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# GENERAL INDEX

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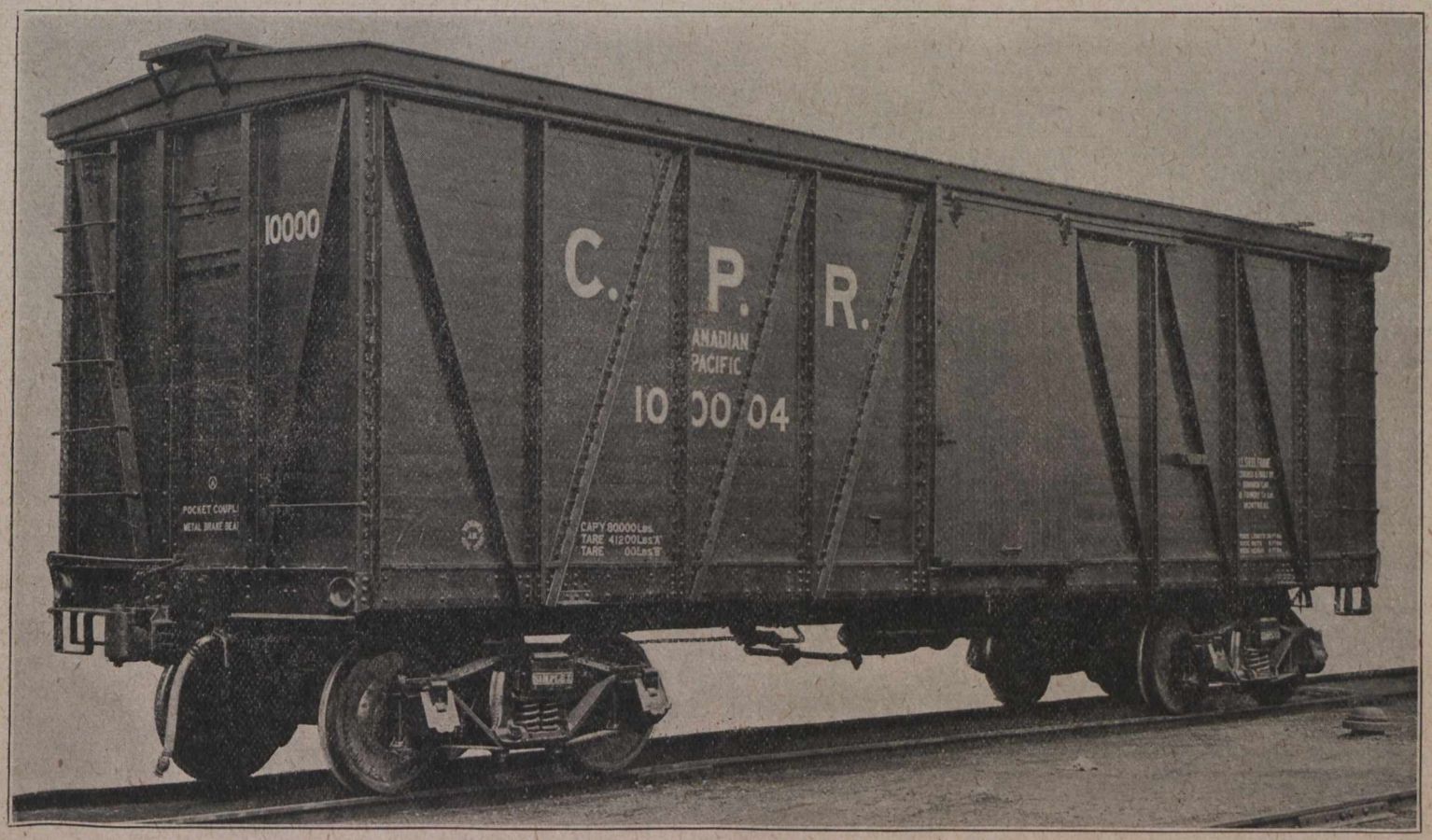
## The Construction of Steel Upper Frame Box Cars.

By R. W. Burnett, General Master Car Builder, Canadian Pacific Railway.

[ABSTRACT OF PAPER.—This paper outlines the development of the box car from the all wood car to the steel under and upper frame constructions now so exclusively in use, and discusses some of the factors that have been effective in establishing steel frame construction. The advantages of the steel upper frame construction are discussed in particular, and the practice of the C.P.R. in construction and repairing is referred to in detail. The advantages that this type has over the wooden superstructure car, which are of value to the operating traffic and mechanical departments of wooden superstructure cars. Immunity from serious damage to superstructure in wrecks. Protection to roof due to the stiffness of the superstructure. Minimum clearance at eaves.]

This paper, which is confined solely to superstructure details of the steel frame box car, is intended to apply in general to steel frame practice as developed in connection therewith. While the early development of steel upper framing is passed over rather briefly, many of the important considerations that have influenced its adoption are discussed in detail, particularly as Jan., 1910, that I have thought it unnecessary to go over this same ground, but will review only briefly the development of the box car from the all wood car through the intermediate stages of steel underframe cars.

The original wooden car, with the single spring draft rigging having the check castings bolted to the sills, gave little if any more trouble than modern equipment, due principally to the shorter trains, lesser density of traffic, and to the use of link and pin couplers which compelled gentler handling of trains than is prevalent today. The steel underframe car was built mainly to




First Inside Sheathed Steel Frame Box Car for Canadian Pacific Railway.

the railways are enumerated as follows: Low tare weight. Clean inside finish. Ease, with which it can be cleaned and kept clean. Answers the purpose, when built with rolled shapes, of a standard car as regards the low cost of maintenance and small amount of material necessary to keep in stock for repairs, and the fact that repairs can be made by the company on whose line the car is without any special tools or dies. An economical car to build, both as regards size of plant and cost of equipment required. Does not deteriorate more rapidly in service than when idle. Small percentage out of service for repairs. Protection against losses from leakage and damage from weather. Much longer life than viewed by the Canadian Pacific Ry. The information and data presented are based on the writer's experience in this railway system in connection with the design, construction and maintenance of 30,000 cars of this type, which represent an investment of $30,000,000.

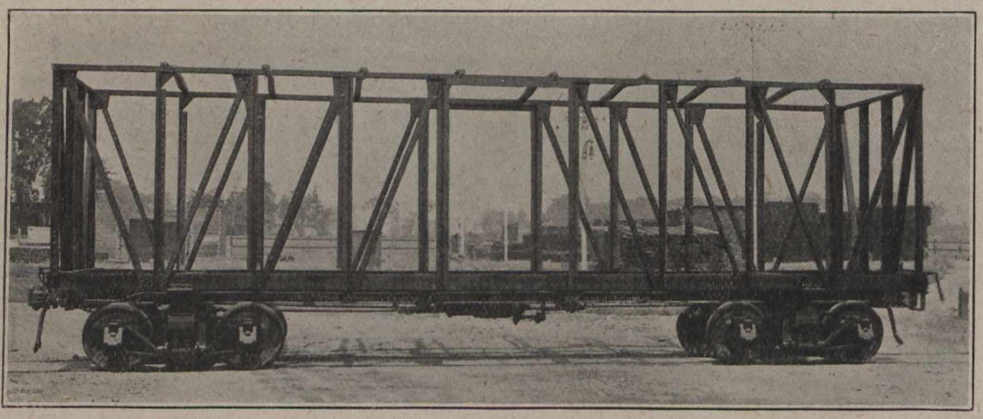
Credit is due to C. A. Seley, Mechanical Engineer, Rock Island Lines, for designing the first outside sheathed steel superstructure box cars that were constructed in large numbers. The introduction of steel into the superstructure of the box car, and the development of the outside sheathed steel superstructure in particular, were discussed so thoroughly by Mr. Seley in a comprehensive paper before the Franklin Institute in

secure a stronger centre construction for the attachment of draft rigging and to get away from the trouble caused by wooden sills breaking and splitting, broken draft bolts, etc.

While having many advantages over the old wooden car, the steel underframe car developed some troubles peculiar to itself, the most important being due to the fact that the body being carried on a rigid frame and not held together by the strains resulting from its weight, as in the old trussed cars, has a tendency to develop slack in the superstructure. This in turn affects the roof and sheathing. One principal trouble with outside sheathed cars is that, after they have been in service a compara-

tively short time, the sheathing frequently loosens at the end sill, and at the side sills near the bolsters, with resultant leakage of grain.

There were some steel frame box cars built previous to 1909, but the writer has been able to secure data on only the outside sheathed types. Of these, 2,700 were in service on the Norfolk and Western, of



Steel Frame of Canadian Pacific Railway Box Car Ready for Lining.

which the first 100 were built in 1902; the owners advise they were satisfactory, and the same type has been purchased on subsequent orders. The Rock Island and Frisco lines had in service at that date approximately 5,000 cars similar to the Norfolk and Western, and these also appear to have given satisfaction as the owners have reordered the same type several times. All of these, however, were outside sheathed, and as regards leakage at the sills, had comparatively little advantage over the wooden cars. Recently both of these lines have purchased some inside sheathed cars.

In 1908 the C.P.R. designed a steel frame inside sheathed box car. This car avoided the disadvantage of the outside sheathed car which had not been accomplished by the steel frame cars constructed up to that time, and at once obtained a further reduction in weight and provided for cheapness of maintenance by the use of steel superstructure, without the additional lumber required by the outside sheathed car. With practically no preliminary experimenting, 500 of these cars were built and over 30,000 have been built since similar to the first cars, with the exception of several refinements of details, such as corner and door posts, end doors and side plates, and joining of flooring and lining. These changes have not affected the general design of the car, but are the improvements that have been introduced from time to time to reduce weight and simplify the construction.

The steel frame outside sheathed car has several advantages over the types previously used, notably in that the tare ton weight is low in proportion to the capacity. There is such a variation in the figures used for the cost of hauling per ton mile, that no attempt is made to say what the saving would amount to, but certainly the advantage of having a car equal, if not superior to other cars in all respects, weighing from 1,000 to 5,000 lb. less, will appeal to all traffic and operating men. Not only is there that much less dead weight to haul when the car is empty or partly loaded, but additional lading can frequently be carried. The actual limit on the paying load that can be carried in a properly designed car is the total weight on the axles. Thus, a car having 5 in. by 9 in. axles, with such a tare weight that, when deducted from the capacity of the axles, allows the car to be safely loaded to 88,000 lbs. could, if dead weight be reduced by 3,000 lbs., safely carry a paying load of 91,000 lbs. and retain the same strength. Thus the actual capacity of the car is increased almost 4% with a better ratio of paying to dead load.

With the wooden superstructure it had been thought necessary to assist the superstructure by heavy roof construction, some going so far as to use different methods of diagonal bracing, but with the steel car it has been found that there is no appreciable local movement of the framing in the heaviest service, which makes a simple proposition of the roof, as it has only to take care of itself. This presents a simpler problem to roof designers, making it possible to design a roof much lighter, without necessity for use of purlins or ridge poles to strengthen the car. It is obvious that unnecessary weight in the roof raises the centre of gravity, and increases the tare weight and cost and has other disadvantages.

In explanation of the local movement of this style of framing, it is well to mention tests we have made in jacking up this car, which demonstrated that the car would take a gentle twist from end to end, allowing the bolsters to be slightly out of the same plane horizontally. This twisting was accomplished without any perceptible local distortion of the sides or ends. The capacity for twisting is a condition to be desired as it allows a car to adjust itself to uneven track conditions.

In addition to being 5½ in. narrower than the outside of the sheathing of a wooden car, the superstructure of the C.P.R. car is protected by the framing, so that a side swipe that would do serious damage to an outside sheathed car frequently does not touch the lining and is resisted by the framing without damage to the posts or braces. Frequently it is found that a side swipe that would almost demolish the sides of a wooden car only bends the steel framing, and in making repairs, the lining is merely removed, posts and braces strengthened and the original lining replaced, the whole cost being the comparatively small labor charge. Jacking frames are being installed at all of our principal repair points for all classes of steel cars, and while not original with the C.P.R., have been amplified better to take care of steel frame box cars. With these frames, many jobs that would require the car to be cut apart, taking several days, can be done in a few hours without cutting rivets. With modern steel frame cars, these jacking frames are as much a necessity as the blacksmith shop or any other part of the shop.

With the outside sheathed car it is difficult to clean a car properly when it is unloaded, on account of grain lodging between the framework, and also on account of the opening where the posts and braces meet at the bottom becoming obstructed, resulting in grain being retained between the sheathing and lining with resultant complaints from shippers. All of this is overcome by the clean joining of the lining and the floor in the steel frame cars, and it is believed a change of this kind would have come years sooner if designers had kept in close touch with service conditions. One advantage of the steel frame car is that outside of possible repairs due to wreck damage and to wear and tear of couplers, wheels, brake shoes and journal bearings, the car does not deteriorate more rapidly in service than when stored.

The grading of lumber for use in these cars is an item that has received much consideration. Yellow pine or fir has so far been the principal lumber used, although we have experimented to some extent with spruce. Spruce has the advantage of being lighter, but it seems to be more difficult to dry it sufficiently for this purpose. Great pains have been taken to avoid knots that are too large or numerous, and while it is generally desirable to have lumber as free from knots as possible, I have never, in the inspection of many hundreds of cars, seen where a knot had fallen out. It is, however, desirable to have lumber as free from sap and shakes as possible and thoroughly dry.

When the first of these cars were built outside of the C.P.R. shops we had considerable difficulty in getting the lumber properly dried, due to lack of both experience and facilities on the part of the car companies. We have about 3,000 cars on which the lumber has shrunk and given them a bad appearance, but this result was expected, as when the cars were built the lumber was quite green. The sheathing on these cars could be tightened for less than $4 a car, but very few have been tightened, owing to receipt of practically no reports of loss or damage to lading due to the shrinkage; also as they do not frequently reach our main repair tracks, being shopped only for such repairs as wheels,

REPORT OF MOISTURE IN LUMBER FOR LINING BOX CARS.

Built by ..... At .....

C. P. R. Equip. Order No. ..... For ..... Number of Cars .....

Report No.....

Moisture determination strictly in accordance with C. P. R. Spec. No. 243 C.

Samples obtained every other day during construction, with a minimum of one sample for each one hundred cars built. Result of each test must be promptly recorded on this sheet and sent to R. W. Burnett, Gen'l. M.C.B., Montreal.

| Lab. No. | Date of Sample | Cars Completed | Car Nos. Represented | Moisture Per Cent. | Average To Date | Orig. Width Inches | Shrinkage Inches | Average To Date Inches | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

Form Used by Canadian Pacific Ry. for Reports on Moisture Determination on Lumber.

or wreck damage, we have not considered it advisable to shop the cars for a defect which is almost entirely a matter of appearance. The lining shrinks as much in two months of summer weather as it ever will.

The lining should not be matched before drying, as it warps and curls, rendering it difficult to make a tight joint. The rough size of lumber should be at least ¼ in. greater than finished dimensions. In establishing limits for drying lumber no information or data could be secured whatever, and after experimenting we came to the conclusion that a piece of this lining of full cross section, subjected to a temperature averaging 170 deg. fahr. for 96 hours, should not lose more than 6% in weight, and that lumber represented by samples losing more than 10% must not be used until further dried.

The variable condition of the lumber when taken from the yard makes it necessary to use careful judgment as to the length of time it should be kept in the kiln. At the C.P.R. Angus shops this responsibility falls on the wood mill foreman, whose constant attention to this feature makes him the best fitted for the purpose. The average moisture loss reported by the test department for lumber used on cars now building at the Angus shops is 5.25%, which shows that we are getting very satisfactory results from the kilns. A number of tests were made last year on lumber taken from the yard. These tests showed a moisture loss of between 25 and 30%, which shows the importance of drying lumber properly. The accompanying form is used for reporting results of tests both at Angus and outside shops.

Due largely to our insistence, nearly all of the car plants in the country are now equipped with dry kilns, and any possible additional cost of drying lumber in excess of what has been considered good practice in the past would be less than $1 a car. Such drying would make the car side practically the same as one board, so that it is absurd that the possible shrinkage of lumber should be considered as any reason for this type of car not being built. It has been claimed that lumber can be so dried that it will swell and bulge, but we have never found this to occur. We have had cases where lumber slightly moist has dried more rapidly on the inside, due to that side not being painted, and made the outside of the boards slightly convex, with tight joints that could be easily mistaken for swelling, whereas the opposite is the case. We have kept a car with very green lumber in the passenger shop, with a high temperature, for over a month, until the lumber was absolutely bone dry, and then put it outside, with doors open through four weeks of constant raining spring weather, with the result that there was no closing of the cracks that could be detected, which further proves that there is nothing to be feared from lumber being too dry.

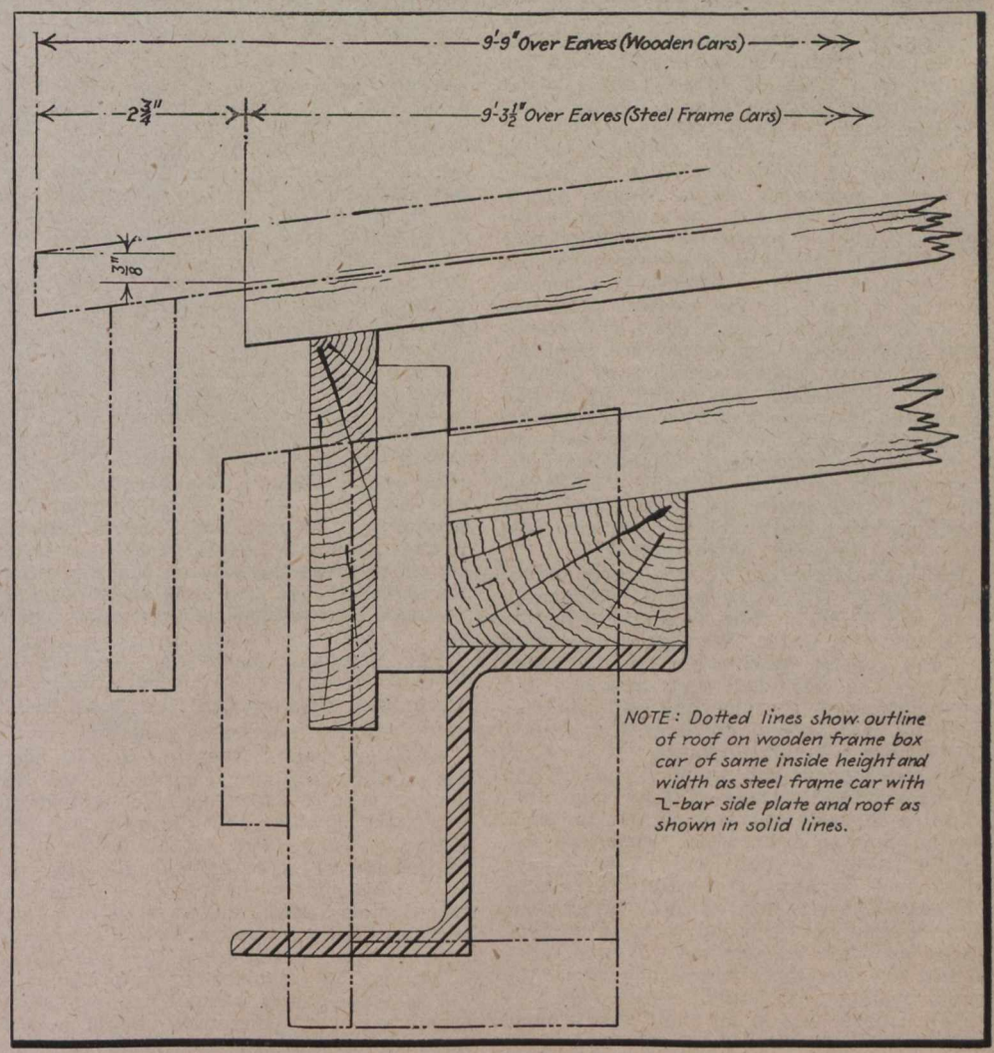
The defects in the sheathing that must be most closely watched are shakes or splits that extend obliquely downward into the car which must be knifed in with paste before the car is painted. The edges of the lining should be painted, and we have found this can be done more easily and thoroughly by dipping the boards and putting them through two rubber scrapers, which removes the surplus paint, leaving the edge thoroughly coated. This gives a thin coat of paint on the inside of the car, which is an advantage in causing the lumber to dry more uniformly and diminishes the tendency to warp. Narrow boards have the advantage of having less tendency to warp, and also if the lumber should not be thoroughly dry, there is less total shrinkage for each board, making the space between the edges narrower. The steel work and roofing are painted the same as other cars. This considerable space has been given to the grading and drying and painting of lumber, as we have found that these factors have required much more attention than everything else combined in connection with the car.

The development of the inside sheathed car has been so rapid and the experience with it so uniformly satisfactory, that I feel safe in saying that its introduction in such large numbers, on so many roads, in so short a time, indicates more nearly a tendency towards the adoption of a standard car than has any distinct type of car, outside of patented cars for special service. It is certain that there will be no backward movement to a wooden superstructure, and that this car, with possible modifications, will remain a standard car unless some superior type is developed. It may be stated as the writer's opinion that no committee will ever develop a car that will be adopted as standard, but that the nearest we will ever get to a standard is what may be developed by one or two persons given a free hand, and the merit of which is so pronounced that it will force itself upon the country.

With the use of structural steel there is less necessity of carrying special parts in stock, on account of repairs being largely a question of labor, and it seems that with this type of car the necessity from a repair standpoint for a standard car is decreasing. This is further borne out by the fact that for the 30,000 cars of this type we have ordered no material for repairs and carry none in stock, outside of material common to all cars, except lining, of which our stock amounts to practically nothing. We save out sufficient of the parts from cars destroyed to make up our stock of repair parts, but have found it necessary to use very little of this. There are, of course, many valid reasons why cars should be made to standard inside dimensions and outside clearances.

To look at the matter in another way, the wheels, axles, journal bearings, journal boxes, couplers, brakes, safety appliances, etc., which constitute the removable and perishable parts, are all standard, and when it is remembered that nearly all of the remaining parts of the cars are standard rolled shapes, which are easily obtained either from the mill or from stock in all principal cities, it is apparent that we now have in effect a standard car, or at least a car of standard parts. A car of different dimensions would not increase the cost of maintenance as long as standard shapes are used; nor would it if every lot of cars is designed differently, as long as proper strength is maintained, and any change in design would usually be to increase the strength. In other words, to keep a car as close as possible to standard and reduce cost of maintenance, rolled shapes should be used in preference to pressed shapes where possible.

It is my belief that the people who are urging the adoption of a standard car, for maintenance reasons, have in mind the remaining wooden cars, for the maintenance of which large quantities of timbers and castings have to be kept in stock. It is of vital importance that the parts be standardized if that style of construction




Details of Roof Clearances on Steel and Wooden Box Cars.

is to be continued. It should not be overlooked that in a car constructed with rolled shapes, these parts seldom need renewal, even when the car is wrecked, as they can easily be straightened or formed to the original shape at any car repair point, while wood would have to be replaced, and pressed shapes would call for special dies to reform them. With a wooden box car the amount of material necessary to carry in stock and use for repairs increases rapidly with the age of the car, with a steel frame box car the amount of material necessary to carry in stock and use for repairs outside of parts common to all cars does not increase with the life of the car.

The wind resistance on the steel frame box cars with inside sheathing is slightly greater than on a smooth outside sheathed car, but on the other hand, it is less than on any ordinary type of stock car. The effect of wind resistance between box and stock cars, has never been great enough to require any distinction between them as to the number of cars that could be hauled in a train of either, and is really a refinement that not even a dynamometer car can detect. A small change in the angle or velocity of the wind, or difference of the number of wheels running to one flange, or trucks somewhat out of square, affects the haulage of the train too much to enable any satisfactory figure for the difference in the wind resistance of the various types of car to be obtained. There is a certain stretch of track on the western plains of about 40 miles, without a curve and practically level, where high winds are frequent, on which the haulage capacity of locomotives is dependent principally upon the wind, and yet even there it was found practically impossible to distinguish between the wind resistance of stock and box cars. From this it is evident that the wind resistance of steel frame inside sheathed box cars, as compared with outside sheathed cars, may properly be ignored.

In the summer of 1911 we lined one of these steel frame cars with corrugated steel and found it to be as simple a matter as lining with wood. We lapped and riveted the sheets, which were no. 13 gauge, between the door and end, and had the corrugations on the side and end coincide, pressing into special corrugated angles in the corners to break the joints. At the floor, we straightened out about 4 in. of the corrugation and formed of it an angle that rests on the side sill, and on this the ends of the floor boards were superimposed, easily making as tight a joint as I have ever seen on any car. After 18 months of general service this car was brought in, and on examination found to be in as good shape as when constructed. It was interesting to note that, when inspected, the paint sealing the joints, where the side sheets lapped, was in no place seal broken, indicating that there is no material weaving or deflection of the sides. The paint was in perfect condition, there still being some gloss, indicating that in the use of steel there is no disadvantage as far as the painting is concerned. Different methods of lining with steel could be followed, and I am convinced that if experience proves that there is no damage to be feared from heat, cold or sweating, that steel lining will be largely used. But, I am also convinced that the use of steel lining with any insulation will never be extensively used, as it adds to the cost and weight without affording any protection to the lading, which is not secured by the wood lining. An advantage of this construction is shown in the application of hoppers under the door openings, which were made without alteration to sills or cross bearers.

As regards the end of the car we use two 4 in. Z-bar end posts of 8.2 lb. per ft., with 1¾ in. lining, which gives good service, but we intend to use on future cars two 5 in. end posts of 11.6 lbs. per ft. with 2⅜ in. lining for a height of 4 ft. and 1¾ in. lining above that height. This, we feel, will protect any lading that needs protection. If a car gets such rough handling that wheels or rails, or similar lading, would break through, it is better to have the boards broken than to distort the posts, as the lining can be replaced at any repair track with a minimum expense, while distorted posts would require sending the car to a steel car repair point. The single thickness end lining makes convenient the application of single thickness, grain tight end doors.

Out of 30,000 of these cars, 29 have been destroyed. Based on the length of time in service, this would average a loss of approximately one car per 1,000 per year. Of the cars destroyed, 15 were burned, 14 were destroyed in wreck, 10 being destroyed on foreign lines. As the loss of cars by fire is in no way affected by the details of construction, I will eliminate these from the calculations. This then, based on the length of time in service would give about one half per car per 1,000 per year destroyed in wreck. As there is no appreciable deterioration of these cars in service, it is safe to assume that in the same service substantially the same rate of loss would continue, while with wooden cars the rate of loss would increase each year.

A conservatice estimate shows that there are today approximately 65,000 steel superstructure cars, including outside sheathed, in service. Of this number 30,000 are C.P.R., and nearly all the remainder belong to the Grand Trunk, Intercolonial, Toronto, Hamilton & Buffalo, Minneapolis, St. Paul and Sault Ste. Marie, Pennsylvania, Rock Island, Erie, Wabash, and Frisco Lines. The Pennsylvania has a 40½ ft. 50 ton car, designed to carry the load on the centre sill; the Frisco Lines has a 40 ft. 40 ton car, designed to carry part of the load on centre sill.

The foregoing paper was read by Mr. Burnett before the American Society of Mechanical Engineers in New York, Dec. 3.

### Steel Underframe Box Cars.

At the same meeting G. W. Rink, Mechanical Engineer, Central Rd. of New Jersey, read a paper on steel underframe box cars, of which the following is a brief extract:—On account of the large variety of designs of steel underframe box cars, it is the desire to show by tables the practice of the various railways, with a view to selecting such designs as will render the best service, considering the more exact conditions as required by interchange of cars and the use of locomotives of increased tractive power. Box cars should now be built along standard lines, with particular reference to those parts that affect repairs and interchange. Tables showing stresses in underframes for various cars are compiled, certain assumptions having been made in order to treat the subject in general. It is the opinion of the author that a committee representing the various railways throughout the country should be organized, with a view to developing a standard box car which will eliminate cars of inferior design and light construction, thereby facilitating repairs and decreasing operating expenses.

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H. G. Smith, City Passenger and Ticket Agent, Grand Trunk Pacific Railway, Vancouver, B.C., in remitting his renewal subscription for Canadian Railway and Marine World writes: "Would be greatly disappointed to miss even one copy."

## The Central Railway of Canada and Its Contractors, Etc.

The Quebec Court of Appeal delivered judgment, Nov. 26, in the action of Wills against the Central Ry. of Canada. This was an appeal against the decision of Mr. Justice Archibald in the original action. The Central Ry. Co. of Canada has a charter from the Dominion Parliament to build a railway from Montreal to Midland, Ont., with charters from the Quebec and Ontario Legislatures to build various connecting lines. The company entered into a contract with C. J. Wills and Co., London, Eng., to build the Montreal-Midland line, agreeing on its part to provide funds for carrying on construction. The contractors started work in 1911, but early in 1912 difficulties arose between the company and the contractors. The latter alleged that the company had failed to provide money as agreed, and the former that the contractors were not proceeding with due diligence. As a result the contractors sought to recover damages, and the company took steps to let another contract for construction. The contractors thereupon applied for an injunction restraining the company from proceeding with the work itself or from letting a contract to any other person for building the line. At the original trial judgment was given in favor of the contractors for $2,373.30 on the first claim, with a reservation to claim other damages for breach of the general contract, and an injunction restraining the company from having the line built by any one other than Wills and Co.

The railway company appealed against this decision, and the Court of Appeal found unanimously in favor of the contractors on the first point—the condemnation to pay $2,373.30. On the second point, the reservation to claim other damages, the Court of Appeal found that the trial judge's finding should be amended in such a way as to eliminate the enacting clause embodying the reservation in question. On the third point—the maintenance in full force and effect of the contract—the court found, by four to one, that while the company had failed to provide the necessary funds in conformity with the contract, and consequently was alone to blame for any delay experienced in the carrying on of construction, the company had a right to terminate the contract at any time on paying damages. The opinion of the trial judge was reversed on the point as to the present force of the contract. On the fourth point—the injunction to prevent the company building the line itself, or letting a contract to anyone else—the court, in a lengthened review as to law and practice affecting injunctions, set out a number of reasons why the injunction should be set aside. The decision of the trial judge is therefore upheld so far as to pay the contractors $2,373.30, but is reversed as to all other of its enacting clauses.

We are officially advised that all construction on this projected line between Montreal and Ottawa has been stopped. F. S. Williamson, Chief Engineer, has resigned, and will act for the company in future as Consulting Engineer.

A meeting of shareholders, under the trust deed of July 17, 1911, made between the company and the City Safe Deposit and Agency Co., London, Eng., was held, Dec. 16, for the purpose of passing resolutions cancelling the trust deed and the redemption of the outstanding bonds.

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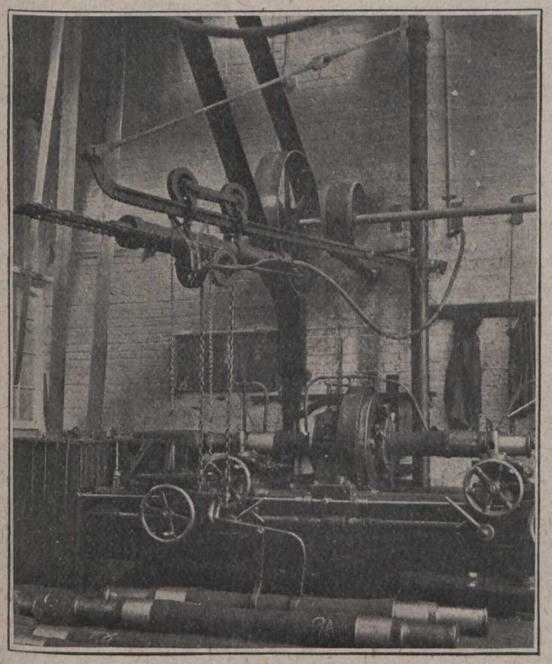
The Board of Railway Commissioners has established express delivery and collections for Leamington, North Bay, and Sudbury, Ont.

## Crane for Mounting Axles in Lathe at West Toronto Shops, Canadian Pacific Railway.

The accompanying illustration shows a handy air crane used in the C.P.R. West Toronto passenger car shops—H. R. Naylor, General Foreman—for lifting axles into the axle lathe for turning. Back of the lathe, against the shop wall, there is attached a jib crane, which has a clear swing over the lathe on the pipe support. On the horizontal arm of the jib there is a two wheel traveller, to the under side of which is attached horizontally an air cylinder. On the under side of the cylinder there are mounted, in bearings, two chain wheels, over which pass hoisting chains, the upper ends attached to a piston rod crosshead. The outward movement of the piston rod, controlled from an air valve adjoining the chain wheels, raises the axle hook on the lower end of the chain, lifting the axle. The axle hook is of the type described some months ago in Canadian Railway and Marine World, as originating in the C.P.R. Angus shops.



Crane for Mounting Axles in Axle Lathe.

## Waste Soaking at Grand Trunk Railway Mimico Locomotive House.

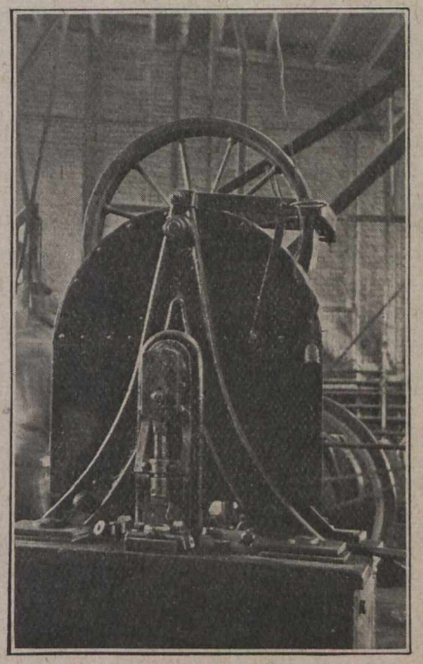
Instead of soaking waste for journals in a pail, or by any of the imperfect methods in common use, the G.T.R. locomotive house at Mimico, near Toronto, is equipped with a simple but efficient device for so doing. This consists of a rectangular steel tank, 26 by 32 ins., and 24 ins. deep, containing about 2 barrels of oil. In this tank, two baskets, about 12 ins. deep, fit loosely, each supported by a chain from a 1¼ in. rod mounted in rough bearings in the side of the tank. The front end of the supporting rod is squared to receive a crank, by means of which the baskets may be lowered into the oil.

The waste to be treated is placed in a basket, after first being torn apart, and the basket load lowered into the oil, where it is allowed to soak at least 5 hours. After this immersion, the basket is raised by the crank and allowed to drain. By this means the waste is thoroughly soaked, and the surplus oil drained off, giving a minimum amount of oil loss. The two baskets are used alternately, one soaking and draining, while the other is in use.

## Sheet Punch in Grand Trunk Railway Toronto Shops.

In the G.T.R. Toronto shops—E. Logan, General Foreman—the old Northern Ry. locomotive house is now used for running repairs for the motive power in and out of Toronto. Much of the machinery is more or less antiquated on account of the long time the shop has been in continuous service. Many small machines are to be seen there that have probably no existing counterparts,

The small sheet punch shown in the accompanying illustration is an instance of what has been done to supply small machines to supplement existing equipment. A small punch was required for perforating thin steel sheeting, resulting in the development of this machine. The punch is guided in a forged frame, and to the upper end of the punch there is attached a connecting rod, operated from a crank on the end of a shaft passing through the sheet metal hood behind the punch. Inside this latter is a large gear, mating with a small pinion on the upper shaft, which is driven from above by belting. This shaft carries an old time small fly wheel, made with a cast iron rim and wrought iron spokes.

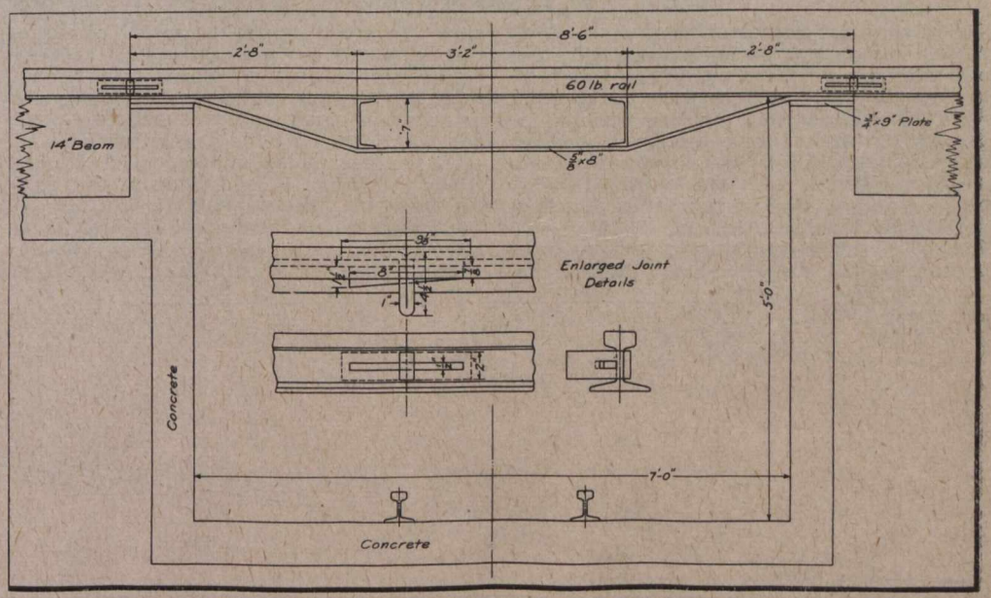


Sheet Punch for Light Work.

## Drop Pit Rail Clamp at Canadian Northern Ontario Railway Trenton Locomotive House.

The rails bridging the drop pit in the C.N.O.R. locomotive house at Trenton are secured to the approach rails by a novel clamp, as shown in the accompanying illustration. The bridging rail is of a 60 lb. section, 8½ ft. long, over the 7 ft. drop pit, and is trussed by a ⅝ by 8 in. strap on 7 in. channel struts, 3 ft. 2 ins. apart. The ends of the bridging rail, and also of the approach rails, each have a channel, ½ in. deep by 2 ins. wide, cut in the rail web, leaving a 1 by 2 ins. opening when the rails are in position. The clamp comprises a length of ½ by 2 in. bar stock, bent double, and the ends then bent outwards to form a T, the top of which is 9⅛ ins., and the upright, 4½ ins., this latter section being the double thickness of the bar stock. This section just fits in the opening cut in the rail ends. A taper key, ½ in. thick, passes through an opening in the double leg of the T, so that the latter is securely clamped in place when the key is driven after the T is in place between the rails. This locks the rails as efficiently together as when the usual slip fish plate catch is employed.

The top edge of the drop pit wall, on which the rails rest, is surmounted by a metal plate. When the locking member is removed from the rail ends, the rail may be slipped to one side along this bearing plate, far enough to allow of the driving wheels to be lowered to the awaiting pit trucks on the tracks below. This eliminates the laborious work of removing the rail entirely, as is the common practice.




Locomotive House Drop Pit with Novel Rail Clamp.

Economy in the use of fuel may be increased by seeing that locomotives do not have unnecessary delays on the road and are not kept under steam an undue time in the locomotive house. These are just as important considerations as the training of enginemen in the proper handling of the locomotive and in firing.

# Divisional Yards on the Montreal-Port Arthur Line, Canadian Northern Ontario Railway.

The Canadian Northern Ontario Railway's Montreal-Port Arthur section of the main C.N.R. transcontinental line, a description of the survey work, etc., on which appeared in Canadian Railway and Marine World for Sept., 1913, has progressed to such a stage that the engineering department has had under preparation for some time plans for the several divisional yards to be completed about the time the line will be opened for through traffic, which, it is expected, will be during this year.

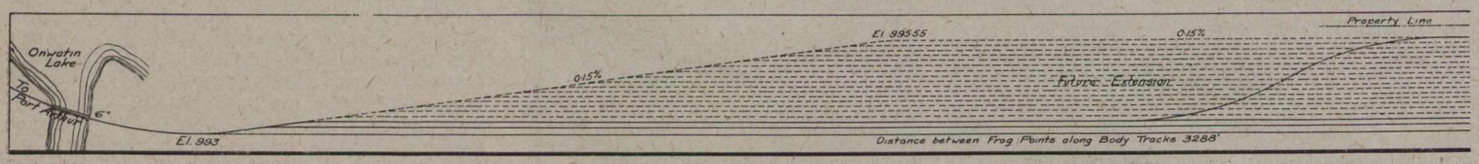
Somewhat longer runs have been provided for than is the practice on the other two principal Canadian lines, the average distance between turning and divisional points being slightly more than 150 miles. This divides the run from Montreal to Port Arthur into very uniform sections, with the exception of the first one from Montreal to Ottawa, which will be only a 116 mile run. The turning and divisional points on the line, with their respective distances from Montreal, will be as follows: Montreal, 0 miles; Rideau (outside Ottawa), 111.6 miles; Capreol, 414.6 miles; Foley (turning point), 563.2 miles; Fitzbach, 711.9 miles; Hector (turning point), 861.7 miles; Port Arthur, 1,010.1 miles. From Rideau to Capreol is 303 miles, and it is the intention to have a divisional point midway, the location of which has not been determined.

In the construction of this link of the new transcontinental line a far sighted policy has been adopted, in so far as is practicable, the designs throughout following the latest practice where such conditions appeared advisable, and wherever it was considered the better policy to follow a cheaper construction, the plans have been so developed as to make possible the introduction of the better construction at some future date with the least change in the original arrangement. In pursuance of this policy, and realizing that the traffic possibilities of this section of the transcontinental line are great, and will increase rapidly, all the turning and divisional points have been laid out in such a manner as to make possible the extension of the yards and facilities to something over four times the initial capacity, utilizing the initial construction as part of the extended yard. In other words, the initial construction is only a portion of the final contemplated accommodation, which may be obtained by making additions to the original arrangement from time to time, without in any way disturbing the general scheme.

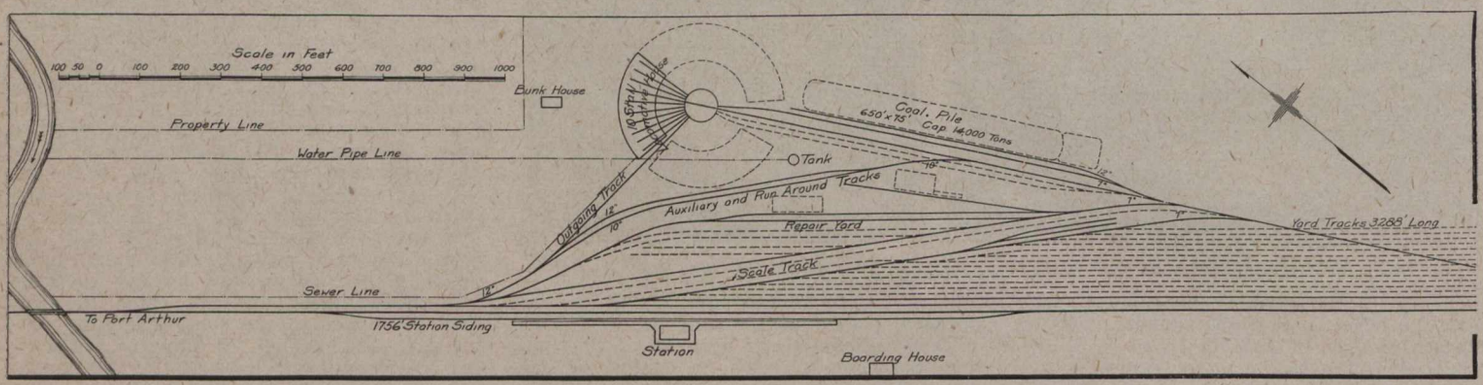
Of the five points under consideration—Rideau, Capreol, Foley, Fitzbach and Hector—two, viz., Rideau and Capreol, are of the greater importance, as both of them are junction points. At Rideau, in addition to the main line, there is also the line from Ottawa to Toronto, now nearly completed, and already operating a freight service, which will make demands on the accommodation, requiring a larger yard and facilities than those at intermediate points. Similarly with Capreol, the junction point of the main line and the Toronto-Sudbury branch, which has a comparatively heavy traffic to the northern mining districts, and it is contemplated that a heavy traffic will develop from the lower Ontario district through this junction point for the west. Of the three other points, Fitzbach is the most important, being a divisional point, and the other two, Foley and Hector, only turning points at the ends of the runs from the divisional points east and west of them.

Of the several divisional and turning points Rideau will not only have the greatest capacity, but will extend over considerably more ground, each of the two lines that branch out from that point having separate yard accommodation, with the mechanical yard arrangement in the intervening angle, as shown in one of the accompanying illustrations. Each of these separate yards will be very similar to the yards at the other points, a standard yard plan having been adopted, with body tracks in all cases 3,288 ft. long. The standard body track length at first accepted in the early studies of yards on this line was 2,800 ft., but this was deemed to be rather too short, as in the latter a maximum train length would be 70 cars, whereas the former gives a possible train length of 80 cars. It is quite conceivable that this will be the standard train length in the near future over this line, as grades and curves have been eliminated as far as practicable, and where such was not possible, provision was made that the line might be reduced to the initially designed high standard at some future time. The maximum gradient will be 0.4%, the limiting gradient for maximum haulage capacity. The far sighted yard policy is thus apparent.

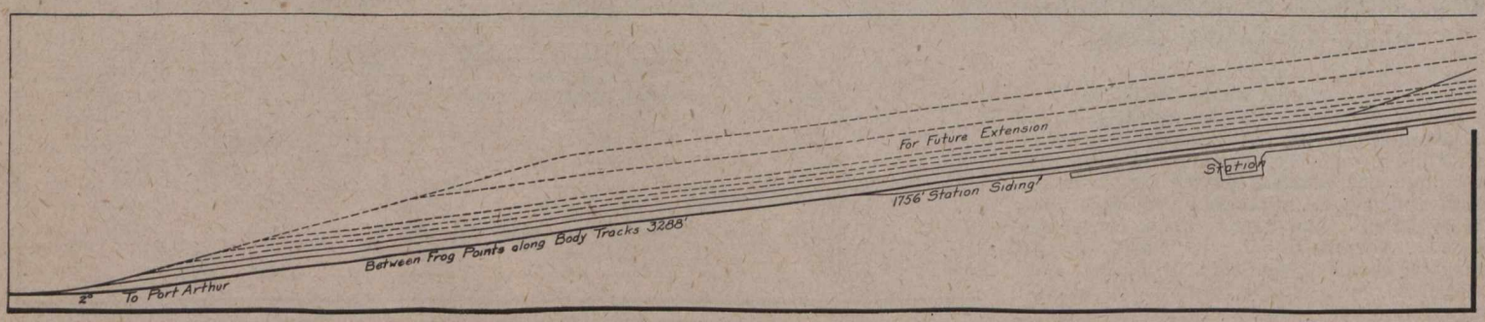
A standard locomotive house construction has been adopted by the engineering and




Canadian Northern Ontario Ry. Yard Layout at Capreol (West End).

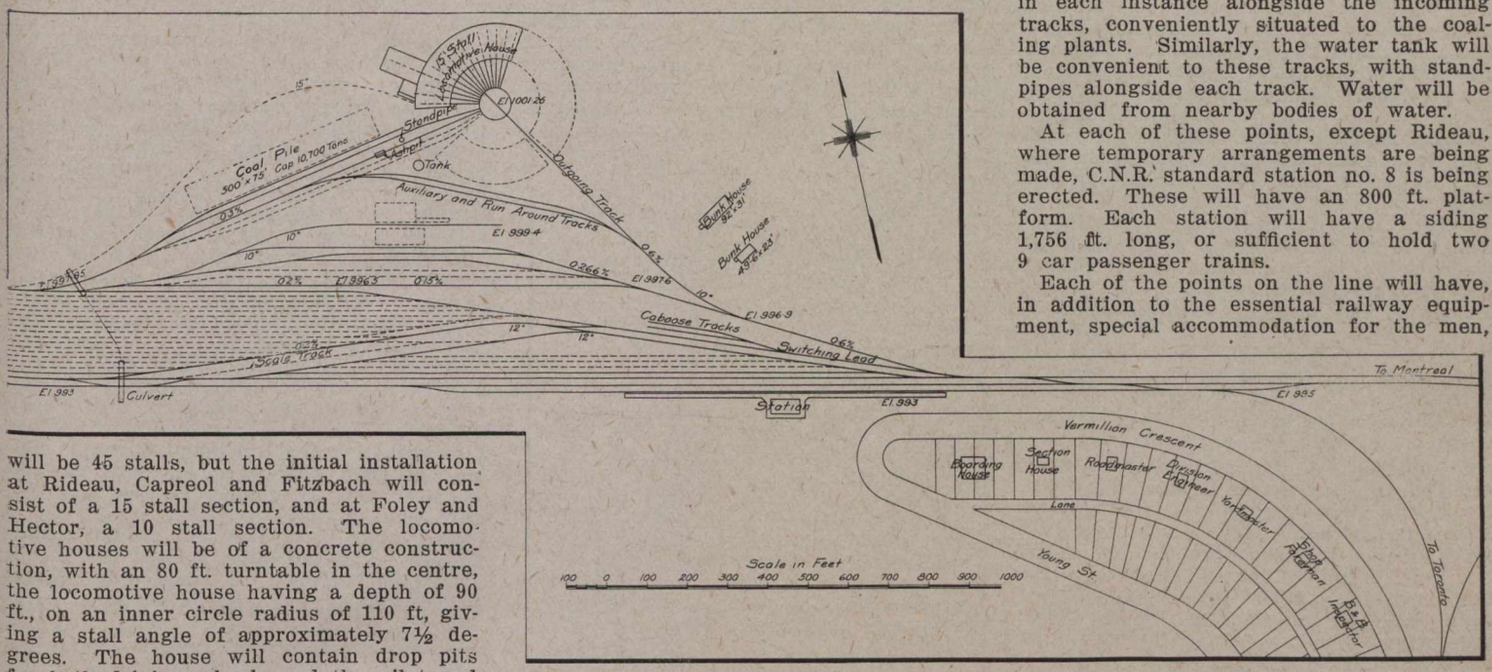



Canadian Northern Ontario Ry. Yard Layout at Foley (West End).

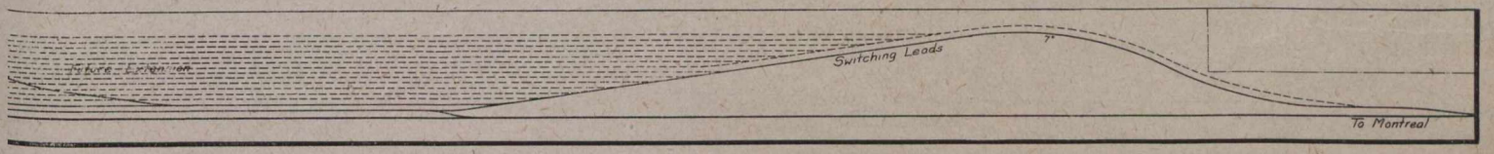



Canadian Northern Ontario Ry. Yard Layout at Fitzbach (West End).

mechanical departments, the same type being built at all the points on the line. The ultimate size of these locomotive houses will be 45 stalls, but the initial installation at Rideau, Capreol and Fitzbach will consist of a 15 stall section, and at Foley and Hector, a 10 stall section. The locomotive houses will be of a concrete construction, with an 80 ft. turntable in the centre, the locomotive house having a depth of 90 ft., on an inner circle radius of 110 ft, giving a stall angle of approximately 7½ degrees. The house will contain drop pits for both driving wheels and the pilot and trailing truck wheels, and will in addition have a small machine shop adjoining for the handling of running repairs, the shops at Rideau and Capreol being larger and more important than at Fitzbach, which in turn is to be more complete than Foley and Hector.




Canadian Northern Ontario Ry. Yard Layout at Capreol (East End).




Canadian Northern Ontario Ry. Yard Layout at Foley (East End).

The incoming tracks at all these points are to be laid out for half the ultimate capacity. The arrangement planned, which will be eventually completed, calls for an incoming track arrangement symmetrical about a central line. Only one half of this scheme will be laid down. In the incoming tracks will be the coaling, sanding and ash handling equipment. A conveyor type of coal plant will be used, the specific design of which is still under consideration, as are most of the details. The ashpits will be air operated.

In all the yards it will be observed that there will be a single outgoing track, with the exception of Rideau with a single outgoing track for each line, and that this track will be tangent for some little distance beyond the locomotive house. In this connection it will be noted that in every instance there is at least one track, either an incoming or outgoing track, that leads directly into a stall. This is an important consideration in the handling of cripples, which may be pushed into a stall directly by a helper, eliminating the necessity for block and tackle assistance from the turntable.

In each layout, with the exception of Rideau, there will be a run around and an auxiliary track connecting the incoming and outgoing tracks. In the excepted instance, these double tracks will connect the two outgoing tracks.

