rate of about 40 carloads a day, the whole of the grain being removed by Nov. 10. It was feared at first that ground water would enter the bins at the bottom and would wet the lower part of the grain. This was found not to be the case, and the absence of water is held to indicate that the accident is not chargeable to wet condition of the subsoil.

The foregoing facts have been compiled from information kindly furnished by J. G. Sullivan, Chief Engineer, C.P.R. Western Lines, to whom we are indebted for the photographs from which the accompanying illustrations have been made.

View 1 is taken from the southwest. It shows the working house undisturbed, though only 10 ft. from the binhouse. The ridge of earth in front is the result of the subsurface flow of oil. View 2 shows the west side of the elevator, with the bin tops exposed, after the cupola slid off. There is a 30 ft. subsidence on this side, the whole length of the binhouse having settled practically uniformly. View 3 shows the southwest corner of the binhouse, with the wreckage of the cupola and roof lying at its foot. View 4 shows the east side, with the adjacent soil upheaved.

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:—

G.T.P.R. Freight Rates in British Columbia.

20441. Sept. 27.—Re application of G.T. Pacific Ry., under sec. 327 of the Railway Act, for approval of its Standard Freight Mileage Tariff C.R.C. no. 19, cancelling C.R.C. 17 approved by order 19866, to apply between stations in British Columbia, Prince Rupert to Siding 9, mile 301, inclusive. It is ordered that the said tariff be temporarily approved, pending judgment in the inquiry into rates charged generally by railway companies in British Columbia.

Rates on Lumber, Shingles, Etc.

20564. Oct. 8. Re Supplement 17 to Tarriff C.R.C. no. W-1615, filed by C.P.R., effective Sept. 3, 1913, increasing rates on lumber, shingles, and other articles taking lumber rates, from British Columbia coast and interior mills to points on its Sault Ste. Marie Division; and order 20245, Aug. 30, 1913, suspending effective date of the said advanced rates for 30 days from date of the order: it is ordered that order 20245 be rescinded.

Inter Warehouse Arrangements for Grain Shipment.

20584. Oct. 16. Re Supplement 28* to C.P.R. Tariff C.R.C. no. E-2141, and Supplement 18 to G.T.R. Tariff C.R.C. No. E-2374, cancelling as from Nov. 1, 1913, the inter warehouse arrangement for completion of

carload shipments of grain:—Upon reading the application of the Toronto Board of Trade protesting against the proposed cancellation, and asking that the railway companies file their reasons therefor, and that the Board suspend the supplements pending justification by the companies, it is ordered that the cancellation be suspended, pending the hearing and determination of the matter by the Board.

Montreal and Southern Counties Ry. Passenger Fares.

20659. Oct. 23. Re the application of the Montreal and Southern Counties Ry., under sec. 331 of the Railway Act, for approval of its standard tariff of maximum passenger tolls, C.R.C. No. 4, on the basis of 2½c. a mile, to apply between stations south of the St. Lawrence River, it is ordered that order 19702, June 27, 1913, be rescinded; that the company's standard passenger tariff above mentioned be approved.

Sand, Gravel and Concrete Material Rates.

20660. Oct. 24. Re application of Clifton Sand, Gravel and Construction Co. for an order reducing, adjusting and fixing the rates on sand, gravel and concrete material between Stamford, Ont., and surrounding points in Ontario, including Niagara Falls, Chippewa, Welland, Port Colborne, Thorold, Merritton, St. Catharines, Hamilton and Toronto and intermediate points, it is ordered that the application be dismissed.

Rates from Estevan to C.N.R. Stations.

20681. Oct. 27. Re application of Board of Trade, Estevan, Sask., for an order directing Canadian Pacific and Canadian Northern Railway Companies to establish a through tariff on goods destined from Estevan, via Midale, to C.N.R. stations to which the companies have published and filed a through traffic from Weyburn, via Midale, it is ordered that, pending the extension and operation of the C.N.R. to Estevan, the C.P.R. publish and file a through freight tariff of class rates from Estevan, via Midale, to those points on the C.N.R. to which through class rates, via Midale, are published and filed by the C.P.R. from Weyburn, Sask., the said through rates from Estevan not to exceed the sums of the published and filed local rates of the C.P.R. to Midale and of the C.N.R. from Midale to the said Weyburn destinations; provided that, so long as Midale Transfer continues a non agency, the C.P.R. be permitted to consolidate less than carload shipments by holding them at Estevan until they approximate a carload of 20,000 lbs. in weight for transfer to the C.N.R. without breaking bulk, and that the said tariff be made effective not later than Nov. 20, 1913.

Week End Fares in British Columbia.

20686. Oct. 27. Re application of Port Hammond and District Improvement Association, Port Hammond, B.C., for an order requiring the C.P.R. to put into effect the same or similar week end fares from Port Hammond to the coast cities as are now in effect from Vancouver to Port Hammond, it is ordered that the application be refused.

Oxygen and Acetylene Gases Freight Rates.

20739. Nov. 4. Re application of L'Air Liquide Society of Montreal for an order reducing the less than carload rating of oxygen gas from the 2nd class of the Canadian Freight Classification to the 3rd class, and providing a carload rating of 5th class, it is ordered that the carload rating of 4th class provided in the Canadian Freight Classification for blaugas and carbonic acid gas be provided, also for oxygen and acetylene gases in carloads; that the application for a reduced less than carload rating of oxygen gas be refused.

Signal Installations on the Grand Trunk Railway.

The interlocking plant at St. Lambert, near Montreal, in connection with the new Southwark yard, was completed and put in service Nov. 12. It is an all electric plant, the signals being semaphore type, upper quadrant, top post mechanisms. This installation is said to be the largest electric power installation in Canada. The apparatus was supplied and installed by the General Railway Signal Co. of Canada.

A contract for automatic signalling on the Victoria Jubilee Bridge, Montreal, has been let to the Union Switch and Signal Co., This system will be the normally clear, alternating current, 3 position, upper quadrant semaphore type. Signals on the bridge will be supported by brackets specially designed. The signal layout and materials will represent the most modern practice of automatic signalling.

The Eastern Terminal Elevator Co., Ltd., has been incorporated under the Manitoba Companies Act, with \$250,000 capital and offices at Winnipeg, to build, own and operate grain elevators, warehouses, etc., and to deal in grain and other products, and in connection therewith to operate wharves, docks, piers, etc. The provisional directors are, J. A. Richardson, A. C. Ruttan, H. Gauer, F. G. Davies, and D. J. McGillivray, Winnipeg.

Canadian Northern Town Properties Co., Ltd., is the name of a company allied with the Canadian Northern Ry., which has been incorporated under the Dominion Companies Act, with \$10,000,000 capital, and offices at Toronto, to deal with townsite properties. The incorporators are all connected with the C. N. R. legal staff.

Powdered coal as a fuel has been used in a locomotive frame forging furnace, reducing the hourly consumption from 650 to 350 lbs., as well as heating 20% faster.



TENDERS.

TENDERS addressed to the undersigned, at Ottawa, and endorsed on the envelope "Tender for Steamer," will be received up to noon of the

EIGHTH DAY OF JANUARY, 1914,

for the construction of a Steel Twin Screw Ice-breaking Steamer of the following leading dimensions:—

Length B.P.	275 feet 0 inches.
Breadth extreme	57 " 6 "
Draft Mean	19 " 0 "
Indicated Horse Power	8,000

to be delivered at the King's Wharf in the City of Quebec.

Plans, tender forms and specifications of this steamer 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, and at the Agencies of the Department of Marine and Fisheries at Montreal, Quebec, St. John, Halifax and Victoria, B.C.

All tenders must be made with the distinct understanding that the steamer must be built in Canada.

Plans, tender forms and specifications can be procured upon application from the Purchasing and Contract Agent, Ottawa.

The tender form is embodied in the specification.

Each tender must be accompanied by an accepted cheque on a chartered Bank equal to 10% of the whole amount of the tender, which cheque will be forfeited if the successful tenderer declines to enter into the contract prepared by the Department or fails to complete the steamer in accordance with the contract.

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 the Department will not be paid.

ALEX. JOHNSTON,

Deputy Minister of Marine and Fisheries.

Dept., Marine and Fisheries,

—50306. Ottawa, October 25, 1913.

Railway Development

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta and Great Waterways Ry.—Surveys have been started on this line near Edmonton, Alta., the work being in charge of W. R. Smith, Chief Engineer, Edmonton, Dunvegan and British Columbia Ry., which is also being built by J. D. McArthur. Under the arrangements made with the old company, it is proposed to follow a portion of the route originally laid down, and to start construction on this early in 1914. The act of the Legislature came into operation by proclamation Oct. 31. (Nov., pg. 534.)

Alberta Proposals for Light Railways.—An act has been passed by the Alberta Legislature to encourage the building of light railways, connecting with existing lines, and open up territory in which there is not traffic to justify the building of ordinary lines. The Government is authorized to give a subsidy of \$7,000 a mile in aid of such lines, which are not to exceed 75 miles in length. A section was inserted in the measure in its passage through the Legislature, limiting the total mileage which may be aided before the next session to 200 miles.

The first line to be built under this act will, it is said, be one from Bassano through the irrigated belt to Richmond, on Red Deer River. Grading is reported to have been started, and press reports state that the line will be completed in the spring. The press reports state that this line will be built by the Bassano and Bow River Ry. Co. The only company incorporated with anything like this title is the Bassano Electric Ry. Co., which was incorporated by the Alberta Legislature, Feb. 12, 1912, with power to build a line from Bassano southerly to Bow River; from Bassano northerly for 40 miles, and also within the town of Bassano. (See Oct., 1912, pg. 520.)

Athabasca Valley Ry.—The Alberta Legislature has extended the time for the building of the projected railway from Independence on the Edmonton, Dunvegan and British Columbia Ry., or from Edmonton to Fort Assiniboine, on the Athabasca River. The company was incorporated at the 1911-12 session of the Legislature, with J. D. McArthur, J. K. McLellan, R. A. Hazleton, D. W. Campbell and W. P. McDougall, all of Winnipeg, as provisional directors. (Jan., 1912, pg. 21.)

Burrard Inlet Tunnel and Bridge Co.—Sir Richard McBride, Premier of British Columbia, in an interview at Vancouver, B. C., on his return from London, Eng., Nov. 5, is reported to have said: "I met Sir John Wolfe Barry, engineer for the proposed Second Narrows bridge, and discussed the question of construction with him. I may announce that the provincial cabinet will discuss the proposal that the province take over the building of the Second Narrows bridge from the inter-municipal company of Vancouver within a short time." (Sept., pg. 432.)

Calumet and Northern Ry.—The Quebec Legislature is being asked for an extension of time for the building of the projected railway from Calumet to St. Jovite, Que. Campbell, McMaster and Papineau, Montreal, solicitors for applicants. (Feb., pg. 83.)

Canada Coal Co. is the title of a company incorporated under the New Brunswick Companies Act, with a capital of \$150,000 to acquire the interests of George Sergeant, Jr., formerly the proprietor of the Canadian Coal Corporation of New Brunswick. The company is authorized to build and operate railways, for the car-

riage of passengers and freight, and for this or any of the other purposes for which it is incorporated, may acquire shares or bonds of other companies. The company's offices are at Chipman, N. B., and the provisional directors are:—G. Sergeant, Jr., R. McClain, W. F. Williams, M. B. Davis, New York; W. G. Conklin, Ardsley, N. Y.

Canadian Alberta Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title, to build a line from one mile west of Blairmore, Alta., on the C. P. R., northerly and westerly through townships eight and nine, range four west of the fifth meridian, for 14 miles to the centre of Sec. 20, tp. 9. Taylor, Harvey, Grant, Stockton and Smith, Vancouver, B. C., solicitors for applicants.

Canadian North Eastern Ry.—New York press reports state that arrangements are being made for the financing of construction of an extension of the existing line from Stewart to Bear Creek, 14 miles, to the Groundhog Mountains, and on to a junction of one of the Canadian Northern Ry. lines into Edmonton, Alta. The reports state that a large portion of the capital secured will be devoted to the opening up of coal mines on the Groundhog Mountain in order to provide traffic for the line. Sir Donald Mann, who is in his private capacity, the principal owner of the line, is said to be negotiating with the British Columbia Government for the purpose of securing the guarantee of an issue of bonds for construction purposes. In this connection it is stated that provision would be made for a line running to Dawson, Yukon, and that connection would be made with a line or lines from the International boundary line, to be built under U. S. auspices. The Premier of British Columbia in a recent speech suggested the possibility of provincial guarantees being given to a north and south line through British Columbia which would connect Alaska and the United States.

Another point in connection with this project is a report that arrangements are being made in London, Eng., for the organization of a company to develop large coal areas on Groundhog Mountain, and in connection with the project to build a railway from Stewart, B.C., to the collieries. (Oct., 1912, pg. 511.)

Cape Breton Coal, Iron and Ry. Co.—We are officially advised that grading has been in progress since Dec., 1912, on three miles of line extending from the present colliery line, which connects with the Sydney and Louisburg Ry. The new mileage starts one mile east of the colliery and extends to Round Island, Mira Bay, N.S. The contract provides for grading only. Lynch and Fane, Sydney, N. S., are the contractors. It is not contemplated to do anything further at present, owing to the fact that while the company had an assurance from the Dominion Government, that a breakwater would be erected to protect the proposed shipping pier at the terminus of the railway, nothing has yet been done. C. J. Coll, Broughton, N. S., is General Manager. (July, pg. 331.)

Central Canada Ry.—The Alberta Legislature has authorized the government to guarantee the company's bonds for \$20,000 a mile for building a line from the Edmonton, Dunvegan and British Columbia Ry., for 100 miles. (April, pg. 168.)

Central Canada Ry.—The Dominion Parliament is being asked to incorporate a company with this title to build a railway from

Winnipeg, northwesterly, via Yorkton, Saskatoon, and Battleford to Edmonton, Alta. Pringle and Guthrie, Ottawa, solicitors for applicants.

Chicago, Milwaukee and St. Paul Ry.—U. S. press reports state that that line, or its subsidiary, the Chicago, Milwaukee and Puget Sound Ry., has purchased the Graner ranch on the southwest corner of Sea Island, near Eburne, at the International boundary, that a number of other properties adjoining were purchased by the same interest recently, and that negotiations are being carried on for some properties on the Canadian mainland, just opposite. These purchases are said to be for the purpose of building a line to connect Seattle, Wash., and Vancouver, B. C. The company has an arrangement by which it can run over the Great Northern Ry. lines into Vancouver, and use the new terminals being laid out on False Creek. (Oct., pg. 470.)

Companie des Pouvoirs d'Eau de Valleyfield Limitee.—Application is being made to the Dominion Parliament for an act confirming the charter and letters patent of this company, and authorizing it among other things, to build a railway from Salaberry de Valleyfield southwesterly across Beauharnois and Huntingdon Counties to the International boundary; a line from Salaberry de Valleyfield southeasterly to the provincial boundary line in Huntingdon; and from Salaberry de Valleyfield northeasterly across the St. Lawrence River and through Soulanges and Vaudreuil Counties to the Lake of Two Mountains, and branch lines. Z. Boyer, Valleyfield, Que., Secretary.

Edmonton, Dunvegan and British Columbia Ry.—It is expected that track will be laid to the Athabasca River, 131 miles from Edmonton, Alta., early in December. A start has been made on the building of the bridge across the river at Mirror Landing, which it is expected to have completed early in the spring.

The Board of Railway Commissioners has approved of location plans for this line from mileage 1556.11 to 238.89, Alta. (Oct., pg. 475.)

Esquimalt and Nanaimo Ry.—It is reported that the work of constructing the bridges and trestles on the line between Victoria and Wellington, B. C., has been completed with the exception of the timber trestle at Arbutus Canyon, the material for which is being delivered. Ten miles of new steel have been laid at the north section, thus completing the replacing of the old 52 lb. with 60 lb. steel. R. Marpole, Vice President, completed a trip of inspection over the line, Nov. 7.

Steel has been laid on the Courtenay extension as far as the Little Qualicum River, a temporary bridge having been built across French Creek. The permanent steel trestle, which is one of the largest structures on the line, is being built by the Dominion Bridge Co. It is expected to have steel laid to the crossing of the Big Qualicum River by the end of the year. The grading from this point into Courtenay is well advanced. There are two large bridges on this section of the line, viz., at the crossing of the Tsuble and Trent Rivers. It is expected, however, that the entire work will be completed so as to enable trains to be run into Courtenay by June 1, 1914.

The terminals being laid out on the Songhees Reserve, Victoria, consist of four substantial concrete and brick structures, erected at a cost of about \$150,000 by E. R. Doe and Brother. The locomotive house will at present accommodate 10 locomotives, but it can be enlarged when required; the other buildings which will be used as machine, repair and car shops, are being equip-

ped with the plant and machinery from the old shops at Wellington, as well as with some new plant. The buildings also comprise a 15,000 gal. oil tank, and a service tank for feeding the locomotives, which are fitted for burning oil instead of coal. (Sept., pg. 430.)

Essex Terminal Ry.—We are officially advised that a contract has been let for the grading of an extension from the present terminus in Sandwich, Ont., southerly to the northerly limit of Ojibway, about a mile. Should the conditions continue favorable it is expected to have this portion of the railway open for traffic by January. Owen McKay, M. Can. Soc. C. E., Walkerville, Ont., is chief engineer. The contractor for the grading on the extension to Ojibway is J. J. Dewhurst, South Woodslee P. O., Ont. The company will do all the other work, with the exception of the building of a 16 ft. bridge, the construction of which has not yet been arranged. (Oct., pg. 475.)

Erie, London and Tillsonburg Ry.—According to statements credited to G.T.R. officials it appears that the surveys recently made by S. Wilson, and the visits made by representatives of the Canadian Stewart Co. to London, and points on Lake Erie south of London, were in the interests of that company. Mr. Wilson, in a recent interview, is reported to have stated that the surveys made show that a satisfactory route can not be obtained between London and Port Talbot, but that a 1.5% gradient can be got between London and Port Burwell. On this route only one bridge would be required.

The G.T.R. controls the charters of the E., L. and T. Ry., which was originally secured by J. H. Teall, Tillsonburg, Ont., who was formerly connected with the Tillsonburg, Lake Erie and Pacific Ry., now owned by the C.P.R. (See London to Port Talbot, Oct., page 475, and E., L. and T. Ry., Dec., 1912, pg. 605.)

Fredericton and Grand Lake Coal and Ry. Co.—Press reports state that ballasting has been completed on this line, and that a train service has been put in operation from Fredericton right through to Norton. The section from Minto to Norton is that formerly operated by the New Brunswick Government, under the charters of the New Brunswick Coal and Ry. Co., and the Central Ry. of New Brunswick. (Sept., pg. 432.)

Glengarry and Stormont Ry.—A meeting of the shareholders has been called to be held at Montreal, Dec. 1, to authorize an issue of first mortgage, 35 year, 5% gold bonds, for \$750,000, to provide for the construction of this projected line from Polycarp, on the C. P. R., to Cornwall, Ont. W. J. Shaughnessy, Montreal, is Secretary.

The Board of Railway Commissioners has approved of location plans for this projected railway. Mileage 0 to 24.05. (July, pg. 331.)

Ha Ha Bay Ry.—Application is being made to the Quebec Legislature to extend the time within which the lines authorized by Chap. 107 of the Statutes of 1908 may be built. (April, pg. 168.) (See also Roberval and Saguenay Ry.)

Kettle Valley Lines.—Steel was expected to be laid to the Summit, 76 miles from Midway, B.C., the starting point of the present construction, by Nov. 30. It is expected that this section will be linked up with the section being built out of Penticton early next summer. Work has been started on the three mile section east of Penticton, which was held up on account of difficulties in obtaining the right of way. Grading in the other parts of the Okanagan Valley is practically completed, and track is being laid. A large bridge is under construction across Trout Creek at Summerland. A route map is reported to have been filed at Ottawa, showing a proposed alteration of

the line from Coldwater summit to Osprey lake, which it is said will save a long detour and open up some new territory. Track has been laid for seven miles westerly from Penticton, and a considerable mileage of grading has been done.

Grading has been started out of Hope, on the section towards the Coquihalla summit, the men being spread over the first six miles. The right of way is being cleared beyond that point, and good progress has been made with cutting out the supply road.

In an interview at Vancouver, Nov. 10, it was stated that the bridge to be built across the Fraser River will be 1,000 ft. long and will cost about \$1,000,000.

We are officially advised that while the line is leased to the C.P.R., it will not be taken over by that company until construction is completed. (Oct., pg. 475.)

Lake Erie and Northern Ry.—The terminal facilities for this line in Galt, Ont., are being laid out, with a view of having everything ready for the opening of the section from Brantford, early next spring. The buildings consist of a brick station, and freight house, and six tracks are being laid in the yard. About 14 miles of grading has been completed between Brantford and Galt, some miles of steel have been laid, and a ballasting gang is working from the Galt end.

Considerable progress has been made in Brantford, where some heavy work is being done at Jubilee Terrace and Lorne Bridge. The bridge is to be raised seven feet. A good deal of the trestle work through the city has been completed.

Good progress is being made with construction on the line from Brantford to Port Dover. The Board of Railway Commissioners, Oct. 10, granted the company the right to use the G. T. R. harbor at Port Dover. (Oct., pg. 475.)

A contract was entered into, Nov. 8, between the Dominion Government and the company, under the provisions of the act granting aid to certain railways, for the building of a line from Galt to Port Dover, Ont., not exceeding 58 miles.

Magdalen River Valley Ry.—The Quebec Legislature is being asked for an extension of time for the building of this projected railway from Magdalen River Roman Catholic Church to a junction with the inland section of the Atlantic, Quebec and Western Ry. F. Murphy, Quebec, is solicitor for the company. (May, 1908, pg. 533.)

Midland Continental Ry.—Press reports state about 40 miles of line between Wimbledon and Jamestown, N.D., have been completed and put in operation, and that surveys have been made for an extension from Wimbledon to Grand Forks, Minn. It is said that further construction will be undertaken in the spring. The object of the company is said to be to secure a through line from Winnipeg, Man., to the Gulf of Mexico. (June, 1912, pg. 301.)

Moncton and Northumberland Strait Ry.—The Board of Railway Commissioners has approved of location plans for a line from Richibucto to Buctouche, N.B., 19 miles. The M. and N. S. Ry. is the new title of the Buctouche Ry. and Transportation Co., which took over the old Buctouche and Moncton Ry., or as it was often called the Moncton and Buctouche Ry. (See Buctouche Ry. and Transportation Co., Aug., pg. 376.)

Norton to St. John, N. B.—Press reports state that surveys have been made for a railway from Norton, through Salt Springs, French Village and Loch Lomond, to St. John, N. B. The report further states that C. P. R. engineers have been over the route, and have been looking into the traffic possibilities. The C. P. R. by the leasing of

the Fredericton and Grand Lake Ry., and the New Brunswick Coal and Ry. Co.'s line, has a line to Norton, and this proposed line would provide it with an entrance into St. John, on the east.

Ontario Lake Front Terminal Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title to build a line from between Havelock and Central Ontario Jct., on the C. P. R., southeasterly via Campbellford to Cobourg, and from near Campbellford to Brighton, Ont. C. Pringle, Ottawa, solicitor or for applicants.

Regina to Saskatoon, Sask.—The Saskatchewan Legislature is being asked to incorporate a company to build a railway from Regina to Saskatoon. Anderson, Bagshaw and Amyott, Regina, solicitors for applicants.

P. M. Anderson, in an interview, Nov. 5, is reported to have stated that the company will be named the Central Saskatchewan Ry. Co., and that in addition to the line to Saskatoon, it is proposed to ask for power to build lines from Regina to Prince Albert, thence northeasterly to the Saskatchewan-Manitoba boundary, and from Regina easterly to the Saskatchewan-Manitoba boundary, and that the interests behind the project are prepared to spend large sums in order to develop the lines.

Ottawa and Ungava Ry.—The Dominion Parliament is being asked to extend the time within which the company may build the line authorized by Chap. 102 of the Statutes of 1909-10, and Chap. 94 of the Statutes of 1912, and for power to build a line eastward from the main line north of the 49th circle of latitude, by the most feasible route and crossing the Ashwappmuchuan, Mistassini, Peribonka, Bersimis, Outarde, Manicouagan, Pentecote, Ste. Marguerite, Moisie, Romaine, Natashkwan Rivers, to Lake Melville, or to the boundary between the province of Quebec and Labrador in the vicinity of St. Lewis Inlet or of St. Charles River, with spurs northward and southward. A. T. Genest, Ottawa, is Managing Director. The company was incorporated in 1909-10 as the Gatineau and Ungava Ry., but its name was changed as above in 1912. (June, 1912, pg. 300.)

Owen Sound to Meaford.—A deputation from Owen Sound and Meaford, Ont., waited on the Provincial Government recently to urge the granting of aid for the building of a railway to connect these two towns. Consideration was promised. There have been several attempts made within the past ten years to secure the building of this line; two or three charters have been granted, and Dominion aid has been voted, but beyond surveys nothing has been done.

Prince Edward Island Ry.—Press reports state that construction of a spur line to Carleton Point, where the car ferry terminal will be situated, has been practically completed. The line is about 2.5 miles long, and runs on a tangent from the Cape Traverse branch. The cuttings and fills have been built for standard gauge. As soon as completed the line will be used for taking in material for the construction of the terminals. Roger Miller, representing the contractors for terminals, and — Downing, engineer in charge of construction of the spur line, inspected the work, Nov. 14. (Oct., pg. 475.)

Pacific Great Eastern Ry.—D'Arcy Tate, Vice President, stated in Vancouver, Nov. 8, that grading was finished between Dundarave and North Vancouver, and that track was being laid. It was expected that a suburban train service will be put on this section of the line early in the next year.

Considerable progress has been made

with construction on the line along the Squamish Valley, beyond the point to which track was laid on the old Howe Sound and Northern Ry. It is expected that a train service will be put on this section at the beginning of 1914.

Squamish Indian Reserve at Newport, B. C., has been acquired by the P. G. E. Ry. The reserve contains 988 acres, of which 40 are reserved by the tribe and each member of the tribe is to receive a 50 ft. lot. The price paid is \$150,000 for the land and \$5,000 for the timber. The land is to be used for terminal and townsite purposes. (Oct., pg. 475.)

Pacific, Peace River and Athabasca Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title to build a railway from the mouth of the Naas River on the Pacific Coast, B. C., easterly 225 miles to the height of land between the Naas and Skeena Watersheds, thence to the North Tacla Lake, through Hogan Pass to the Omineca River, and the Findlay branch of the Peace River, along the Peace River to the Athabasca River, and Fort McMurray, thence to Prince Albert, Sask., a total distance of 1,500 miles. Pringle, Thompson, Burgess and Cote, Ottawa, solicitors for applicants.

Peace River Tramway and Navigation Co.—Application is being made to the Dominion Parliament for the incorporation of a company with this title, to build a railway from Smith's Landing on Peace River, to Fort Smith on the northern boundary of Alberta; a line from Vermillion Rapids easterly along the northern bank of the Peace River to Vermillion Falls, with branch lines, and to operate steamships on the Peace, Slave and Mackenzie Rivers. Pringle, Thompson, Burgess and Cote, Ottawa, solicitors for applicants.

Quebec Central Ry.—The work of locating the route for the projected extension from St. Sabine to St. Pamphile, Que., of which F. H. Burpee, has been in charge, has been completed for the season. The final location of the 25 miles from St. Sabine to English Lake, has been completed, and grading has been done on the first ten miles. P. J. Wolfe, Sherbrooke, Que., having the contract. Track is reported to have been laid to St. Camille, five miles from St. Sabine, on the extension, and a train service is expected to be put in operation on it by the end of the year. (Dec., 1912, pg. 605.)

Quinze and Blanche River Ry.—Application is being made to the Dominion Parliament for an extension of time for the building of the lines authorized by Chap. 123 of the Statutes of 1906-07, and by Chap. 127 of the Statutes of 1908-09. Orde, Powell and Lyle, Ottawa, solicitors for applicants. (July, 1909, pg. 481.)

Roberval and Saguenay Ry.—The Quebec Legislature is being asked to extend the time for the building of the lines already authorized; to authorize the building of a line of 250 miles from the Ha Ha Bay Ry. to the St. Maurice River or one of its tributaries, and to continue and complete the branches of any railway the lines of which may have been acquired. Lapointe and Langlois, Chicoutimi, Que., solicitors for applicants. (Dec., 1912, pg. 605. See also Ha Ha Bay Ry.)

St. John and Quebec Ry.—We are officially advised that considerable progress has been made with construction on the 120 miles, between Gagetown and Centreville, N. B., for which contract was let in May, 1912. The grading, which in many places north of Fredericton, and immediately north of Woodstock, was very heavy, is about completed. Track laying is under way north and south from Fredericton; and north and south of Woodstock; about 45 miles

of steel has been laid, and about 30 miles of ballasting has been completed. It is expected to complete the ballasting between Fredericton and Gagetown, 33 miles, and between Woodstock and Centreville, 27 miles, before winter. Track laying will be continued until the whole 120 miles have been laid. Station buildings are being constructed, and the Dominion Bridge Co. will begin the erection of the steel superstructures of the bridges shortly.

Final location plans have been approved for a further 23 miles, south of Gagetown to the Kings County line, and a contract for its construction has been let, we are advised, to Jas. H. Corbett and Sons, Que., which firm will start work immediately. It is expected the final location plans for the line from Centreville to Andover, 26 miles, will be approved at an early date, and a contract for grading will be let immediately thereafter. The location of the line from the Kings County line into St. John, has not been decided. (Oct., pg. 476.)

Sudbury, Kepawa and Bell River Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title, to build a railway from Sudbury, Ont., to the south end of Lake Timiskaming, thence north easterly to a junction with the National Transcontinental Ry. at the crossing of Bell River, Que. Jno. Thompson, Ottawa, solicitor for applicants.

Timiskaming and Northern Ontario Ry.—We are officially advised that the question of the electrification of the several branch lines has been under consideration for some time, and it has been decided to proceed with the work on the Kerr Lake branch next spring. This branch extends from Cobalt to Kerr Lake, 3.9 miles. Engineers are making a thorough investigation of the other branch lines with a view to their electrification. (Oct., pg. 470.)

Toronto, Hamilton and Buffalo Ry.—The second track from Welland to Fenwick Station, Ont., about 6.50 miles, has been completed and is now being operated. The last section to be passed by the Board of Railway Commissioners for operation extends from Welland to Welland River, mileage 0.49 to 1.35. (Oct., pg. 476.)

Ungava Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title, to build a railway from the Hudson's Bay Co.'s post at the mouth of Great Whale River, or between the Great Whale River and the Nastasoka River, on the eastern coast of Hudson Bay, easterly and south easterly to Aylmer Sound, or some other convenient point on the Gulf of St. Lawrence between the 50th and 51st parallels of north latitude. Pentland, Stuart, Gravel and Thomson, Quebec, solicitors for applicants.

Victoria, B. C. The City Council recently received tenders for the supply of 555 gross tons of 20 lb. steel, in 20 ft. lengths, together with the necessary splice bars, bolts and track spikes for 10,700 miles of line. The city is to lay eight miles of single track to Goldstream; 1 1-8 miles to Fitzgerald, and 8 2-3 miles to Cooper Cove wharf, in connection with certain works about to be undertaken.

Welland Canal Construction Railway.—In connection with the railway being built for the getting in of supplies for the construction of the new Welland ship canal, we are advised that a contract has been let by the Dominion Government to The Hamilton Bridge Works, for the erection of a double track swing bridge across the canal near lock 11. The bridge will be 170 ft. long over all, calculated to carry heavy railway traffic. It will be somewhat similar in design to the double track bridge on the G. T. R. main line where it crosses the old

canal, a short distance east of Merritton, Ont. The contract covers the furnishing and erection of the steel work, at an estimated cost of \$65,800.

Winnipeg, Man.—The Winnipeg City Council has given a general notice that it will invite tenders early in 1914 for the works necessary for the delivery of water from Shoal Lake to the Greater Winnipeg water district, at an estimated cost of \$13,500,000. The works include the construction of 85 miles of railway, the estimated cost of which is \$12,000 a mile, or \$1,020,000. The cost of rolling stock is included in the general cost of the works. Location and profile plans and other particulars may be obtained of M. Peterson, Winnipeg, acting Secretary of the Administration Board of the Greater Winnipeg Water District.

The railway will follow the right of way of the pipe line for the water supply, and will be used entirely for construction purposes. The line will cross the Canadian Northern Ry. between Winnipeg and Nairn, and will proceed easterly, bearing southerly, passing by Plympton, Meadowvale, Monomonto, north of Old Lake and crossing the Whitmouth, Boreli and Brokenhead Rivers, to Indian Bay, an inlet of Shoal Lake, which itself is an inlet of the Lake of the Woods. Four survey parties are reported to be in the field completing the location of the route. One of the largest structures will be the viaduct across the Brokenhead River Valley. (Oct., pg. 476.)

Papers on Steel Frame and Steel Underframe Box Cars.