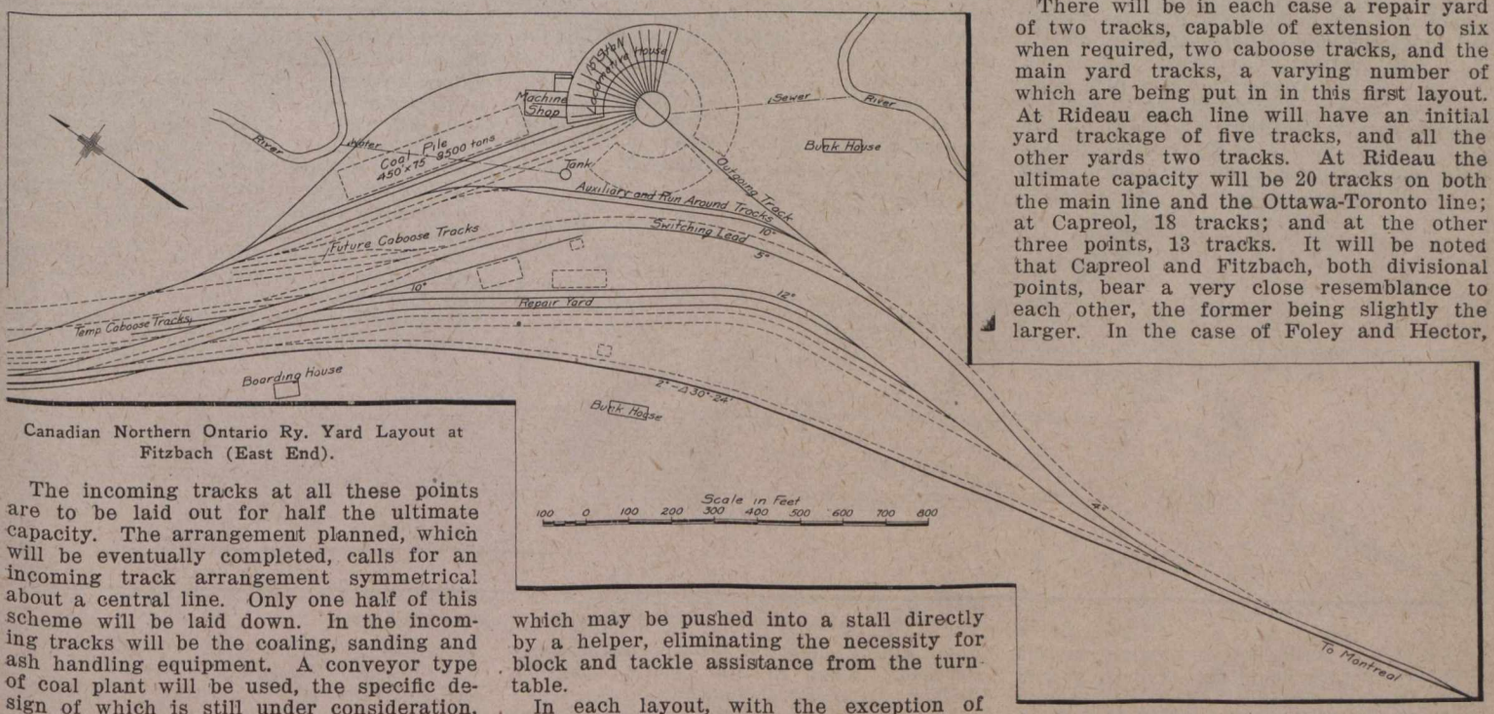
Coal storage piles, varying in capacity from 9,500 to 14,000 tons, will be located in each instance alongside the incoming tracks, conveniently situated to the coaling plants. Similarly, the water tank will be convenient to these tracks, with standpipes alongside each track. Water will be obtained from nearby bodies of water.

At each of these points, except Rideau, where temporary arrangements are being made, C.N.R. standard station no. 8 is being erected. These will have an 800 ft. platform. Each station will have a siding 1,756 ft. long, or sufficient to hold two 9 car passenger trains.

Each of the points on the line will have, in addition to the essential railway equipment, special accommodation for the men, including bunk houses of standard design, dining hall, section house, and at such a point as Capreol, where the divisional staff will be located, a series of cottages. A few company cottages will also be erected at the other points.

There will be in each case a repair yard of two tracks, capable of extension to six when required, two caboose tracks, and the main yard tracks, a varying number of which are being put in in this first layout. At Rideau each line will have an initial yard trackage of five tracks, and all the other yards two tracks. At Rideau the ultimate capacity will be 20 tracks on both the main line and the Ottawa-Toronto line; at Capreol, 18 tracks; and at the other three points, 13 tracks. It will be noted that Capreol and Fitzbach, both divisional points, bear a very close resemblance to each other, the former being slightly the larger. In the case of Foley and Hector, the turning points, the similarity is more apparent, the layouts being almost identical.

The engineers were most fortunate in nearly every instance in choosing sites that




Canadian Northern Ontario Ry. Yard Layout at Fitzbach (East End).

are practically level, requiring but a small amount of excavation and fill. The principal exception was Capreol, where some heavy cutting was made necessary. Foley was also comparatively heavy, and Fitzbach had some filling. Both Hector and Rideau, however, were practically level.

The several yards were planned in the office of H. E. B. Smith, Engineer of Yards and Terminals, Toronto, from whom the data on which this article is based, was secured, through the courtesy of A. F. Stewart, Chief Engineer. We are also indebted to J. Montgomery, of the Imperial Construction Co., for information concerning the standard buildings which are being erected by that company at these points.

## Automatic Electric Block Signalling on the Canadian Pacific Railway.

In addition to the block signalling work referred to in previous issues, automatic block signals are being installed between Montreal Jct. and Iberville Jct., Que., 27 miles; between West Toronto and Islington, Ont., 5 miles; between Markstay and Stinson, Ont., 11 miles; for 3 miles at Mattawa, Ont., and between Renfrew and Eganville, Ont., 6 miles. For the 13 miles between Islington and Streetsville Jct., Ont., they have been rearranged for the new second track.

The block signal system in operation between Fort William, Ont., and Winnipeg is similar to that in use on the Eastern Lines except that the signals protect station limits only. The signals, which are of semaphore type, are located about 3,000 ft. outside of the outlying switch, and, in accordance with usual C.P.R. practice, the semaphore stands at horizontal for "stop" and 90 degrees above horizontal for "clear." They are electrically operated, and act in such a way that a car or engine occupying the main track at any point from the signal through the station yard will hold the signal at "stop," and also if a switch in the main line should be open or a car happen to stand on siding close enough to the switch to foul the main line or there should happen to be a broken rail in the portion of track protected by the signal, the signal will stand automatically at "stop"—furthermore, the mechanism is so designed that in the event of a possible failure of the electric current or in the mechanism itself the signal will stand at "stop."

A. L. Smith, Superintendent District 1, Lake Superior Division, Sudbury, Ont., has issued the following special rules:—

The movement of trains between Markstay and Stinson, and at Mattawa, will be controlled by normal danger automatic block signals of the three position, upper quadrant type, the three positions being: horizontal, forty five degrees above horizontal, and ninety degrees above horizontal. The indications given are:—Arm horizontal—Stop. When in this position a red light is displayed at night. Arm forty five degrees above horizontal—Proceed, prepared to stop at next signal. When in this position a yellow light is displayed at night. Arm ninety degrees above horizontal—Proceed. When in this position a green light is displayed at night.

The signals governing eastbound trains have even numbers, and those governing westbound trains have odd numbers, and are on poles, located at the entrance to each block on the right hand side as seen from an approaching train. The arm of a signal has a pointed end. A lunar white marker light is placed at 6 ft. below, and on the opposite side of pole from signal light.

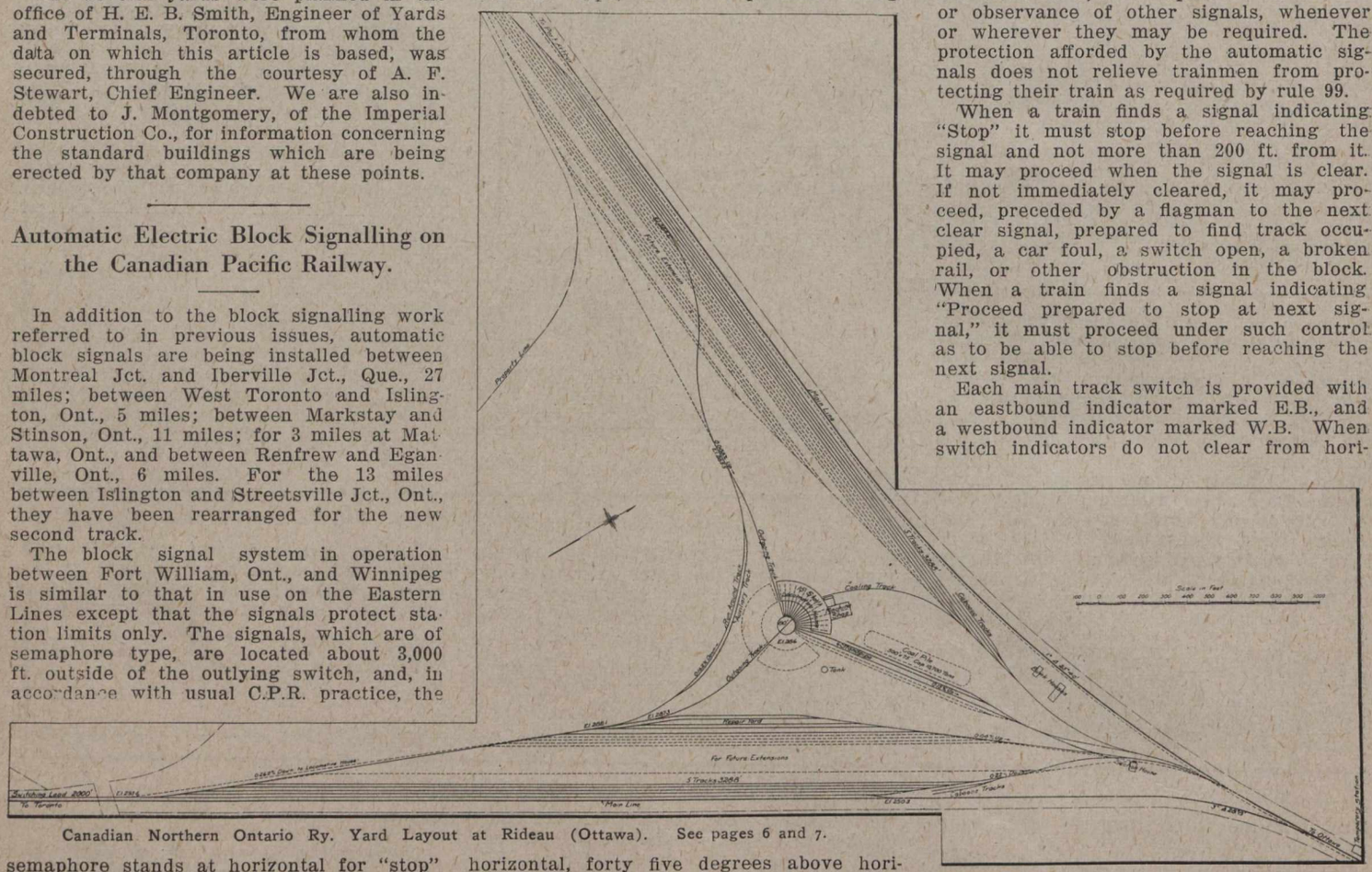
The track is divided into blocks, and the block signals control the use of the block but do not effect movement of train under the train rules, nor dispense with the use or observance of other signals, whenever or wherever they may be required. The protection afforded by the automatic signals does not relieve trainmen from protecting their train as required by rule 99.

When a train finds a signal indicating "Stop" it must stop before reaching the signal and not more than 200 ft. from it. It may proceed when the signal is clear. If not immediately cleared, it may proceed, preceded by a flagman to the next clear signal, prepared to find track occupied, a car foul, a switch open, a broken rail, or other obstruction in the block. When a train finds a signal indicating "Proceed prepared to stop at next signal," it must proceed under such control as to be able to stop before reaching the next signal.

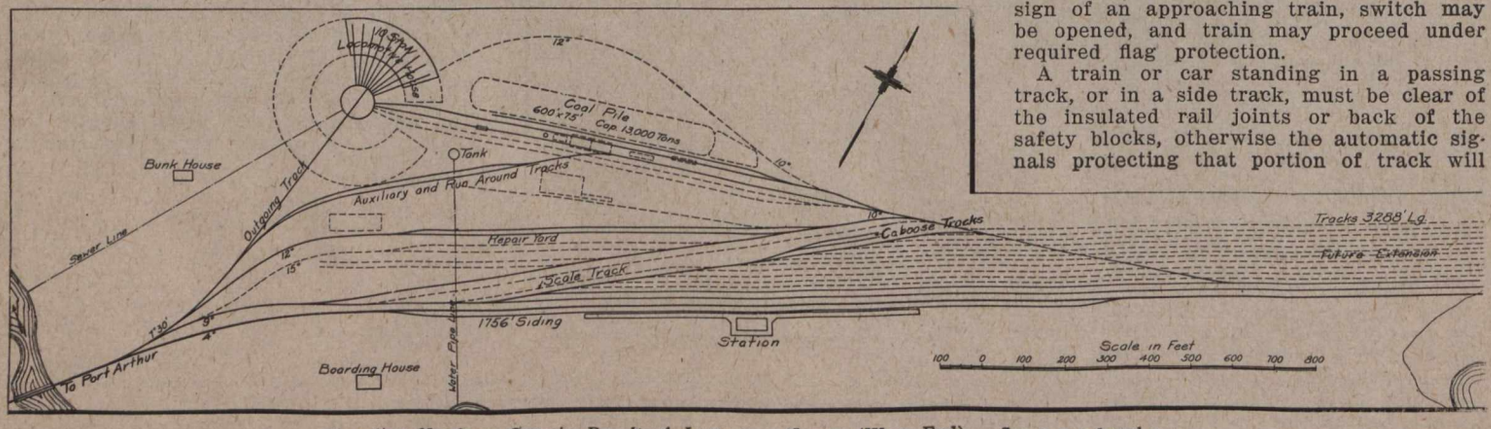
Each main track switch is provided with an eastbound indicator marked E.B., and a westbound indicator marked W.B. When switch indicators do not clear from horizontal to vertical by operating the push button underneath the indicator, it will indicate that a train is approaching and switch must not be opened until sufficient time has elapsed to allow the approaching train to pass. If, after this period of time, indicator will not clear, and there is no sign of an approaching train, switch may be opened, and train may proceed under required flag protection.

A train or car standing in a passing track, or in a side track, must be clear of the insulated rail joints or back of the safety blocks, otherwise the automatic signals protecting that portion of track will not clear for an approaching train.

Conductors must report by wire to the Superintendent from the first telegraph station all delays caused by signals, giving the number of signal, and cause if known. Engineers must use forms S. M. 1 to report delays at signals, except delays on account of train ahead. Track foreman and other employes will also report promptly by wire




Canadian Northern Ontario Ry. Yard Layout at Rideau (Ottawa). See pages 6 and 7.




Canadian Northern Ontario Ry. Yard Layout at Hector (West End). See pages 6 and 7.

any defect noticed in the signals, wires, or other appurtenances of this system.

Trainmen must not make any change in the track which will interfere with the signal system without notifying the signal maintainer, and, except in case of emergency, receiving his consent.

Signals 546 and 631, being the end signals of the installation between Markstay and Stinson, and signals 725 and 720, being the end signals of the installation at Mattawa, will operate only in two positions, namely, horizontal, and 45 degrees above horizontal.

If necessary to clean the ashpan on the main track, inside of block signals limits. the ashes and cinders must immediately be removed by the fireman, if no one else is available for the purpose, in order to prevent damage by fire to the trunking which covers the signal wires.

## The Canadian Pacific Railway's Windsor Street Station, Montreal.

The extensive additions to the Windsor St. station, Montreal, are rapidly approaching completion. A full description, with plan, of the trackage and approaches appeared in Canadian Railway and Marine World for November, and a very complete article on the power interlocking and signalling appears elsewhere in this issue.

In the summer of 1910 the foundations were laid of an addition to the old building, to extend the frontage along Windsor street to a total of over 490 ft. with a frontage on St. Antoine street of over 170 ft. There were two problems to be faced, one architectural, the other engineering. The architect's difficulty was to devise a facade which would look harmonious and impressive from every point of view; in spite of the fact that there was a difference in elevation on Windsor St. of 40 ft. between St. Antoine and Osborne streets. The engineering problem was to find a satisfactory foundation on rather treacherous soil for the massive tower, which the architect proposed. The sinking of the foundations delayed the work considerably at the initial stages, but eventually a satisfactory base was found, and the building began to rise with a structural steel frame, all the columns of which rest upon heavy concrete foundations carried to rock by means of cylindrical caissons. The variation in levels had one satisfactory result, namely, that room was found for vast vaults beneath the main floor of the building and beneath the tracks, in which there is storage capacity sufficient to accommodate records for many years to come. These vaults cover a ground area of 66,000 sq. ft., still leaving room for an immigration hall covering 10,000 sq. ft., Chinese waiting room, covering 6,900 sq. ft., and third class passenger waiting room, covering 3,000 sq. ft. with a combined capacity of 30,000 gallons, and is said to be the most massive tower in Canada. The general waiting room, in the main building, has a ground area of 7,800 ft. The new addition alone contains 2,800 tons of steel, apart from the steel used in the train sheds. The building when completed will have 13 elevators, 8 for passengers (2 of which have a lifting capacity each of 7,000 lbs.), 4 for freight and baggage, and 1 for the kitchen and restaurant.

In the construction of the exterior of the building limestone from quarries in the Province of Quebec was used, and the labor employed was almost entirely native. The steel was manufactured at Lachine by the Dominion Bridge Co. As many as 600 men were employed at one time on construction, the rivetters and erectors being chiefly recruited from the Indian reservation at Caughnawaga. The stonemasons were French Canadians. The interior fittings were very fine, marble being used exclusively in the principal halls and corridors. Italy, France, Indiana and Tennessee have each contributed from their quarries, some of the stone coming from Euville, and some of the marble from the Botticino quarries.

The trainsheds have been planned to cover all the tracks, which have been increased to 11 in number. On 6 tracks the sheds are 1,000 ft. long, on 2 tracks 800 ft., on 2 more 550 ft., and on track 1, intended particularly for suburban traffic, 420 ft. Over 2,000 tons of steel have been used in these sheds, exclusive of the concourse. The area covered is 205,000 sq. ft., or about 5 acres. The train sheds are of the Bush pattern, and special care has been taken to provide roof drainage and to ensure dry and clean platforms at all times. The skylights are designed so as to be always clear, and snow can be shovelled through slots in the roof on to cars below. A copper hood over every skylight is specially designed to allow of ventilation and yet to prevent snow or rain from drifting in. There is a system of fire protection in case of cars taking fire in the station, pipes being laid with plentiful supply of water under high pressure.

The cubic capacity of the new portion of the building, exclusive of vaults under tracks, but including the splendid concourse, is 4,703,000 cu. ft., while the viaducts total another 1,000,000 cu. ft., and the power houses an additional 220,500 ft. The tower is 15 stories high, or 16 including the basement, and its top is 225 ft. above the level of St. Antoine St. It contains water tanks,

## Birthdays of Transportation Men in January.

Many happy returns of the day to:—

W. U. Appleton, General Master Mechanic, Intercolonial Ry., Moncton, N.B., born there, Jan. 29, 1878.

R. Armstrong, Superintendent, District 4, Manitoba Division, C.P.R., Souris, born at Kingston, Ont., Jan. 27, 1865.

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

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

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

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

W. A. Cowan, acting Superintendent, District 1, Atlantic Division, C.P.R., Brownville Jct., Me., born at Galt, Ont., Jan. 22, 1877.

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

A. Davidson, General Agent, G.T.R., Prince Rupert, B.C., born at St. Henri, Montreal, Jan. 29, 1885.

J. E. Everell, Superintendent, Montmorency Division, Quebec Ry., Light and Power Co., Quebec, born at Cap Rouge, Que., Jan. 1, 1863.

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

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

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

H. J. Herrold, General Freight and Passenger Agent, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry., Sault Ste. Marie, Ont., born at Athens, Ohio, Jan. 21, 1880.

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

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

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

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

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

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

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

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

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

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

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

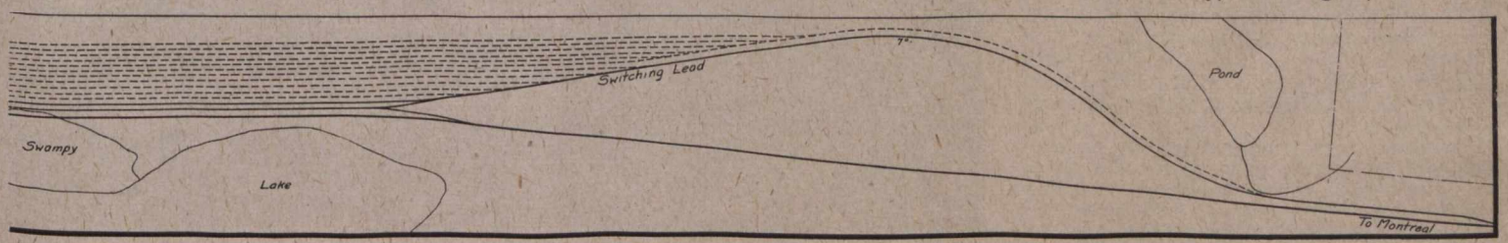
L. J. Rouleau, Travelling Freight Agent, G.T.R., and Agent, National Despatch-Great Eastern Line, Montreal, born there, Jan. 6, 1879.

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

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

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

Ross Thompson, Chief Engineer, St. John




Canadian Northern Ontario Ry. Yard Layout at Hector (East End). See pages 6 and 7.

and Quebec Ry., Fredericton, N.B., born at Newry, Ireland, Jan. 1, 1865.

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

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

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

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

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

A. Wilcox, General Superintendent, Central Division, C.N.R., Winnipeg, born at Kincardine, Ont., Jan. 2, 1865.

T. A. Wilson, Assistant Superintendent, District 3, Lake Superior Division, C.P.R., Schreiber, Ont., born at Stratford, Ont., Jan. 27, 1872.

## The Manufacture of Coil Springs.

There are a number of parts that enter into the construction of all kinds of rolling stock which can be made in conventional and slow methods in the railway shops, but which when made in the specialty shops of large supply companies, are made more expeditiously and, for the most part, better, from the fact that the demand is sufficiently great to warrant the installation of special machinery for this purpose. Such an instance is the production of coiled springs, which are in use in large quantities in every railway shop. Their production under the usual blacksmith shop methods would be an uneconomical practice; in specialty shops, this is not the case.

Fig. 1.—Coil Winding Machine.

The development of a coiled spring is a most interesting process, and from its very general service, and the fact that but few people know the steps through which the stock passes in the development, the following description has been prepared. The practice followed in the Canadian Steel Foundries spring shop at Montreal has been selected as an example of modern practice in this work.

To obtain a flat bearing on the ends of the coil spring, the ends of the bar stock from which the coil is developed is drawn out to a flat tapered end, something like a chisel. The spring steel that is made up into these coils is received from the rolling mills, cut to length, with the ends of the stock pieces drawn down as explained. The initial step in the coil shop is thus the coiling of the spring. Piles of the spring stock lengths are to be seen in the background in the accompanying illustrations.

Figs 1 and 2 show the mechanism of the machine, which completes the whole operation of winding the coil in very short order. Oil furnaces for heating the stock are located to the rear of the point from which the views were taken. Here the lengths are heated in batches as for the bolt machine, etc.

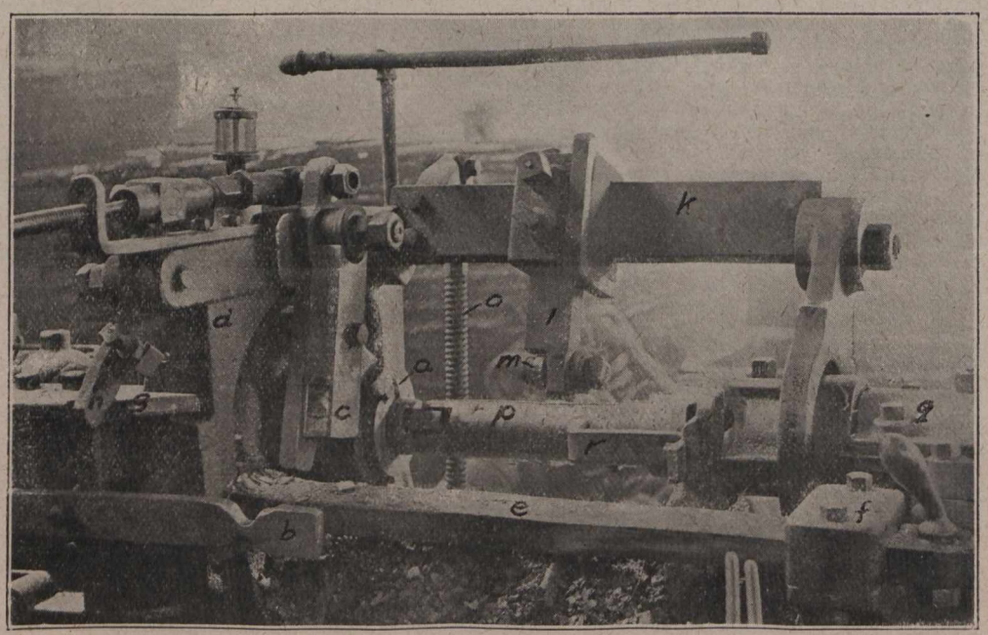



Fig. 2.—Close View of Coil Machine.

The construction of the machine is fundamentally that of the lathe. A spindle is carried in two bearings which are integral with the base of the machine. The front bearing of these two is located behind the mechanism to the left in fig. 2. The spindle at this point is large, and on its front is attached the stock chucking device a. This consists of a short knife edge mounted on the inner face of an arm that parallels the spindle inside the front bearing, and which is fulcrumed on the spindle inside the bearing, the whole revolving with the spindle. To the rear end of this fulcrumed arm is ring on a sleeve that can be moved within short limits on the spindle behind the front bearing. The movement of the sleeve by an operator's handle pushes the short link into a vertical position under the rear of the fulcrumed lever, the knife edged front end of this latter being depressed on the end of the bar stock, the end of which is pushed in under the knife edge, with the flat against the shoulder of the spindle at the point a. The central arbor on which the bar stock is clamped by the knife edge is the internal diameter of the spring. The knife edge is so adjusted as to bear down tightly on the stock when the locking sleeve to the rear is moved into the locking position.

On the face of the spindle shoulder at a, there is a slight projection against which the stock bar is forced before clamping. The bar is guided into place over the support bar b, and through the pitch guide, c, the purpose of the latter being to guide the bar while the spindle is winding up the stock so as to give the desired pitch. The pitch guide bar, c, is carried on a carriage which corresponds to the carriage of a lathe. This carriage is the casting d, which is bolted to a guide, e, which slides in bearings, one of which is shown at f.

On the face of the stationary part of the machine is a tapered bar, g, on which a short arm, h, fulcrumed on the carriage, rests when the carriage is in its furthest back position. Through an adjustable link connected to the upper end of the arm h. the latter is connected with the upper end of the guide arm c, so that when the arm h rides down the taper of g the arm c falls in towards the coil arbor, resting against the outer surface of the coil, against which it is held by the small coiled spring on the link on the top of the carriage. The bar stock is thus accurately guided on the arbor.

The forward movement of the carriage is obtained through a pitch screw sleeve secured to the machine spindle between the two bearings, as at i. These pitch screw sleeves are made in all the desired sizes,

and are constructed in halves which can be bolted on around the spindle. The sleeves consist of hollow cast iron shells, in halves, as mentioned, bored at the ends to fit the spindle, with the outer surface turned, and grooved with a narrow channel cut to the required pitch, each end of the pitch groove breaking away from the spiral to give the flat end to the spring. On the continuation of the bar e to the left, there is a vertically hinged arm, on the lower face of which there is a pin that can be dropped into the grooves of the pitch sleeve. This arm, j, fig. 1, is shown dropped into the pitch sleeve by the operator to the rear. This arm being attached to the bar e, carries the carriage to the right with the pitch of the screw, feeding the coil along over the arbor. On reaching the full length of the spring, the pin in the pitch sleeve groove rises out of the groove, when the carriage is ready to return to its initial position.

Over top of the winding arbor, there is a bar, k, pinned at each end, and which carries a downwardly projecting arm, l, with a stencil wheel pinned on its lower end. This stencil is engraved with the initials of the company and the number of the month of the year. The arm l is so set on the bar k for each size of spring that the last coil of the spring bears up under the roller, the name and date being automatically rolled on the spring during the winding operation. On the completion of the spring winding, the stencil roller is swung out of the way by the depression of a lever at the floor level, connected to the lower end of the rod o.

The arbor on which the coil is wound is of the expanding mandrel type, with the shell of the arbor in three sections, and an internal taper pin that forces outward these three sections to the required diameter. The inner taper pin of the arbor is operated through the lever in the hands of the operator on the right in fig. 1, this lever being fulcrumed on the arbor carrying frame, with the inner end connected to the taper pin, which, on being forced to the left, expands the arbor.

The frame that carries the expanding winding arbor is a carriage sliding on ways in the lower part of the frame of the machine, the action being such that the carriage can move away to the right from the position shown in both illustrations, so that the winding arbor is free from the supporting point where it connects with the chuck. The connection is only a loose sliding joint. This carriage, on moving to the right, causes the spring to strike the arm r. Before moving backwards, the taper pin in the centre of the mandrel is loosened, freeing the spring on the mandrel, so that as the spring strikes the stationary bracket r, it is slipped off the mandrel.

The drive of the machine is through a clutch block, engaging the gearing on the left in fig. 1 with the machine spindle. This clutch is operated by the attendant to the rear. On the lower left hand side will be noted a short shaft. This connects at the near end with a cross shaft through bevel gears, this latter shaft bearing at its centre a pinion meshing with a gear rack on the under side of the arbor carrying carriage. Through this means, the carriage can be moved to the right so as to draw the arbor from out of the coiled spring.

Over the top of the machine will be noted a short length of pipe, the lower surface of which is perforated with a series of small holes, through which water is poured on the winding arbor, keeping the parts cool. The spring, on being dropped off the arbor, runs down a chute under the arbor to the floor to the rear.

The still red hot spring is next immersed in an oil bath and tempered in the conventional manner. After this process in the oil bath, the spring is taken to a testing machine, in which it is forced up tight once, to give the required initial set. This testing press consists of a 4 bar vertical frame. On the upper end of the rod frame is a heavy head, on the under side of which is a set of 6 springs carrying on their lower end a face plate, the idea of the spring backing being that the machine will not be strained on tightening down the coil. Guided on the lower parts of the four rods is a plunger, operated from below through a chain of gears to a connecting rod, giving the plunger table a slow vertical motion. The spring is placed on the table, the upward movement carrying it up to the spring cushioned head, against which it is tightened up. This gives the spring the required set, providing the tempering has been correct. To test for this set, there are gauge arms attached to one of the four legs. The spring is slipped into these legs, and if the tempering is correct, the spring will just clear through. This is the final step in the spring production. On ordinary heavy springs, it is possible to produce as many as 75 an hour in this machine without undue exertion, so that the development of the machine is a considerable improvement on older methods of forming by hand.

## Additions to Grand Trunk Railway Freight Car Equipment.

The G.T.R. has added to its rolling stock recently a large number of freight cars of improved designs, comprising several thousand all steel hopper cars, 2,000 steel frame box cars and 250 steel underframe automobile cars.

The hopper cars are specially adapted to the transportation of coal and coke, being self clearing and having doors which are easily and quickly opened or closed by means of a device which is positive in action as well as safe against accidental discharge of lading. They were designed to carry 100,000 lbs. of coal with an addition of the usual 10% overload. Pressed shapes, plates and structural material have been used to the best advantage to obtain as light a car as possible, consistent with good practice, for the service required. The centre sills, which extend from end sill to end sill, are made of 10 in. 20 lb. channels, reinforced at top with cover plates, and at bottom with 3½ by 3½ in. angles. The side sills extend from bolster to end, and are made of pressed steel 10 in. deep; 10 in. 15 lb. channels are used for end sills and are attached to side sills by means of gussets and malleable iron push pockets.

The body bolster consists of a ¼ in. web plate, reinforced at top with a bent plate, and at bottom with 3½ by 3 in. angles, and an 18 by ⅜ in. tie plate, the centre plate and brace being made of malleable iron. The corners of the car are further stiffened by means of diagonal braces made of 5 by 3 in. angles, extending from body bolster at centre to end sills at corner of car. The side, end and floor sheets are made of ¼ in. plates, reinforced with flanges and angles, the sides being stiffened vertically by 7 pressed steel stakes per side, two inside gussets at cross ridge and two channel braces extending across car near the top from side sheet to side sheet. There are four doors, hung in pairs, each two doors being connected by two 5 in. channels, placed back to back, to which the operating arm of the door gear is connected. The operating device consists of levers and cams and is positive in action, and when in the closed position the doors cannot be accidentally opened and lading discharged along the tracks. The trucks are of the arch bar type with rolled channel top arch bar, 5½ ft. wheel base, 5½ by 10 in. journals; pressed steel truck bolster and brake beams; malleable iron journal boxes and grey iron wheels being used. All safety appliances are in accordance with the requirements of the Board of Railway Commissioners and the Interstate Commerce Commission, to permit use of cars in service between Canada and the U.S. The general dimensions are as follows:—

| | |
|---|---|
| Length inside of body | 30 ft. 0 ins. |
| Width inside of body | 9 ft. 6 ins. |
| Width over side stakes | 10 ft. 1½ ins. |
| Length over end sills | 31 ft. 6 ins. |
| Height from rail to top of body | 10 ft. 0 ins. |
| Height from rail to top of brake mast | 10 ft. 9 ins. |
| Length of drop doors in clear | 2 ft. 4¾ ins. |
| Width of drop doors in clear | 3 ft. 4½ ins. |
| Weight of car body | 20,600 lbs. |
| Weight of two trucks | 16,400 lbs. |
| Light weight of car | 37,000 lbs. |
| Percentage of paying load to total weight of car and lading | 75% |

BOX CARS.—The 2,000 steel frame box cars, 60,000 lbs. capacity, which were recently completed, have steel under and upper frames and carlines, with wooden floor, roof and sheathing. The centre sills are 15 in. 33 lb. channels, and the side sills 8 in. 11¼ lb. channels, all extending from end sill to end sill. The end sills are 10 in. 15 lb. channels, connected to side sills by gusset plates and pressed steel push pockets. The body bolsters are built integral with underframes and are made of four pressed steel diaphragms and one cast centre brace each, reinforced at top and bottom with 15 by ⅜ in. cover plates. The underframe is further strengthened, transversely, by two cross bearers made of pressed steel diaphragms, with top and bottom cover plates, 13 in. deep at centre sills and 7 in. deep at side sills, also by three shallow diaphragms made of 5 in. to 6½ in. channels. The side posts and braces are made of 3 in. 6.7 lb. Z bars and the end posts of 4 in. 8.2 lb. Zs, securely riveted to the side and end sills and plates. The floor boards are made of yellow pine 1¾ in. thick, resting directly on side sills and bolted to intermediate Z bar stringers, being supported at centre by yellow pine stringers resting on top of centre sills. The side sheathing, or lining, is made of yellow pine 1½ in. thick, bolted to Z bar posts and braces with ½ in. bolts; the end lining being made of 1¾ in. yellow pine, bolted to end and corner posts. There are two centre side doors, one on each side of car, made of yellow pine. The cars are equipped with Westinghouse air brakes, cast steel couplers, vertical twin spring draft gear with key attachment to couplers, roller side bearings, inside metal roof and all safety appliances in accordance with the requirements. The trucks are of the arch bar type with 4¼ by 8 in. journals and 5 ft. 2 in. base, equipped with pressed steel bolsters, cast steel centre plates, M.C.B. brake beams, steel back shoes, malleable iron boxes and 625 lb. grey iron wheels. The general dimensions are as follows:—

| | |
|---|---|
| Length inside of car | 36 ft. 0 ins. |
| Width inside of car | 8 ft. 6½ ins. |
| Height from floor to carlines | 8 ft. 0½ ins. |
| Width of door opening | 6 ft. 0 ins. |
| Height of door opening | 7 ft. 7¾ ins. |
| Length over end sills | 37 ft. 4¾ ins. |
| Width over side sills | 8 ft. 9½ ins. |
| Width over eaves | 9 ft. 3⅜ ins. |
| Height from rail to top of floor | 4 ft. 2¼ ins. |
| Height from rail to roof at eaves | 12 ft. 7¾ ins. |
| Height from rail to top of running boards | 13 ft. 5 ins. |
| Height from rail to top of brake mast, | 13 ft. 11¼ ins. |
| Weight of car body | 23,000 lbs. |
| Weight of two trucks | 12,300 lbs. |
| Total light weight of car | 35,300 lbs. |

AUTOMOBILE CARS.—The 60,000 lbs. capacity automobile cars are of the following dimensions:—

| | |
|---|---|
| Length over striking plate | 41 ft. 8 ins. |
| Length over running boards | 42 ft. 0 1-8 ins. |

| | |
|---|---|
| Length inside | 40 ft 0 ins. |
| Height from floor to carline | 8 ft. 6 ins. |
| Height from top of rail to top of floor | 3 ft. 8 ins. |
| Height from top of rail to eaves | 12 ft. 8 9-16 ins. |
| Height from top of rail to top of running board | 13 ft. 6 ins. |
| Height from top of rail to top of brake mast | 14 ft. 0 ins. |
| Height of side door opening in clear | 8 ft. 1¾ ins. |
| Width of side door opening | 9 ft. 0 ins. |
| Width inside of body | 8 ft. 6 1-8 ins. |
| Width over eaves | 9 ft. 6 ins. |
| Width over side sills | 9 ft. 0¾ ins. |
| Centre to centre of truck | 30 ft. 6 ins. |
| Height of end door opening in clear | 8 ft. 1¾ ins. |
| Width of end door opening in clear | 7 ft. 9¾ ins. |

The steel underframe of these cars is principally of the structural type, composed of plates and shapes, except for the bolster and cross bearer diaphragms, which are pressed steel. The superstructure is of a wooden type with diagonal tie rods in the side, and each side is fitted with double side doors set off centre, and one end is fitted with double hinged end doors with a vertical operated locking device. The roof is of the inside metal type and the car is braced longitudinally by diagonal braces fitted into the side plates and carlines near the centre of the car.

All the cars above mentioned have been built in the United States, where 1,000 gondola cars are also being built, and where an additional order for 3,000 box cars is soon to be turned out all by the Pressed Steel Car Co.

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T. Duff Smith, Fuel Agent, Grand Trunk Pacific Railway, read a paper on the proper method of firing locomotives, before the Western Canada Railway Club in Winnipeg, Dec. 8.

brick fire walls. The roof, of wood covered with tar and gravel, is carried on the side walls, fire walls, and two rows of steel columns, the latter dividing the length of the shed into three bays of equal width.

The columns divide the length of the shed into sections, of which there are 76, three of the fire wall separated sections containing 18 smaller sections, and the most southerly one 22 sections. These smaller sections are each 15 ft. wide, and in the centre of each one there is a 7 ft. 2 in. door on the driveway side, with a door the full 15 ft. width in every alternate section on the track side. Both sets of doors slide along the wall. In the centre of each of the four larger sections, there is a scale on the driveway side. Passage between the large sections is through three 9½ ft. openings in each of the fire walls.

The Bridge St. end of the shed is sectioned off for the offices of the railway officials, Customs officials, the Shedden Co., and a telegraph office. This office section is 63 feet long, and is entered through a central door on the Bridge St. front, a central hallway leading to all the offices.

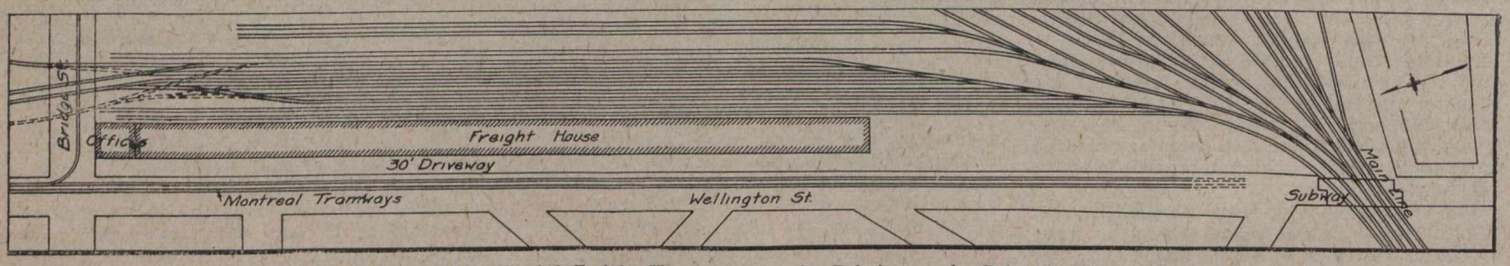
It is anticipated that the new shed will improve the handling of bonded freight. Its cost is about $185,000.

## Canadian Northern Railway's Land Mortgage Debentures.

Canadian Railway and Marine World for December contained brief particulars of a prospectus, issued in London, Eng., by Lloyds Bank, Limited, offering for subscription £1,500,000 five per cent. C.N.R. land mortgage debentures. The prospectus contained the following letter from Sir Wm. Mackenzie:—

"The Canadian Northern Town Property Co., Ltd. (a Canadian company), has recently been formed for the purpose of acquiring land and developing towns at points on the C.N.R. System, and, except for portions that have already been sold, it is acquiring the whole of the sites of about 300 towns and villages, aggregating approximately 68,700 acres. It is also acquiring valuable property in 172 other towns and villages. The 4½% debenture stock of the company will be secured as a first charge on all the above mentioned property and on the unpaid instalments in respect of land already sold. Pending the transfer to the Town Property Co. of the assets it is to acquire, a charge will be given upon such assets by the trust deed securing the debentures. Davidson and McRae, Land Agents, C.N.R., value, on a conservative basis, the unsold land of this company at $10,500,000. There is money payable in respect of land sold on which the instalments are payable within 18 months. $885,834, and within three years, $2,065,000, making a total of $13,450,834. The land grant assets of the C.N.R. Co., which will be charged as security for the debentures, consist of about 850,000 acres of land unsold, the value of which is certified by Davidson and McRae at $12,750,000; instalments of principal payable on land sold on which at least the first payment has been made, $6,852,445, and there is in the hands of the trustees for the repayment of the prior mortgages and charges, $2,424,451, less outstanding charges, $6,254,860, making a net value of $15,772,036. The security therefore for the land mortgage debentures will be the whole debenture and capital stock of the C.N. Town Property Co., whose assets appear above at $13,450,834; surplus, as above, of land grant assets over prior charges, $15,772,036, making a total of $29,222,870, showing a surplus over the total issue of land mortgage debentures of upwards of £2,500,000.

"The C.N.R. Co. is operating 4,520 miles of lines, which include 644 miles of leased lines. In addition, about 408 miles of track have been laid on new branch lines and will shortly be opened for traffic, and about 300 miles more are under construction. The net earnings of the company have been steadily progressive, as the following figures show:—Years ended June 30, 1908, $3,032,687; 1909, $3,566,362; 1910, $4,344,390; 1911, $4,990,347; 1912, $5,881,045; 1913, $7,023,867. At June 30, 1913, the company had accumulated surpluses to the credit of profit and loss account:—on account of land sales, $16,930,835, and on account of railway operation, $6,778,384; total, $23,709,219."




Plan of New G.T.R. Bonded Freight House, showing its Relation to the Point St. Charles Yards.

## Grand Trunk Railway Bonded Freight House in Montreal.

The bonded freight house, which the G.T.R. has had under construction for some time on Wellington St., Point St. Charles, Montreal, to the north of the main line from Montreal to Portland, is approaching completion. Its location near the Victoria Bridge, over which nearly all the bonded freight enters the city, is an admirable one for handling this class of traffic with a minimum of car handling through the city. The company's large Point St. Charles freight yards are located immediately to the south of the new bonded freight house.

The new building is 1,200 ft. long on Wellington St., from which it sets back 30 ft., extending southerly from Bridge St. It is 60 ft. wide, with a height of roof of 22 ft. at the inner side of the building, sloping to 19 ft. on the street side, with a 12 ft. projecting hood extending the full length of the building along the 30 ft. strip of the street side, which is paved with granite blocks. The loading of trucks in this driveway will be possible in all weathers. A concrete curb separates the driveway from the sidewalk along the street.

The building is of the latest type of freight shed construction, with brick walls resting on concrete foundations. The floor is of concrete, at an elevation of 4 ft. above the driveway, resting on a sand fill which extends under the whole shed inside the concrete foundation walls. The building is divided into four main freight sections by

## Safety First on the Grand Trunk Railway.

A safety organization has been formed for the G.T.R. system, under the control of H. G. Kelley, Vice President (Operation), and a circular has been issued from his office covering the details. Four grades of committees are provided for, as follows:—General Safety Committee, the Operating Vice President being chairman; division safety committees, the superintendent of each division being chairman; terminal safety committees, the superintendents of terminals being chairmen of each; and shop safety committees, the master mechanic of each shop being chairman of each committee. The members of the General Safety Committee and some of each of the other committees are permanently appointed on account of their positions as officials, but the arrangement is that the remaining membership shall be held by other employes in periods of six months, giving wider opportunity for wider range of suggestions from the rank and file and for a more general dissemination of safety ideas. The chief purposes of the organization are, the correction of unsafe conditions and practices before an injury has resulted and the investigation of accidents which may occur, with a view to discovering the causes and applying corrective measures where possible, to avoid a recurrence. The introduction of the system is in charge of George Bradshaw, Safety Engineer.

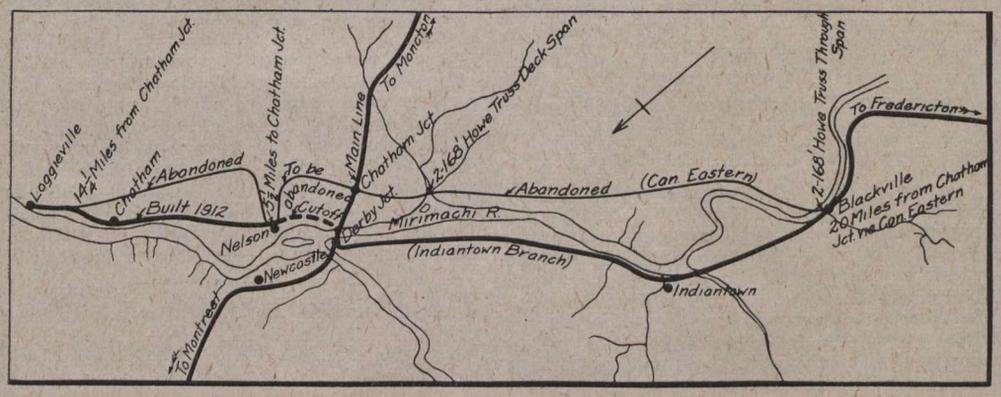
A card has been distributed to all employes of the system, in connection with the movement, conveying the terms of a pledge, as follows:—"I will railroad according to the book of rules. I will do all in my power to guard against unsafe acts on my part. If I see a fellow employe doing his work in an unsafe manner, I will speak to him as a friend, and use my moral influence to have him perform his duties in the safetst pos-

sible manner. I will remember and practice at all times, safety first." To this pledge is appended a statement to the effect that 83% of all persons injured on railways are the men who work on them, and 60% of all preventable injuries are due to unsafe practices which can be avoided.

## Intercolonial Railway Diversion at Derby Junction.

The accompanying map shows the situation of the Intercolonial Ry., and the old Canadian Eastern Ry., from Loggieville, to Chatham, now a part of the I. R. C., and the mouth of the Miramichi River, and the facilities which will be provided, when the work now in progress, or contemplated is completed.

When the Dominion Government took over the Canada Eastern Ry., extending from Loggieville to Fredericton, with a branch from Derby Jct. to Blackville, it operated a line on both sides of the South West Miramichi River from Blackville to the main I. R. C. line. On account of the large expenditure required to maintain the portion of the Canada Eastern Ry. between Nelson and Blackville, via. Chatham Jct., which included the building of two bridges, and as the local traffic on this portion of the line was very light, it was decided to abandon




Map Showing Diversion of Intercolonial Ry. at Derby Jct., N.B.

it and to build a diversion from Nelson to Derby Jct., and to use the Indiantown branch from Derby Jct. to Blackville as the main line of the Canada Eastern Branch. A diversion from Chatham to Nelson was completed in 1912, and the projected line from Nelson to Derby Jct. will finish it. The mileage to be abandoned on the completion of the work will be as follows: Chatham to Nelson, 14.25 miles; Nelson to Chatham Jct., 5.50 miles; Chatham Jct. to Blackville, 20 miles, total 39.75 miles. The new route between the points will be 33.03 miles as follows: Chatham to Nelson (built), 8.28 miles; Nelson to Derby Jct., contract for construction awarded, 2.75 miles; Derby Jct. to Blackville, Indiantown branch I. R. C., 22 miles.

The proposed diversion at Derby Jct., will leave the main line at the south end of the crossing of the South West Miramichi River, and will run to Nelson, on the old Canada Eastern Ry., 2.75 miles. The maximum gradient will be 1%.

We are officially advised that the contract has been awarded to K. A. Morrison, Union Bank Bldg., Ottawa.

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In 1912, there were 236,444 miles of railway in the United States, and the fuel cost for operating trains over them was $230,555,544, or 11.85% of the total operating expenses, and 8.22% of the gross earnings. This means a cost of $4,000 a locomotive a year for fuel alone.

## The Conservation of Natural Resources Through the Electrification of Railways.

A paper on this subject was read before the Canadian Railway Club in Montreal by G. Percy Cole, Electrical Engineer, Canadian General Electric Co., which has been abstracted as follows:

Few railway electrifications have been made entirely from an economic standpoint, municipal laws for the abatement of smoke having been largely the cause. The earlier installations centred on the feasibility of heavy electric traction, whereas the present tendency appears to be towards considering the question from an economic viewpoint.

Authority is quoted for the statement that on the average, there is receiving back from the coal consumed, much less than 10% of the latent heat in the coal. It has been shown that in order that electricity may be supplied for all purposes, this conversion efficiency must be raised to at least 25%.

Railways cannot possibly generate electricity for less than twice the cost of a company with miscellaneous power loads. The addition of the railway load would be welcomed by the latter, not only on account of the increase in load decreasing the unit cost, but the railway load would slightly improve the total load factor, making it possible for the companies to offer the railways an attractive price.

Early railway electrifications involved heavy capital expenditure, as high as $90 per k.w., to insure continuity of service, the plants in one instance being duplicated. Since the primary installations in 1907, conditions have changed, and it is only a question of a few years before the country will be covered with transmission networks, from which the railways may secure power, and on account of the non-coincidence of the railway peak with the industrial peak, it will be a desirable addition.

Comparing power generated in a station for distribution to electric locomotives, to that generated directly in steam locomotives, the fuel cost of the former is only about one third that of the latter. Railways use about one fifth of the coal mined, so that if a saving of two thirds of this were effected by the elimination of the steam locomotive, the saving in Canada and the U. S. would be approximately 75,000,000 tons, or $147,000,000, yearly. In addition to this conservation of coal, the railway capacity would be increased, water stations would be eliminated, there would be no reduced locomotive steaming capacity in cold weather, and there would be elimination of smoke, as well as other minor advantages.

Four electrification systems are offered: low pressure d.c., at from 500 to 600 volts; high pressure d.c., at from 1,200 to 3,000 volts; single phase a.c.; and three phase a.c. The future of railway electrification lies between single phase a.c., and high pressure d.c. for main line work, with a.c. having the disadvantage of requiring motors half as large again for the same power, with heavier switching arrangements.

## Additions to Grand Trunk Railway Mimico Locomotive House.

Since the addition of the recently purchased mikado locomotives to the G.T.R. motive power, the stalls in the existing locomotive houses on the divisions over which the new power is being used have been found to be too short. One of the principal runs over which they have been employed is that between Black Rock, N.Y., and Toronto, between which points solid coal trains are operated under conditions that are most suitable for such heavy power.

To accommodate these large units the locomotive house at Mimico, just west of Toronto, where all the motive power at that terminal is handled, has required enlargement. Ten stalls, nos. 1 to 10, are being extended 9 ft., by knocking out openings in the concrete wall in front of each pit just large enough to clear the cylinders, and building a new metallic lath and plaster wall to form the passage in front of the locomotives, beyond the old

The present 70 ft. turntable can handle the new locomotives when the tender is loaded with coal and water, but as this is not always convenient this turntable is to be replaced shortly by an 85 ft. one. It is the intention to build a concrete wall at the 85 ft. diameter, and then knock out the existing wall, replacing the existing table, thereby interrupting operations at a minimum.

Arc lights, suspended from the inner wall of the locomotive house for illuminating the turntable, have been replaced by bull's eye lights, attached to the inner wall of the locomotive house near the roof, and focussing down on the turntable; 115 candle power tungsten lights are used, and a superior illumination is obtained.

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**Strengthening the Forth Bridge.**—Bridges of long span, on account of their great dead load, as compared to the live weight of passing trains, have been able to meet the requirements of increased loading without the strengthening that has been necessitated in bridges of smaller dimensions. The great Forth bridge, in Scotland, with its 1,710 ft. spans, has been able to meet the increased requirements in all the main members without increasing the stresses unduly, but it has been found that an increase of 25% in the axle loading has left the floor system rather too light. The main floor girders are of ample strength, and only the superimposed trough construction requires strengthening, which it is proposed to do shortly, following observations on experimental sections in the bridge approaches. The new construction will extend over 7854 ft., and will require 2,500 tons of structural material. An effort will also be made to improve the drainage facilities, as the corrosive effect of sand, cinders and water on the existing floor has necessitated frequent paintings.

G. F. BURGESS, Road Foreman of Locomotives, C.P.R., Macleod, Alta., writes: "Enclosed is express order for subscription to Canadian Railway and Marine World. I had your valuable paper left on my desk every month when I was acting District Master Mechanic at Moose Jaw, and since coming up here I have missed it greatly, as it always contains the current railway news."

## Great Northern Railway's Report.

The annual report of the directors for the year ended June 30 shows an increase in the authorized share capital from $210,000,000 to $231,000,000, and a decrease from $147,757,909.09 to $143,655,909.09 in bonds outstanding. There was paid in $12,958,546 on account of new capital stock, and the directors had in hand 92½ shares of stock for acquiring 74 shares of the St. Paul, Minneapolis and Manitoba Ry. still outstanding. The directors also held $28,069,000 of bonds in the treasury, and there were held by mortgage trustees $14,106,000. During the year, $102,000 of the St. Paul, Minneapolis and Manitoba Ry. bonds were retired through the operation of the sinking fund. Of the bonds held in the treasury, $6,000,000 were issued against construction and acquisition of property, and $5,246,000 against the acquisition of the stock of certain companies.

The construction of new lines included $166,930.03 for the line from Niobe, N.D., to a junction at the international boundary with a branch of the Grand Trunk Pacific Ry., from Regina, Sask., and $2,158,373.25 on account of construction of the Oroville-Pateros-Wenatchee line, connecting with the Vancouver, Victoria and Eastern Ry. at Oroville, Wash., south of the international boundary.

The company made advances to the controlled Canadian companies to pay for property, construction, additions and betterments, as follows:—

| | |
|---|---|
| Midland Ry. of Manitoba | $571,089.06 |
| Manitoba Great Northern Ry. | 18,882.96 |
| Crows Nest Southern Ry. | 21,898.18 |
| Vancouver, Victoria and Eastern Ry. | 352,092.15 |
| Nelson and Fort Sheppard Ry. | 4,592.53 |
| New Westminster Southern Ry. | 34.37 |
| Total | $968,876.25 |

The Midland Ry. of Manitoba issued $4,300,000 of stock in payment of advances for construction made by the G. N. Ry. and Northern Pacific Ry., each company receiving one half of the total issue.

The gross operating revenues for the year were $78,692,767.22, and the income from operation was $28,676,258.77, an increase of $3,513,366.47 over the year ended June 30, 1912. The operation of the company's lines in Canada are included in the totals, the figures not being reported separately.

Details as to construction work are referred to under the heading of Great Northern Ry. Lines in Canada elsewhere in this issue.

The general balance sheet shows that the company had the following investments in other railways, whose lines formed a part of the system:—

| | |
|---|---|
| Midland Ry. of Manitoba | $2,172,940.49 |
| Midland Great Northern Ry. | 2,061,491.50 |
| Brandon, Saskatchewan and Hudson Bay Ry. | 2,150,000.00 |
| Crows Nest Southern Ry. | 4,201,968.07 |
| Bedlington and Nelson Ry. | 280,000.00 |
| Nelson and Fort Sheppard Ry. | 2,093,612.04 |
| Red Mountain Ry. | 310,619.07 |
| Vancouver, Victoria and Eastern Ry. and Navigation Co. | 19,482,092.15 |
| New Westminster Southern Ry. | 279,921.27 |

**Car Illumination.**—From the results of a series of tests of gas and electric lighting in the Lake Shore and Michigan Southern Rd. shops at Collinwood, Ohio, a committee has drawn the following inferences: 1. Equally satisfactory illuminating results are obtained with either the centre deck or half deck arrangement, but the latter has a much greater maintenance charge. 2. For good illumination distribution, the light should not be more than two seats apart, excepting indirect or semi-direct, which may be located three seats apart. 3. With direct lighting, head lining color has no effect, but a light color is recommended on account of cheerfulness. 4. A lamp of greater light capacity is desirable, but pending the production of such a lamp, only the most efficient present types should be used.

## Recommendations in Connection With Fruit Transportation.

At the annual meeting of the Ontario Fruit Growers' Association in Toronto recently, the following recommendations, made by the Association's Transportation Agent, G. E. McIntosh, of Forest, were adopted:—

That an effort be made to have all navigation companies handling freight and operating upon Canadian waterways placed under the jurisdiction of the Board of Railway Commissioners.

That power be given the Board to adjudicate claims against railway or express companies not settled in 60 days.

That the Board be given jurisdiction in the matter of fixing a penalty for rough handling and pilfering of freight and express shipments.

That fruit inspectors be also cargo inspectors.

The the express minimum be reduced from 20,000 lbs. to 15,000 lbs.

That if necessary the Board of Railway Commissioners be asked to compel the railway companies to allow free transportation both ways for man sent in charge of heated cars.

That the railway companies be asked to provide a special fruit train service from central points in Ontario to Winnipeg during the shipping seasons.

## Progress of Construction of the Quebec Bridge.

Work on the bridge across the St. Lawrence River near Quebec was carried on throughout the past summer and autumn. Practically all of the masonry work on the piers is completed, and progress has been made in the erection of the approaches, and of the steel falsework for the anchor spans. The steelwork is being fabricated in an entirely new shop at Lachine, Que., built especially for the Quebec bridge by the St. Lawrence Bridge Co., a newly organized company holding the Quebec bridge contract. It has a capacity of about 2,000 tons a month.

All draughting, designing, etc., for the bridge is being done at Lachine by the St. Lawrence Bridge Co. under the direct supervision of the Board of Engineers, but when the shop designing is completed the whole office will be moved to or near the bridge site.

When construction is started again in 1914, it is expected that erection will be prosecuted from both sides of the river and that the approaches will be completed by the end of next season. No estimate is made as to the time of completion of the anchor arms or of the entire bridge.

## The Use of Natural Gas on the Intercolonial Railway.

Since March, 1913, the Intercolonial Ry. has been using natural gas for lighting its passenger car equipment over the principal portions of its main line, including all the first class, second class, sleeping, dining and chair cars in that service, or about 200 in all. Charging stations are located at Halifax, Moncton and Levis, Pintsch gas being also still used from the Pintsch Compressing Co.'s Montreal plant.

The gas is used in the regular Pintsch gas equipment in the cars, at the same pressure, none of the parts being changed, except that it has been found that flat flame burners are not as satisfactory with natural gas as Pintsch gas, and, in consequence, the flat burners are being replaced with mantle burners as the cars go through the shops.

As previously mentioned in these columns natural gas, which is obtained in quantities near Moncton, has replaced producer gas for the gas engines in the Moncton shops. It is also being used in the same plant for the blacksmith, boiler and pipe, shop forges, and in the regular cast iron sectional boilers for heating the general offices and station, and in the water tube boilers for shop heating. During the summer some 30,000 cu. ft. a month are used, and during the winter about 50,000 a month.

## The Additions to Angus Shops, Canadian Pacific Railway.

Ten steel freight cars a day, and from 8 to 10 steel passenger cars a month, is the capacity of the latest addition to the Angus shops, C.P.R., Montreal. The new buildings for the construction of steel cars are now operating in full blast. The buildings consist of two structures 100 by 200 ft. and 100 by 182 ft. respectively, for the manufacturing of both classes of cars, a building 72 by 405 ft. for the exclusive manufacture of freight cars, and four buildings 226 by 208 ft. for passenger car work.

The blacksmith shop, wood mill, and wooden freight car shop previously used in the manufacturing of wooden cars, and which had a capacity of 32 cars a day, will be utilized in the work of steel car construction. The only change to be made will be the affording of more space in the blacksmith shop for the presses and machinery required. A new bolt nut and rivet shop, 60 by 420 ft., has been built, to which all this class of machinery can be moved.

## Extension of Grain Elevator Facilities at St. John, N.B.

The new C.P.R. elevator at St. John, N.B., with a capacity of 1,032,000 bush., was completed and ready to receive grain during December. The cost of the building is quoted as $600,000. The contractors were John S. Metcalf Co., Montreal.

The Dominion Department of Public Works has awarded a contract for the erection of approximately half a mile of grain shipping conveyor galleries at berths 5 and 6, Sand Point, West St. John, N.B., at an approximate cost of $135,000, to John S. Metcalf Co., Montreal. The conveyor will extend from the end of the old C.P.R. elevator to the inner end of Sand Point basin, round the end of the basin and on top of the Government sheds 5 and 6. Belt conveyors 36 ins. wide, each with a loading capacity of 15,000 bush. an hour, will be installed so that vessels at both sheds may be loaded simultaneously. These conveyors will also receive grain from the new C.P.R. elevator, under construction also by John S. Metcalf Co., and which it is expected to have completed early in the winter. The galleries will be of wood, and will be 56 ft. above wharf level. Thirty-three vessel loading spouts will be provided, and all machinery will be driven by electricity.

**Canadian Cartage and Storage Co., Ltd.,** has been incorporated under the Dominion Companies Act, with $500,000 capital and office at Montreal, to carry on business as cartage contractors and forwarders, and to own and operate vehicles of all kinds, aerodromes, steam and other vessels, etc. F. W. Rous, Westmount, Que., is chiefly interested.

# 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.

20728. Oct. 29.—Authorizing C.P.R. to build bridge 0.32 at Lorne St., Kamloops, B.C.

20729, 20730. Oct. 29.—Authorizing C.P.R. to build at grade its ballast pit spur across highways from mileage 0 to 3.05 of said ballast pit spur, at mileage 3 from Bassano, and between Sec. 19-6-11 and Sec. 24-6-12, w. 4 m., on its Weyburn-Stirling Branch.

20731. Oct. 28.—Approving location of C.P.R. station at Mara, B.C.

20732. Oct. 28.—Authorizing Canadian Bridge Co. to build foot bridge and grade crossing over Pere Marquette Rd. at Walkerville, Ont.

20733. Oct. 27.—Authorizing C.P.R. to build, at grade, extension to passing track across Boundary St., Didsbury, Alta.

20734. Nov. 3.—Authorizing C.P.R. to divert road in Sec. 4-23-27, w. 3 m., Sask., and to build its Swift Current Northwesterly Branch at grade across same at mileage 96.3.

20735. Oct. 27.—Authorizing Vancouver, Victoria and Eastern Ry. and Navigation Co. (G.N.R.) and C.P.R. to operate trains over crossing at Burrard Inlet, Vancouver, B.C., without previous stop.

20736. Oct. 29.—Authorizing Montreal Light, Heat and Power Co. to lay concrete water tunnel under C.P.R. in Ville Lasalle, Que.

20737. Oct. 30.—Authorizing G.T. Pacific Branch Lines Co. to build spur for Union Coal Co. in Sec. 36-31-24, w. 4 m., Alta.

20738. Oct. 29.—Authorizing G.T. Pacific Ry. to build spur from its main line on 21st St. into Block 12, Inglewood Subdivision, Edmonton, Alta.; crossing of Brazeau Ave. to be built as per regulations.

20739. Nov. 4.—Ordering that rating of 4th class provided in Canadian Freight Classification for blaugas and carbonic acid gas be provided, also for oxygen and acetylene gases in carloads, and dismissing application for a reduced less than carload rating of oxygen gas.

20740. Oct. 28.—Authorizing C.P.R. to build, by means of a bridge, four tracks on its main line across Westminster Road, Lethbridge, Alta.

20741. Nov. 5.—Authorizing Canadian Northern Ry. to build its Bienfait-Estevan Branch over a coal mine in south ½ Sec. 19-2-6, w. 3 m., Sask.

20742. Nov. 6.—Ordering Pere Marquette Rd. to maintain watchman at crossing of highway 1¾ miles west of Kingsville, Ont., pending installation of bell.

20743. Nov. 5.—Relieving C.P.R. from providing further protection at crossing of first public highway west of west switch at Little St. Martin, Que.

20744. Oct. 9.—Relieving G.T.R. from providing further protection at crossing of public road one mile east of Wyoming, Ont.

20745, 20746. Nov. 5, 6.—Approving location of C.P.R. stations at Tribune and Bromhead, Estevan-Forward Branch, and at Westerham, Swift Current Northwesterly Branch, Sask.

20747. Nov. 5.—Extending, to Dec. 31, time within which C.P.R. shall install electric bell as required by order 20017, Aug. 11, at crossing of Main St., Shelburne, Ont.

20748. Nov. 6.—Authorizing C.P.R. and Quebec, Montreal and Southern Ry. to operate trains over crossing at mileage 18.81 from Farnham, Que., without their first stopping.

20749. Nov. 6.—Extending, to Nov. 30, time within which C.P.R. shall install gates at crossing of Centre St., Chatham, Ont., as required by order 19051, Apr. 14.

20750. Nov. 6.—Authorizing C.P.R. to open for traffic portion of its Weyburn-Stirling Branch from mileage 0 to 49.2 east of Stirling, Alta.; speed of trains limited to 25 miles an hour.

20751. Nov. 6.—Authorizing C.P.R. to use bridge crossing St. Lawrence River at mileage 41.9, Farnham Subdivision, Que.

20752. Nov. 6.—Authorizing Canadian Northern Ry. to build across 11 highways on its Alsask Southeasterly Branch, Sask.

20753. Nov. 6.—Authorizing C.P.R. to build extension and passing siding track at mileage 53.43, Toronto Subdivision, Ont., for Godson Contracting Co.

20754. Nov. 7.—Authorizing C.P.R. to build bridge 9.17, Nipigon Subdivision, over Maggot River. Ont., and rescinding order 20084, Aug. 18, so far as it authorizes similar construction.

20755. Nov. 6.—Authorizing C.P.R. to build spur for Kettle River Co., Minneapolis, Minn., at North Transcona, Man.

20756. Nov. 6.—Authorizing G.T.R. to build siding for Canada Stove and Furniture Co., St. Laurent Parish, Que.

20757. Nov. 6.—Authorizing Galbraith & Sons to build tram-logging road under Vancouver, Victoria and Eastern Ry. and Navigation Co.'s trestle bridge 73, near Lincoln, B.C.

20758. Nov. 7.—Approving location of Glengarry and Stormont Ry. from mileage 0 to 24.05.

20759. Nov. 6.—Relieving C.P.R. from providing further protection at crossing of Godfrey Ave., Winnipeg.

20760. Oct. 30.—Dismissing application of S. J. Blair, Calgary, Alta., of order staying proceedings under order 19075, Apr. 16, re C.P.R. branch for Northern Electric and Mfg. Co., Calgary; but determining that order be not construed as prejudicing applicant from claiming that spur cannot be built over his land without first taking expropriation proceedings under Railway Act.

20761. Oct. 30.—Ordering C.P.R. to provide level crossing where Calgary and Edmonton Ry. intersects 32nd Ave., Calgary, Alta., same to be built in accordance with standard regulations and at city's expense.

20762, 20763. Nov. 5.—Ordering Canadian Northern Ry. to provide proper culvert under its tracks at Waller Ave., and to provide crossing at Southwood Ave., Fort Garry, Man., both at the municipality's expense.

20764. Nov. 4.—Amending order 20018, Aug. 14, re C.P.R. crossing of Anderson St., Grenfell, Sask., by providing that cost of watchman be paid: 60% by C.P.R. and balance by the municipality.

20675. Oct. 31.—Ordering Canadian Northern Ry. to file, within ten days, plan in triplicate of freight shed 30 by 40 ft. to be built at St. Albert, Alta., within 30 days after approval.

20766, 20767. Nov. 5.—Ordering Canadian Northern Ry. to provide crossings at Chevrier Boulevard and at Waller Ave., Fort Garry, Man., at municipality's expense.

20768, 20769. Nov. 1.—Dismissing application of City of Saskatoon, Sask., for authority to build Avenue J across C.P.R. at rail level, and authorizing it to build Avenue I across C.P.R.

20770, 20771. Oct. 31.—Finding that should Peace Ave. and Athabasca Ave., Edmonton, Alta., be opened up, such opening would be subject to seniority of Calgary and Edmonton Ry. title and construction as against the city.

20772. Nov. 7.—Rescinding order 20624, Oct. 22, relieving C.P.R. from providing protection at Cote du Sud, Montreal.

20773. Nov. 8.—Extending, to Jan. 15, 1914, time within which C.P.R. shall install bell at crossing of Port Burwell Road, mileage 32.7, Port Burwell Branch, Ont.

20774. Nov. 7.—Authorizing C.P.R. to build spur for loading ties at mileage 44.32 from Chapleau, Ont.

20775. Nov. 6.—Authorizing C.P.R. to build spur for Frontenac Floor and Wall Tile Co., Kingston, Ont.

20776. Nov. 8.—Authorizing C.P.R. to build its Lacombe Easterly Branch across 39 highways, mileage 180.61 to 221.11, Alta.

20777. Nov. 8.—Approving location of C.P.R. station at Port McNicoll, Ont.

20778. Nov. 10.—Rescinding order 20638, Oct. 22, re C. N. Ontario Ry. farm crossing for L. O. Christmann, Beachburg, Ont.

20779. Nov. 10.—Authorizing C.P.R. to open for traffic portion of its Lacombe Easterly Branch from Consort to Monitor, Alta., mileage 139 to 149.

20780. Nov. 8.—Ordering C.P.R. to instal, by June 1, 1914, improved type of automatic illuminated electric bell at crossing of public road east of Mountain Grove station, Ont., 20% of cost to be paid out of the railway grade crossing fund.

20781. Nov. 10.—Authorizing C.P.R. to open for traffic its Lacombe Easterly Branch from Coronation to Consort, Alta., 32 miles, speed of eastbound trains approaching crossings at mileage 132.6 and 136.3 to be reduced to 10 miles an hour, and bells rung continuously between whistling posts and crossings, and rescinding order 17852, Oct. 25.

20782 Nov. 8.—Approving plan showing Logan Drain where it crosses G.T.R. in Blyth, Ont.

20783. Nov. 7.—Authorizing G.T.R. to build bridge 62, Goderich Tp., Ont.

20784. Nov. 10.—Approving location of C.N. Ontario Ry. Parry Sound-North Bay line through Gurd, Nipissing, Himsworth and Ferris Tps., from mileage 209.52 to 233.90 from Toronto.

20785. Nov. 11.—Approving C.P.R. revised location from mileage 5.08 to 7.16, and from mileage 9.68 to 11.51, Schreiber Subdivision, Ont.

20786. Nov. 11.—Authorizing G.T.R. to build siding for Malcolm Furniture Co., Listowel, Ont., and change location of existing track south of the proposed siding.

20787, 20788. Nov. 10.—Approving location of C. N. Ontario Ry. Parry Sound-North Bay Line through Burpee, Burton, Mackenzie, Ferrie, Mills, Patterson, and Pringle Tps., mileage 170 to 209.52, from Toronto.

20789. Nov. 11.—Authorizing Esquimalt and Nanaimo Ry. to build spur across roadway to station at Cowichan Lake, B.C.

20790. Nov. 10.—Ordering C.P.R. to rebuild culvert on its Chalk River Subdivision bridge 53.2, near Arnprior, Ont.; to be completed by Jan. 1, 1914.

20791. Nov. 11.—Relieving C.P.R. from providing further protection at crossing of public road at Cluny, Alta., mileage 116.2, Calgary Subdivision.

20792. Nov. 11.—Recommending to Governor in Council for approval, Toronto, Hamilton and Buffalo Ry. rules and regulations, covering private instructions to train conductors.

20793. Nov. 12.—Authorizing City of Edmonton, Alta., to build its electric railway across G.T. Pacific Ry. at intersection of Twenty-seventh St., between Armstrong and Cochrane Aves., cost of providing half-interlocking plant to be paid equally by city and G.T.P.R.

within six weeks to fence its right of way on property of H. E. Knight, Grand Forks, B.C.; and fixing penalty of $25 a day for each day it shall be in default.

20795. Nov. 12.—Authorizing G.T.R. to rebuild bridge carrying Durham Road over its line at milepost 125.25, near Hanover, Ont.

20796. Nov. 11.—Approving plan and specifications Teillier award drain under G.T.R. in Lot 2, Lake Shore Concession, Rochester Tp., Ont.

20797. Nov. 12—Ordering C.P.R. to instal improved type of automatic electric bell at crossing

20794. Nov. 12.—Ordering Great Northern Ry. of first public highway east of Britannia, Ont., at mileage 3.9, Chalk River Subdivision, 20% of cost to be paid out of the railway grade crossing fund.

20798. Nov. 12.—Amending order 19430, May 19, re Great Northern Ry. subway at Subway Ave., White Rock, B.C.

20799. Nov. 13.—Approving location of Alberta Central Ry. Sounding Creek-Moose Jaw line from mileage 220 to 277.75, east of Red Deer, Alta., and authorizing construction across 56 highways.

20800. Nov. 13.—Authorizing C.P.R. to build spur for Dominion Wire Rope Co., Lachine, Que.

20801. Nov. 13.—Authorizing C.P.R. to build spur for Montreal Light, Heat and Power Co., Lachine Parish, Que.

20802. Nov. 13.—Authorizing C.P.R. to operate spur for Massey-Harris Co. at Medicine Hat, Alta.

20803. Nov. 11.—Authorizing Canadian Northern Ry. to build across and divert public road between Secs. 24 and 23, Tp. 26, R. 23, w. 3 m., on its Alsask Southeasterly line, Sask., and ordering it to instal improved type of automatic electric bell there.

20804. Nov. 13.—Authorizing Vancouver, Victoria and Eastern Ry. and Navigation Co. (G.N.R.) by over crossing, to build across and divert Nicola-Princeton highway, Lot 1775, Group 1, Yale District, B.C.

20805. Nov. 1.—Dismissing application of E. A. Purcell, Saskatoon, Sask., alleging that G.T. Pacific Ry. discriminates against his 'bus line.

20806. Nov. 13.—Dismissing application of Fort Garry, Winnipeg, Man., for order directing Canadian Northern Ry. to build crossing at Fairfield Ave

20807. Nov. 13.—Authorizing Alberta Government to build diversion of road allowance across C.P.R. in s.w. ¼ Sec. 32-18-14, w. 4 m., Alta.

20808. Nov. 13.—Authorizing Canadian Northern Ry to divert Rue La Verandrye, St. Boniface, Man.

20809. Nov. 13.—Authorizing C. N. Ontario Ry to build across and divert public road on Lot 38, Con. 18, Ferris Tp., stations 981 to 991, and rescinding order 20060, Aug. 13.

20810. Nov. 13.—Authorizing C.P.R. to build, at grade, its siding extension across public road at Worthington, Ont.; and to build sidings for Mond Nickel Co., Coniston, Ont., from its right of way, at Worthington, across public road and lands adjoining, in Lot 2, Con. 2, Drury Tp.

20811. Nov. 13.—Authorizing C.P.R. to build extension to siding for Dominion Radiator Co., Toronto.

20812. Nov. 13.—Ordering North Cowichan municipality, B.C., to move highway crossing at milepost 41, 6½ ft; and rescinding order 6642, Feb. 27, 1909.

20813. Nov. 13.—Amending order 19506, June 7, re crossing of Canadian Northern Ry. by Regina Municipal Ry., on Fourth Ave.

20814. Nov. 13.—Approving plan and specifications of Ellice Maitland relief drain under C.P.R. on Lots 29 and 30, Con. 18, Elma Tp., Ont.

20815. Nov. 12.—Authorizing Canadian Northern Ry. to operate trains over Thirteenth St., Brandon, Man., without first stopping; cars of Brandon Municipal Ry. to be stopped before crossing, and conductors of latter cars to operate interlocker levers.

20816. Nov. 12.—Ordering C.P.R. and Great North Western Telegraph Co. to remove wires from poles on Queen St. North, between King and Weber Sts., Berlin, Ont.; city to make provision by which companies have right to string wires on Frederick and King Sts.

20817. Nov. 11.—Ordering Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build undercrossing for A. R. Farewell, Oshawa, Ont., to be completed within 3 months.

20818. Nov. 14.—Authorizing C.P.R. to build spur for P. Hamilton Co. across Sherbrooke St. and along Water St., Peterboro, Ont.

20819, 20820. Nov. 14.—Authorizing G.T.R. to build sidings for Grand Gypsum Ltd., North Cayuga Tp., at Nelles Corners, Ont.; and Dominion Tar and Ammonia Co., Hamilton, Ont.

20821. Nov. 13.—Authorizing Canadian Northern Ry. to build across Winnipeg Electric Ry. on Jubilee Ave.

20822. Nov. 15.—Authorizing C.P.R. to use bridge 45.6, Orford Subdivision, Que.

20823. Nov. 17.—Authorizing G. T. Pacific Ry. to build bridge across Nechaco River, mileage 371.4, Prince Rupert Easterly, B.C.

20824. Nov. 15.—Authorizing G.T.R. to operate bridges 217, over Jacques River, mileage 13.07; 232, over English River, mileage 36.85; and 236, over Chateauguay River, mileage 43.82, Que.

20825. Nov. 17.—Approving location of Montreal and Southern Counties Ry. from Central Vermont Ry. at St. Cesaire to boundary between St. Cesaire and St. Paul de Abbotsford parishes, Que.

20826. Nov. 14.—Amending order 20514, Oct. 6, re installation of electric sign and bell, by Michigan Central Rd., at Townsend, Ont.

20827. Nov. 14.—Authorizing C.P.R. to build bridge 92.7 (Don Viaduct), near Donlands, Ont.

20828. Nov. 14.—Authorizing C.P.R. to take, for double track, certain land in York Tp., Ont.

20829. Nov. 17.—Amending order 18837, Mar. 12,

re operation of G. T. Pacific Ry. on its Regina-Moose Jaw Branch, for construction purposes, etc.

20830. Nov. 18.—Approving revised location of Canadian Northern Ry. Calgary Southerly Line, mileage 10.59 to 13.21, 13.74 to 16.16, 35.49 to 38.05, and 93.21 to 100.79.

20831. Nov. 18.—Amending order 20609, Oct. 15, re revised location of Campbellford, Lake Ontario and Western Ry. (C.P.R.).

20832. Nov. 15.—Authorizing City of Edmonton, Alta., to cross Canadian Northern Ry. at grade with its electric railway at Athabasca Ave.

20833. Nov. 18.—Authorizing G.T.R. to build additional track across John St., Weston, Ont.

20834. Nov. 18.—Authorizing Town of Sudbury, Ont., to build highway crossing over C.P.R. Stobie Branch, to connect Bond St. with Notre Dame St.

20835. Nov. 18.—Authorizing Montreal and Southern Counties Ry. to build bridge across Yamaska River, near St. Cesaire, Que.

20836. Nov. 18.—Approving location C.P.R. station at Gravel, mileage 32.50, Nipigon Subdivision, Ont.

20837. Nov. 18.—Authorizing St. Lawrence and Adirondack Ry. to build highway across its line, just south of Bellevue station, Que.; cost to be paid by Chateauguay Parish, and maintenance borne by railway.

20838. Nov. 19.—Approving location and details of Canadian Northern Ry. special station to be built at Gravelbourg, Sask.

20839. Nov. 19.—Amending order 8627, Oct. 21, 1909, re G.T.R. station at Guelph, Ont.

20840. Nov. 18.—Authorizing C.P.R. to build spur for J. Elie, Montreal.

20841. Nov. 18.—Authorizing G. T. Pacific Branch Lines Co. and C.P.R. to operate trains over crossing at Frobisher, Sask., without their first stopping.

20842. Nov. 19.—Authorizing C.P.R. to operate trains over drawbridge over Kaministikwia River, at Fort William, Ont., without their first stopping.

20843. Nov. 19.—Authorizing C.P.R. to build spur for Quaker Oats Co., Saskatoon, Sask.

20844. Nov. 11.—Ordering Canadian Northern Ry. and G. T. Pacific Ry. to build transfer track near Dana, Sask.

20845. Nov. 17.—Ordering Campbellford, Lake Ontario and Western Ry. (C.P.R.) to install improved type of automatic electric bell at highway crossing between Cons. 3 and 4, Tyendinaga Tp., mileage 61.87; to be installed by time line is opened for traffic.

20846. Nov. 19.—Establishing collection and delivery limits for Express Companies in Hamilton, Ont.

20847. Nov. 19.—Authorizing C.P.R. to open for traffic portions of double track on Lake Superior Division, Ont.:—Azilda, mileage 86.0 to 95.5; mileage 113.2 to Cartier, mileage 114.6, Cartier Subdivision; Nemegos, mileage 120.9 to 125.0; Poulin, mileage 127.0 to 130.0, Chapleau Subdivision; Esher, mileage 7.1 to 9.0; mileage 18.9 to Goldie, mileage 34, on White River Subdivision; Redlite, mileage 11.2 to 21.0, Schreiber Subdivision; and Selim, mileage 9.3 to Rossport, mileage 14.3; mileage 29.0 to Gurney, mileage 39.1, Nipigon Subdivision.

20848. Nov. 18.—Authorizing G. T. Pacific Ry. to rebuild bridge across Kitsumkaylum River, mileage 91, Prince Rupert East, B.C.

20849. Nov. 12.—Ordering Canadian Northern Ry. to provide crossing at Fort Garry Boulevard, Fort Garry, Man.; cost to be paid by municipality.

20850. Nov. 19.—Authorizing Canada Southern Ry. to build branch from east of Welland station, Ont., to Lot 22, Con. 5, Humberstone Tp., crossing Ontario Road, Commercial St., Dover St., Dain St. and Town Line Road between Crowland and Humberstone Tps.

20851. Nov. 19.—Relieving C.P.R. from providing further protection at first crossing east of station at Tyndall, Man.

20852. Nov. 17.—Authorizing Niagara, St. Catharines and Toronto Ry. to open for traffic its line between St. Catharines and town line between Grantham and Niagara Tps., Ont., 7.1 miles, for three months from date; and authorizing it to operate cars over crossing of G.T.R. at Welland Ave., St. Catharines; all trains and cars to be flagged over crossing by day and night watchmen pending installation of interlocker.

20853. Nov. 20.—Ordering Canadian Northern Ry., within three weeks, to extend siding at Sleeman, Ont., to accommodate 38 cars.

20854. Nov. 13.—Authorizing City of Edmonton, Alta., to operate its street railway cars over G. T. Pacific Ry. on Twentyfirst St., pending installation of half interlocker; cars to stop and be flagged over crossing by street railway conductors.

20855. Nov. 20.—Authorizing C.P.R. to build siding for Cowan Co. at Parkdale, Ont.

20856. Nov. 20.—Ordering Edmonton, Dunvegan and British Columbia Ry. to build farm crossing for Wm. Dives, Independence, Alta.

20857. Nov. 19.—Ordering G. T. Pacific Ry. to build no. 1 B.R.C. station and platform at Telkwa, B.C.; and to build siding for 12 freight cars at west side of bridge, and provide way freight and local passenger service.

20858. Nov. 20.—Authorizing Town of Stony Plain, Alta., to build Main St. across Canadian Northern Ry.

20859. Nov. 21.—Ordering C.P.R. to install gates at crossing of Whyte St., Edmonton, Alta., to be operated by day and night watchmen; 20% of installation to be paid out of railway grade crossing fund, 2-3 of remainder by C.P.R., and balance by city; watchmen to be paid: 2-3 by C.P.R. and balance by city.

20860. Nov. 21.—Establishing collection and delivery limits of express companies in Cochrane, Ont.

20861. Nov. 20.—Dismissing complaint of Otis-Fensom Elevator Co. against proposed 6th class rating in Supplement 2 to Canadian Freight Classification 16, submitted by Canadian Freight Association for approval.

20862. Nov. 21.—Ordering that Canadian Northern Ry. trains be stopped before proceeding over Fournier and Browning Aves., Carman, Man., and speed in crossing limited to 4 miles an hour; posts showing word "Stop" to be erected at east side of Fournier Ave. and at west side of Browning Ave., 75 ft. from crossing; company to make entrance for vehicular traffic from lane at back of station building, midway between Fournier and Browning Aves., the town undertaking to trim trees at southwest corner of Browning Ave. to 22 ft. above rail.

20863. Nov. 20.—Authorizing C.P.R. to operate over the bridge across McKellar River, Fort William, Ont.

20864. Nov. 19.—Authorizing C.P.R. to build spur for J. L. Abbott, Toronto, at mileage 35.07, Balsam Lake, Ont.

20865, 20866. Nov. 21.—Establishing express collection and delivery limits in Sudbury and North Bay, Ont.

20867. Nov. 20.—Authorizing City of Winnipeg to extend Godfrey Ave. across Canadian Northern Ry. Oak Point Branch.

20868. Nov. 20.—Ordering C.P.R. to build bridge with 30 ft. roadway over its tracks on Eighth Ave. West, Moose Jaw, Sask., with extension sidewalk 6 ft. wide on one side of said bridge; $5,000 to be paid out of railway grade crossing fund, 75% of remainder by C.P.R., and 25% by city; substructure to be maintained by C.P.R., and roadway and sidewalk by city; and rescinding order 17206, July 25, in this connection.

20869. Nov. 21.—Amending order 16978, July 11, re Campbellford, Lake Ontario and Western Ry. (C.P.R.) undercrossing of Oshawa Electric Ry. on Simcoe St., Oshawa, Ont.

20870. Nov. 13.—Approving location of G. T. Pacific Branch Lines Co.'s Mountain Park Coal Branch from mileage 0 to 30.24, North Alberta District.

20871, 20872. Nov. 21.—Authorizing G.T.R. to build sidings for A. Sherk, Whitehall, Ont., into Northern Veneer Co.'s premises, Lot 28, Con. 11, McMurrich Tp.; and for Whiteside and Arnold, Barrie, Ont.

20873 Nov. 11.—Authorizing Keyes rural municipality 303, Sask., to build highway crossing over Canadian Northern Ry., between Secs. 25 and 36, Tp. 33, R. 1, w. 2 m., Sask.

20874. Nov. 20.—Ordering Canadian Northern Ry. and G. T. Pacific Ry. to erect gates at First St. and Namayo, Syndicate and Alberta Aves., Edmonton, Alta; 20% of cost at First St. and Namayo and Syndicate Aves. to be paid out of railway grade crossing fund, remainder equally by companies; city to pay watchmen; maintenance of gates divided equally between companies; 20% of cost of gates at Alberta Ave. to be paid out of railway grade crossing fund, 2-3 of remainder by companies, and 1-3 by city; and maintenance, 2-3 by companies and 1-3 by city.

20875. Nov. 21.—Authorizing Canadian Northern Ry. to build across Winnipeg Electric Ry. near Helen and Pembina Sts.

20876. Nov. 22.—Rescinding order 19310, May 16, which authorizes G.T.R. to build bridge 149, Mariposa Tp., Ont.

20877. Nov. 24.—Authorizing C.P.R. to build siding for Quaker Oats Co., Peterboro, Ont.

20878. Nov. 1.—Ordering Canadian Northern Ry. to furnish a daily passenger service west of Alsask, Sask., satisfactory to an engineer of the Board; to be effective by Nov. 10.

20879. Nov. 24.—Ordering G.T.R. to build spur on south side of Kaministikwia River for Mount McKay Pressed Brick Co., Fort William, Ont., crossing 2 city roads and street railway.

20880. Nov. 24.—Authorizing G. T. Pacific Ry., subject to inspection by B.C. Public Works Department, after completion, to build main line across Government Road at mileage 400, Prince Rupert East.

20881. Nov. 24.—Authorizing G. T. Pacific Branch Lines Co. and C.P.R. to operate trains over crossing in east half of Sec. 23-17-20, w. 2 m., Sask., without first stopping.

20882. Nov. 24.—Authorizing G. T. Pacific Ry. to build its Lake Superior Branch across highway at mileage 17.9, Oliver Tp., Ont.

20883. Nov. 24.—Establishing express collection and delivery limits in Leamington, Ont.

20884. Nov. 24.—Extending, for one month from date, time within which C.P.R. shall complete extension of siding for Quinlan & Robertson in Lot 10, Con. 8, Huntingdon Tp., Ont.

20885. Nov. 24.—Authorizing G.T.R. to build siding for Pollard Manufacturing Co., Niagara Falls, Ont.

20886. Nov. 25.—Extending, for 30 days from date, time within which C.P.R. shall complete fencing portion of right of way from mileage 6.8 to 7.6, on east side of track, and repairing fences on west side of track, on its Kingston and Pembroke Branch.

20887. Nov. 21.—Approving plan showing two new abutments for replacing piers at C.P.R. bridge, mileage 35.4, Chalk River Subdivision, Ont.

20888. Nov. 21.—Authorizing C. N. Ontario Ry. to build bridge over Indian River, Richards Tp., at mileage 107.85 from Ottawa.

20889. Nov. 25.—Authorizing Canadian Northern Ry. to build across public road between Secs. 14 and 15, Tp. 26, R. 26, w. 3 m., Sask.

20890. Nov. 25.—Authorizing G.T.R. to build spur from siding serving Queenston Quarry Co., for S. W. Marchment, on Lot 48, Niagara Tp., Ont.

20891. Nov. 20.—Ordering Canadian Northern Ry., within 30 days, to submit for approval of Board's Engineer detail plans showing half interlocking plants to be installed at various crossings in Edmonton, Alta., as required under orders 5598, 6751 and 7291; work to be completed within 3 months after approval; cost of diamonds to be paid by City of Edmonton, and cost and maintenance to be paid half by city and half equally between C.N.R. and G. T. Pacific Ry.; leave reserved to G.T.P.R. to appeal to Supreme Court upon competency of Board to apportion cost as provided; and rescinding order 14994, Sept. 11, 1911, in this connection, upon completion of interlocking plants.

20892. Nov. 25.—Authorizing Toronto, Hamilton and Buffalo Ry. to build spur for Egg-O Baking Powder Co., Hamilton, Ont.

20893. Nov. 25.—Ordering C.P.R. to erect fences along portions of right of way near Savona, B.C., work to be completed within 3 months from date; and rescinding order 17358, Aug. 27, 1912, in so far as it relieves C.P.R. from erecting fences between Savona and Pennys, B.C.

20894. Nov. 24.—Authorizing Hillsburgh Rural Municipality 289, Sask., to build highway across Canadian Northern Ry. 250 ft. west of west switch, D'Arcy, Sask.

20895. Nov. 25.—Approving location and detail plans of Windsor, Essex and Lake Shore Rapid Ry. station on Talbot Road, Maidstone, Ont.

20896. Nov. 27.—Authorizing C.P.R. to open for traffic portion of double track from mileage 121 to 131.3, at Broadview, Sask.

20897. Nov. 25.—Authorizing C.P.R. to build, at grade, its Snowflake Westerly Branch across 9 highways, mileage 0 to 9.10, Man.

20898. Nov. 25.—Authorizing C.P.R. to build, at grade, switching lead at mileage 123.0 from Montreal, Smith's Falls Subdivision, Ont., across public road between Cons. 3 and 4, Montague Tp.

20899. Nov. 27.—Approving revised location of C. N. Montreal Tunnel and Terminal Co.'s tunnel line from St. Antoine St. to junction with main line, at Montreal.

20900. Nov. 26.—Approving Canadian Northern Ry. plan of freight shed to be built at St. Albert, Alta., as required by order 20765, Oct. 31.

20901. Nov. 25.—Authorizing G.T.R. to build siding for Harris Abattoir Co., Hamilton, Ont.

20902. Nov. 25.—Ordering Great Northern Ry. to build open ditch on north side of its line at Hjorth Road, Tynehead Station, B.C.

20903, 20904. Nov. 25.—Authorizing C.P.R. to build spur for W. Rutherford, Stephen, B.C., and siding for National Builders' Supply and Enamel Concrete Brick Co., Montreal, Que.

20905. Nov. 25.—Authorizing Saskatchewan Government to build highway over G. T. Pacific Ry. near northeast corner of Sec. 17-38-26, w. 2 m.

20906. Nov. 27.—Authorizing B.C. Public Works Department to build overhead highway crossing over G. T. Pacific Ry. about 127 miles from Prince Rupert, near Fiddler Creek.

20907. Nov. 25.—Authorizing G.T.R. to build extension to siding for M. Chew, on Lot 21, Con. 3, Tay Tp., Ont.

20908. Nov. 27.—Authorizing Canadian Northern Ry. to remove spur to Exhibition Grounds, Brandon, Man., built under order 18348, Dec. 20, 1912.

20909. Nov. 28.—Extending, to Dec. 31, 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.

20910. Nov. 27.—Authorizing C.P.R. to build spur for Pembroke Shook Mills, Ltd., Pembroke, Ont.

20911. Nov. 29.—Authorizing G. T. Pacific Branch Lines Co. to carry traffic over portion of Mountain Park Coal Branch, Alta., between mileage 0 and 30.24; speed not to exceed 12 miles an hour.

20912. Nov. 25.—Re special eastbound tariff rates from Vancouver, B.C., published by C.P.R. from time to time, to apply to carload shipments of lumber, shingles, and articles taking lumber and shingle rates. This order is given in full on another page.

20913. Nov. 28.—Amending order 20411, Sept. 23, re installation of automatic electric bells by Campbellford, Lake Ontario and Western Ry. (C.P.R.) and G.T.R. at crossing between Lots 16 and 17, Con. A, Haldimand Tp., Ont.

20914. Nov. 28.—Authorizing C.P.R. to build its Calgary and Edmonton Ry. Lacombe Easterly Branch, across highways at mileage 181.93 and 186.01.

20915. Nov. 29.—Authorizing C.P.R. to build grade crossing at mileage 64.32, East Kootenay District, B.C.

20916. Nov. 29.—Authorizing C.P.R. to build road diversion in Sec. 27-8-8, and to build its Weyburn-Stirling Branch across highway between Secs. 27 and 28-8-8, w. 3 m., Sask.

20917. Nov. 29.—Amending order 18457, Dec. 30, 1912, re C.P.R. crossing of May and Ridgeway St., Fort William, Ont.

20918. Nov. 29.—Approving C. N. Ontario Ry. revised location through unsurveyed territory at Clemow Lake, Barron Tp., Nipissing District, mileage 133.45 to 134.75.

20919. Nov. 29.—Authorizing C. N. Ontario Ry. to open for traffic its branch from Oshawa station to material yard, south of William St., 2¾ miles.

# Port Huron Fire and the Grand Trunk Railway's Western Shops.

The G.T.R. took immediate steps, following the disastrous fire of Nov. 26, which devastated practically the whole of its Port Huron, Mich., car shops, to handle the repair work that formerly was done there. The accompanying illustrations give a birds-eye view of the plant before, and immediately after, the fire. The only building of the entire plant not destroyed was, strangely, the lumber shed on the extreme left, alongside the wharf on the river. The building on the extreme right in the view of the plant before destruction, was the office, to the rear of which was the machine shop, and a long passenger car shop, extending nearly the full length of the grounds. To the left of the office building, was the blacksmith shop, adjoining which was the mill, with the freight car shop to the rear of both buildings, the mill forming a wing thereof. As the illustration of the plant following the fire shows, nothing remains but the brick walls of the office, and the machine and passenger car shops. The insurance adjustment is going on and until this is completed it will not be decided just what will be done in the way of replacing the plant.

To meet immediate requirements the G. T.R. has purchased the Whipple Car Co.'s plant at Elsdon, Ill., in the heart of the G. T.R. Chicago freight yard. The Whipple Co. was going out of business, so the plant proved a particularly fortunate means for the G.T.R. yards. This Elsdon plant covers about 20 acres, and comprises a modern group of buildings, none of which are over five years old. The office building, stores building, power house and mill building are of brick and steel construction. There are three main buildings for the forge shop and erecting shops, two of which are 80 by 500 ft., and the third, 80 by 400 ft., each containing three longitudal tracks. These three buildings are of steel construction sheathed in galvanized iron. All the machinery throughout the plant is electrically driven, from power generated in the plant. Electric lighting is handled from the same power house. The G.T.R. took possession of the plant Dec. 20, and as soon as an inventory of the stock on hand is made, which is expected will be Jan. 1, it will be placed in service.

It is the G.T.R.'s intention to transfer much of the staff as desire to go, from Port Huron to Elsdon it being the President's express wish that all the old employes be cared for. From 400 to 500 can be used in the new plant, but it will not be quite large enough to handle all the repairs on the western line. Since the fire the pressing repairs on these lines have been handled in the company's Canadian shops. All the parlor and dining cars have been taken to Montreal for overhauling, adding to the congestion in that shop.

We were offcially advised, Dec. 15, that the loss on buildings and contents burned at Port Huron amounts to about $350,000. It had not then been decided whether the shops would be rebuilt or not.

## Mount Royal Tunnel, Canadian Northern Railway.

The last barrier in the C.N.R. tunnel under Mount Royal, Montreal, was blasted out Dec. 10, at 7 a.m., when the gangs working from both ends met. In the afternoon, a party of engineers and other officials were taken through the tunnel by S. P. Brown, Chief Engineer, and H. T. Fisher, Tunnel Engineer of the Canadian Northern Montreal Tunnel and Terminal Co., in a train of work cars from the west portal at the back of the mountain to the Dorchester St. shaft, on the site of the proposed Montreal station.

This tunnel, which was described in detail in Canadian Railway and Marine World for August, 1913, is 3 1-3 miles long, with east portal, station 137.0, between Lagauchetiere and Latour Sts., in Montreal, and the west portal, station 318.0, at the back of the mountain at the C.P.R. crossing. Briefly, the tunnel extends practically the full length through Trenton limestone and essexite, with igneous dykes. The interior section will be 22 by 30 ft. neat excavation, except near either portal, where it will be arched with concrete blocks. The estimated quantities to be excavated for the tunnel are 390,000 cu. yds. of rock and 13,000 cu. yds. of earth, and there will enter into its construction 61,000 cu. yds. of concrete and 1,000 tons of steel and iron. In addition, the work has necessitated 1,400 lineal ft. of shafting and tunnelling, not in the main tunnel line.

In the pushing forward of the work, four headings were used, with part of the time a fifth. Apart from preliminary work of preparing approaches, the actual tunnel work commenced from the west portal in Sept., 1912, and at the same time work was begun on the sinking of shafts at Dorchester St., station 145.0, and Maplewood Ave., station 265.0, the former 55 ft. deep, and the latter, 240 ft. From the Dorchester St. shaft, the tunnel heading, which in each case was from 8 to 10 by 12 ft., was pushed towards the west portal, with a short section to the east, towards the city portal. From the Maplewood Ave. shaft, the heading was driven in both directions, meeting that from the west portal at station 285.0 in April, 1913. The two headings from Maplewood Ave. and Dorchester St. were the ones that met Dec. 10, at station 208.0, completing the heading the full length of the tunnel.

Following up the smaller heading, principally from the west end, which was through first, the smaller heading has been timbered and the upper section of the bore removed to full dimensions. A large portion of the west end has been completed in this manner, leaving only the benches, which, through a short section, have also been removed. On the completion of the upper heading, the benches will be removed by steam shovel.

The tunnel at the Dorchester St. shaft, the terminal site, is level, at elevation 144.4, ascending from that point on a 0.6% grade to the west portal. The greatest depth of rock over the tunnel is near the point where the last headings met, where there is 600 ft. of rock above.

The small working heading was pushed through in the short period of 15 months. The best progress made was 810 ft. in 31 working days. The monthly progress in each heading averaged 420 ft., giving a gross monthly progress of 11,000 ft.

Following is comparative data of progress with other well known railway tunnels:—

| Tunnel | Size of Heading | Distance | Time | Material |
|---|---|---|---|---|
| Arlberg | .... | 641 | 1 mo. | Gneiss. |
| Simplon | 6.5x9.5 | 685 | 1 mo. | Hornblende and Mica. |
| Loetschberg | 6.5x10 | 1013 | 1 mo. | Triassic limestone. |
| Mount Royal | 8x12 | 810 | 31 days | Hard limestone and dykes of igneous rock. |

The distance driven in 31 consecutive working days at the Loetschberg tunnel was greater than that in the Mount Royal tunnel, but it is said that the Triassic limestone in the former was ideal for making distance.

Grand Trunk Railway Car Shops at Port Huron Before and After the Fire.

**Suit Against the Grand Trunk Ry. re Toronto Union Station.**—An action has been instituted in Boston, Mass., by the Westinghouse, Church, Kerr and Co., New York, against the G.T.R. for the purpose of securing damages for an alleged breach of contract. Contract was entered into by the late C. M. Hays, President, G.T.R., for the preparation of plans and the erection of the new union station and terminals at Toronto. The contract was subsequently cancelled by the G.T.R., and for this cancellation $1,000,000 is claimed as damages. It is stated on behalf of the G.T.R. that the Board of Railway Commissioners issued certain orders after the signing of the contract which made it impossible that the original plans could be carried out, and that the cancellation of the contract was justified.

The G.T. Pacific Ry. hotel Fort Garry, at Winnipeg, was opened for guests, Dec. 9. It is 14 stories high, and is of Canadian granite and buff limestone. It is located on Broadway Ave., in close proximity to the Fort Garry Union Station, and almost on the site of the historic Fort Garry, some ruins of which yet remain.

The Eastern Terminal Elevator Co., Ltd., incorporated under the Manitoba Companies Act, has been authorized to do business in Ontario, with capital to be utilized in that Province, limited to $250,000. F. H. Young, Fort William, is its attorney.

## Issue of Note Certificates by Canadian Pacific Railway.

The following official statement was given out by the C.P.R. management in Montreal, Dec. 8:—

"At the regular meeting of the directors today, a trust fund was created to be known as The Special Investment Fund, made up of deferred payments on land sales, and securities in which the cash proceeds of land sales are invested, to the aggregate of $55,000,000. The Royal Trust Co. of Montreal is named as trustee of the fund.

"It was decided to offer the holders of the ordinary capital stock of record Dec. 23rd, 1913, in proportion to their respective holdings, $52,000,000, note certificates carrying interest at the rate of 6% per annum, payable semi annually, at the price of 80% of their par or face value.

"The C.P.R. Co. engages and promises that the interest on the note certificates will be promptly paid, and that all of the note certificates will be redeemed at their face value on or before Mar. 2, 1924, but they may be redeemed in part by drawings at any time when the trustee has funds in hand for the purpose.

"The amounts accruing from time to time from deferred payments on land heretofore sold and the interest thereon, and from securities in which the proceeds of land sales have been invested, will be utilized by the trustee, in so far as may be necessary, or will be supplemented by the company if required, to effect the payment of interest on the note certificates, and the repayment of the principal on or before maturity."

It was also announced that shareholders would be entitled to subscribe for one note certificate for eight full shares of stock held. Payments are to be made as follows:—$32 on each $100 note on Feb. 2, and $48 on March 2.

The day following the above announcement, Sir Thos. G. Shaughnessy made the following statement:—"The trust fund which has just been created by the company is to be devoted to the payment of interest on the note certificates and to their redemption at par at or before maturity, and is composed of the deferred payments on the securities in which the proceeds of the land sales, heretofore made, are invested. It does not include any of the company's unsold lands or other extraneous assets. These remain intact for the future benefit of the shareholders, and the directors are quite satisfied that the special income from these sources will be sufficient for all the company's purposes."

On Dec. 12, Sir Thos. G. Shaughnessy issued another statement as follows:—"The company is not short of funds by any means, its bank account being of very comfortable proportions, but it has for many years been its policy to be strong in its cash resources, and, considering the magnitude of the enterprise, this is manifestly prudent. Works of improvement, now in progress, to provide for its traffic, will require a considerable sum to finish. The additional railway mileage constructed, and nearing completion, represents an expenditure of upwards of $40,000,000. To meet this expenditure the directors have authority to issue and sell 4% consolidated debenture stock, but this is not the time to go into the market with a large issue of that security to the prejudice of the commanding position that it has always had in the London market, and will again have when normal conditions are restored. Any issue of debenture stock, excepting such small amounts as may be required to meet the demands of the market, must be postponed until some more opportune time. Neither would an increase of the company's capital stock be desirable just now. In view of these circumstances, the directors decided to ask the shareholders to loan the company the money likely to be required for its purposes during the next year or two on terms that would be advantageous to them, and the issue of $52,000,000 of note certificates was determined upon accordingly.

"When the proceeds of land sales, to an amount exceeding $62,000,000, had been invested in the property, the land assets were permitted to accumulate, and these now constitute the special investment fund of $55,000,000 that has been set aside and ear marked as applicable only to the principal and interest of the note certificates. Of course it goes without saying that were the company to go into the market to borrow money on its own credit in the ordinary way, better terms could be arranged, but this was a special transaction between the company and its shareholders, and it was intended that the shareholders should have the distinct advantage to which they are entitled. These note certificates will constitute no permanent charge against the company's revenue; indeed, they make no demand whatever on the income from the company's traffic It is a debt that will obliterate itself in the course of a few years. The unsold lands and other extraneous assets will remain undisturbed for the future benefit of the shareholders, and it is evident that the income from them will be sufficient for the purposes to which it has, for some years, been largely devoted."

## Intercolonial Railway Construction, Betterments, Etc.

**Halifax Ocean Terminals.**—A contract for the first section of these terminals has been let, according to an Ottawa dispatch to Foley, Welch, Stewart and Fanquier, at an estimated cost of $5,208,748. A description of the work to be done under the proposed contract was given on pg. 462 of our Oct. issue. In connection with these new terminals, we have been officially advised that the existing tracks to North St. station, the deep water terminus and pier No. 2 will be retained, but nothing has been definitely decided as to the existing stations at North St. and at Richmond. The new union passenger station to be provided at the ocean terminals will be designed to accommodate all railways entering the city.

**The New Station at Truro, N.S.,** has been completed. It is one of the largest and most modern stations on the line. It is 337½ ft. long, of which 140 ft. is two stories high, with a central tower 19 ft. square; and is 50 ft. deep. The building is of brick and concrete, and is finished with natural woods in the interior. The main entrance is under the tower, and leads to the general concourse, 61 by 50 ft., in which is located the ticket office. On the right is the ladies' waiting room and retiring room; the second class waiting room, with lavatories; and on the left is the smoking room, the station master's office, telegraph office and trainmen's room. A passage on the left leads to the general lavatories and the lunch and dining rooms, the latter being 80 by 50 ft. and in the single story part of the building. In the opposite wing, in the single story section, are baggage room, conductors' box room, express room and office and mail room. The second floor contains offices for the superintendent and the despatching staff, with six bedrooms.

**Diversion of Line in Cape Breton.**—Tenders are under consideration for the building of a diversion from North Sydney to Leitches Cove, on the Cape Breton section.

**St. Romuald-Chaudiere Curve Second Track.**—The contract for the second track work from St. Romuald to Chaudiere Curve, Que., 3.75 miles, to which reference was made in our October issue, has been let, we are officially advised, to Soper and McDougall, Ottawa. The work is not heavy, and there is no bridgework and does not involve any diversion from the existing line. The present track is to be raised at one or two points to improve the alignment. The contract does not include work at the crossing of the National Transcontinental Ry.

**Bridge Reconstruction.**—A contract is reported to have been let to the Dominion Bridge Co. for the building of four bridges, viz.:—over the Beeamour River, over the National Transcontinental Ry., at Riviere du Loup, and Riviere du Sud; Canadian-Allis-Chalmers Co., for bridges at West River, Barneys River, and French River, N.S.; and to McKinnon, Holmes & Co., for bridges at Beach River, Riviere Le Brass, Sayabee, Ivory, Road and Oxford.

We are officially advised that the contracts cover as follows:—

Dominion Bridge Co., Becancourt River bridge, four 105 ft. deck plate girder spans; bridge at Riviere du Loup, six 105 ft. and two 50 ft. deck plate girder spans; bridge at crossing of National Transcontinental Railway two 52 ft. and four 45 ft. deck plate girder spans; Riviere du Sud bridge, two 65½ ft. through plate girder spans.

Canadian Allis-Chalmers, Toronto, West River, Antigonish, one 88 ft. through plate girder span, and 28 Bethlehem I beam spans, each 22 ft. 3 ins.; bridge at Barney's River east, one 71½ ft. through plate girder; French River bridge, one 89½ ft. through plate girder.