In connection with the American Society of Mechanical Engineers' annual meeting, to be held in New York Dec. 2 to 5, there will be a railway session on Dec. 3. Two papers will be presented, one on steel frame box cars, by R. W. Burnett, General Master Car Builder, Canadian Pacific Ry., and one on steel underframe box cars, by G. W. Rink, Mechanical Engineer, Central Rd. of New Jersey.

Mr. Burnett, in his paper on steel frame box cars, will consider the development of this type of car and outline some of the factors which have been responsible for it. The practice on the C.P.R., particularly in reference to the repairs, and the advantages of this type of car, will be considered and special attention will be directed to the methods of selecting and treating the lumber for the sheathing and lining.

Mr. Rink will present tables showing the practice of a number of roads regarding the dimensions of various parts of box cars. These tables were prepared with a view to making it possible to select a design which would render the best practice. Mr. Rink believes that further steps should be taken toward adopting standards for use on the box cars of the railways generally, and suggests that a committee representing the different roads should be appointed to develop a standard box car.

This is the first time that the merits of these two types of cars will have been discussed so thoroughly by a technical association. Both of the papers will cover the subjects which they deal with comprehensively. A number of railway officers have been invited to participate in the discussion, and it is expected that much good material will be brought out.

J. A. M. Faulds, Manager Railway and Steamship Department, D. E. Brown, Hope & MacCauley, Ltd., Vancouver, B.C., writes: "I think Canadian Railway and Marine World is an excellent work. It should be read by every man in the railway and steamship business."

The Canadian Pacific Railway's New Bridge Across the St. Lawrence at Lachine.

The bridge which the C.P.R. has built across the St. Lawrence River at Lachine, Que., to replace the single track structure that was built in 1886, is shown in the accompanying illustration. The original bridge had 17 spans from the Lachine end, as follows: 3 shore girders 80 ft. long and 7 ft. deep; 8 river spans 240 ft. long and 35 ft. deep; flanking span 270 ft. long; 2 cantilever spans 407 ft. long; flanking span 270 ft. long; and 1 girder span 240 ft. long and 35 ft. deep. While this bridge was of sufficient strength to handle light traffic, it was rapidly approaching the day when the heavy rolling stock would tax it to a point that was considered unsafe for modern conditions. This, in spite of the fact that the bridge when built was considered one of the engineering marvels of the time. The spans of the old bridge have been used in the new bridge built by the company at Outlook, Sask., which was described in Canadian Railway and Marine World for June, 1913.

Since its inception, the constantly in-

creasing size of rolling stock and the rapid development in the volume of traffic to be handled, made it imperative that the Lachine bridge be not only rebuilt, but also double tracked. The new bridge, descriptions of which have appeared in Canadian Railway and Marine World for Feb. and Aug., 1912, contains steel spans as follows: six 80 ft. long; sixteen 120 ft.; four 270 ft.; two 122 ft.; eight 240 ft.; four 270 ft.; and four 480 ft., making the total length of the bridge in spans 3,138 ft. The new design is entirely different from the former construction, the latter comprising long light spans, while all the new spans are heavier and shallower, following more modern practice. To reduce the length of the old spans to make possible the use of shallow girders, the four old 240 ft. spans have been replaced by eight 120 ft. spans, these all being on the Lachine end. The double tracking of the new structure made possible the simplification of the work of maintaining the traffic without interruption, the old bridge being retained in portions while the new spans have been put in place alongside. The presence of the old spans also facilitated the actual work of construction.

In the new bridge there are 28,072,252 lbs.

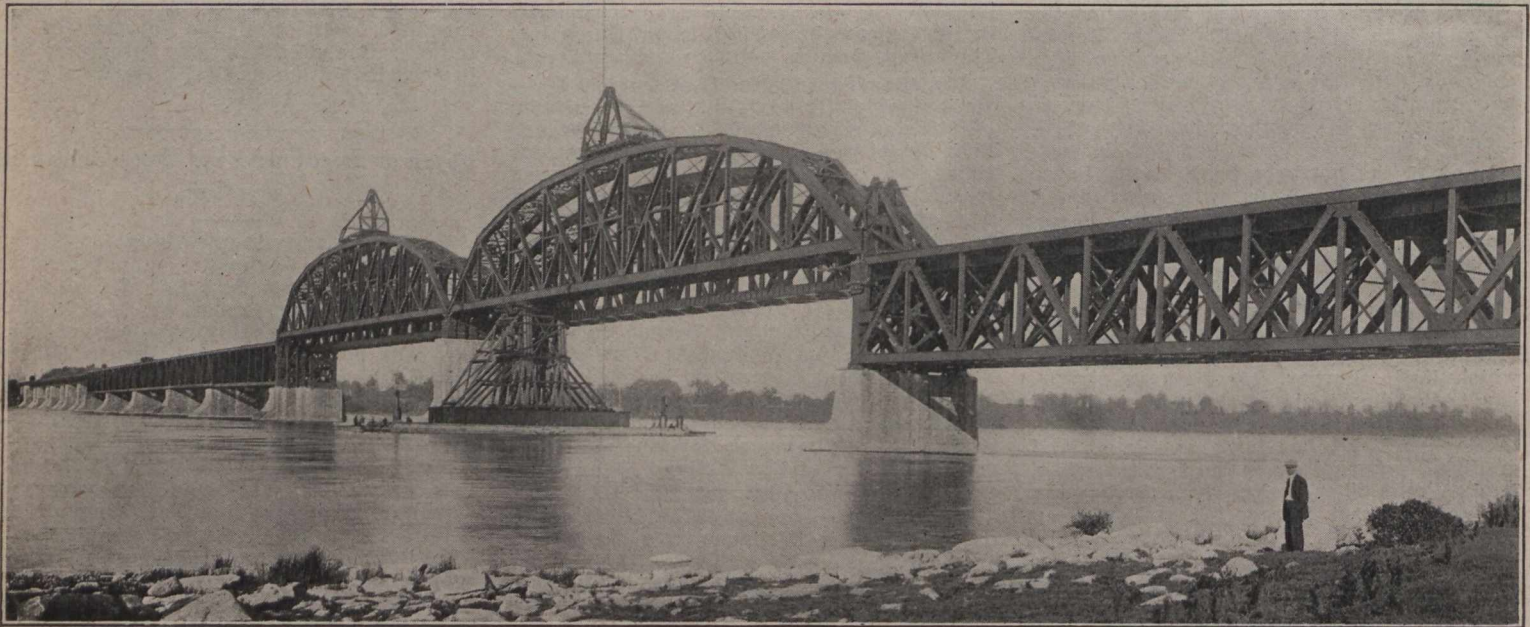
of steel. The 80 ft. lengths run to 110,000 lbs.; the 120's, 226,000 lbs.; the 240's, 960,000 lbs.; the 270's, 1,324,138 lbs.; and the 408's, 2,600,000 lbs.

The C.P.R. is carrying out this work at a cost of about \$3,000,000 in pursuance of its policy of ultimately double tracking the whole of its main transcontinental line. This bridge is on the line between Montreal and St. John, N.B., and is a few miles southwest of Montreal. The necessity of double-tracking this unit in preference to some other portions is accounted for by the joint use of this section of the line from Montreal to Adirondack Jct., which is just south of the river, by the New York Central Lines entering Montreal, which also handle a heavy traffic.

This work was carried on under the direction of P. B. Motley, M. Can. Soc. C.E., Engineer of Bridges, with J. H. Barber, M. Can. Soc. C.E., in charge of the erection.

The bridge was officially completed Nov. 4, when D. McNicoll, Vice President, tightened up the last bolt in the track and offi-

March, 1912. Last spring, after desultory work during the winter, the old spans that remained were taken down and the last of the channel spans installed. Between April 21 and October 21, the last five old spans—two 270 ft., two 408 ft., and one 120 ft.—were taken out and five new spans of similar length erected, this work being accomplished in six months, which is said to be a record time for the moving of four thousand tons of steel, during which traffic was passing all the time. In connection with the work 3,500,000 rivets were used. Only two men lost their lives during the work. One fell off a scow into the river and could not swim, and another fell off a locomotive derrick in the yard. Mr. Motley complimented the Caughnawaga men on the part they had taken in the work. The bridge is five eighths of a mile long as against the Victoria bridge of two miles and a half. The floating in of the third and fourth channel spans was accomplished in record time. The third took 22½ minutes actual time, while the fourth was placed into position in 15 minutes, which was certainly a remarkable achievement, and he congratulated the Dominion Bridge Co. on the excellent work. It required 3,450 cars to handle the material used for the bridge.



The Canadian Pacific Railway Bridge at Lachine, Que.

cially opened the bridge for traffic in the presence of Phelps Johnson, Vice President Dominion Bridge Company; G. H. Duggan, General Manager Dominion Bridge Company; A. D. MacTier, General Manager Eastern Lines C.P.R.; P. B. Motley, Engineer of Bridges C.P.R.; H. H. Vaughan, Assistant to Vice President C.P.R.; J. M. R. Fairbairn, Assistant Chief Engineer Eastern Lines C.P.R.; J. K. McNeillie, Superintendent Montreal Terminals C.P.R.; W. Cowie, Chief Engineer Montreal Harbor Commission; S. P. Brown, Chief Engineer Mount Royal Tunnel; C. N. Monserrat, Chairman Quebec Bridge Commission; and G. Hodge, General Superintendent Eastern Lines C.P.R.

At a luncheon given subsequently at the Mount Royal Club, P. B. Motley, Engineer of Bridges, C.P.R., said that it had taken three years to build the bridge. There are really two bridges, each of single track, and by well considered methods the structure was erected in sections, traffic being shifted from up stream to down stream until the bridge was finished clean across the river. By June, 1910, the steel and masonry was going on together, and the first half of the bridge was completed between June, 1910, and

Construction Camps in Selkirk Mountains.—Canadian Railway and Marine World for November contained an illustrated description of the model construction camp being erected by Foley, Welch and Stewart, at Glacier, B.C., for their employes on the tunnel which they are boring for the C.P.R. at Rogers Pass. We are advised that another model camp is under construction at the other portal of the tunnel. The camps are identical, except that the one at Glacier is being equipped with offices, etc., for all business connected with the tunnel construction. Both camps are rapidly approaching completion.

Railway Lands Patented.—Letters patent were issued during September in respect of railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acres.
Canadian Northern Alberta Ry.	560.15
Canadian Northern Ry.	1,186.67
Canadian Pacific Ry. grants	469.30
Canadian Pacific Ry. roadbed and station grounds	12.09
Grand Trunk Pacific Ry.	286.02
Grand Trunk Pacific Branch Lines Co.	16.58
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	3,574.56
Total	6,105.37

Canadian Pacific Railway Construction, Betterments, Etc.

Eastern Division.—The C.P.R., we are officially advised, has signed the agreements with the city which will enable progress to be made with the laying out of new terminals in Quebec, which will be utilized by all railways entering the city. The signature of the Minister of Railways has also been appended to the document, thus completing a matter which has been the subject of negotiation for some years.

Plans and book of reference for a revision of location of the line at Delari, Bolton tp., have been deposited in the office of the Supreme Court for the district of Bedford, Que.

We are officially advised that a contract has been let to John S. Metcalf Co., Montreal, for the extension of the Glen Arch, Westmount, Que., to provide for a width of four tracks. The estimated cost is \$50,000.

The new Lachine bridge was completed and opened for traffic Nov 4.

Ontario Division.—The second track work east of Toronto is intended to extend from near Agincourt, when the new Campbellford, Lake Ontario and Western Ry., from Glen Tay, makes a connection into Toronto. The line from Montreal is double track to Glen Tay, and from this point to near Agincourt, there will be two single track lines—the original main line through Peterboro, and the new line to Belleville, and along the lake front. Thence into Toronto. We are officially advised there is no present intention of any further second track work on the Montreal-Toronto line.

Considerable progress has been made with the viaduct in North Toronto, which has been under construction for over a year. It will extend from east of Yonge St., to west of Dufferin St., and will have accommodation for five tracks. It will be used by the C.P.R. and the Canadian Northern Ry., and is expected to be completed during 1914. A station is to be built at North Toronto for the joint use of the two lines, as a part of the project.

The new second track from west of Islington was put in operation as far as Erindale, about 11 miles, Nov. 2. It is expected that it will be completed to Streetsville Jct., Dec. 1, and the remaining mileage to Guelph Jct., by Dec. 31. The only thing likely to delay it is the steel work for the bridges. Press reports state that the second track work will be continued through from Guelph Jct. to London, in 1914, and that a line will be built from near Guelph Jct. to connect with the Sudbury line at Bolton Jct. In connection with the first of these reports it is stated that negotiations are in progress for the purchase of considerable land at Woodstock, with a view of increasing the yard accommodation and adding to the terminal facilities there.

A down-town yard has been laid out on Main St., Galt. Eight tracks have been laid, and a freight shed and offices built.

Owen Sound press reports, Nov. 14, state that a project has been under consideration for the building of a line from Owen Sound, via Meaford and Collingwood to Orillia. A gang of men started work at Collingwood, Nov. 8, and local reports state that they are engaged on the preliminary work for the line from Collingwood to near Baxter, on the Sudbury line. This line is what is known as the Collingwood Southern Ry., the charter for which is held by the C.P.R., and surveys for which were made by H. D. Lumsden.

Lake Superior Division.—The bridge over Current River, east of Port Arthur, Ont., was finished Nov. 10, completing the final link on the second track work, easterly to

Navilus. East of this it is proposed to build a division in order to secure a better gradient for the double track. Preliminary surveys have been made, and the final location survey is now being made.

Manitoba Division.—The new bridge across the McKellar River, Fort William, Ont., connecting Island one and two, was opened for traffic Oct. 30. Trains are being operated to the new coal dock and the new freight docks.

Plans have been approved by the Winnipeg City Council for alterations to be made at Main St. subway. The level is to be raised so as to make the approaches easier, and the superstructure is to be widened to allow the laying of two additional tracks.

The Board of Railway Commissioners has authorized the opening for traffic of the second track from Kennay, mileage 8.2, to Griswold, mileage 24.8, Broadview subdivision.

Saskatchewan Division.—The Board of Railway Commissioners has authorized the operation of trains over the second track on the Broadview subdivision, from mileage 25.5 to 28; on the Moose Jaw subdivision from Pilot Butte, mileage 84.7 to Regina, mileage 92, and on the Swift Current subdivision from Ernfold, to mileage 70. The second track is reported to be in operation to Hebert, 81 miles west of Moose Jaw. It is expected that the grading for the second track will be completed as far east as Broadview by Dec. 31. Second track is expected to be laid for six miles east of Swift Current by Dec. 31, which will leave about 12 miles to complete the work to Hebert.

The extension of the line from Swift Current northwesterly, from Cabri to Prussia about 54 miles was put under the operating department, Oct. 28. A route map has been filed with the Department of Railways, for a revision of route in the vicinity of Empress, at the Saskatchewan-Alberta boundary.

The Weyburn line is being operated as far as Assiniboia, 111.4 miles, and it is expected that track will be laid to Shaunavon, a further distance of 118.6 miles, by Dec. 31. This will bring the line to the Saskatchewan-Alberta boundary, near where the section being built easterly from Stirling will be met.

Alberta Division.—The new double track bridge over the Saskatchewan River at Medicine Hat, Alta., has been completed. It is said to weigh about 2,300 tons, and to have cost about \$400,000. Construction was started in the spring, and has been carried on continuously, traffic not having been delayed more than eight minutes at any one time.

The Board of Railway Commissioners has authorized the opening for traffic of the branch line under construction from Stirling, to meet the line running westerly from Weyburn, from Stirling to mileage 49.2. It was expected to have track laid to Foremost, Nov. 30. Grading is progressing to the Alberta-Saskatchewan boundary. It is proposed to establish a divisional point on sec. 24, tp. 5, range 6, at mileage 110, and 40 miles east of Foremost.

The Board of Railway Commissioners has authorized the operation of trains over the extension of the Lacombe branch of the Calgary and Edmonton Ry. to Monitor. The line is to connect at Kerrobert with the line from Moose Jaw northwesterly.

At the annual meeting of shareholders the directors were authorized to construct a line from near Swift Current, Sask., on the main line, via Coronation, to Sedgewick, Alta., west of Hardisty, on the Calgary and Edmonton Ry., at Wetaskiwin, 290

miles, and for the completion of the line from Weyburn, westerly to Stirling, which will have a total length of 436 miles, in Saskatchewan and Alberta.

Pacific Division.—The Kootenay Central Ry. is in operation 40 miles from Golden to Spallumcheen, and for some miles northwesterly from Fort Steele, B.C. Between these points construction has been in progress all summer. It was recently reported that on the 143.5 miles between Golden and Fort Steele, 63.5 miles of track had been laid, and that practically all the grading had been completed.

The three track bridge over the Coquitlam River was reported recently to be practically completed. A three track bridge is under construction across the Pitt River near the same place, and when this has been put up, the second track work east of Vancouver to Mission City will have been completed. The second track work from Mission City to Ruby Creek is practically complete.

Considerable progress is reported to have been made with the erection of the steel work on the new passenger station at Vancouver. The mason work is also being progressed with, and it is expected that the eastern portion of the building will be ready for occupation by February. The raising of the passenger tracks to the level of the new station, five feet above the present height, is being carried out. (Oct., pg. 480.)

Applications to Parliament.—The C.P.R. and a number of its subsidiary companies have given notice of applications to be made to the Dominion Parliament at the next session for power to build certain lines and for extensions of time within which to build lines already authorized. Full particulars of the various applications are given in the several companies official notices on pg. 602 of the reading matter section, and on pg. 36 of the advertising section of this issue.

Grand Trunk Railway Port Huron Shops Destroyed by Fire.

A press report from Port Huron, Mich., Nov. 26, states that block one of the G.T.R. car shops there was destroyed by fire that morning, the fire starting from an unknown source, and gaining rapid headway, due to lack of water, the pumps having been shut down to repair a water main. The buildings reported to have been burned include the main building, 800 ft. long, which contained the general offices, stores department, machine shop, passenger car shop, draughting and record rooms, paint shop and upholstery shop. Most of these departments were at the general office end of the building, with the machine shop next, and the passenger car shop occupying the whole of the other end of the shop.

In the different shops there are said to have been 14 passenger cars and 50 freight cars, which were totally destroyed, adding to the general loss. The 586 men on the pay roll will be temporarily out of employment. New electrical equipment for the power house was to have been installed shortly, but fortunately had not been delivered. A dispatch credits G.T.R. officials there with stating that the plant will be immediately rebuilt. Damage to the extent of about \$50,000, caused by the recent heavy storms on the Great Lakes, was done to the plant, which is located directly at the mouth of the St. Clair River, and repairs were nearly completed prior to the fire.

The Canadian Northern Ex. Co. has opened offices at Inwood, Man.; Dinsmore and Elrose, Sask., and Hanna, Olyen and Youngstown, Alta.

National Transcontinental Railway Construction.

A press dispatch from Cochrane, Ont., Nov. 17, states that the last section of track has been laid easterly from that point, connecting with the track laid westerly from Quebec, thus completing track laying on the entire line of the N.T.R. from Moncton to Winnipeg, 1804 miles. The last of the steel was laid near Nellie Lake, about 15 miles east of Sunday River, and about 200 miles east of Cochrane. This does not mean that the line is completed, for the bridge work is yet to be finished and the ballasting, etc., to be done. The most important bridge work yet to be done is the building of the bridge across the Megiskan River valley, about 190 miles east of Cochrane. This bridge will be 500 ft. long. The abutments are in place and the steel will be put in position during the winter. The valley is at present spanned by a temporary trestle.

West of Cochrane the line is reported to be in excellent shape as far as Superior Jct., whence the G.T. Pacific Ry. branch line is in operation to Fort William. The trestle work on this section is now reported to be filled in and the bridge work practically completed. It is expected that the entire line will be ready for operation by the end of next summer.

Work is being proceeded with on the car ferry slips at Quebec and Levis, Que., and these are expected to be ready about the same time.

The section of the line from Cap Rouge, Que., for 50 miles west, was finally completed Oct. 30, and is ready for traffic. The section from Levis to the boundary of New Brunswick is expected to be finally completed in July. G. Grant, Chief Engineer, completed a trip of inspection over the section south of the St. Lawrence River to the New Brunswick boundary, Nov. 9. The contract on both these sections has been carried out by M. P. and J. T. Davis.

In connection with the terminal plans at Quebec a terminal is to be built from Lampson's cove to St. Malo, near the site of the shops. This tunnel will obviate the original plan of building a line along the already congested water front.

Tenders will be received by the Commissioners to Nov. 4 for the installation of an electric wiring system for the car shops at Transcona, Man. (Oct., pg. 479.)

Grand Trunk Pacific Railway Construction.

Collingwood Schreiber, General Consulting Engineer for the Dominion Government, completed an inspection of the line, Nov. 5, and in an interview at Winnipeg, is reported to have stated that from the present stage of progress he is of opinion that grading will be completed by the end of April, and that track laying will be completed, by the gangs working westerly and easterly, in the vicinity of Fort Fraser, B.C., by the end of next summer.

Press dispatches, Nov. 12, state that it is expected that steel will be laid westerly into Fort George, B.C., early in December. A train service is being operated to Kidd, about 411 miles west of Edmonton, Alta., and it is expected that this will be extended into Fort George early in 1914. On the construction work coming east a train service is being operated from Prince Rupert to mileage 301, just east of Rose Lake, B.C., by the contractors, and the company is operating a regular train service to Smithers, 227 miles east of Prince Rupert. At Smithers, which is the divisional point between Prince Rupert and Fort George, a contract has been let for the laying out of

the yard, which will necessitate the shifting of about 30,000 cubic yards of earth.

Grand Trunk Pacific Branch Lines.

The Board of Railway Commissioners has authorized the building of a double track branch from the main line at Empire Ave., Fort William, Ont., northward along what was formerly known as James St., and easterly along the city limits to Thunder Bay. The spur will be three miles long and will open up and serve a large industrial area as well as give the company access to the new government elevator.

The Board of Railway Commissioners has authorized the point of junction of the Brandon branch with the main line at Harte, Man., and a slight change in the location, about half a mile, on the line at the Brandon end. Construction is being carried on at the bridge at Brandon, but the grading is being held up owing to some right of way difficulties, which it is hoped to clear out of the way by Dec. 31.

The branch line from Regina to the International boundary, Sask., was opened for traffic, Nov. 10. Connection is made at Northgate, the boundary station, with the Great Northern Ry. branch from Niobe, N. D. The plans for the company's station at Regina have been submitted to the city council for approval. The estimated cost of the building, which will include a power house, laundry and train shed, is \$1,000,000. It will have a ground area of about 8,000 square feet, at the corner of Albert St. and Sixteenth Ave., about half a block from the hotel. The building will be two stories high, the upper story being devoted to the company's divisional offices. Ross and McDonald are the architects.

An order was made, Nov. 4, by the Board of Railway Commissioners for the provision of temporary terminal facilities in Moose Jaw, Sask. Work was started, Nov. 11, on a short spur track, and the grading of land south of the track east of Main St., to provide the necessary facilities. It is said that negotiations are in progress with the Canadian Northern Ry. for the provision of a union station in the city. The Board of Railway Commissioners has authorized the opening for traffic of the line from Moose Jaw north westerly to Maver, Sask., 47.3 miles.

Surveys have recently been made to locate a site for the bridge across the South Saskatchewan River, over which the company's line from Young will enter Prince Albert, Sask. It was expected that track laying on the branch would be completed to the southern bank of the river by Nov. 30.

The Cutknife branch, extending from Battleford to Rossman, Sask., 33.6 miles, has been opened for traffic.

A train service has been put in operation over the Biggar-Calgary branch, as far as Lovernna, 105 miles from Biggar, Sask. This branch will ultimately be extended to a junction with the Tofield-Calgary line in Alberta.

The Alberta Legislature has increased the guarantee voted in 1909 for the building of the line from Tofield to Calgary, from \$13,000 to \$15,000 a mile. No alteration has been made in the conditions upon which the guarantee was made. A train service has been in operation into Calgary since Sept. 29, a temporary station having been provided west of Twelfth St. East. The line has not been finally completed between Irricana and Calgary, but it is expected that the finishing up will be completed by the end of the year. The provision of permanent terminal facilities will be taken in hand early next year, it having been stated that the increased subsidy, which amounts to \$420,000, was granted largely in order that these might be provided. (Oct., pg. 479.)

Railway Finance, Meetings, Etc.

Canadian Northern Ry.—A prospectus was issued in England, Oct. 31, by Lloyds Bank, Limited, offering for subscription £1,500,000 five per cent. land mortgage debentures due June 1, 1923, part of a total authorized issue limited to £3,500,000, the issue price being 95%. They are a direct obligation of the C.N.R., both as to principal and interest, and are secured by a trust deed constituting them a specific charge on the whole of the debenture stock and capital stock of the Canadian Northern Town Property, Ltd., and upon the C.N.R. Co.'s land grant and deferred payment on land already sold.

Canadian Northern Railway.—At the annual meeting in Toronto, Nov. 24, the report printed on pages 564 and 565 of this issue was adopted. The directors for the current year, who were re-elected, are as follows:—Sir Wm. Mackenzie, President; Sir Donald Mann, Vice President; Z. A. Lash, Senior Counsel; R. M. Horne-Payne, director representing company in Europe; Frederic Nicholls, Toronto.

Canadian Pacific Ry.—The New York Stock Exchange gave notice, Nov. 18, that a further \$60,000,000 of common stock of the C. P. R. would be listed after Dec. 3 on official notice of issuance and payment in full. The common stock now listed in New York amounts to \$260,000,000.

Central Vermont Ry.—The following officers were elected for the current year, at the recent annual meeting of the directors: Executive committee, E. J. Chamberlin, E. C. Smith and E. H. Baker; Chairman, E. J. Chamberlin; President, E. C. Smith; Vice President, C. W. Witters; Treasurer and Clerk, W. H. Chaffee; Auditor, E. Deschenes, Jr.

Grand Trunk Ry.—It is announced that \$2,500,000 4½% equipment trust notes have been sold to Blair and Co., New York. Part of this issue is offered in London, Eng., showing a yield of 5¼%.

London and Port Stanley Ry.—A special meeting of shareholders has been called to be held in London, Ont., Dec. 9, to lease the line to the City of London upon terms to be agreed. The line is practically owned by the city, and is at present leased to the Lake Erie and Detroit River Ry., the Canadian subsidiary of the Pere Marquette Rd. A bylaw has been approved by the citizens providing for the electrification of the line, on the termination of the present lease, which expires in a few months.

Temiscouata Ry.—A dividend of 1¼% has been declared on the provisional certificates in respect of profits earned during the year ended June 30, as compared with 1% for the previous year.

Net earnings for August, \$5,849, against \$7,086 for Aug., 1912. Aggregate for two months ended Aug. 31, \$10,434 against \$16,027 for same period 1912.

White Pass and Yukon Route.—Gross earnings from Jan. 1 to Oct. 14, \$985,799, against \$1,049,348 for same period 1912.

East End Incline Ry., Hamilton.—A landslide at this incline railway at Hamilton, Ont., Nov. 3, completely wrecked the line. The City Engineer proposed a plan for the reconstruction of the line, at a meeting of the Board of Control, Nov. 8, and the matter is being discussed with G. F. Webb, the owner of the old incline. The City Engineer has practically completed plans for the building of a new incline railway at Sherman Ave., at an estimated cost of \$125,000. No definite action will be taken until the owners of the incline at Wentworth St. have decided what to do with their damaged property.

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TORONTO, CANADA, DECEMBER, 1913.

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Railway Rolling Stock Notes.

The Intercolonial Ry. has received 10 box cars, 60,000 lbs. capacity from the Nova Scotia Car Works.

A press report from Moncton, N.B., states that it is probable that during the next few weeks some substantial orders for rolling stock for the Intercolonial Ry. will be placed.

The G.T.R. has received 20 Mikado type locomotives, nos. 550 to 569, from the Montreal Locomotive Works; 537 box cars from the Canadian Car and Foundry Co.; and 220 box cars from the Eastern Car Co.

The Dominion Dredging Co., St. Catharines, Ont., contractors on section 1 on the Welland Ship Canal, has ordered 3 six wheel switching locomotives from Montreal Locomotive Works.

The C.P.R., between Oct. 13 and 31, ordered the following rolling stock from its Angus Shops,—1 flanger, 1 superintendent's business car, 190 steel frame box cars, 3 refrigerator cars, 17 stock cars, 2 vans and 1 pile driver.

The Grand Trunk Pacific Ry. has received the following additions to rolling stock,—6 parlor cafe cars, nos. 3905 to 3910, and 10 first class cars, nos. 2054 to 2063, from Pullman Co.; and 10 second class cars, nos. 1021 to 1030, from Canadian Car and Foundry Co.

The C.P.R., between Oct. 13 and 31, received the following additions to rolling stock,—137 steel frame box cars, 14 vans and 4 class U3 locomotives, from its Angus Shops; 114 steel frame box cars from Canadian Car and Foundry Co.; 2 class D10 locomotives from Canadian Locomotive Co.; 1 class N3 locomotive from Canadian Allis-Chalmers Ltd., and 499 steel frame box cars from Barney and Smith Car Co.

The Canadian Northern Ry. between Oct. 14 and Nov. 13, received the following additions to rolling stock, 16 cabooses from its Winnipeg Shops; 75 steel ore cars from Nova Scotia Car Works; 30 stock cars, from Crossen Car Co.; 110 box cars and 15 steel underframe flat cars from National Steel Car Co.; 3 combination passenger cars from Preston Car and Coach Co.; 5 switching locomotives from Canadian Locomotive Co., and 3 consolidation locomotives from Canadian Allis-Chalmers Ltd.

With reference to the item in our last issue stating that the Pacific Great Eastern Ry. was in the market for locomotives and cars, we were officially advised, on Oct. 30, that the rolling stock to be purchased was, approximately, 4 locomotives, 45 box cars, 75 flat cars, 18 ballast cars, 3 refrigerator cars and 4 cabooses. A press report from Vancouver of Nov. 8, stated that D'Arcy Tate, Vice President, P.G.E.R., had announced that two locomotives had already arrived from the East and another two were on the way, and that other rolling stock had been ordered and would arrive in Vancouver.

Following are chief details of the consolidation locomotive which the Dominion Coal Co. is having built by the Montreal Locomotive Works, as mentioned in our last issue:—

Cylinders, diar. and stroke	21 by 26 ins.
Tractive power	39,000 lbs.
Factor of adhesion	4.1
Wheel base, driving	15 ft.
Wheel base, total	23 ft.
Wheel base, engine and tender	51 ft. 6 1/2 ins.
Weight in working order	179,000 lbs.
Weight on drivers	160,000 lbs.
Weight on engine truck	19,000 lbs.
Weight, engine and tender	272,000 lbs.
Boiler, type	Straight top
Boiler, diar. first ring	72 ins.
Boiler, working pressure	200 lbs.
Firebox, length and width	96 by 72 ins.
Crown staying	Radial
Tubes, no. and diar.	368—2 ins.
Tubes, length	13 ft. 11 ins.

Heating surface, tubes	2,665 sq. ft.
Heating surface, firebox	150 sq. ft.
Heating surface, total	2,815 sq. ft.
Grate area	48 sq. ft.
Wheels, driving, diar.	50 ins.
Wheels, material—Driving, cast steel; others, cast iron	
Axles, engine truck journals	6 by 10 ins.
Wheels, engine truck, diar.	30 ins.
Wheels, tender, diar.	33 ins.
Axles, driving journals	9 by 12 ins.
Axles, tender truck journals	5 by 9 ins.
Journal boxes	Cast steel
Brake	Westinghouse American
Engine truck	Two wheel radial
Tank, type	U shape, sloping top
Capacity, water	4,000 U.S. galls.
Capacity, coal	8 tons

All Red Line Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build a railway from near Cape St. Charles on the Atlantic coast, westerly north of lat. 52, to Lake Ashunipi, then southerly to the southern end of Lake Mistassini, and intersecting the projected Ottawa and Ungava Ry., thence crossing the Nottaway, and Harricana Rivers, to the Quebec-Ontario boundary, reaching the Albany River at Martin's Falls, then on westerly to the mouth of Lake Winnipeg, crossing the Dominion Government Railway to Hudson Bay at Cormorant Falls, Man., keeping north of Montreal Lake, Sask., and south of Lac de la Biche to Athabasca Landing, Alta., thence north of Lesser Slave Lake to Peace River Landing, then on to Parsnip River, and continuing via Fort Fraser to a terminus at the head of Dean's Channel, on the Pacific Coast. Power is also being asked to build branch lines from Martin's Falls to Winnipeg, thence back to the main line near Moose Lake, Sask.; from the Peace River Valley to the Yukon Territory; and via the Peribonka River Valley to Quebec City. J. K. Dowsley, Prescott, Ont., solicitor for applicants.

Forty Locomotives Converted to Burn Oil have been put in service this month on the C.P.R. between Vancouver and North Bend, B.C., 129.1 miles. The change has been made on passenger, freight and yard engines, and oil depots have been established at intervals along the subdivision. The work of converting locomotives for oil consumption is now under way for the entire British Columbia division between Vancouver and Field, 510.1 miles, it is reported, and the new fuel will be in use at an early date. East of Field the use of coal will be continued. Crude petroleum from California is worth about \$1 per 42 gal. barrel in Vancouver, and it is estimated that coal costs the railway about \$3 a ton. The use of oil fuel removes the necessity for maintaining a fire patrol along the railway, which is required of coal burning roads by provincial statute.