The contracts placed with McKinnon, Holmes & Co., Sherbrooke, Que., are for the following:—Riviere Le Bras bridge, 26 ft. centre to centre, near St. Louise, Que.; Black River bridge, 26 ft. centre to centre, near Sayabee, Que.; the Sayabee bridge, a 32 ft. 8 in. span centre to centre, 2.8 miles west of Sayabee; Ivory road crossing bridge, three spans 24 ft. each, for a roadway 20 ft. wide, supported on longitudinal I beams and two trestle bents, near Nelson, N.B.; Oxford Subway bridge, 20 ft. clear half deck plate girder span, at Oxford, N.S.

**Automatic Electric Block Signalling.**—As previously stated in Canadian Railway and Marine World, it has been decided to install automatic electric block signalling between the following points:—Halifax and Windsor Jct., N.S., 13.9 miles; Pamtec Jct. and Moncton, N.B., 7.3 miles; Hampton and St. John, N.B., 22 miles. A contract has been given to the Union Switch and Signal Co., the approximate cost being stated as $85,000. The installation is to be completed by June 30, 1914.

**Painsec Jct.—Oxford Jct. Second track.**—We are officially advised that engineers are in the field making surveys for revising grades, and building a second track between Painsec Jct., N.B., and Oxford Jct., N.S., 70 miles. The survey is aiming at securing a gradient of 0.6 per cent. J. H. Congdon is in charge of the party, and it is expected that the survey will be completed early in the spring.

**Telephone Train Dispatching.**—We are officially advised that a contract has been let to the Hall Switch and Signal Co., for the erection of a telephone train despatching line between Moncton and St. John. N.B., at an estimated cost of $10,371.90.

**Grade Crossings in Moncton.**—A proposition has been laid before the Moncton, N.B.,

City Council with a view of eliminating the level crossings in the city. F. P. Gutelius, General Manager, Government Railways, explained the project at a meeting of the Moncton Board of Trade, Nov. 4, and it came before the city council, Nov. 7. The cost of $100,000 is immediately available. The work would include the building of a subway on Main St. and bridges at five other points. The city council, Nov. 12, gave a general approval of the plans, asked for a couple of additional subways, and some other modifications, and appointed a committee to confer with Mr. Gutelius. At a meeting of the City Council, Nov 28, a resolution was passed stating that the written proposals submitted were not in accordance with the plans outlined by Mr. Gutelius, and that they be not concurred in. (Oct., pg. 475.)

## The Rogers Pass Tunnel, Canadian Pacific Railway.

Preliminary work for the construction of the tunnel through Mt. Macdonald in the Selkirk Range for the C.P.R., considerable information about which has already been published in Canadian Railway and Marine World, is now well advanced. About 350 men are engaged, and this force will be increased later on to about 500, who will be employed for about four years.

Three camps have been established. Camp 1, at Glacier, B.C., which was described and illustrated in our November issue, will be the main headquarters of the contractors for the work. The second camp is located on the west side, and another is at Bear Creek, 6 miles east of camp 1. At the latter place three steam shovels are in operation, and will continue to be used there throughout the construction of the tunnel. Another shovel will be operated at east side of the hill. The contractors' quarters will include two large buildings, a boiler house and a locomotive house capable of housing four locomotives. The working force will be housed in a 2 storey building 360 ft. by 50 ft. The rooms will be each 12 by 12 ft.

The tunnel will be a trifle over 5 miles long and will have a 1,700 ft. approach on the west side, and a 2,600 ft. approach on the east side. It will lower the grade of the road 545 ft., will shorten the distance by nearly 4 miles; and will practically do away with dangers from snow slides. The portal of the tunnel will be 150 ft. wide by 40 ft., and it will be necessary to excavate 50 ft. before reaching tunnel grade. Before work can be started on the main tunnel, the course of the Illecillewaet River ,for nearly a mile, will have to be changed. In doing this the river will be diverted some 900 ft. to the left of its present course. Over 20,000 cu. yards of concrete will be required for tunnel approaches and the tunnel proper.

Foley Bros., Welch & Stewart, are the contractors. A. C. Dennis, M. Can. Soc. C. E., with headquarters at Glacier, B.C., is in charge of the work for them.

**A Passenger on the Quebec and Lake St.** John Ry., recently sued the company for $1,000 damages for being put off a train between Limoilou and Lorette on account of his refusal to give up his ticket through not being accommodated with a seat. The judge stated that the fact that plaintiff remained on the train and standing, after being asked for his ticket, was an acknowledgment that he was prepared to proceed on the train, and therefore his ticket was collectible. He, however, awarded him $10 and damages with costs, on account of the conductor putting him off the train between two stations, which was not justifiable.

## Anniversary Honors to Dean Galbraith.

As a mark of esteem towards its Dean, John Galbraith, M.A., L.L.D., M. Can. Soc. C.E., on the occasion on which, by a strange coincidence, occurred three important anniversaries of his connection with the University of Toronto, the University of Toronto Engineering Society made him the guest of honor at its annual dinner on Dec. 5. This occasion marked the 50th anniversary of the Dean's entrance to the University as a freshman; the 35th of his connection with the institution of which he is head, first as Principal of the Ontario School of Practical Science, and after the incorporation of the latter into the University with a change in name to the Faculty of Applied Science, as its Dean; and it was also the 25th annual dinner of the Engineering Society, of which he was the first president. The dinner was attended by more than 500 of the alumni, practically from all quarters of the continent.

Dr. Galbraith was born in Montreal, Sept.

Dean Galbraith.

5, 1846, receiving his primary education at the Port Hope Grammar School. Entering the University of Toronto in 1863 he received his B. A. with double scholarship in mathematics and general proficiency, and the gold medal in mathematics, as well as being Prince's prizeman in 1868. He received his M.A. in 1875, and the honorary degree of LL.D. in 1902. In addition, the honorary degree of LL.D. was conferred upon him by Queen's University in 1902. Following graduation, he studied engineering and surveying under G. A. Stewart, Chief Engineer, Midland Ry. (Ontario) subsequently attaining the rank of P.L.S. and D.L.S. He was employed in the building of the Intercolonial Ry., the Midland Ry., and the Canadian Pacific Ry.

On the formation of the Ontario School of Practical Science in 1878, he was appointed to the chair of engineering, as well as being Principal, and when that institution became the Faculty of Applied Science of the University of Toronto, he was given the title of Dean. To him, the old "School," as it is familiarly known by its graduates, owes much of its success, as it was his tireless energy in promoting the welfare of the institution from the early days when a small building and a staff of three comprised his entire charge, to the present day, when there are three large buildings under him with a large staff of instructors and nearly 800 students in the four years.

In the engineering profession at large, he is well known. He was one of the founders of the Canadian Society of Civil Engineers, of which he was for many years a councillor, finally being elected President in 1908. He is also an associate of the Institute of Civil Engineers, England. He was a member of the Royal Committee to investigate the Quebec Bridge failure in 1907.

## Railway Finance, Meetings, Etc.

**Atlantic, Quebec and Western Ry.**—A London, Eng., cablegram states it is understood among the creditors of the Charing Cross Bank, which financed the building of this railway, that the Quebec Government is considering the purchase of the company's bonds which are held by the liquidators of the bank; and that Canadian capitalists have an option on the company's land grants.

**Canada Gulf and Terminal Ry.** The annual meeting of shareholders was held at Montreal, Nov. 28. Following are the officers and directors for the current year,—President, M. J. O'Brien; Vice President, H. J. Lyons; Secretary-Treasurer, F. W. Rous; other directors, J. A. O'Brien, C. A. Gavreau, A. M. Tessier, G. A. Cote, J. A. Ross and Hon. R. Turner.

**Canadian Pacific Ry.**—Application is being made to the Dominion Parliament for an act to enable the C.P.R. to guarantee bonds, debentures or other securities of companies in which it may take shares, having for their object the holding of lands, wharves, docks, warehouses, offices, etc., to be used for the purposes of the company or its steamship connections.

**Central Ry. of Canada.**—A London, Eng., cablegram of Dec. 16 says:—"The Central Ry. Co. of Canada today resolved to retire existing bonds, replacing them by a new issue covering the whole main line between Montreal and Midland. C. N. Armstrong, Vice President, told the bondholders that the railway company was negotiating with an important shipping company which proposes to put a line of steamers on the Great Lakes and from Montreal to British ports. Negotiations are also proceeding with an important new railway from Montreal to the north. Canadian bondholders, Mr. Armstrong added, had never attempted to sell their holding, but they had every confidence in the company's future."

At a meeting of shareholders in London, Eng., Dec. 16, it was resolved to retire all existing bonds in order to make a new issue of bonds covering the whole projected line from Montreal to Georgian Bay. C. N. Armstrong, Vice President, is reported to have stated that bondholders had never attempted to sell their holdings. Negotiations were in progress with another railway for the enlargement of the undertaking, and also with a shipping company which proposed to put a line of steamers on the Great Lakes, and from Montreal to Great Britain to be operated in connection with the line.

**Grand Trunk Pacific Ry.**—A press dispatch from London, Eng., states that an announcement was made there recently that an issue of $10,000,000 of seven year 5% notes would be placed on the market at 97, within a few days thereafter.

**Grand Trunk Ry.**—The Dominion Parlia-

ment is being asked to confirm an agreement between the G.T.R. and the Canada Atlantic Ry. for the amalgamation of the two companies, under the title of the G.T.R. Co., and to authorize the issue by the G.T.R. of such additional amounts of stock as may be necessary for the carrying out of the agreement.

Application is also being made for an act providing for the holding of one annual general meeting a year, and the submission thereto of the accounts for the entire year, instead of half yearly meetings as at present; authorizing the directors to pay interim dividends if thought advisable, and authorizing the creation of an additional amount of 4% consolidated debenture stock, the annual interest charge on which shall not exceed £100,000.

**Kettle Valley Ry.—Canadian Pacific Ry.**—A duplicate of an agreement between these companies was deposited with the Secretary of State at Ottawa, Nov. 22.

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

**Temiscouata Ry.**—Net earnings for October, $2,161. Aggregate for four months ended Oct. 31, $15,095.

**Timiskaming and Northern Ontario Ry.**—The Ontario Government has received $250,000 from the Treasurer of the T. and N.O. Ry. representing the net earnings for the financial year, less an amount reserved for working capital. For 1912 the Government received $510,000 and in 1911 $515,000 from this source. The decrease in the net earnings is due to decreased freight traffic, owing to smaller ore and coal shipments, reduction in mining royalties, and increased working expenses.

The Ontario Government has received payment of $2,134,000, the subsidy voted by the Dominion Parliament.

**White Pass and Yukon Route.**—Gross earnings from Jan. 1 to Nov. 14, $1,075,202, against $1,098,822 for same period 1912.

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**Railway Cartage Charges on Eastern Lines.**—In connection with the arrangement by which the railway companies recently gave notice that giving cartage service as hitherto, would expire on Oct. 1, 1913, the Board of Railway Commissioners gave a hearing to a number of the eastern boards of trade, during December, at which the railway companies definitely announced that they would not continue the cartage service under the terms and conditions prevailing. It was announced Dec. 18, that the railway companies, in view of the urgent demand of the merchants in different sections of the country, and their voluntary offer through the boards of trade to pay the exact cost of cartage, would continue the present cartage arrangements until further notice.

**G. T. Pacific Ry. Regina-Minneapolis Route.**—Negotiations are reported to be in progress between the G.T. Pacific Ry., the Great Northern Ry. and the Chicago, Burlington and Quincy Ry., for the establishment of a through service between Regina, Sask., and Chicago, via Minneapolis. The run would be over the G.T. Pacific Ry. from Regina to the International boundary, over the Great Northern Ry. to Minneapolis, thence over the C.B. and Q. Ry. to Chicago. In the event of the arrangement being made the new service will, it is said, be started in the spring.

# Steam Railway Track Laid in 1913.

In pursuance of its annual practice Canadian Railway and Marine World issued circulars on Dec. 1, to all railway companies in Canada, asking information as to new track laid during 1913. The following table gives a preliminary statement of the new track laid. In a number of cases the figures given have been estimated either by the railway companies, or in our own offices, pending the receipt of the final figures for the year. Estimated figures are distinguished by an asterisk. The total new single track laid, 3,358.50 miles, is largely in excess of previous years, the figures for 1912 being 2,179.09 miles, and for 1911, 1,851.98 miles.

| | Miles. | Miles. |
|---|---|---|
| **Algoma Central Ry.—** | | |
| Oba to Hearst, Ont. | | 49.00 |
| **Algoma Eastern Ry.—** | | |
| Mileage 79 to Little Current, Ont. | | 6.57 |
| **Canadian Northern Ontario Ry.—** | | |
| Between Montreal and Hawkesbury | 10.00 | |
| Between Ottawa and Capreol | 120.00 | |
| Between Ruel and Port Arthur | 406.00 | |
| Between Sydenham and Ottawa | 54.00 | |
| | | 590.00 |
| **Canadian Northern Ry.—** | | |
| Manitoba— | | |
| Greenway extension | 15.33 | |
| Oakland extension | 11.48 | |
| Gross Isle extension | 22.80 | |
| Deerfield spur | 12.50 | |
| Saskatchewan— | | |
| Delisle Jct. westerly | 31.48 | |
| Delisle southerly | 5.61 | |
| Swift Current line | 55.85 | |
| Prince Albert-Battleford line | 51.95 | |
| Moose Jaw extension | 1.85 | |
| Battleford north westerly | 17.10 | |
| Alberta— | | |
| Main line to Yellowhead Pass | 143.31 | |
| Onaway north westerly | 30.40 | |
| Saskatoon-Calgary line | 26.09 | |
| Vegreville-Calgary line | 12.64 | |
| Brazeau line | 42.57 | |
| | | 480.96 |
| **Canadian Northern Pacific Ry.—** | | |
| Yellowhead westerly | 5.00 | |
| Cisco to Hope | 62.00 | |
| Portions between steel bridges, Cisco to Kamloops | 9.00 | |
| Cottonwood to Kamloops | 123.00 | |
| New Westminster to Steveston | 12.00 | |
| | | 211.00 |
| **Canadian Pacific Ry.—** | | |
| Campbellford, Lake Ontario and Western Ry., Glen Tay to Agincourt, Ont. | 182.60 | |
| Manitoba— | | |
| Snowflake west | 10.00 | |
| Virden-McAulay line | 23.00 | |
| Boissevain-Lauder line | 35.00 | |
| Saskatchewan— | | |
| Estevan north west | 47.00 | |
| Kerrobert north east | 22.00 | |
| Swift Current-Bassano | 60.80 | |
| Weyburn-Stirling line | 162.00 | |
| Alberta— | | |
| Suffield south west | 32.30 | |
| Gleichen-Shepard | 25.00 | |
| *Alberta Central | 40.00 | |
| Lacombe branch extension | 8.00 | |
| British Columbia— | | |
| Kootenay Central extension | 19.70 | |
| Whitewater to Kalso | 16.00 | |
| | | 683.40 |
| ***Dominion Government Ry.—** | | |
| To Hudson Bay Pass and mileage Man. | 130, | 130.00 |
| **Esquimalt and Nanaimo Ry.—** | | |
| McBride Jct. to Big Qualicum | 15.80 | |
| Osborne Bay Jct. to Crofton | 3.20 | |
| | | 19.00 |
| **Edmonton, Dunvegan and B.C. Ry.—** | | |
| Mileage 23 to Mirror Landing, Alta. | | 88.00 |
| **Fredericton and Grand Lake Coal and Ry. Co.—** | | |
| Mileage 11 to 24, N.B. | 13.00 | |
| Marysville Jct. to Marysville | 2.84 | |
| | | 15.84 |
| ***Grand Trunk Pacific Ry.—** | | |
| Main Line in B.C. | 180.00 | |
| Branch lines in Manitoba, Saskatchewan and Alberta | 420.00 | |
| | | 600.00 |
| **Intercolonial Ry.—** | | |
| Georges River to Sydney Mines | | 9.80 |
| ***Kettle Valley Lines—** | | |
| On several sections | | 50.00 |
| **National Transcontinental Ry.—** | | |
| In Province of Quebec | 88.26 | |
| In Province of Manitoba | 2.22 | |
| | | 90.48 |
| ***Pacific Great Eastern Ry.—** | | |
| North Vancouver | | 3.00 |
| **Quebec Central Ry.—** | | |
| St. Sabine to St. Camille | | 5.00 |
| **St. John and Quebec Ry.—** | | |
| Gagetown to Fredericton, N.B. | 29.00 | |
| Fredericton northerly | 18.00 | |
| Mileage 21 south of Woodstock to Woodstock, N.B. | 21.00 | |
| Woodstock northerly | 24.00 | |
| | | 92.00 |
| **Sydney and Louisburg Ry.—** | | |
| Morien Jct. to Morien, N.S. | 2.00 | |
| Waterford Lake to Colliery 17 | 1.00 | |
| | | 3.00 |
| **Timiskaming and Northern Ontario Ry.—** | | |
| Montreal River to Elk Lake, Ont. | 6.00 | |
| Iroquois Jct. to Iroquois Falls | 6.40 | |
| | | 12.40 |
| **Vancouver, Victoria and Eastern Ry.—** | | |
| Kilgard to Sumas Landing | | 5.05 |
| Total | | 3,344.50 |

In addition to the above new lines the C.P.R. laid second track as follows:

| | Miles. | Miles |
|---|---|---|
| *Quebec—Farnham section | 3.00 | |
| Ontario—Islington to Guelph Jct. | 29.00 | |
| Manitoba—Bergen north east | 20.00 | |
| Manitoba—Kemnay-Virden | 35.00 | |
| Saskatchewan—Whitewood-Grenfell | 8.00 | |
| Saskatchewan—Indian Head-Regina | 21.60 | |
| Saskatchewan—Regina-Pasqua | 12.00 | |
| Saskatchewan—Caron-Java | 66.70 | |
| British Columbia—Ruby Creek to Hammond | 59.00 | |
| | | 254.30 |

The Toronto Hamilton and Buffalo laid second track on 5.90 miles from Welland to Fenwick, Ont., and the Vancouver, Victoria and Eastern Ry. 7.12 miles from Ardley to Still Creek, B.C., making a total of 267 miles of second track laid during 1913.

On the Minneapolis, St. Paul and Sault Ste. Marie Ry., a C.P.R. subsidiary line in the United States, 97.35 miles of track was laid as follows:—

| | Miles. |
|---|---|
| Ambrose, N.D., to Whitetail, Mont. | 85.78 |
| Ironhub, Iron Mountain, Minn. | 8.21 |
| Range Jct. to Riverton, Minn. | 3.36 |
| Total | 97.35 |

The Detroit and Huron Ry., a subsidiary of the G.T.R. in the United States, laid 14.50 miles of track, from near Cass City, to Bad Axe, Mich., 14.25 miles, and from West Bay City to Bay City Terminal, Mich., 1.25 miles.

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**Passenger Meetings at Buffalo.**—The annual meetings of the Niagara Frontier Summer Rate Committee and the Great Lakes and St. Lawrence River Rate Committee will be held at the Lafayette Hotel Buffalo, N. Y., in January. The rate representatives of the Niagara Frontier committee will meet on January 20 and 21 at 9 a.m. for compilation of fares, etc., and the full committee will meet on January 22 at 10.30 a.m. The Great Lakes and St. Lawrence River Rate ing. The International Water Lines Passenger Association will meet on Jan. 21, at 4 p.m.

**Calgary Storage Elevator.**—The Minister of Trade and Commerce announced at Ottawa, Dec. 12, that tenders would shortly be called for the construction of a Government owned interior storage elevator at Calgary, Alta. It is said to be intended that construction shall commence as early as possible in the spring, that the capacity will be about 2,500,000 bush., and that the type to be followed is that which was adopted for similar elevators at Moose Jaw and Saskatoon.

The Dominion Government telegraph line between Vancouver and Newport, B.C., the terminus of the Pacific Great Eastern Ry., has been completed and opened for commercial business.

# Railway Development.

## Projected Lines, Surveys, Construction, Betterments, Etc.

**Alberta and Great Waterways Ry.**—Press reports from Edmonton, Alta., dated Dec. 4, state that two engineering parties are in the field completing location surveys for the line. Construction will be started, it is stated, at a point on the line of the Edmonton, Dunvegan and British Columbia Ry., 12 miles north of Edmonton. J. D. McArthur, Winnipeg, will build the line. (Dec., 1913, pg. 573.)

**Alberta Metropolitan Ry.**—We are officially advised that right of way plans have been approved for about 16 miles of this projected railway, and that it is expected to build this year about five miles from the Calgary city limits, through Calgary Jct., to connect with the C.P.R. Ogden shops. A contract for four miles of grading has been let to the Dominion Co-operative N. T. and Realty Co., Calgary, and this is nearly completed. The company has an authorized capital of $500,000, the directors being:—W. H. Clapperton, Toronto; W. J. C. Madden, W. T. D. Lathwell, R. P. Madden, Calgary. (Dec., 1913, pg. 592.)

**Alberta, Peace River and Eastern Ry.**—A general meeting of shareholders was called to be held at Edmonton, Alta., Dec. 29, to consider matters relating to the construction of the line. Lord Farrar, London, Eng., is President. (Dec., 1912, pg. 604.)

H. Muskett King, Vice President, and H. H. Williams, Chief Engineer, who have been in England for some time are expected in Edmonton about Dec. 31. A recent cablegram stated that the meeting of shareholders called to be held in Edmonton, Dec. 29, would be adjourned to London, Eng., where the stockholders reside. The cablegram also said that financial arrangements have been completed for starting construction early in the year.

**All Red Line Ry.**—In connection with this projected railway in Canada, the associated British interests are promoting the building of a line to connect existing railways in Ireland with Black Sod Bay, from which point it is proposed to run steamships to the Newfoundland coast, or to the starting point of the Canadian line. A contract is reported to have been signed in London, Eng., for the building of wharves and other harbor works at Black Sod Bay. H. C. Long, Boston, Mass., is said to be engineer in charge of the work. (Dec., 1913, pg. 579.)

It is reported in a press dispatch from Prescott, that the principal promoter of this railway project in Canada is F. A. Knapp; that the company will be capitalized at $100,000,000, and that large New York and London, Eng., financial interests will be associated with the project. Mr. Knapp is a barrister formerly living in Toronto, and was the inventor of the Knapp roller boat, built in Toronto, about 15 years ago, which did not prove a success.

**Bassano to Richmond, Alta.**—We are officially advised that the press reports to the effect that a light railway was to be built under the recent Light Railways Act of the Alberta Legislature, from Bassano through the Irrigation Block to Richmond, by a subsidiary of the C.P.R., are entirely without foundation. (See Alberta proposals for Light Railways, Dec., 1913, pg. 573.)

**Burrard Inlet Tunnel and Bridge Co.**—At a meeting of directors in Vancouver, B. C., Dec. 3, it was reported that the Provincial Government had under consideration the question of taking over the charter and building the bridge as a provincial work. Representatives of certain of the municipalities urged that the directors should invite tenders at once on the plans prepared by the company's consulting engineer. The plan suggested by certain interests to the Provincial Government is of a different type to that proposed by the company, and is estimated to cost $1,000,000. (Dec., 1913, pg. 573.)

Application is being made to the Dominion Parliament for an extension of time for the building of its authorized lines of railway, bridge and tunnel at Vancouver, B. C.

**Central Provinces Ry.**—The Saskatchewan Legislature has incorporated a company with this title to build the following lines:—From Regina southeasterly to the eastern boundary of the province between townships four, five and six; from Regina northwesterly to townships 27, 28 or 29, ranges 4, 5 or 6, thence northerly to Saskatoon; from Regina northerly to Prince Albert, and from Saskatoon northeasterly to the eastern boundary of the province between townships 52, 53 or 54. The provisional directors are:—J. D. McArthur, W. P. McDougall, D. W. Campbell, R. A. Hazelwood, J. K. McLellan.

**Dominion Atlantic Ry.**—We are officially advised that a contract has been let to Kirk and Cook, North Sydney, N.S., for building a line from Centreville Jct., on the Cornwallis Valley branch, to Weston, N.S., 14.79 miles. It is proposed to build a line from Sissiboo Falls to Weymouth, 8.5 miles, but the plans for this have not yet been approved. G. G. Hare, Kentville, N. S., is Engineer. (Oct., 1913, pg. 475.)

**Edmonton, Dunvegan and British Columbia Ry.**—Edmonton press reports state that it is expected to have a regular train service in operation from Edmonton to Narrow Landing, on the Athabasca River, early in January. (Dec., 1913, pg. 573.)

**Gananoque and Arnprior Ry.**—Application is being made to the Ontario Legislature for authority to build a branch from the projected main line between Gananoque and Arnprior, Ont., in the township of Rear of Leeds and Lansdowne to Ottawa. J. C. Judd, Ottawa, is the solicitor. The company was incorporated in 1913 to build a railway to be operated by steam or any other motive power from Gananoque to Arnprior, Ont. The provisional directors are:—G. E. Fauquier, J. C. Judd, W. T. Sampson, W. J. Gibson, F. B. Taber, D. W. Green, J. Kenny.

**Ha Ha Bay Ry.**—The Quebec Legislature has extended the time for the building of previously authorized lines, and for building a branch line from a point on the existing line to the St. Maurice River, following the height of land. (Dec., 1913, pg. 575.)

**Joliette and Lake Manuan Colonization Ry.**—Application is being made to the Dominion Parliament for an extension of time for the building of the projected lines from Joliette to the G.T. Pacific Ry., and from Joliette to Montreal, Que. Beament and Armstrong, Ottawa, are the solicitors. (Aug., 1912, pg. 412.)

**Kettle Valley Lines.**—J. J. Warren, President, who was in Victoria, B. C., in conference with the Provincial Government, in connection with the construction of the line, Dec. 3, is reported as stating in an interview as follows:—Beginning at Midway, the present western terminus on the line, 75 miles of steel have been laid westerly to the summit between the Kettle River and Okanagan Valleys. A small trestle is being erected there, and on its completion track will be laid to Canon Creek, mileage 83. A number of trestles have to be built in the Canon Creek district, which will delay track laying in that vicinity until the spring. The grading is finished, with the exception of some cuts and one tunnel, through to Penticton. This work it is expected to have completed and ready for track laying by Mar. 1. It was expected to have about 15 miles of steel laid easterly from Penticton by Dec. 31, leaving 35 miles to be laid to connect with the track end at mileage 75. Track has been laid 30 miles westerly from Penticton, and was expected to have been laid to Osprey Lake, 10 miles farther on, by Dec. 31. Very little work has been done between Osprey Lake and Otter Summit, mileage 105 west of Penticton, the location not having been finally approved. As soon as the route has been settled, a contract will be let, and the work completed, it is expected, by the fall. The line is in operation from Otter Summit to Merritt, 30 miles. At Coldwater Jct., 25 miles south of Merritt, the line branches off in the direction of the Coquihalla Summit. On this section 13 miles of grading have been completed, and 11 miles of steel have been laid. Between the Coquihalla Summit and the Fraser River, McArthur Bros. have over 1,000 men at work. The work of building the bridge across the Fraser River at Hope, to connect with the C. P. R., is well in hand, and it is expected to have it completed by the end of the year. At Merritt, where connection is made with the Nicola, Kamloops and Similkameen Ry., a C. P. R. branch, spur lines will be built during this year or next to give connection with the coal mines. The divisional shops and other buildings have been completed. (Dec., 1913, pg. 574.)

**Lake Erie and Northern Ry.**—Construction on this line between Brantford and Galt, and Brantford and Port Dover, Ont., was suspended Nov. 28. W. P. Kellett, Chief Engineer, subsequently went to Montreal, and on his return stated that arrangements were being made to resume work shortly. The only place where work did not cease was in Brantford at Lorne Bridge. Near this point there is some difference with the city as to the protection of the terrace. G. A. Mountain, Chief Engineer of the Board of Railway Commissioners, was in the city, Dec. 10, in consultation with the City Engineer and Mr. Kellett on the matter, and a satisfactory understanding was reached. (Dec., 1913, pg. 574.)

**Lake Huron and Northern Ontario Ry.**—The old Bruce Mines and Algoma Ry. built a line from Bruce Mines, Ont., for about 13 miles northerly to some copper mines, and grading was completed for some six miles beyond that point, before it fell into financial difficulties. The property of the old company was sold, and the purchasers obtained incorporation under the above title from the Ontario Legislature, with power to extend the line to the National Transcontinental Ry. Press reports state that work has been started cleaning up the six miles of grading done beyond track end. It is expected that plans for the extension of line northerly to the N. T. Ry. will shortly be submitted for approval by the Board of Railway Commissioners. (July, 1913, pg. 331.)

**Moncton and Northumberland Strait Ry.**—We are officially advised that preliminary surveys have been completed for the projected line from Buctouche to Loggieville, N. B., and the location survey from Buctouche to St. Louis, 27 miles. It is expected to have the location survey, together with the profiles of all the bridge sites, borings of the

rivers, lay outs, etc., required by the Board of Railway Commissioners, completed by Feb. E. G. Evans, Hampton, N. B., is Chief Engineer. (Dec., 1913, pg. 574.)

**Montreal and Lake Victoria Ry.**—The Dominion Parliament is being asked to extend the time for the building of the line authorized by chap. 122 of the Statutes of 1912. E. Rodier, Montreal, is Secretary. (June, 1913, pg. 301.)

**Montreal and South Western Ry. and Power Co.**—The Quebec Legislature is being asked to extend the time within which the company may start construction of the works authorized by chap. 82 of the statutes of 1911. The company has power, among other things, to build a railway to be operated by steam, electricity or any other motive power in the counties of Laprairie, Beauharnois, Huntingdon and Caughnawaga, and particularly from Adirondack Jct., on the C.P.R., to the international boundary at St. Francis; from Adirondack Jct., on the New York Central Ry., to Dundee, in Huntingdon county. H. A. Beique, Montreal, is solicitor. (June, 1911, pg. 557.)

**Pacific and Hudson Bay Ry.**—We are officially advised that survey work has been completed for the present, that arrangements are being made to start construction on the first 30 miles of the line early in the spring, that route maps have been filed, and that arrangements have been made for securing the right of way for the greater part of the contemplated construction. The portion of the right of way for which negotiations are in progress is that through the Bella Coola Indian Reserve. (May, 1913, pg. 220.)

**Pacific Great Eastern Ry.**—It is expected that a train service will be put in operation between North Vancouver and West Vancouver, B. C., Jan. 1; and by June 1, as far as Horseshoe Bay, near Newport. The lines being operated from Newport for about 12 miles, and it is expected to be able to run trains as far as Lillooet by the fall, and to have the entire line to Fort George completed by the end of 1915. It is not intended to have the piece of line along Howe Sound into Newport completed until 1915, as there is a water route between Vancouver and Newport, which can take care of the existing traffic.

The company is negotiating with the Provincial Government with a view to securing a considerable area of the tide flats at Newport, reclaiming them for railway purposes. Dec., 1913, pg. 574.)

**Prince Edward Island Ry.**—The line to be built to Carleton Point in connection with the carferry terminals under construction there, will start from the existing line about 1.5 miles from Cape Traverse. It will be about three miles long. Construction will, we are officially advised, probably be gone on with at once. (Dec., 1913, pg. 574.)

**Quinze and Blanche River Ry.**—We are officially advised that this railway was built only for a very short distance from the Quinze River, a tributary of the Ottawa River, to Quinze Lake, Que. It was built as a lumbering line, but is not now being operated. (July, 1913, pg. 481.)

The Dominion Parliament is being asked to extend the time for the building of the railway authorized by chap. 123 statutes of 1906-07, as amended by chap. 27, statutes of 1908-09, and to confirm the section already built, or partially built, between the Devil's Eddy at the Third Chute of the Des Quinze River and the head of navigation on Lake Timiskaming. Orde, Powell and Lyle, Ottawa, are solicitors for applicants.

**Regina and Saskatoon Ry.**—The Saskatchewan Legislature is being asked to incorporate a company to build a railway from Regina to Saskatoon, Sask. Anderson, Bagshaw and Amyot, Regina, are the solicitors.

**Roberval-Saguenay Ry.** — The Quebec Legislature has granted an extension of two years within which that company may build its projected lines; and has authorized the building of a line of 250 miles, from the Ha Ha Bay Ry., to the St. Maurice River. (Dec., 1913, pg. 575.)

**Saskatchewan Central Ry.**—The Dominion Parliament is being asked to grant an extension of time for the construction of the lines authorized to be built by chap. 160 of the Statutes of 1910. Smith and Johnston, Ottawa, solicitors. (June, 1913, pg. 302.)

**Shefford, Bagot and Missisquoi Ry.**—Application is being made to the Quebec Legislature for the incorporation of a company with this title, to build a railway from the International Boundary, between Quebec and Vermont, in the parish of St. George, to a junction with the Intercolonial Ry. between Bagot and St. Eugene, in Bagot County, and to build a branch line from Adamsville to the parish of St. Armand, and another from Roxton pond to Richmond. J. E. Runnels, Worcester, Mass., is Chief Engineer.

The provisional directors are W. H. Robinson, Granby, Que.; A. R. McMaster, Montreal; J. G. Gibson, Dunham, Que.; A. W. Runnells, Springfield, Mass.; J. E. Runnells, Worcester, Mass.

**Simcoe, Grey and Bruce Ry.**—Negotiations are reported to be in progress between the company and the G. T. R., under which the latter proposes to take over the line between Owen Sound and Meaford, Ont., when built. The directors have asked the G. T. R., to give fuller details of its proposals, particularly in regard to what running rights would be given to other railways. Jas. McLaughlin, A. G. MacKay, B. Allen, C. Eaton, Owen Sound, are provisional directors. (See Owen Sound to Meaford, Dec., 1913, pg. 574, and S., G. & B. Ry., Dec., 1912, pg. 605.)

**Seward to Yukon.**—The Territories Committee of the U.S. Congress reported, Nov. 27, in favor of the Government building and operating a railway from Cordova or Seward, on the Alaskan Pacific Coast, to the Upper Yukon River, 722 miles.

**Timiskaming and Northern Ontario Ry.**—The plans and specifications for the reconstruction of the line from North Bay to New Liskeard, are reported to be fully prepared, and is expected that now the Dominion Government has paid over the subsidy amounting to $2,134,080 voted last session, the Provincial Government will authorize the Commission to go ahead with the work.

**Toronto, Hamilton and Buffalo Ry.**—The Board of Railway Commissioners has decided that it has full authority to issue an order to compel the company to divert its present entrance into Hamilton, via Hunter St., and to adopt in conjunction with the G. T. R., and the Canadian Northern Ry., a common location in the north end of the city. The city desired the company to eliminate level crossings, and the company proposed to do this by elevating its tracks. The city said this would be much more costly than depressing them, which the company refused to consider. Then the city put forward a plan for common entrance into the city for the T. H. and B. Ry., and the C. N. R. The company claimed that the Board of Railway Commissioners had no power to order it to move from its existing location, although it might order the tracks to be either elevated or depressed. (Dec., 1913, pg. 575.)

**Toronto, Barrie and Orillia Ry.**—At a special meeting of the Barrie, Ont., Town Council recently a resolution was passed approving a provisional agreement granting the Toronto, Barrie, and Orillia Ry. Co. a 25 years franchise for building an electric railway in the town, the company's assessment for general taxation to be fixed at $15,000. The company proposes to build a line of about six miles from near Utopia or Midhurst stations on the C. P. R. Toronto-Sudbury line into and through Barrie. Construction will, it is said, be started in April, and completed by Sept., 1915. A by-law approving of the agreement will be voted on by the ratepayers at the municipal elections, Jan. 5.

**Victoria, B.C.**—The rails recently required by the Victoria, B.C., City Council, were for building a railway on the pipe line grade for the new water supply. The pipe line will have a length of 27.5 miles from the Humpback reservoir to Sooke Lake, along the mountain side. The railway is to be used for transporting concrete pipe and other materials. The gauge is 2 ft., and the gradient 1 ft. in 1,000. There are a great many curves, and several high trestle bridges have had to be built. Part of the line is in operation. C. H. Rust, City Engineer and Works Commissioner, has charge of construction.

**Wabash Rd.**—Negotiations have been opened with the London, Ont., City Council by the Wabash Rd., for running rights over the London and Port Stanley Ry., from St. Thomas to London, Ont.

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**The "Right Side" for Traffic in British Columbia.**—This question was discussed at a meeting of the Progress Club at Vancouver, Dec. 10, particularly as it affects the British Columbia Electric Ry. At present this railway operates its line according to the British rule of the road, under which vehicle traffic of all kinds keeps to the left. The club advocates the making universal of the rule of the road as used throughout the United States and some parts of Canada. F. R. Glover, representing the company, while sympathizing with the suggestion pointed out that the change would have to be made in one night. The entire line and rolling stock were constructed for left hand operation, and it would be a most expensive matter to make the change. A full four way crossing would cost $22,000, and as the number of such and other crossings on the line is large, the cost of changing the track would be about $290,000. It would take a year to change the cars, and the cost would be about $300,000, to say nothing of the inconvenience that would be caused by the withdrawal of cars to be altered. To purchase new rolling stock for the mainland lines would cost $2,471,000. The other expenses might run to $650,000. It would, therefore, be easily seen that the suggested change would be a most expensive one to the company.

**The Quebec Industrial Co.**—Application is being made to the Quebec Legislature for the incorporation of a company with this title with a capital of $2,000,000 and offices in Quebec. The powers asked include, according to a statement made to the Legislature, "everything in the industrial and commercial calendar except banking and insurance." Among the things which it is specifically mentioned the company desires to do is to build or acquire docks, wharves, warehouses, elevators, etc., to build railways, and to carry on an express business. The provisional directors are: E. Roy, R. Langlois, O. Morin, advocates, Quebec.

**The Quebec and Saguenay Ry. Co.** applied in the Quebec courts recently for the dismissal of an ex parte motion for judgment in favor of M. J. O'Brien and others, the contractors, for building the line, amounting to $839,511.18. The application was refused.

## Railway Rolling Stock Notes.

The G.T.R. is in the market for 110 passenger cars, 500 flat cars and 500 stock cars.

The Pacific Great Eastern Ry. is reported to have ordered two motor cars in San Francisco, Cal.

The Intercolonial Ry. has received 5 consolidation locomotives, nos. 266 to 270, from Montreal Locomotive Works.

The G.T. Pacific Ry. has received two colonist cars, nos. 3038 and 3039, from the Canadian Car and Foundry Co.

The G.T.R. has ordered 500 steel frame stock cars, and 10 steel frame baggage cars, from National Steel Car Co.

The Pacific Great Eastern Ry. has ordered 44 steel frame box cars, and 67 steel underframe flat cars, from National Steel Car Co.

The Minneapolis St. Paul and Sault Ste. Marie Ry. has ordered 6 passenger cars, 2 parlor cars and 2 buffet observation cars, from Barney and Smith Car Co.

The Intercolonial Ry. has ordered 200 box cars and 20 vans, from Nova Scotia Car Works; and 6 consolidation and 5 switching locomotives, from Canadian Locomotive Co.

J. D. McArthur and Co., contractors for the Dominion Government railway to Hudson Bay, are reported to have ordered six mogul locomotives from Canadian Locomotive Co.

The C.P.R., between Oct. 31 and Nov. 30, ordered the following rolling stock from its Angus Shops,—12 steel baggage and express cars, 25 steel first class cars, 3 horse express cars, 60 ft. long, and 1 horse car, 72 ft. long.

The Union Carbide Co. of Canada has ordered one four wheel saddle tank locomotive, with cylinders 15 by 24 ins., 44 ins. driving wheels, and weight in working order, 44 tons, from Canadian Locomotive Co., for delivery in February.

The British Columbia Equipment Co. has ordered one four wheel saddle tank locomotive, with cylinders 10 by 14 ins., 28 ins. driving wheels, and weight in working order, 14 tons, from Canadian Locomotive Co., for delivery during January.

The Canadian Northern Ry., between Nov. 13 and Dec. 12, received the following additions to rolling stock,—4 cabooses, from its Winnipeg shops; 125 box cars and 3 snow ploughs, from Canadian Car and Foundry Co., and 20 box cars, from National Steel Car Co.

The Confederation Construction Co. has ordered one four wheeled saddle tank locomotive, with cylinders 13 by 18 ins., 36 ins. driving wheels, and weight in working order, 30 tons, from Canadian Locomotive Co., for delivery during January, for use on its Welland Ship Canal contract.

Morley Donaldson, Vice President and General Manager, G.T. Pacific Ry. is reported to have stated recently, that the company was taking up the question of oil fuel for locomotives, and that he expected within two years, locomotives consuming oil fuel would be in operation on the Mountain Division.

The G.T.R. has received 18 mikado locomotives, 63in. wheels, nos. 570 to 587, from Montreal Locomotive Works; 691 box cars from Canadian Car and Foundry Co.; 313 box cars from Eastern Car Co.; 479 box cars from Western Steel Car and Foundry Co., and 286 gondola cars from Pressed Steel Car Co.

The Canadian Locomotive Co. has recently delivered 18 ten wheel locomotives, class M3d, with cylinders 23 by 26 ins., 188,600 lbs. weight in working order, completing an order of 25, to the C.P.R.; and 5 six wheel switching locomotives, class O—10b, with cylinders 19 by 26 ins., 124,600 lbs. weight in working order, to the Canadian Northern Ry.

The C.P.R., between Oct. 31 and Nov. 30, received the following additions to rolling stock,—231 steel frame box cars, 2 horse cars, 2 buffet parlor cars, 7 single track flangers, and 3 locomotives class U3, from its Angus Shops; 356 steel frame box cars from Canadian Car and Foundry Co.; 8 locomotives, class D10, from Canadian Locomotive Co., and 366 steel frame box cars, from Barney and Smith Car Co.

The C.P.R. Angus Shops, Montreal, during five weeks last autumn completed 233 new cars, comprising tourist sleepers, diners, freight cars and conductors' vans, and also turned out 7 new locomotives ready for service. If the Angus Shops had no repairs to make, if the entire staff of 7,000 men were available, a complete train could be turned out daily by this plant, which is the largest of its kind in Canada and one of the largest on this continent.

The Intercolonial Ry. has ordered 5 consolidation and 5 switching locomotives, from Canadian Locomotive Co. Following are the chief dimensions,—

| | Consolidation. | Switching. |
|---|---|---|
| Weight on drivers | 208,000 lbs. | ..... |
| Weight, total | 236,000 lbs. | 150,000 lbs. |
| Wheel base, rigid | 16 ft. 6 ins. | ..... |
| Wheel base, engine, total | 25 ft. 5 ins. | 12 ft. |
| Wheel base, engine and tender | 69 ft 11 ins. | 40 ft 7 ins. |
| Heating surface, firebox | 207 sq. ft. | 157.5 sq. ft. |
| Heating surface, tubes | 1885 sq ft. | 2300.0 sq. ft. |
| Heating surface, total | 2092 sq. ft. | 2475.5 sq. ft. |
| Driving wheels, diar. | 63 ins. | 51 ins. |
| Driving wheel centres | Cast steel | Cast iron |
| Driving journals | 10 by 14 ins. | 8½ by 11 ins. |
| Cylinders, diar. and stroke | 24 by 32 ins. | 21 by 26 ins. |
| Boiler, type | Straight top radial stay. | |
| Boiler pressure | 180 lbs. | |
| Tubes, no. and diar. | 227—2 ins. | 272—2 ins. |
| | 30—5⅝ ins. | 28—5⅝ ins. |
| Tubes, length | 15 ft. 2¾ ins. | 12 ft. 5 ins. |
| Brakes | Westinghouse American | |
| Superheaters | Schmidt type A | |
| Valve gear | Walschaert | |
| Weight of tender loaded | 140,000 lbs. | 90,000 lbs. |
| Capacity, water | 6,500 galls. | 3,800 galls. |
| Capacity, coal | 10 tons | 6 tons |
| Tank, type | Water bottom | Sloping back |
| Truck, type | Outside equalizing | Arch bar |
| Truck wheels, diar. | 34 ins. | 34 ins. |
| Wheels, material | W. I. centre steel tired | |
| Journals | 5½ by 10 ins. | 4½ by 8 ins. |
| Brake beams | Steel I section | |

Following are chief details of the six-wheel switching locomotive which the Dominion Dredging Co. is having built by the Montreal Locomotive Works, as mentioned in our last issue:—

| | |
|---|---|
| Cylinder, diar. and stroke | 17 by 24 ins. |
| Tractive power | 23,100 lbs. |
| Factor of adhesion | 4.33 |
| Wheel base, rigid | 10 ft. 8 ins. |
| Wheel base, engine and tender | 35 ft. |
| Weight in working order | 100,000 lbs. |
| Weight, engine and tender | 155,000 lbs. |
| Boiler, type | Straight top |
| Boiler, diar. first ring | 54 ins. |
| Boiler, working pressure | 180 lbs. |
| Firebox, length and width | 90 by 34¼ ins. |
| Crown staying | Radial |
| Tubes, no. and diar. | 180, 2 ins. |
| Tubes, length | 10 ft. 4 ins. |
| Heating surface, tubes | 966 sq. ft. |
| Heating surface, firebox | 121 sq. ft. |
| Heating surface, total | 1,087 sq. ft. |
| Grate area | 21.4 sq. ft. |
| Wheels, diar. | 46 ins. |
| Wheels, material | Cast iron |
| Wheels, tender, diar. | 28 ins. |
| Driving journals, Main, 8 by 9 ins.; others 7 by 9 ins. | |
| Tender truck journals | 3¾ by 7 ins. |
| Journal boxes | Cast iron |
| Brakes | Westinghouse American |
| Tank capacity | 2,500 U.S. gals. |
| Coal capacity | 3 tons |

With reference to the 130 passenger cars for which the G.T.R. is in the market, we are officially advised that the number is divided as follows,—67 first class, 25 baggage, 8 mail, 5 combination first class and baggage, 4 dining, 5 parlor, 16 suburban. The cars are to be of steel frame construction 74 ft. over end sills, except the baggage and mail cars which will be 61 ft. over end sills. They will have substantial steel under frames, with sides of steel girders and substantial side sill Z bars and heavy dropper bar under window sills and 3 by 3½ by ⅜ ins. angles for side plates. Steel carlines are to be rivetted to the side plate angles thus making a rigid steel frame construction. The entire vestibules are to be of steel of built up construction, and the width will be increased from 2 ft. 5 ins. to 2 ft. 9¼ ins.; trap doors will be so arranged that they cannot be opened before the vestibule side door has been opened, and grab irons are to be placed on the bottoms of the trap doors as well as on the buffer beams. Each of the cars will be equipped with the Coleman bolster locking device, which was fully described in Canadian Railway and Marine World of Jan., 1913. The insides of the cars will be finished in Mexican mahogany.

## Grand Trunk Railway Betterments, Construction, Etc.

**Stratford Station and Yards.**—The new station at Stratford, Ont., has been practically completed, and the staffs of the several departments have taken up their new quarters. The majority of the tracks in the yard have been rearranged, and have been raised 3 ft. above the old level in the vicinity of the new station, and to meet this the bridge across Wellington St. is being raised. It is not expected, however, to have the entire work in the yards completed until the spring.

Press reports state that plans are being prepared for the building of an additional 20 stalls to the locomotive house, and that work will be started early in the spring.

**The Port Huron Shops.**—Pending decision as to what is to be done in regard to rebuilding the shops at Port Huron, Mich., a number of men have been transferred to the shops at London, Ont., and others have been moved to Chicago, Ill., where temporary premises have been taken for carrying on some of the work formerly done at Port Huron. (Dec., 1913, pg. 582.)

**The Toronto Board of Trade's Traffic** Department, of which T. Marshall is Manager, issued recently its Information Series no. 1, which contains very full information about less than carload merchandise freight service and class rates from Toronto, and shows what an excellent service the railways have under schedule. It also contains information with respect to the proper packing, marking and addressing of freight, preparation and presentation of claims, etc., together with the effective class rates. This is the first publication of its kind in Canada, and it will undoubtedly be of considerable assistance in shipping rooms.

**Cost of Transcontinental Lines.**—J. P. Muller, who testified as an expert before the Board of Railway Commissioners during its recent enquiry into Western freight rates, gave the following figures of capital expenditure on the three transcontinental lines:—Canadian Pacific, total $363,274,900; per mile, $35,126.07. Canadian Northern, total $170,411,188; per mile, $45,669.50. Grand Trunk Pacific, total $110,612,588; per mile, $87,537.66.

It is said that the motor cars on the Toronto Civic Car Lines on the Gerrard St. section cost about $9,500 each and those on the St. Clair Avenue and Danforth Avenue sections about $8,500 each. They were imported from the United States.

## National Transcontinental Railway Construction.

We are officially advised that track was laid during 1913, on 88.26 miles in the Province of Quebec, and on 2.22 miles in Manitoba. The line is now completed so far as track laying is concerned, and G. Grant, Chief Engineer, is said to have recently stated that the entire line will be ready for handing over to the G.T. Pacific Ry. for operation, by the end of this year. On the line east of Quebec to the boundary between Quebec and New Brunswick, there is stated to be only about 10 miles of ballasting to be completed. The work of finishing up the line west of Quebec is being pushed forward with all speed. In regard to the velocity grades, which were established east of Bell River, the Chief Engineer is reported as stating that they will be eliminated before long.

The steel bridge work is not yet finished, contracts for four bridges to replace temporary trestle work having just been let to the Canadian Bridge Co. (Dec., 1913, pg 578.)

## Grand Trunk Pacific Railway Construction.

A train service is being operated regularly on the main line to McBride, B.C., 413 miles west of Edmonton, Alta. The contractor's work trains are running to the second crossing of the Fraser River, 55 miles beyond McBride. It is expected that track laying will be completed into Fort George early in January, and that the track laying gang working easterly from Prince Rupert will have come within 100 miles of Fort George. The grading is all expected to be completed by June 30.

### G. T. Pacific Branch Lines.

The Saskatchewan Legislature has authorized the city of Weyburn to enter into an agreement with the G.T.P. Saskatchewan Ry. for the building of a branch line into the city from the Regina-International boundary branch. The programme for construction during 1914 had not yet been arranged between the Government and the company.

It has been reported to the Saskatchewan Legislature that the surveys for the proposed branch through the territory lying north and west of Moose Mountain, provision for the guaranteeing of bonds for the construction of which has been made by the Legislature, are expected to be completed during the winter. No agreement had been made for the extension of the Moose Jaw Riverside line across the South Saskatchewan River.

The Saskatchewan Legislature has authorized the guaranteeing of the company's securities to the extent of $2000 a mile in addition to the amount already guaranteed, for the construction of the lines named in chap. 4 of the statutes of 1908-09, as amended by chap. 35, 1909, chap. 5, 1909, and chap. 13, 1912, such additional securities to be secured by supplementary mortgages or deeds. It has also authorized the guaranteeing of securities for $1,300,000 in addition to those already guaranteed to provide a railway bridge across the South Saskatchewan River, on the Young-Prince Albert branch and bridges on the Regina-Moose Jaw northwesterly branch, and approaches thereto. The resolutions also provide that the rate of interest guaranteed shall be increased from 4% to 4½%.

A freight service has been put in operation on the line from Regina to Moose Jaw, Sask., and it is expected that a passenger service will soon be operated. On the line northwesterly out of Moose Jaw, track is reported to have been laid to Mawer, 10 miles west of Eyebrow.

Track laying has been completed to the banks of the South Saskatchewan River, on the Young-Prince Albert branch, and sidings laid out. Preparations are being made for the building of a bridge across the river. It is expected that the piers and abutments will be put in during the winter.

The Board of Railway Commissioners has authorized the opening for traffic of the Mountain Park Coal branch, mileage 0 to 30.24. (Dec., 1913, pg. 578.)

The Legislature is further being asked to guarantee the company's 4½% bonds for $15,000 a mile in respect of the construction of the following additional lines:—From a point on the Biggar-Calgary branch to the west bank of the South Saskatchewan River opposite Riverside, 60 miles; from the main line in tp. 36, range 8, west of the third meridian, southwesterly from Saskatoon, 50 miles; from Talmage on the Regina-Boundary branch northwesterly towards Moosomin, 70 miles; and for a 90 mile extension of the Watrous-Swift Current line authorized to be built by par. 2 of the schedule to chap. 14 of the statutes of 1912.

## 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:—

### Rates on Elevator Sundries.

20861. Re complaint of Otis-Fensom Elevator Co. against the proposed rating of 6th class for elevator guides, iron or steel. in supplement 2 to Canadian Freight Classification 15, submitted by Canadian Freight Association for approval, it is ordered that the complaint be dismissed.

### Rates on British Columbia Lumber.

20912. Nov. 25.—Re complaint of Fullerton Lumber & Shingle Co., of Vancouver, that notwithstanding orders 7277 and 9187, the joint rates on lumber, etc., from stations on the Vancouver, Victoria & Eastern Ry. and Navigation Co.'s line to points in British Columbia, Alberta, Saskatchewan, Manitoba, and Ontario, did not come into force until Sept. 22, 1913, although the C.P.R. rates from Vancouver, on which the said joint rates are based, became effective July 10, 1913. It is ordered: 1. The special eastbound tariff rates from Vancouver, published by the C.P.R. from time to time, to apply to carload shipments of lumber, shingles, and articles taking the lumber and shingle rates, shall, with the addition of not more than 1c. per 100 lbs., apply as joint rates from stations between Vancouver and New Westminster on the Vancouver, Victoria & Eastern Ry. & Navigation Co.'s line (operated by the Great Northern Ry.) to carload shipments of the same articles, to the same points, which are routed via Vancouver or New Westminster and the C.P.R., or the C.P.R. and railways connecting therewith. 2. The Great Northern Ry. shall receive not less than 2½c. per 100 lbs. to Vancouver or New Westminster as its proportion of the said joint rates. 3. The C.P.R. shall furnish the said new rates from Vancouver, together with the regulations and conditions pertaining thereto, to the G.N.R., so that the new joint rates from the said stations of the Vancouver, Victoria & Eastern Ry. and Navigation Co. shall become lawfully effective simultaneously with the new rates from Vancouver to the same points. 4. Orders 7277 and 9187, dated June 16, 1909, and Jan. 7, 1910, are rescinded.