Dominion Railway Subsidy Agreement.—The Dominion Government has entered into an agreement with the Lake Erie and Northern Ry. under the act granting aid for the construction of railways, in respect of a line from Galt to Port Dover, Ont., not exceeding 58 miles.

The G.T. Pacific Ry. machinists and boiler makers have applied to the Minister of Labor for the appointment of a conciliation board to enquire into their application for higher rates of wages and improved working conditions, and have named J. T. Murray as their representative. It is understood that a complete board will be appointed.

The arbitration board appointed to deal with a new schedule between the C.P.R. and its maintenance of way employes, consists of Chief Justice R. M. Meredith, of the Court of Common Pleas of Ontario, Chairman; Wallace Nesbitt, K.C., for the C.P.R., and H. Irwin, Portage la Prairie, Man., for the employes.

Mainly About Transportation People.

R. B. ANGUS, director, C.P.R., has resigned the presidency of the Bank of Montreal.

Mrs. Peart, wife of J. W. PEART, agent, G.T.R. and Wabash Rd., St. Thomas, Ont., died there, Nov. 5.

J. K. L. ROSS has been elected a director of the Canadian General Electric Co., in place of his father, the late James Ross.

J. J. H. RENSHAW, agent, G.T.R., Blair, Ont., was found dead in the station there, Nov. 4, as the result of drinking carbolic acid.

SIR WILLIAM VAN HORNE, K.C.M.G., addressed the Canadian Club, Toronto, on the public's attitude towards railways, Nov. 17.

Mrs. G. R. Pattullo, who died at Woodstock, Ont., Oct. 31, was a sister of W. H. BIGGAR, K. C., General Counsel, G. T. R., Montreal.

W. D. REID, President, Reid Newfoundland Co., who has been suffering from congestion of the lungs and bronchitis, is reported to be convalescing.

A statue, 9 ft. high, of LORD MOUNT STEPHEN, first President of the C.P.R., has been placed in the new waiting room of Windsor St. station, Montreal.

FRANK D. LYMAN, Manager, Railway Supply Department, John Millen & Son, Ltd., Montreal, was married at Bridgeport, Conn., recently, to Miss E. S. Wilson.

A. S. MAYNARD, Commissary Agent, Sleeping, Dining and Parlor Cars and News Department, C.P.R., Montreal, is reported to have resigned to enter private business.

J. A. TWOHEY, an attorney, of Washington, D.C., who has acted in Interstate Commerce Commission cases, for the C.P.R., committed suicide in an hotel at Ottawa, Ont., Nov. 21.

Mrs. Tiffin, wife of E. TIFFIN, General Western Agent, Canadian Government Railways, Toronto, returned, Nov. 4, from England and Ireland, where she spent some months.

The engagement of Miss M. P. Wainwright, daughter of W. WAINWRIGHT, Vice President, G.T.R. and G.T. Pacific Ry., Montreal, to R. D. Bell, Staten Island, N.Y., is announced.

Mrs. Baker, wife of W. R. BAKER, Secretary, C.P.R., and Assistant to the President, sailed from New York early in November for Europe, to spend the winter in Italy and the south of France.

W. G. CHACE, M. Can. Soc. C. E., of Kerry & Chace, Ltd., Consulting Engineers, Toronto, has been appointed Chief Engineer for the construction of the Greater Winnipeg water supply system.

J. G. KERR, a G.T.R. dispatcher at London, Ont., was run over by a train and instantly killed, near Lobo, Ont., Nov. 10. He was repairing some telegraph lines which had been blown down.

W. E. MULLINS, General Manager, United Fruit Co., of Costa Rica, with jurisdiction over the company's railway system, and formerly in G.T.R. service in Canada, visited his old home in London, Ont., recently.

C. M. PIKE of the Audit Department, Canadian Northern Quebec Ry., Quebec, was presented with a travelling bag by a number of the local staff, on his leaving the service for a position in the Provincial Crown Lands Department.

W. C. CHISHOLM, K.C., formerly of Toronto, who was appointed some months ago General Solicitor of the G.T.R. with headquarters at Montreal, has taken up his resi-

dence, with his wife and family, at 35 Aberdeen Ave., Westmount.

ALEX. JEFFREY, who died at Montreal, Oct. 30, aged 78, was a well known contractor, having in addition to a number of works in connection with the Lachine Canal, built the Mount Royal Incline Railway, as well as the cars used thereon.

JOHN PRICE, who died at Toronto, Nov. 7, aged 82, was for many years in the G.T.R. Baggage Department, retiring from the service about 20 years ago. He was father of A. Price, Assistant General Manager, Eastern Lines, C.P.R., Montreal.

T. C. KEEFER, C. M. G., Honorary Member Canadian Society of Civil Engineers, Honorary Member of the Institute of Civil Engineers (Eng.), and a past President of the American Society of Civil Engineers.



G. A. Montgomery,
General Superintendent, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry.

has been elected an Honorary Member of the latter society.

The estate of the late ROBERT REFORD, of the Robert Reford Co., steamship agents, etc., who died at Montreal recently, has been valued for probate at \$2,912,486. With the exception of some charitable bequests, the estate is divided amongst the widow and children.

SIR THOMAS TAIT, President, Fredericton and Grand Lake Coal and Ry. Co., addressed the Canadian Club at Montreal, Nov. 10, on a number of questions relating to the Empire, and gave experiences of his stay in Australia, where he was for some time Chairman of the Victorian Railway Commission.

A. R. HOWARD, General Yardmaster, C. P. R., Vancouver, B.C., who was recently accidentally shot whilst on a hunting trip, was born July 25, 1881, and from 1904 to Oct. 1911, was in C.P.R. service at Vancouver, B.C., as yard man, yard foreman and Yardmaster, and since the latter date, as General Yardmaster.

ALEXANDER HILTON, who has recently been appointed Passenger Traffic Manager, St. Louis and San Francisco Rd., St. Louis,

Mo., was born at Hamilton, Ont., and entered railway service in 1878, as clerk on the Great Western Ry., now a portion of the G. T. R. Since 1880 all his railway service has been in the United States.

Mrs. Chipman, wife of C. C. CHIPMAN, who was for some 20 years prior to 1912, Commissioner, Hudson's Bay Co., at Winnipeg, died at London, Eng., Oct. 26. Since Mr. Chipman's retirement from active service, he has made his home in England. With Mrs. Chipman, he was in Canada recently, and only returned to England three weeks before her death.

J. W. STEWART, railway contractor of Foley, Welch and Stewart, Vancouver, B.C., is reported to have purchased a large tract of land in Sutherlandshire, Scotland, from the Duke of Sutherland. Mr. Stewart already holds a considerable quantity of property at Assyt, in that county, where he was born, and the present purchase practically doubles his holding.

A. C. BRADY, Assistant Superintendent, Montreal Terminals, C.P.R., who died at Montreal, Nov. 20, was born there Nov. 18, 1875, and entered C.P.R. service in 1889. He had been successively, agent at Farnham, Que., Magog, Que., Newport, R.I., and Outremont, Que., and Inspector of Montreal Terminals. He was the only son of F. P. Brady, General Superintendent, Canadian Government Railways, Moncton, N.B.

AUBREY CECIL BAKER, who has been appointed Inspector of Stations, Trains and Train Dispatching, Canadian Government Railways, Moncton, N.B., was born at Lacadie, Que., Aug. 5, 1878, and entered railway service, Oct. 1, 1895, since when he has been, to Apr. 1900, agent and operator, at various points, Eastern Division, C.P.R.; May 1900 to Oct. 1913, dispatcher and Chief Dispatcher, consecutively, Lake Superior Division, C.P.R., Chapleau, Ont.

THOMAS WILLIAM HENNESSY, whose appointment as District Master Mechanic, District 2, Intercolonial Ry., Campbellton, N.B., was announced in our last issue, was born at Truro, N.S., Nov. 22, 1862, and entered I.R.C. service Nov. 22, 1882, since when he has been, to Feb. 28, 1888, fireman at Truro, N.S.; Feb. 28, 1888 to Dec. 29, 1902, locomotive driver at Truro; Dec. 29, 1902 to Apr. 9, 1904, Mechanical Foreman, Truro; Apr. 9, 1904 to Sept. 30, 1913, locomotive driver, Truro.

PERCY G. GALBRAITH, whose appointment as Inspector of Telegraphs, Ontario Division, C. P. R., Toronto, was announced in our last issue, was born at Toronto, Aug. 2, 1879, and entered C.P.R. telegraph service, July 19, 1892, since when he has been, to Dec. 1, 1899, consecutively, messenger, collector, clerk and relief operator, Toronto; Dec. 1, 1899, to May 1, 1905, clerk and stenographer, Superintendent's office, Toronto; May 1, 1905, to Oct. 1, 1913, chief clerk to Superintendent, Toronto.

F. B. TAPLEY, who has been appointed Assistant Engineer Maintenance of Way, Eastern Lines, C.P.R., Montreal, was born at St. John, N.B., Oct. 17, 1876, and entered C.P.R. service, July, 1903, since when he has been, to Apr., 1905, rodman, St. John N.B.; Apr., 1905 to Apr., 1907, transit man, St. John, N.B.; Apr., 1907, to July, 1908, acting Resident Engineer, Belleville Jct., Ont.; July, 1908, to Dec., 1911, Resident Engineer, Belleville Jct., Ont.; Dec., 1911 to Oct., 1913, Resident Engineer, London, Ont.

GEOFFREY S. ANDREWS, who has been appointed Agent, Sleeping and Dining Cars, Canadian Northern Ry., Duluth, Minn., was born at Montreal, Apr. 5, 1890, and entered transportation service, Jan., 1909, since when he has been, to 1910, sleeping and dining car storekeeper, C.P.R., Fort William, Ont.; 1911, assistant chief clerk to

dining car department, C.P.R., Winnipeg; 1912 to 1913, dining car conductor, G.T. Pacific Ry., Winnipeg; Oct. 1 to Nov. 1, 1913, Inspector, Sleeping and Dining Cars, Canadian Northern Ry., Winnipeg.

DAVID PATTERSON, who has been appointed Superintendent, Union Stock Yards, St. Boniface, Man., was born at Waldemar, Ont., Sept. 13, 1870, and entered transportation service, June 1, 1887, since when he has been, to Sept., 1894, telegraph operator and ticket agent, C.P.R., Toronto; Sept., 1894, to May, 1896, agent, C.P.R., Caledon, Ont.; May, 1896, to Dec., 1901, agent, C.P.R., Woodbridge, Ont.; Jan., 1902, to Dec., 1906, agent, Brampton, Ont.; Dec., 1906, to July, 1912, agent, Woodstock, Ont.; July, 1912, to Nov., 1913, agent, C.P.R. Stock Yards, Winnipeg.

The Toronto Mail and Empire recently stated that "there is no foundation for the report that CHARLES MURPHY, Superintendent, C.P.R., Toronto, has been or is to be appointed to the Railway Commission. No vacancy exists on that body, nor has Mr. Murphy been appointed to its staff." It might also have added, "nor is he Superintendent, C.P.R., Toronto." He is General Superintendent, Manitoba Division, C.P.R., Winnipeg, and was Superintendent, District 2, Ontario Division, Toronto, about six years ago, and has held several different positions in the interval.

J. D. McAULEY, who has been appointed City Freight Agent, G.T. Pacific Ry., Vancouver, B.C., was born at Plantagenet, Ont., June 11, 1884, and entered railway service, Oct. 1, 1903, since when he has been, to Aug. 1, 1908, in the local Freight Department, Bonaventure Station, G.T.R., Montreal; Aug. 1, 1908, to May 1, 1910, in Freight Claims Agent's Office, same road, Montreal; May 1, 1910, to May 1, 1911, Inspector, Canadian Freight Association; May 1, 1911, to July 1, 1913, in General Foreign Freight Agent's Office, G.T.R., Montreal; July 1, to Sept. 1, 1913, Soliciting Freight Agent, G.T. Pacific Ry., Montreal.

GEORGE EDWARD SMART, whose appointment as Master Car Builder, Intercolonial Ry., Moncton, N. B., was announced in our last issue, was born at Edinburgh, Scotland, Dec. 23, 1873, and entered railway service in 1892, since when he has been, to 1897, in various positions in car shops, G. T. R., Montreal; 1897 to 1904, Car Inspector, G.T.R., Montreal; 1904 to 1906; General Inspector, Heating and Lighting, Eastern Lines, C.P.R., Montreal; 1906 to 1909, General Car Inspector, Eastern Lines, C.P.R., Montreal; 1909 to Sept. 30, 1913, Division Car Foreman, Eastern Division, C. P. R., Montreal.

H. R. NAYLOR, whose appointment as Division Car Foreman, Eastern Division, C.P.R., Montreal, was announced in our last issue, was born at Hull, Eng., Aug. 30, 1885, and educated at the Municipal Technical School, there. He served an apprenticeship in the North Eastern Ry. shops at Hull, and came to Canada in 1907, since when he has been, from Dec., 1907, to Feb., 1909, pattern maker, Angus Shops, Montreal; Feb., 1909, to Mar., 1911, draughtsman, Angus Shops, C.P.R., Montreal; Mar., 1911, to Apr., 1912, Steam Heat Inspector, Eastern Lines, C.P.R., Montreal; Apr., 1912, to Oct., 1913, General Car Foreman, Passenger Car Shops, Toronto.

A. J. RODGERS, for 12 years Superintendent of the Carborundum Co.'s plant at Niagara Falls, N. Y., who died there recently, as a result of an accident, was born in Albany, N.Y., in 1872. Previous to going to the Carborundum Co., he was Superintendent of the Eddy Electrical Co. of Hartford, Conn. He was a member of the American Chemical Society, Engineers Society

of New York, Chemists Club, Niagara Club, University Club and Country Club of Niagara Falls, and several other scientific and social organizations. His funeral was attended by several hundred members of the Carborundum Co., members of the clubs mentioned at Niagara, and other friends.

W. D. GROSSET, whose appointment as Agent, C.P.R., Antwerp, Belgium, was announced in our last issue, was born at Glasgow, Scotland, and was for many years in C.P.R. service there, and also with J. J. Roxburgh and Co., ship owners and brokers. In 1906 he was appointed chief assistant to Allan Cameron, then General Traffic Agent, C.P.R., London, Eng., and now Superintendent, Land Branch, Department of Natural Resources, C.P.R., Calgary, Alta.; he continued in the same position on the appointment of G. McL. Brown as General Traffic Agent, London, Eng., and on Mr. Brown's appointment as European Manager on the death of Archer Baker in 1910, he became chief assistant to the European Manager.

R. NELLES YOUNG, whose appointment as Superintendent of Telegraphs, Alberta



R. N. Young,
Superintendent of Telegraphs, Alberta Division,
Canadian Pacific Ry.

Division, C. P. R., Calgary, was announced in our last issue, was born at Cayuga, Ont., Sept. 4, 1870, and entered transportation service, Oct. 1889, since when he has been, to Oct. 1890, telegrapher, Michigan Central Rd., between St. Thomas, Ont., and Buffalo, N.Y.; Nov., 1890, to Nov., 1902, operator and dispatcher, Western Lines, C.P.R.; Nov., 1902, to Nov., 1903, Circuit Manager, Pacific Division, C.P.R.; Nov., 1903, to Mar., 1907, Inspector of Telegraphs, Central Division, C.P.R.; Mar., 1907, to July, 1910, Assistant Superintendent of Telegraphs, C. P. R., Winnipeg; July, 1910, to Aug., 1913, Superintendent of Telegraphs, Saskatchewan Division, C. P. R.

ALBERT E. LOCK, who has been appointed Commercial Agent, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., was born at Albany, N.Y., July 14, 1879, and entered railway service, Dec. 1, 1896, since when he has been, to Sept. 1, 1897, telegraph operator and relief agent at various

points, Lehigh Valley Rd.; Sept. 1, 1897, to July 1, 1902, tower man, telegraph operator, relief agent, ticket clerk, assistant agent, etc., Mohawk and Adirondack Divisions, New York Central and Hudson River Rd.; July 1, 1902, to Aug. 15, 1903, City Ticket Agent, same road, Lake Placid, N.Y.; Aug. 15, 1903, to Sept. 15, 1904, Travelling Passenger Agent, New York Central Lines, Saranac Lake, N.Y.; Sept. 15, 1904, to Nov. 1, 1913, Travelling Passenger Agent, New York Central Lines, Montreal.

JAMES MELVILLE ROBERTSON, Assoc. M. Inst. C.E., Assoc. M. Can. Soc. C.E., who was accidentally killed by the discharge of a rifle at Sylvan Lake, Alta., Canada, a short time ago, was 27 years old and the only son of Jas. Robertson, of Bonneybridge, Stirlingshire, Scotland. He received his earlier education and training for engineering in Glasgow. He was a graduate of the Glasgow West of Scotland Technical College, and afterward a pupil of Wharrie & Colledge, civil engineers, Glasgow. His experience subsequently had been principally on Canadian railways, and at the time of his death was Resident Engineer on the construction of part of the Alberta Central Ry. (a subsidiary of the C.P.R.), which included the building of the large bridge across the North Saskatchewan River at Rocky Mountain House, Alta.

T. McNEIL, whose appointment as Agent, C.P.R., Liverpool, Eng., was announced in our last issue, entered transportation service Aug. 22, 1892, and to Nov. 19, 1897, served as apprentice and junior chartering clerk, Walter Runciman and Co., Newcastle upon Tyne, Eng.; Nov. 22, 1897 to 1900, in service of Elder Dempster and Co., Liverpool, Eng., and in 1900, he succeeded the late F. W. Forster, whom he has now succeeded in the C.P.R. service, as Manager of the Freight Department, Beaver Line, which had been acquired by Elder, Dempster Co., in which position he continued until Apr. 1903, when he resigned, and was, from Apr. 1903 to Sept. 1, 1910, Manager, Freight Department, Manchester Liners Ltd., and from Sept. 1, 1910 to Oct. 1913, Agent, C.P. R., Antwerp, Belgium. In addition to being Agent for the C.P.R. at Liverpool, he is Agent for the Dominion Express Co. there.

JAMES M. MACARTHUR, who has been appointed Trainmaster, District 1, Alberta Division, C.P.R., Medicine Hat, was born at Toronto, Dec. 8, 1885, and entered C.P.R. service July 16, 1902, since when he has been, to Sept. 30, 1902, stenographer, Division Engineer's Office, Toronto; Oct. 1, 1902 to Mar. 1, 1903, stenographer, Chief Dispatcher's Office, Toronto; Mar. 1 to June 30, 1903, secretary to Superintendent, Moose Jaw, Sask.; July 1, 1903 to Aug. 8, 1907, chief clerk to Terminal Superintendent, Toronto; Aug. 9, 1907 to Aug. 1, 1909, clerk, General Superintendent's Office, Toronto; Aug. 1, 1909 to Aug. 1, 1910, assistant chief clerk, Vice President's Office, Winnipeg; Aug. 1, 1910 to Oct. 1, 1911, chief clerk, Vice President's Office, Winnipeg; Oct. 1, 1911 to Feb. 21, 1912, assistant chief clerk, Vice President and General Manager's Office, Winnipeg; Feb. 22, 1912 to Oct. 2, 1913, chief clerk to General Superintendent, Manitoba Division, Winnipeg; Oct. 3 to Oct. 28, 1913, acting Trainmaster, District 1, Alberta Division, Medicine Hat.

GEORGE A. MONTGOMERY, whose appointment as General Superintendent, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry., Sault Ste. Marie, Ont., was announced in our last issue, was born at Bradford, Ont., Feb. 11, 1871, and entered railway service, Sept. 1, 1886, since when he has been, to Sept., 1887, assistant to agent, Northern Ry., Newmarket, Ont.; Sept., 1887, to Mar., 1889, agent, G.T.R., Powassan, Ont.; Mar. 1889 to Mar 1890,

freight clerk, C. P. R., North Bay, Ont.; Mar., 1890, to June, 1893, chief clerk, Freight Department, C. P. R., Sudbury, Ont.; June to Aug. 31, 1893, relieving agent, C. P. R., North Bay, Ont.; Aug. 31, 1893, to June, 1900, chief clerk to Superintendent, District 1, Lake Superior Division, C. P. R., North Bay, Ont.; June, 1900, to Aug. 28, 1902, chief clerk to General Superintendent, Algoma Central and Hudson Bay Ry., Sault Ste. Marie, Ont.; Aug. 28, 1902, to Aug. 15, 1910, Superintendent, Algoma Eastern Ry., Sudbury, Ont.; Aug. 15, 1910, to Mar. 1, 1911, Superintendent, A. C. & H. B. R., Michipicoten Harbor, Ont.; Mar. 1, 1911, to Oct. 15, 1913, Superintendent, A. C. & H. B. R. and A. E. R., Sault Ste. Marie, Ont.

W. C. BROWN, President, New York Central Lines, New York, has resigned on account of defective hearing. He was born in Herkimer County, N.Y., in 1853, and commenced railway work at the age of 16, as a section hand and fireman on the Chicago, Milwaukee and St. Paul Ry., during which period he learnt telegraphy and was made an operator. After two years he transferred to the Illinois Central Rd. as dispatcher, and later served in a similar capacity on the Chicago, Rock Island and Pacific Rd., and the Chicago, Burlington and Quincy Rd. In 1880 he was Chief Dispatcher on the latter road, and in 1881, Trainmaster; 1884, Assistant Superintendent; 1887, Superintendent; 1890, General Manager, Hannibal and St. Joseph and Kansas City, St. Joseph and Council Bluffs Rds., both parts of the Burlington System. In 1891 he was also appointed General Manager, Chicago, Burlington and Kansas City, and St. Louis, Keokuk and Northwestern Rds., and in 1896, General Manager, Chicago, Burlington and Quincy Rd. In July, 1901, he was appointed Vice President and General Manager, Lake Shore and Michigan Southern Ry., and was later given direct charge of that road. Shortly after his appointment as Vice President and General Manager, L.S. & M.S. Rd., he was also appointed Vice President, New York Central and Hudson River Rd., and later his jurisdiction was extended over the New York Central Lines, and in 1909 he was appointed President.

PETER ALEXANDER PETERSON, who died at Montreal, Nov. 21, after a long illness, was born at Niagara Falls, Ont., Nov. 8, 1839, and educated at the University of Toronto. He entered engineering service in 1859 as an articled pupil with T. C. Keefer, Hon. M. Can. Soc. C.E., and remained with him as student and assistant until May, 1867, during which time he was engaged on the Hamilton and Port Dover Ry., Hamilton waterworks, a survey for a Georgian Bay canal, and on dam construction on the Grand River at Paris and Brantford, Ont., and also carrying on a general consulting engineer's business in Toronto. In 1867 he was engaged on the Great Western Ry., now a part of the G.T.R.; from 1867 to 1869, Resident Engineer, New York, Oswego and Midland Ry.; 1869 to 1872, Division Engineer, Bathurst Division, Intercolonial Ry.; 1872 to Sept., 1875, Chief Engineer, Toronto waterworks; 1875 to Oct., 1881, Chief Engineer of lines between Quebec and Montreal, and Montreal and Ottawa, built by the Quebec Government, and now part of the C.P.R.; 1881 to 1890, Chief Engineer, Eastern and Ontario Divisions, C.P.R., including the construction of the bridge across the St. Lawrence River, at Lachine, Que., which has just been rebuilt as a double track bridge; 1890 to Feb., 1902, Chief Engineer, C.P.R. On his retirement he was given the honorary title of Consulting Engineer, and later acted as Chief Engineer of the Guelph and Goderich Branch, which was completed in 1908,

since when ill health has kept him from any active work. He was a Member of the Canadian Society of Civil Engineers, from 1887, a councillor in 1887-88-90-91; a Vice President in 1889-1892 and 1893, and President in 1894. He was also a Member of the Institute of Civil Engineers (Eng.), and a Member of the American Society of Civil Engineers, of which he was a Vice President in 1896.

Grand Trunk Railway Betterments, Construction, Etc.

Southern New England Ry.—J. S. Murdoch, Vice President, informed the Providence, R.I., City Council, Nov. 13, that the bridge at Elmwood Ave., which was left unfinished when construction was stopped on the line in 1912, will shortly be completed.

Work has been resumed on the grading of the line between Palmer, Mass., and the Rhode Island boundary, according to official advices received, and a recent statement credited to E. J. Chamberlin, President, G.T.R., is to the effect that financial arrangements have been made for the grading of the line through Massachusetts.

Lachine, Jacques Cartier and Maisonneuve Ry.—Application is being made to the Dominion Parliament for an extension of time for the building of the line authorized by sec. 1, chap. 104, statutes of 1911. One of the matters, and probably the main one now unsettled, is the purchasing of the right of way. The Smythe estate, part of which is being acquired, is taking the matter to court, the difference in valuation being considerable. The price offered by the company works out at 17 cents a square foot, while the owners ask \$1.25 a square foot.

Track Elevation in Montreal.—The City Engineer of Montreal has submitted an estimate to the Board of Railway Commissioners showing that the proposed elevation of the G.T.R. tracks in the city could be carried out for \$5,500,000. The cost of the work between Bonaventure Station and Point St. Charles, as estimated by the G.T.R. engineers, is \$5,760,000. It is expected that the Board will shortly reach a conclusion on the matter, and decide the proportion which shall be paid by the city. The city has already power to contribute \$2,000,000 to the cost, but the company asks that this be raised to \$2,800,000, on account of the great increase in the cost of material and labor since it was decided upon.

E. J. Chamberlin, in a recent interview, referring to the matter, said it was doubtful if the track elevation at Montreal and the building of a new station which was involved, could be carried out at the same time as the building of the viaduct and the provision of a new union station at Toronto. There would be too much dislocation of traffic, even if the money for the two works was available.

St. Catharines' Freight Sheds.—The freight sheds just west of the station at St. Catharines, Ont., were destroyed by fire, Nov. 3, the loss being estimated at \$50,000.

The Detroit and Huron Ry. extends from Cass City to Bad Axe, Mich., 18.25 miles. It was completed during this year, we are officially advised, by the D. and H. Ry. Co., a subsidiary of the G.T.R. The construction was light, the country through which the line runs is a typical farming one, and is especially adapted for the cultivation of sugar beets and beans. The contractors started work in Aug., 1912, a train service was put in operation, Sept. 9, 1913, and construction was finally completed Oct. 15. (Oct., pg. 480.)

Dominion Government Railway to Hudson Bay.

According to an interview with J. D. McArthur, general contractor for this line, at Ottawa, Nov. 5, grading has been completed for 150 miles from Pas, Man., and it is expected to have track laid for 130 miles by Dec. 31. Grading from mileage 150 to Thicket Portage, mileage 200, is practically completed. Track laying had been delayed on account of the delay in getting steel in. Supplies and construction material are being got in to the construction camps, and it is expected, provided there is no shortage of labor, to have the grading finished to Fort Nelson by the end of 1914.

Work was started Oct. 31, at Pas, in laying out the terminals for the line, and on the section of line which will connect the Canadian Northern Ry. with the government line. It is expected that everything will be completed this year or that construction of the locomotive house and other buildings can be gone on with early in the spring.

L. G. Denis, a hydro-electric engineer, recently reported to the Dominion Government that he had completed surveys of the water powers along, and in the vicinity of the route of the line. While there are many water powers, economic conditions of development are not at present practicable. To be profitably developed there should be a continuous market for the power, and in view of the economic potentialities of the district, he does not see any prospect of such a market being developed. The cost of developing power at such points as would be necessary for the operation of the line by electricity would be such that it would not pay.

The Grain Growers' Grain Co.'s annual meeting was held in Winnipeg, Nov. 11. The report for the year showed a net profit of \$170,000, after paying a loss of \$30,000 on the operation of the Manitoba Government elevators for the season. The company's paid up capital is \$645,000, the net profits showing more than 25%. Dividends of 10% have been paid for the year. The total amount of business handled exceeded \$50,000,000. The President announced that the Manitoba Government had cancelled the company's lease of the elevators as from Aug., 1914.

The Morrison Construction Co., Ltd., has been incorporated under the Dominion Companies Act, with \$100,000 capital and office at Ottawa, Ont., to carry on a general contracting business, including the construction of railways, tramways, harbors, shipping places, wharves, etc. K. A. Morrison, who has been awarded the contract for the diversion of the Intercolonial Ry. between Nelson and Derby Jct., N.B., is chiefly interested in the company.

Jones, Girouard and Co., Ltd., has been incorporated under the Ontario Companies Act, with \$50,000 capital and office at Ottawa, to carry on a general contractors' business. A. M. Jones and E. C. Girouard, two of the incorporators, have a contract on C.P.R. second track work between Islington and Guelph Jct., Ont., and have done other railway contracting work.

The National Association of Purchasing Agents has been organized in New York with the object of collecting and disseminating ideas and information amongst purchasing agents. E. B. Hendricks, P. O. Box 1406, New York, is temporary secretary.

J. H. Tromenhauser Co., Ltd., has been incorporated under the Dominion Companies Act, with \$100,000 capital and offices at Toronto, to carry on the business of engineers and general contractors.

Electric Locomotives for Mount Royal Tunnel, Canadian Northern Railway.

Some general information in regard to the principal electrification features of the Mount Royal Tunnel, Montreal, supplied by W. C. Lancaster, Electrical and Mechanical Engineer, Canadian Northern Montreal Tunnel and Terminal Co., was published in Canadian Railway and Marine World for November. The following fuller details in regard to the electric locomotives, six of which have been ordered, has since been received. As before stated they will be designed for an operating potential of 2,400 volts direct current, with vertical trolley construction. Two of them, operated and controlled as a single unit, will have ample capacity and suitable speed requirements for handling the heavy transcontinental pas-

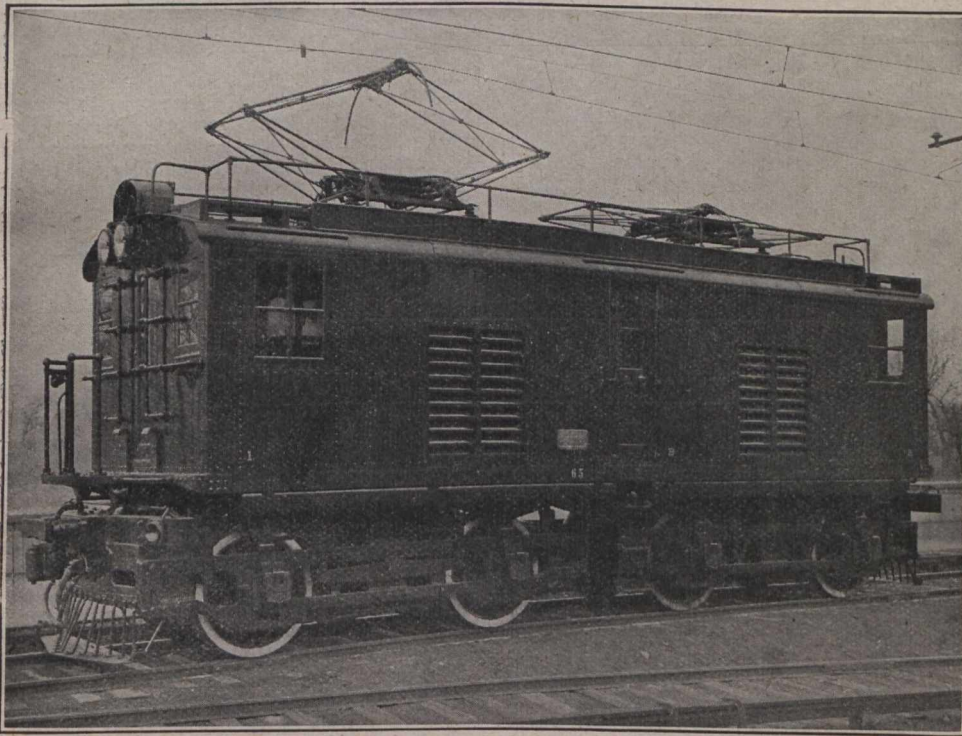
the effect of severe shocks.

Both the box cab and platform will be built of plates, sheets, angles and heavy channels, and will be thoroughly reinforced throughout. The box cab will be divided into three compartments; the apparatus compartment in the centre and the two operators' compartments at the ends. Each operator's compartment will have a full complement of apparatus, consisting of controller, control switches, meter, air brake control apparatus, air gauges, pantagraph control and heaters, thus providing the locomotive with a complete double end control. All apparatus subject to 2,400 volt potential will be located in the centre apparatus compartment and screened to

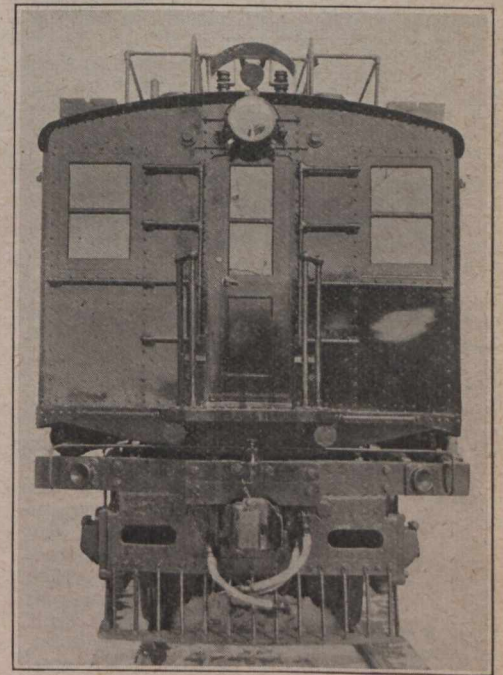
2,400 volts, so that two may be connected permanently in series and operated on a 2,400 volt circuit. These motors will be geared to the axles through twin gears, there being one pinion on each end of the armature shafts. These motors are especially designed for locomotive service and will be provided with forced ventilation by a blower located in the apparatus compartment. The locomotives will be geared for a free running speed on tangent, level track of approximately 45 miles an hour, and will be operated as two speed machines with ten points in series and nine points series parallel.

The air brake equipment will be the straight air and automatic type, so as to combine the desirable features for train operation through an equalizing reservoir and the independent operation of the brakes upon the locomotive. Provision will be made for the multiple operation of the compressors upon all locomotives when operating in multiple, so as to distribute the duty upon all the compressors in the train.

The motors will be operated in series and series-parallel by the Sprague-General Electric type M two speed control. The external regulating resistance will be divided into two parts, each part being directly connected to a pair of motors permanently connected in series. The two pairs of motors, with their resistances, will all be connected in series on the first point of the control, the resistance being varied through the first nine points on the controller and finally short circuited on the tenth, or running point. The two pairs of motors will then be similarly operated in series parallel and all resistances cut out on the



Electric Locomotive of Similar Type to those ordered for Mount Royal Tunnel.



End View Electric Locomotive.

senger trains—1,130 tons trailing load—within the Montreal terminal zone. A single locomotive will successfully handle the freight trains—1,000 tons trailing—and the local passenger service—550 tons trailing.

The general type of locomotives to be used is that known as the box cab articulated running gear. The estimated weight of the complete locomotive is 83 tons. The locomotive will have four axles, with all of the weight of the locomotive upon the eight driving wheels, thus securing the maximum adhesive weight on drivers. The running gear will consist of two four wheel trucks, articulated together by a heavy hinge. The equalization of the trucks will be accomplished by a heavy locomotive type semi elliptic leaf springs, over each journal box, connected through spring hangers to the frame and to the equalizer bars. Practically a three point suspension will thus be supplied through the side equalization of one of the trucks and both side and cross equalization of the other truck. With friction draft gear mounted in the end frame casting of the truck, this type of construction will, it is claimed, restrict the hauling and buffing stresses to the truck side frame and articulated joint, instead of through the cab centre plate, thus relieving the cab and apparatus from

protect against accidental contact. The location and general arrangement of this apparatus will be such as to provide easy access from all sides for inspection, cleaning and repairs.

The Sprague-General Electric type M multiple unit double end control equipment is proposed for the locomotives, all the control points being proportioned and adjusted so as to secure a smooth and even acceleration, at all times, corresponding to a current consumption near the slipping point of the wheels. The transition between series and series-parallel will be effected by a special electro pneumatically operated changeover switch and the motor fields will always be on the ground side of the armature.

A motor generator set will supply 125 volt energy for the operation of the control and a 2,400 volt air compressor of 100 cubic feet free air piston displacement will be provided as part of the air brake equipment. Two air operated roller pantagraphs and a properly insulated bus line will be located upon the roof. The bus line will supply power to two or more units from the pantagraphs of any of these units.

The motor equipment will consist of four C.G.E. 229 commutating pole type motors wound for 1,200 volts and insulated for

last or full speed running point.

A special electro pneumatically operated changeover switch will be used, to make the transition between series and series parallel so that there will be no appreciable reduction in tractive effort during the change. A smooth transition between all points, both rheostatic and transitional, will insure motor operation close to the slipping point of the wheels and a steady, gradual acceleration at all times.

The motors will have sufficient capacity to slip the wheels, the slipping point serving as a current limit to prevent overload-

ing. Either pair of motors may be cut out, in case of emergency, by means of a special handle on the changeover switch.

The master controllers will receive their energizing current at a potential of 125 volts from the motor generator set and provide for operating the contactors so that they will close the motor circuits under different combinations and regulate the external motor resistances to give 10 points series and 9 points parallel. The controller will be of the non automatic type and will have two handles; one regulating the applied voltage at the motors and the other for controlling the direction of rotation of the motors. Each of the above handles will control a single cylinder.

The overhead trolleys will be of the pantagraph type, mounted on insulated bases and pneumatically operated. A hand pump will be provided for raising the trolley in case a locomotive has been standing some time and has no air supply.

Provision will be made for automatically opening the control circuit and cutting off all power from the locomotive, in case the locomotive driver overruns a signal set against him. At the same time a special valve will be opened which will set the emergency air brake.

Following are the approximate general dimensions of the locomotives: Length inside of knuckles, 37 ft. 4 in.; length over cab, 31 ft.; height over cab, 12 ft. 10 ins.; height with trolley down, 15½ ft.; width over all, 10 ft.; total wheelbase, 26 ft.; rigid wheelbase, 8 ft. 8 ins.; track gauge, 4 ft 8½ ins.; minimum radius of curvature, 150 ft.

The locomotives, as well as the rest of the electrical equipment, have been ordered from the Canadian General Electric Co.

The illustrations on this page are of a locomotive built for the Butte, Anaconda and Pacific Ry., and we are advised that the ones for the Mount Royal Tunnel will be precisely similar.

company's legal department, and J. A. Foiey, of the engineering staff, were in Medicine Hat, recently, completing the agreement with the city council. This is one of the lines, for the building of which the Alberta Legislature has guaranteed the company's bonds. The Vegreville-Calgary line, which has been in operation as far as Drumalier, is reported completed and ready for traffic as soon as the official inspections have been made.

The Board of Railway Commissioners has authorized the opening for traffic of the extension of the line from Macrorie to Tichfield, Sask., six miles, and of the branch from between those two points to Elrose, 50 miles.

Press reports state that track laying has been completed on the short line from Blaine Lake to Denholm, Sask., which will permit of the operating of traffic by a shorter route than at present from Prince Albert to Edmonton.

The Board of Railway Commissioners has approved of revised location of the line from Maryfield, Sask., westerly, from mileage 194.82 to 224.58. This line is projected to extend to Lethbridge, thence northerly to Calgary, Alta. Press reports from Lethbridge state that grading is in progress on the section of the line from Calgary southerly to Barons, at which point the line will part, one branch going to Macleod, and the other to Lethbridge.

The Alberta Legislature has increased the guarantee of bonds granted in 1909 for the building of certain branch lines from \$13,000 to \$15,000 a mile.

The Alberta Legislature has authorized the government to guarantee bonds of the Canadian Northern Western Ry. for \$25,000 a mile, for a line from the point where the line crosses the Calgary and Edmonton Ry. near Blackfolds, for not exceeding 115 miles, on cancellation and delivering up of bonds of the same amount now outstanding.

Construction is being proceeded with on the branch line into the Brazeau River country. Owing to the large number of trestles to be erected it is not expected that track will be laid as far as the coal fields until Dec. 30.

The Board of Railway Commissioners has authorized the opening for freight traffic of the line from St. Albert, Alta., westerly, for 22 miles.

It was expected that track laying would be completed in Alberta, on the main line to Vancouver, by Nov. 20. West of the provincial boundary the line is known as the C.N. Pacific Ry., but the construction to the Alberta summit is being carried on under the supervision of the company's staff working westerly. Eighty miles of grading have been completed beyond the summit, and it is expected that track will be laid on this mileage by the end of the year. Beyond this point to the Alberta summit, grading and bridge work is reported to be well advanced.

Canadian Northern Pacific Ry.—A regular train service has been inaugurated between Port Mann and Hope, B.C., passengers and freight being carried. The bridge over the Stoyama Creek, opposite North Bend, is reported completed. The structure is 760 ft. long and consists of seven spans, on steel towers, built on concrete pedestals. Five small steel bridges have been completed over gullies as far as Nine Mile Creek, mileage 123.5 from Port Mann, to which track has now been laid. At this point a 300 ft. viaduct resting on three steel towers will be built, the material for which is being delivered. Grading has been practically completed to Kamloops, and track laying is being pushed ahead as fast as possible. At Kamloops, a branch line is projected to Vernon. The location for this line, we are officially advised, has been com-

Canadian Northern Railway Construction, Betterments, Etc.

Canadian Northern Montreal Tunnel and Terminal Co.—It is expected that the boring of the Mount Royal tunnel will be completed Dec. 15. A contract for the electrification of the tunnel and the connecting lines has been let to the Canadian General Electric Co.

Press reports state that plans for the station on Dorchester St. are being prepared by Warren and Wetmore, New York.

J. P. Mullarkey, who is building a section of the line westerly from Rideau Jct., is reported to have stated, Nov. 17, that he expected to have his contract completed by the end of 1914. The Board of Railway Commissioners has authorized the making of a connection with the C.P.R. at Pembroke, Ont., in order to get in construction material. Tracklaying is being gone on with easterly from Pembroke, and it is expected to lay 35 miles this year. Sir Donald Mann, in an interview Nov. 10, is reported to have stated there were about 60 miles of track to be laid to complete the line from Port Arthur to Ruel, 545 miles. It is expected to have this laid by the end of the year.

Montreal-Ottawa-Port Arthur Line.—Grading is reported completed from the western portal of the Montreal tunnel to the Back River, and it was reported, Nov. 20, that track laying was to be gone on with at once, in order that the steel may be transported for the bridges at that point. There are two channels of the Back River which are to be crossed, then the line crosses Isle Jesus, and then over another bridge to the mainland. The substructure for two of these bridges has been completed, and the last pier for the third one is being erected. On the mainland the grading and bridge work is completed as far as Carlton, at which point a large bridge is to be built over the Ottawa River to Portage du Fort. The substructure for this bridge is completed, and the superstructure will be put in place during the winter.

Canadian Northern Ontario Ry.—The line from Toronto to Ottawa, which has recently been completed, is 240 miles long. A freight service has been put in operation, but it is not intended to operate a passenger service until next summer. The company is now able to give connection through the C.N. Quebec Ry. at Hawkesbury, Ont., with Montreal, Quebec and Lake St. John.

The Board of Railway Commissioners has approved of revised location through York Tp. and part of the city of Toronto, mileage 2.23 to 6.16 from Yonge St.

Canadian Northern Ry.—In connection

with press reports to the effect that the company proposed to erect a car repairing plant at Port Arthur, Ont., at a cost of \$30,000, we are officially advised that it is not contemplated to do so.

It was reported in Port Arthur, Nov. 10, that the company has for some time past had some gangs of men at work on the section of the old Port Arthur and Duluth Ry., from Stanley to the International boundary. A large number of new ties are said to have been put in; a lot of additional ballast distributed, and several new station buildings erected.

Press reports state that considerable progress has been made with relaying track on the Duluth, Rainy Lake and Winnipeg Ry. from Virginia, Minn., to Rainy Lake, opposite Fort Frances, Ont., with 80 lb. steel.

Work was begun, Nov. 8, on a new station at the corner of Provencher Ave. and Rue des Menours, St. Boniface, Man. The building is to be of concrete and brick. Benoit and Co., St. Boniface, have the contract.

Notice has been given by the company that it intends to apply for an order to permit of the construction of a double track line along the route of the projected Fort Rouge cutoff at Winnipeg. The residents along the route held a meeting at South Fort Rouge, Nov. 12, to consider the question of applying to the Board of Railway Commissioners for an order directing that the cutoff be operated by electricity.

The line into Moose Jaw, Sask., has been completed, and a train service was put in operation from Rodville, Nov. 4. A temporary station has been opened on Home St., and it is reported that negotiations are in progress with the G.T. Pacific Ry. for the erection of a union station.

Track has been laid as far as Brioux, Sask., on the extension of the line from Melfort to Humboldt. It is expected that the line will be completed into Humboldt by the fall of 1914. Press reports state that on the completion of the extension additional terminal facilities will be laid out at Humboldt.

A through connection has been established between Saskatoon and Calgary, over the line which was opened for traffic, Nov. 9. The line had previously been opened for traffic to Alsask, but on Nov. 9 it was opened to Hanna, 93 miles, and subsequently to Munson, the junction with the Vegreville-Calgary line, 40 miles further. It is proposed to build a branch line from Hanna to Medicine Hat, and press reports state that a contract will be let for its construction during the winter. G. R. Clark, of the

Transportation Appointments Throughout Canada.

pleted, and everything is ready for construction, but tenders have not yet been invited. Grading has been completed to about 100 miles westerly from Kamloops, and 86 miles of track has been laid.

Vancouver Island Lines.—The Premier of British Columbia is reported to have stated, Nov. 10, that track had been laid for the greater part of the 140 miles from Victoria to Port Alberni, and the line would be completed by the end of next summer.

Plans for the bridge across the Selkirk water, connecting the terminals on the Soughees Reserve to the gully under the gorge bridge, have been filed. They show a bridge of the bascule type, at a height of 23 ft. above extreme low water. There will be two openings in the bridge, 60 ft. and 25 ft., respectively, to permit of the passage of small vessels.

Survey parties are reported to be in the field in the districts north of Alberni Canal, and also north of North Sound, locating a line from Port Alberni to the extreme north of the island. (Oct., pg. 478.)

Grading and Track Laying in 1913.—We have been favored with the following official particulars of grading and track laying done in Manitoba, Saskatchewan and Alberta. The figures for grading are up to Sept. 30, and for tracklaying up to Oct. 31. A great deal of the track laid this year is on grading done in 1912. The figures represent miles:—

Delisle Jct., westerly, graded this year, 13.80; track laid on 1912 grade, 31.48.
Delisle, southerly, track laid on 1912 grade, 5.61.

Bienfait-Estevan, graded this year, 8.10.
Blackfalls, westerly, graded this year, 24.70; track laid on 1912 grade, 32.55.
Camrose, southeast, graded this year, 44.60.

Edmonton to Yellowhead, main line, graded this year, 33.40; track laid on 1912 grade 111.51, on 1913 grade 13.40, total 124.91.

Deerfield Spur, track laid on 1912 grade, 12.50.

Canora, north, graded this year, 1.90.
Greenway, extension, graded this year, 2.94, track laid on 1912 grade 12.25, on 1913 grade 3.08, total 15.33.

Grosse Isle, northerly, graded this year, 13.40; track laid on 1912 grade, 7.62.

Moose Jaw, southerly, track laid on 1912 grade, 1.

Oakland, northerly, track laid on 1912 grade, 11.48.

Onaway, northwest, graded this year, 6; track laid on 1912 grade, 30.40.

Prince Albert-Battleford, graded this year, 1.15; track laid on 1912 grade, 46.

Avonlea, westerly, graded this year, 7.15; track laid on 1912 grade, 48.70, on 1913 grade, 7.15, total, 55.85.

Saskatoon-Calgary, track laid on 1912 grade, 25.92.

Vegreville-Calgary, track laid on 1912 grade, 12.64.

Vonda, north, graded this year, 8.20.

Winnipeg-Fort Alexander, graded this year, 7.40.

Wroxton-Yorkton, graded this year, 2.

The total grading done this year to Sept 30 was 174.74; track laid on 1912 grade, 389.66; on 1913 grade, 23.63; total track laid to Oct. 30, 413.29.

Railway Mechanical Conventions.—The Master Car Builders Association and the American Railways Master Mechanics Association will hold their 1914 conventions at Atlantic City, N.J., the former on June 10 to 12, and the latter on June 15 to 17.

It is said that in an investigation a few years ago, it was shown that frame failures constituted 20% of the cost of locomotive maintenance.

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.

Canada and Gulf Terminal Ry.—J. E. PINAULT, heretofore Superintendent, has been appointed General Superintendent, exercising all duties and authority formerly assumed by Rene Dupont, Traffic Manager. Office, Matane, Que.

Canadian Government Railways.—A. C. BARKER, whose appointment as Inspector of Stations, Trains and Train Dispatching, was given in our last issue, as relating to the Intercolonial Ry. only, has jurisdiction also over the Prince Edward Island Ry. His office is at Moncton, N.B., and he was formerly Chief Dispatcher, District 2, Lake Superior Division, C.P.R., Chapeau, Ont.

Canadian Northern Ry.—F. J. CREIGHTON has been appointed City Ticket Agent, Winnipeg.



John L. Hodgson,
Master Car Builder, Grand Trunk Pacific Ry.

J. F. McGUIRE has been appointed Travelling Passenger Agent, Winnipeg.

J. HONAN, heretofore Shop Foreman at Kamsack, Sask., has been appointed Locomotive Foreman, Kindersley, Sask., vice W. Toll, transferred.

I. L. BOOMER, heretofore acting Superintendent, District 3, Western Division, has been appointed Superintendent, vice J. G. Entwistle. Office, Edmonton, Alta.

J. W. CRANE has been appointed Trainmaster, District 3, Western Division, with jurisdiction over Battle River and Calgary Subdivisions, and Camrose cutoff and Brazeau line, when taken over. Office, Big Valley, Alta.

W. TOLL, heretofore Locomotive Foreman, Kindersley, Sask., has been appointed Locomotive Foreman, Hanna, Alta., a new position.

G. S. ANDREWS, heretofore Inspector, Sleeping and Dining Cars, Winnipeg, has been appointed acting Agent, Sleeping and Dining Cars, Duluth, Minn.

Canadian Pacific Ry.—F. B. TAPLEY, heretofore Resident Engineer, London, Ont., has been appointed Assistant Engineer,

Maintenance of Way, Eastern Lines. Office, Montreal.

WALTER MAUGHAN, heretofore Assistant District Passenger Agent, Toronto, has been appointed Assistant General Passenger Agent, Eastern Lines. E. J. Hebert and F. O. Hopkins remain as First Assistant General Passenger Agent and Assistant General Passenger Agent, Eastern Lines, respectively. Office, Montreal.

D. A. WALLACE has been appointed Resident Engineer, District 1, Eastern Division, vice H. T. Ruhl, resigned to enter Intercolonial Ry. service. Office, Farnham, Que.

H. J. MAIN, heretofore dispatcher, Ottawa, Ont., has been appointed Chief Dispatcher, District 2, Eastern Division, Montreal, vice W. W. Cook, appointed a dispatcher at Smiths Falls, Ont.

E. F. L. STURDEE, heretofore chief clerk to General Passenger Agent, Eastern Lines, Montreal, has been appointed Assistant District Passenger Agent, Toronto, vice Walter Maughan, promoted.

R. V. CARLETON, heretofore Assistant General Car Inspector, Eastern Lines, Montreal, has been appointed General Car Foreman, Passenger Car Shops, West Toronto.

F. S. ROSSITER, heretofore Resident Engineer, Cranbrook, B.C., has been appointed Resident Engineer, London, Ont., vice F. B. Tapley, promoted.

J. MORTON has been appointed Locomotive Foreman, Kenora, Ont., vice J. H. Wilson, transferred.

JAMES CLIFFORD, heretofore District Engineer, Illinois Central Rd., Chicago, Ill., has been appointed Assistant Engineer, Maintenance of Way, Western Lines, C.P.R., Winnipeg.

E. D. COTTERELL, heretofore Chief Dispatcher, New York Central and Hudson River Rd., New York, has been appointed Inspector of Transportation, Western Lines, C.P.R. Office, Winnipeg.

W. J. ANDREWS, heretofore Locomotive Foreman, Neudorf, Sask., has been appointed Locomotive Foreman, Minnedosa, Man., vice J. F. Rugg, resigned.

R. M. BINNEY has been appointed Roadmaster, Brandon Subdivision, vice T. M. Fraser. Headquarters, Winnipeg.

J. DUNCAN, heretofore section foreman, Arden, Man., has been appointed acting Roadmaster, Arborg and Winnipeg Beach Subdivisions. Headquarters, Winnipeg.

F. E. RUTLAND, heretofore chief clerk, Local Freight Department, Winnipeg, has been appointed Agent, C.P.R. Stockyards, Winnipeg, vice D. Patterson, resigned.

E. H. RIDER, heretofore storekeeper at Broadview, Sask., has been appointed storekeeper at Hardisty, Man., vice J. H. Perkin, resigned.

J. T. TURNER has been appointed station master at Moose Jaw, Sask., vice E. L. Barrett, who has left the service.

W. G. McPHERSON, heretofore Locomotive Foreman, Alyth roundhouse, Alta., has been appointed Locomotive Foreman, Moose Jaw, Sask.

G. O. JACKSON, heretofore temporary storekeeper at Swift Current, Sask., has been appointed storekeeper at Broadview, Sask., vice E. H. Rider, transferred.

H. McHARDY has been appointed Locomotive Foreman, Neudorf, Sask., vice W. J. Andrews, transferred.

D. H. JOHNSON has been appointed Roadmaster, District 1, Alberta Division, in charge of Lemsford Subdivision. Headquarters, Cabri, Sask.

F. WALKER, heretofore Car Service Agent, Alberta Division, Calgary, has been appointed Superintendent, District 2, Alberta Division, vice W. J. Uren, appointed Superintendent, District 1, Ontario Division,

Toronto, as announced in our last issue. Office, Calgary.

J. G. SUTHERLAND, heretofore Chief Dispatcher, Medicine Hat, Alta., has been appointed Car Service Agent, Alberta Division, vice F. Walker, promoted. Office, Calgary.

W. J. READER, heretofore storekeeper at Alyth Roundhouse, Calgary, Alta., has been appointed Foreman of Stores, Ogden Shops, Calgary, Alta.

E. A. BARNWELL has been appointed Locomotive Foreman, West Calgary Roundhouse, Alta., vice J. Reed, transferred.

H. ALLEN has been appointed Locomotive Foreman, Alyth Roundhouse, Alta., vice W. G. McPherson, transferred.

J. REED, heretofore Locomotive Foreman, West Calgary Roundhouse, Alta., has resumed his former position as Shop Foreman, Alyth Roundhouse, Alta.

E. J. BURKE has been appointed storekeeper at Alyth Roundhouse, Calgary, Alta., vice W. J. Reader, promoted.

J. E. GILES has been appointed Shop Foreman, Lethbridge, Alta.

A. A. SMITH, heretofore Trainmaster, District 1, Alberta Division, Lethbridge, has been appointed Trainmaster, District 1, Alberta Division, Medicine Hat, vice J. E. Ryan, assigned to other duties.

J. M. MACARTHUR has been appointed Trainmaster, District 1, Alberta Division. Office, Medicine Hat. There are two trainmasters at Medicine Hat.

J. E. RYAN, heretofore Trainmaster, District 1, Alberta Division, Medicine Hat, has been appointed Chief Dispatcher, District 1, Alberta Division, vice J. G. Sutherland, assigned to other duties. Office, Medicine Hat.

H. O. WHITNEY, heretofore Roadmaster, Lethbridge, Alta., has been appointed Roadmaster, Medicine Hat, Alta., vice M. P. Fitzpatrick, transferred.

W. H. GORDON, heretofore Trainmaster, District 2, Alberta Division, Strathcona, has been appointed Trainmaster, District 1, Alberta Division, vice A. A. Smith, transferred. Office, Lethbridge.

M. P. FITZPATRICK, heretofore Roadmaster, Medicine Hat, Alta., has been appointed Roadmaster, Lethbridge, Alta., vice H. O. Whitney, transferred.

C. W. FISHER has been appointed Trainmaster, District 2, Alberta Division, vice W. H. Gordon, transferred. Office, Strathcona.

G. M. KEATES has been appointed storekeeper at Strathcona, Alta., vice G. R. Blake, transferred.

D. G. McDONALD has been appointed Locomotive Foreman, Macleod, Alta., vice J. A. Maddick, transferred.

W. M. ANSLEY, heretofore Trainmaster, Grand Forks, B.C., has been appointed Trainmaster, Macleod, Alta., vice W. S. Hall, transferred.

J. A. MADDICK, heretofore Locomotive Foreman, Macleod, Alta., has been appointed Locomotive Foreman, Crowsnest, B.C.

W. S. HALL, heretofore Trainmaster, District 3, Alberta Division, Macleod, has been appointed Trainmaster, District 3, Alberta Division, vice C. Hood, transferred to British Columbia Division. Office, Cranbrook, B.C.

C. HOOD, heretofore Trainmaster, District 3, Alberta Division, Cranbrook, B.C., has been appointed Trainmaster, District 3, British Columbia Division, vice W. M. Ansley, transferred to Alberta Division. Office, Grand Forks.

C. E. WISE has been appointed storekeeper at Kamloops, B.C., vice L. Norman, transferred.

L. NORMAN, heretofore storekeeper at Kamloops, B.C., has been appointed storekeeper at Coquitlam, B.C. This is a new position.

W. WOODHOUSE, heretofore Coach Yard Foreman, Vancouver, B.C., has been appointed Shop Foreman, there, vice L. L. Hannah, deceased.

F. REEVE, heretofore coach carpenter, Vancouver, B.C., has been appointed Coach Yard Foreman, there, vice W. Woodhouse, promoted.

W. McINNES, heretofore Yardmaster, Vancouver, B.C., has been appointed General Yardmaster there, vice A. R. Howard, deceased.

E. F. RALSTON, heretofore Night Yardmaster, Vancouver, B.C., has been appointed Yardmaster, there, vice W. McInnes, promoted.

F. CLINE, heretofore acting Yardmaster, Vancouver, B.C., has been appointed Night Yardmaster there, vice E. F. Ralston, promoted.

A. E. VOYSEY has been appointed chief assistant to the European Manager, C.P.R., London, Eng., vice W. D. Grosset, appointed Agent at Antwerp, Belgium.

Central Vermont Ry.—E. C. SMITH, a former Governor of the State of Vermont, has been elected President, C.V.R., vice E. J. Chamberlin, who retains the position of chairman of the Board.

Grand Trunk Pacific Ry.—H. WISMAR has been appointed Assistant to Solicitor, Winnipeg, Man., vice A. Hutcheon, Assistant Solicitor, resigned to engage in private practice.

W. C. SCHNEIDER, heretofore Chief Car Draughtsman, Motive Power and Car Department, has been appointed Chief Draughtsman, Car Department. Office, Transcona, Man.

O. J. ROWE, General Yardmaster, Transcona, Man., is reported to have been transferred to a similar position at Edmonton, Alta.

J. D. MCAULEY, heretofore Soliciting Freight Agent, Montreal, has been appointed City Freight Agent, Vancouver, B.C., vice R. N. Card, resigned on account of ill health.

The following agents have been appointed.—Uno, Man., E. A. Neupert; Duff, Sask., J. W. Le Gallais; Lewvan, Sask., F. H. Williams; Griffin, Sask., F. C. Scheppelle; Mirrör, Alta., J. I. Scott; Tete Jaune, B.C., J. S. Dobie; New Hazelton, B.C., F. R. Law; Hazelton, B.C., F. A. Wildmoyer; Smithers, B.C., H. H. Boggs; Rose Lake, B.C., M. K. Thayer. The station at Morricetown, B.C., has been closed.

Grand Trunk Ry.—The following agents have been appointed.—Ste. Rosalie Jct., Que., H. E. Coderre (Pass); St. Constant, Que., W. J. Marchand; Hemmingford, Que., E. E. Bourdon; Henrysburg, Que., J. E. A. Berriault; Sundridge, Ont., J. E. Bailey; Milton, Ont., G. Williamson; Petersburg, Ont., I. C. Laschinger; Sarnia, town, Ont., W. J. Meredith; Windsor, Ont., J. E. Laughlin; Vittoria, Ont., A. J. Simmons; Tara, Ont., W. H. McPhail; Shallow Lake, Ont., C. Dopher; Gowanstown, Ont., C. S. Smith; South Indian, Ont., J. O. Prefontaine; Glasgow, Ont., A. H. Johnston; Edgington, Ont., H. Wolfe; Durham, Ont., outside, W. Calder.

Hudson Bay Railway.—J. W. PORTER, heretofore Assistant District Engineer, District B, National Transcontinental Ry., has been appointed Chief Engineer of the Dominion Government railway to Hudson Bay, vice John Armstrong, resigned. Office, Winnipeg. The report that the office had been moved from Winnipeg to Pas, Man., is premature. We are officially advised that it is the intention to do so, as soon as it can be arranged.

Intercolonial Ry.—H. T. RUHL, heretofore Resident Engineer, District 1, Eastern Division, C.P.R., Farnham, Que., has been

appointed Resident Engineer, I.R.C., Truro, N.S.

E. SAVAGE has been appointed Bridge and Building Master, Moncton-Ste. Flavie Division, including branches. Office, Newcastle, N.B.

A. B. McDONALD, heretofore General Car Foreman, has been appointed Superintendent Car Shops, Moncton, N.B.

Toronto, Hamilton and Buffalo Ry.—A. E. LOCK, heretofore Travelling Passenger Agent, New York Central Lines, Montreal, has been appointed Commercial Agent, T. H. & B. R., Hamilton, Ont., vice J. D. Dewan, who resigned some time ago to enter Kansas City Terminal Ry. service at Kansas City, Mo.

Union Stock Yards, Winnipeg.—D. PATTERSON, heretofore Manager, C.P.R. Stock Yards, has been appointed Manager, Union Stock Yards, St. Boniface, Man., vice J. W. Backpit, resigned.

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1912-13, from July 1, 1913:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	\$1,923,800	\$1,414,500	\$514,300	\$19,700
Aug.	1,824,800	1,416,200	408,600	37,800
Sept.	1,994,900	1,470,000	524,900	101,400
	\$5,748,500	\$4,300,700	\$1,447,800	\$158,900
Incr.	\$ 501,500	\$ 342,600	\$ 158,900	.....

Approximate earnings for October, \$2,687,100, against \$2,351,200.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1912-13, from July 1, 1913:—

	Gross Earnings	Expenses	Net Earnings	Increase or Decrease
July	\$11,993,062.27	\$7,876,269.09	\$4,116,793.18	x\$331,383.72
Aug.	11,434,459.58	7,473,320.64	3,961,138.94	x756,786.42
Sept.	12,167,082.17	7,741,508.48	4,425,573.69	165,274.84

\$35,584,604.32 \$23,091,093.21 \$12,493,511.11 x\$922,895.30
x Decrease.

Incr. \$ 623,651.19
Decr. \$ 299,244.11 \$ 922,895.30

Approximate earnings for October, \$14,357,000, against \$12,960,000 for Oct., 1912.

The mileage under operation was increased at the end of October to 11,791.

Grand Trunk Railway Earnings, Etc.

Approximate earnings for October, \$5,047,641, against \$4,901,954 for Oct., 1912.

TRAFFIC RECEIPTS OF THE SYSTEM.

Aggregate from July 1 to Oct. 31:

	1913	1912	Increase
G.T.R.	\$15,841,292	\$15,143,742	\$697,550
C.A.R.	868,363	856,059	10,310
G.T.W.R.	2,523,820	2,423,425	100,395
D.G.H. & M.R.	891,002	854,500	37,402
Totals	\$20,128,377	\$19,282,720	\$845,657

Grand Trunk Pacific Railway Earnings.

The approximate earnings of the Prairie Section and Lake Superior Branch for October were \$994,303, and for 4 months ended Oct. 31, \$2,732,674.

C. P. R. Operations in Austria.—After a debate lasting several days, the subcommittee appointed by the Austrian Parliament to investigate the questions which recently arose as to the working of the emigration business from that country, unanimously passed a resolution approving the policy of the Ministry of Commerce in granting the C. P. R. a concession, and found that the increase in emigration was due to economic conditions, and that if there were abuses in this business, no company could be spared. In dealing with this matter, G. McLaren Brown, European Manager, visited Vienna, to look into conditions personally, and it is reported that the services of the British Foreign Office were utilized.

Electric Railway Department.

Pay-As-You-Enter Cars for London Street Railway.