### Rating of Peanut Butter.

50925. Nov. 25.—Re application of Toronto Board of Trade, for an order requiring the provision of a carload rating of 4th class on peanut butter in the Canadian Freight Classification. It is ordered that the Canadian Freight Classification be amended by the addition of a rating of 4th Class for peanut butter in carloads, and that the said amendment be included in the proposed Supplement 2 to Canadian Freight Classification 16 submitted by the Canadian Freight Association for the Board's approval.

### Demurrage On Coal Shipments.

21011. Dec. 15. Re complaint of Vanguard Co-Operative Supply Co., Ltd., Vanguard, complaining that the C.P.R. wrongfully collected $34 from it as demurrage on two cars of coal consigned to Canadian Coal and Commission Co., Bienfait, and shipped on Dec. 11 and 12, 1912. It is declared that the said charge for demurrage was illegal.

**Steam Shovel Track Connection.**—Every shovel man knows that much time is needlessly lost in moving up. This loss is sometimes due to the poor organization of the crew, but more often to derailment and other delays due to soft ground and poor track laying. Many methods have been devised for cutting down these accidents by the introduction of various devices for connecting the track ends. The most common method is the ordinary splice bar, which holds the rails together by means of a pair of pins or bolts slipped through holes bored in the rail ends and through each end of the bar. Another device is a pair of angles mounted on a plate and bolted to the tie. A better device, however, is a rail chair. It consists of a steel casting which fits loosely over the end of the rail, its length corresponding to the width of the tie, i.e., 8 in. The casting is bolted to the tie as shown, and is fitted with pins chained to the castings in order to prevent loss.

**A Steel Lunch Counter Car** was placed in service by the Pennsylvania Rd. recently between New York and Philadelphia on trains which also carry dining cars. The car is 80 ft. long and has, instead of tables, a long mahogany counter extending over half the length of the car, with sufficient capacity to serve 21 people seated on revolving mahogany chairs facing the counter. While the number seated is no greater than in a standard dining car, it is hoped to be able to serve them more rapidly.

**Roger Miller & Co., (P. E. I.) Limited,** has been incorporated under the Dominion Companies Act, with a capital of $200,000 and offices at Montreal, to carry on business as a general construction and contracting company. The provisional directors named are merely nominal. A contract was let recently by the Department of Railways to Roger Miller and Sons, Toronto, for the erection of car ferry terminals at Carleton Point, P. E. I.

**Railway Lands Patented.**—Letters patent were issued during October, covering railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

| | Acres. |
|---|---|
| Canadian Northern Ry. | 149.30 |
| Canadian Pacific Ry. grants | 922.69 |
| Canadian Pacific Ry. roadbed and station grounds | 19.98 |
| Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co. | 10,881.50 |
| Total | 11,973.47 |

**Calgary Stock Yard.**—A project for the establishment of a stock yard at Calgary, Alta., has been initiated by the United Farmers of Alberta, of which organization W. J. Tregellis is President. The C.P.R., it is stated, asks to have 51% of the capital allotted to it, but the U. F. of A. desire to give the three railways now entering Calgary equal interests, the city of Calgary and the farmers having the other interests.

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## Change of Canadian Railway and Marine World's Subscription Rates.

When this paper, under its original name of the Railway and Shipping World, was first issued in March, 1898, it consisted of 32 pages, which size was maintained during that year. During the succeeding 16 years it has been gradually increased in size, so that in 1913 it averaged 112 pages an issue, a total of 1,348 pages for the year.

When the Railway and Shipping World was first projected it was intended to be both a newspaper, with up to date news features relating to its field, and a technical paper dealing with engineering, mechanical and other transportation problems. This intention has been fully lived up to, and from a small beginning, with a limited amount of reading matter, it has been gradually built up to its present standard. As business has warranted, the editorial staff has been added to, until to-day's Canadian Railway and Marine World has the largest editorial staff of any technical publication in Canada devoting itself entirely to one publication, and in addition has a number of regular contributors, so that the various engineering, mechanical and other technical subjects are dealt with by experts of experience and acknowledged authority.

The establishment of a transportation paper in Canada in 1898 was looked upon as a risky venture, including some of the most prominent transportation officials, but the founder had every confidence in his ability to make it a success, which has been amply justified by results. The originally expressed intention to make accuracy the leading feature of matter published was very soon appreciated, and has resulted in securing a most thorough circulation among all grades of steam railway, electric railway and steamship officials throughout the Dominion, the result being that to-day there are on the subscription list over 90% of all the officials of those companies. For a number of years the paper has been a thoroughly established and satisfactory property, and as a result it is today much larger and more valuable in every way than in its earlier history. How thoroughly this has been appreciated is shown by the fact that during 1913 the average circulation was 4,341 copies of each issue. How completely this covers the entire Canadian field will be realized from the fact that the average circulation of the leading railway publication in the United States during 1913 was 8,600 copies per issue, as per its own published statement, and that in a field including the whole United States, and with some circulation in Mexico, Canada and other countries. This comparison shows how thorough Canadian Railway and Marine World's circulation is, and justifies the claim that no other transportation publication in any part of the world has so intensive a circulation, in fact that this paper has a very much larger circulation in proportion to the population of its field than any other transportation periodical published anywhere.

In the 16 years during which the paper has been published the cost of production has largely increased. Altogether outside of the facts that the size of the paper has steadily grown, and that editorial and other expenses have been largely added to in order to secure the improvements which have been carried out, the actual cost of printing per page has largely increased. in line with the general advance in prices which has been such a marked feature of the last few years. Since the establishment of this paper printer's wages have advanced over 75%, the prices of paper, ink, etc., have also largely increased. As a result the cost of printing Canadian Railway and Marine World, including typesetting, paper, presswork and binding, is now considerably over double the annual subscription price heretofore charged, and this is exclusive of the cost of illustrations, editorial salaries, office and other business expenses, postage, etc.

In the earlier days of the paper's history, when its size was much less than to-day, and when the circulation was also much smaller, the loss on subscriptions was not a very serious item, but as the transportation interests have developed and the circulation has in consequence increased to its present proportions, the loss on circulation has to be considered. Enquiries which we have made from a large number of subscribers have elicited expressions of most thorough satisfaction with the paper, of surprise that it has been possible heretofore to supply it at so low a price, and entire readiness to pay a more adequate subscription. As a sample of letters received from time to time we may quote one from one of the principal general officers of the Canadian Pacific Railway, who wrote as follows:—"I look upon Canadian Railway and Marine World as THE paper which anyone interested in Canadian railway or marine matters has to take and read in order to be posted. I would not be without it for considerably more than 'the price of admission.'" Another well known railway man, in remitting his renewal subscription recently, wrote:—"I am ashamed to send so small a trifle for so valuable a publication."

After the most thorough consideration it has therefore been decided to make the subscription rate on and after Jan. 1, 1914, $2 a year, including postage to any address in the world. This will still be below the actual cost of printing, outside of other expenses enumerated above. We are confident that in view of the quality of the publication which is being supplied, this change will be very generally acceptable to subscribers, and we can assure them that the extra revenue which will be derived will be expended in still further improving the paper in every way.

The new rate will apply to all new subscribers received on and after Jan. 1, 1914. Subscribers who have not yet paid the current year's subscription will be given the old rate for a year from their last payment date. For example, a subscriber who has paid up to say, June, 1913, will be charged the old rate to June, 1914, after which the new rate will apply.

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**Nosbonsing and Nipissing Ry.**—We are officially advised that this line is no longer in operation, the rolling stock having been removed and the track taken up during last summer. It was a logging railway, 5.50 miles long, connecting Lakes Nosbonsing and Nipissing, crossing the G. T. R. line to North Bay, in Ferris Tp., and was owned by J. R. Booth, Ottawa.

**G. M. Ross,** Agent, C.P.R., Summerland, B.C., writes: "Enclosed find express order for one year's subscription to Canadian Railway and Marine World. My late father, D. G. Ross, always had it in his home, and I am sure it is the best means of keeping up to date about railway matters generally."

**J. W. Porter,** acting Chief Engineer, Hudson Bay Railway, Winnipeg, writes: "I have been a subscriber to Canadian Railway and Marine World for some time, and like many others get a great deal of pleasure, as well as information, from reading your interesting and accurate paper."

## Canadian Pacific Railway Construction, Betterments, Etc.

**Eastern Division.**—The work of putting up the train sheds at Windsor St. station, Montreal, is practically completed. There is a good deal of work yet to be done at the old building in order to bring it in character and design in harmony with the new extension.

**Campbellford, Lake Ontario and Western Ry.**—Track laying has been completed from Glen Tay to Agincourt, Ont., 182.6 miles. The line starts from Glen Tay, 15.7 miles west of Smiths Falls, to which point the C.P.R. line from Montreal is double track, and running down to the lake shore at Belleville, runs south of the G.T.R. to Port Hope, and then strikes northwesterly to a junction with the C.P.R. Montreal-Toronto line at Agincourt, 12.8 miles east of Toronto. From this point on to Toronto a second track is being built. The distance from Montreal to Toronto by the old route is 338.5 miles, and by the new one 341.1 miles. A freight service is being put on at once, but it is not intended to operate a passenger service over the new line until the summer. The stations on the new line are:—Christie Lake, Crow Lake, Parham (junction with the Kingston and Pembroke Ry.), Wilkinson, Overton, Lonsdale, Shannonville, Belleville, Trenton, Brighton, Colborne, Grafton, Cobourg, Port Hope, Newtonville, Newcastle, Bowmanville, Oshawa, Whitby, Cherrywood.

**Ontario Division.**—In connection with the building of the viaduct in Toronto, the C.P.R. is considering the desirability of putting all its telegraph wires on lines entering Toronto, underground.

The second track between Islington and Guelph Jct., 29 miles, has been completed, and trains are being regularly operated over it. The rearrangement of the station yards at Streetsville is being gone on with, and is expected to be finished early in January. The only piece of the second track between Toronto and Guelph Jct. not completed is at the bridge across the Humber River. The plans for the reconstruction of this bridge as a double track one have been approved, and it is expected that construction will be gone on with during the year.

We are officially advised that no work is being done in or around Collingwood, Ont., by the C.P.R., preparatory to any new construction. Recent press reports stated that some work had been started at Collingwood, which was understood to be in preparation for the projected Collingwood Southern Ry. to Baxter, on the Toronto-Sudbury line.

**Lake Superior Division.**—The Board of Railway Commissioners has authorized the opening for traffic of a portion of the deviated line at bridge 39.49, North Bay Subdivision.

**Manitoba Division.**—Construction of the yards at North Transcona, six miles east of Winnipeg, is being steadily progressed with. When completed, they will have 150 miles of trackage, sufficient to handle 12,000 cars. The plans at present being carried out are for track accommodation to handle 2,000 cars. The yards will have two locomotive houses, each 425 ft. outside diameter, with a 108 ft. turntable, and between the two will be a 100,000 gall. water tank. A double track line has been provided for these yards, extending from Bergen northeasterly and rejoining the main line at or near Whitewater, on which 20 miles of second track was laid during 1913.

Track has been laid for 10 miles on a branch line starting from Snowflake, and running west just north of the international boundary.

The Board of Railway Commisisoners has authorized the opening for traffic of the Boissevain-Lauder branch, 36.4 miles. Track was laid on this branch during 1913 for 35 miles.

A second track has been laid on the main line from Kemnay to Virden, 35 miles. The branch line from Virden, northeasterly, which heretofore extended 13 miles, has been extended to McAuley, on the Kirkella-Langdon line, 23 miles of track being laid in 1913. This line was opened for traffic early in December, the speed of trains being limited to 20 miles an hour.

**Saskatchewan Division.**—During 1913 the following stretches of second track were completed:—Whitewood to Grenfell, 8 miles; Indian Head to Regina, 21.6 miles; Regina to Pasqua, 12 miles, and Caron to Java, 66.7 miles.

The branch line construction carried on during 1913 included tracklaying as follows:—Extension of the branch line northwesterly from Estevan for 47 miles; this line connects with the Weyburn-Stirling line at Forward. Extension of the Weyburn-Stirling line for 162 miles, which carries the line to or just over the boundary line between Saskatchewan and Alberta. Completion of the branch from Kerrobert northeasterly, 22 miles; this line gives a connection between the Moose Jaw-Macklin line and the Portage la Prairie-Wetaskiwin line. Track has also been laid for 60.8 miles additional on what is known as the Swift Current-Bassano line. This carries the line approximately to the Saskatchewan-Alberta boundary.

**Alberta Division.**—The Board of Railway Commissioners has approved of location plans of the Swift Current Northwesterly branch, mileage 111.17 to 134.38, and for the line running easterly from Bassano to meet the Swift Current Northwesterly branch, mileage 118.39 to 180.20.

Track was laid on the following branches or extensions of branch lines during 1913:—Suffield, southwesterly, 32.3 miles; this line will give a connection with the Weyburn-Stirling line, a new and direct line from Gleichen to Shepard, 25 miles. Extension of the branch line from Lacombe, easterly for 8 miles. This branch connects with the Moose Jaw-Macklin line at Kerrobert.

The Alberta Central Ry., which is being built under C.P.R. auspices from Red Deer towards the Brazeau River coalfields, was expected to have laid 40 miles of track by Dec. 31, but definite reports as to work done had not been received when we were advised.

The addition to the C.P.R. hotel at Banff, Alta., is expected to be ready for occupancy early in the year. The new section is of reinforced concrete, and will increase the number of rooms to 400.

**Kootenay Central Ry.**—We are officially advised that track was laid during 1913 on a further 19.7 miles of this line. Track was laid for 14.50 northerly from Colville, and for 41 miles south from Golden, B.C., during 1912. The remaining mileage is under construction, and it is expected to have it completed by the end of 1914.

**Pacific Division.**—During 1913, track was laid on 16 miles of the Whitewater-Kaslo line. This covers an extension of the Three Forks-Whitewater line, on which track was laid during 1912, the connection of the same with the old Kaslo and Slocan Ry., and the reconstruction and conversion of that line to standard gauge.

The second track between Hammond and Ruby Creek, 59 miles, was laid and is being operated over.

We are officially advised that the press dispatch from Denver, Col., Dec. 5, to the effect that the C.P.R. had let a contract for the driving of a 10 mile tunnel at Rogers Pass, B.C., to cost $8,000,000, to James A. McIlwee & Son, of that city, is incorrect. The contract, as stated on pg. 485 of our issue for Oct., 1913, was let to Foley, Welch and Stewart, and we are advised that "the work is not sublet, neither would the cost named be anything near the estimate." The tunnel is to be five miles, and not ten miles long.

There is a proposal to give J. A. McIlwee & Son a contract for the pioneer tunnel to be used in connection with the construction of the tunnel proper, but this has not been decided at the time of our advice, Dec. 17.

Considerable work has been done on the new double track bridge over the Harrison River at Pitt Meadows, which is being built in connection with the development of the new yards at Coquitlam.

Press reports state that arrangements are being made for the building of large oil tanks at Port Moody, for use in connection with the pipe line, thence to connect with the tanks at Coquitlam, which is now being laid. (Dec., 1913, pg. 576.)

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**Renewing Switches with Wrecking** Cranes is a method of handling track alterations that has been employed in several cases on the Philadelphia & Reading Ry. In some recent changes near Vine St., Philadelphia, it became necessary to put in some additional slip switch crossings and to shift others, and these were handled bodily. The new double slip crossings were put together on skids at the side of the track. Two wrecking cranes, with four part sling chains attached to the hoisting block, were then attached to the rails and ties of an old crossing, which was ripped out bodily. Then the slings were passed through two of the long end ties of a new crossing, and the crossing swung up and deposited in place, the ballast having been leveiled and tamped in the meantime. The work is done very quickly and avoids the long period during which the track would be broken if the old crossover or crossing was taken apart and relaid in the ordinary manner.

**Freight Car Troubles.**—J. Coleman, Superintendent Car Department G.T.R., writes:—"It has been the practice on our road to scrap 30,000 and 40,000 capacity box cars when they require a general rebuild. We are not doing anything towards the introduction of strengthening light capacity cars for the reason that they are very unpopular with shippers, and our traffic department is placed at a disadvantage offering light capacity cars for loading on account of the reduced loading space as compared with the modern box car. We believe that this is a question on which the traffic departments should be consulted, and I am sure careful canvass of the officials of the traffic departments would show the consensus of opinion is that light capacity box cars should not be continued in interchance service."—Railway Master Mechanic.

**United States Railways.**—According to the Interstate Commerce Commission's statistics for the year ended June 30, 1912, there were 240,238 miles of track operated in the U. S. The average number of locomotives per 1,000 miles of line was 265, and the average number of cars was 9,860. The total number of persons on the payrolls was 1,699,218, and the total wages and salaries paid amounted to $1,243,113,172. The par value of the amount of railway capital outstanding was over nineteen and a half billion dollars.

# Steel Upper Frame and Steel Underframe Box Cars.

In the unavoidable absence of R. W. Burnett, General Master Car Builder, C.P.R., his paper on steel underframe box cars, which appears on pages 1 to 4 of this issue, was read before the American Society of Mechanical Engineers, New York, on Dec. 3, by H. H. Vaughan, Assistant to the Vice President, C.P.R. A paper on steel underframe box cars, by G. W. Rink, Mechanical Engineer, Central Rd. of New Jersey, an abstract of which is given on page 4, was read at the same meeting, the two papers being discussed together. Following is a portion of the discussion:—

H. H. VAUGHAN, Assistant to Vice President, C.P.R.—I feel that Mr. Burnett's paper has, unintentionally, to a large extent referred to what Mr. Rink has said about the standard car. Personally, I feel that Mr. Burnett's position, that with the structural steel car we have to all intents and purposes a car that is standard as far as any car can be standard, is a sound one. I do not believe that we are ever going to adopt one standard type of car or one standard design of car and build it indefinitely. There are sure to be improvements and alterations that the different roads think it desirable to make, and if we had a standard car tomorrow the next order that was let would have a few changes from it. If we use standard material that can be obtained without difficulty, and keep to certain standards on the parts that both Mr. Rink and Mr. Burnett have mentioned, I think that we are going as far as we can go in the direction of a standard car. I quite agree that the draft castings, arch bars, bolsters and some of the other parts should be standardized to a greater extent than at present. It does seem absurd that the slight variations made in these parts should necessitate their being obtained from the car owners, when repairs are to be made on foreign lines, and that serious delays should ensue on account of these parts not being available.

We have been a good deal criticized on account of certain features in the design of the C.P.R. car, such features as I think Mr. Rink refers to when he says there was not very good engineering carried out in the design of the steel underframe. Some of the features of our underframe design were not altogether a question of engineering, but largely governed by a feeling I had that if you make a thing plenty strong enough you never lighten it, but that if you make a new design a little fine and then strengthen it at the weak points, you will finish up with a considerably lighter design than if you started out with some arbitrary figures and made everything plenty strong enough to start with.

In designing a car, what must be considered is the service in which it is generally going to run, not the service in which it may run. We estimated that 60 to 75% of the service to which the box cars are put, both in Canada and in the United States, is service in which the old type of underframe will stand up perfectly satisfactorily. I feel that that assumption is justified by the results we have had. If there was any decided weakness in this type of car we would certainly have found it out in five years. The fact that we have had 14 or 15 cars destroyed on foreign lines indicates that, while the construction may not be as strong as would be desirable for some service, it is strong enough for the average service in which the cars are used. I do not believe to-day that it is a good commercial proposition to put weight in a car for occasional service.


Standard Canadian Pacific Railway Steel Frame Car Fitted with Corrugated Steel Lining.
For description see page 4 of this issue.

The omission of the end braces and the corner braces has been discussed. The centre sills and the side sills have ample strength to hold up the corners of the cars under general conditions, and the saving of 500 lbs. weight there, and 500 lbs. in the cover plate, and a few hundred pounds here and there, is what has made the car as light as it is.

Attention should be drawn to the effect of reduced weight on net earnings, and not on the cost per ton mile. The C.P.R. figures for 1913 show that we carried 22.34 tons per loaded car mile, and our light car mileage was 28.5% of the loaded car mileage. That gives an average load of 16.8 tons per car mile total. I have not the average car weight, but I do not think we are far off in taking it to be 18 tons; the average weight of the car loaded was then 34.8 tons. I do not believe that figure is out of the way for a large number of roads in this country handling general traffic. We have a large amount of grain, and while we do not have much coal our average load is fairly good.

Supposing the car weighed one ton more. Without any question as to whether we would always change our train rating, the weight of the car loaded would be 35.8 tons instead of 34.8; in other words, there would be an increase in the ton mileage of 2.85%. Or suppose we were operating on a ratio of 70%, under this changed condition of weight we would be operating on a ratio of 72%. Our net tons would fall from 30% to 28%, which is a difference of 6%; in other words, while we have only changed 2% in our cost of transportation, we have changed about 6% in our net earnings, and net earnings are what we are after. It does not take very much of a change in transportation matters to make quite a change in net earnings. It takes less than it does to make a change in gross earnings. Even supposing that one half the time the weight of the car makes no difference, it depends on how tonnage is handled; on the C.P.R., on which a large percentage of the traffic is on grades over 0.6%, tonnage is what we are after. If we are within a certain number of tons of the right load we take it, and if it is less than that we put on another car. Taking only half, the handling of a ton makes a difference of 1% in the expenses and 1 1-5% in the net earnings. Taking the size of the car, and only taking one half of the actual difference in weight, we find that it amounts to about $12 a ton per year. That is only assuming that one half the difference in weight makes any difference. We can do a good deal on a lot of cars with $12 a ton per year.

The question of weight is something which must be looked after carefully in car design; we must not give all our attention to designing a car that is cheap to keep up and which will not need repairs, but try to design a car that is most economical for the railway company in handling its traffic. It may cost $5 or $10 a car more per year to keep up, but it will save two or three times that in the weight that is being hauled about uselessly.

In reference to vertical or horizontal sheathing, Mr. Burnett stated that there were a number of cars which were quite open. We have had a lot of cars which have shrunk to an extent to cause us a great deal of anxiety, but we have had singularly few cases of damage claims on account of it. The planks are all shiplapped, and when looking at a car it would almost seem possible to see through the openings. But it is not difficult to tighten them, and the only reason we have not done so is because we have not had sufficient complaints to justify our taking the cars out of service and doing the work. The vertical sheathing would be, possibly, a preferable arrangement if it could be accompanied by an economical and convenient design of side framing. The truss form of side framing naturally lends itself to horizontal sheathing. We are using very extensively the same style of end for repairs of all-wood cars that we use on the steel frame car, simply putting in two Z bars, reinforcing the ordinary end post, and putting the ¾ in. lining outside.

B. D. LOCKWOOD, Chief Engineer of the Pressed Steel Car Company, stated that he believed the railways should specify the minimum stresses allowable in box car frames in order that builders may have something definite to work to.

W. F. KIESEL, Jr., Assistant Mechanical Engineer, Pennsylvania Rd.—The authors of both papers seem to favor the Z bar posts and braces because they are made of rolled material, and, as stated by them, can be readily obtained. This does not seem a good argument, as it is well known that standard sections of rolled material cannot always be obtained on short notice; in fact, within the past year the steel mills have quite frequently reported that certain angles, etc., could not be furnished under

three or six months, as there was no stock on hand and they did not expect to put in the rolls for that length of time. Advocates of pressed steel for this purpose assert that pressed steel posts and braces are lighter per unit of strength, because they can be formed to the required shape; that they can be formed with sufficient surface at the ends for the number of rivets required to develop their full strength, while Z bars and other rolled forms require gusset plates for this purpose; that they are not likely to be damaged by pushpoles, and if damaged in wrecks, can be readily straightened and restored to approximate shape; and that when absolutely necessary to replace them they can readily be obtained from the car owner or builder, without waiting for any special rolling of material.

O. C. CROMWELL, Mechanical Engineer, Baltimore and Ohio Rd.—Side and end posts and braces, corner posts and door posts, should be brought down to a standard; they are now very nearly this. The height of the floor above the rail is an important point, and there should be no good reason why we should have a variation 6¾ in. in this height. This also affects the height of the truck, as if it is desired to work toward standard and interchangeable truck parts, the height of the truck is an important one to bear in mind.

I observe that no diagonal braces are used in the end framing of the C.P.R. steel frame car, such as are generally used in the end of a wooden frame car. These braces tend to keep the end framing of the car square. While their omission would probably not be apparent for the early life of the car, should we not expect to find, as the car ages, a loosening of the riveted joints uniting the posts with the plates and underframe? While the car is new, the end sheathing will serve to keep the framing straight, but will we not in time experience loosening of these end boards through shrinkage? We know that on gondola cars the side planks decay under the side stakes and under the corner bands. May we not, as the cars become older, experience a similar action of the lumber in this character of car? Would not this in turn lead to the loosening of the framing?

The Baltimore & Ohio built, in 1862, some iron box cars. These cars had wooden underframes, but the body and roof were made of iron plates. The cars proved unsatisfactory because in the summer they became so excessively heated that they spoiled the merchandise, and in sudden changes of weather produced sweating, with damage to the lading. They had finally to be withdrawn from service.

W. S. ATWOOD, Chief Engineer, Canadian Car & Foundry Co.—The first steel frame car which we built was considerably heavier that the present ones, weighing 41,000 lbs. This was partly due to the fact that the car was constructed from material which was in stock, no special material having been ordered. The present car weighs less than 36,000 lbs.

With the first cars of this type there was some difficulty experienced in securing the proper grade of lumber and also in properly drying it, as, owing to its thickness, it had to remain in the dry kilns longer than was necessary in the case of the thinner sheathing used on the outside sheathed car. On this account the car companies were not, in all cases, equipped with sufficient dry kiln capacity. The lumber dealers, however, have met the car builders in attempting to prepare a satisfactory grade of lumber, and no difficulty is now encountered.

The adoption of a car with standard inside dimensions would be a matter of considerable importance to the car builders, as material could be stocked and would be available for building cars required for quick delivery for any of the railways which had adopted this type of car.

The foregoing report of the discussion is abstracted from the Railway Age Gazette.

## Great Northern Railway Lines in Canada.

**Projected Lines in Saskatchewan and Alberta.**—The extension of the line from Niobe, N.D., to Northgate, on the International Boundary, 21 miles, has been completed, and a connection established with the Grand Trunk Pacific Ry. branch from Regina, Sask.

An extension of the branch now terminating at Plentywood, Mont., westerly for 45 miles to Scobey, is reported to have been completed. This extension runs parallel with the International Boundary.

Another line is under construction under the charter of the Grand Falls and Felon County Ry., from Power to Bynum, Mont., on which 45 miles of track has been laid. This line runs northerly, and its present terminus is almost directly south of Cardston, Alta.

L. Hill, President, accompanied by several G.N.R. officials, recently completed a trip through Southern Saskatchewan and Alberta, stopping at Swift Current, Medicine Hat, Calgary, Lethbridge and Cardston. G.N.R. interests hold several charters covering the building of lines in these two provinces, and also own the Crows Nest Southern Ry. A large amount has recently been expended on developing coal mines in the Pincher Creek district, and recent local press reports state that it is expected that a start will be made with railway construction in that district in the spring.

**Kootenay Ry. and Navigation Co.**—The G.N.R. President reported at the annual meeting of shareholders that because of the liquidation of the K.R. and N. Co. the Bedlington and Nelson line between Sirdar Jct. and Kuskanook, B.C., 3.26 miles became of no use and had been removed.

**Vancouver, Victoria and Eastern Ry. and Navigation Co.**—The G.N.R. President reported at the recent annual meeting that work was in progress on the line of the V., V. and E. Ry. and N. Co., from Kilgard to Sumas Landing, B.C., 10 miles, and on an extension from Coalmount to Otter Summitt 35 miles. The Board of Railway Commissioners has authorized the opening for traffic of a section of the line from mileage 245.84 to 155.619, which is a double track section.

In connection with this line the G.N. Ry. is engaged in building a line in the U. S. to connect at Oroville. The section under construction during the current year extends from Wenatchee to Pateros, Wash. Owing to landslides and other difficulties construction has been delayed, and it is not expected that the line will be ready for operation until June, 1914. The line is 133 miles, and track laying will probably be completed by Mar. 31, 1914.

**Vancouver Terminals.**—The excavations on the Grandview cut in Vancouver, B.C., are practically completed. The original width of the cutting was 38 ft., but in view of the False Creek reclamation and terminal project, it has been made 66 ft. The greatest depth is 65 ft. The cutting is spanned by seven bridges, and others will be added as street traffic necessitates. Four lines of track have been laid in the cut, and this line of approach into the city, which is 1.5 miles long, has a gradient of 1%. The line originally crossed the streets on the level.

The erection of the warehouses on the new dock on Burrard Inlet is being proceeded with. It is expected that the wharf and its equipment will be finally completed by the end of the year.

It is reported that 70% of the work on the reclamation of the False Creek flats has been done. The area near Main St., which will be used as the site of the union station, has been entirely filled in, and the work is now in progress to the original shore line. L. Hill, President, and a number of G.N.R. officers were in Vancouver recently inspecting the progress of the work. The site upon which the station is to be built was selected, and it is said that tenders for the building will be called for at once. (Oct., pg. 479.)

## Additional Lines in New Brunswick Controlled by Canadian Pacific Railway.

The C.P.R. commenced, Dec. 1, to operate the lines of the New Brunswick Coal and Ry. Co., the Fredericton and Grand Lake Coal and Ry. Co., and the Southampton Ry. in New Brunswick, which have been leased. They are being operated under the supervision of the General Superintendent of the Atlantic Division.

A. Sherwood, heretofore Manager, New Brunswick Coal and Ry. Co., which has hitherto been operated by a commission for the New Brunswick Government, has also been appointed Manager, F. & G.L.C. & R. Co., and Southampton Ry., and his office has been moved from Norton to Fredericton, N.B.

H. Larsen has been appointed Roadmaster of the combined lines, vice —. Baker, assigned to other duties.

**Hamilton Incline Ry.**—The Ontario Railway and Municipal Board issued an order, Nov. 25, directing the owners of this line to put it into a safe condition for operation. An engineer representing the Board subsequently visited Hamilton for the purpose of ascertaining the work necessary and the time required to do it.

**Ottawa Car Manufacturing Co.**—W. M. Arnold, heretofore Purchasing Agent, has been appointed Assistant General Manager. H. T. Burpee has been appointed Controller.

The C.P.R. is reported to have discharged its Japanese porters on sleeping and cars running west of Winnipeg, and to have replaced them with negroes. The change took effect Dec, 12.

L. R. Johnson, General Superintendent, Angus Shops District, C.P.R., read a paper before the Canadian Railway Club in Montreal, Dec. 9, on first aid to the injured as practised by the St. John Ambulance Association, under the auspices of the Order of St. John of Jerusalem, in England.

J. Grey, a C.P.R. locomotive driver living at West Toronto, was fined $100 at Ingersoll, Ont., Dec. 11, for being intoxicated while in charge of a locomotive. The sentence was directed to be held in suspense and Grey was directed to report to the C.P.R. solicitors in Toronto when required.

The conciliation board in connection with the enquiry into the dispute between the G. T. Pacific Ry. and its machinists and boiler makers, consists of Mr. Justice Haggart, Chairman; W. Cross, representing the company, and C. J. Murray on behalf of the men, all of Winnipeg.

A Lehigh Valley Rd. Pacific type locomotive, weighing in working order 262,000 lbs., with 77 in. drivers, recently made a record in hauling an 8 car all steel train, weighing 603 tons, over a 24 mile stretch at an average speed of 38.1 m. p. h. against an average grade of 42.1 ft. per mile, with a maximum gradient of 67.9 ft. per mile.

# Canadian Northern Railway Construction, Betterments, Etc.

**James Bay and Eastern Ry.**—The first section of this railway is under construction from Roberval, Que., the northerly terminus of the Quebec and Lake St. John Ry., 30 miles northerly. We are officially advised that grading upon this is well advanced. J. P. Mullarkey, Montreal, is the contractor, and A. F. Stewart, Chief Engineer of Construction, Mackenzie, Mann & Co., Ltd., is in charge of the work.

**Canadian Northern Quebec Ry.**—The extensions and branch lines located, but not yet finally passed for construction are:—Huberdeau Argenteuil county, Que., to St. Remi, 11 miles, and from Rawdon to St. Donat, 40 miles. These lines are projected for the purpose of opening up new territory lying between the old Great Northern Ry. and the old Montford Colonization Ry., both of which are now part of the C.N.Q.R. Another charter also amalgamated with the C.N.Q.R. is the Quebec, New Brunswick and Nova Scotia Ry., under which it is proposed to build a line from Quebec Bridge to Woodstock, N.B.

**Canadian Northern Montreal Tunnel and** Terminal Co.—The headings of the tunnel being driven under Mount Royal, to give the C.N.R. an entrance into Montreal, were joined on Dec. 10. The heading is 8 by 12 ft., and the work of enlargement to 22 by 30 ft. is being gone on with.

Plans have been filed in Montreal showing a revision of the location of the line to connect the tunnel with the St. Lawrence water front. These have been approved by the Board of Railway Commissioners.

**The Central Ontario Ry.** is asking the Dominion Parliament for an extension of time within which to complete the line from its present northerly terminus to a junction with the C.P.R. at some point between Sudbury Jct. and Callander station, Ont.

**Canadian Northern Ontario Ry.**—A mixed freight and passenger service has been put in operation on the Ottawa-Sydenham section of the Ottawa-Toronto line which has recently been completed. A regular freight and passenger service has been operated for some time between Toronto and Sydenham, and these services will be run through to Ottawa early in the spring.

The Board of Railway Commissioners has authorized the opening for traffic of the branch from Oshawa station to the material yard south of William St., 2.75 miles, and the building of a transfer track between the C.N.O.R. Oshawa spur and the Oshawa Ry.

**Montreal-Ottawa-Port Arthur Line.**—Track was laid during 1913, on 536 miles of this line, distributed as follows:—Between Montreal and Hawkesbury, Ont., 10 miles; between Ottawa and Capreol, Ont., 120 miles; between Ruel and Port Arthur, 406 miles. The line is being built, under special guarantees by the Dominion Government, under the charter of the Canadian Northern Ontario Ry. Ballasting and other work are reported well forward from Ruel west. Ballasting is also reported to be completed up to 200 miles easterly from Port Arthur, and one lift has been given to mileage 244, where the bridge work is not completed. Another bridge at mileage 253 is also incomplete. All the stations, section houses and other buildings up to mileage 200 have been erected.

**Canadian Northern Ry.**—The Saskatchewan Legislature has increased the amount of securities previously guaranteed by $2,000 a mile, making the guarantee $15,000 a mile. The lines in respect to which the guarantee apply are set out in sec. 9 of the act passed in 1908, as it is amended by chap. 4 of the statutes of 1909; and in chap. 8 of the statutes of 1912. Sec. 6 of the recent act authorizes the Government to guarantee the bonds for any surplus mileage on the lines mentioned in the several acts over the mileage specifically guaranteed at $13,000 a mile, or in the event of there being a shortage of mileage the Government may authorize the application of the surplus of guaranteed bonds to be used in respect to the construction of other lines to be built.

A second act provides for the payment of interest on these securities at 4½%, and for the building of the following lines:—In further extension of the line mentioned in par. 1, second part of the schedule to chap. 3, statutes of 1908-09, westerly from mileage 210 for 60 miles; in further extension of the line mentioned in par. 3 of the same schedule from mileage 50 from North Battleford northwesterly for 39 miles; from mileage 100, on the Thunder Hill branch west of the eastern boundary of the Province, westerly for 40 miles; and any extension of any lines authorized to be built in Saskatchewan, as may be designated by the Government, not to exceed 40 miles in any one instance.

A third act deals with the guarantee of the bonds of the C.N. Saskatchewan Ry. The amount of the bonds to be guaranteed is increased to $15,000 a mile, the rate of interest is fixed at 4½%, and an extension of time for construction granted. It is also provided that the route of the line set out in par. 5 of the schedule to chap. 11, statutes of 1912, may be changed so as to be routed from Handsworth on the company's authorized line from Lampman northerly, westerly or northwesterly.

In a statement made to the House in connection with these measures it was mentioned that the Government had guaranteed bonds for the building of 1,155 miles of line. The sale of the bonds had realized so far $9,703,668.98, of which $8,577,067.76 had been released to the company for work done.

The Saskatchewan Legislature has been informed that surveys for the proposed branches from Lampman northerly through the territory lying north westerly from Moose Mountain have been completed, but have not yet been approved by the Provincial Minister of Railways. The company has agreed that construction on these lines, the bonds for building which have been guaranteed by the Legislature, will be started early in 1914. The construction programme for 1914 had not been finally agreed upon between the Government and the company. The extension of the branch southerly from DeLisle, would probably be gone on with, but the final location plans had not been approved.

The line from North Battleford which has hitherto been in operation to Edam, Sask., 38 miles, has been extended to Mervin, Sask., 11 miles, tracking being reported to have been laid into that place Dec. 8.

The first through train on the branch line from Radville into Moose Jaw, Sask., ran into the temporary station on South Hill, Dec. 5. For some time previously the trains had only been operated to a point three miles out of the city. The line goes into the city on a trestle bridge over the river and the C.P.R., which is to be replaced early in the year by a steel structure. It was reported in Moose Jaw, Dec. 13, that an arrangement had been made under which the C.N.R. will join with the G.T. Pacific Ry. in building a union station at Moose Jaw, and will have running rights over the latter company's line to Regina. The Saskatchewan Legislature was asked, Dec. 12, to consider a measure guaranteeing bonds for $1,000,000 for aiding the construction of terminals and bridges in Moose Jaw. The bill provides that the works shall be immediately put in hand, and that when completed they shall be used jointly with the G.T. Pacific Ry. or any of its allied companies.

Moose Jaw press reports also state that a line is projected from that city southwesterly between Lakes Johnston and Chaplin to a junction with the line to Lethbridge, near Maple Creek, and for a line from Moose Jaw to Chamberlin on the line from Regina to Prince Albert.

The line from Camrose, Alta., southeasterly, on which grading is reported to have been completed for 60 miles, has been located through to Sibbald, at the Saskatchewan-Alberta boundary, on the Saskatoon-Drumheller line, 165 miles. This piece of grading is stated to be a 58 mile tangent. A new town, Alliance, is being laid out at mileage 59.5.

**Canadian Northern Pacific Ry.**—The Dominion Government Inspector went over the line out of Port Mann as far east as Hope, B.C., Nov. 20, for his final inspection. It is expected that this section of the line will be taken over by the operating department. The end of track easterly was reported to be at mileage 129, and ballasting has been completed to mileage 120. The grading is practically completed from this point to Kamloops. East of Kamloops 90 miles of track is reported to have been laid, and grading is well forward to the Albreda Summit. Eight of the bridges have been completed; three others are reported to be well forward as far as the steel work is concerned; and the substructures for the others are being progressed with. It is also reported that the section which is being built from the west to the Albreda Summit, is 90% completed so far as the grading is concerned.

The locomotive house at the Port Mann terminal is under construction, and the foundations are being piled for the machine shop and other buildings.

The question of the route of the tunnel, which will give an entrance from the north arm of the Fraser River to the terminal on False Creek, Vancouver, is still undecided. two routes being under consideration.

An area of about 80 acres has already been reclaimed from the False Creek flats, for the company's terminal. About 600,000 cubic yards of material were reported to have been deposited Dec. 4, and this is stated to represent about a sixth of the work to be done.

**Vancouver Island Lines.**—It was reported Dec. 9, in Victoria, that about 85% of the work on the Victoria-Alberni line had been completed, and that considerable progress had been made with the line from Victoria along the Saanich Peninsula. It is expected that steel will be delivered in order to start track laying in February. (Dec., 1913, pg. 584.)

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**Oil Burning Locomotives on C. P. R.**—We were officially advised, Dec. 5, that 45 locomotives had been equipped for oil burning to operate between North Bend and Vancouver, the applying of the apparatus having been done at Vancouver. Seventy-nine locomotives have been similarly equipped to operate between Field and Kamloops, most of the work having been done at Vancouver, and the rest of it at Ogden shops near Calgary. No arrangements have been made for similarly equipping locomotives to operate on other portions of the Pacific Division.

The Grand Trunk Pacific Ry. opened the Fort Garry Hotel at Winnipeg, Dec. 10.

## Transportation Appointments Throughout Canada.

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

**Algoma Eastern Ry.**—J. P. MADER has been appointed General Agent at Sudbury, Ont. All reports, communications, etc., from agents, heretofore required by General Freight and Passenger Agent, are forwarded to him.

**Canadian Northern Ry.**—H. R. ARTHUR, heretofore chief clerk, General Manager's office, Winnipeg, has been appointed Inspector of Transportation. Office, Winnipeg.

O. D. PROSSER, heretofore assistant chief clerk, has been appointed chief clerk, General Manager's office, Winnipeg, vice H. R. Arthur, promoted.

WILLIAM KILBY, heretofore secretary to Assistant General Manager, has been appointed Fire Inspector. Headquarters, Winnipeg.

**Canadian Pacific Ry.**—F. B. TAPLEY, whose appointment as Assistant Engineer, Maintenance of Way, Eastern Lines, Montreal, was announced in our last issue, has been appointed Assistant Engineer in Assistant Chief Engineer's office, vice M. A. Fullington, transferred, and not Assistant Engineer, Maintenance of Way. We are officially advised that there is no Assistant Engineer, Maintenance of Way, Eastern Lines.

J. E. MORAZAIN, heretofore Assistant Superintendent, District 3, Eastern Division, Quebec, Que., has been appointed Assistant Superintendent, Montreal Terminals, vice A. C. Brady, deceased. Office, Windsor St. Station.

T. M. BARRETT, heretofore Purchasing Agent, Sleeping, Dining and Parlor Cars and News Department, Calgary, Alta., is reported to have been appointed Chief Commissary Agent, same department, Montreal, vice A. S. Maynard, who, it is stated, has resigned to enter private business.

W. BALLANTYNE, heretofore in the Passenger Department, has been appointed chief clerk, Atlantic Steamship Department, Montreal, vice W. C. Casey, appointed General Agent, Passenger Department, Steamship Lines, Winnipeg.

JOHN GRIFFIN, District Freight Agent, C.P.R., Toronto, has resigned, to enter private business in Milwaukee, Wis.

W. C. CASEY, heretofore chief clerk, Atlantic Steamship Lines Department, Montreal, has been appointed General Agent Passenger Department, C.P.R. Steamship Lines. Winnipeg, vice J. S. Carter.

F. STAMELIN, heretofore Shop Foreman, Winnipeg, has been appointed Night Locomotive Foreman, Winnipeg roundhouse, vice J. Morton, transferred.

R. BROWN has been appointed District Master Mechanic, Medicine Hat, Alta., vice W. W. Webster.

**Central Railway of Canada.**—F. Stuart Williamson, M. Can. Soc. C.E., Chief Engineer, having resigned, has been appointed Consulting Engineer. Office, Montreal.

**Grand Trunk Pacific Ry.**—J. H. TODD, heretofore Assistant to Superintendent, Smithers, B.C., has been appointed Superintendent there, vice G. A. McNicholl, transferred to Traffic Department.

The following agents have been appointed:—Holden, Alta., K. Fraser; Edmonton, Alta., O. J. Rowe; Beiseker, Alta., C. W. Storey; Tete Jaune, B.C., F. R. Harrison; McBride, B.C., J. S. Dobie; Rose Lake, B.C., R. A. Pake; Smithers, B.C., W. W. Noonan; Pacific, B.C., T. S Constantine.

**Grand Trunk Ry.**—D. ROSS, heretofore Locomotive Foreman, Madawaska, Que., has been appointed Locomotive Foreman, Coteau Jct., Que., vice W. A. Black, transferred.

J. H. RHYMB has been appointed Locomotive Foreman, Madawaska, Que., vice D. Ross, transferred.

W. J. HARDING, heretofore Locomotive Foreman, Depot Harbor, Ont., has been appointed an engineer of the power plant at Ottawa, Ont.

J. B. DUNLOP has been appointed relieving Locomotive Foreman, Mimico Yards, Toronto, during absence of J. H. Storrz, who was seriously injured recently.

W. GRUNDY, heretofore in Union Stock Yards Co.'s service, and at one time chief clerk, Ticket Office, G.T.R., Toronto, has been appointed Station Ticket Agent, Toronto, vice A. Albertson, assigned to other duties.

W. A. BLACK, heretofore Locomotive Foreman, Coteau Jct., Que., has been appointed Locomotive Foreman, Depot Harbor, Ont., vice W. J. Harding, assigned to other duties.

D. W. THORNTON, heretofore Yardmaster, Michigan Central Rd., St. Thomas, Ont., has been appointed General Yardmaster, G.T.R., London, Ont., vice W. J. Ball resigned.

The following agents have been appointed:—Blair, Ont., C. Noecker; Ingersoll, Ont., F. N. Burke; Hickson, Ont., R. J. Campbell; Chesley, Ont., G. Reid; Cedars, Que., J. S. Bolduc.

**Michigan Central Rd.**—F. J. DEIMLING, heretofore Engineer of Construction, has been appointed Assistant Chief Engineer, vice A. L. Sarvey, assigned to other duties. Office, Detroit, Mich.

C. C. Hill, heretofore Division Engineer, Niles, Mich., has been appointed Engineer of Construction, vice F. J. Deimling, promoted. Office, Detroit, Mich.

F. B. MARBLE, heretofore Assistant to Chief Engineer, Detroit, Mich., has been appointed Division Engineer, Niles, Mich., vice C. C. Hill, promoted.

A. B. McBURNEY has been appointed Yardmaster, St. Thomas, Ont., vice D. W. Thornton, resigned to enter G.T.R. service.

**New York Central Lines.**—E. A. McCARTHY has been appointed Travelling Passenger Agent, Montreal, vice A. E. Lock, whose appointment as Commercial Agent, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., was announced in our last issue.

**Northern Pacific Ry.**—A. M. BURT, heretofore Division Superintendent, Spokane, Wash., has been appointed Chief Engineer, Maintenance of Way, vice W. C. Smith. Office, St. Paul, Minn.

**South Eastern Ry.**—F. S. Little has been appointed Secretary-Treasurer London and South Eastern Ry., London, Ont., in succession to his father, J. W. Little, deceased.

**Use of Natural Gas on Intercolonial Railway.**—Since the article on this subject which appears on page 14 was put in type, we have been officially advised, in answer to an inquiry, that no trouble has been experienced on account of mixing the natural gas and the Pintsch gas which is put into the car reservoirs at Montreal, while natural gas is put in at the eastern points. The I.R.C. has tanks placed on ordinary flat cars for transporting the gas from Moncton to Halifax and Levis, each tank holding 1,700 cu. ft. at one atmosphere. It is charged or loaded at about 14 to 15 atmospheres. There are separate tanks and compressors for unloading the tank cars and charging the passenger cars at the charging stations at Halifax and Levis.

## Terminal Plans for Quebec.

An Ottawa press dispatch, Dec. 22, stated that the Minister of Railways had that day signed "the agreements which will enable the start of work on the immense terminal undertakings" in Quebec, which involve the building of "a union station, and also a freight depot, extensive car shops at St. Malo, and a large freight yard at St. Foye. A tunnel is to be built between the union station and the harbor front station."

The contract for the building of the shops at St. Malo, at a cost of about $1,500,000, was let in September to J. Gosselin, Levis, Que., by the National Transcontinental Railway Commission. A description of the works covered by this contract appeared in Canadian Railway and Marine World, Sept., 1913, pg. 409. During Oct., the negotiations between the C.P.R. and the city of Quebec as to certain arrangements which would enable progress to be made with the laying out of union terminals in the city were completed, and we were officially advised of the signing of the same on behalf of the C.P.R. In November it was announced that a tunnel would be built in connection with the terminal plans at Quebec, from Lampson's Cove to St. Malo, near the site of the shops. (See Dec., 1913, pages 577 and 578.)

**Kettle Valley Ry. and C.P.R.**—The Board of Railway Commissioners has recommended the Governor-in-Council to sanction an agreement made June 2, between the K.V. Ry. and the C.P.R. providing for an interchange of traffic. On completion of construction the line will be taken over by the C.P.R.

**Quebec Central Ry.**—The Quebec Legislature is being asked to authorize the directors to fix by bylaw the time and place at which the annual meeting shall be held.

## Canadian Government Railways

### TENDER

SEALED TENDERS, addressed to the undersigned and marked on the outside, "TENDER, Diversion of Line North Sydney to Leitches' Creek," will be received up to and including

TUESDAY, JANUARY 6TH, 1914,

for the construction of a line of Railway from North Sydney to Leitches' Creek, N.S.

Plans and specifications may be seen at the office of the undersigned at Ottawa, Ont., at the Station Master's Office, North Sydney, N.S., and at the Office of the Chief Engineer, Moncton, N.B., where forms of Tender may be obtained.

All the conditions of the specification must be complied with.

L. K. JONES,
Assistant Deputy Minister and Secretary, Department of Railways and Canals, Ottawa, Ont.

Ottawa, Ont., Dec. 16th, 1913.

## CALGARY AND EDMONTON RAILWAY CO.

NOTICE.—The Calgary and Edmonton Railway Company will apply to the Parliament of Canada at its next session for an Act increasing its bonding powers, and for other purposes.

Dated at Montreal this 17th day of December, 1913.

H. C. OSWALD,
Secretary.

Pringle, Thompson, Burgess & Cote,
Ottawa agents.

# Mainly About Transportation People.

SIR THOS. G. SHAUGHNESSY spent a week end in Ottawa recently as a guest of the Duke and Duchess of Connaught.

G. E. Rutley, who died recently at Winnipeg, aged 61, was father of B. G. F. RUTLEY, ticket agent, Union Station, Winnipeg.

W. E. Apps, son of WILLIAM APPS, who was at one time Master Car Builder, C.P.R., died at his father's house, Toronto, Dec. 3, age 29.

R. H. LEA, General Agent, Great Western Ry., of England, at Toronto, left there, for England, Dec. 13, on account of a death in his family.

F. C. SALTER, European Manager, G.T.R., G.T.P.R., and Canadian Express Co., who has been visiting Canada, has returned to London, Eng.

G. D. PERRY, General Manager, Great Northwestern Telegraph Co., Toronto, has been elected Vice President, Toronto Carpet Manufacturing Co.

S. W. HOPKINS, who died at New York, Dec. 14, was connected with the organization of the Chicago and Grand Trunk Rd., a subsidiary of the G.T.R.

J. QUINLAN, District Passenger Agent, G.T.R., Bonaventure Station, Montreal, returned to duty early in December, after an absence through illness.

The engagement is announced of Miss Edith M. Shaughnessy, youngest daughter of SIR THOS. G. SHAUGHNESSY, to R. M. Redmond, of Montreal.

F. BARLOW CUMBERLAND, ex Vice President, Niagara Navigation Co., who died at Port Hope, Ont., in September, left an estate valued at $114,979.83.

W. D. REID, President, Reid Newfoundland Co., has returned to Montreal, from St. John's, Nfld., having completely recovered from his recent illness.

W. WHEATON, who, in partnership with a brother, carried out certain contracts on the National Transcontinental Ry., died in the Montreal Hospital, Dec. 15.

E. J. CHAMBERLIN, President, G.T.R. and G.T.P.R., and Mrs. Chamberlin, were week end guests of the Duke and Duchess of Connaught in Ottawa recently.

It was rumored in Ottawa during December, that R. W. LEONARD, Commissioner, National Transcontinental Ry., would be knighted, early in the New Year.

Persistent reports from Ottawa state that the Hon. F. COCHRANE'S health will necessitate his retirement from the position of Minister of Railways and Canals shortly.

FAIRFAX HARRISON, President, Chicago, Indianapolis and Louisville Railway, has been elected President of the Southern Railway, to succeed the late W. W. Finley.

J. E. GRIFFITH, who has been appointed Deputy Minister of Public Works for British Columbia, vice W. W. Foster, resigned, was at one time connected with C.P.R. construction in the west.

HON. F. COCHRANE, Minister of Railways and Canals, returned to Ottawa, Dec. 20, after an extended holiday. It is understood that his health has been much benefitted by the rest and change.

W. E. DUPEROW, General Agent, Passenger Department, G.T. Pacific Ry., Vancouver, B.C., attended the recent meetings of the North Pacific Coast Passenger Agents Association, at Portland, Ore.

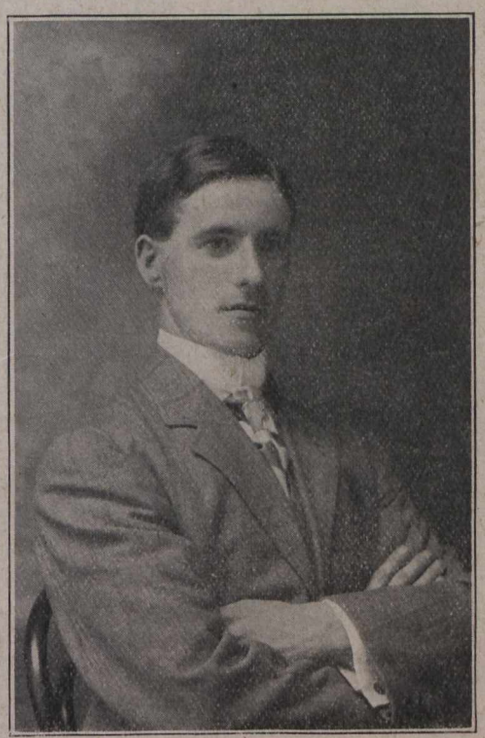
R. W. LEONARD, Commissioner, National Transcontinental Ry., has offered the necessary land and buildings for the establishment of a students' residence and training school for Queens University, Kingston, Ont.

HUNTER BLAIR, who was found dead in his rooms at Toronto recently, was in the Canadian Northern Ry. service there. He is stated to have been a brother-in-law of R. M. Horne-Payne, the C.N.R. director in England.

G. STILSON, Supervisor of Track, G.T.R., Hamilton, Ont., who was injured recently at St. Catharines, when he was thrown off a car of a work train which was being backed into the yard, died in the General Hospital there, Dec. 4.

W. McNAB, Principal Assistant Engineer, G.T.R., gave an address in Montreal, recently, on the progress of the G.T. Pacific Ry., the principles of its success and the advantages of its coast to coast route with low grades, easy curves and excellent roadbed.