The 6 single truck, single end, p.a.y.e. cars for the London Street Ry., partly described in the last issue of Canadian Railway and Marine World, are illustrated herewith. They will have 10 cross seats, 2 longitudinal and 3 stationary seats, giving a seating capacity of 32. The underframing will be entirely of steel, the main members consisting of 3-16 in. plates, 15 ins. deep, one on each

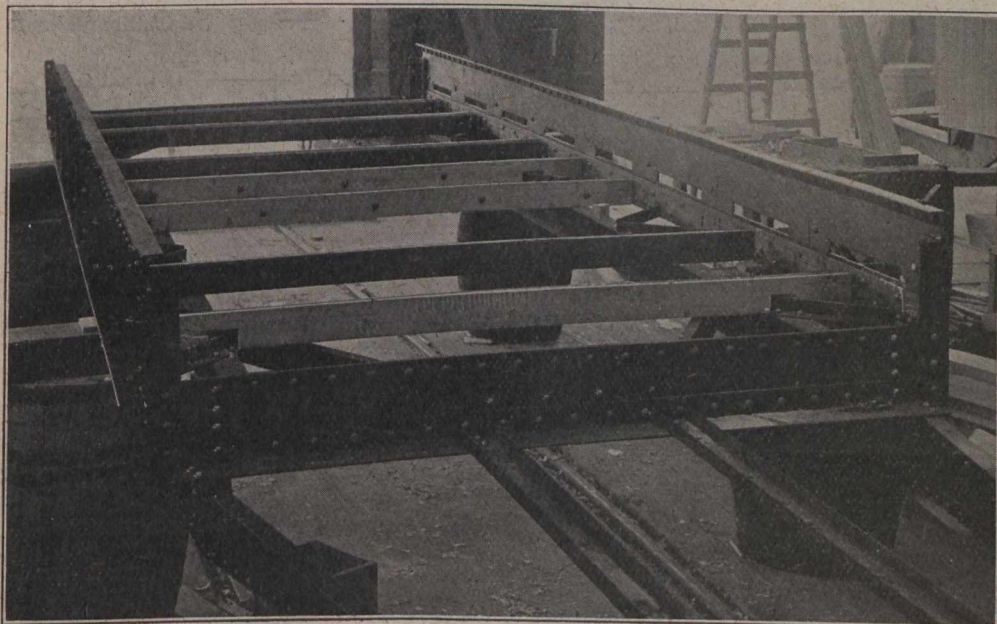
In designing the steel frame, to which the Manager of the London St. Ry., C. B. King, has given special attention, it was the desire to obtain rigidity in the car posts in all directions, and, at the same time, make the vestibule supports so strong and rigid that there would be no possibility of the vestibule sagging. The possibility of collisions was borne in mind by giving the frame suf-

sills is greatest, diagonal braces are called for between the outside angles and the I beams.

The window posts are held in position by bolting them to angle irons rivetted to the outside of the side plates. These angle irons not only offer the maximum of support for the posts, but they make possible the use of a lighter section for the side plates.

As there will be no large timbers in the lower frame, such repairs as are necessitated from time to time can be made without removing the whole side of the car. With this steel frame, a large part of the repair work resulting from damages, may be made from underneath the car without requiring to touch the side of the car at all. However, in the event of a serious collision, when the side members of the car are seriously bent, it will still be necessary to remove the whole side of the car to straighten the injured members.

A maximum seating capacity was aimed at in the design, so that it may appear that the entrance and exit are somewhat crowded by the seats. As it is believed that these passage seats will not be used very much, this will minimize such an objection. The desire to utilize every available foot of space was responsible for the moving forward of the motorman's position as far as possible, making room for a seat for 3, and standing room for as many more on the front vestibule, which is of the same size as the rear vestibule.



Steel Underframing of London Street Railway Cars.

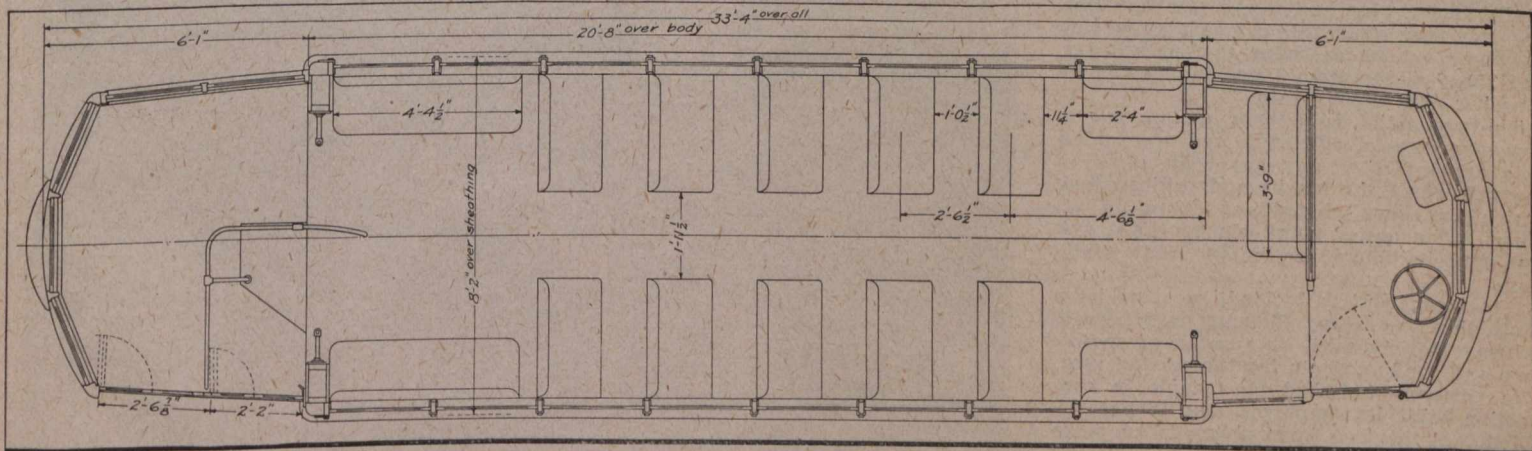
side of the car, reinforced at the bottom with an angle. They are to be 33 ft. 4 ins. long, with a body length of 20 ft. 8 ins. They will be 8 ft. 2 ins. wide over the sheathing. The centre aisle will be 1 ft. 11½ ins. wide, with cross seats on each side at 2 ft. 6½ ins. centres. The longitudinal seats at the forward end will be 2 ft. 4 ins. long, and at the rear end, 4 ft. 4½ ins. long, leaving the greater standing room at the rear end,

sufficient strength to resist either end or cross impact. The 6 in. I beams, together with the longitudinal angles and steel plates, are calculated to support the ends of the cars without sagging. The side steel plates are just high enough inside the car so that the end of the cross seats will fit over the steel plate, thereby providing a maximum amount of aisle space. The strong end sills, when securely fastened to the side

Wages on Lethbridge Municipal Railway.

A new wage schedule went into effect on Lethbridge Municipal Ry. recently, as follows:—First 6 months, 25c. an hour; second 6 months, 28c. an hour; commencing 2nd year, 30c. an hour; commencing 3rd year, 32c. an hour; pay day to be on the 5th and 20th of each month.

All motormen and conductors are to be paid time and a half for the following public



Floor Plan of London Street Railway Cars.

where it is most required. The stationary cross seat at the forward end will be on the platform level, backing against the motorman's section. The latter will be separated from the exit path by a chain stretched across from the partition to the front vestibule end.

plates and angles, will make it practically impossible for the side plates to become distorted. The intermediate cross channels offer a great deal of resistance in the event of side collisions, but, fearing this might not prove ample in that portion of the frame where the distance between the cross

holidays:—New Year's Day, Good Friday, Victoria Day, Dominion Day, civic holiday, Labor Day, Christmas Day and Thanksgiving Day, and the pay for Sundays is on a basis of nine hours' pay for 7½ hours' work. Work after 24 o'clock to be paid for on time and a half basis.

Sherbrooke Railway and Power Company's Annual Report.

Following are extracts from the report for the year ended June 30, submitted at the annual meeting in Montreal Sept. 22:

The business has continued to grow at a very satisfactory pace, and the gross earnings show an increase of \$34,058.93, or nearly 37%, and the net earnings, including the income from real estate investments and after charging renewals show an increase of \$19,080.09, or 58% over the preceding year. The increase in business was principally in the lighting and power branches of the company's system.

\$32,000 of bonds and \$32,000 of stock were issued and sold and the proceeds of the same expended in extensions and betterments. The full benefit, however, of these extensions will not be derived until the winter months.

While the increase in earnings has been large, it has not been up to expectations, as two of the company's largest consumers of power were unable to take their requirements as early as expected. One which had contracted for 500 h.p. has so far only taken 200 h.p. and this during a small part of the year. The other company, whose contract amounts to 700 h.p., expected to have its plant in operation in Oct., 1912, but on account of the late delivery of plant and machinery, only started to operate a portion of its plant in the month of June. Shortly afterwards, owing to an accident, the company's transformers were badly damaged, and being of special design they had to be shipped away for repairs. It is now expected that this plant will be in operation the latter part of October. If these contracts had come into operation during last year, the net earnings would have been increased by at least \$12,500.00.

During the summer your directors have been successful in locating two large industries in Sherbrooke. Both will be large consumers of power, and the company has already entered into contracts with them for their entire power requirements. These two contracts, together with those referred to above, should increase the annual net revenue, when in operation, by over \$21,750.00.

In regard to the light and power business in the districts controlled by your company, your directors beg to state that a very satisfactory rate of increase has been shown, especially in Lennoxville, Stanstead, Beebe Plain, Derby Line and Derby Centre. During the past year the company's lighting system has been extended to four villages, and the revenue from these villages is increasing at a steady rate.

The properties have been maintained in a proper state of efficiency, and a considerable amount of money has been spent in the upkeep of the tracks and rolling stock which has been charged to operating account. The power plant, electric light system and buildings are in excellent condition.

The company has decided, so as to have the highest operating efficiency on the street railway, to increase the wages of motormen and conductors during the coming year. The company has had no trouble in connection with its employes, but it has decided that this is a good policy to adopt so as to keep men as long as possible in the service.

Your directors have considered it advisable to insure all the company's properties against fire, accident and liability of all kinds. These public liability policies protect the company against accidents to the public from the power and distribution systems, and also against accidents to persons and vehicles on the street railway.

Your management feels confident that during the coming year the earnings, exclusive of the power contracts already referred to, will show satisfactory increases.

The city of Sherbrooke continues to ex-

plants there this year.

Your directors take pleasure in expressing their appreciation of the services rendered by N. C. Pilcher, General Manager, and the officers and staff.

Proportion of operating expenses to gross earnings.....	1912 84.80%	1913 77.22%
Proportion of net earnings to gross earnings.....	15.20%	22.78%
Car mileage.....	423,200	448,144
Gross earnings per car mile.....	10.143 cts.	10.746 cts.
Operating expenses per car mile.....	8.601 "	8.299 "
Net earnings per car mile.....	1.542 "	2.447 "
Passengers carried, including dead-heads.....	1,064,003	1,115,038
Transfer passengers carried.....	197,988	220,809

The officers are:—President, C. J. McCuaig; Vice President, S. H. Ewing; Secretary-Treasurer, Grant Johnston; General Manager, N. C. Pilcher; Power Superintendent, J. B. Woodyatt.



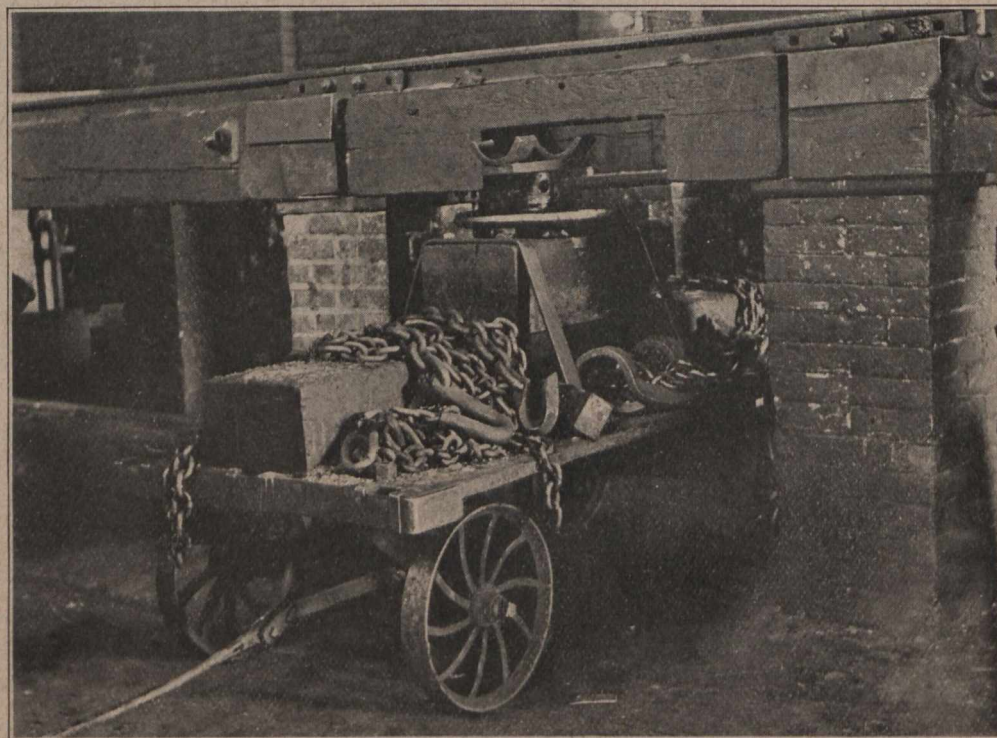
N. C. Pilcher,
General Manager, Sherbrooke Railway and Power Co.

pand at a rapid rate. The continuance of building activity is very gratifying to note in spite of the financial stringency which Canada experienced during the past year. There is no question that if this condition

Wheel Truck in Niagara, St. Catharines and Toronto Railway Shops.

The N., St. C. and T. Ry. shops at St. Catharines, W. Pay, Master Mechanic, are rather unique, the floor level being below the level of the surrounding ground at a depth equivalent to that of the depth of the usual repair pit, with all the machinery located on this lower level. The cars (there is room for two) enter at one end, and the rails are carried on heavy wooden beams supported on short brick piers, this track being along one wall, with an open space between the track and the other wall for the machinery and repair floor space. The fitting, repair and inspection of the cars is simply carried out from the same level as the shop floor.

A short section of each rail, with supporting timber, is removable for the dropping of the car wheels for turning, etc., the car being blocked up for this operation in the usual manner. For the removal of the wheels from under the car, a handy truck, shown in the accompanying illustration, is employed. This is of a familiar construction, with central hand power jack screws



Wheel Truck, Niagara, St. Catharines and Toronto Ry. Shops.

had not existed all through the Dominion as well as the United States, several other U.S. manufacturers, who have been considering locating branches in Sherbrooke, would have commenced the construction of

for lowering the wheels for removal to the wheel lathe or other repair point.

The general shop design, with the floor on a level with the pit, should recommend itself to all who intend building a small

The Winnipeg River Power Company.

The Winnipeg River Power Co. has been incorporated under the Dominion Companies Act, with a capital of \$1,000,000 and offices at Winnipeg, to develop water powers, and distribute electric energy. The provisional directors are E. Frith, C. W. Campbell, A. P. Scott, E. Beadle, R. Siderfin, Winnipeg. This company will undertake development work at the Big Bonnet falls of the Winnipeg River, the rights to which were originally held by C. W. Chamberlain, for Chicago people, and subsequently came under the control of R. R. Muir, by whom they were assigned to Sir William Whyte, the assignment being filed at Ottawa, Oct. 26.

We are officially advised that the Winnipeg Electric Ry. will take the full output of the plant, which will be installed at these falls, and operated by the subsidiary company above named. The distance from the W.E.R. Co's. present plant to the proposed new plant is about 12 miles. The Big Bonnet falls are estimated to be capable of providing from 80,000 to 100,000 h.p. It is the intention of the subsidiary company to start development work at once, and a late press report states that a contract has been let to J. G. White and Co., Inc., New York city, for the work.

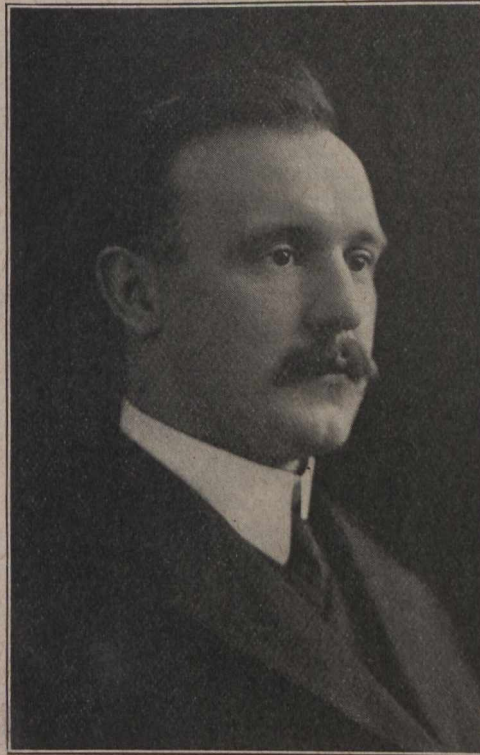
The Toronto and York Radial Railway North Toronto Diversion.

The Judicial Committee of the Imperial Privy Council has dismissed the Toronto and York Radial Ry. Co.'s appeal against the judgment of the Ontario Court of Appeal in favor of the City of Toronto, in the matter of the proposed diversion of the line

companies of the T. & Y. R. R. Co., to deviate its line from Yonge St. to a private right of way from Farnham Ave. to a new terminal 800 ft. west, and north of the C. P.R. The location of the proposed deviation

with its earnings, to spend \$500,000 in grade separation, more especially as the municipalities refused to contribute anything. The company commenced clearing part of the site, July 1, and about the same time the city notified the company of its intention to appeal against the order.

The city's appeal was dealt with by the Court of Appeal in February, and was allowed, upon which the City Council took steps to stop the construction of the deviation, which was then about half completed. The company then entered an appeal to the Judicial Committee of the Privy Council, which, upon hearing the appellant company's case did not think it necessary to call on the city to reply, and eventually dismissed the appeal.



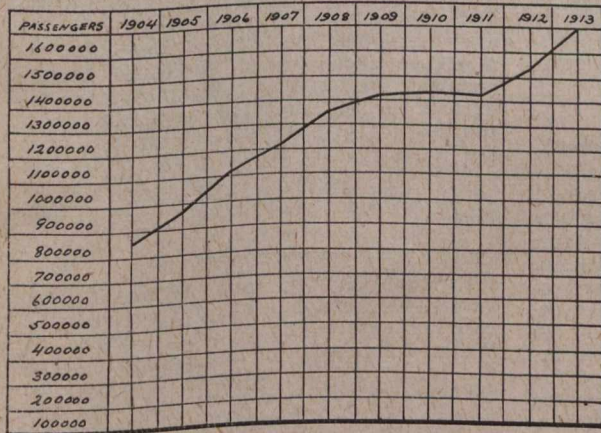
H. G. Matthews, General Manager, Quebec Railway, Light and Power Co.

Quebec Railway Light, Heat and Power Company's Annual Report.

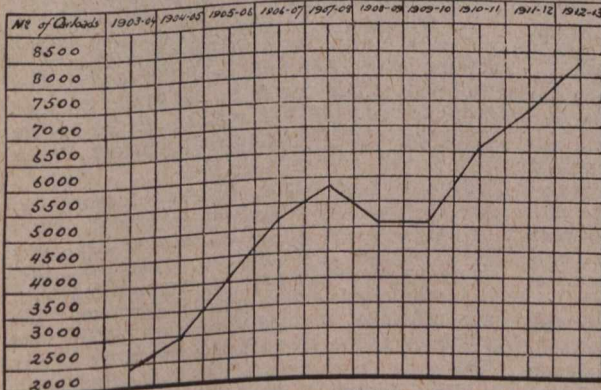
Following are extracts from the report for the year ended June 30, presented at the annual meeting, Sept. 9:—

The gross earnings from operation were \$1,524,200.71, compared with \$1,415,825.38 in 1912. Adding miscellaneous income of \$236,881.78, makes a total revenue from all sources of \$1,761,082.49, an increase of \$150,672.65. The operating and maintenance expenses were \$895,180.61, against \$734,925.35. The fixed charges and taxes of all kinds were \$792,100.17, leaving a net surplus of \$73,801.71, which added to last year's one leaves a total surplus to date of \$147,341.16. \$27,641.60 was received from the Dominion Government on account of subsidies. This has been applied to the cancellation of \$30,000 bonds according to the trust agreements.

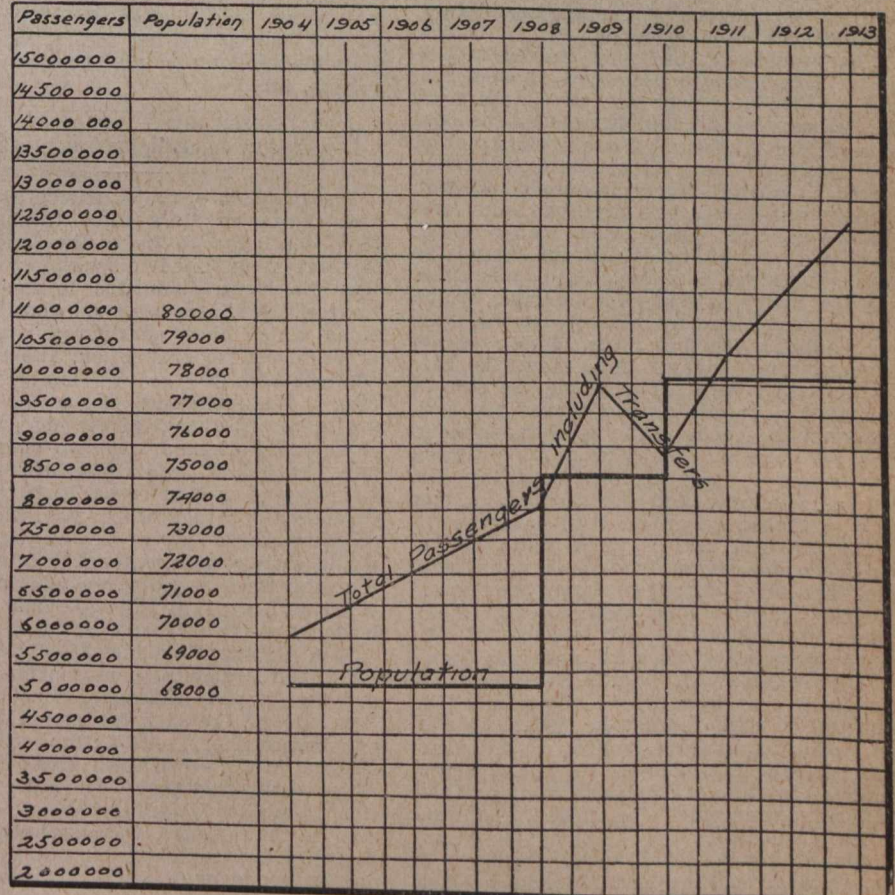
The officers are:—President, Sir Rodolphe



Car Loads of Freight Hauled on Montmorency Division, Quebec Railway, Light and Power Co.



Passengers Carried on Montmorency Division, Quebec Railway, Light and Power Co.



City Division, Quebec Railway, Light and Power Co. Passengers Carried, Including Transfers; Also Population.

off Yonge St., in North Toronto. On June 17, the Ontario Railway and Municipal Board made an order authorizing the Metropolitan Ry., one of the component

showed the crossing of several streets on the level, and the speed of cars was limited to six miles an hour, the Board holding that it was not reasonable to compel the line

Forget; Vice President, L. G. Webster; General Manager, H. G. Matthews; Treasurer and Comptroller, W. J. Lynch; Secretary, P. Hamel.

The Ontario West Shore Railway Muddle.

Prior to 1906, certain persons in Goderich procured a charter for an electric railway to run through various parts of Huron and adjoining counties. They tried for some time to float the company, without success. In 1906, they got in contact with J. W. Moyes, of Toronto, who is said to have represented that he was an expert in electric railway matters; that he had built and operated the Metropolitan Ry. from Toronto up Yonge St., and that he was in a position to finance the road. He undertook to do so, and as part of his scheme he outlined the building of a dam across the Maitland River for the purpose of securing power, not only to operate the railway, but to supply Goderich, Clinton and other municipalities with electricity. He first decided to make a start by building a line from Goderich to Kincardine. He applied to the towns of Goderich and Kincardine and the townships of Colborne, Ashfield and Huron to guarantee the railway company's bonds. Four of the corporations passed bylaws, but the bylaw in Colborne township was defeated. The town of Goderich guaranteed bonds for \$150,000, payable in 30 years, with interest at 5 per cent., Kincardine \$50,000; Huron \$75,000, and Ashfield \$125,000, a total of \$400,000. A trust company was appointed to act as trustee, and a mortgage was executed as security for the guaranteed bonds, and also unguaranteed bonds to the extent of \$200,000, which was the total amount that the 33 miles from Goderich to Kincardine could be mortgaged for. The guaranteed bonds realized about \$385,000. The work was proceeded with, and all of the funds realized from the guaranteed bonds were paid out, with the exception of about \$30,000. The railway company claims, and the certificates of the engineer show, that \$639,000 was expended.

The building of the road started in Colborne Township, just outside of Goderich, and the right of way was purchased from the farmers whose land fronted on the east side of the highway. Certain construction was done, and the road was said to be completed to Kintail, about 16 miles. No ballasting was done, but the road was considered safe for construction trains traveling over the 16 miles. From Kintail to Amberley, about 6 miles, grading was done, and the road was ready for the rails, which were placed along the side of the highway, but nothing further was done. From Amberley for several miles towards Kincardine rails were placed along the side of the road and still remain there; no work whatever was done. The work referred to was all done by The Huron Construction Co., which is said to be owned by Mr. Moyes, who promoted the railway, in fact it is said that he owned both concerns.

For the first two or three years the interest on the guaranteed bonds was paid. The last three payments have been made by the corporations guaranteeing them. There is, apparently, no chance of Mr. Moyes completing the road, and it looks as if the corporations would be obliged to complete it or lose their investment. The \$200,000 of unguaranteed bonds are said to be held by a banking institution which advanced, so Mr. Moyes claims, certain monies to him. The corporations are, naturally, very much dissatisfied, and want to know what became of their money. They employed H. W. Middlemist, Engineer of the Ontario Railway and Municipal Board, to go over the road and make an estimate. His report claims that not more than \$260,000 has been expended and that it will take several hundreds of thousands of dollars to complete the road. If his report is accurate, then it is quite clear that there is

something radically wrong in the reports furnished by the engineer in charge, and on whose certificates the money was paid out by the trust company. Mr. Moyes claims that the reason why he was not able to go on with his schemes is because of the appearance of the Hydro-Electric Commission on the scene, and the probability of it taking over his water power; and further, that owing to this it was impossible for him to finance the power scheme. No matter how the result has been brought about, the municipalities have been placed in a most unfortunate position. The Ontario Railway and Municipal Board, at the instance of the municipalities, started an investigation, some time ago, but it was blocked by failure to procure Mr. Moyes' attendance. All of the books and papers which should be in the company's office at Goderich were, it is said, sent to him. The only evidence given was that of the engineer. He had no books or papers, and the examination was adjourned to get Mr. Moyes and also to enable the engineer to make up statements. A subpoena was issued for Mr. Moyes on Sept. 25, but at the end of October the Sheriff of Toronto wrote the solicitor who is acting for the municipalities interested, that he had been unable to serve it, although he had every available bailiff employed and had had officers who knew him personally wait outside his house in Toronto for several hours on different days. The Sheriff added that he was of the opinion that Mr. Moyes was evading service. Early in November, however, he was located and service effected. Mr. Moyes has recently been employed by the City of Toronto as one of the "experts" to report on the projected purchase of the Toronto Ry.

Mr. Moyes appeared before the Board for examination during the third week in October, but practically no information of any value was elicited from him, and up to the time of writing this it has not been possible to obtain the company's books, papers, etc.

The Electric Railway Situation in Montreal.

The question of the extension of the Montreal Tramway Co.'s lines throughout the city, continues to be a live one. After several lengthened discussions, G. Janin City Engineer, submitted to the Board of Control, Nov. 5, a map showing the extensions which they considered necessary in order to relieve congestion, and to give accommodation to the outlying parts of the city. The principal extensions suggested are in the northeast of the city; the extensions being divided into two classes, those most important, and those less necessary. This report was referred back to the two engineers for further consideration, and a recommendation as to the minimum which would satisfy requirements. It was stated that the lines asked for would involve the construction of 14 subways and overhead bridges, and would cost at least \$3,500,000.

E. A. Robert, President M. T. Co., in a letter to the city council, subsequently pointed out that it was useless to consider all the demands of the city for new lines in the outlying territory, until better facilities were secured in the down town areas. The new lines would only make the present congestion worse.

A further report was submitted to the Board of Control, Nov. 7, by G. R. MacLeod, and approved by G. Janin, showing the lines urgently required, and those which should be discussed with a view to future requirements.

The City Council has requested the Board of Control to ask the company for suggestions as to the best way of relieving the con-

gestion in the centre of the city, and it is said that the company has suggested the construction of an underground line along the whole of St. Catherine St., and an underground line from Bonaventure Station to the Courthouse, thence northerly along either Bleury or St. Lawrence St.

On Nov. 11, the City Council referred all the plans and reports back to the Board of Control with a request that the negotiations be gone on with, so that the basis of an agreement for the solution of the whole matter may be reached.

A Montreal press dispatch of Nov. 18 says that the Canadian Autobus Co. has intimated that it is prepared to build underground lines to serve both the down town and up town districts.

The formal offer of the company was laid before the city Nov. 14. The letter of G. A. Robert, President, points out that "as a transportation problem is so intimately bound up with general traffic requirements of this city, both pedestrian and vehicular, some means must be devised for giving more facilities for three classes of traffic." The agreement, the company suggests, would provide for:—a 40 year franchise; a new avenue between Place Viger and Victoria Square or Windsor Station; a boulevard from Craig St. to Mount Royal or Van Horne Avenue on Back River; subways under steam railway tracks and Lachine Canal at two points; subway from Craig St. to Mount Royal or Van Horne Ave., between Bleury and St. Denis Streets; subway east and west, probably under St. Catherine St.; subway under Notre Dame or St. James St., between Courthouse and Victoria Square or from Hochelaga to Victoria Square; motor bus service on Sherbrooke St.; the widening of Vitre St. from St. Denis to Bleury Street or Victoria Square. The company will agree to pay half interest and sinking funds after the foregoing works are completed; the city to guarantee the mortgage securities to be issued by the company for building subway system; two experts to be appointed to decide as to the location of subways; the right to operate a freight service at night to be conceded; the company will pay to the city 4% on all gross traffic earnings on the surface lines.

London St. Ry. and Hydro Electric Power.—A London, Ont., press dispatch of Nov. 14 says:—The contract between the Water Commission of London and the London St. Ry. for the purchase of hydro electric power at \$36 per horsepower has been received in the city after having been signed by President Everett, of Cleveland, for the railway company. The city will install a rotary converter and supply direct current power, the company having the privilege of a flat rate or a meter rate, both based on peak load. The company will take a minimum of 1,000 h.p., and this will reduce the cost of the power to the city. Further reductions in the cost will be shared by the company, and the agreement will run to the end of the franchise in 1925.

Sandwich, Windsor and Amnerstburg Ry.—A press dispatch from Windsor, Ont., recently, stated that the city council had taken up the question of buying out this company, so as to prevent competition with the municipal hydro electric system. We are officially advised that the matter has not been taken up with the company in any way.

The Board of Railway Commissioners has approved the Montreal and Southern Counties Ry. standard tariff of maximum passenger fares on the basis of 2½c. a mile between stations south of the St. Lawrence River.

The Propose Purchase of the Toronto Railway.

The main points covered by the reports on the proposal for the acquirement of the Toronto Ry. and the Toronto Electric Light Co., as prepared by B. J. Arnold, Chicago, Ill., and also signed by J. W. Moyes, Toronto, in regard to the Toronto Ry., and as prepared by R. A. Ross, Montreal, in regard to the Toronto Electric Light Co., were dealt with in Canadian Railway and Marine World for November. Since these reports have been received, the matter has on various occasions come before the City Council, but no definite steps were taken, as it had been decided to have reports from John Mackay, chartered accountant, Toronto, as to the commercial value of the scheme, and from H. H. Couzens, General Manager, Toronto Hydro Electric System, as to what extent the T.E.L. Co.'s plant might with advantage be incorporated with that of the city. At the council meeting, Nov. 11, these latter reports not having been received, it was, after some discussion, decided to instruct the Corporation Counsel to draft an agreement for purchase on the lines of the reports presented and the correspondence connected with them, such draft agreement to be submitted to the President of the Toronto Ry. Co., the Ontario Government, and the Ontario Hydro Electric Commission, for approval, so that the result may be reported to the council by Dec. 8, in order that the by-law may be submitted to the ratepayers on Jan. 1, and in the event of the agreement not being submitted in time, a synopsis be prepared for submission to the ratepayers instead.

Since that meeting, John Mackay's report has been received. In regard to the proposal regarding the Toronto Ry., the report states that making allowance for all charges and the construction of an enlarged system of 283 miles in 1921, with corresponding increases in car capacity, etc., and operated as a single system on a single fare basis, the net annual surpluses, after paying the city upwards of \$13,000,000 in respect of traffic receipts, to which it is entitled under the agreement with the Toronto Ry., should amount to approximately \$11,500,000 by Sept. 1, 1921. On a stationary traffic from 1921, the net receipts should, after bearing all charges and paying \$2,300,000 a year into the city treasury in continuation of the existing arrangement with the company, leave a surplus of over \$2,000,000 a year. This surplus could be applied to the reduction of fares to 3 1-3c. Failing the completion of purchase, the net loss on the existing civic car system, together with additional losses involved in adequate extensions, will amount, excluding the provision for sinking funds, to about \$3,750,000.

The proposals, if carried out, involve the immediate expenditure of \$30,000,000 and the obligation to expend additional capital in large amounts from time to time. The purchase price of the railway properties has been fixed at \$22,000,000, and the physical assets have been valued at a little over \$10,000,000, leaving something less than \$12,000,000 as applicable to the franchise rights that would be surrendered to the city. The principal franchise, that of the Toronto Ry., expires Sept. 1, 1921, and others of the radial lines proposed to be dealt with, in 1921 and 1929, subject to varying terms of renewal. The purchase price of the Toronto Electric Light Co. has been fixed at \$8,000,000, and the physical assets have been valued at \$6,045,000, leaving \$1,955,000 as the price payable for the surrender of the company's franchise rights, which are practically perpetual.

After having gone most carefully through all the intricacies of the proposed deal, Mr.

Mackay has no hesitation in declaring his full confidence as to the outcome, provided the basic conditions as outlined are observed by those concerned.

London and Port Stanley Railway Electrification.

At a meeting of the London, Ont., City Council, Nov. 17, resolutions were passed finally passing the bylaw for the electrification of the line from London to Port Stanley; providing for the appointment of a commission to supervise the expenditure of the \$750,000 voted; and instructing the mayor to vote on behalf of the city in favor of the lease of the line by the city council, at the special meeting of the shareholders to be held Dec. 9.

In an interview, Nov. 5, Mayor Graham is reported to have said he had just returned from Detroit, Mich., where he had had conferences with officials of the Michigan Central Rd. and the Pere Marquette Rd. The latter, he said, would submit an offer for operating over the line from the expiration of its present lease until the electrification was completed. If an arrangement could not be made with the P. M. Rd., the M. C. Rd. would be prepared to operate the line.

The plans for the electrification are practically completed and will be submitted to the Board of Railway Commissioners for approval at an early date.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry. and allied companies.—Gross earnings for September, \$734,283; operating expenses, maintenance, etc., \$560,888; net earnings, \$173,395, against \$688,069 gross earnings; \$483,562 operating expenses, maintenance, etc.; \$204,507 net earnings, for Sept., 1912. Aggregate gross earnings for three months ended Sept. 30, \$2,260,854; net earnings, \$583,478, against \$2,013,586 aggregate gross earnings; \$581,406 net earnings for same period, 1912.

British Columbia Electric Ry.—The Vancouver City Council has asked the company to state on what basis it would be willing to dispose of the car lines in the city, and it is said that on receipt of the statement of terms a vote of the ratepayers will be asked on the general question of purchase. The city council has authorized the City Comptroller to arrange for an audit of the company's books to ascertain the amount of cash taken in by the company on which the city receives a percentage.

Cape Breton Electric Co.—Gross earnings for September, \$32,515.62; operating expenses and taxes, \$16,955.73; net earnings, \$15,559.89; interest charges, \$4,891.66; balance, \$10,668.23; bond sinking and improvement funds, \$1,190; net balance, \$9,478.23, against \$34,363.62 gross earnings; \$15,777.26 operating expenses and taxes; \$18,586.36 net earnings; \$4,495.84 interest charges; \$14,090.52 balance; \$1,206.66 bond sinking and improvement funds; \$12,883.86 net balance for Sept., 1912.

Halifax Electric Tramways Co.—The Nova Scotia Public Utilities Commission, Nov. 7, authorized the company to issue 6,000 shares of ordinary stock at par. The additional capital is to be devoted to the retirement of certain bonds, and in extending and improving the system.

London and Lake Erie Ry. and Transportation Co.—In the course of a discussion at a recent meeting of a committee of the St. Thomas, Ont., City Council, W. N. Warburton, General Manager, is reported to have stated that the time is not far distant when the company's head offices will be transferred from London to St. Thomas,

that the dispatching is already being done from St. Thomas, and that the General Manager and his staff will be located there. We have been officially advised that Mr. Warburton made no such statements.

London St. Ry.—Gross earnings for September, \$31,547.30; expenses \$19,988.56; net earnings \$11,558.74; deductions \$2,380.40; net income \$9,178.34, against \$29,541.07 gross earnings; \$17,656.01 expenses; \$11,885.06 net earnings; \$2,371.25 deductions; \$9,513.81 net income for Sept., 1912. Aggregate gross earnings for nine months ended Sept. 30, \$248,349.74; expenses \$174,493.51; net earnings \$73,856.23; deductions \$21,807.24; net income \$51,823.99, against \$227,106.36 aggregate gross earnings; \$155,941.21 expenses; \$71,165.15 net earnings; \$21,639.75 deductions; \$49,525.40 net income for same period 1912.

Nelson Street Ry.—A press dispatch from Nelson, B.C., says that at a conference between the city council and the company's directors municipal operation of the street railway, with the stockholders retaining their interest in it on a proportionate partnership basis was decided on. Reorganization of the company involves increasing the capital from 50,000 shares to 75,000 shares in order that the city may be given 40,000 shares, by which it will have control. The city will issue bonds to pay off the company's debt and provide working capital.

Quebec Ry., Light, Heat and Power Co.—Supplemental letters patent under the Dominion Companies Acts, dated Nov. 6, authorize the company to enter into any agreements relating to any corporation whose capital stock is owned or controlled by or for the Q. R. L. H. and P. Co., "and relating to acts, steps and things to be done or taken or agreed to or assented to by any such corporation, and relating to or respecting the undertakings, contracts, stocks, securities, liabilities, bonds, mortgages, charges, assets, operations, revenues and profits of any such corporation, whether such agreements, undertakings, guarantees and arrangements may be entered into with such corporation itself or otherwise."

Saskatoon Municipal Ry.—Receipts for Oct. were \$12,336.20, an increase of \$972.63 over the previous month. Details of the receipts show, cash \$4,349.30; tickets \$7,792.55; advertising \$81; police \$17.50; postmen \$41.65; chartered cars \$15; miscellaneous \$69.20. The mileage operated was 58,858; traffic receipts per car mile, a little over 21c.; operating expenses per car mile, 25.3c.; number of passengers carried per car mile, 4.6; wages \$7,409.65; interest on capital expenditure \$2,083; sinking fund, \$743.

St. Thomas, (Ont.) Electric Ry.—It was reported to the committee having charge of the line, Nov. 3, that the present bonded indebtedness is \$85,000, and that since the City took over the line from the company nearly \$250,000, including the purchase price, has been laid out upon it.

Toronto Ry., Toronto and York Radial Ry. and allied companies.—Gross earnings for September, \$865,796; operating expenses, maintenance, etc., \$411,159; net earnings, \$454,637, against \$767,944 gross earnings; \$404,171 operating expenses, maintenance, etc.; \$363,773 net earnings for Sept., 1912. Aggregate gross earnings for nine months ended Sept. 30, \$7,183,470; net earnings, \$3,553,004, against \$6,221,044 aggregate gross earnings; \$3,185,100 net earnings, for same period, 1912.

Winnipeg Electric Ry.—Gross earnings for September, \$331,732; operating expenses, \$181,652; net earnings, \$150,080, against \$309,722 gross earnings; \$162,870 operating expenses; \$146,852 net earnings for Sept.,

1912. Aggregate gross earnings for nine months ended Sept. 30, \$2,981,434; net earnings, \$1,336,374, against \$2,737,552 aggregate gross earnings; \$1,280,748 net earnings for same period, 1912.

The Montreal Tramways Company's Fares, Service, Etc., in Mount Royal Ward.

Peter Murphy, of Mount Royal Ward, Montreal, complained some little time since to the Quebec Public Utilities Commission, of an increase in fares charged by the company in that ward, which was formerly Notre Dame des Neiges municipality; also charging discrimination as compared with other sections of the city. The matter was referred to the President of the Commission, who, with F. C. Laberge, M. Can. Soc. C.E., another member of the Commission, heard the matter on November 7. The company filed an exception to the Commission's jurisdiction. The change in fares complained of by Mr. Murphy was the abandonment of the practice of selling 6 tickets for 25c and the putting in force of a cash fare. It was shown that on Feb. 20, 1911, the Board of Railway Commissioners for Canada made an order governing the fares to be charged upon the Montreal Park and Island Ry., and authorizing the cash fare mentioned, but President Hibbard held that that order had ceased to be in effect as the Board of Railway Commissioners had ceased to have any jurisdiction over the Montreal Park and Island Ry., which is now a part of the Montreal Tramways Co.'s system. He therefore recommended as follows:—

That an order be issued directing the city of Montreal and the Montreal Tramways Co. to show cause why the commission should not consider and for the interest and convenience of the public require the extension of the railway from the present authorized limit of the Guy St. and Cote des Neiges line to such point within the limits of Mount Royal Ward as will be of convenient access to persons living in that ward and its immediate vicinity, as a means of reaching the central portions of the city, subject to such reasonable conditions as to right of way, construction, operation and rates as may be provided in the contract between the city and the company, or it may be within the jurisdiction of the commission to direct:

That the question of rates or tolls to be charged be not finally disposed of until such time as any questions arising upon the foregoing order are dealt with; that in the meantime the company be directed to restore the issue of 6 tickets for 25c. (the cash fare of 5c. to be still optional with passengers), children's tickets and other matters affecting tolls and transfers as were in effect before the adoption of the uniform 5c. cash fare now being required to be paid.

The commission subsequently passed an order carrying out the President's suggestions.

Fares on Saskatoon Municipal Ry.—In response to a request from workmen, limited tickets are now being issued at 8 for 25c., available only between 6 and 8 a.m. Other tickets are sold as follows:—Regular tickets, 6 for 25c., available at all hours; school tickets, for children under 14, 8 for 25c., available 8 a.m. to 5 p.m.; children's tickets, for children under 12, 8 for 25c., available at all hours. The cash fare is 5c.

The Montreal and Southern Counties Ry. is reported to be in the market for 12 cars, 57 ft. long, or 7 ft. longer than those at present in service, and with through platforms. It is said they are to be of the multiple unit, single control type, with toilet accommodation. It is also stated that some baggage cars are required.

Electric Railway Projects, Construction, Betterments, Etc.

Alberta Metropolitan Ry.—A meeting of shareholders was held at Calgary, Alta., Nov. 5, to elect directors, authorize the issue of capital stock, and approve of contracts for the construction of the projected railway. W. J. C. Madden, 114 Ninth Ave. E., Calgary, was chairman of the provisional directorate. The company was incorporated by the Alberta Legislature in 1912, to build a railway from Calgary to Shepard, Alta., to arrange with other companies for the operation of the line, and to lay out amusement parks.

Berlin and Northern Ry.—Press reports state that a contract has been let for the elimination of a curve on the existing line, and that the work includes the building of a 1,300 ft. culvert, and abutments. (May, pg. 235.)

Brandon Municipal Ry.—We are officially advised that a report is being prepared for submission to the City Council of Brandon, Man., respecting extensions to the line which it may be necessary to make in 1914. The principal extension talked of is one of four miles to the Experimental Farm, the Industrial School and Lake Percy. The city is to get a park from the farm and school around Lake Percy, on condition that a line be built to it. The land required for the park will be surveyed as soon as the river and the lake freeze over, and then the agreement will be discussed and definitely decided upon. J. Antonisen, Brandon, is Superintendent. (Aug. pg. 395.)

British Columbia Electric Ry.—The building of an extension from Boundary Road, along Hastings St., Vancouver, for two miles, was expected to be completed by Dec. 1.

Plans have been approved for the building of a line on 43rd Ave., South Vancouver, from Bridge St. to Main St., and it is said that construction will be started early in 1914. This is an extension of the new line from Kerrisdale to Point Grey.

Work has been started on the construction of the station at the south end of Granville St., as a terminal for the Lulu Island line. The substructure, consisting of heavy pile and timber work supporting the platform on the level of the bridge, was built during the summer. The contract for the superstructure has been let to Campbell Bros., and it is expected that the station will be completed early in 1914. The platform on which the station is to be built is 188 by 140 ft., and the station building will be 115 by 30 ft. It will contain waiting rooms, refreshment room, and offices for the operating staff. There will be five tracks to accommodate the regular traffic and to provide storage for cars, etc. The cost of the building is estimated at \$40,000.

We are officially advised that Westinghouse, Church, Kerr and Co., have been engaged to act as consulting engineers in connection with the erection of the double deck car barn in Vancouver, a description of which was given on pg. 542 of our November issue. This barn is estimated to cost \$330,000, and will give accommodation for 120 cars. The same firm is also acting as consulting engineers in connection with the erection of new shops in Burnaby municipality on the easter boundary of Vancouver, which will probably cost about \$250,000. Their construction work will probably be started early in 1914. Plans are being prepared.

Tenders are under consideration for the construction of an interlocking signal tower at the crossing of the Esquimalt and Nanaimo Ry. on Esquimalt Road. (Nov., pg. 544.)

Calgary Municipal Ry.—The ratepayers of Calgary, Alta., by a considerable majority have refused to approve of an arrangement for taking over a line to Shaganappi Park, which it was proposed to build privately, and hand over to the city for operation, the promoters guaranteeing the cost of operation for a short term. As a result of the vote the City Commissioners, Nov. 7, recommended the City Council to pass a resolution providing that in the future the City shall not entertain any proposition from private individuals to establish public utilities within the City limits.

Press reports state that the City Council has under consideration plans for extending the municipally owned electric railway, totalling over four miles. (Oct. pg. 494.)

Cape Breton Electric Co.—Press reports state that among the new work proposed to be carried out during 1914, is the building of a new substation at Reserve Jct., N.S., and an addition to the machine shops. (July, pg. 344.)

Dominion Power and Transmission Co.—It was reported in Hamilton, Nov. 13, that the directors had decided to undertake the immediate construction of a steam auxiliary plant at an estimated cost of \$1,000,000. We have since been officially advised that designs are being prepared for a steam supplementary plant of a capacity of 6-10,000 k. w. turbine, of which capacity the company is now engaged in developing two of the units. The plant will be equipped with water tube boilers for 200 lbs. pressure with 160 degrees of superheat. The plant is designed on the unit plan. Work will be proceeded with as rapidly as possible, and it is expected to have the first units in operation within a year. The plant is not designed merely for emergent or peak use, but is intended to be operated continuously. (Nov., pg. 544.)

An official is reported recently as stating at Brantford, that there is no intention of extending the line westerly from that town, but that a branch line will be built to Galt. The right of way for this branch has been purchased, and it is possible that construction will be undertaken in 1914. There is, he added, absolutely no foundation for the press reports that the present line from Hamilton to Brantford will be made into a double track one. The traffic between the two points will not warrant a second track for some years to come. (Nov., pg. 544.)

Dunnville, Wellandport and Beamsville Electric Ry.—A bonus has been voted in aid of the building of this electric railway by Gainsboro township, and press reports state that bonds are being sold to provide for the building of the line from Dunnville to St. Anne, Ont. (Oct., pg. 494.)

The Edmonton Interurban Ry. has built a single track line from the city boundary of Edmonton, Alta., to St. Albert, about 5 miles, and has been operating a self-propelled gasoline electric car between the two termini three times a day, but it has had no connection with the Edmonton Radial Ry., which is operated by the city. On Nov. 6 an agreement was entered into between the company and the city and we were subsequently officially advised that the 1.5 miles of track to give connection between the city lines and the company's southern terminal were expected to be completed by Nov. 20, when a through service between Edmonton and St. Albert was to be started. It is said that the company has ordered three more cars in England. The car already in use is equipped with the Hele-Shaw system of transmission, which

consists of oil motors and fittings. H. Warner, Edmonton, is Chief Engineer. (Nov., pg. 544.)

It is reported that the company will soon begin the construction of a carhouse on Algonquin Ave., Edmonton.

Estevan Transit and Power Co.—Application is being made to the Saskatchewan Legislature for the incorporation of a company with this title to develop power, and in connection therewith to build railways from the s. w. $\frac{1}{4}$ of sec. 13, tp. 2, range 8, west of the 2nd meridian, near the crossing of the Canadian Northern Ry. by the C.P.R., along the Government road allowance, and by a fully described route to sec. 11, and along the south side of the Souris River valley, to the road allowance between sections 11 and 12. The provisional directors named in the application are H. J. McNeil, W. J. Perkins, E. C. Hillborn, D. C. Dunbar, Estevan, Sask.

Forest Hill Electric Ry.—Application has been made to the Ontario Railway and Municipal Board for sanction to proceed with the construction of the projected line north of Toronto. (Sept., pg. 442.)

Frontier Electric Ry.—Press reports state that it is not proposed to start construction of this projected three track railway from Buffalo to Niagara Falls, N.Y., until the spring. J. S. Simmons, Niagara Falls, N.Y., is Vice-President.

Imperial Traction Co.—Press reports state that it is proposed to begin construction early in the spring on the proposed lines from Bridgeburg to Smithville, and from Hamilton to Toronto, and that a connection will be provided between Smithville and Hamilton. (July, pg. 344.)

Kingston, Portsmouth and Cataraqui Electric Ry.—Press reports state that a second track is to be laid on Princess St., Kingston, Ont., during next summer. (Apl. pg. 185.)

We have been officially advised that it is the company's intention to lay a second track on portions of King and Princess Streets in the early spring, provided the city is in a position to undertake the paving of the same, and that on the completion of the second track the company will operate a limited ten minute service all the year round.

London, Grand Bend and Stratford Ry.—C. J. McAllister in an interview at London, Ont., Nov. 4, is reported as stating that surveys had been completed and application was being made to the several municipalities through which the line would pass, for franchises. The lines for the building of which arrangements are said to be being made are:—From London to Grand Bend, via Hyde Park and Parkhill; and from Grand Bend via Exeter to Stratford. The line may eventually be carried on to Berlin. (Oct., pg. 494.)

London St. Ry.—A conference between the company's officials and the London, Ont., City Council, was held Nov. 8, on the condition of the lines in the city. The Council is desirous that cars be run on Sundays, but T. H. Smallman, Vice President, stated that the company would not pay a cent or grant anything in the way of concessions for the privilege of running cars on Sunday. The City Engineer had presented a report suggesting new routes, additional lines, additional cars, and some concessions as to fares. The company will consider this report and make suggestions thereon.

An agreement was reached Nov. 3, under which it is said that the company will take a minimum of 1,000 h. p. from the Hydro-Electric Commission. The price is \$36 per h. p., and the contract is to run for twelve years from Dec. 15. (July, pg. 344.)

Medicine Hat Tramways, Ltd.—Application was made to a court at Calgary, Alta., Nov. 21, by E. G. Fagan, of Medicine Hat, for an order quashing the resolution of the council granting an extension of time to the Montreal Engineering Co. for the construction of an electric railway in the city. (Nov., pg. 544.)

Moncton Tramways, Electric and Gas Co.—Press reports state that it is not intended to extend the line to Sunny Brae, N. B., via Church St., Moncton, until early in 1914. (Feb. pg. 90.)

Montreal and Southern Counties Ry.—We are officially advised that contracts have been let as stated in our last issue for the building of a bridge across the Yamaska River, and the extension of the line through Granby, Que. In connection with this line a route map from St. Cesaire to Granby, 14.5 miles, has been approved by the Board of Railway Commissioners. We are further advised that a contract has been let to A. F. Byers & Co., for the building of a sub power station, and a passenger station at Rougemont, and that they have started the work. (Nov. pg. 544.)

Moose Jaw Electric Ry.—The South Hill belt line has been completed and was put in operation Nov. 8. (July, pg. 344.)

Niagara Gorge Rd.—Press reports state that the company is preparing to erect additional car houses at Niagara Falls, N.Y.

Niagara, St. Catharines and Toronto Ry.—Plans are being prepared for a passenger station and freight house at Niagara-on-the-Lake, the terminal of the recently completed 11 mile branch from St. Catharines, Ont. (Nov., pg. 544.)

Port Arthur and Fort William Electric Ry.—Tenders are under consideration for a brick addition 260 by 30 ft. to the Walsh St. car barn, Fort William.

The only work necessary for the completion of the line to the industrial plants on Island no. 2, Fort William, is the building of 100 ft. of trestle work on the island side of the bascule bridge. This is being put up by the C. P. R., and is expected to be completed by the end of the year, when the extension will be put in operation. (Nov., pg. 544.)

Regina Municipal Ry.—We are officially advised that it has been decided to postpone the building of the line into the C. P. R. annex, Regina, Sask., until the spring. The extension on Young St., to the new power house has been completed. During the construction season now completed there have been built and reconstructed 21 miles of single track. This includes about 11 miles of paved single track. The approximate expenditure on this was about \$550,000. H. Doughty is Superintendent. (Nov., pg. 544.)

Prince Albert, Sask.—At a meeting of the Prince Albert, Sask., Board of Trade, Oct. 30, a resolution was passed urging the City Council to grant a franchise for an electric railway in the city, to a company. It is said that a proposal will be submitted to the City Council at an early date.

Quebec and Island of Orleans Ry.—Application is being made to the Quebec Legislature to authorize an extension of the projected lines connecting with the Isle of Orleans, from Quebec to Montreal, as far as possible along the north shore of the St. Lawrence River. G. Maillet, Quebec, is Secretary. (May, 1911, pg. 455.)

St. John Ry.—Rapid progress has been made with the extension to the One Mile House and to Kane's Corner, on the extension of the St. John, N.B., Ry. Track has been laid to One Mile House, part of the line ballasted, and part of the overhead

work completed. It is expected to have the extension in operation early in December. An arrangement has been made with the City Council providing for a further extension from Kane's Corner, along the Marsh Road. (Nov., pg. 544.)

St. Thomas Street Ry.—The City Engineer was instructed by the St. Thomas City Council, Nov. 3, to prepare an estimate for putting the line throughout into proper condition, and for the laying of a second track upon Talbot St. (July, pg. 345.)

Sudbury, Copper Cliff Suburban Electric Ry.—A bylaw has been passed by the Town Council of Sudbury, Ont., granting a franchise to the company for the building of a street railway, to be operated by any power except steam, on the following streets and avenues: Regent, Lorne, Elm, Durham, Monk, College, Kathleen, Teetman, Morin, Notre Dame, Lisgar, Larch, Cedar, Station, Nelson, John, Elizabeth, McNaughton, and Annie. By consent other streets may be substituted; rights on the streets may be granted to other street railway companies, and the company may utilize a private right of way connecting with the lines on the streets. The agreement also contains sections as to the class of cars to be provided, and provides for the making of regulations as to the operation of the same. (Nov. pg. 545.)

Three Rivers Tramway Co.—Press reports state that the proposed electric railway from Three Rivers to Berthier and Portneuf, Que., is again under consideration, with a view of construction being started in 1914. (Aug. pg. 395.)

Toronto Suburban Ry.—Construction on the line from Lambton Mills to Guelph, Ont., has practically been closed down for the season. The grading is almost finished into Guelph, and nearly all the ties have been delivered at Cooksville, where they are stored on the right of way. Some right of way difficulty has developed between Lambton and the crossing of Mimico Creek, on which section of the line no grading has been done. Efforts are being made to settle these matters.

Owing to a difficulty raised by the Village Council of Weston, the line to Woodbridge has not been put in operation. The Board of Railway Commissioners has ordered the reconstruction of the subway, about which the difficulty arose, and the division of the cost between the village, the company and the G. T. R.

It is expected that both the above lines will be completed and put in operation early next summer. (Oct., pg. 494.)

Winnipeg Electric Ry.—After several conferences between the City Council, representatives of the company and R. M. Fenstel, the street car traffic expert, who recently made a report on the electric railway in the city, a special committee was appointed to act for the City in further negotiations with the company on the report. As the result of the conference alterations were made in the routing along several lines. The Public Utilities Commission made an order, Nov. 4, that the cost of the investigation made by R. M. Fenstel, should be divided between the city and the company, each paying \$2,637. (Nov., pg. 545.)

Grand Valley Ry.-Brantford St. Ry.—An extension of time to Nov. 23 was given the company to elect whether or not it would comply with the conditions imposed by the court as the result of the recent action brought by the city of Brantford, Ont., for the cancellation of the franchise. If the conditions are not complied with the city is to take possession of the streets, but not of the company's assets.

Electric Railway Notes.

The Dominion Power and Transmission Co. has received one freight car from the Preston Car and Coach Co.

The Regina Municipal Ry. has received one double truck snow sweeper from the Preston Car and Coach Co.

The Regina Municipal Ry. has purchased from the Preston Car and Coach Co. 18 double truck cars and one double truck snow sweeper, and has had a motor haulage car and some other rolling stock built in its own shops.

The Niagara, St. Catharines and Toronto Ry. Co. recently presented E. F. Purdon, an operator, with a gold watch and chain for bravery in preventing a collision when two freight cars broke loose from a train on the company's line in August.

H. C. Nickle, Superintendent of the Kingston, Portsmouth and Cartaraqui Electric Ry., is reported as stating that after Oct. 1, 1914, a ten minute service will be given between 11 a. m., and 7 p. m., all the year round. At present a ten minutes service is given between these hours, during the summer.

The Montreal and Southern Counties Ry. has ordered six motor passenger cars, two trailer cars and two motor combination passenger and baggage cars, all 54 ft. 2 ins. long over buffers, with straight platforms, and equipped with all the most modern improvements, from the National Steel Car Co.

With reference to the statement in the daily press that the Toronto and York Radial Ry. is building an extension to its car barn on its Scarboro Division, we are officially advised that a storage switch has been built at the west side of the car barn, which is no doubt responsible for the report.

The Denver City Tramway has instituted what is called a "skip stop" service on one of its lines, as a means of relieving the traffic, and speeding up the schedule. Under this system, the cars stop at every other street travelling in one direction, and at the intermediate streets in the other direction, so that all streets have a stop in one or other direction.

The Toronto Suburban Ry. has given notice of an appeal to the Privy Council against the decision of the Appellate Division of the Supreme Court of Ontario, which upheld the application of the City of Toronto that the company shall pave the track allowance on which it operates on Bathurst St. and Davenport Rd. The company claims that under the agreement it is not compelled to do this work.

It was stated recently that the Montreal Tramways Co. had decided to obtain the ruling of the highest court, if necessary, in order to test its powers over passengers who refuse to comply with the company's antismoking regulations. We are advised that the company has had several cases before the recorder's court under the by-law prohibiting smoking, and that it secured a conviction in each case. None of the cases have been appealed.

The Hull Electric Co. is in the market for four double truck trailer cars. The design of the car bodies will be the same as that in use for the company's motor cars, as illustrated in an article on its two car trains in Canadian Railway and Marine World for September, page 441, and the arrangement of the entrance and exit will be similar to that shown on the trailer car in the same illustration. The general dimensions of the cars will be, length over bumpers, 43 ft.; height from bottom of sill to

top of roof, 8¾ ft.; width over side sheathing, 8½ ft.; seating capacity, 54 persons.

The Cape Breton Electric Co. has made a change in regard to the collection of fares on its local lines. Ever since commencing operation fares have been collected without the use of fare boxes, but fare registers have been used. On Nov. 1, the company started the use of portable hand fare boxes on its local lines in Sydney, North Sydney, Sydney Mines and Glace Bay, but it is continuing the old plan of fare collection on the interurban lines between Sydney and the colliery districts, using a fare register as in the past.

Proposed Municipal Interurban Electric Railways in Ontario.

In connection with the project for the building of an electric railway from Toronto to Port Perry, Ont., which was fully dealt with in Canadian Railway and Marine World for November, a meeting of representatives of municipalities interested was held in Toronto, Oct. 29. It was decided that support would generally be given to what is described as route 1, viz., from Toronto to Whitby, passing through Markham, Uxbridge, Brooklin and Port Perry, 71 miles. It was further decided that the Hydro-Electric Commission should draw up a contract for the building and operation of the line, which should be submitted to the municipalities for discussion. The financing of construction was also discussed, and the opinion was expressed that the Provincial Government should grant subsidies in favor of this and other similar lines.

A project has been started in Guelph to build a line to follow the Hydro-Electric Commission's power transmission lines from Hespeler through Guelph to Elora, Fergus, Arthur, and Mount Forest, and on through the Beaver Valley to Meaford or Thornbury. The Owen Sound Board of Trade, Oct. 30, passed a resolution favoring the Guelph project, but advocating the continuance of the line to Owen Sound.

A survey has been made of the County of Huron by engineers acting for the Hydro-Electric Commission, and preliminary plans for routes laid out. As soon as the necessary reports on these are received by the Commission, it is proposed to arrange for meetings to be held in Goderich, and other centres in the county to discuss the whole question. (Nov., pg. 539, and Sept., pg. 442.)

Port Arthur and Fort William Electric Ry.—At a meeting of the Fort William, Ont., City Council, Nov. 1, a resolution was passed deciding to take over the control of the part of the electric railway system within the city limits. At present the line is operated as a joint undertaking by a commission, but each city undertakes the construction of extensions within its own borders. Under the present agreement a through service between the two cities is carried on. A committee was appointed to arrange with Port Arthur the necessary details for the change. The suggestion is that the line shall be operated as at present by a joint board, but that it shall be run as two separate units, each city having control of its own lines, while a neutral zone will be provided, where the cars from each city will switch and turn.

The present joint commission was appointed in 1908 for four years, which terminates, it is claimed, in December. The commission decided, Nov. 6, to employ an outside man to assist the commission and the officers of the line in making up the final reports and to advise as to the future management.

Personal Paragraphs.

N. W. PATTERSON has been appointed Chief Inspector, Regina Municipal Ry.

THOMAS PENNY, formerly President International Ry. Co., which controls the Niagara Falls Park and River Ry. in Canada, has resumed practicing law in Buffalo, N. Y.

C. J. McCUAIG, stock broker, Montreal, who is President of the Sherbrooke Railway and Power Co. has been appointed honorary lieutenant colonel of the 53rd regiment, which has its head quarters at Sherbrooke.

PATRICK DUBEE, Secretary-Treasurer Montreal Tramways Co., and President Canadian Electric Railway Association, has been elected a member of the American Electric Railway Association's committee on taxation matters.

London and Lake Erie Ry. and Transportation Co.—G. B. Woods, Vice President, is reported to have stated in an interview at St. Thomas, Ont., Nov. 19, that the company had under consideration proposals for the extension of the line to Ingersoll, and to Aylmer. In reference to the latter proposal a deputation from the Aylmer district told Mr. Woods that a right of way would be provided to Aylmer, along or near the 7th concession of Yarmouth, if the company would agree to that route. Mr. Woods is reported to have stated that he personally favored a route along Talbot St. If the line was built in all probability a branch would be built to Sparta, five miles in length if the Talbot St. route was adopted, and four miles if the 7th concession route was selected. The route for the proposed line to Ingersoll would be a direct one. Since the present company took over the line, added Mr. Woods, about \$150,000 had been expended upon improvements. (Aug., pg. 395.)

Co-operative Insurance for Employes has been arranged by the Fourth Avenue Ry., of New York, with an insurance company. The proposed policies are to be issued in lieu of a death benefit of \$250 under the mutual benefit association affiliated with the company. For members of the association the average annual cost is to be about \$11, but this rises to \$12 for employes not members. The association will pay \$4 of each member's premium and the remainder will be paid through the company, being deducted in weekly installments from wages. The payment of 75c. a year additional secures accident benefits varying from \$250 for loss of thumb and index finger to \$1,000 for the loss of both hands or feet, etc. Anyone leaving the company's employ may continue the insurance on paying the published rate for his age; the additional accident benefit may be secured after leaving the company's employ for an annual fee of \$1.25.

Toronto, Barrie and Orillia Electric Ry.—At a meeting of the Barrie, Ont., Town Council, Nov. 17, a committee was appointed to confer with the company with a view to having an agreement for a franchise submitted to a vote of the ratepayers in January.

This company was originally incorporated by the Ontario Legislature as the Monarch Radial Ry., having power to build a railway from Toronto to Barrie and Orillia. An extension of time for construction, and authority to change its name to the T.B. and O.E. Ry., was granted in 1912. (Feb., 1912, pg. 91.)

The London St. Ry. has received six single end single truck pay-as-you-enter city cars from the Preston Car and Coach Co.

The Board of Railway Commissioners has established express delivery and collection limits of Owen Sound, Ont.

Marine Department.

The Shipping Disasters on the Great Lakes.