D. O. LEWIS, Engineer in charge of the construction of the Canadian Northern Ry.



H. R. Naylor,
Division Car Foreman, Eastern Division, Canadian Pacific Railway.

on Vancouver Island, was elected vice chairman of the executive committee of the Victoria branch of the Canadian Society of Civil Engineers at the annual meeting, Dec. 11.

JNO. M. EGAN, who was General Superintendent, C.P.R., at Winnipeg from 1882 to 1886, is now President and General Manager, Kansas City Railway and Electric Ry. Co,. of which R. J. Clarke, formerly Assistant Comptroller, Toronto Ry., is Comptroller.

D. A. WALLACE, whose appointment as Resident Engineer, District 1, Eastern Division, C.P.R., Farnham, Que., was announced in our last issue, was formerly on the Central Vermont Ry., there, and prior to that was in Illinois Central Rd. service at Chicago.

G. McLAREN BROWN, European Manager, C.P.R., who has recently been spending some time in Vienna, in connection with the company's Austrian business, and the disturbance it has been subjected to on account of political troubles, returned to London, Eng., Dec. 3.

F. STUART WILLIAMSON, M. Can. Soc. C.E., who has resigned as Chief Engineer, Central Railway of Canada, has been appointed Consulting Engineer for that company, and has opened an office at 103 St. Francois Xavier St., Montreal, for the practice of his profession.

E. E. BRYDONE-JACK, C.E., M. Can. Soc. C.E., Professor of Civil Engineering, University of Manitoba, was presented with a clock at Winnipeg, Dec. 17, by the Manitoba branch of the Canadian Society of Civil Engineers, in recognition of the services which he has rendered to the society.

D. S. SUTHERLAND, General Agent, Michigan Central Rd., Detroit, Mich., died there, Dec. 17. He was appointed General Agent in Aug., 1912, after having held the position of Divisional Superintendent there for about 25 years. He had been in the company's service for nearly 50 years.

SIR WILLIAM MACKENZIE, President, Canadian Northern Ry., who returned to Toronto, Dec. 13, from England, confirmed the report that he had while there disposed of £1,500,000 five per cent. land mortgage debentures, particulars of which were given in Canadian Railway and Marine World for December.

JAMES HOWDEN, the inventor of Howden's patent forced draught for steamships, died suddenly, towards the end of November, in Glasgow, Scotland, aged 81. His first experiments with forced draught were conducted in 1862, but it was not until 1882 that the system was first introduced into steamships.

An unconfirmed report from Winnipeg says that R. J. MACKENZIE, who has spent most of his life in California during the past two or three years, will return to Winnipeg and again take an active part in Canadian Northern Ry. matters, particularly construction, and that he will be appointed Second Vice President.

S. C. HAYWARD, who died at Port Huron, Mich, Nov. 24, aged 84, was in G.T.R. service from early boyhood, holding various positions in the Point St. Charles, Stratford and Port Huron Shops. He retired from active service about 18 years ago, prior to which he had held the position of Master Mechanic for some years.

J. H. STORTZ, Locomotive Foreman, G.T.R., Mimico, Ont., met with a serious accident recently, when he was caught between a locomotive house door and the cylinder of a moving locomotive, when investigating some valve gear trouble on the locomotive. He was badly crushed, two ribs broken and his hip injured, but is reported to be progressing favorably.

W. A. BLACK, who has been appointed Locomotive Foreman, G.T.R., Depot Harbor, Ont., was born at Belleville, Ont., Mar. 27, 1880, and entered G.T.R. service as an improver, in 1900, and later served as a machinist, and to 1911, acted as Night Foreman and Assistant Shop Foreman, Belleville, Ont.; 1911 to 1912, Shop Foreman, Belleville, Ont.; 1912 to Nov., 1913, Locomotive Foreman, Coteau Jct., Que.

JOSEPH ABRAMS, who was recently appointed Wharf Freight Agent, C.P.R., Vancouver, B.C., was born at Manchester, Eng., Jan. 24, 1870, and entered transportation service in 1886, since when he has been, to 1891, yard clerk and checker, Cheshire Lines Committee, Manchester, Eng.; 1891 to 1899, freight handler, car sealer and freight checker, C.P.R., Winnipeg; 1899 to 1907, freight checker, delivery clerk and foreman, C.P.R., Vancouver wharf; 1907 to 1913, General Foreman, local traffic, C.P.R., Vancouver, B.C.

FRANK STAMELIN, who has been appointed Night Locomotive Foreman, C.P.R., Winnipeg, was born at Chatham, Ont., Oct. 16, 1863, and served his apprenticeship there, after which, to May, 1907, he served in various capacities with railway companies in Canada and the U. S. He re-entered C. P.R. service, May, 1907, and was to Sept., 1907, Shop Foreman, Kenora, Ont.; Sept., 1907, to June, 1908, Shop Foreman, Winnipeg; June, 1908, to Feb., 1909, Locomotive Foreman, Saskatoon, Sask.; Mar., 1909, to Dec. 1, 1913, Shop Foreman, Winnipeg.

JOHN WARDLE, who was recently appointed Commercial Manager, Metropolitan Ry., London, Eng., has had considerable railway commercial experience, having been 15 years with the Lancashire and Yorkshire Ry., in England, after which he was Assistant Secretary, G.T.R., London, Eng., and while holding this position accompanied the then President on a tour of the system in Canada and the United States. After holding that office for about four years, he was appointed London Manager of the G.T.R. Traffic Department, which position he held for about a year.

GEORGE HENDRIE, who died at Detroit, Mich., Dec. 20, aged 79, was a brother of the late Wm. Hendrie, the founder of the Hendrie Cartage Co., railway cartage agents. He was engaged in the cartage business in Hamilton, Ont., for a few years, but moved to Detroit nearly 50 years ago, establishing the first freight cartage line there. He was interested in the organization of the Duluth, South Shore and Atlantic Ry., now controlled by the C.P.R., and was President of the Detroit and Buffalo Steamboat Co., and at one time was a director of the Detroit and Cleveland Navigation Co.

LEWIS NORMAN, whose appointment as Storekeeper, C.P.R., Coquitlam, B.C., was announced in a recent issue, was born in Devonshire, Eng., Oct. 5, 1884, and entered C.P.R. service, Feb. 25, 1908, since when he has been, to Dec., 1908, clerk, Vancouver, B.C.; Dec., 1908, to Mar., 1910, storeman, Vancouver, B.C.; Mar. to July, 1910, on supply car, Vancouver. B.C.; July to Sept., 1910, shipper, Vancouver, B.C.; Sept., 1910. to Feb., 1911, relieving storekeeper, Kamloops, B.C.; Feb. to Oct., 1911, storeman, Vancouver, B.C.; Oct., 1911, to Feb., 1913, tracing and pricing clerk, Vancouver, B.C.; Feb. to Apr., 1913, Storekeeper, Kamloops, B.C.

FRANCIS EDWARD RUTLAND, whose appointment as Agent, C.P.R. Stockyards, Winnipeg, was announced in our last issue, was born in Essex, Eng., Nov. 17, 1868, and entered transportation service about 25 years ago. Prior to coming to Canada, he was engaged in railway work in South Africa, during and after the Boer War. He entered C.P.R. service in 1904, since when he has been, to 1905, register clerk, Local Freight Department, Winnipeg; 1905 to 1907, chief correspondence clerk, same department, Winnipeg; 1907 to Nov. 6, 1913, chief clerk, same department, Winnipeg. He is a commissioner for oaths and notary public for Manitoba.

J. G. SUTHERLAND, whose appointment continental Passenger Association, who died at Chicago, Ill., recently, after a short illness, was born at Bothal, Northumberland, Eng., May 15, 1832, and commenced railway service there, Apr, 1847, since when he has been, to Mar., 1857, junior clerk, chief clerk, and cashier, Newcastle and Carlisle Ry., Newcastle upon Tyne, Eng.; Apr. 29, 1857 to 1870, assistant to chief clerk, Audit Department, in charge of statistics and freight accounts, and chief clerk, auditor and General Passenger Agent, Great Western Ry. of Canada, now part of the G.T.R. Since March, 1870, his service has been in the U.S., retiring from active railway work, Jan. 1, 1900, when he held the position of General Passenger and Ticket Agent, Chicago and Alton Rd.

JAMES CHARLTON, Chairman, Transas Car Service Agent, Alberta Division, C. P.R., Calgary, was announced in our last issue, was born at Aulac, N.B., Nov. 24, 1882, and entered railway service June, 1898, since when he has been, to Apr., 1901, operator and assistant agent, Intercolonial Ry. at various points; Apr., 1901, to June, 1902, operator, Pacific Division, and relieving agent, C.P.R., at various points; June, 1902, to May, 1906, dispatcher, C.P.R., Revelstoke, B.C.; May, 1906, to Feb., 1907, dispatcher, C.P.R., Calgary, Alta.; Feb., 1907, to Apr., 1911, dispatcher and acting Chief Dispatcher, C.P.R., Cranbrook, B.C., and Macleod, Alta.; Apr. to Nov., 1911, dispatcher and acting Chief Dispatcher, C.P.R., Calgary, Alta.; Nov., 1911, to Nov., 1913, Chief Dispatcher, C.P.R., Medicine Hat, Alta.

ALFRED H. SMITH, who has been appointed President, New York Central and Hudson River Rd., and Lake Shore and Michigan Southern Ry., New York, was born in the Western States in 1864, and has achieved all his railway experience with the New York Central Lines. He commenced service with the Lake Shore and Michigan Southern Ry. in 1879 as a messenger boy, subsequently transferring to the Purchasing Agent's Department, and later to the Engineering Department, under which he worked for several years as foreman and general foreman of construction on the change of grade and reconstruction of the line west of Toledo. From Oct., 1890, to Apr. 1, 1901, he was consecutively, Superintendent, Kalamazoo, Lansing, Franklin and Michigan Divisions; Apr. 1 to June 17, 1901, Assistant General Superintendent, Cleveland, O.; June 17, 1901, to Feb., 1902, General Superintendent; Feb., 1902, to July 1, 1903, General Superintendent, New York Central and Hudson River Rd.; July 1, 1903, to June, 1906, General Manager, same road; June, 1906, to Apr. 15, 1912, Vice President, same road; Apr. 15, 1912, to Mar., 1913, also Vice President, other N.Y.C. Lines; Mar. to Dec. 31, 1913, Senior Vice President, New York Central Lines in charge of operation, maintenance and construction.

JOHN WILLIAM PORTER, whose appointment as acting Chief Engineer, Hudson Bay Ry., Winnipeg, was announced in our last issue, was born at Aberdeen, Scotland, Oct. 15, 1877, and entered railway service in 1896, since when he has been, to 1902, pupil and assistant in office of Engineer in Chief, Great Northern Ry. of Scotland, Aberdeen; May, 1902, to Jan., 1903, draughtsman, Construction Department, C.P.R., Montreal; Jan. to Dec., 1903, draughtsman and transitman, C.P.R., Winnipeg to Fort William; Dec., 1903, to Mar., 1905, transitman, preliminary and location, C.P.R., Sudbury to Parry Sound, Toronto-Sudbury Line; Mar. to June, 1905, assistant chief of location party, Walkerton-Proton Line, C.P.R.; June, 1905, to Jan., 1906, Resident Engineer on Construction, Toronto-Sudbury Line, C.P.R., Alliston, Ont.; Feb. to May, 1907, Assistant Engineer, Georgian Bay and Seaboard Ry. (C.P.R.), Coldwater, Ont.; May, 1907, to May, 1909, Assistant Engineer, Toronto-Sudbury Line, C.P.R., Craighurst, Bala and Parry Sound, Ont.; Sept., 1909, to June, 1912, Division Engineer, District —, National Transcontinental Ry., Quebec, Que.; June, 1912, to Nov., 1913, Assistant District Engineer, District B, National Transcontinental Ry., Quebec, Que.

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The total railway consumption of crude oil in 1912 is estimated at 32,000,000 barrels, an increase of 4,000,000 over 1911. The total mileage operated by fuel oil is 28,000 miles.

## A Suit Over the Old Great Eastern Railway.

Some details of the early history of the old Great Eastern Ry. came out recently in the course of an action brought in the Quebec courts by Miss I. M. M. Campbell against the widow and administratrix of the late Hon. R. Prefontaine. The line was acquired by C. N. Armstrong in 1894, and subsequently an endeavor was made to settle the company's indebtedness, the creditors including Miss Campbell's father and Hon. R. Prefontaine, to whom $10,000 each were due. Mr. Armstrong and the creditors agreed to have the line sold, and bid in by the South Shore Ry. at $65,000. Mr. Prefontaine bought the railway, however, at auction for $505, and later on transferred it to the South Shore Ry. for $59,999, the S. S. Ry. turning over in payment certain subsidies from the Dominion and Quebec Governments. At the time of Mr. Prefontaine's sudden death in Paris, there was still due to him on account of the agreed on price, $22,-035.55, with interest, which was subsequently paid when the South Shore Ry. was acquired, along with the Quebec Southern Ry., by Senator Beique for the Delaware and Hudson Co., and amalgamated as the Quebec, Montreal and Southern Ry. Mrs. Prefontaine, her husband having died intestate, is administering the estate under the terms of her marriage settlement. Miss Campbell sought to recover the $10,000 due to her father as one of the creditors of the old Great Eastern Ry., and Mrs. Prefontaine's counsel contended that she only had the usufruct of her deceased husband's property and personally could not pay out or alienate any portion of the property. The court upheld this contention, Dec. 7.

## National Transcontinental Railway Bridges.

Between Moncton and Winnipeg there are 200 bridges having an aggregate length of 11 miles and a weight of 61,000 tons of steel; they cost more than $6,000,000. Some of the most interesting structures were mentioned by R. F. Uniacke, Bridge Engineer, N.T.R., in an address at the Canadian Railway Club recently.

Many of the bridges are plate girder viaducts, among which is the one over Little Salmon River. It is 100 ft. high, 4,000 ft. long and contains 7,000 tons of steel. In the Bostonnais River bridge, where the deck plate girders are supported on comparatively low concrete piers, the spans are tilted out of a horizontal plane so that the girder webs are slightly inclined to the vertical and provide without shimming for the superelevation of the outer rail on a curve.

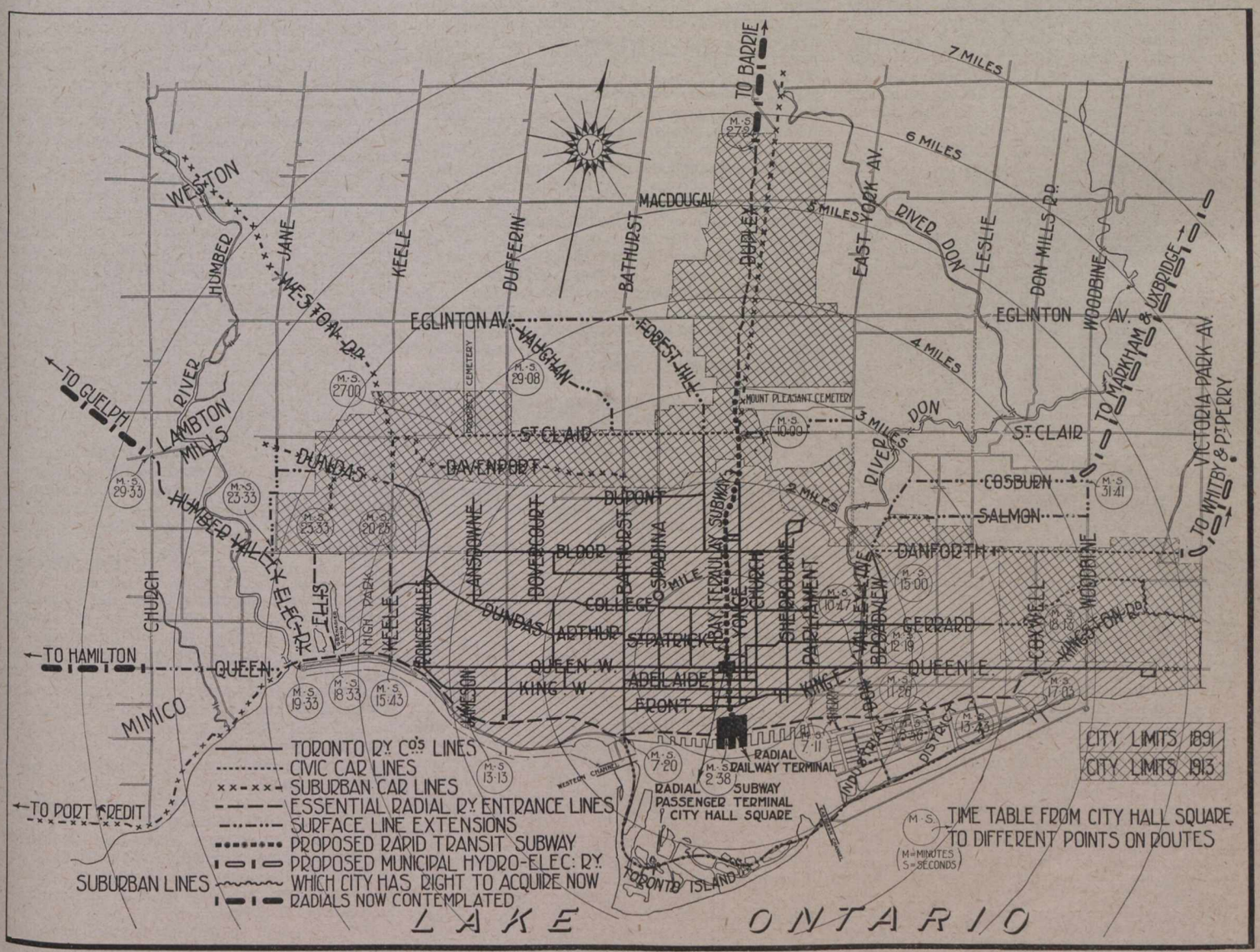
Falsework for the erection of the Bush River bridge truss spans and for the preliminary temporary support of a contractor's service track was made with the main bents capped at the proper elevation to support the chamber blocks for the trusses, and surmounted by centre pony bents to carry track stringers and rails and provide for a construction track in advance of the bridge erection.

The 80 ft. deck plate girder approach span of the Okekodaski River bridge was supported at the shore end on a concrete pier that was wrecked by transverse displacement. The sub soil was found to be unable to support the 15 ft. fill that had been retained by the abutment pier. Temporary repairs were effected by supporting the end of the span on timber cribbing until a permanent low steel trestle could be built to replace the embankment.—Engineering Record.

# Electric Railway Department

## Toronto Harbor Commissioners' Suggestions for Solving the Electric Railway Problem.

Another plan for the solution of the local transportation situation in Toronto has been submitted for consideration, this time by the Board of Harbor Commissioners, and the story of its inception and development is told in a report, with plan annexed, prepared by E. L. Cousins, Engineer to the Board, and reasons for its presentation to the public are given in a letter covering the report and plan, sent to the Mayor by L. H. Clarke, Chairman of the Harbor Commission.




In his report Mr. Cousins says: "The settlement of the viaduct question and the fact that as a result the Commissioners were enabled to secure control of the inner harbor front between Cherry St. and Bathurst St., together with the development plans of the Commissioners, has at last made possible with a reasonable expenditure the construction of a radial railway entrance from both east and west along the water front to a central radial railway terminal." The first point settled, according to the chairman's letter, was the location of terminals for the transfer of passengers and freight among the three different services—steamships, steam railways and electric railways. This was fixed at the water front between Bay and Yonge streets, and the necessity of providing adequate connection with the steam and electric railways in the city and converging thereon led to the preparation of these comprehensive plans.

The main feature of the proposal is to provide a waterfront terminal between Bay and Yonge streets, to be used by all passenger steamships entering the port, and to have provision for the distribution of the passengers to all parts of the city. To provide for this distribution, and on the other hand for the collection of passengers, it is proposed that there shall be a line along the waterfront, partly on land belonging to the Harbor Commission, partly by the city, and partly on the right of way of the Toronto and York Radial Ry., in process of acquirement, or which may have been acquired by the city, from the Humber River, to Victoria Park Ave., on Kingston road, and to have a branch from Bathurst St., across the Western channel to and along the Island to Ashbridge Bay, and connecting up again with the water front line. In the next place, it is proposed to build a subway or tube line to a central terminal at the City Hall, connecting there with the previously projected tube line to St. Clair Ave. This tube line it is proposed to extend to the old Belt Line Ry., then bringing it to the surface to extend it right to the northerly boundary of the city, about 5½ miles from the City Hall. The various surface lines proposed would connect up these lines with existing civic lines, or would open up new territory. In most cases they are not more than suggestions of possible lines, but are given by the Commission as being probably the most suitable.

The final point in the proposals has to do with the entrance of the radial lines now

converging, or projected to converge on Toronto. It is proposed that all these shall enter the waterfront terminal. These, with the proposed points of connection with the Commissioners' suggested lines are:—Toronto and York Radial Ry., Mimico Division, at the Humber River Bridge; T. and Y.R. Ry., Scarboro Division, at Kingston Road, if the section to Victoria Park Ave. be not acquired. T. and Y.R. Ry., Metropolitan Division, at St. Clair Ave. Toronto Suburban Ry.—Guelph line at Lambton Mills; Weston-Woodbridge line at St. Clair Ave., and Keele St. The proposed line from Hamilton it is suggested to connect with the extension of the line across the Humber Bridge along Queen St. West; the proposed Toronto, Barrie and Orillia Electric Ry. would connect with the surface line extension of the Terauley-Yonge St. subway; the proposed Hydro-Electric line to Markham and Uxbridge would connect with the surface line ending at Cosburn and Woodbine Avenues; while the proposed Hydro-Electric line to Whitby and Port Perry would be connected up with the Toronto Civic Car Line on Danforth Ave.

The plans are divided into two sections, the essential lines, covering 25.46 miles of double track, and certain surface line extensions which may be built as required. These lines, together with the estimated cost of the same, are as follows:

ESSENTIAL LINES.

EASTERN SECTION.—From the waterfront terminal between Bay and Yonge Streets, easterly to a connection with the Kingston Road division of the Toronto and York Radial Ry., 4.12 miles. It is suggested that the section of the T. and Y. R. Ry. to the city limits at Victoria Park Ave. be acquired. The estimates provide for the acquiring of this piece of line and reconstructing it as a double track line, with a branch to the Toronto civic car line on Gerrard St. A branch line from near Eastern Ave., via Coxwell Ave. A branch from where the main line crosses the Don, along the eastern bank of the river to the corner of Danforth Ave. and Don Mills Road. Estimated cost of these lines, $1,933,300.

NORTHERN AND CENTRAL SECTION.—From the waterfront terminal northerly to the central terminal station at Terauley St., by a subway, connecting there with the projected subway along Terauley St. and extension and Yonge St. to St. Clair Ave. At present there is a civic car line running west along St. Clair Ave for 3.12 miles. Subway extension to Old Belt Line, 2,300 ft., and a continuation as a surface line to the northern city limits, via Duplex Ave. Estimated cost, $7,703,550.

WESTERN SECTION.—From the waterfront terminal at Bay and Yonge Streets, westerly through the Exhibition Grounds by a subway, and out to the level of the G.T.R. at Sunnyside, along the Lake Shore Road on the right of way of the Mimico Division of the Toronto and York Radial Ry., to the Humber River. This piece of line is proposed to be taken over by the city, Jan. 1. From the Humber the line would turn northwesterly and follow the right of way of the projected Humber Valley Electric Ry., reaching Dundas St. at Lambton Mills. A branch line from the Lake Shore Road along Ellis Ave., or Windermere Ave., and other streets, to Bloor St. A branch line from the Lake Shore Road along Keele St., and through High Park, to Bloor St. Estimated cost, including the cost of acquiring the Sunnyside-Humber River section of the Toronto and York Radial Ry., $3,560,675.

Total estimated cost of essential lines, $13,197,524.

SURFACE LINE EXTENSIONS.

EASTERN SECTION.—From corner of Don Mills Road and Danforth Ave. along Don Mills Road to Fulton St., thence easterly to Woodbine Ave., north along that avenue to Cosburn St., and westerly along that street to Don Mills Road. From the foot of Bathurst St., across the Western Channel and along the Island to the Eastern Channel, to connect with the main line easterly, and with spurs serving the Ashbridge Bay industrial district. Estimated cost, $846,000.

CENTRAL AND NORTHERN SECTIONS.—Line easterly from Yonge St. to Eglinton. A line through Forest Hill and westerly along Eglinton Ave. to Dufferin St. A surface line from west of Bathurst St. to Eglinton Ave. at Dufferin St. Estimated cost, $669,750.

WESTERN DISTRICT.—Extension from the Humber River, along Queen St., west to Church St., Mimico. May, Jane and St. John's Road extension from Bloor St. to Dundas St. Estimated cost, $270,250.

**Total estimated cost of surface line extensions $1,786,000.**

**Total expenditure called for by plans $14,983,525. This estimate is exclusive of cost of terminals.**

The accompanying plan shows the existing city lines and radial lines, together with the proposed lines and the projected radial lines. Figures on the plan show the time required for transit from the City Hall to the various points indicated on the several proposed lines. No estimates have been made as to the probable receipts from traffic on the lines.

The Board of Control has referred the report and plans to the City Engineer and the City Solicitor for consideration and report.

## Public Utilities Commissioner's Report on Winnipeg Electric Railway.

H. A. Robson, Public Utility Commissioner for Manitoba, issued a statement recently dealing with the City of Winnipeg's light and power department and also with the Winnipeg Electric Ry. Co. and two of its subsidiaries. Following are extracts:—

The Winnipeg Electric Ry. Co.'s fiscal year ends with Dec. 31. A copy of its statements in respect of its last year's business is submitted herewith. The company in filing these accounts stated that on account of its owning and operating the street railway and the power and light department as one concern, it was somewhat difficult to separate the accounts. It had made a separation of certain items for its own purposes, which separation was somewhat arbitrary, without having gone minutely into figures. The gas department is kept separate. The Suburban Rapid Transit Co. and the Winnipeg, Selkirk & Lake Winnipeg Ry. Co.'s report is also herewith. Certain of these accounts may require investigation for the purposes of pending applications for rate reductions. Shareholders and bondholders, in privately owned utilities, are entitled to apply for the setting up of depreciation reserves. Aside from rate questions and protection of securities there may be a public interest in the establishment of depreciation reserves in order to keep utility property up to condition. This is a matter open to be considered on an appropriate proceeding.

The following are the figures for 1912 for the street railway department:—

| | |
|---|---|
| OPERATING REVENUES— | |
| Revenue from transportation | $2,152,729.60 |
| Sundry earnings | 21,611.48 |
| Total revenue | $2,174,341.08 |
| OPERATING EXPENSES— | |
| Transportation | $922,999.12 |
| Repairs, buildings and plant | 6,731.09 |
| Repairs, equipment | 111,639.65 |
| Repairs, roadbed, track and overhead | 46,591.65 |
| Salaries and expenses | 57,488.81 |
| Total operating expenses | $1,145,490.32 |
| Gross revenue | $1,028,890.76 |
| Deductions from gross revenue— | |
| City of Winnipeg percentage on car license | $111,448.74 |
| Percentage of fixed charges to capital invested | 168,469.98 |
| Total | $279,918.72 |
| Net revenue | $748,972.04 |

The financial statement of the two subsidiary companies may be briefly summarized. That of the Winnipeg, Selkirk and Lake Winnipeg Ry. shows that the operating revenue for the year was $106,181, and the total operating expense, $52,648, leaving a gross revenue of $53,533. The interest on the funded debt and other miscellaneous expenditures was $44,033, leaving the net income $9,499. No dividend was paid on the common stock, the net income being carried forward. The assets are $1,127,609. The surplus of assets over liabilities is $36,908. The common stock is $111,500, and the funded debt is $400,000.

The Suburban Rapid Transit Co., working the line to Headingly, had an operating revenue of $59,060, and operating expense of $57,419, showing a gross revenue of $1,640. The interest on the funded debt was $25,000. The taxes were $1,606, leaving a net deficit for the year of $24,966. The deficit at the beginning of the year was $18,402, the total deficit at the end of the year being $43,469. No dividend was paid on the common stock. The assets of the company are given as $600,657, and the liabilities $644,026. The common stock is $100,000, and the funded debt in bonds $500,000.

## Proposed Municipal Electric Railways in Western Ontario.

At a meeting of delegates representing the municipalities of the Counties of Wellington, Grey and Simcoe, interested in the building of an electric railway from Hespeler, through Guelph to various points on Georgian Bay, held in Guelph, Ont., Dec. 9, a resolution was passed emphasizing the need for the construction of such a railway; pointing out that the Hydro-Electric Commission of Ontario is eminently qualified for the carrying out of such a project; urging that the commission take the necessary steps to collect information as to the cost of construction, operation and the manner of financing construction, and promising the support and co-operation of the several municipalities "in the building up of such a hydro electric radial system as shall bring the greatest development, progress and prosperity to the whole Province of Ontario." Hon. Adam Beck, M. L. A., Chairman of the Hydro-Electric Power Commission, who attended the meeting upon invitation, said that engineers were going over the ground for various suggested lines, and only on the basis of any line becoming self supporting would the Commission undertake the responsibility of advising its being built. The municipalities would have to take the risk of the line failing to meet the cost of operation and sinking fund.

In connection with this project, an investigation is being made with a view of building an electric railway from London to St. Marys and Stratford, to be operated by power supplied by the Hydro-Electric Commission.

P. Pocock, Chairman of the Hydro-Electric Commission of the City of London, is reported to have made considerable enquiries into the matter, and committees have been formed in a number of the municipalities interested. A press report from St. Marys states that engineers of the commission have recommended that the section of the line from London to St. Marys be constructed, and that the St. Marys Town Council is considering submitting a bylaw to the ratepayers at an early date, granting the necessary franchise.

The Middlesex County Council passed a resolution, Dec. 6, asking the Hydro-Electric Commission to prepare plans and estimates for the building of an electric railway from London to St. Marys and Stratford, and the London City Council passed a similar resolution Dec. 9.

Press reports state that persons who are interested in the Merchants' Mutual Line, and other steamship interests, are having plans prepared for an electric line from Petrolia to Corunna, Ont., with lines radiating therefrom to Sarnia and other points.

It has been announced that the Pennsylvania Rd. will extend its electrified zone to Elizabeth, N.J. This is a step toward the electrification of the entire New York division, which will probably be accomplished within the next few years.

## The Port Arthur and Fort William Electric Railway.

On Dec. 1, the Port Arthur and Fort William Electric Ry.. which for some years has been operated by a joint commission, passed under the direct and separate control of the councils of the two cities named, at the head of Lake Superior, each city taking over for operation under the direction of its own council, the portion of the line within its own borders. At the time the joint board was constituted the Fort William City Council acquired by purchase the portion of the old Port Arthur Electric Ry., within its borders, and since that date all capital expenditure on the lines has been made by the two cities, each on its own behalf. The order of the Ontario Railway and Municipal Board creating the joint commission provided that its existence might be terminated on Dec. 1, 1913, and that, if so terminated, for five years thereafter, only one fare should be charged on the system, that is, for a fare collected in Port Arthur a passenger should be carried to any point in Fort William, and contrariwise. By an arrangement made between the councils of the two cities no alteration in the officers in charge of operation, or of the schedule, were to be made during December, pending adjustment of various matters, and the settlement of questions as to future management. The only difference noticeable by the public, was that at the boundary point between the two cities, the conductors of the various cars operating on the main line change fare boxes.

The railway has a total length of just over 40 miles, and the two systems have a mileage of approximately 20 track miles each. The main line extends from a point in Port Arthur, about which a definite understanding has not yet been reached, to a point in Fort William. An eight minute service is maintained on this line from 6 a.m., until midnight, then every hour. Each city has full control of traffic in its own boundaries, collecting fares, within its own bounds, but as on this main line Port Arthur cars will run into Fort William, and the reverse, it has been arranged for a change of fare boxes to be made at the boundary.

Certain rolling stock was acquired from Port Arthur by Fort William at the time the joint commission was formed, and since then each city has purchased such rolling stock as was necessary to meet the requirements of traffic within its own boundaries. On Dec. 1, Port Arthur was in possession of 16 double truck and one single truck pay-as-you-enter cars, and 3 double truck and 2 single truck cars of the ordinary type, while Fort William owned 11 double truck and 1 single truck pay-as-you-enter cars, and 5 double truck cars of ordinary type. Fort William has on order 5 single truck, and three double truck pay-as-you-enter cars. The Fort William cars are now heated by electricity, but they are being fitted with ordinary heaters. Power for the operation of the entire line is supplied by Port Arthur, in which city the car repair shops, owned entirely by Port Arthur, are situated. Each city has its own car barns.

The joint commission consisted of two members nominated by each of the cities, and these four appointed a chairman, the chairman in 1913 being G. L. Matthews, Port Arthur. The operating officials at the time of the transfer were: General Manager, M. O. Robinson; Purchasing Agent, A. R. Herman; Master Mechanic, F. Philp; Road-master, J. Dillon; Line Foreman, N. Kennedy. Prior to the appointment of the joint commission the line was managed for Port Arthur by Commissioners elected by the ratepayers.

The Fort William City Council passed a resolution, Dec. 5, appointing M. O. Robinson Manager of the city electric railway, at a salary of $125 a month, and on Dec. 8, the Port Arthur City Council passed a similar resolution appointing him Manager of the latter city electric railway at the same salary. He was General Manager of the entire line under the joint commission, and is now Manager of the two separate lines. The receipts of the two systems for the first two days of the separate operation are reported to have been as follows: Port Arthur—Receipts, Dec. 1, $319.80; per cent of total, 40.2; Dec. 2, $404,84; per cent, 41.7. Population, 18,500. Fort William—Receipts, Dec. 1, $473.90; per cent. of total, 59.8; Dec. 2, $560.66; per cent., 58.1. Population, 25,000.

## British Columbia Electric Railway Percentage Payments in Vancouver.

A report was presented by the city auditors to the Vancouver City Council, Nov. 29, on the system of fixing the percentages paid by the British Columbia Electric Ry. to the city for suburban traffic. The auditors found that the percentages due the city, as reported by the company, on traffic within the old city limits, and on traffic within the annexed districts, where nothing was paid for the use of streets, were correct, but objection is taken to the system of calculating percentages, for traffic on various lines beyond these areas. The traffic on the particular lines is discussed in detail. As the result of a conference with the City Auditors, the company's officers agreed that the percentage in future shall be based on tests made of the traffic on the several lines affected every six months. Another question involved was in regard to settlers' tickets, of which during September 243,240 were used, the company's officers, while declining to withdraw from the position taken up that no percentage was due on this traffic, expressed a willingness to pay $1,200 a year on account of it. The arrangement in both cases begins Jan. 1, and will extend during the currency of the franchise in the city, which expires in 1919.

## The Ottawa Electric Railway's Suburban Fares.

The Ottawa Electric Railway gave notice some time ago that on and after Dec. 1 an extra fare would be charged to all passengers riding from Holland Ave., the western limits of the city, to Britannia and intermediate points. As a result of an application filed with the Board of Railway Commissioners on behalf of the city, asking the commission to investigate the company's tariffs, and its alleged unwillingness to make any further extensions in the city before the expiration of the franchise in 1923, an order was issued restraining the company from putting the proposed increase in rates in effect before Jan. 1, and the application was subsequently withdrawn, on the understanding that the matter will be brought up again toward the end of the year. The company contends that since the one fare from any part of Britannia to Ottawa, a distance of about 6 miles, has been in effect the receipts have not been sufficient to pay the fixed charges of $50,000 on the $750,000 invested in the line. When the line was opened in 1900 an extra fare was charged from the city limits. Five years ago the extra fare was abolished and a fare or transfer from any part of the city was honored on the line. The district through which the line runs has become fairly well settled during the last five years, but the increase in traffic which resulted has not been sufficient to meet even the fixed charges.

## Guelph Radial Railway Company's Report.

Following are extracts from the report for the year ended Sep. 30, 1913, of A. H. Foster, Manager Guelph Radial Ry, which is owned by the City of Guelph, Ont.:

Passengers carried, 1,192,129, an increase of 263,084 over 1912. Transfers issued, 153,012, an increase of 39,128 over 1912. The average fare is 3 4-5 c. with an increase of .022 per passenger car.

The extraordinary expenses for the year were approximately $706.00, which includes repairs to track on Wyndham and Woolwich Streets, and the strengthening and repairing of a pier on the Dundas Road bridge. The earnings, $49,816.99, show an increase of $11,415.40, or 29.7% over 1912. The expenses, $33,771.33, show increase of $3,208.93, or 11.05%. The net profits show an increase of $8,206.47, or 104.67%. The additions to real property were $16,937.87. The surplus profits are $29,654.11, an increase of $9,985.66 over those to Sept. 30, 1912.

PROFIT AND LOSS ACCOUNT FOR YEAR.

| | | |
|---|---|---|
| **Earnings.** | | |
| Passenger receipts | $45,835.40 | |
| Freight | 2,909.66 | |
| Advertising | 405.05 | |
| Rent | 200.04 | |
| Sale of power | 43.75 | |
| Interest and discount | 174.26 | |
| Rink receipts | 167.85 | |
| Park receipts | 80.98 | |
| | | $49,816.99 |
| **Expenditures.** | | |
| Passenger operating | $11,809.49 | |
| Freight | 900.47 | |
| Oil and waste | 297.50 | |
| Coal | 280.54 | |
| Painting | 370.97 | |
| Office salaries | 1,511.50 | |
| Stationery | 265.85 | |
| General expense | 186.30 | |
| Insurance | 545.02 | |
| Car barn maintenance | 6,558.19 | |
| Taxes | 1,629.35 | |
| Track | 1,963.61 | |
| Line | 180.21 | |
| Power house | 224.74 | |
| Park expense | 924.05 | |
| Hotel expenses and taxes | 18.75 | |
| Rink | 181.78 | |
| Power | 5,757.71 | |
| Legal expense | 165.30 | |
| | | $33,771.33 |
| Profits on operating | | 16,045.66 |
| Written off for depreciation | | 9,654.11 |
| Net profit | | $6,391.55 |

## Hours of Labor on Toronto Railway.

Jos. Gibbons, Business Agent, Toronto Railway Employes Union, has made an application to the Ontario Railway and Municipal Board in which he sets out Sec. 272 of the Ontario Railway Act as follows:—"The Board may regulate the hours during which conductors and motormen, employes of a street railway company, may be required or permitted to work, but in no case shall an employe be permitted to work more than six days in a week, or 10 hours per day, and whenever practicable and reasonable such 10 hours shall be performed within 12 consecutive hours."

The application then states that the Toronto Ry. has in operation schedules that do not comply with the regulations specified in this section, the day's work in some cases being spread over a period up to 17 hours, and he asks that the Board make an order directing the company to operate its railway in accordance with Sec. 272, and also an order limiting the hours during which employes of a street railway may be permitted to work on Sunday to eight hours, the said eight hours work to be performed in eight consecutive hours.

## Pay-As-You-Enter Cars on London Street Railway.

Canadian Railway and Marine World for December contained a description of six single truck p.a.y.e. cars built for the London St. Ry. by the Preston Car & Coach Co., with a floor plan and an illustration of the steel underframe. We were advised early in December that two of the cars had been put in operation and that the public had taken to them without any difficulty and appeared highly pleased with them. We have received the following information in regard to them:—

Every bit of space in the cars is fully utilized. Putting the forced ventilation heater in the vestibule with the motorman, makes room for one more seat for three passengers and also additional standing room for three or four more. The floor of the car is built out over the floor of the front vestibule to a point in line with the small partition just back of the motorman. While it might appear that this would crowd the motorman quite a bit, it is found that he has ample room. The floor is slightly extended in the same manner in the back vestibule in order that the conductor may stand further into the vestibule and at the same time be on a higher level than the passengers entering and paying their fares, the conductor thus being in a more commanding position.

The register is mounted just over the middle window of the rear vestibule. It is operated by foot pedals with the lever running upwards through the pipe stanchion just to the left of the conductor when he is facing the fare box. The mechanism works a rod from the top of this stanchion overhead to the register. Double registers are used, recording cash fares and tickets on one dial and transfers on the other dial.

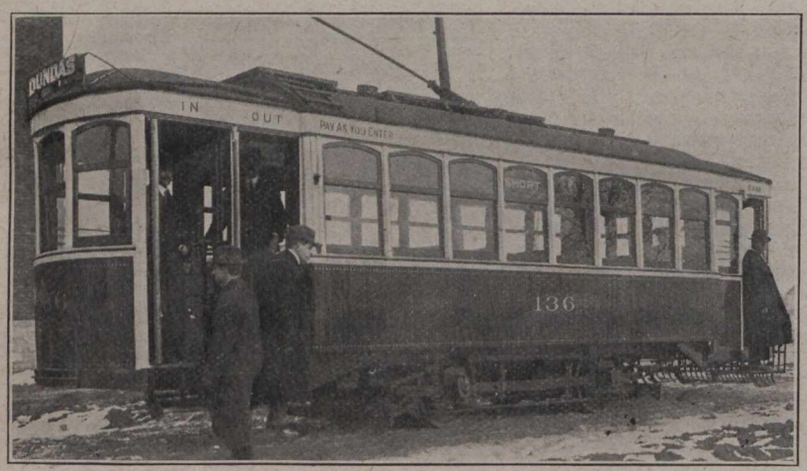
In the body of the car proper, lift windows with sash fixtures are used instead of the drop windows. This enables the using of the thin walls in the car, which in turn enables the aisle to be made of maximum width.

The sign on the end of the car shown in the accompanying illustration as "Dundas," is illuminated, having two lamps arranged in the brackets with reflectors just behind the sign. Any name and desired color can be used, thus avoiding any possible confusion of getting the right color with the right name. These signs are distinguishable by color several blocks away and by reading the word quite a reasonable distance. The signs are mounted close to the end of the car, so that they may be reached from inside the car when the window is lowered or by standing on a small step provided just beside the number. The signs can then be changed without having to climb on to the roof of the car. The side signs shown as "Short," and referring to a short line which is operated, are provided by slipping a small sheet iron sign into sockets which are attached to the window posts just between the runway for the lower sash and the shade. This sign might be perforated and colored glass used to correspond with the same routing color. An advantage of this sign is that it also shows the passengers inside just what car they are on.

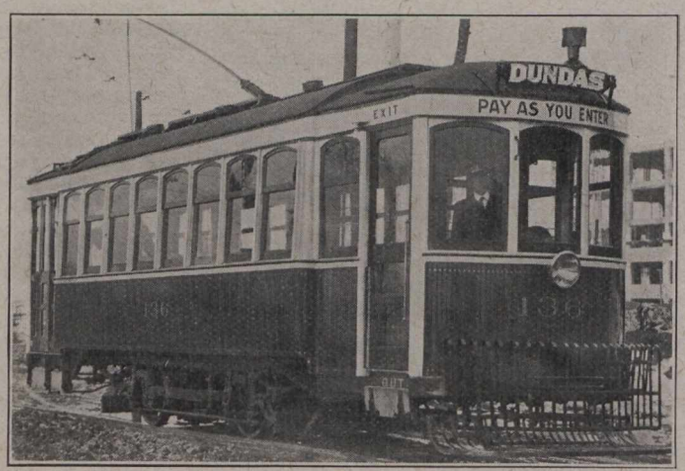
A feature of the doors which is being tried, to prevent clothing or hands being caught when the door is being closed, is that the edge of the door is cut away 1½ ins. and the space filled up by a loop of soft rubber sheeting, which is not strong enough to injure the hands nor to hold clothing even should they get caught.

On putting the cars into service, the company inserted advertisements in the local papers, giving exterior views and floor plan of the car, showing entrance, fare box and exits, with the following reading matter, in which the co-operation of the public is asked to secure efficient working:—

To secure maximum convenience and comfort of passengers, and minimize the possibility of accidents, patrons are respectfully requested to co-operate in making the use of the cars a success, viz.:—By being prepared to enter and leave the car promptly. Entrance at rear door only. When boarding the car be careful that the conductor is not closing the door at the time you take hold of the handles. Please have fare ready, if possible, so that it may be dropped into box without having to stop in vestibule, causing it to become crowded. Transfers are to be requested and given when paying fare. By moving toward front of car. Safety and convenience were the first considerations in designing these cars; therefore the doors must be closed and the steps folded whenever the car is moving. Exits at rear of car and also at front. Use front exit if at all possible. Please do not stand in the vestibule nor smoke on these cars. When leaving the car and carrying parcels, leave the left hand free for use in holding on to the handles. The company is endeavoring to provide a safe and pleasant means of transportation. If passengers will assist by refraining from blocking the pasageway at the rear of the car, the success of the p.a.y.e car is assured. As the company and the passenger are equally interested in improving the service, your co-operation is earnestly requested."




London St. Ry. Cars, showing entrance and both ways out.




London St. Ry. Cars, showing signs and Closed Doors.

## Extension Sought for the Windsor and Tecumseh Electric Railway.

The council of Sandwich East, Ont., applied recently to the Ontario Railway and Municipal Board to compel the Sandwich, Windsor and Amherstburg Ry. to build a belt line in connection with its subsidiary, the Windsor and Tecumseh Electric Ry. When the S. W. & A. Ry. Co. built the W. & T. E. Ry., 9.45 miles, after the original promoters had found they were unable to finance it, the S. W. & A. Ry. Co. purchased the franchises, stock, etc., of the W. & T. E. R. Co., a clause in the franchise from Sandwich East Tp. reads as follows: "That if, after three years of operation of the road, it paid, the company had then to complete a belt line between Tecumseh and Walkerville." The first line was built along the river and lake front, and the extension was to be built on a road a mile back, and would be approximately seven miles long. The council of Sandwich East Tp. has claimed for the past two years that the railway has been making lots of money, and that the extension should be built. The company contended that the line was not in that condition and that it was not under any obligation to build a belt line until the original line was on a paying basis. The township disputed the company accounts, although allowed access to the books and vouchers so that the same might be verified. The township did not take advantage of this offer but brought the matter before the Ontario Railway and Municipal Board which met in Windsor some time ago, and took the ground that if the township did not believe the company's records they would appoint independent auditors and, accordingly, Falls & Chambers, of Toronto, were appointed to make an audit. In connection with the report of the audit which verified the company's contention in every respect, the township again appeared before the Board, questioned the accuracy of the auditor's report and suggested the appointment of a railway expert to further investigate. The Board then adjourned the matter for two weeks to allow the township authorities to decide whether they would go to the expense of securing an expert's services or not.

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The City of Saskatoon, Sask., recently received six complete cars from the United States, for operation on its municipal electric railway, but it is reported that four of the six have been returned as being defective in respect of material and finish, and not up to specifications. Two of the six were retained as cars were urgently required.

## London and Port Stanley Railway Electrification.

The lease of the London and Port Stanley Ry., to the City of London, Ont., has been signed on behalf of the City Council, and the signing of the lease by the company, which is controlled by the city, has been authorized. The lease of the line to the Lake Erie and Detroit River Ry., which is the Ontario section of the Pere Marquette Rd., has been terminated, owing to the expiration of the lease, and the line has passed directly into the hands of the London City Council. Arrangements are being made with the P. M. R. for the operation of traffic over the line pending the electrification.

On Dec. 2, the City Council appointed a commission to operate the line, and to have charge of its electrification. The commission consists of four members, viz., Hon. A. Beck, M. L. A., minister in charge of the Hydro-Electric Commission for Ontario; P. Pocock, chairman of the Hydro-Electric Commission for the City of London; Alderman W. Spittal, and M. D. Fraser. The first two have been appointed for two years, and the two last for one year; all, however, are eligible for re-election. The commissioners, accompanied by the Mayor, H. J. Lambe, Engineer of the Department of Public Works, and others, made a trip of inspection over the line Dec. 8. On the special train carrying the party, the commission was formally organized as follows: Chairman, Hon. A. Beck; Vice Chairman, P. Pocock; Secretary, pro tem, W. Spittal. At Port Stanley, the commissioners were shown the warehouse, 190 by 30 ft., which is being erected there by the Dominion Government, for import business. The commissioners discussed with the Reeve of Port Stanley the question of the erection of a new station and other terminal facilities there. It is said that a proposition will be made to the ratepayers of Port Stanley to contribute $10,000 towards the cost of this work. The matter of station accommodation at St. Thomas was also discussed, and it was arranged to meet the St. Thomas City Council at an early date. So far as the work of reconstruction is concerned, the plans, it is stated, provide for the laying of new ties and steel in such a way that when it is decided to lay a second track it may be easily done. It is expected that tenders will be asked for the necessary work at an early date. Arrangements are being made for the continuance of the operation of the line by the Pere Marquette Rd. as at present, under which arrangement the Michigan Central Rd. obtains an entrance into London.

The line was formally handed over to the commissioners Dec. 9. Sanction to the leasing of the line to the London City Council is being asked from the Dominion Parliament.

The London and South Eastern Ry. was originally organized to build a line from London, Ont., south easterly to a junction with the Michigan Central Rd. It acquired a property in London, but never built any railway, and when the M. C. Rd. entered into an agreement to come into London over the London and Port Stanley Ry., the L. and S. E. Ry. leased its land to the M. C. Rd. for terminal purposes. The directors have granted an extension of the lease until the L. and P. S. Ry. is electrified, and a committee of the directors has been appointed to negotiate with the M. C. R. management as to future arrangements.

We are officially advised that the name of the commission having charge of the electrification and operation of the line will be the London and Port Stanley Ry. Commission. Plans for the electrification are being prepared by the engineers of the Ontario Hydro-Electric Commission. It has not been decided when tenders for the work will be invited.

## Judgment in Grand Valley Railway Suit.

The case of Wood vs. Grand Valley Ry. Co. came before the Appellate Division of the Ontario Supreme Court, Dec. 16, on an appeal by defendant, Pattison, from judgment of a Divisional Court of Dec. 20, 1912. Action by business men of St. George to recover damages for breach by defendant of contract to make traffic arrangements with the C.P.R., whereby current competitive freight rates will apply as from Galt and other points to all points east and west in Canada in consideration of plaintiffs purchasing $10,000 first mortgage bonds of defendant railway company, and for repayment of amount paid by plaintiffs for said bonds. At the trial before Middleton, J., judgment was awarded plaintiffs for $10,000 damages, costs, etc. This amount was varied and reduced by the judgment of the Divisional Court that defendant appealed from, and otherwise appeal was dismissed by Divisional Court.

The following judgment was given Dec. 16: Appeal allowed. Order of Divisional Court discharged and judgment at trial vacated. Judgment entered declaring that respondent is entitled to recover from the railway company and the appellant the damages sustained by reason of the breaches of the agreement complained of, directing a reference to ascertain the amount. The appellants and the railway company to pay the respondent their costs up to and inclusive of trial. Reserving further directions and subsequent cost, except costs of appeal to Divisional Court and to this court till after report. No other costs or any costs of any appeal. Cross-appeal of respondent dismissed without costs.

## Civic Running Rights Over Toronto Railway.

The City of Toronto has requested the Ontario Government to proclaim the statute giving the Ontario Railway and Municipal Board authority in regard to the regulating of running rights and interchange of traffic for the purpose of arranging running rights over certain of the Toronto Ry. lines, or for an interchange of passengers, in accordance with amendments to the Ontario Railway Act, made in 1912, for that purpose.

A bill was originally promoted to give effect to the desire of certain lines to make arrangements with other lines for running rights and interchange, but the provisions were later incorporated in the Ontario Railway Act, such clauses not to come into effect until proclamation. The clause under which the city desires to effect the arrangement referred to, provides that any railway corporation shall furnish reasonable facilities for running rights and interchange of traffic to any other contiguous railway, and where they fail to agree as to terms and conditions the Ontario Railway and Municipal Board shall have authority to settle the differences between them and to enforce its decisions. It is also provided that such provisions shall apply notwithstanding any exclusive franchise purported to be held by any company. It is stated that if the proclamation is made, a number of applications will be made by other railways for interchange and running rights, including the entrance of various radial electric lines into cities where they have not such powers at present.

## An Alleged Fake Accident Case in London.

A case against the London Street Ry. and the Grand Trunk Ry. is set down for the January Assizes in London, Ont. The plaintiff, Charles Nickels, was supposed to have been one of those injured when the London St. Ry. car No. 98 ran into the side of a G.T.R. freight train at the interswitching crossing on Dundas St. East on July 24, about 11 p.m. He was removed to the Victoria Hospital, where he appeared to be suffering from several severe bruises and strains to the muscles of his shoulders and back. He was in the hospital about ten days. About the time he left the hospital a reporter of the London Advertiser, claimed to have discovered evidence showing that Nickels was not in the collision at all and that any claim for injuries he might make would therefore be a fake. This reporter claimed that Nickels had been several miles east of the city with another party, arranging to do some work building a silo or something of that nature and was at the time of the collision driving into the city with a Mr. Spettigue, that they were held up by the freight train and on the opposite side of the train from which the car came, that when the collision occurred, Nickels jumped out of the buggy and disappeared in the darkness. Spettigue is reported to have stated that he knew nothing about Nickels' whereabouts after he jumped from the buggy, but that he was certain that he could not have been in the collision. Nickels afterwards admitted to the London St. Ry's. superintendent that he had been out in the country and was with Spettigue in the buggy but declared that he was in the collision. He was unable, however, to state how he got from the buggy, to the other side of the train, and into the car in order to be in the collision.

The crossing where this collision occurred was beyond the old city limits, where there were no street lights whatever in the vicinity and hence the crossing was very dark. The street cars had been operated for a number of years over this crossing under an order of the Board of Railway Commissioners, permitting the free use of the crossing by the street railway cars and requiring freight train conductors whenever crossing, to go ahead and see that all was clear before doing so. It seems that in the case in question the trainmen did this but did not afterwards protect the side of their train, and in the darkness the motorman did not see the train in time to avoid running into it. Since the accident an investigation has been made for the Board and it is expected that an order will be issued to have the crossing protected by interlocking derails and semaphores as other street railway-steam railway crossings are usually protected.