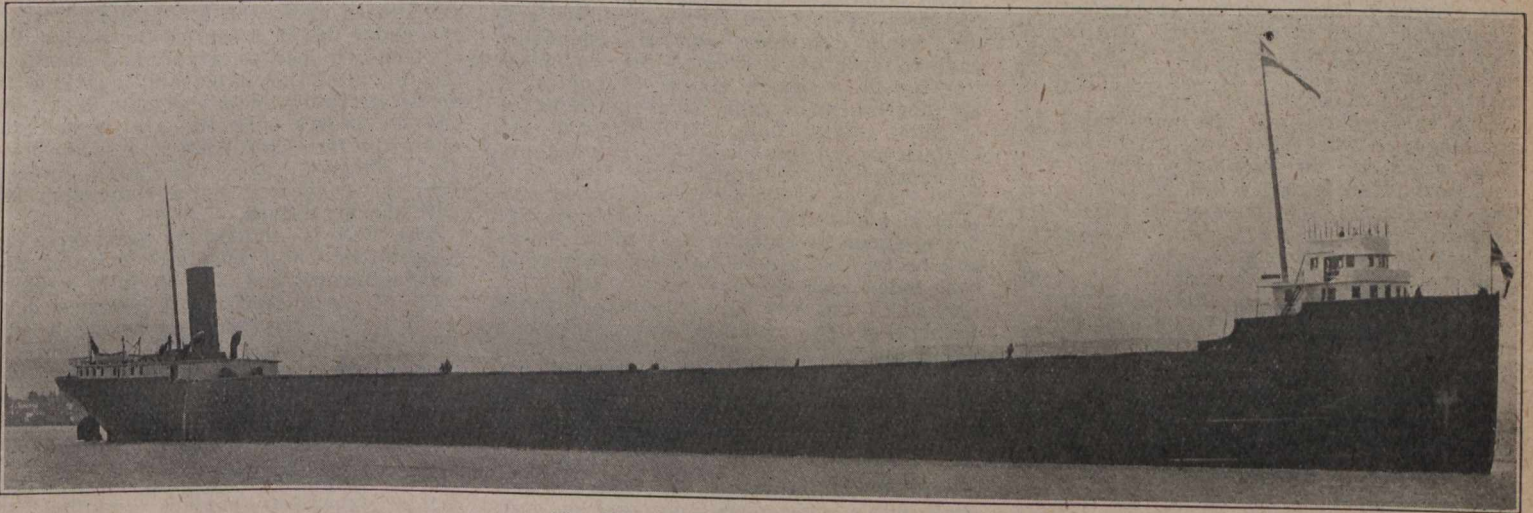
What is, without doubt, the greatest disaster, or series of disasters, which has ever taken place in connection with the navigation of the Great Lakes, occurred chiefly during Nov. 9, when a severe storm swept the lakes from end to end. Though practically no part of the Great Lakes escaped some evidence of the storm, it seemed to have been most severe in Lake Huron, so far as damage to vessels and loss of life are concerned, but whether such damage and loss are due entirely to the storm, or to a possible bunching of vessels in the nar-

rower parts of Lake Huron, thus restricting the area within which vessels might have run for safety, and making for possible collisions, is at present a matter for conjecture. Although a full enquiry will be made into all possible causes of the disaster, it is, unfortunately, impossible to obtain any very clear details of what actually happened, as any evidence which could be given and which would have any real value in clearing up many of the clouded points, could only be given by men who went down with the vessels. It is to be hoped, how-

little or no wreckage has been discovered, while a fifth, the Canadian Lake and Ocean Navigation Co.'s s.s. Turret Chief, was driven ashore in such a position that it is doubtful if she can be salvaged. The officers and crew of this latter vessel got ashore, but those of the other four vessels were all lost. The largest individual loss was the St. Lawrence and Chicago Steam Navigation Co.'s s.s. James Carruthers, an illustration of which is given herewith. She was the largest freight carrying steamship engaged in the Canadian lake trade, and was

H. G. Hagarty, director and Secretary-Treasurer of the company attended. The steamships Wexford and Leafield were in charge of Capt. B. Cameron and Capt. C. F. Baker, respectively, both of Collingwood, and the Regina, of Capt. E. H. McConkey, of Barrie, Ont. None of the bodies of the last three has been recovered at the time of writing.

In addition to total losses, there were a number of strandings, with consequent damage, these including the following Canadian vessels:—A. E. McKinstry, owned by Can-



The Wrecked Steamship James Carruthers.

only launched at Collingwood, Ont., May 22. Of the Canadian vessels lost, she was the only one built in Canada, all the others having been built in Great Britain. The loss of United States vessels is considerably heavier, both as to number and value.

Capt. W. H. Wright, who had been master of the James Carruthers since her first trip at the commencement of the season, has been master of most of the vessels of the St. Lawrence and Chicago Steam Navigation Co.'s fleet. He was promoted from

ada Interlake Line, Ltd., Toronto, near Brighton, in Lake Ontario; Acadian, owned by the same company, at Thunder Bay, Lake Superior; Huronic, owned by Northern Navigation Co., Sarnia, Ont., at Whitefish Point, Lake Superior, all of which were released without actual damage. The following U.S. vessels were also damaged by stranding, etc., but the extent of such damage is, at the moment, in most cases, unobtainable:—Fred. G. Hartwell, Mutual Steamship Co., Duluth, Minn., ashore at Iroquois Point; Chas. L. Hutchison, H. Wineman, Jr.,

Name	Owner	Where and When Built	Dimensions	Tonnage	Value Approx.	Insurance	Lives Lost Approx.
CANADIAN:							
James Carruthers.....	St. Lawrence and Chicago Steam Navigation Co., Toronto....	Collingwood, Ont. ....1913	551x58x31	7862—5606	\$385,000	\$275,000	25
Leafield.....	Algoma Central and Hudson Bay Ry., Sault Ste. Marie, Ont. . .	Sunderland, Eng. ....1892	249x35x16	1454—922	\$ 85,000	\$ 85,000	15
Regina.....	Canadian Interlake Line, Ltd., Toronto.....	Dumbarton, Scotland. .1907	250x43x21	1957—1280	\$150,000	\$150,000	20
Turret Chief.....	Canadian Lake and Ocean Navigation Co., Ltd., Toronto.....	Sunderland, Eng. ....1896	253x44x20	1881—1197	\$100,000	\$100,000	—
Wexford.....	Western Steamship Co., Ltd., Toronto.....	" "1883	250x40x24	2104—1340	\$100,000	\$100,000	20
UNITED STATES:							
Argus.....	Interlake Steamship Co., Cleveland, O. ....	.....1903	416x50x28	4707—3380	\$200,000	Not Known	24
Charles S. Price.....	Mahoning Steamship Co., Cleveland, O. ....	.....1910	504x54x30	6322—4901	\$325,000	"	28
Henry B. Smith.....	Acme Transit Co., Cleveland, O. ....	.....1906	525x55x31	6631—5229	\$325,000	"	26
Howard M. Hanna, Jr.....	Hanna Transit Co., Cleveland, O. ....	.....1908	480x54x30	5905—4413	\$ 25,000	"	—
Hydrus.....	Interlake Steamship Co., Cleveland, O. ....	.....1903	416x50x28	4713—3384	\$200,000	"	23
Isaac M. Scott.....	Virginia Steamship Co., Cleveland, O. ....	.....1909	504x54x—	6372—4840	\$325,000	"	28
John A. McGean.....	Pioneer Steamship Co., Cleveland, O. ....	.....1909	432x52x23	5100—3777	\$250,000	"	23
L. C. Waldo.....	Roby Transportation Co., Detroit, Mich. . .	.....1909	462x48x23	4466—3519	\$200,000	"	—
Louisiana.....	F. M. Osborne, Cleveland, O. ....	.....1887	267x39x21	1929—1383	\$ 20,000	"	—
Matoa.....	Pittsburgh Steamship Co., Cleveland, O. ....	.....1890	290x46x25	2311—1336	\$ 50,000	"	—
Northern Queen.....	Mutual Transportation Co., Buffalo, N. Y. . .	.....1889	299x41x25	2476—1885	.....	"	—
Wm. Nottingham.....	Great Lakes Steamship Co., Cleveland, O. ....	.....1902	380x50x28	4234—3070	.....	"	3

Note:—The dimensions given above are in feet, representing length, breadth and depth in the order named; the tonnage shows gross and registered tons.

ever, that much will be learnt, which if put to its proper use, should make for a general betterment of navigation conditions on the Great Lakes.

Of the Canadian vessels involved in the disaster, four have been absolutely lost, and

the command of the E. B. Osler, which, until the launching of the James Carruthers, was the largest of the company's vessels. On the recovery of his body, it was taken to his home at Toronto, the funeral taking place Nov. 17, when Capt. Crangle and J.

Detroit, Mich., aground at Iroquois Point; G. J. Grammer, Seither Transit Co., Cleveland, O., aground at Lorain, Lake Erie; H. B. Hawgood, Acme Transit Co., Cleveland, O., aground off the St. Clair River, in Lake Huron; H. P. McIntosh, Wilson Transit Co.

Cleveland; J. M. Jenks, Acme Transit Co., Cleveland, O., aground near Midland, Ont.; Lafayette, J. J. Freitus, Buffalo, N.Y., ashore near Calumet, Mich.; Major, W. H. Gratwick, Buffalo, N.Y., reported abandoned near Whitefish Point, Lake Superior; Manchester, Milwaukee Western Steamship Co., Milwaukee, Wis.; Mathew Andrews, Kinsman Transit Co., Cleveland, O., aground on Corsican Shoals, Lake Huron.

The following table shows the names of the vessels lost, their owners, dimensions, etc., and their approximate value and insurance. With the exception of the James Carruthers, the amount mentioned as insured is intended to represent that the vessel is insured for its full value, and not necessarily the actual amount for which it is insured. In the case of the James Carruthers, the owning company a few years ago adopted the policy of insuring only a proportion of the risk under a modified form of insurance policy, and crediting an insurance fund with the amount of the premiums saved in each year. The report for 1912 showed that there was at the credit of this account \$109,290.47, and the directors stated that it was their intention to continue this policy until insurance could be obtained at what they considered reasonable rates and on reasonable terms. The amounts insured for the U.S. vessels cannot be ascertained, but it may be taken for granted that they are all well covered. It is not intended that this table should be taken as correct in every detail, as owing to varying circumstances, discrepancies are likely to appear, but it is believed to be correct.

In addition to the vessels mentioned, the U.S. Lightship no. 82 was driven from its moorings off Point Abino, Lake Erie, and lost, and the barges Halstead and Plymouth, and tug Martin were also reported lost. The number of lives lost has been estimated at about 250, but in this there is a certain amount of guess work as, so far as the Canadian vessels are concerned, the numbers of the crews on their last voyage is not definitely known in several cases.

Labor troubles at various ports in Great Britain and Ireland during the present year have interfered considerably with the St. Lawrence trade. Five of the Head Line steamships are reported to be tied up on account of the Dublin strike.

The Dominion Government Customs Patrol Steamship Margaret.

The steel twin screw patrol steamship which is under construction at Southampton, Eng., for the Dominion Government Customs Department, will be of the following dimensions,—length between perpendiculars, 185 ft.; breadth, moulded, 32 ft.; depth, moulded to main deck, 16 ft.; draught, forward and aft, 10½ ft.; dead-weight on forego draught, 175 tons; coal, full supply, 200 tons; indicated horse power, 2,000; complement, officers and crew, 32; armament, two 6-pounder quick firing guns.

She will have a ram stem and cruiser stern, and five main transverse water tight bulkheads, all extending to the main deck. The shafting will be housed in the hull, the plating and frames being bossed out for the purpose.

The propelling machinery will consist of two sets of inverted, vertical, direct acting, triple expansion, surface condensing engines, each set having three cylinders working on separate cranks at angles of 120 degrees with each other in sequence of high, intermediate and low when the engines are going ahead. The engines will be capable of developing not less than 2,000 i.h.p. on a trial of 6 hours when running at about 180 revs. a minute with 220 lbs. of steam pressure in the boilers. There will be two boilers of the water tube type, each being used independently of the other, and each fitted with Howden's patent forced draught system made in accordance with plans furnished by Howden & Co. The total heating surface will be 5,500 sq. ft. with a total grate area of about 100 sq. ft.

There will be three decks, viz.,—lower, main, and boat and forecastle. On the lower deck will be located two state rooms, bath room and toilet, engineers' quarters and general crew's accommodation; on the main deck, two state rooms, dining saloon and officers', stewards' and wireless operator's quarters; on the boat deck, the day cabin, captain's quarters, wheel house, etc.

The auxiliary machinery will consist of windlass, capstan, boat hoist, refrigerating engine, steering gear, etc., and there will be a complete electric light installation with search light, and a wireless telegraph equipment.

The Dominion Government Fisheries Protection Steamship Malaspina.

The first of the two vessels built in Dublin, Ireland, for the fisheries protection service, was expected on the Pacific coast, where she will be stationed, towards the end of November. The severe trials through which vessels for this service are put, were carried through successfully without mishap. With the specified dead weight on board a speed of 14.7 knots was obtained as a mean of six hours run on the measured mile.

She has been built for the highest class at Lloyd's for both hull and machinery, and she is of the flush deck type with the machinery amidships, a top gallant forecastle and long bridge or awning deck amidships, with chart room at the forward end with navigating bridge, house and pilot's room above. The captain's and officers' quarters are located under the bridge deck forward, and under the after end of the bridge deck are the wireless telegraph and operators' rooms, with the engineers' quarters immediately below under the main deck. The general crew's quarters are immediately under the forecastle deck, and on the lower deck forward are the petty officers' quarters connected by a companion way with the main deck.

The hull is divided by transverse and longitudinal bulkheads into 20 water tight compartments, and she is fully equipped with lifeboats, mechanical lowering equipment, etc., steam steering gear, steam windlass and steam warping winch. There are also a complete electric light installation with searchlight, refrigerating plant and cold storage, wireless telegraph installation, steam heating and hot water systems, etc.

The propelling machinery consists of triple expansion engines supplied with steam by a marine type boiler at 180 lbs. under Howden's patent forced draught system. There is a large bunker capacity sufficient for steaming about 6,000 miles at about 9 knots an hour.

The Dominion Department of Public Works will receive tenders to Nov. 17 for the construction of harbor improvements at Port Hope, Ont.

List of Steam Vessels Registered in Canada during October, 1913.

No.	Name	Port of Registry	When and Where Built	Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines, Etc.	Owner or Managing Owner	
130773	C. Endress	Sault Ste. Marie	Manitowoc, Wis.	1898	83 0	18 4	7 1	146	69	16n.h.p. sc.	Dominion Fish Co., Wiarton, Ont.
93691	Rupert City (a)	Vancouver, B.C.	Barrow-in-Furness, Eng.	1886	310 3	85 1	25 2	2536	1640	300 "	N. Hardie, Vancouver, B.C.
184131	Serieux	Quebec	St. Irenee, Que.	1913	60 6	15 0	5 9	41	18	15 "	Napoleon Trudel, St. Irenee, Que

(a) Formerly Powhatan.

List of Sailing Vessels and Barges Registered in Canada during October, 1913.

No.	Name	Port of Registry	Rig	When and Where Built	Length	Breadth	Depth	Reg. Tons	Owner or Managing Owner	
134065	A. M. VIII.	Vancouver, B.C.	Scow	Vancouver, B.C.	1913	60 8	29 9	7 7	121	Armstrong, Morrison & Co., Vancouver, B.C.
134066	A. M. IX.	"	"	"	1913	64 4	29 9	7 7	133	"
134067	A. M. XII.	"	"	"	1913	59 5	30 0	6 6	108	"
134068	A. M. XIV.	"	"	"	1913	72 4	30 0	6 6	131	"
130514	Alvina Theriault	Weymouth, N.S.	Schr.	Belliveau Cove, N.B.	1913	112 5	31 0	10 0	199	P. A. Theriault et al., Belliveau Cove, N.S.
134025	Bute No. 8.	Victoria, B.C.	Barge	Victoria, B.C.	1911	80 0	30 0	9 2	179	A. Berquist, Victoria, B.C.
133670	E. D. Conrod	Halifax, N.S.	Schr.	Mahone Bay, N.S.	1913	46 2	17 1	6 6	30	D. E. Conrod, M.O., Grand Desert, N.S.
131098	Ella C. Hollett	Shelburne, N.S.	"	Shelburne, N.S.	1913	95 0	23 0	9 7	96	W. H. Hollett, M.O., Burin, Nfld.
119963	Grace M. Filer	Pictou, Ont.	"	Chicago, Ill.	1874	125 5	27 3	9 0	215	J. Fagan, Belleville, Ont.
130777	J. F. Boyd No. 1.	Sault Ste. Marie, Ont.	Dredge	Sault Ste. Marie	1911	75 0	24 0	7 0	115	Boyd & Tweedie, Sault Ste. Marie, Ont.
131097	Prydwen	Shelburne, N.S.	Schr.	Shelburne, N.S.	1913	133 0	31 3	12 8	295	G. A. Cox, M.O., Shelburne, N.S.
130630	acordo	Yarmouth, N.S.	"	Mavilette, N.S.	1913	44 6	14 2	5 2	13	G. E. Doucette, Mavilette, N.S.
97766	Simla (b)	Vancouver, B.C.	Bk.	Port Glasgow, Scot.	1890	278 2	41 9	24 2	2098	Ship Simla Co., Vancouver, B.C.

(b) Re-registered after wreck.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

363. Oct. 22.—Ontario, Georgian Bay, Midland Bay, Tiffin, dredging.
364. Oct. 22.—Ontario, Georgian Bay, Victoria harbor, Port McNicoll, dredging.
365. Oct. 22.—United States of America, Lake Erie, Buffalo harbor entrance, dredging, caution.
366. Oct. 22.—British Columbia, Queen Charlotte Islands, chart of Skidegate Inlet issued.
367. Oct. 22.—Alaska, Revillagigedo Channel, Cutter Rocks, beacon rebuilt.
368. Oct. 22.—Alaska, Cross Sound, Cape Spencer, light established.
369. Oct. 27.—New Brunswick, east coast, Miramichi Bay, Grandon Flats channel, buoys established.
370. Oct. 27.—Quebec, River St. Lawrence, Montreal harbor, buoy established, position of gas buoy.
371. Oct. 29.—Ontario, Bay of Quinte, Big Bay, wharf, buoys placed.
372. Oct. 29.—Ontario, Georgian Bay, approach to Victoria harbor, Midland Point range lights, light poles replaced by towers.
373. Oct. 31.—Nova Scotia, south coast, entrance to Halifax harbor, Sambro outer bank, gas and whistling buoy to be replaced during the winter months by a light-ship.
374. Oct. 31.—Prince Edward Island, south coast, Northumberland Strait, Prim Point, erratum in List of Lights.
375. Oct. 31.—Prince Edward Island, north coast, Shipwreck Point, lighthouse established.
376. Oct. 31.—Quebec, Chaleur Bay, Cascapedia Bay, New Richmond, buoy.
377. Nov. 4.—New Brunswick, south coast, Bay of Fundy, intended change in color of Beaver harbor whistling buoy.
378. Nov. 4.—New Brunswick, south coast, approach to St. John, Sheldon Point, temporary light.
379. Nov. 4.—New Brunswick, south coast, Bay of Fundy, intended change in color of Mispék bell buoy.
380. Nov. 4.—Nova Scotia, Bay of Fundy, Minas basin, Cobequid bay, entrance to Portapique River, lighthouse to be established near wharf, pole light to be discontinued.
381. Nov. 4.—Nova Scotia, south coast, approach to Sheet Harbor, intended change in color of gas and whistling buoy.
383. Nov. 4.—Newfoundland, east coast, Cape Bonavista, fog alarm to be established.
384. Nov. 6. Maritime Provinces, North Head, Shinimikas River, Shipwreck Point, names.
385. Nov. 6. Prince Edward Island, south coast, Northumberland Strait, Bedeque Bay, Summerside harbor, position of buoy.
386. Nov. 6. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, Pointe aux Trembles, change in character of buoy.
387. Nov. 6. Quebec, Montreal harbor, temporary buoy removed.
388. Nov. 8. British Columbia, Strait of Georgia, Sisters rocks, intended change in character of light, temporary light.
389. Nov. 10. Ontario, Ottawa River, Deep River inlet, lighthouse rebuilt.
390. Nov. 10. Ontario, Lake Huron, Southampton, gas buoy carried away by storm.
391. Nov. 10. Ontario, Georgian Bay, Penetanguishene, light on Reformatory pier improved.
392. Nov. 12. Prince Edward Island, southeast, Cape Bear, change in character of light.
393. Nov. 14. Ontario, Lake Ontario, Cobourg harbor, extension to breakwater under construction, temporary light, caution.

394. Nov. 14. Ontario, Detroit River, Limekiln Crossing channel, north light vessel withdrawn, fog bell discontinued.

395. Nov. 15. Ontario, Lake Erie, Port Colborne, beacon light on eastern breakwater discontinued.

396. Nov. 17. Nova Scotia, North Atlantic Ocean, Sable Island east bar, position of dry bar.

397. Nov. 17. Nova Scotia, North Atlantic Ocean, eastward of Cranberry Island lighthouse, cable buoy moored temporarily.

398. Nov. 17. Prince Edward Island, south coast, Northumberland Strait, Bedeque Bay, Summerside, intended change in position of back range lighthouse.

399. Nov. 17. Newfoundland, south coast, off Burnt Islands, Bad Neighbor shoal, spar buoy replaced by bell buoy.

400. Nov. 18.—Ontario, Georgian Bay, west side, Lionhead harbor, lighthouse and outer portion of breakwater destroyed by storm, temporary light.

401. Nov. 18.—Ontario, Lake Huron, north channel, Little Current, railway swing bridge, regulations, lights.

402. Nov. 19.—Quebec, River St. Lawrence, from the Gulf to Montreal, color of gas buoys and lights.

Canada Steamship Lines, Limited.

It is announced that during the early part of December, an issue of \$6,106,000 of 5% debenture stock will be made in London, Eng., which will be convertible into bonds at the option of the holder, and which will be a part of the total issue of \$9,000,000, repayable at 105, in 1943. The London prospectus shows consolidated net profits of the companies concerned, for 1912, at \$1,494,554, against \$552,533 required to pay the interest and sinking fund on securities to be issued at present, including the amount reserved to retire underlying bonds, and to pay the balance of the cost of building the Northern Navigation Co.'s s.s. Noronic. It is estimated that on the basis of the increased gross earnings to Aug. 31, 1913, the net earnings for this year will be about \$1,750,000. Interest at 5% and sinking fund at 1½% on the \$8,500,517 debenture stock will require \$552,533, showing a surplus of \$1,197,467. In 1914, when the improvements and economies effected by the consolidation have come into full operation, it is estimated that the net earnings will approximate \$2,000,000.

It is proposed to exchange six 7% preference shares of Canada Steamship Lines, Ltd., for every five common shares of Richelieu and Ontario Navigation Co., now held, with a bonus of common stock.

It is stated that the name of Canada Steamship Lines, Ltd., has been selected to replace the one previously adopted, Canada Transportation Lines, Ltd., in deference to the wishes of British investors.

Following are the names of those constituting the board of directors:—James Carruthers, President; Wm. Wainwright, D. B. Hanna, W. D. Matthews, J. P. Steedman, Sir Montagu Allan, H. B. Smith, E. Bristol, J. R. Binning, M. J. Haney, Aemilius Jarvis, Hon. J. P. B. Casgrain, C. A. Barnard and J. W. Norcross, Managing Director. A London advisory board has been appointed, consisting of Sir Stephen Furness, Sir Trevor Dawson, Sir Vincent Caillard, F. W. Lewis, A. Vickers, W. G. Morden and C. G. Bryan.

The Baffin's Bay Co., Ltd., has been incorporated under the Dominion Companies Act with \$100,000 capital and office at Toronto, to carry on a general Arctic trading business, and in connection therewith to own and operate steam and other vessels for whale fishing, etc.

Welland Ship Canal Contracts.

Tenders for the construction of section 5 of the new Welland Ship Canal were received up to Nov. 18 by the Department of Railways and Canals. This section is 2.6 miles long, extending from the centre of Allanburgh, where the new and present canals will join, to Port Robinson, where the new canal will diverge from the present canal to follow its new course along the Welland River. This section of the canal is probably the simplest of all the nine sections into which the work is being divided, as the new canal will follow the present one along exactly the same course through this whole section. The work will consist entirely of widening and deepening the present channel, and as the rock cutting through this section is small, the work will be light. This section is on a tangent throughout nearly its full length, and will be crossed by only one bridge, no. 13, in Port Robinson. A press report from Ottawa, Nov. 24, states that this contract has been awarded to the Canadian Dredging Co. at prices which are estimated to approximate \$2,000,000. The report is in error in stating that there only remains one more section of the canal to be put under contract, as sections 4, 6, 7, 8 and 9 have yet to be tendered for.

The contract for section 2 has been awarded to Baldry, Yerburch and Hutchinson, of St. Catharines, Ont., and London, Eng., the amount involved approximating \$5,500,000.

Full details of the work, as it will be when completed, appeared in Canadian Railway and Marine World for July and August.

St. Lawrence and Chicago Steam Navigation Company's New Stock Issue.

As mentioned in Canadian Railway and Marine World for November, the directors have decided to build another steamship, a duplicate of the s.s. James Carruthers, recently wrecked, to take care of its increasing business, and an order has been placed for it at Collingwood, Ont.

In order to meet the payments for this vessel, the directors decided to issue 1,400 new shares at par, in the first instance to shareholders of record on Nov. 15, in the proportion of one new share for every six shares held. The amounts subscribed are payable in two instalments, 25% on Dec. 15, and 75% on Jan. 5, 1914. In the event of any shareholders paying the first instalment and failing to pay the second instalment by the due date, their rights to such shares and all moneys paid in respect of same shall be forfeited to the company, and in the event of any shareholders failing to take up any new shares and to pay the first instalment, their rights to such shares shall be forfeited to the company. All new shares forfeited and any left over undistributed shall be disposed of by the directors as they may see fit. No allotment will be made to the holder of less than six shares, nor to the holder of more than six shares in respect of any shares held which are not a multiple of six.

Prize for Advertising or Sales Essay.—Advertising & Selling, New York, has authorized the Associated Advertising Clubs of America to announce a prize of \$1,000 in cash, which it will pay at the Toronto convention next year—and every year thereafter until further notice—to the person who writes the most vital and helpful essay on a sales or advertising subject, in the opinion of the official awards committee of the Associated Clubs and of the editorial advisory board of Advertising & Selling, consisting of prominent advertising managers.

The Royal Line and St. John, N.B.

Since the inception of the Royal Line between Canada and England by Canadian Northern Steamships, Ltd., Halifax has been the Canadian winter port for the company's two steamships, Royal Edward and Royal George. On account of the new mail contract, which came into effect recently, and by which the mails were to be taken from and delivered to either Halifax or St. John, at the contractors' option, some little rearrangement of the steamship service to these two ports has been deemed advisable. The C.P.R. and Allan Line, which control the majority of the vessels engaged in the mail service, selected Halifax as their mail port, and decided to make that the terminus for the steamships Empress of Britain and Empress of Ireland, instead of St. John, as hitherto. In this connection, several representative bodies from St. John interviewed the Government, and as an outcome, the Minister of Marine announced at St. John, Nov. 12, that arrangements had been made with Canadian Northern Steamships, Ltd., that the Royal Edward and Royal George will make St. John their Canadian terminus this winter, instead of Halifax, the first sailing under the new schedule being from Bristol, Eng., Dec. 3, and from St. John, Dec. 16.

Atlantic and Pacific Ocean Marine.

Manchester Liners' s.s. Manchester Commerce, while passing through the Strait of Belle Isle, Nov. 1, struck an iceberg, necessitating a call at St. John's, Nfld., where she was drydocked for examination and repairs.

A fortnightly service between France and Halifax, N.S., calling at St. Pierre Miquelon and Sydney, has been inaugurated by the s.s. Miquelon, owned by La Morue Francaise et Secheries de Fecamp, a French firm with interests in St. Pierre Miquelon.

In connection with various statements repeated in the daily press recently, G. M. Bosworth, Vice President, C.P.R., has stated that it is not the company's intention to operate a steamship service through the Panama Canal.

Press dispatches from St. John, N.B., recently stated that Canadian Northern Steamships Ltd. had decided to change the winter terminal of the Royal Line from Halifax to St. John. We have been officially advised that Halifax is the winter port of the line, and no such change as that indicated is, or has been contemplated.

It is announced in London, Eng., that the Hudson's Bay Co. intends spending £4,000,000 on developments in Northwestern Canada, in the establishing of further trading posts, and in building specially designed steamships for the Hudson Bay route to Liverpool, Eng., and for a service between the Pacific Coast and England, via the Panama Canal.

The Hudson's Bay Co. has erected an interesting memorial in Vancouver, consisting of the mast of the company's old steamship Beaver. This vessel was built by the company at Blackwall on Thames, Eng., in 1835, and launched by King William IV. She was the first steamship to come round Cape Horn to Vancouver, and was wrecked in 1888 at Prospect Point, Stanley Park. The mast has been encased in steel and is set in a bed of concrete on a granite base.

A dispatch from London, Eng., dated Nov. 12, states on the authority of the Times that "the capital has been raised in Boston and Great Britain for necessary engineering works and the establishment of a line of steamers running direct from Blacksod

Bay, County Mayo, Ireland, to Halifax and Boston. This project is in connection with the schemes for all British communication around the Empire." The inclusion of Boston in an all British scheme for communication around the Empire, makes one wonder if the writer of the dispatch ever heard of a Boston tea party.

The Allan Line announces that its two new quadruple screw turbine steamships Alsatian and Calgarian, will be in service between Halifax and Liverpool, early in the New Year, the first sailing of the Alsatian taking place from Liverpool, Jan. 17, and from Halifax, Jan. 31. These vessels are 600 ft. long, 18,000 tons, with a speed of from 18 to 20 knots an hour. They will be the largest on the Canadian route, and will be equipped with the latest wireless telegraphy, submarine signalling and other installations. The Allan Line is now announced as being operated in connection with the C.P.R.

A representative of a Mexican company was in Victoria recently with the view of arranging a steamship service between British Columbia ports and Salina Cruz, Mexico, in connection with the Tehuantepec Ry. If the scheme is carried through, it is intended to place a number of small steamships on the route, with accommodation for both passengers and freight, on a tri-monthly service. The Canadian Mexican Pacific Steamship Co., now a part of the Union Steamship Co., the Harrison Direct Line, and W. R. Grace & Co., have each run vessels on this route at various times, and with the exception of the last mentioned, have abandoned the service on account of the unsettled condition of affairs in Mexico.

Maritime Provinces and Newfoundland.

The Eastern Steamship Corporation's s.s. Governor Cobb, which has been on the Yarmouth-Boston route for some time, is having her turbine engines overhauled at Bath, Me.

The C.P.R. has withdrawn the s.s. St. George from the Bay of Fundy service for the winter, during which period the run between St. John, N.B., and Digby, N.S., will be taken by the s.s. Yarmouth.

The s.s. Alcona, owned by fishing in-

terests in Gloucester, Mass., and engaged off the Newfoundland coast, as a refrigerated vessel in attendance on the fishing fleet, took fire and sank in Curling harbor, Nfld., Nov. 6. She was valued at \$100,000.

The Ship Masters Association no. 1 of Canada, which was organized at Halifax, N.S., in April, 1910, has now 60 members in good standing. The officers are:—President, Capt. N. Hall; Treasurer, Capt. D. A. Scott; Secretary, Capt. Ernest Wells. Meetings are held on the third Tuesday in each month.

The Southern Salvage Co., Liverpool, N.S., is reported to be building a steam tug for salvage purposes on the Nova Scotia coast, to be 118 ft. long and 32 ft. beam, with twin screws. The engines will be of the compound surface condensing type developing about 700 h.p., for a speed of 12 knots an hour.

The Dominion Coal Co's s.s. Bridgeport which left Sydney, N.S., Nov. 1, for St. Lawrence ports, is believed to have been lost with her crew during a severe storm. She was a comparatively new vessel, her dimensions being, length 442 ft., breadth 58 ft., draught 28 ft. 7 ins., 3,380 registered tons. The crew numbered 40, the majority being Chinese.

The board of conciliation appointed under the Industrial Labor Disputes Act, to hear the complaints of the longshoremen at St. John, N.B., has reported to Ottawa, and it is said that a satisfactory agreement will result. The board consisted of W. E. Foster, chairman; J. E. Moore, representing the Shipping Federation of Canada, and J. E. Tighe on behalf of the men.

About the end of December, or early in January, the Department of Marine will replace the gas and whistling buoy on the Sambro outer bank at the entrance to Halifax harbor, by a light ship. The hull of the steamboat to be used, is painted red, with the word Halifax in white on each side, and with No. 15 on each side of the bow.

The Department of Railways and Canals has issued a notice to the effect that the public wharf or pier at Cape Tormentine, N.B., is closed for the remainder of the season and for two months from the reopening of navigation in 1914, in consequence of the work now in progress there in connection with the car ferry terminal.

Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during October, 1913.

ARTICLES -	CANADIAN CANAL	U. S. CANAL	TOTAL
Copper..... Eastbound..... Short tons	28	4,998	5,026
Grain..... "..... Bushels	6,050,692	8,388,364	14,889,056
Building stone..... "..... Short tons			
Flour..... "..... Barrels	200,560	1,381,976	1,532,536
Iron ore..... "..... Short tons	4,829,478	2,362,655	6,692,133
Pig iron..... "..... ".....		2,051	2,051
Lumber..... "..... M. ft. b.m.	4,311	76,890	81,201
Silver ore..... "..... Short tons			
Wheat..... "..... Bushels	32,027,253	12,691,618	44,718,871
General merchandise..... "..... Short tons	7,438	40,510	47,948
Passengers..... "..... Number	542	645	1,187
Coal, hard..... Westbound..... Short tons	54,967	287,723	292,690
Coal, soft..... "..... ".....	388,576	1,309,245	1,697,821
Flour..... "..... Barrels	1,000	40	1,040
Grain..... "..... Bushels			
Manufactured iron..... "..... Short tons	20,826	36,933	57,759
Iron ore..... "..... ".....			
Salt..... "..... Barrels	12,245	86,781	99,026
General merchandise..... "..... Short tons	82,562	97,682	180,544
Passengers..... "..... Number	708	199	907
Summary.			
Vessel passages..... Number	1,229	2,172	3,392
Registered tonnage..... Net	3,818,722	4,720,611	8,534,333
Freight—Eastbound..... Short tons	5,446,968	3,228,622	8,675,590
" — Westbound..... ".....	549,080	1,694,604	2,243,684
Total freight..... ".....	5,996,048	4,923,226	10,919,274

The schooner *Gypsum Emperor*, owned in the U.S., but registered at Windsor, N.S., while bound from New York to Halifax, N.S., with coal, was reported to have been dismasted during a storm at sea and to have been abandoned in a waterlogged condition. The crew was saved by the Hamburg American Line s.s. *Barcelona*, bound from Philadelphia to Hamburg. The schooner was built at Parrsboro, N.S., in 1892, her dimensions being: length, 179.2 ft.; breadth, 36.2 ft.; depth, 16.2 ft.; 695 tons register.

Province of Quebec Marine.

The removal of the gas buoys from the St. Lawrence ship channel commenced Nov. 22, when they were replaced by spar buoys for the remainder of the navigation season, which will close early in December.

The Quebec Harbor Commission's grain elevator is practically complete so far as the construction work is concerned. It was expected that the installation of the machinery would be commenced towards the end of November.

The Reid-Donald Steamship Co., Ltd., has been incorporated under the Dominion Companies Act, with \$100,000 capital and office at Montreal, to own and operate steam and other vessels, and to carry on a general trading, navigation and salvage business.

Canadian Vickers, Ltd., announce that work will proceed on the erection of machine shops, etc., at Maisonneuve during the winter, and it is anticipated that the plant will be completed by about July 1, 1914. The foundations of the shipbuilding slipway have been laid, and the structural work is in process of construction by the Dominion Bridge Co.

Ontario and the Great Lakes.

The Canada Interlake Line's s.s. *Mapleton*, while passing through the Welland Canal recently, struck the wall of the Humberstone bridge, near Port Colborne, damaging some of her plates forward. She returned to Port Colborne and discharged her cargo.

The Keystone Transportation Co.'s s.s. *Keyvive*, which has been built at Middlesbrough, Eng., arrived at Thorold, Ont., the end of October, with a cargo of sulphide pulp from Hernosand, Norway. She is a sister vessel to the company's vessels, *Keywest* and *Keypoint*.

W. H. Sullivan, Superintending Engineer, Welland Canal, has been appointed Principal Assistant Engineer, Welland ship Canal, St. Catharines, Ont., and L. D. Hara, Assistant Engineer, Welland Canal, has been appointed acting Superintending Engineer, Welland Canal, vice W. H. Sullivan.

The Merchants Mutual Line's s.s. *Mapleton*, while upbound, Nov. 19, ran ashore on Drummond Island, during a dense fog. It was expected that she would have to be lightered of her cargo of cement before being released. She is being operated by Canadian Interlake Line, Ltd.

The s.s. *Mary C. Elphicke*, owned by the Republic Transportation Co., Cleveland, Ohio, which foundered in Lake Erie recently, is reported to have broken up and, with her cargo of grain, become a total loss. She was built in 1901, her dimensions being: length, 430 ft.; breadth, 50 ft.; depth, 29 ft.; tonnage, 4,998 gross, 3,967 register.

The Northern Navigation Co.'s s.s. *Noronic*, which has been built at Port Arthur, Ont., was given a number of trial runs in Thunder Bay, Nov. 24, for the adjustment of her compasses, etc. She later loaded

flour at Fort William, and sailed for Sarnia, where all her furnishings will be installed during the winter.

It was announced early in November that the Northern Navigation Co.'s s.s. *Noronic*, which has been built at Port Arthur, would sail from that port towards the end of November for Sarnia, where all the furnishings would be installed during the winter. Prior to sailing, she was to make trial runs in the bay, after which she was to load flour for the east.

The Department of Marine has announced that the gas buoy off the north end of Chantry Island bank, near Southampton in Lake Huron, which was carried away from its moorings during a storm, and which it was stated in the Canadian Notices to Mariners, no. 390, Nov. 10, would not in all probability be replaced this season, has been replaced.

Work was commenced early in November on the wreck of the Keystone Transportation Co.'s s.s. *Keystone*, which sank in deep water in Chippewa Bay, St. Lawrence River, Oct. 26, 1912. The wreck has been located and the hull is being prepared preparatory to using compressed air in order to raise her. The cargo is valued at \$300,000. Some interesting particulars were given in our last issue.

The Montreal Transportation Co.'s barge, *Cornwall*, with 40,000 bush. of wheat, while passing through the Cornwall Canal, Nov. 2, in tow of the steam tug *Emmerson*, broke her lines and blocked navigation. She was later secured and taken to Bergins Lake, where she sank, and is probably a total loss. She was built at Kingston in 1890, her dimensions being:—length, 178.6 ft.; breadth, 35.2 ft.; depth, 11.7 ft.; 586 tons register.

It is estimated that work involving the expenditure of \$1,200,000 has been undertaken in Fort William by the Government during this year, including dredging in the channels, building slip and abutment walls, etc. Other works to be undertaken next year cover the construction of 2,646 ft. of concrete abutment walls on the Mission River, and the construction of a turning basin necessitating the removal of about 25 acres of earth.

The dredging completed and swept at Port McNicoll, in Pictoria Harbor shows a depth of 25 ft. below the zero plane of Georgian Bay, including the whole of the space in the dock between the quay walls, 600 ft. wide, and extends to deep water. A gas buoy is moored at the turn on the northern edge of the dredged channel, close round which vessels should turn, and straighten up for the middle of the dock opening.

In connection with the dredging in Midland Bay, a plan of the work completed and swept at Tiffin shows a depth of 25 ft. below the zero plane of Georgian Bay, for a width of 340 ft. in front of the G.T.R. quay wall and for 680 ft. along the face of it from the northwest corner of the elevator quay. From the quay the channel is 400 ft. wide to deep water, the northeast edge of the dredging being in the same line as the work in front of the quay.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tidewater for October as follows:—Superior, 603.03; Michigan and Huron, 580.70; Erie, 572.42; Ontario, 246.29. Compared with the average October levels of the past ten years, Superior was 0.27 ft. above, Michigan and Huron 0.04 ft. above, Erie 0.26 ft. above, and Ontario 0.35 ft. above. It was anticipated that during November, Superior would fall about 0.2 ft., and Michigan, Huron, Erie and Ontario about 0.3 ft.

Masters of vessels are warned to have great care when in the vicinity of the Buf-

falo harbor entrance to reduce speed promptly when signalled by dredge or drill boat whistles. Rock excavation to deepen the approach to the north entrance to the harbor, to 25 ft. at mean lake level over an area of about 2,400 ft. long and 60 ft. wide, northward of the northern end of the old breakwater, which has been in progress since September, will continue until completed in 1915. Owing to the upheaval of rock by blasting and dredging, vessels drawing more than 14 ft. should keep clear of this area and navigate only in the channel to the northward marked by gas buoys.

The Lake Superior Dry Dock and Construction Co. Ltd., has been incorporated under the Ontario Companies Act, with \$1,500,000 capital, and office at Sault Ste. Marie, to build dry docks, steam and other vessels, and to carry on a general contracting business. The incorporators are all professional men in Toronto, but it is said that this is the concern which will undertake the construction of a dry dock and ship repairing and building plant at Sault Ste. Marie, some details of which were given in our last issue. It has been announced that \$25,000 has been deposited in a local bank as evidence of the company's good faith, preparatory to the submission of a bylaw granting a subsidy in aid of the work.

British Columbia and Pacific Coast Marine.

The G.T. Pacific Coast Steamship Co.'s s.s. *Prince John* has been withdrawn from the service for overhauling and to have oil burning equipment installed.

The C.P.R. coal boat *Coronado*, which was acquired in Seattle, Wash., some time ago, was reported to have foundered in the Gulf of Georgia, Nov. 20, with her cargo of 1,600 tons of coal.

The United States authorities have rebuilt the beacon tower on the Cutter rocks in the Revillagigedo channel, Alaska, and have established a flashing white light on a small islet off Cape Spencer, in Cross Sound, Alaska.

The Vancouver Tugboat Co. recently commenced an action against the Grand Trunk Pacific Coast Steamship Co. on a claim for salvage of its steamship *Prince Albert*, which stranded near Port Simpson, May 23. The damage sustained by the *Prince Albert* was approximately \$20,000.

Regarding the proposed dredge for the Dominion Public Works Department, for use on the inland lakes of British Columbia, plans for which were being prepared by Cartwright, Matheson and Co., Vancouver, as mentioned in our last issue, we are officially advised that its construction is not being proceeded with at present.

It was recently announced that work was to have been commenced towards the end of November on the excavation in connection with the construction of the Dominion Government dry dock at Burrard Inlet. A contract for the building of a drill scow was recently awarded, and this is under construction at North Vancouver, and will probably be ready during December. H. McFee and Co. are the general contractors.

The C.P.R. s.s. *Princess Beatrice* is again in service, after receiving a thorough overhaul. She has relieved the s.s. *Princess Mary* on the Granby Bay route, and it is said that the *Princess Mary* will be laid up at Victoria, where she will probably have oil burning apparatus installed. The s.s. *Princess Maquinna* is again in service, after repairs necessitated by striking a rock in Yakutat Bay, Alaska, in September. She has replaced the s.s. *Tees*, which will be held as a relief vessel during the winter.

A press report from Vancouver, published in Canadian Railway and Marine World for November, stated that the White Pass and Yukon Route would start a direct passenger steamship service between Vancouver and Skagway, Alaska, using vessels which would be built at a cost of about \$1,000,000 each. The President, O. L. Dickeson, left for England in November to consult with the directors, and will probably return early in January, when a definite announcement may be expected. There appears to be no doubt that the service referred to will be established.

The two vessels under construction at Dumbarton, Scotland, for the C.P.R. British Columbia coast service, are proceeding rapidly, and it is expected that both of them will be launched next spring, and that they will arrive on the coast towards the end of the year, by way of the Panama Canal. They will be equipped with the latest Parsons geared turbines, by which it is claimed the greatest efficiency is obtained from both the turbine and the propeller. It is stated that these vessels will be the fastest in service on the coast, the contract speed being 22½ knots an hour.

The Pacific Coast Steamship Co., which operates a weekly steamship service into Vancouver, has communicated with the

Marine Department at Ottawa, protesting against the compulsory payment of pilotage dues. It states that the amount paid is in excess of \$4,000 a year for services which are not used nor required, as all its captains are fully qualified to pilot vessels in and out of all harbors on the Pacific coast. If it is considered desirable to maintain a system of compulsory pilotage dues, it is suggested that a flat rate of \$200 a vessel a year be paid, and that the Dominion Government authorize the local pilotage authority to make such flat rates in its discretion.

In our last issue a complete denial was given to the rumor that the Canadian Northern Ry. had placed orders in Glasgow, Scotland, for two steamships for a Pacific coast service, but notwithstanding this, the Victoria Colonist of Nov. 4, contained a cablegram from Glasgow, dated Nov. 3, to the effect that orders had been given to the Fairfield Shipbuilding Co. by the Canadian Northern Ry. for the construction of two turbine vessels to steam 20 knots. It also stated that the orders were given by D. B. Hanna, Vice President, Canadian Northern Ry., Toronto. On enquiry at the Canadian Northern Ry. offices, we have been informed that Mr. Hanna has placed no such orders, nor does he know of any such orders having been placed.

Raising Wrecked Atlantic Liners by Compressed Air.

The use of compressed air in raising and repairing sunken vessels has been employed very extensively, either in floating caissons, or "camels," attached to the ship, or by converting part of the ship itself into a pneumatic caisson. An exceptionally important piece of work done in the latter manner was the raising of the Canadian Northern Steamships, Ltd., Atlantic liner Royal George in the St. Lawrence River. A specially interesting feature of this work was that the hull when raised was repaired under air pressure while floating in the river (instead of going into drydock). By this means the vessel was enabled to take cargo and cross the Atlantic to have permanent repairs made at its home port.

The Royal George is 545 ft. long and 60 ft. beam, with a registered tonnage of 12,000 tons; it is driven by triple screws and steam turbines, developing a total of 18,000 h.p. and giving a speed of about 20 knots. On Nov. 6, 1912, while on its last voyage of the season to Montreal (before the closing of the river by ice) it went ashore at high tide about nine miles below Quebec. Passengers and cargo were discharged and attempts made to pump out the flooded compartments of the hull. The following description of the salvage work as finally accomplished is condensed from an article by R. G. Skerrett:

After nearly two weeks it was recognized that the usual salvage procedure would not answer, and W. W. Wotherspoon was summoned from his work on a nearby wreck, the stranded collier Gladstone. Upon this he was using compressed air, and the underwriters decided to have him try the same method upon the Royal George.

The pumps were removed and the hatches to the damaged compartments sealed by air tight plates. Air locks were secured to circular passageways in the hatch covers, and connections also made by pipe between the air compressors and the injured holds. In three days this work was completed.

It was necessary to provide against the pressure of a head of water of 23 ft., and the deck overlying the compartment was not equal to a bursting stress of this magnitude. Worse still, the deck planking did not rest upon a solid steel deck, and there was risk of blowing out the calking between

the planks, which would mean failure. To meet the situation, hot pitch was poured into all the deck seams, the deck covered with a number of layers of tar paper, and over these placed a course of spruce flooring. Then this pressure deck was braced by shores reaching to the deck above, so as to distribute the stress when the holds should be filled with compressed air. In brief, it turned the flooded cargo spaces into caissons, and then all was in readiness for the expulsion of the water by forcing in the air under pressure. The compressors started at 10 p.m. of Nov. 22, and 15 minutes later the forward cargo space was dry.

An internal examination of the injured holds showed that nearly 40% of the ship's bottom was damaged, but it also demonstrated that the salvage method was equal to the demands to be placed upon it. The next afternoon, two hours before high tide, the water was blown out from the flooded compartments and the vessel floated clear.

Then came the question of repairing the badly damaged hull. The nearest drydock was at Montreal, 140 miles away, and the river's closed season was drawing near. Besides the liability of having the ship held for months, there was the prospect of heavy dock charges, independently of the cost of repairs. The question was how could the Royal George be made ready for sea without going into drydock? Mr. Wotherspoon answered this in a unique and satisfactory manner.

The ship was anchored in deep water, and into the damaged spaces men were sent through the air locks, the compartments being held substantially drained by reason of the compressed air within them. Beginning at the uppermost point of the rents in the hull, the men roughly sealed these openings by covering them with heavy planking calked with mud and oakum, the water receding as the pudge boards reached downward and finally covered the openings. This sealing was but temporary, and effective only so long as the air pressure was maintained. Before the vessel could proceed seaward it would be necessary to cover the damaged bottom from without with steel plates made water tight.

From within the hull, flexible templates

of wood were made of each needed patch, and upon these were marked the places for bolt holes, the same positions being indicated upon the inner surface of the vessel's plating. The templates were sent up through the air locks and guided the steel workers in forming the steel patch plates and in boring the threaded bolt holes. Into these holes tap bolts were screwed. In the meantime, slightly larger holes were drilled around each wound in the hull, and made tight with wooden plugs from within.

A weighted platform was swung under the ship directly beneath the rents to be mended, and a diver took his place upon this submerged platform. When each patch was ready, with its tap bolts in place, it was lowered to the diver, who directed it into position, the men inside withdrawing the wooden plugs so that the bolts could enter their proper holes. Then nuts and washers, with plenty of red lead, were placed upon the bolts and screwed well home in order to make the patch plate snug and water tight.

With this done, the temporary inside pudge boards were removed, and the ragged edges of the damaged hull were cut away by means of oxy acetylene torches. In this manner all of the repairs were effected, and the total damage covered an area of 700 sq. ft. The Royal George left the St. Lawrence for Halifax, and on the way encountered heavy weather, but the repairs proved quite equal to the stress placed upon them. At Halifax, because of the novelty of the work and to satisfy the insurance people, the liner was docked for a brief examination. Everything being found in excellent shape, the Royal George loaded with cargo and returned to England without further mishap.

Another somewhat similar work was done by Mr. Wotherspoon early this year. The transatlantic steamship Uranium, 5,180 tons, went ashore at Chebucto Head, N.S., on Jan. 12, and after being floated was taken to Halifax for repair. The drydock, however, was occupied by another steamer, and would not be available until March. To avoid the delay, the rents in the hull were patched while the damaged compartments were filled with compressed air, the ship being practically a floating caisson. Men entered the air locks and made templates for the patch plates and bolt holes, and drilled the necessary holes. The plates (with tap bolts inserted) were lowered outside the hull, and guided into place by a diver standing on a submerged platform; the bolts were entered into the proper holes, and nuts and washers applied by the men on the inside. The ship was then able to proceed to New York.

Sight Tests in the Mercantile Marine Service.—The British Board of Trade has modified its standard of sight tests required of candidates for certificates of competency from Jan. 1, 1914. Under the new standard a candidate will only be required to possess normal vision when using both eyes together, or, at his option, either eye separately. It has also decided that a candidate who already holds a certificate of competency of any grade and who presents himself for a higher certificate shall not be required to undergo any color test, and officers who hold certificates of competency, presenting themselves voluntarily for sight tests, should be confined to the form vision tests.

The Bronson Co., Ottawa, which owns, among other properties and franchises, the charter of the Quinze and Blanche River Ry., is applying to the Dominion Parliament for authority to borrow additional sums for the development of its several undertakings.

Rules of the Road on the Great Lakes.

The Dominion Government is proposing to amend the Rules of the Road for navigation on the Great Lakes. The chief amendments cover the use of lights on vessels, a new clause being proposed requiring canal boats, when in tow of steam vessels on the Great Lakes and tributary waters as far east as Montreal, to carry lights. A new rule is also proposed relating to the use of searchlights, and providing that any master or pilot of any steam vessel who shall flash or cause to be flashed, the rays of a searchlight into the pilot house of a passing vessel shall be deemed guilty of misconduct, and shall be liable to have his certificate suspended or revoked. Other rules govern the use of fog and distress signals, speed during fog, and in case of accident. Special rules are to be included, governing the navigation of motor boats, and as, in several cases recently, the navigation of such craft by inexperienced persons has caused considerable danger, and in some cases, loss of life, these rules should be well studied by all those concerned with navigation, especially when in the vicinity of harbors and small bays.

Extension of Wharves at Fort William, Ont.

The Dominion Public Works Department received tenders, Nov. 21, for harbor and river improvements, consisting of the extension of wharves at the entrance to the Mission River, Fort William. The work covers the construction of quay walls of 2,646 ft. total length, in two parts, of 1,225 ft. and 1,421 ft. respectively. The construction is to be of square timber crib work, close faced on the outer faces and open faced on the inner faces, the outer faces to have a batter of 1 in 24, and the other faces to be vertical. When fully ballasted the top of the cribwork is to be 6 ins. below low water level. The superstructure is to be of concrete and when completed to be 5.5 ft. above low water level. The site will be dredged by the Public Works Department to a depth of 26 ft. at low water.

New Atlantic Steamships for the Canadian Pacific Railway.

The two steamships which the C.P.R. has under construction at Glasgow, Scotland, and which will be in service during next year, will be of the one class cabin type. Their dimensions will be, length 520 ft., breadth 64 ft., breadth of passenger deck 41 ft. Each vessel will have passenger accommodation for 520 second class, and 1,200 third class passengers. The dead weight capacity will be 7,950 tons, with an approximate cargo capacity of 6,000 tons. The cruiser stern, which is one of the features of the new Pacific Empresses, has been adopted. There will be six decks, and the hulls will be subdivided by water-tight doors and bulkheads so as to be capable of floating when three of the compartments are open. These bulkheads will be automatically controlled from the bridge. The speed of the vessels will be 15 knots, and they will have a draught of 27.5 ft. All conveniences will be included in the passenger accommodation, and heating and ventilation will be supplied by the thermotank system, changing the air eight times an hour.

Diesel Locomotive.—A locomotive of the 4-4-4 type operated by Diesel oil engines has recently been placed in service on the Prussian-Hessian State Rys. It is 54½ ft. long, weighing in working order 95 tons. The engines are of the 4 cylinder V type,

and drive a crank shaft which is connected to the driving axles. It also has an independent air compressor of about a quarter the power of the main engine, the air from which is used for starting the locomotive. The cylinders each have a fuel valve through which the oil is injected under a pressure of from 50 to 70 atmospheres. The cab encloses the entire locomotive, and the fuel and circulating water are contained in four tanks built into the corners. The reversing and other mechanism is so arranged that the locomotive can be controlled from either end. The auxiliary is started by the admission of air from the reservoir, slowly at first, and after the auxiliary has been changed to oil fuel, the pressure in the oil storage cylinders rises, and the air supply is admitted to the main engine, which consequently commences to work. When running at about 6 m. p. h., the starting valves are thrown out of action, and the engine is changed to oil fuel, and the operation is then normal. The locomotive was designed for fast passenger service, and has developed 62 m. p. h.

Transportation Conventions in 1913 and 1914

Dec. 9, 10.—Association of Transportation and Car Accounting Officers, Galveston, Texas.
Jan. 20-22.—American Wood Preservers' Association, New Orleans, La.
Mar. 17-20.—American Railway Engineering Association, Chicago, Ill.
Apr. 21.—American Association of Freight Agents, Houston, Texas.
May.—Association of Railway Claims Agents, St. Paul, Minn.
May 17-20.—American Railway Engineering Association, Chicago, Ill.
May 18-22.—International Railway Fuel Association, Chicago, Ill.
May 19.—American Association of Demurrage Officers, St. Louis, Mo.
May 20-22.—Freight Claim Association, Galveston, Texas.
May 20-23.—Association of Railway Telegraph Superintendents, New Orleans, La.
May 21-22.—American Association of Railroad Superintendents, St. Louis, Mo.
May 28.—Association of American Railway Accounting Officers, Atlantic City, N.J.
June 10-12.—Master Car Builders' Association, Atlantic City, N.J.
June 15-17.—American Railway Master Mechanics' Association, Atlantic City, N.J.
July.—International Railway General Foremen's Association, Chicago, Ill.
Aug. 18.—International Railroad Master Blacksmiths' Association.
Sept. 8-11.—Roadmasters and Maintenance of Way Association, Chicago, Ill.
Oct. 20-22.—American Railway Bridge and Building Association, Los Angeles, Cal.

Greater Safety at Sea. An international conference of those interested in the matter of safer navigation at sea, was opened in London, Eng., Nov. 12, on the invitation of the British Government. The chief nations of the world were represented, and a number of matters were discussed, and full use was made of information and ideas gleaned from the Titanic investigation. Lord Mersey, who conducted the investigation into the Titanic disaster, was Chairman of the conference. Canada was represented by Alex. Johnston, Deputy Minister of Marine.

Harbor Improvements at Port Hope, Ont.—The Public Works Department has under consideration, tenders for harbor improvement works at Port Hope, Ont., comprising the preparation of the site by dredging and excavating material to an elevation of 227.8, or 17 ft. below zero, the construction of a reverment wall consisting of seven wooden, stone filled cribs each 16 ft. wide, and 16 ft. deep, six of which are to be 100 ft. long, and one 45 ft. long with an upper structure of concrete to an elevation of 250.8, or 6 ft. above zero, with walings, bollards, anchor rods, blocks, etc.

The Canadian Northern Telegraph Co. has opened offices at Dinsmore and Elrose, Sask.

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 distinctly to 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.

Canadian General Electric Co. has issued a folder on the advance in transportation equipment.

Canadian Steel Foundries Ltd. has issued illustrated catalogue 6 of the Jackson rigid switch stand.

Commercial Acetylene Railway Light and Signal Co.—W. H. Wood has been appointed Canadian Manager, vice J. R. Arnoldi, deceased. Office, 103 Bay St., Toronto.

Canadian Allis-Chalmers Ltd. is distributing McKiernan-Terry Drill Co.'s booklet of rotating hammer drills for sinking, stoping and drifting, for which it is selling agent in Canada.

Orenstein-Arthur Koppel Co., Koppel, Pa., has issued illustrated catalogue 900 of portable and industrial railways, narrow gauge sidings, narrow gauge public railways and general railways equipment. The company is represented in Canada by the Canadian Fairbanks Morse Co., Ltd.

United States Light and Heating Co.—J. Allen Smith, President, left New York recently for Europe for the second time this year, among other things to attend several automobile shows and to deal with the company's business in electric starters and lighters, storage batteries and electric car lighting equipment.

The Hull Iron and Steel Foundries, Ltd., has been incorporated under the Dominion Companies Act with \$250,000 capital and office at Hull, Que., to carry on the business of iron smelters and brass and steel founders, and to take over the business being carried on in Ottawa, Ont., by A. H. Coplan.

C. E. A. Carr, who has occupied a number of important positions on electric railways, etc., in Canada and the United States, the last one being the General Managership of the New Orleans, Southern and Grand Isle Ry., at New Orleans, La., has established the C. E. A. Carr Co., at Toronto, to deal in railway supplies.

Ottawa Car Manufacturing Co., Ltd., which was incorporated recently under the Dominion Companies Act with an authorized capital of \$3,000,000, and head office at Ottawa, was organized November 10 with the following directors. T. Ahearn, President; W. Y. Soper, Vice President; Jas. D. Fraser, Secretary-Treasurer; Travers Lewis, K.C., C. MacNab, E. N. Soper, and T. F. Ahearn. The company will take over the business of the Ottawa Car Co., Ltd., builders of electric railway cars, etc.

The W. W. Butler Co., Ltd., has been incorporated under the Dominion Companies Act, with an authorized capital of \$100,000 and head office in Montreal, and with extensive powers. At first the company will handle railway, marine and mining supplies. W. R. Butler, Vice President, Canadian Car and Foundry Co., is the chief man in the new company, and has appointed as one of its representatives G. T. Merwin, formerly with the Safety Car Heating and Lighting Co. and the Canada Car Co.

Armstrong, Whitworth of Canada, Ltd., has been incorporated under the Dominion Companies Act with an authorized capital of \$2,000,000 and head office at Montreal, the principal persons interested being connected with Sir W. G. Armstrong, Whit-

worth & Co., shipbuilders, ordnance manufacturers, etc., in England. M. J. Butler, formerly General Manager, Dominion Iron and Steel Co., is one of the directors and will manage the business. The company is building a plant on the north side of the St. Lawrence, opposite Montreal, for manufacturing various steel products.

John Millen & Son, Ltd., 321 St. James St., Montreal, are distributing an illustrated booklet issued by Electric Service Supplies Co., Philadelphia, showing latest types of electric railway car equipment, among its principal features being the Keystone car signs, which are being installed on the Montreal Tramway Co.'s cars; the automotoneer, which is in use on several Canadian lines, Keystone steel gear cases, the newest development in headlights, air valves and fittings, counting and registering fare boxes. They are also distributing a folder on snow fighting and winter equipment.

Pay-as-you-Enter Car Patents.—T. W. Casey, President Prepayment Car Sales Co., New York, has issued the following circular:—"The Ross & McDonald pay-as-you-enter basic patent 800,176 has just been sustained at New York City, before Judge Holt, in the U.S. Court for the Southern District of New York, and the royalty of \$100 per car established. This decision, while upholding the company's right to be compensated for the admitted benefits which its inventions have brought in car design, is of prime importance to the entire street railway industry and to the public, as it will insure the proper application of the prepayment principle based upon the widespread experience of the inventor company."

The Canadian General Electric Co., Ltd., has received a contract for the electrical equipment for the floating dry dock which the Grand Trunk Pacific Ry. is building at Prince Rupert, B.C. It includes two 200 h.p. and four 100 h.p. variable speed induction motors, with full automatic control, for operating the pumps on the dock. The power will be produced by two 1250 k.v.a. Curtis steam turbines with complete condensing apparatus. The excitors for the main turbine generators will consist of three 35 k.w. turbine driven generators and one motor generator set. The foundry, machine shops and shipyards will be equipped with motor driven tools, requiring motors ranging from 60 to 10 h.p. The contract also includes all necessary power and light transformers.

Transportation Associations, Clubs, Etc.

The names of persons given below are those of the secretaries.

Canadian Car Service Bureau, J. Reilly (acting), 401 St. Nicholas Building, Montreal.

Canadian Electric Railway Association, Acton Burrows, 70 Bond Street, Toronto.

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, 176 Mansfield St. West, Montreal.

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, Capt. E. Wells, 45 John St., Halifax, N.S.

Ship Masters' Association of Canada, H. O. Jackson, 376 Huron St., Toronto.

Shipping Federation of Canada, T. Robb, 526 Board of Trade, Montreal.

Western Canada Railway Club, W. H. Rosevear, 25 1/2 Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.



Department of Railways and Canals.

Lachine Canal.

NOTICE TO CONTRACTORS.

Roofing St. Gabriel Shed No. 1.

SEALED TENDERS, addressed to the undersigned and endorsed "Tender for Roofing of St. Gabriel Shed No. 1, Ottawa Street, Lachine Canal," will be received at this office till 12 o'clock noon, Thursday, December 11th, 1913.

Plans, specifications and form of contract to be entered into can be seen on or after this date at the office of the Chief Engineer of the Department of Railways and Canals, Ottawa, and at the office of the Superintending Engineer of the Quebec Canals, New Birks Building, Montreal, Que.

An accepted bank cheque on a chartered bank of Canada for the sum of \$500.00 made payable to the order of the Minister of Railways and Canals, must accompany each tender, which sum will be forfeited if the party tendering declines entering into contract for the work, at the rates stated in the offer submitted.

The cheque thus sent in will be returned to the respective contractors whose tenders are not accepted.

The cheque of the successful tenderer will be held as security, or part security, for the due fulfilment of the contract to be entered into.

The lowest or any tender not necessarily accepted.

By order,

L. K. JONES,

Asst. Deputy Minister and Secretary.

Department of Railways and Canals,
Ottawa, 22nd November, 1913.

Newspapers inserting this advertisement without authority from the Department will not be paid for it.—51421.

DRAUGHTSMAN.

Wanted draughtsman, architectural, having technical education and some experience of interior finish, similar to store furnishing, buffet, etc. Apply Box 158, Canadian Railway and Marine World, Toronto.

DRAUGHTSMAN.

Wanted draughtsman with experience on railway cars. Only applications giving experience and salary expected will be considered. Apply Box 158, Canadian Railway and Marine World, Toronto.

CANADIAN PACIFIC RAILWAY.

NOTICE.—The Canadian Pacific Railway Company will apply to the Parliament of Canada, at its next session, for an Act authorizing it to construct the following lines of railway:—

(a) From a point on its Swift Current Southeasterly Branch in Township 14 or 15, in a southwesterly direction to a point in Township 8 or 9, Range 17 or 18, W.3.M., Saskatchewan.

(b) From a point on said Swift Current Southeasterly Branch in Township 12, in a southerly and southwesterly direction to a point in Township 9, Range 16, or 17, W.3.M., Saskatchewan.

Dated at Montreal, 6th November, 1913.

W. R. BAKER,
Secretary.

Pringle, Thompson & Burgess,
Ottawa agents.

CALGARY & EDMONTON RAILWAY.

NOTICE.—The Calgary & Edmonton Railway Company will apply to the Parliament of Canada, at its next session, for an Act authorizing it to construct the following lines of railway:—

(a) From a point on its McLeod Branch in Township 19, 20 or 21, in a westerly direction to a point on the south branch of Sheep Creek in Range 4, W.5.M., Alberta.

(b) From a point on the line described in paragraph (a) to a point on the north branch of Sheep Creek in Range 2, 3 or 4, W.5.M.

(c) From a point on the line described in paragraph (a) to a point on Trap Creek in Range 6, W.5.M.

Dated at Montreal, 6th November, 1913.

H. C. OSWALD,
Secretary.

Pringle, Thompson & Burgess,
Ottawa, agents.

ESQUIMALT & NANAIMO RAILWAY.

NOTICE.—The Esquimalt & Nanaimo 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 railways which it was authorized to construct by paragraph (a) of section 2 of chapter 92 of the Statutes of 1906, and by section 1 of chapter 92 of the Statutes of 1912, and for other purposes.

Dated at Vancouver, 6th November, 1913.

W. F. SALSURY,
Secretary.

Pringle, Thompson & Burgess,
Ottawa agents.

CANADIAN PACIFIC RAILWAY COMPANY.

Dividend Notice.

At a meeting of the Board of Directors held today a Dividend of two and one-half per cent. on the Common Stock for the quarter ended 30th September last, being at the rate of seven per cent. per annum from revenue and three per cent. per annum from interest on the proceeds of land sales and from other extraneous assets, was declared payable on 2nd January next to Shareholders of record at 3 p. m. on 1st December next.

By order of the Board.

W. R. BAKER, Secretary.
Montreal, 10th November, 1913.

The C. E. A. Carr Co.

Telephone Main 2986

2 Toronto St., Toronto

RAILWAY SUPPLIES

Reports on Electric Railway and Electric Light Properties. Estimates Prepared.