**American Electric Railway Association.**—The following officials of Canadian electric railways have been appointed on committees: Taxation Committee: G. Kidd, British Columbia Electric Railway; Wilford Phillips, Winnipeg Electric Railway; J. D. Fraser, Ottawa Electric Railway; Patrick Dubee, Montreal Tramways Co.; J. W. Crosby, Halifax Electric Tramway Co. Committe on Way Matters: W. F. Graves, Montreal Tramways Co. Committee on Equipment: W. R. McRae, Toronto Railway.

D. McDonald, President of the Canadian Autobus Co., informed the Montreal City Council by letter, Dec. 12, that in view of the delays in improving the streets the company, which has ordered its autobusses, will be unable to commence running them until early in the spring.

# Electric Railway Projects, Construction, Betterments, Etc.

**Berlin and Waterloo St. Ry.**—We are officially advised that the Berlin, Ont., City Council has laid 3,600 ft. of double track concrete foundation, and new steel on its line between Wellington St. to Union St. It is proposed to undertake about half a mile of concrete construction on the line from King St. to the G. T. R. station in the spring. The work will be done by the city staff. V. S. McIntyre, Berlin, Ont., is Superintendent. (July, 1913, pg., 344.)

**British Columbia Electric Ry.**—In connection with the proposal of Burnaby, Westminster and Coquitlam, B.C., townships, to build a bridge across the Brunette River, it has transpired that the B. C. E. Ry. has prepared plans for the building of a cut-off into Westminster on its Burnaby Lake line, which will have to be provided for. Several suggestions in connection with this projected line have been made, and will be considered by F. L. McPherson, the engineer engaged to prepare plans for the bridge.

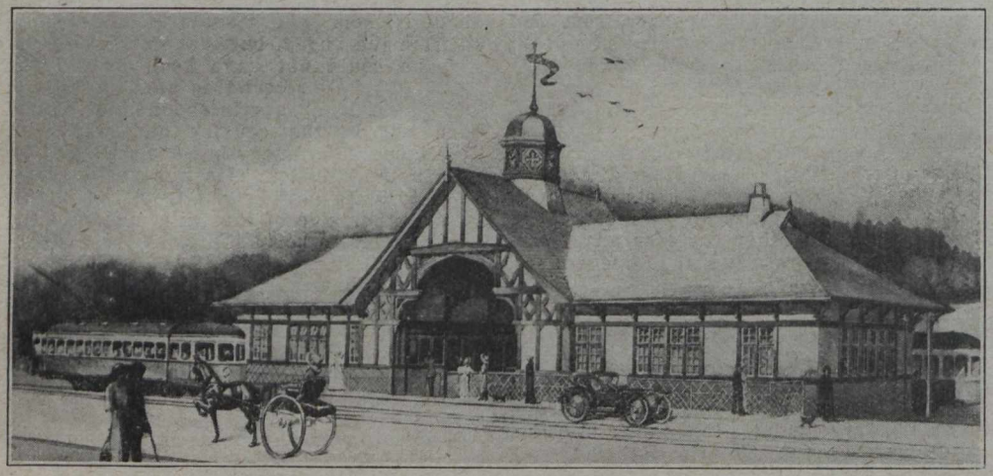
A contract is reported to have been let to R. Shields, Vancouver, for building of an interlocking control tower, electrically controlled, at the crossing of the Esquimalt and Nanaimo Ry., by the B. C. E. Ry. on the Esquimalt Road, Victoria. (Dec., 1913, pg. 592.)

**Forest Hill Electric Ry.**—Plans are reported to have been prepared for starting construction upon this projected line, early in the spring. The section to be built will start near the Toronto city limits on Forest Hill Road, run to Eglinton Ave., and westerly along that street to the old Belt-Line Ry. Property owners along the route are said to be aiding in financing the construction. (See also plan proposed by Toronto Harbor Commissioners.) (Sept., 1913, pg. 442.)

**Halifax Electric Tramway Co.**—Press reports state that a 500 k. w. motor generator set and other equipment for the railway generating plant is being installed in the power house at Halifax, N. S., by the Canadian General Electric Co. (May, 1913, pg. 237.)

**Hamilton St. Ry.**—We are officially advised that it is intended to build about 4.5 miles of new double track line during the present year. E. P. Coleman is General Manager, Dominion Power and Transmission Co., Hamilton, Ont. (Oct., 1913, pg. 494.)

**Hull Electric Co.**—We are officially advised that rails have been laid on the double track extension from Rivermead to the Jockey Club, at Connaught Park, 0.75 miles. (April, 1913, pg. 184.)



Lulu Island Line Terminus, British Columbia Electric Railway, Granville Street Bridge, Vancouver.
For description see Canadian Railway and Marine World, Dec., 1913, pg. 592.

**Calgary Municipal Ry.**—Press reports state that during this year the city council will let contracts for the building of about 10 miles of extensions of present lines. (Dec., 1913, pg. 592.)

**The Edmonton Interurban Ry.** Company has a charter from the Alberta Legislature to build lines from Edmonton, in various directions. It has laid track on a line from the city limits of Edmonton, to St. Albert, Alta., about five miles, upon which a self propelled gasoline electric car is being operated. There has been under consideration a piece of line to connect the southerly terminal of the line with the Edmonton Municipal Railway, about two miles, and it was expected to have this completed by Dec. 31. The officers of the company are: President, G. Barbeau; Vice President, J. H. Picard; other directors, M. Kimpe, J. H. Garispy, L. Bureau. The first three are directors of the French Canadian Mortgage Co., the President being a resident of Paris, France. Felix Lantellier is General Manager, and H. Warner, Chief Engineer. (Dec., 1913, pg. 592.)

**Estevan Transit and Power Co.**—The name of H. Nicholson, Estevan, should have been in our last issue along with the other provisional directors of this projected company. (Dec., 1913, pg. 593.)

**International Transit Co.**—Press reports state that plans are being prepared for the building of a line to connect the existing lines in Sault Ste. Marie, Ont., with Steelton, that the work will be done by the company, and that the rails will be supplied by the Lake Superior Corporation, which owns the I. T. Co.

**Lacombe and Blindman Electric Ry.**—Press reports state that about eight miles of grading have been completed out of Lacombe, Alta., toward Gull Lake and Rimeby, 30 miles. It is also reported that contracts have been let for ties and steel, etc., for the track laying, which it is proposed to go on with during the summer. It is also said that it is proposed to use gasoline electric cars on the line. E. R. Strathy, Winnipeg, is among the promoters. (Mar., 1913, pg. 141.)

**London and Lake Erie Ry. and Transportation Co.**—The Dominion Parliament is being asked to extend the time for the building of its already authorized line, to increase the bonding power from $25,000 to $30,000 a mile, and to authorize the building of the following additional lines: From Union in Yarmouth tp., to Sparta, from St. Thomas via Aylmer to Port Burwell. The St. Thomas, Ont., City Council, Nov. 25, granted the company permission to build a spur of 200 ft. on Wellington St., from which point it is to be extended across property belonging to the Michigan Central Ry. Permission was also given the company to run over the city's line on Wellington St., from Forest Ave., to connect with this spur, which is to be used for transferring freight from the L. E. Ry. and T. Co's. line to the M.C.R. (Dec., 1913, pg. 594.)

At a meeting of the ratepayers of Aylmer Village, and Malahide Tp., held at Aylmer, Dec. 9, a resolution was passed authorizing the councils of the two municipalities to negotiate with the company for the building of a line, on a satisfactory route, on the basis of a guarantee of bonds for $20,000 a mile for the mileage in their respective areas.

**Medicine Hat Tramways, Ltd.**—We have been officially advised that the action brought by E. J. Fagan for the purpose of quashing the bylaw, passed by the Medicine Hat, Alta., City Council, granting an extension of time to the Montreal Engineering Co., for the building of the projected electric railway in Medicine Hat, came before the courts at Calgary, Nov. 25. Judgment was reserved. (Dec., 1913, pg. 593.)

**Montreal and Southern Counties Ry.**—It is reported that the bonding and other work on the roadbed on the extension from Marieville to St. Cesaire, Que., nine miles, has been completed, and that it was expected to finish up the overhead work by the end of Dec., 1913. A station is being built at Rougemont, midway between Marieville and St. Cesaire. Construction will be gone on with all winter on the bridge across the Yamaska River, east of St. Cesaire, which it is expected to have completed in the spring. (Dec., 1913, pg. 593.)

Press reports state that a contract has been let to the Canadian General Electric Co. for a 300 k. w. motor generator set, a bank of transformers and the other equipment for the substation now under construction at Rougemont, Que.

**Montreal Tramways Co.**—The Montreal City Council has under consideration a report from the Board of Control on the proposals of the M. T. Co., and the Autobus Co., respecting an underground railway. The Council is asked to lay down certain general principles before proceeding to the discussion of details. (Dec., 1913, pg. 590.)

The new car line in Westmount which connects the upper and lower levels of the city was opened for traffic Dec. 10.

Application is being made to the Quebec Legislature for an act in the company's interest. Formal notice was given some months ago, but the bill was not placed before the Legislature at the regular time. It is now printed and permission has been asked for the waiving of certain standing orders to enable it to be discussed. The chairman of the Legislature Committee on private bills is reported as stating Dec. 12, that the bill would ask for a 40 years extension of the franchise, and for the ratification of certain contracts with the city.

**Nelson Street Ry.**—Plans are being made, press reports state, for the betterment of existing lines, and for the building of some extensions during this year. (Aug., 1911, pg. 783.)

**Niagara, St. Catharines and Toronto Ry.**—Application is being made to the Niagara Falls, Ont., City Council, for an extension of the franchise in that city. (Dec., 1913, pg. 593.)

**Ottawa and St. Lawrence Electric Ry.**—Press reports state that it is likely that construction will be started on the Ottawa-Morrisburg section of this projected electric railway, in the spring. It is also stated that it has been determined to provide a

private right of way in Ottawa. (Nov., 1913, pg. 544.)

**Ottawa Electric Ry.**—The ratepayers of Eastview, Ont., will vote on a bylaw at the municipal elections in January, providing for the extension of the O.E.R. into the municipality, and for granting a bonus of $25,000 therefor. (May, 1913, pg. 235.)

**Port Arthur-Fort William Electric Ry.**—The Port Arthur, Ont., City Council decided, Nov. 25, that it will be necessary in the near future to extend the line from Current River to Hodder Ave. The ratepayers will vote at the municipal elections on a bylaw to issue debentures for $35,000 for street railway expenditures. The construction of the belt line has been completed, and it is expected that a regular car service will be put in operation over it at an early date. Press reports state that a proposition has been made to the Fort William, Ont., City Council for financing the building of an extension of the double track line on Victoria Ave., from near the Canadian Northern Ry. station along Victoria Ave., Edward St., and South Edward St. to a connection with the present lines in the west end. The City Council passed a bylaw, Dec. 5, providing for the expenditure of $238,000 upon the street railway, and for the taking of a vote of the ratepayers thereon, at the municipal elections in January. (Dec., 1913, pg. 593.)

**Sandwich, Windsor and Amherstburg Ry.**—Plans are under consideration, press reports state, to rebuild about a mile of the Windsor-Amherstburg, Ont. line, eliminating some curves. (Nov., 1913, pg. 545.)

**Saskatoon Municipal Ry.**—The Saskatoon Sask., City Council made a trip of inspection over the newly built line to Sutherland, Dec. 2. It is 4.5 miles long, and will be operated by the Saskatoon City Council under a 20 year franchise granted by the Sutherland Town Council. The latter has power to purchase the line on the expiration of the franchise at a price to be fixed by arbitration. (Nov., 1913, pg. 545.)

**St. John Ry.**—Press reports state that it is expected to have the line extended to Crouchville, N.B., by July 1, and that the company is willing to extend the line as far as Little River, provided the municipalities interested will strengthen the bridges. (Dec., 1913, pg. 593.)

**Three Rivers Traction Co.**—The Quebec Legislature has incorporated a company with this title to built electric lines in Three Rivers, Que., by arrangement with the City Council, and by arrangement with the various municipalities to Fond du Lac, Yamachiche, and other places in the counties of St. Maurice, Maskinonge and Champlain. The capital is fixed at $600,000, and the city of Three Rivers is authorized to and the company by the purchase of bonds and by granting of exemption from taxation, and a franchise for 20 years. The company is being formed in connection with the Shawinigan Power Co.

**Toronto Eastern Ry.**—The grading from Bowmanville, and through Whitby to Pickering, Ont., is reported to have been completed, and track laying is said to be well advanced. It is expected to have the line between these points ready for operation early in the spring. (June, 1913, pg. 287)

**Toronto Civic Car Lines.**—The new track laid on the city streets during 1913 in connection with the civic lines was as follows: Danforth Ave. line, Greenwood to Luttrell Ave., 4.09 miles; Coxwell Ave. line, Gerrard St. to Danforth Ave., 0.57 mile. The St. Clair Ave. line from Station St. to Yonge St., 6.28 miles, was completed at midsummer. It is proposed to build a track 0.34 mile long to the St. Clair Ave. car barn.

The Board of Control has under consideration plans for building a line from the St. Clair Ave. line southerly along Lansdowne Ave. to the C. P. R. crossing at Royce Ave.

Corporation Counsel Geary, in a recent report to the City Council said he hoped to be able to submit at an early date an agreement for the use of the Yonge St. line of the Toronto and York Radial Ry. within the city limits. (Feb., 1913, pg. 91.)

**Toronto Ry.**—The ratepayers of Toronto will vote at the municipal elections on a bylaw to provide by debentures $963,890.25 for the purpose of paying for reconstructing, repairing and renewing pavements upon portions of streets occupied by the company's right of way.

The Board of Control has been asked to consider the question of negotiating with the Toronto Ry. Co. for an extension of the Harbord St. line from its present terminus at Bloor St., northerly along Ossington Ave. to Hallam St., then west to Dufferin Ave., and along Lappin Ave., to a junction with the Lansdowne Ave. line.

**Toronto Suburban Ry.**—Grading operations were continued during December on the extension from Lambton to Guelph, Ont., the principal point being north of Meadowvale, where the line runs under the C. P. R. Credit Valley Branch. Some difficulty is being experienced there in getting foundations for bridges, owing to the nature of the soil. It was expected that the grading would be completed through to Eden Mills by Dec. 30. Track laying will be started as early as possible in the spring, and it is hoped to have the line finished by the fall. (Dec., 1913, pg. 593.)

**Windsor, Essex and Lake Shore Rapid Ry.**—The Board of Railway Commissioners has approved location and detail plans for a station building on Talbot Road, Maidstone, Ont. (Feb., 1913, pg. 93.)

**Winnipeg Electric Ry.**—Track is reported to have been laid on the Winnipeg, Selkirk and Lake Winnipeg Ry., owned by the W. E. Ry., to Stony Mountain, Man., eight miles from Stonewall, and the overhead work is said to have been completed. The line branches off from the main line to Selkirk at Middlechurch, and proceeds in a nearly straight line to Stony Mountain. The branch is 24 miles long and it is expected to have it finally completed and in operation during next summer. While it is said that the branch will be extended to Balmoral no definite agreement for a franchise has been reached. (Dec., 1913, pg. 593.)

We are officially advised that the press reports stating that a contract had been let for the development of the water power at Big Bonnet Falls on the Winnipeg River, by the Winnipeg Water Power Co., a subsidiary of the Winnipeg Electric Ry. Co., are incorrect. It is probable, however, that arrangements will be made in the near future. (Dec., pg. 589.)

## The Grand Valley Railway and Brantford Street Railway Litigation.

The company having failed to pay to the city of Brantford $7,500, due for taxes, prior to Dec. 1, seven warrants for the seizure of the property of the Brantford St. Ry., covering real estate, movable assets, rolling stock, etc., were issued Dec. 2. The city, however, decided not to have them executed until after the hearing of the company's appeal against the recent decision of the Ontario High Court, reported in our issue of Oct., 1913, pg. 496, which is down for hearing in the Court of Appeal, at Toronto, at the current sittings.

The case came up for hearing at Toronto, Dec. 10, and the arguments were concluded Dec. 12, judgment being reserved. During the hearing the Chief Justice granted the Brantford City Council special leave to ask to have the order set aside authorizing E. B. Stockdale, the Receiver, the right to appeal, and to change the Receiver should it be shown that there was a conflict of interest between his interests as Receiver and as General Manager of the Trusts and Guarantee Co., the trustee for the bondholders. This matter was set down for hearing, Dec. 22, and the appeal of the G.V. Ry. against the order made for a distress warrant for $7,500 on account of taxes due the Brantford City Council was postponed until the same date. The case heard was the appeal of the G.V. Ry. against the decision providing for the forfeiture of the charter of the Brantford St. Ry., unless certain works on the way of betterment were done at once, and other works arranged for in the immediate future, and payment made of all sums due.

The Brantford City Council, Dec. 15, authorized the City Solicitor to make the necessary applications as authorized by the court.

The adjourned case, and the cases specially fixed for hearing in these matters, came before the Appellate Division, Toronto, Dec. 22. The court dismissed the appeal from the decision giving the city of Brantford permission to issue a distress warrant for taxes due in 1913. The specially entered case, viz., the city's application for the removal of Mr. Stockdale as Receiver of the company, was adjourned to Feb. 22.

## Electric Railway Finance, Meetings, Etc.

**British Columbia Electric Ry.**, and allied companies.—Gross earnings for October, $753,501; operating expenses, maintenance, etc., $561,902; net income $191,599, against $721,621 gross earnings; $515,813 operating expenses, maintenance, etc.: $205,808 net income for Oct., 1912. Aggregate gross earnings for four months ended Oct. 31, $3,014,355; net earnings $775,077, against $2,735,207 aggregate gross earnings; $787,214 net earnings for same period 1912.

**Cape Breton Electric Co.**—Gross earnings for October, $36,793.71; operating expenses and taxes $18,751.52; net earnings $18,942.19; interest charges $4,891.67; balance $13,150.52; bond sinking and improvement funds $1,190; balance $11,960.52, against $31,133.27 gross earnings; $16,339.61 operating expenses and taxes: $14,793.66 net earnings; $4,412.50 interest charges; $10,381.16 balance; $1,206.67 bond sinking and improvement funds; $9,174.49 net balance for Oct., 1912.

**Dominion Power and Transmission Co.** A dividend of 2% was paid Dec. 15 to shareholders of record on Nov. 30, on the limited preferred stock, which is entitled to a dividend of 10%, after which it becomes common stock. Dividends of 3½% have been paid on this stock, and it is anticipated that the remaining 6½% will be paid during the current year.

**Hamilton St. Ry.**—Gross receipts for quarter ended Sept. 30, 1913, $181,463.09, on which the $16,397 percentage has been paid to the city.

**Lethbridge Municipal Ry.** Earnings for November, $4,618.73, number of passengers carried, 111,618. Total earnings for 11 months ended Nov. 30, $53,576.17.

**London St. Ry.** Gross earnings for October, $27,791.58; expenses $20,465.62; net earnings $7,325.96; deductions $2,680.49; net income $4,645.47, against $25,668.78 gross earnings; $17,890.65 expenses; $7,778.13 net earnings; $2,450 deductions; $5,328.13 net income for Oct., 1912. Gross earnings for Nov. $26,347.73; expenses $18,-

692.06; net earnings $7,655.67; deductions $2,388,35; net income $5,267.32; against $25,-442.85 gross earnings; $18,371.43 expenses; $7,071.41 net earnings; $2,371.25 deductions; $4,700.16 net income for Nov. 1912. Aggregate gross earnings for 11 months ended Nov. 30, $302,489.05; expenses $213,651.19; net earnings $88,612.86; deductions $26,-876.08; net income $61,736.78, against $278,-217.98 aggregate gross earnings; $192,-203.29 expenses; $86,014.59 net earnings; $26,461 deductions; $59,553.69 net income for same period 1912.

**Mount McKay and Kakabeka Falls Ry.**—A committee has been appointed by the Fort William, Ont., City Council to meet the directors of the company with a view of discussing the purchase of the line.

**Montreal Tramways Co.**—The amount recently received by the Montreal City Council for percentages during 1913 was $500,934.55, compared with $409,510 for 1912.

**Nelson St. Ry.**—At a conference recently between the directors of the Nelson St. Ry. Co., and the City Council of Nelson, B.C., it was decided that the railway be operated under municipal control, with the present shareholders retaining their financial interest on a proportionate partnership basis. It is proposed to increase the number of shares by 25,000, making 75,000 in all, of which, the city is to acquire 40,000, thus getting control of the property.

**Niagara Falls Park and River Ry.**—See International Ry.

**Toronto Ry., Toronto and York Radial Ry., and allied companies.**—Gross earnings for October, $861,235; operating expenses, maintenance, etc., $415,021; net earnings, $446,214, against $754,104 gross earnings; $371,485 operating expenses, maintenance, etc.; $382,619 net earnings for Oct., 1912. Aggregate gross earnings for ten months ended Oct. 31, $8,044,705; net earnings $3,999,218, against $6,975,148 aggregate gross earnings; $3,567,719 net earnings for same period 1912.

**Toronto and York Radial Ry.**—The ratepayers of Toronto are being asked to authorize the issue of debentures for $89,393 to provide for the purchase of the old Toronto and Mimico Electric Ry., from Sunnyside to the Humber River, a part of the Lake Shore Division of the T. and Y. R. Ry.

**Winnipeg Electric Ry.**—Gross earnings for October, $357,313; operating expenses $196,703; net earnings, $160,610, against $321,039 gross earnings; $170,073 operating expenses; $150,966 net earnings, for Oct., 1912. Aggregate gross earnings for ten months ended Oct. 31, $3,338,748; net earnings $1,496,985, against $3,058,592 aggregate gross earnings; $1,431,714 net earnings for same period 1912.

## The Proposed Purchase of the Toronto Railway.

D. M. McIntyre, Chairman of the Ontario Railway and Municipal Board, has according to a statement in the daily press, informed Corporation Counsel Geary that it is the intention of the Board to procure the assistance of an adviser thoroughly versed in street railway transportation to report on the city's application for new lines. This will be done when the pending construction on the lower city streets is completed and the new routes established, allowing a reasonable time to elapse to determine their effect upon the operation of the system, and to ascertain, in particular, the extent to which such routing will relieve the congestion in the downtown districts during the rush hours. The letter adds that the Board could not any longer ignore the pending negotiations between the city and the company for the purchase by the former of the company's undertaking. Under such circumstances, it is suggested that the status quo should be maintained until a determination of the negotiations one way or another.

At a meeting of the Board of Control, Dec. 17, a motion was carried by three votes to two, to notify the Toronto Ry. Co. that the city will not proceed, with any further negotiations for the purchase of the property, but the City Council decided Dec. 22, to proceed with the negotiations.

The Toronto Rapid Transit Association has been formed with the objects of agitating for an extension of the powers of the Ontario Hydro Electric Commission, to include the purchase, construction and operation of a complete provincial system of rural and urban electric railways; to secure the elimination of private ownership of the supply of electric light, heat, power and traction; to defeat the proposed purchase of the Toronto Ry. and Toronto Electric Light Co., and to support the speedy construction of a rapid transit system by the city with connections to the suburbs, and the necessary terminal facilities. J. F Ellis and A. W. Wright are respectively, temporary chairman and secretary.

## Personal Paragraphs.

W. H. MUNRO, Local Manager, Peterborough Radial Ry., has been elected Secretary-Treasurer of the Trent Valley Water Conservation Association, which has been formed in the Trent Valley district of On-

J. W. MOYES, of Toronto, the promoter of the Ontario West Shore Ry., has been employed by the City of Toronto recently to report on the relative cost of operation of electric cars and motor busses.

J. B. SUNDERLAND has resigned from the Comptroller's Department, British Columbia Electric Ry., in which he has been engaged for the last five years, to take charge of the agency department of McDonald, Marpole & Co., Vancouver, B.C.

A. B. CORYELL has been appointed Superintendent, Electric and Tramway Department, Moncton Tramways, Electricity and Gas Co., Moncton, N.B., vice H. N. Price, resigned. Mr. Price has not been transferred to Pittsburgh, Pa., as intimated in the local press.

## Electric Railway Notes.

The Hull Electric Co. has ordered two 800 k. w. transformers for its plant at Deschenes, Que., from Canadian General Electric Co.

The Hull Electric Co. has ordered four 43 ft. semi convertible, single end trailer car bodies, from the Ottawa Car Manufacturing Co.

The Port Arthur Electric Ry. has ordered one 21 ft. single truck, semi convertible, p.a.y.e. car body from Ottawa Car Manufacturing Co.

The Montreal Tramways Co. has ordered a standard double truck combination locomotive and snow sweeper from Ottawa Car Manufacturing Co.

The Toronto Suburban Ry. has received two single end, single truck, p-a-y-e city cars from the Preston Car and Coach Co. The T.S.R. is installing its own equipment.

The Fort William Electric Ry. has received one standard single truck snow sweeper, with Westinghouse 101 B2 equipment, complete, from Ottawa Car Manufacturing Co.

The Brandon (Man.) Municipal Ry. has received a standard single truck, double end, long broom snow sweeper, with Westinghouse 101 B2 equipment, from the Preston Car and Coach Co.

The British Columbia Electric Ry. has received four single end, double truck city cars, with Westinghouse 101 B2 equipment and Westinghouse straight air brakes, from the Preston Car and Coach Co.

The British Columbia Electric Ry. has announced that the name of its station situated on the Hastings townsite on its Burnaby line will be Horne-Payne, after R. M. Horne-Payne, the Chairman of the company.

The Saskatoon (Sask.) Municipal Ry. has received six double end, double truck, p-a-y-e city cars, mounted on standard trucks, with Westinghouse 101 B2 equipment, Westinghouse straight air brakes, from the Preston Car and Coach Co.

We are advised that the self-propelled car built at Burton-on-Trent, Eng., for use on the Edmonton Interurban Ry., at Edmonton, Alta., has not yet been delivered. The car being operated on the line has been obtained from another source.

The Fort William Electric Ry. has on order with the Ottawa Car Manufacturing Co., five single truck and four double truck p-a-y-e cars, all of steel construction. Four have been delivered, and the remainder will follow early in the year.

The Port Arthur, Ont., City Council was advised recently by the joint board then operating the street railway service of Fort William and Port Arthur, that it should purchase four additional single truck cars at once in order that an efficient service might be given on the recently completed belt line in Port Arthur.

The London, Ont., City Council decided, Dec. 1, that a vote be taken at the municipal elections in January, as to the operation of electric cars in the city. Under an Act of the Ontario Legislature a vote on this question can only be taken in places of over 50,000 population, and a certificate that London has this population has been given by the Ontario Government.

The British Columbia Electric Ry. has announced that tickets will be issued at single fare for the double journey for young people attending school from points on the recently opened line from Victoria up the Saanich Peninsula. The minimum fare will be 5c. Books of tickets will be issued, but they will not be available on Saturdays, Sundays, or school holidays.

The Toronto City Council passed a resolution Dec. 2, instructing the City Solicitor to apply to the Lieutenant-Governor-in-Council for a proclamation putting in force the statute passed in 1912 amending the Ontario Railway Act, with reference to the interchange of traffic and running rights between electric street railway systems owned or operated by different corporations lying contiguous to one another.

The Windsor, Essex and Lake Shore Rapid Ry. has ordered two interurban passenger cars from Tillsonburg Electric Car Co. Following are the chief particulars:—Seating capacity, 62; length over body, 44 ft.; length over bumpers, 55 ft.; width over all, 9 ft. 1½ ins.; interior trim, polished bronze; roof, monitor deck style; bottom frame, composite wood and steel; interior finish, oak; couplers, radial.

The Toronto Board of Control has recommended to the City Council the appointment of a Traction Commission to have charge of all the transportation interests of the city. It is proposed to have a commission of three, serving without salary, and at the

commencement, appointed for varying terms, so that eventually each member will serve three years, one retiring each year. The City Council to retain the power of veto over the actions of the commission.

The two cars which the Dominion Power and Transmission Co., Hamilton, Ont., recently received from Tillsonburg Electric Car Co., of which mention was made in a previous issue, are 51 ft. long over all, 49 ft. long over body, and 9 ft. wide over all. The bottom frame is composite wood and steel, the roof of the freight car type, with interior finish of chestnut and interior trim of polished bronze; the trucks are equipped with extra heavy rolled steel wheels, and the couplers are M.C.B. standard.

The Sandwich, Windsor and Amherstburg Ry. was sued recently for penalties for alleged breach of contract by the Walkerville, Ont. Town Council, and when the case came on for hearing the county judge dismissed it on the ground that it had not been shown that the town had suffered damage. The case was appealed, and the Appellate Division of the Supreme Court of Ontario gave judgment Dec. 16, reversing the previous decision, and giving the town $1 damages and costs.

The London St. Ry. reached an agreement with the City Council of London, Ont., Dec. 11, as to the operation of street cars in the city on Sundays in the event of the ratepayers voting in favor of the bylaw at the forthcoming municipal elections. The cars will be operated for eight months in the year on Sundays from 8 a.m. to 10.30 p.m., and during June, July, August and September from 8 a.m. to 11 p.m.; with fares at 5c. cash, tickets seven for 25 cents, and children's tickets two for five cents, with transfers applying to all.

In a recent decision dismissing the action of the owner of a horsedrawn vehicle for damages caused by the vehicle being knocked over by one of the Montreal Park and Island Ry. cars the judge stated that while those in charge of cars must take every means to render their operation as little dangerous as possible, it must not be forgotten that the cars are a public necessity, and the inconveniences arising from their operation, which are reasonably necessary for their efficiency, must be submitted to. The cars have the right of way on their tracks, and it is the duty of others using the streets to respect that right of way.

A proposition is under consideration by the Vancouver, B. C., City Council for the operation of a motor bus service in the city. The applicants for the franchise are: F. Buscombe, J. G. Woods, J. Martin and J. Weart. No decision has been reached, but it was pointed out that the council some time ago had decided to make application to the Legislature for power to operate motor busses, or to give franchises for such a purpose. A similar application has been made to the New Westminster City Council.

The Cape Breton Electric Co. has applied to the joint local municipal bodies for approval of a fender with which its new double truck cars have been equipped, and which is of a different type to that already approved. E. L. Milliken, General Manager, stated that it was only a matter of form to have the fender approved by the different municipal bodies, but strictly speaking the company was breaking the law, when during the rush hours cars were operated with the different type of fender on, and the law would also be broken if the cars were run without a fender. The company operates cars in Sydney and North Sydney, N.S., and on the Sydney and Glace Bay Ry., out of Sydney.

The Imperial Privy Council, Dec. 12, declined to hear an appeal case in the matter of damages for personal injuries received by one Bastien against the Montreal Tramways Co. The amount involved was comparatively small, but application was made that the appeal be heard, as there was a principle involved which would affect a number of other cases. The injuries were caused to Bastien by a street car belonging to the M. T. Co., but it is alleged on behalf of the company that the actual cause of the accident arose from the neglect of the Montreal City Council in not having the streets in a proper state of repair. The Lord Chancellor stated that the court, while fully appreciating the importance of the questions arising, did not feel, having regard to the amount of damages involved, that it was a case for hearing before that tribunal.

## Electric Railway Track Laid in 1913.

Below is a table showing track laid on electric railways in Canada during 1913. The table is not published as a complete one, owing to the fact that some of the companies have not replied to the circular sent, but it is believed to be approximately correct. The * mark indicates that the figures given are estimated.

| | Miles. | Miles. |
|---|---|---|
| *British Columbia Electric Ry.— | | |
| Extensions in Vancouver | | |
| New Westminster and Victoria | | 28.00 |
| *Calgary Municipal Ry.— | | |
| Various extensions | | 10.00 |
| Edmonton Interurban Ry.— | | |
| Edmonton to St. Albert | | 5.00 |
| Edmonton Radial Ry.— | | |
| Various lines | | 21.115 |
| Hull Electric Ry. (1).— | | |
| Rivermead to Connaught Park | | 0.75 |
| Montreal and Southern Counties Ry.— | | |
| St. Lambert to M. & S.C. Jct. | 4.00 | |
| M. & S.C. Jct. to Marieville | 18.00 | |
| | | 22.00 |
| Montreal Tramways Co.— | | |
| Various extensions | | 3.84 |
| Niagara, St. Catharines and Toronto Ry.— | | |
| St. Catharines to Niagara on the Lake | | 12.20 |
| Ottawa Electric Ry.— | | |
| Extensions | | 2.75 |
| Quebec Ry., Light and Power Co.— | | |
| St. Malo Ward | 0.25 | |
| Limoilon Ward | 1.59 | |
| | | 1.84 |
| Regina Municipal Ry.— | | |
| Extensions of City System | | 14.50 |
| St. John Ry.— | | |
| Extensions in St. John, N.B. | | 1.50 |
| Toronto Civic Car Lines— | | |
| Danforth Ave. Line | 4.09 | |
| Coxwell Ave. | .57 | |
| | | 4.66 |
| *Toronto Eastern Ry.— | | |
| Bowmanville to Pickering | | 20.00 |
| Toronto Ry.— | | |
| Extensions of various lines | | 2.21 |
| Winnipeg Electric Ry.— | | |
| St. Boniface to St. Vital | 2.00 | |
| Through Fort Garry | 5.37 | |
| Various city extensions | 6.61 | |
| | | 13.98 |
| Winnipeg, Selkirk and Lake Winnipeg Ry.— | | |
| Middlechurch to Stony Mountain | | 9.77 |
| Total | | 164.115 |

The London St. Ry. laid 0.70 miles of second track on existing lines; the Galt, Preston and Hespeler Ry. laid some sidings.

So far as construction for the current year is concerned we have been officially advised by six companies that they have under contract or survey, 47.70 miles of new track, and subject to confirmation we understand that four other companies have under consideration about 20 miles of new lines. These figures are altogether apart from the lines under construction by the Toronto Suburban Electric Ry.; the projected extension of the Toronto Eastern Ry.; the electrification of the London and Port Stanley Ry., and the projected lines out of Toronto under the Ontario Hydro Electric Commission.

The Canadian Northern Telegraph Co. has closed its offices at Vista, Man., and has opened offices at Salines, Ont., and Highland, Alta.

## Telegraph, Telephone and Cable Matters.

W. J. Camp, Assistant Manager, C.P.R. Telepraphs, Montreal, lectured before the Montreal Electrical Society, Dec. 1, on the telegraph system.

The Board of Railway Commissioners has extended the time, to July 1, for approval of telegraph tolls of C. P. R., Canadian Northern Telegraph Co., Great North Western Telegraph Co., White Pass and Yukon Route and G.T. Pacific Telegraph Co.

The Canadian Northern Telegraph Co. has opened telegraph offices at Cereal, Chinook, Hanna, Oyen and Youngstown, Alta., and telephone offices at Lakeland and Langruth, Man., Pleasant Valley, Pathlow and St. Brieux, Sask., and has closed its telephone offices at Cereal, Chinook and Richdale, Alta.

On the completion of the wireless telegraph stations at Port Burwell, Toronto Island and Kingston, which it is anticipated will take place this winter, Canada will have the longest single stretch covered by wireless telegraphy, in the world, viz., from Port Arthur, Ont., to Cape Race, over 2,000 miles.

The C.P.R. Telegraph Department, which has been operating two duplex Morkrum printer circuits between Montreal and Toronto during the past year, has placed another similar circuit in operation between Montreal and Ottawa, and another will shortly be installed for use between Montreal and Quebec.

J. McMillan, General Superintendent, Western Lines, C.P.R. Telegraphs, announced in Winnipeg Dec. 11, that the following additional telegraph lines have been erected during the past season,—Manitoba Division, —1,065 miles of copper wire, 90 miles of iron wire, and 151 miles of train dispatching telephone circuit; Saskatchewan Division,—525 miles of copper wire, and 617 miles of copper wire and 90 miles of iron wire along new lines; Alberta Division,—1,650 miles of copper wire, 713 miles of iron wire and 508 miles of railway equipped with train dispatching telephone circuits, and 250 miles of wire along new lines.

It is announced that the Western Union Telegraph Co. will shortly re-start business in Alberta, under an arrangement with the Alberta Government. The company at one time had an office at Lethbridge, and operated over the Alberta Ry. and Irrigation Co's. lines, but on the absorption of the A. R. & I. Co. by the C.P.R., the Western Union retired from the Province. It is stated that the telegraph operators intend to petition the Government not to enter into an agreement with the W.U.T. Co. unless the company agrees to pay a fair wage scale and abolish what are alleged to be black list methods.

B. S. Jenkins, who recently retired from the position of General Superintendent, C. P.R. Telegraphs, Winnipeg, was entertained there, Dec. 10, by the telegraph staff, including representatives from various points on the whole system. He was presented with a silver tea service and an illuminated address. He commenced his telegraph service with the Montreal Telegraph Co., at the age of 15, and later was engaged with the Dominion Telegraph Co. in Ontario, and subsequently returned to the Montreal Telegraph Co. He entered C.P.R. service in 1881 at Winnipeg, as an operator at Winnipeg Jct., when his telegraph office was a box car which had been used for cattle. He was later moved to Ossowo and Birds Hill, and to Winnipeg Jct., and was afterwards Superintendent of the commercial telegraph service at Winnipeg, on its inception, Sept. 1, 1883.

# Marine Department

## The Ocean Freight Rate Question.

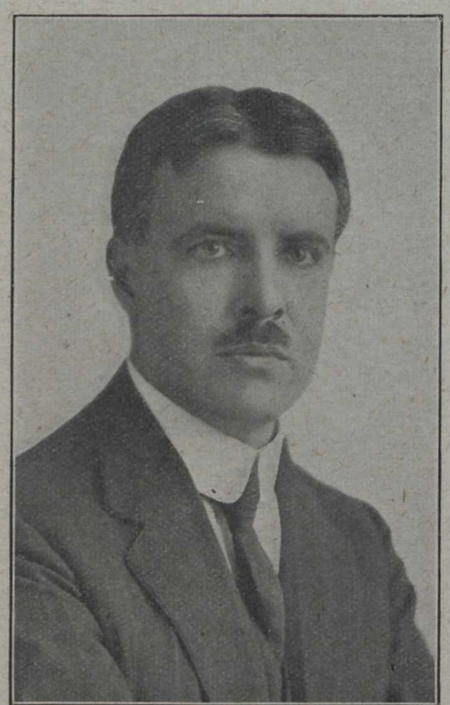
By H. L. Drayton, K.C., Chief Commissioner, Board of Railway Commissioners.

Through the courtesy of Hon. G. E. Foster, M.P., Minister of Trade and Commerce, we are enabled to give the full text of the report presented to the Dominion Government by Mr. Drayton, on his recent visit to England in connection with the question of ocean freight rates, as follows:—

Acting on the instructions contained in a report of a meeting of the Privy Council, approved by the Administrator on July 19, 1913, I proceeded to England with the object of discussing with the Imperial authorities the question of governmental control of the charges made by the shipping companies to the public for the carriage of ocean borne freight. The question was one which had already engaged the attention of the Board of Trade of Great Britain, the conclusions that that Board arrived at being included in the communication from the Marine Department of the Board of Trade to the Under Secretary of State, Colonial Office, on Aug. 4, 1910. The material part of the conclusion is as follows:—

"While, for the above reasons, the Board would see great difficulty in the establishment of a joint tribunal for the control of ocean freight rates, they direct me to call Lord Crewe's attention to the recommendation made by the Royal Commission on Shipping Rings in paragraph 332 of their report, that to meet the possibility of cases arising where public interests may be grievously affected either by the checking of a trade or by its more or less permanent diversion, the Board of Trade should have power to appoint competent persons to investigate the matter. There seems no reason why His Majesty's Government should not discuss with the Canadian Government the question of holding a joint inquiry into the rates charged and the facilities afforded by the shipping companies engaged in the trade between United Kingdom and Canadian ports, either on the lines of the recommendation of the Royal Commission or on the lines of the inquiries provided for in the Combines Investigation Bill, which it is understood has passed through the Canadian Legislature."

In view of the conclusion arrived at by the Board of Trade, a preliminary joint investigation, such as above suggested, was essential. The scope of such an enquiry of necessity would cover the whole situation, so as to enable the commissioners appointed for the purpose to determine whether the rates charged and facilities afforded by the shipping companies engaged in the trade between the United Kingdom and Canada were such as to require some form of governmental control or not. With this end in view, I endeavored to obtain the appointment of a joint commission to make a thorough and complete investigation of, and to report on the methods and practice, and rates and charges of ocean carriers doing business, or from time to time doing business, between ports in the United Kingdom and ports in Canada; and also of all terminal companies or port authorities of any port in the United Kingdom or in Canada through which traffic, whether of passenger or freight, between the United Kingdom and Canada passes; and also to investigate into and report on all insurance charges or other expenses that shippers from the United Kingdom to Canada, or vice versa, are subject. I further represented that the commission, in addition to reporting its findings in the above matters, should also recommend what, if any, legislation it deemed advisable should be passed by the Imperial Parliament, or by the Dominion Parliament, or by both. I further represented that it was necessary that the commission should have authority to sit at such places it might desire, either in the United Kingdom or in Canada, with authority to compel the attendance of witnesses, production of documents, books, papers, etc., and to administer oaths; and also that the commission should have the right to employ accountants, traffic experts, clerical and other assistance. I further impressed upon the Imperial authorities that it was the desire of the Canadian Government that the investigation should be entered on in the near future, and, if possible, a report made so as to enable any necessary action to be taken by that government at the ensuing session of Parliament. In support of the necessity for an investigation, I relied upon the admitted fact of large increases in rates and the falling off of the ratio of imports from Great Britain to Canada, as well as the large increase of cost to the British consumer certain increases in rates in part



H. L. Drayton, K.C.
Chief Commissioner, Board of Railway Commissioners for Canada.

worked, the particulars of which I do not now venture to trouble you with. It will be noted that the investigation as asked was not confined to the freight situation merely, but also covered passenger traffic. In case there could be any exception taken to my request for an investigation on that score, I pointed out that no complaint was made at the instant in so far as passenger rates were concerned, but that, in order to arrive at what a fair, adequate and reasonable freight rate should be, the sources of revenue, with the expense common to both services, should be considered, and a proper allocation made of expenses so as to distinguish that part fairly chargeable to freight and that fairly chargeable to passenger traffic. This, of course, could not be done unless the passenger figures were placed before the commission of enquiry.

In addition to discussing the matter with the Imperial authorities, I also had the opportunity afforded me of meeting the representatives of the different lines that are in conference with each other, and of hearing a statement of their position. As a matter of fairness to the companies, it is only due to state that the expense of carrying on a business in some particulars has very largely increased, so that a certain advance would undoubtedly be reasonable if the previous rates only afforded fair returns to the operating companies.

The action taken by the Board of Trade is shown in the following letter:—

"I am directed by the Board of Trade to refer to the discussion which took place on Aug. 22 between yourself and representatives of the Board and the Colonial Office on the subject of ocean freight rates, and I am to state that the Board of Trade have carefully considered the arguments and suggestions advanced by you at that discussion.

"The offer of co-operation in a joint inquiry which was made in a letter from Lord Crewe to the Governor-General of Canada on Aug. 19, 1910, appears to have met with no response from the Canadian Government until now; but on April 15, 1912, in pursuance of a resolution passed by the Imperial Conference of 1911, on the motion of the Canadian Prime Minister, a joint Royal Commission was appointed, representing the Dominion and the United Kingdom, in whose terms of reference the question of shipping freights was clearly included. Further, at the meeting of the Imperial Conference at which the resolution moved by the Prime Minister of Canada was under discussion, the question whether the subject of shipping arrangements and means of transport, etc., would be included in the reference to the commission was expressly raised by the Prime Minister of Australia and was answered in the affirmative by the President of the Imperial Conference.

"Since their appointment the Royal Commission have visited Australia and New Zealand, and have taken evidence on the subject of freight rates in relation to trade between the United Kingdom and those Dominions.

"In these circumstances, the Board, after consultation with the Secretary of State for the Colonies, feel that it would not be possible at the present stage to advise His Majesty's Government to appoint a second Royal Commission representing Canada and the United Kingdom only, to investigate a subject which the Royal Commission on the Trade of the Dominions are already examining and on which it is understood that this commisison will very shortly be taking evidence in Canada." In any event, a commission possessing all the powers suggested by you could not be constituted without legislation, and it could not, therefore, be appointed or get to work until next year, by which time, it is understood, the Dominions Royal Commission will be visiting Canada.

"While, however, it is feared that the appointment of a special commission of the nature proposed is not possible, His Majesty's Government would be prepared, if desired, to communicate with the Dominions Trade Commission (of which the Canadian Minister of Trade is a member), informing them of the desire of the Canadian Government that the subject of shipping freights, etc., in the trade between Canada and the United Kingdom should be investigated with as little delay as possible. The Board of Trade hope that, in the circumstances, this course will meet the wishes of the Canadian Government."

Might I be permitted to say that, if the Dominions Trade Commission could take this matter up and make an interim report on it, if necessary, I do not think the enquiry could be in better hands. On receiving this advice, I attended on the Chairman of the Dominions Trade Commission, Sir Edgar Vincent, who told me that the question of transportation within the Empire was one which his commission had already taken some evidence on; and that, under the present arrangement, the commission would be in Canada next August. He also thought that, if necessary, a sitting of the commission could be arranged at an earlier date, in London, to take evidence. Notwithstanding the information which I received from the conference lines, I am still of the view that an investigation should be held.

For the Western movement, the lines forming part of the conference which are, the Allan, the Canadian Northern, the Canadian Pacific, the Cunard, the Dominion, the Donaldson, the Furness, the Manchester Liners, and the Thompson Lines, issue a tariff for the different seasons, it being drawn to include general minimum rates on practically all, or at least on the chief commodities moving. These minimum rates so called are practically the maximum rates that the lines obtain, and the shipper is in a position to know, as in my view he always should know, what the rate will be on a given commodity within a given period. No such rates are issued in so far as the eastern movement is concerned; but weekly lists are issued from time to time so that it may be entirely impossible for the Canadian shipper to know what his rates on flour or wheat may be in a month's time. I have been unable to at all convince the conference that this is an improper practice in so far as the eastern movement is concerned. The advanced reason why the admitted convenience can be given to the shipper shipping west is that there is never a scarcity of room on the western movement, while there may be a scarcity of space on the eastern movement. The position of the companies shortly is, that with the higher amount of business offering, and the possibility of shortage in boat accommodation, they should be allowed to take advantage of the shortage and charge a greater rate for handling the large than would be charged for handling the smaller amount. This practice the companies claim to be necessary. Whether it is necessary or not, it is certainly injurious to Canadian exporters, and is entirely against the usual basis of rate adjustments, at least so far as a land haul is concerned. It should be noted that, while it is true boats rarely, if ever, get a full cargo going west; during the present season the eastern rates have been so remunerative that a largely increased number of tramp boats have gone to Montreal not carrying English merchandise at all, but simply to get the return eastern cargo.

The effect of the present situation is that when the exporter of this country is not afforded sufficient facilities by the ocean carrier, the exporter is penalized for that situation. The Canadian exporter, by reason of the fact that, speaking in a general sense, nearly all the country's exports have a low value in proportion to the space occupied, and a comparatively low value in relation to the cost of transportation, is peculiarly affected by any increases in the cost of transportation, so that it becomes a matter of prime importance to keep such costs to a reasonable rate. While on some commodities the increased rate may be felt on the western movement, this is not the result speaking generally. So far as the western movement is concerned, apparently, the exporters are more concerned with the speed and regularity of service on many articles than they are in the rate; those that I now refer to being articles the value of which is large compared to the cost of transportation. This is evidenced by the fact that, in the arrangement that the conference has made, the Manchester Liners are allowed to absorb certain charges, with the result that, on shipment of goods originating in Manchester, the comparative cost works out as follows:—When shipping at Manchester, cartage from the warehouse to the Manchester docks, 2s. per ton; ship canal toll, 4s. 4d.; total, 6s. 4d. per ton. When shipping at Liverpool, cartage to the railway station, 1s. 6d.; railway rate from Manchester to Liverpool, 7s. 1d.; cartage to docks, 1s. 6d.; Liverpool dock and town dues, 1s. 10d.; total, 11s. 11d. per ton. These illustrative figures show a movement (prior) on the printed lists which were published previous to the recent advance in railway rates and ship canal tolls. English railway rates have been increased 4%; ship canal tolls, 16%; and Liverpool dock and town dues, 10%. These increases do not affect, however, the proposition that it is considerably cheaper to ship at Manchester than at Liverpool. Notwithstanding this, a very large proportion of goods, originating not only in the Midlands but in Manchester itself, are shipped at Liverpool. The ship canal tolls shown in the above statement, I am advised, are now absorbed by the Manchester Liners; so that the saving, shipping by Manchester as against Liverpool would, on the information with which I have been supplied, amount to 9s. 11d. per ton. The claim that importers made to the effect that the British preference was absorbed by the increased rates does not appear to be borne out. The following statement, prescribed by the conference lines, would seem to be approximately correct:—

| | Value. | Preferential. | Rates. 1910. | 1912. | Increase. |
|---|---|---|---|---|---|
| Woollen Goods | £90 p. 40 c. ft. | 5% — 90s. p. 40 c. ft. | 27s. 6d. | 30s. | 2s. 6d. |
| Cotton Piece Goods | £80 p. 40 c. ft. | 5% — 80s. p. 40 c. ft. | 22s. 6d. | 30s. | 7s. 6d. |
| Carpets | £50 p. 40 c. ft. | 5% — 50s. p. 40 c. ft. | 20s. | 25s. | 5s. |
| Felt Hats | £30 p. 40 c. ft. | 7½%— 45s. p 40 c. ft. | 15s. | 20s. | 5s. |
| Cutlery | £150 p. 40 c. ft. | 7½%—225s. p. 40 c. ft. | 25s. | 35s. | 10s. |

No shipper has supplied me with any information which supports the general proposition, that is, that the British preference has been absorbed. I have no doubt, however, that on articles sold on the Canadian market by the British exporter, in close competition with exporters in other countries, the increases in rates of recent years have a detrimental and injurious effect on the traffic, and may account in part for the fall in ratio of British exports. The demand for investigation made by the Canadian Government, and acceded to as above noted by the Imperial authorities, is, therefore, justified by the exigencies of the traffic moving in either direction.

The position, when action was taken by your honorable body, was that steamship conferences were effective so that no competition was afforded beyond the sporadic competition that the tramp freight boat affords. Competition of this character affords no protection whatever to shippers requiring regular shipment in less than cargo lots. In my view, such a condition practically eliminates all competition, and requires some governmental control. This state of affairs obtained at the time of my interview with the steamship representatives in England. Since my return, I notice that the C.P.R. Co. states that it has withdrawn from the conference. I am unaware as to whether this action is dictated by a change of policy on the part of that company, or whether it is the natural outgrowth of the conflict existing between the C.P.R. and the German lines, which are in another conference. However this may be, I think the present opportunity for investigation in conjunction with the Imperial authorities is of too much value to abandon for this cause.

I should also inform you that I am advised by the steamship conference that the so called loyalty provision, under which a charge of 10% was made for primage, and which is shown on the official tariffs of the conference, being General Minimum Tariff 11, effective Jan. 1, 1913, and by General Minimum Tariff 11A for the summer season of 1913, has been withdrawn. Under the former practice, this charge of 10% was rebated in six month periods to all shippers who shipped no freight except by conference lines, and has been the subject of much unfavorable comment.

The matter of governmental control is difficult. Certain conditions which apply to railways do not apply to ocean carriers. The carrying unit is a fixed unit. For this reason the sections of the Railway Act which prevent discrimination cannot well be applied. It would be against the interests, not only of the carriers, but, in the long run, of the commerce of the country, if a boat, being unable by reason of the state of the market to obtain a proper cargo at regular rates, could not be loaded with goods which would only move by reason of the special inducement that a cut at the last hour, having reference to that particular sailing, might afford, on the other hand, as at present advised, there would seem to be no reason why standard maximum rates should not be fixed by an independent authority, and that no increase should be allowed in standard maximum rates except with the consent of that authority.

In fixing maximum rates, regard, of course, would be had to, not only the fair rate on any given commodity, but what a fair proportion as between commodity and commodity would be. For example, one of the most serious complaints against steamship practices is made by the millers, who complain that a spread as between wheat and flour, which existed from 1907 to 1912, inclusive, varying from 1.52 cents for the year to 3.85 per 100 lbs. was increased in the early part of this year to 7 cents, resulting, as the flour exporter submitted, in a very unfair preference to the British miller; or, putting it conversely, in improperly penalizing the exporter of flour from this country. There is no doubt that the increase in the spread would militate much to the disadvantage of the Canadian shipper. At the same time, it must also be borne in mind that the milling capacity of Great Britain is constantly increasing. The milling unit is much larger, more economical and of greater efficiency, with the result that, so far as the metropolitan district of London is concerned, the local milling capacity since 1903 has increased from 430 sacks an hour to 850, so that the present milling capacity is well over five million sacks per annum. Large increases have also been noted at both Liverpool and Manchester. This increase in milling capacity is relied on by the carriers as accounting for any difficulty that Canadian exporters of flour may be at rather than increased ocean rates or the variable spread.

I am not covering in this report the question of the individual advances, not attempting to deal with their justification, as no useful result can be arrived at without a proper investigation and full production of papers. I should, however, draw to your attention that, in addition to what I have already said, the position of the liners is that all control of any kind is impossible to work out, and would be a great detriment to the shipping industry; and that the increased rates are justified not only by the increased cost of service already noted, but by the peculiar conditions of the Canadian trade. They point out that very little high rated package freight is shipped from Canada, and very little specie, ivory, silk, copper, and other high rated commodities are shipped to Canada; that many one time revenue producing commodities have either disappeared or are shipped in diminishing quantities owing to increased domestic consumption, e.g., butter and cheese; competition of domestic manufacturers, e.g., cotton goods and metals; domestic and U.S. mar-

ket conditions, e.g., grain; reduced quantities of general cargo leave westbound fine goods and eastbound grain, flour and lumber—the only goods moving in considerable quantities on which revenue can be secured. In order that the position of the confederated lines may be fairly placed before you, I attach hereto a copy of an open letter to the Times from W. Black Noble, who attended the unofficial conference I had with the representatives of the liners at Liverpool. I should call attention to this paragraph of his letter:—

"Again, with a very few exceptions, steamship rates are regulated by the law of supply and demand; that is to say, should a line, or number of lines in conference together, agree on a rate altogether out of proportion to the value of the goods, it would be impossible for any traffic to move, and automatically the rate in question would cease to exist for all practical purposes. The result would be that a fresh rate, which would give a just and proper share of the profits of the transaction to both parties interested, would come eventually into existence."

While not agreeing with some of Mr. Noble's conclusions, this seems to me to be a frank and fair statement of the present position. Confederated lines (as the lines then were) can, as Mr. Noble states, make a rate altogether out of proportion to the value of the goods, and as a result, extinguish the traffic; and as a further corollary, as pointed out by Mr. Noble, eventually a fresh rate which would give a just and proper share to the profits of the transaction (as interpreted by the carrier) to both parties interested would eventually come into existence. This affirmation by a member of the conference of a condition under which the business of any given importer could, at any time, perhaps by the carrier's whim, lack of information, or desire for an excessive return, be at least temporarily extinguished, would appear of itself to call for the fullest investigation.

I desire to express my obligation to the Department of Trade and Commerce and the Montreal Harbor Commission for valuable information from time to time supplied.

In connection with the foregoing we are officially advised that the Dominion Government has requested the British Government to have the matter referred to the Dominions Royal Commission, of which the Hon. G. E. Foster is a member. Evidence will be taken in Great Britain and also in Canada, which the Commission is to visit this year.

## Magnetic Chart, Etc., for Hudson Bay.

An Ottawa press dispatch says:—"As an aid to the navigators of Hudson Bay and Straits who find their compasses seriously affected by proximity to the magnetic pole, the Department of Naval Service will at an early date publish the result of investigations which have been carried on for some time past. A magnetic chart will also be published giving carefully worked out tables of the deviations to which the compass is subject at various points in the bay. The nearness of the magnetic pole causes the compass to play strange antics, which are to say the least discouraging to navigators, especially in foggy or stormy weather when everything depends on the compass for guidance. In one part of the bay the needle is actually dead and swings free. In other cases it causes the navigator to travel landward if its motions are followed. All these deviations have been carefully worked out, and it is believed that a knowledge of these made possible by the possession of the chart will almost entirely obviate the present difficulties under which the navigators labor."

The Dominion Government has awarded the contract for the construction of section 5 of the Welland Ship Canal to the Canadian Dredging Co., Midland, Ont.

## Investigation Into the Stranding of the Steamship Turret Chief.

An investigation into the stranding of the Canadian Lake and Ocean Navigation Co's. s.s. Turret Chief in Lake Superior, near Copper Harbor, Keweenaw Point, U.S., on Nov. 8, was held at Kingston, Ont., Nov. 21, by Commander H. St. G. Lindsay, R.D. R.N. R., Dominion Wreck Commissioner, assisted by Captains F. Nash and W. S. Batten, as nautical assessors. The following judgment has since been delivered:

The Turret Chief was on a voyage from Midland to Fort William, Ont., in water ballast, and left the Sault Ste. Marie Canal on Nov. 7 at about 6.30 a.m., with a crew of 17 all told, and drawing about 11 ft. aft and 6 ft. forward, the propeller being only half immersed. Proceeding out into Lake Superior the patent log was set off Iroquois Point at about 7.45 a.m. Whitefish Point was abeam at about 10 a.m., when a course was set, n. w. by n., by compass, for Passage Island. Everything seems to have gone well until about 9 p.m., when the wind, which had been southwesterly all day, shifted suddenly to the northward, and commenced to blow hard. At 9.30 the vessel fell off into the trough of the sea, apparently not being able to hold up against the wind and sea, and apparently remained in that position until she drove ashore at 4 a.m. on the 8th. No attempt was made by the crew to leave the ship on striking, as she had driven almost broadside on to the shore, and was soon driven up by the seas within a few feet of the land, where she lay, and there was apparently no immediate danger anticipated of the vessel breaking up, as only spray was coming over the superstructure. At 10 a.m., the master considered it unsafe to remain any longer on board, as the ice was forming fast on the weather (starboard) side of the ship, and likely to list her to seaward, so all hands left her by means of a ladder from the fore part of the ship to the shore. The vessel is still on the rocks, with very little water in her holds, showing that her shell plating cannot be badly damaged.

The court, after carefully reviewing the evidence adduced, is unanimous in its opinion that the stranding was caused by the vessel not being able to head up to the sea, owing to her light draught, and the propeller having no hold of the water, and also to her peculiar construction exposing a very high side to the wind, which, being strong on the beam, would tend to drive her to leeward very fast. The court is also of opinion that the master, Thos. Padington, did not do all that might have been don to try to save his ship, inasmuch as he did not appear to have made proper allowance for the large amount of leeway the ship was making, and therefore lost the run of the vessel's position, and apparently he did not try and find out what speed she was making through the water after the patent log was lost during the night, and the court is satisfied that had he put his ship on the other tack, and headed her to the eastward, he might have had some chance of keeping her afloat, knowing as he should have done that the land,—Keweenaw Point.—was to leeward and only about 30 miles off, when the wind came out from northwest at 9.30 p.m. The court therefore severely censures him for this error of judgment, and total ignorance of, or disregard to the most essential part of the duties of a master, viz: a knowledge of the position of his vessel at all times.

The court criticizes the fact of this valuable vessel leaving port so light that her propeller was only half immersed, and short handed in the stokehold, especially at this season of the year. It was no doubt due to this that the vessel was not able to head up to the sea. The court would suggest that either a deep sea lead and line, or a patent sounding machine would be very useful to vessels in circumstances like this in the inland waters, especially in Lake Superior, where soundings are of more than ordinary depth, and also that an officially fixed light load line for all vessels would be a great protection to lives and property engaged in navigation on the Great Lakes.

## The Organization of Canada Steamship Lines, Limited.

As stated in Canadian Railway and Marine World for November the company which has been formed to absorb the Richelieu and Ontario Navigation Co. and other navigation companies acquired in that connection will be called Canada Steamship Lines, Ltd., the name originally chosen, Canada Transportation Lines, Ltd., not having found favor with the interested persons in Great Britain. The directors and London advisory committee are, as stated in our last issue. It will be noticed that Jas. Playfair, H. W. Richardson, F. A. McGee, W. Hanson, W. G. Morden and C. G. Boyne, who are on the R. and O. N. Co's. board, are not on the new board.

The company has been incorporated under the Dominion Companies Act, with an authorized capital of $25,000,000 divided into 125,000 7% preference shares and 125,000 ordinary shares, of the par value of $100. The company, as stated in our last issue, is offering £1,254,720 16s. 5d. or $6,106,308.51 of 5% consolidated debenture stock, part of a total amount of £1,849,317 12s. 10d., or $9,000,000, repayable Aug. 15, 1943 at 105%. This stock is constituted by a trust deed and is secured by the company's lands, buildings and steamships and shares of other companies acquired or to be acquired, and by a general charge upon the undertaking. An accumulative sinking fund of 1½% per year is to be started in 1915. A portion of the consolidated debenture stock has been underwritten in Canada.

The company has been formed to acquire (1) The property of the Richelieu and Ontario Navigation Co., Ltd., which holds the whole of the shares of the following companies: Inland Lines, Ltd., Northern Navigation Co., Ltd., Niagara Navigation Co., Ltd., St. Lawrence River Steamboat Co., Ltd., Richelieu & Ontario Navigation Co. of U. S. A., Thousand Islands Steamboat Co., Ltd., and the steamships C. A. Jaques and Bickerdike, formerly constituting the Merchants Montreal line. (2) The Ontario and Quebec Navigation Co., Ltd. (3) The steamship Haddington. (4) Not less than 80% of the shares of the Canada Interlake Line, Ltd., and the Quebec Steamship Co., Ltd., and to carry on the business of the several companies as a single undertaking under one central management. This will give the company more than 100 vessels controlling the most important part of the passenger and freight transportation between Canadian ports on the Great Lakes and Montreal and Quebec, while the Quebec Steamship Co. runs lines from Quebec to ports on the Lower St. Lawrence and to New York, and from New York to the Bermudas and West Indies.

The transfer of the R. and O. N. Co's. assets to the Canada Steamship Lines, Ltd., was completed at a board meeting of the former company, at Montreal, Dec. 12. The R. & O. N. shareholders receive $12,000,000 7% preferred stock and $4,000,000 common stock.

James Carruthers, President, is reported to have stated recently, that the London interests in charge of the financing of the company have come to the conclusion that the present is not an opportune time to

make any public issue, and the debenture stock has therefore been taken up by a syndicate composed of some of the most powerful financial houses in England, and by well known persons in Canada. On these subscriptions, 20% had then been paid up, and 30% was to be paid on Dec. 14, the balance being payable in two instalments, on Mar. 1 and May 1. The syndicate intends making a public offering of the debenture stock as soon as financial conditions are considered more favorable.

The combined net earnings of the different companies now owned by the new company, were, to Nov. 1, 1913, over $1,450,000, and the officials report that the total net earnings for the year, notwithstanding adverse circumstances, will approximate $1,700,000. An exact statement of the earnings will be published as soon as the returns are in after the close of navigation. The balance sheet shows that there are physical assets, valued by the Canadian Appraisal Co., at over three times the amount of the debenture stock, and the net earnings, without any of the advantage of the benefits of the consolidation, show as over three times the amount of the bonds, and sufficient to meet the fixed charges, the 7% dividend on the preference stock and a small dividend on the ordinary shares, which last, however, it is not the intention to pay for the present. With the savings that can be effected by the consolidation, the net earnings should approximate $2,000,000 a year on the basis of the business that the different companies have done in the past year.

The interests in control of the R. & O. N. Co. have felt for some time that in view of the immense and rapid growth of the country and the consequent necessity for continuous additions and improvements to the property, in order to provide a service that would be at all satisfactory, a consolidation of this kind was necessary, if they hoped to secure the capital required, and further feel that in bringing together a fleet that will take care of and profit by both the bulk and package freight and the passenger business of such a large territory, they are putting the company on an absolutely sound basis, and that they can promise a better and more efficient public service.

The following is a consolidated statement showing the assets and liabilities of the various merged companies at Dec. 31, 1912, as prepared by the chartered accountants employed to examine the books:—

ASSETS.

| | | |
|---|---|---|
| Investments, stores, supplies, etc. | | 1,167,856 |
| Cash in banks and on hand | | 500,000 |
| Balances, representing leases, contracts and goodwill, covered by common stock | | 8,589,647 |
| Vessels (excluding Noronic) | | $16,866,834 |
| Real estate, buildings and dock properties | | 5,450,268 |
| | | *$22,317,102 |
| Sundry merchandise | | $ 150,000 |
| Paid on Noronic in course of construction | | 280,079 |
| | | $33,004,684 |

LIABILITIES.

| | | |
|---|---|---|
| Accounts payable | | $ 555,538 |
| Capital—7% preferred | $12,500,000 | |
| Common, issued | 12,000,000 | |
| | | 24,500,000 |
| 5% debentures to be issued | | 6,106,308 |
| Underlying bonds and loans | | 1,842,838 |
| | | $33,004,684 |

*For the purpose of valuation of the assets as security for debenture stock, the figure is reduced by the Canadian Appraisal Co. to $19,250,406.

Note.—$534,983 of the $9,000,000 debenture stock will remain in the hands of the company for future issues, and in the meantime will be available for financing purposes.

A fleet of fifteen 1000 ton barges, each equipped with twin screw propellers driven by producer gas engines, is now under construction by the Alabama and New Orleans Transportation Co. to operate between the coal fields of Alabama and the City of New Orleans, La.

## Atlantic and Pacific Ocean Marine.

The Cairn Line s.s. Cervona was reported wrecked and a total loss near Bear Cove Point, Renews Head, Nfld., Dec. 12.

The steamship which is under construction at Belfast, Ireland, for the White Star-Dominion Line's Canadian service, is to be named Regina.

The C.P.R. s.s. Ruthenia, which arrived at Montreal Nov. 25, was the last ocean vessel from a foreign port for the St. Lawrence navigation season of 1913.

The Osaka Shosen Kaisha is reported to have decided to build two or three 16,000 ton steamships at Kobe and Nagasaki, Japan, chiefly for freight service between Japan and Vancouver, in connection with the Great Northern Ry.

M. J. Haney, director, Canada Steamship Lines, Ltd., was visiting Bermuda early in December, in connection, it is reported, with a possible extension of the company's service, acquired with the Quebec Steamship Co., in the West Indies.

The vessel which the Union Steamship Co. of New Zealand is having built in Great Britain for its Canadian mail service is to be a sister vessel to the recently built Niagara, and it is stated will be named Ottawa.

The Allan Line s.s. Alsatian underwent her trials in the Clyde, Dec. 16, obtaining a speed of 20½ knots an hour over the measured mile. She will arrive at Halifax on her maiden trip about the middle of January and sail again on Jan. 31.

The Union Steamship Co. of New Zealand, which operates between Australasia and Canada under a mail subsidy contract, is reported to have ordered an additional steamship in Scotland, of approximately 16,000 tons, for a service between Australasia and U. S. Pacific ports.

The steamships which are under construction in Great Britain, for the C.P.R. Atlantic steamship service, some details of which were given in our last issue, have been tentatively named Metagama and Missanabie, but it has not been decided that these names will be given them when launched.

The Norwegian steamship Imperial Transport, bound from Norway to Philadelphia, put in at Louisburg, N.S., Dec. 15, 26 days out, with her fore plates badly strained on account of heavy head seas. Temporary repairs, consisting of timbers and concrete, were made to enable her to complete her voyage.

Vancouver press reports state that the Merchants and Shippers Steamship Co., at present operating between England and South American ports, will establish a steamship service between Australia and Vancouver, during this year, working in conjunction with either the Canadian Northern Ry., or the Great Northern Ry.

The Cunard Line is reported to have placed an order for the construction of another steamship, which is to be used solely for the Canadian service, and to be named Aurania. It is said she will be about 520 ft. long, and about 14,000 gross tons, with accommodation for second and third class passengers only. The operation of the company's Canadian service is said to have been exceedingly profitable.

It is reported in Montreal that Furness Withy and Co. will inaugurate a special steamship service from Montreal to Europe next season, in order to cope with the export grain trade. This decision, which the local management states it is not in a position to confirm, is said to be the result of the report of the Chairman of the Montreal Harbor Commission on the shipping of grain from Montreal, which has been dealt with in a previous issue.

The first sailing of the Royal Mail Steam Packet Co's. s.s. Cobequid, under the new agreement for a faster mail steamship service between Canada and the West Indies, took place Dec. 5, from Halifax, N. S. A fortnightly service has been arranged, three other steamships being engaged in the service viz,—Caraquet, Chaleur and Chignecto. Calls will be made at Bermuda, St. Kitts, Antigua, Dominica, St. Lucia, Barbados, Grenada, St. Vincent, Trinidad and Demarara, and St. John, N.B., will be called at on the return voyage.

Canadian Northern Steamships Ltd., has purchased the s.s. Principe di Piedmonte, which has been operating between Genoa and New York in the passenger and freight trade, and has leased her to the Uranium Steamship Co., in place of the s.s. Volturno recently burnt at sea. The name of the

## Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during November, 1913.

| Articles | | | Canadian Canal | U. S. Canal | Total |
|---|---|---|---|---|---|
| Copper | Eastbound | Short tons | 1,098 | 4,421 | 5,519 |
| Grain | " | Bushels | 9,243,784 | 12,423,773 | 21,667,557 |
| Building stone | " | Short tons | | | |
| Flour | " | Barrels | 463,202 | 1,126,910 | 1,590,112 |
| Iron ore | " | Short tons | 4,230,030 | 1,155,483 | 3,365,513 |
| Pig iron | " | " | | 3,361 | 3,361 |
| Lumber | " | M. ft. b.m. | 7,403 | 65,662 | 73,065 |
| Silver ore | " | Short tons | | | |
| Wheat | " | Bushels | 34,245,702 | 13,386,830 | 47,632,532 |
| General merchandise | " | Short tons | 496 | 25,724 | 26,220 |
| Passengers | " | Number | 387 | 157 | 544 |
| Coal, hard | Westbound | Short tons | 52,077 | 239,691 | 291,768 |
| Coal, soft | " | " | 338,021 | 1,007,452 | 1,345,473 |
| Flour | " | Barrels | | | |
| Grain | " | Bushels | | | |
| Manufactured iron | " | Short tons | 15,720 | 36,571 | 52,291 |
| Iron ore | " | " | | | |
| Salt | " | Barrels | 9,520 | 104,626 | 114,146 |
| General merchandise | " | Short tons | 80,009 | 84,447 | 164,456 |
| Passengers | " | Number | 201 | 16 | 217 |
| **Summary.** | | | | | |
| Vessel passages | | Number | 876 | 1,510 | 2,386 |
| Registered tonnage | | Net | 2,527,162 | 2,983,111 | 5,510,273 |
| Freight—Eastbound | | Short tons | 3,516,819 | 2,057,316 | 5,574,135 |
| " —Westbound | | " | 487,187 | 1,383,855 | 1,871,042 |
| Total freight | | " | 4,004,006 | 3,441,171 | 7,445,177 |

vessel has been changed to Principello. She was built at Sunderland, Eng., in 1907, and is equipped with all the latest devices including wireless telegraphy. Her tonnage is 6,365 gross, 4,044 register. She will be placed on the same route as the Volturno, between European continental ports and New York, calling at Halifax, N.S. The Volturno which was lost was owned by Canadian Northern Steamships, Ltd., and chartered to the Uranium Steamship Co.

With reference to a report that the Hudson's Bay Co. had decided on an expenditure of £4,000,000 for additions to its trading stations and stores throughout northern Canada, and on the construction of a number of vessels for operation from the Pacific coast to Great Britain, by way of the Panama Canal, we are officially advised that the company has no intention of building vessels for the route named. The actual transportation needs of the company recently entailed the building of some additional steamships, and six were decided on; two of these are now in service, one is under construction, and three are under consideration. The new store at Calgary, Alta., was recently opened for business, and it is in this direction that most of the recent development has taken place.

## Maritime Provinces and Newfoundland.

The Lurcher Shoal lightship in the Bay of Fundy, which was taken off her station recently for repairs, has been replaced.

The Cape Breton Electric Co.'s s.s. Electronic has arrived at Yarmouth, N.S., where her machinery is being installed, after which she will be added to the ferry service between Sydney and North Sydney.

It is reported that dredging will shortly be commenced in the harbor at Stn Johns, Nfld., where it is stated that the ends of wharves only can now be used by vessels, and that the side dockage for a number of the wharves is absolutely useless owing to a gradual filling up.

The Terra Nova, the ship of Captain Scott's Antarctic expedition, recently left Cardiff, Wales, for St. John's, Nfld., where she is to re-engage in the whaling and sealing industry, in which she was employed until engaged for service in the Antarctic. Her figure head has been presented to the City Council of Cardiff.

The Consumers Fish and Cold Storage Co., Ltd., has been incorported under the Dominion Companies Act, with $50,000 capital and office at Yarmouth, N.S., to carry on a general fish and cold storage business, and in connection therewith to own and operate vessels. W. D. Sweeny, Yarmouth, N.S., is interested, and all the others concerned are resident in Boston, Mass.

Work is in progress on the Courtenay Bay development in St. John harbor, a channel with a depth of 32 ft. at low water is being dredged, and there is under construction a breakwater on the east side of the bay, and a dry dock is under contract with the Dominion Government. The dry dock will be excavated in the point south of the old penitentiary grounds, and the breakwater will run out from the shore immediately east of the dry dock.

The Dominion Department of Marine will receive tenders, Jan. 7, for the purchase of the Government patrol boats Hudson, now at Port Elgin, N.B.; Davies and Number One, now at Pictou, N.S., and Number Two, at Harbor de Lute, Campobello, N.B. They are to be sold as they stand without equipment. The Hudson was built at St. John, N.B. in 1903, and is screw driven by engine of 7 n.h.p., and has dimensions, length 57.7 ft., breadth 12.5 ft., depth 4.7 ft.; tonnage, 34 gross, 23 register.

The marine warehouse freight checkers at St. John, N.B., have applied for the appointment of a conciliation board to investigate the terms of employment and wages, and have named J. E. Moore, a freight checker at the wharves, and president of their union, to represent them on the board. The Shipping Federation of Canada has protested against the appointment of a board on the present application as it does not comply with the regulations of the Industrial Disputes Investigation Act, and that a number of the checkers have struck work illegally.

## Province of Quebec Marine.

The Richelieu and Ontario Navigation Co.'s s.s. Murray Bay has been drydocked at Montreal for general overhaul.

It is announced that the projected extensions of the Alexandra, King Edward and Jacques Cartier piers at Montreal will not be commenced until next season, or pending the completion of the Dominion Government's proposed alterations at the entrance to the Lachine Canal.

The number of vessels passing through the Lachine Canal during 1913 was 664, of which 442 were Canadian, and 222 U.S. vessels. They reperesented a combined tonnage of 239,377, and made 10,197 trips. The number of passengers carried was 107,073, and the cargo tonnage, 4,977,559 tons.

It is reported that the Dominion Government has decided to undertake the work of straightening the Lachine Canal between Cote St. Paul bridge and lok 4, during the winter. The curve is 250 ft. long, and on its removal, a wharf about 1,000 ft. long will be built, with a power house on the west side of the curve near the present lock 4, for the operation of the canal gates.

## Ontario and the Great Lakes.

The Department of Public Works has received tenders for the renewal of the south pier in Burlington channel, Hamilton.

The C.P.R. steamships Alberta and Athabasca will be docked at Port Arthur during the winter for general overhaul and repairs, at an estimated cost of $70,000.

The dredging of a channel in the Mission River, at Fort William, has been completed. There is now a channel 600 ft. wide, 25 ft. deep, and over 1,400 ft. long, available for navigation.

The United States s.s Edward Buckley, which was lying aground at Harbor Beach, Lake Huron, for some weeks, has been released and taken to Sarnia, where she will be examined for bottom damage and repaired.

The results of the hydrographic survey conducted during 1913 by the Dominion Government are reported to indicate that first class harbor facilities exist in the vicinity of the mouth of the Nottaway River, on James Bay.

The Northern Navigation Co. will, in January, move its auditing and accounting offices from Collingwood to Sarnia, where the head office has been located for some time. An office will be maintained at Collingwood, in charge of an agent.

The ratepayers of Sault Ste. Marie recently voted in favor of subsidizing the Lake Superior Drydock and Shipbuilding Co.'s project for the construction of a drydock and shipbuilding plant there, to the extent of $20,000 a year for 20 years.

The St. Lawrence and Chicago Steam Navigation Co. has declared a dividend of 8% for the past year, which would probably have been larger but for the loss of the s.s. James Carruthers, on which the company carried part of the insurance.

The steamboat Cornwall has been bought from the Calvin Co., Kingston, Ont., by the Donnelly Wrecking Co. She was built at Kingston in 1874, and was formerly named Algerian, and owned by the Richelieu and Ontario Navigation Co. She is paddle wheel, driven by engine of 61 h.p., and her dimensions are, length 176.6 ft., breadth 27.1 ft., depth 9.9 ft.; tonnage, 588 gross, 304 register.

The Northern Navigation Co.'s s.s. Huronic, which grounded at Whitefish Point during the storm of Nov. 9, will be drydocked at Port Huron during the winter, when she will be thoroughly examined for any possible damage she may have sustained. It is stated that bilge keels will be placed on her in order to prevent her rolling in heavy weather, and that she will receive several other improvements.

The wireless telegraph stations which the Dominion Government is erecting at Toronto and Port Burwell are reported to be complete, and it is anticipated that they will be in operation from the commencement of the year, when communication will be maintained with the car ferry steamboats plying across Lakes Ontario and Erie. The station at Kingston will, it is reported, be ready for operation by the spring.

The Hamilton Harbor Commissioners have decided to build a warehouse, with the necessary appliances for the carrying on of harbor and transportation business. The building will be on the westerly end of the revetment wall recently built by the Dominion Government in Burlington Bay, near the foot of Catharine St., and which has been transferred to the Harbor Commissioners. A. W. Peene is acting Engineer for the Commissioners.

The Great Lakes Towing Co. has been awarded contracts for the release of the steamships Turret Chief and L. C. Waldo, wrecked in the recent storm on the Great Lakes. The Turret Chief is ashore on Keeweenaw Point, six miles from Copper Harbor, and the L. C. Waldo is on Gull Rock, Lake Superior. The payment is on the basis of $15,000 for the former vessel and $20,000 for the latter. In both cases, the vessels have to be delivered at designated ports.

It is reported that the Great Lakes Protective Association has called upon its members for an assessment of 50% of the original contribution, which was settled at 4% of the insurance valuation. The Association carries 25% of the insurance on its members vessels. This action it is stated has been taken after a careful examination of the losses sustained through the storm of Nov. 9, which made the original amounts paid insufficient to meet all the claims for the season's losses.

In view of the accidents which have happened of late on the Great Lakes, where vessels have sunk and their whereabouts have not been ascertained, a Port Arthur mariner has suggested that each vessel should have attached to its topmast, by a coil of rope. a floating buoy, so that in the event of the vessel going down, its location would be marked. It is claimed that the device would be quite feasible, and surprise has been expressed that on account of its simplicity it has not been carried out before.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tidewater for November, as follows:—Superior,

602.91; Michigan and Huron, 580.44; Erie, 572.28; Ontario, 246.06. Compared with the average November levels for the past 10 years, Superior was 0.60 ft. above; Michigan and Huron, 0.06 ft. above; Erie, 0.46 ft. above, and Ontario, 0.39 ft above. It was anticipated that during December, Superior, Michigan, Huron and Ontario would fall about 0.2 ft., and Erie about 0.1 ft.

Hamilton merchants and vessel owners are protesting against the harbor rates charged by the local harbor commissioners, and approved by the Governor in Council. The Chairman of the Commission is reported to have stated that the rate was fixed in order to provide a sufficient revenue for the government of the harbor, and though he favored a free harbor, it could not be done unless the city made a sufficient annual appropriation for the purpose, which it did not seem likely would be done.

A press report from Ottawa, Dec. 15, stated that it had practically been decided to have a thorough investigation by the Parliamentary Marine and Fisheries Committee, into the recent Great Lakes disaster, and that evidence would be called from among the persons and organizations interested, with a view to increasing the safeguards for passengers and sailors. It is anticipated that legislation will later be effected fixing a load line and providing for the inspection of vessels before they leave harbor.

A large bulk freight steamship, reported to be the largest of the kind in the world, is under construction at Port Arthur, and which, it is anticipated, will be ready for operation towards the latter part of next season. Her dimensions are:—length over all 625 ft., length on keel 604 ft., moulded beam 59 ft., moulded depth 32 ft. She will have a carrying capacity of over 9,000 gross tons. She has been designed to handle bulk cargoes of coal, ore and grain. The hull is on the Isherwood system, and is of steel, with double bottom and side tanks 5½ ft. deep, up to the main deck stringer.

The Pelee and Lake Erie Navigation Co.'s s.s. Pelee was launched at Collingwood, Dec. 20. She will be utilized for passenger and freight business between Pelee Island and the main land. The general dimensions are,—length 146 ft., beam 24 ft., depth 18¼ ft. to promenade deck. The propelling machinery consists of triple expansion engines of the jet condensing type supplied with steam by one Scotch marine type boiler, designed for a speed of 13 knots an hour under full lead. She will be completed for operation on the reopening of navigation.

Following on the effects of the storm on Lake Huron, Nov. 9, during which a number of vessels were wrecked and lives lost, an inquest was held at Goderich into the death of one of the crew of the s.s. John A. McGean, whose body was washed ashore there. The verdict, which was delivered Dec. 14, merely stated that death was due to drowning owing to the wreck, but, in addition, the jury made a number of recommendations covering, chiefly, that Goderich should be properly and completely equipped as a harbor of refuge, and the more extensive use of wireless telegraphy, both on land and on the various vessels travelling the lakes.

The Lake Superior Dry Dock and Construction Co., the incorporation of which was announced in a recent issue, has a capital stock of $1,500,000, divided into $500,000 7% preference stock, and $1,000,000 common stock. The City of Sault Ste. Marie, Ont., has granted a bonus of $20,000 a year for 20 years, and has also granted a site for the erection of the plant. Arrangements are in course of progress for the granting of a subsidy by the Dominion Government of 3% per annum for 20 years on an approximate expenditure of $1,338,000. It is reported that the contract will shortly be awarded to the British Construction Co., London, Eng., for the construction of the plant, plans for which have been approved by the Dominion Government, and that bonds for $1,200,000 are to be issued.

The s.s Noronic, which has been built at Port Arthur for the Northern Navigation Co., is at Sarnia, where she will have her fittings and furniture installed during the winter. She is built on the Isherwood system with watertight compartments, and has five steel decks, main, spar, promenade, observation and boat. Her dimensions are:—length over all 385 ft., length between perpendiculars 362 ft., beam, moulded, 82 ft., depth, moulded, 28¾ ft. The propelling machinery consists of four cylinder, triple expansion engines, with cylinders 29½, 47½, 58 and 58 ins. diar., by 42 ins. stroke, suplied with steam at 200 lbs. working pressure by four 15½ by 11 ft., and one 12½ by 11 ft. Scotch boilers, under forced draught.

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**Vessels for Hudson Bay Service.**—It is reported that tenders are being invited in Great Britain, for the construction of two steamships, to be named Nelson and Nottaway, for operation between Port Nelson on Hudson Bay, and Nottaway on James Bay, in connection with the North Ry., which is projected between Nottaway and Montreal, that they will be 14 knot vessels, making the trip between the two ports in 48 hours, that their dimensions will be,—length 365 ft., beam 49 ft., draught, about 20 ft., with a carrying capacity of 4,500 tons, or 150,000 bush. of wheat, that there will be passenger accommodation for 100 first class and 200 second, and that they are required for service by May 1915.

**Thousand Foot Dry Dock.**—If New York is not to be at a serious disadvantage, as compared with the ports at Quebec and Boston, it must provide its own dry dock for the accommodation of the largest ocean liners. At both Quebec and Boston dry docks are being built capable of accommodating ships 1,000 ft. long. The Dock Commission is planning to build a dock of this size at South Brooklyn.

## List of Steam Vessels Registered in Canada during November, 1913.

| No. | Name | Port of Registry | When and Where Built | | Length | Breadth | Depth | Gross Tons | Reg. Tons | Engines, Etc. | Owner or Managing Owner |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 134145 | Byron Whitaker | Montreal | Mount Clemens, Mich. | 1890 | 222 6 | 37 7 | 33 8 | 1539 | 959 | 89n.h.p. sc. | F. E. Hall, Montreal. |
| 133937 | Dollard | Ottawa, Ont. | Kingston, Ont. | 1913 | 178 6 | 31 9 | 15 3 | 761 | 323 | 116 " " | Minister of Marine and Fisheries, Ottawa, Ont. |
| 134071 | Eastholm | Vancouver, B.C. | Vancouver, B.C. | 1913 | 93 0 | 24 3 | 6 8 | 197 | 118 | 16 " " | Lincoln Steamship Co., Vancouver, B C. |
| 133758 | Helena | St. John, N.B. | Collingwood, Ont. | 1907 | 108 8 | 23 3 | 14 0 | 299 | 204 | 81 " " | Minister of Public Works, Ottawa, Ont. |

## List of Sailing Vessels and Barges Registered in Canada during November, 1913.

| No. | Name | Port of Registry | Rig | When and Where Built | | Length | Breadth | Depth | Reg. Tons | Owner or Managing Owner |
|---|---|---|---|---|---|---|---|---|---|---|
| 134146 | A. Bibeau | Montreal | Sloop | Pierreville, Que. | 1913 | 107 2 | 22 2 | 7 4 | 131 | A. Bibeau, Notre Dame de Pierreville, Que. |
| 134041 | Azanetta | Lunenburg, N.S. | Schr | Bayswater, N.S. | 1913 | 59 0 | 15 8 | 9 0 | 35 | B. Cleveland, Bayswater, N.S. |
| 134132 | Bic | Quebec, Que | Yawl | Ile-aux-Grues, Que. | 1913 | 70 7 | 23 8 | 6 8 | 61 | C. C. Vezina, Ile-aux-Grues, Que. |
| 134030 | G.Q.L. No. 2 | Victoria, B.C. | Barge | Victoria, B.C. | 1911 | 90 0 | 30 0 | 8 0 | 168 | C. P. Wolley and F. H. Stirling, Victoria, B.C. |
| 134143 | H.M.C. No. 1 | Montreal | Scow | Goderich, Ont. | 1912 | 97 6 | 31 2 | 8 4 | 215 | H. M. Connolly, Montreal. |
| 134144 | " No. 2 | " | " | " " | 1912 | 97 6 | 31 2 | 8 4 | 263 | " " " |
| 134147 | " No. 3 | " | " | St. John, N.B. | 1911 | 60 6 | 22 0 | 6 5 | 69 | " " " |
| 134148 | " No. 4 | " | " | " " | 1911 | 60 2 | 21 8 | 6 5 | 69 | " " " |
| 134149 | " No. 5 | " | " | " " | 1911 | 35 5 | 19 0 | 2 5 | 35 | " " " |
| 134150 | " No. 6 | " | " | " " | 1911 | 60 4 | 30 2 | 4 5 | 129 | " " " |
| 134151 | " No. 7 | " | " | " " | 1911 | 44 9 | 16 2 | 3 0 | 17 | " " " |
| 134152 | " No. 8 | " | " | " " | 1911 | 37 0 | 14 0 | 2 5 | 33 | " " " |
| 133982 | J. I. 5 | New Westminster, B.C. | Barge | Steveston, B.C. | 1912 | 50 0 | 16 0 | 3 6 | 27 | Jervis Inlet Canning Co., Vancouver, B.C. |
| 133983 | J. I. 6 | " " " | " | " " | 1912 | 50 0 | 16 0 | 3 6 | 27 | " " " " " " |
| 133984 | J. I. 7 | " " " | " | " " | 1912 | 50 0 | 16 0 | 3 6 | 27 | " " " " " " |
| 134191 | J. F. Boyd No. 4 | Sault Ste. Marie, Ont. | Scow | Sault Ste. Marie | 1911 | 73 0 | 30 0 | 8 0 | 175 | Boyd & Tweedie, Sault Ste. Marie, Ont. |
| 130349 | Joseph P. Johnston | Charlottetown, P.E.I. | Schr | Essex, Mass. | 1889 | 87 6 | 23 7 | 7 7 | 71 | M. H. Bonnell, Murray River, P.E.I. |
| 134043 | Lauretta Frances | Lunenburg, N.S. | " | Lunenburg, N.S. | 1913 | 106 8 | 26 3 | 10 4 | 95 | W. Spindler, M.O., Lunenburg, N.S. |
| 130779 | M. T. No. 1 | Sault Ste. Marie, Ont. | Scow | ..... | ..... | 104 0 | 27 5 | 7 0 | 193 | M. F. Griffith, M.O., Sault Ste. Marie, Ont. |
| 130780 | McLean No. 1 | " " " | " | Sault Ste. Marie | 1907 | 90 0 | 24 0 | 8 0 | 179 | A. B. McLean, Sault Ste. Marie, Ont. |
| 133759 | P. W. D. No. 12 | St. John, N.B. | Dredge | St. John, N.B. | 1913 | 110 0 | 32 0 | 8 1 | 435 | Minister of Public Works, Ottawa, Ont. |
| 134069 | Pacific Coast Cable Co., No. 1 | Vancouver, B.C. | Barge | New Westminster | 1909 | 72 4 | 28 0 | 7 4 | 137 | Pacific Coast Cable Co., Vancouver, B.C. |
| 133892 | Percy B | Parrsboro, N.S. | Schr | Port Greville, N.S. | 1913 | 128 4 | 32 9 | 10 8 | 281 | T. K. Bentley and W. A. Lawson, Port Greville, N.S. |
| 134031 | Transfer No. 4 | Victoria, B.C. | Barge | Esquimalt, B.C. | 1913 | 260 0 | 42 1 | 12 6 | 895 | Canadian Pacific Railway Co., Montreal. |
| 103172 | Una (a) | Guysboro, N.S. | Schr | Shelburne, N.S. | 1894 | 77 2 | 22 2 | 8 2 | 82 | S. H. Pyle, Boylston, N.S. |
| 134042 | Viola May | Lunenburg, N.S. | " | Mahone Bay, N.S. | 1913 | 114 3 | 26 2 | 10 2 | 100 | S. Ernst, M.O., Mahone Bay, N.S. |

(a) Recovered wreck.

## British Columbia and Pacific Coast Marine.

H. B. A. Vogel, of South Vancouver, has been appointed Secretary of the recently constituted North Fraser Harbor Commission, with office, for the present, at Eburne.

The West Vancouver Ferry Board is carrying out some reinforcement work on the wharf at the foot of 14th St., at a cost of about $20,000. The plans were prepared by Cartwright, Matheson and Co., Vancouver.

The Public Works Department has awarded the contract for the removal of approximately 300,000 yds. of sand and silt from the new channel across the Sandheads of the Fraser River, to the Navigation and Dredging Co., Vancouver.

One of the matters to be taken up and decided at a meeting of directors of the White Pass and Yukon Route, in London, Eng., early in the year, is the final arrangement for the establishment of the proposed steamship service between Puget Sound ports and Southeastern Alaska.

At an extraordinary meeting of shareholders of the Boscowitz Steamship Co., at Vancouver, recently, it was agreed that the company be wound up voluntarily, and W. S. Buttar was appointed liquidator. The company's property was sold some time ago, and incorporated with that of the Union Steamship Co.

C. H. Nicholson, Manager, G.T. Pacific Coast Steamship Co., Vancouver, recently stated that the report that the company had placed orders for the building of additional steamships for its service, was unauthorized and incorrect. On the completion of the transcontinental line some addition to the fleet will become necessary, but nothing of the nature of the report has taken place.

Wellington Comox Co., Ltd., has been incorporated under the Dominion Companies Act, with $500,000 capital and office at Toronto, to carry on coal and oil mining business, etc., and in connection therewith to own and operate steam and other vessels, wharves, docks and other shipping facilities. The incorporators are all connected with the Canadian Northern Ry's. Toronto offices.

The Government Fisheries Protection cruiser Malaspina, a description of which was given in our last issue, arrived at Victoria, towards the end of October, from Glasgow, Scotland. She took 75 days on the voyage round Cape Horn. Her sister vessel, named Galiano, has been launched at Dublin, Ireland, where both hulls were built the machinery being installed at Glasgow.

## Canadian Notices to Mariners.

The Department of Marine has issued the following:—

403. Nov. 21. British Columbia, Vancouver Island, west coast, Barkley Sound, Sechart, whaling steamer not now available for life saving service.

404. Nov. 21. British Columbia, Chatham Sound, Prince Rupert, Pillsbury Point, fog bell established.

405. Nov. 24. Ontario, Lake Huron, Goderich, shoal extending from south pier, temporary buoy, caution.

406. Nov. 24. United States of America Lake Erie, Buffalo harbor approach, Buffalo light vessel missing, light buoy established.

407. Nov. 24. United States of America, Lake Erie, Lorain harbor, east breakwater lights destroyed, provisional lights.

408. Nov. 24. United States of America, Lake Huron, southern end, wreck, gas buoy to be established.

409. Nov. 25. Nova Scotia, Bay of Fundy, Lurcher Shoal, lightship replaced on her station.

410. Nov. 25. New Brunswick, east coast, Northumberland Strait, Shediac Bay, Pointe du Chene, Shediac harbor range lights improved.

411. Nov. 25. Quebec, River St Lawrence, Quebec harbor, off mouth of St. Charles River, conical buoy replaced by gas buoy.

412. Nov. 25. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, temporary day marks at lighthouses.

413. Nov. 27. Quebec, River St. Lawrence, above Quebec, Pointe a Basile, range lights to be improved.

414. Nov. 27. Quebec, River St. Lawrence above Quebec, Pointe aux Trembles en bas, light to be improved and arc of visibility increased.

415. Nov. 27. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, Grondines Point front range lighthouse, lantern removed, height of light diminished.

416. Dec. 1. Nova Scotia, Cape Breton Island, Bras d'Or Lake, Denys River south basin, buoys established.

417. Dec. 1. Prince Edward Island, north coast, New London harbor, entrance to French River.

418. Dec. 1. Quebec, Gulf of St. Lawrence, Seven Islands Bay, Seven Islands Wharf, light established.

419. Dec. 3. Quebec, River St. Lawrence, Lake St. Louis, Lachine front range lighthouse, new foundation.

420. Dec. 3. Ontario, River St. Lawrence, Prescott, Dominion Lighthouse Depot, light for experimental purposes, caution.

421. Dec. 3. Ontario, Georgian Bay, approach to Midland, westward of Gin Rocks, buoy withdrawn.

422. Dec. 3. New Brunswick, south coast, Bay of Fundy, St. John harbor, Courtenay Bay, channel, breakwater and dry dock, temporary lights.

423. Dec. 3. Nova Scotia, south coast, Blind Bay, Kieley Cove, buoys established.

424. Dec. 3. Newfoundland, south coast, Placentia Bay, Placentia harbor, range lights established.

425. Dec. 3. Newfoundland, south coast, Fortune Bay, Sagona Island, fog alarm established.

426. Dec. 3. England, southwest coast, Seven Stones light vessel, submarine fog signal established.

427. Dec. 3. Wales, west coast, Carnarvon Bay light vessel, submarine fog signal established.

428. Dec. 12. Nova Scotia, south coast, Whitehead Island, fog alarm established.

429. Dec. 12. Prince Edward Island, east coast, Cardigan Bay, Panmure Shoal, Wheeler Bar can buoy replaced for winter by a spar buoy.

430. Dec. 15. British Columbia, Vancouver Island, southeast coast, Victoria harbor, Middle Rock, beacon light replaced by temporary light buoy.

431. Dec. 15. British Columbia, Vancouver Island, Saanich Inlet, Finlayson Arm, Beacon Rock, day beacon erected.

432. Dec. 15. British Columbia, Lama Passage, Hunter Island, Serpent Point, day beacon erected; Denny Island, day beacon discontinued.

433. Dec. 17. Nova Scotia, south coast, Halifax approach, Chebucto Head, permanent light in operation.

434. Dec. 17. Quebec, River St. Lawrence, Portneuf en bas lighthouse, additional slats placed on skeleton frame.

435. Dec. 18. Quebec, Chaleur Bay, Paspebiac Point, intended change in character of light.

436. Dec. 18. Quebec, Gulf of St. Lawrence, Gaspe coast, Cape d'Espoir, intended change in character of light.

437. Dec. 18. Quebec, Gulf of St. Lawrence, Anticosti, southwest point, intended change in character of light.

## Among the Express Companies.

The Canadian Northern Ex. Co. has opened offices at Deerfield, Man., Cereal and Chinook, Alta., and has closed its office at South Moose Jaw, Sask.

The Canadian Northern Ex. Co. has closed its offices at Vista, Man., and Cardiff, Alta., and has opened offices at Salines, Ont., and Highland, Alta.

E. S. Cushing, heretofore cashier, American Ex. Co., Springfield, Mass., has been appointed cashier American and National Ex. Cos., Montreal.

T. McNeill, Agent, C. P. R., Liverpool, Eng., has also been appointed Agent, Dominion Ex. Co. there, vice F. W. Forster, deceased, who was Agent, C. P. R. and Dominion Ex. Co.

C. Stewart, a former employe of the Dominion Ex. Co., at Vancouver, and son of the late T. S. Stewart, at one time Superintendent, Western Division, Dominion Ex. Co., Vancouver, died there recently, aged 29.

The Dominion Ex. Co. has opened offices at Pictou Landing and Trenton, N.S.; Jacquet River, N.B.; St. Maurice and Marcil, Que.; Verwood, and Readlyn, Sask; Okanagan Centre, Matsqui and Spillimacheen, B.C.

The Board of Railway Commissioners has established express delivery and collection limits for Levis, Que., and Liskeard, Ont., and has also established new limits for Edmonton, Alta., cancelling those previously fixed by orders 14987, Sept. 11, 1911, and 15759, Jan., 1912.

The Board of Railway Commissioners has ordered the reduction of express companies' charges for the handling of freight bills of lading, and money collections in connection therewith. Under present conditions the companies forward bills of lading for freight shipments, and charge 1% for the collection and return of money. The new rule provides for a charge of ⅛ of 1%, with a minimum of 1% on $100 on one company's line, and 1½% when over more than one company's line.

The Dominion Ex. Co. has issued instructions to its agents, stating that it has been brought to the company's attention that certain agents have been altering the charges on through waybills of foreign companies, covering business from the U.S., to agree with the rates as published in the Dominion's Joint Basing Transfer Tariff. Under a ruling of the Interstate Commerce Commission, the tariffs issued by the company originating the traffic must govern the charge, and hence agents receiving goods on through waybills should not change the charges according to the rates in the Dominion Ex. Co.'s tariffs.

**Regina Municipal Railway.**—Following is the operating account for Oct., 1913:

| | |
|---|---|
| Gross earnings | $22,430.29 |
| Maintenance of way and structures | $117.95 |
| Maintenance of rolling stock | 447.36 |
| Purchased power | 5,697.15 |
| Conducting transportation | 10,248.40 |
| General expenses | 1,671.24 |
| | $18,182.10 |
| Interest and sinking fund charges | 6,205.63 |
| | $24,387.73 |
| Deficit | $1,957.44 |

## 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.

**The Canadian General Electric Co.** has issued bulletin No. 4131 on storage battery, industrial and mining locomotives.

**Gold Car Heating and Lighting Co.**—Frank A. Purdy, heretofore Manager, Canadian Gold Car Heating and Lighting Co., Ltd., Montreal, has been appointed Sales Manager for Gold Car Heating and Lighting Co., and Canadian Gold Car Heating and Lighting Co., Ltd., with office at 17 Battery Place, New York, N.Y.

**The Independent Pneumatic Tool Company**, of Chicago, Ill., has arranged with W. H. Rosevear & Son, of Winnipeg, to sell the Thor air tools in Manitoba, Alberta and Saskatchewan. A complete line of air drills and pneumatic hammers, as well as repair parts, will be carried in stock by W. H. Rosevear & Son for delivery direct to users in their territory.

**The Ohio Brass Co.**, Mansfield, Ohio, has issued Construction Details of Some Prominent Catenary Roads, equipped withO. B. catenary materials, either wholly or in part, which contains a number of illustrations, with accompanying construction details. These include the Montreal and Southern Counties Ry., 15 miles of which were installed in 1912.

**American Locomotive Co.** has issued bulletin 1016, Pacific Type Locomotives, designed to increase capacity without increasing operating costs. It contains a tabular comparison of a large number of this type built by the company, and also a number of illustrations, including the following of locomotives built for Canadian railways:—Canadian Northern, 702; Canadian Pacific, 1,260; Grand Trunk, 199.

**The Canadian H. W. Johns-Manville Co.**, Ltd., has removed its Toronto branch to larger premises at 19 Front St. East, where it has a floor area of about 35,000 sq. ft. in the heart of the wholesale district, which will enable it to carry a larger stock and have ample space for the display of its complete line of J-M asbestos roofings, packings, pipe coverings, building materials, electrical and railway supplies, automobile and plumbing specialties, etc. The entire building will be lighted by its Frink and J-M linolite systems of lighting, and one room will be used for exhibiting these systems.

**Titanium Alloy Manufacturing Co.**, Niagara Falls, N.Y., has issued bulletin 3 of its rail reports, containing sulphur prints and microphotographs showing cross sections of seven standard and seven titanium treated open hearth rails, and claiming that the results of chemical and physical tests show that (1) the treated rails average better ductility, especially in the heads, and strength than the untreated; (2) the treated steel averages an increased shock resistance; (3) treated rails are less easily fractured by fatigue or constantly repeated stresses below the elastic limit, and (4) that treated rails show greater uniformity, indicating freedom from segregation and its attendant evils.

**The Canadian General Electric Co., Ltd.**, has appointed W. G. Gordon, as Transportation Engineer to take charge of all inquiries in connection with electric traction. He is a son of Rev. D. M. Gordon, Principal of Queen's University, Kingston, Ont. After graduating from Cornell in electrical engineering in 1899 he entered the testing department of the General Electric Co. at Schenectady, N. Y. While in the railway construction department he had charge for the General Electric Co. of the installation of the first electrically operated train on the Manhattan Elevated Ry., New York, and later of the installation of the first multiple unit equipments for the Northwestern Elevated Ry., Chicago, Aurora, Elgin and Chicago Ry. Lake Shore Electric Railway, etc., etc. Later, while in the railway engineering department, at Schenectady, he was closely associated with the further development of multiple unit operation for the New York Central lines and the Interboro Rapid Transit Co. He went to Australia in the G. E. Co.'s interests and was Manager and Engineer of the North Melbourne Tramways and Lighting Co., Ltd., later Engineer for the National Electrical and Engineering Co., Ltd., handling the New Zealand business for the G. E. Co., and finally Engineer for the Brisbane Tramways Co., Ltd., until his return to Canada.

**The National Steel Car Co.**, Hamilton, Ont., has appointed J. G. Baukat as its engineer in charge of its passenger car department and of the design and building of cars. He was born in 1870, and was, from 1887 to 1895 working as a machinist and studying engineering, from 1895 to 1898, engaged in draughting and mechanical engineering on marine work, automatic machinery and general machine work; 1898 to 1899, in Port Chester (N. Y.) Ry. service as Assistant Engineer in charge of power and equipment; 1899 to 1902, Designing Engineer in railway department, General Electric Co.; 1902 to 1905, Chief Engineer, Schenectady Ry., in charge of rolling stock, repair shop, track work, trolley lines and construction work, and during this period supervised the construction of 30 miles of high speed interurban railway and the building of new car houses and a power house; 1905 to 1909, Assistant Superintendent of electrical equipment in charge of electrical rolling stock, repair shops and inspection sheds, New York Central and Hudson River Rd.; 1909 to 1910, Chief Engineer, Miami Valley Construction Co.; 1910 to 1911, Mechanical Engineer, Wilmington-Philadelphia Traction Co., in charge of the rehabilitation of rolling stock and equipment; 1911 to 1913, Superintendent of Equipment, Lehigh Valley Transit Co., and latterly connected with a private firm engaged in general electric railway engineering work.

**Canada Machinery Corporation**, Galt, Ont., has supplied 40 radial drills to the St. Lawrence Bridge Co. for its shop at Lachine, Que., in which the Quebec bridge is being fabricated. The drill has a 76 in. arm and round column. Sixteen of the drills are arranged for mounting on a floor plate, and the remaining 24 are provided with trucks, the trucks having wheels to run on a standard gauge track to be moved along as the work requires. Arrangements have been made for clamping the truck rigidly to the rails, and a prominent feature of the design is the ease with which the truck may be unclamped, moved to a new position and quickly clamped in place again. The drills have been provided with a direct connected motor mounted on the arm, and driving the drill spindle through spiral gears and an intermediate shaft. This, it is claimed, gives an exceedingly direct and strong drive and one possessing several novel features. The bearings, with the exception of the guide bearings of the spindle itself, are all of the full ball bearing type, and the spiral gears are made from high carbon steel and bronze, totally enclosed with a large grease cup for lubrication. The motor is of the variable speed type with a range of speed sufficient for the work required, so that no change gears have been provided in the drive. The feed is of the all geared type, with four changes, and is also provided with a quick return and slow hand motion. The controller handle of the motor travels with a carriage, enabling the operator to start and stop or change the speed without leaving the carriage. The locking of the arm is done by means of the handle travelling with the carriage, this being a great convenience when working at the end of a long arm, as the operator does not need to leave the carriage for each adjustment. The machine, under test, has drilled 1 3-16 in. holes from solid high carbon steel at the rate of 10 ins. a minute, and owing to the ball bearing equipment the very high proportions of the horse power from the motor are delivered to the spindle.

## Transportation Conventions in 1914.

Jan. 29-31.—American Electric Railway Association, New York. Midwinter meeting.
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.
June 16.—Train Despatchers' Association of America, Jacksonville, Fla.
June 24.—Association of American Railway Accounting Officers, Minneapolis, Minn.
July.—International Railway General Foremen's Association, Chicago, Ill.
Aug. 18.—International Railroad Master Blacksmiths' Association.
Sept. 8-10.—Roadmasters and Maintenance of Way Association, Chicago, Ill.
Oct. 20-22.—American Railway Bridge and Building Association, Los Angeles, Cal.

## 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., 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.
**Western Canada Railway Club**, W. H. Rosevear, 25½ Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.

## SPECIAL NOTICE TO CONTRACTORS.

### Re Greater Winnipeg Water Supply.

### (Estimated Cost $13,500,000.00.)

Notice is hereby given to contractors that tenders will be invited early in the year 1914 for the construction of works necessary for the delivery of water from Shoal Lake to the Greater Winnipeg Water District. The following is a brief description of the proposed works:—

1. A dyke and channel for the diversion of the Falcon River into Snowshoe Bay.
2. 85 miles Concrete Aqueduct.
3. 10 miles Pipe Line (probably 1916 work.)
4. 900 lin. ft. Tunnel under Red River.
5. 85 Miles of Construction Railway.
6. Telephone Line.
7. Clearing and Ditching.

The fall season of the year affords the best opportunity for inspection of proposed route of the aqueduct, and it is recommended that contractors having a view to tendering on the work should send their inspectors over the line at as early a date as possible.

Particulars as to estimated cost of the work, map of approximate location and profile of aqueduct may be obtained from the undersigned.

M. PETERSON,
Clerk of the Corporation
Greater Winnipeg Water District.

City Hall, Winnipeg,
October 6th, 1913.

NOTE.—Copy of the report of the Consulting Engineers, plan and profile of work, and typical details of design may be seen at the office of this magazine.

## SOUTH ONTARIO PACIFIC RY. CO.

NOTICE.—The South Ontario Pacific 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 railway authorized by section 1 of chapter 151 of the Statutes of 1912, and for other purposes.

Dated at Montreal, this 11th December, 1913.

H. C. OSWALD,
Secretary.

Pringle, Thompson, Burgess & Cote,
Ottawa agents.

## GRAND TRUNK RAILWAY COMPANY OF CANADA.

NOTICE is hereby given that the Grand Trunk Railway Company of Canada and the Canada Atlantic Railway Company will apply to the Parliament of Canada, at its next session, for an Act confirming and making valid and binding an agreement providing for the amalgamation of the said two companies and the formation thereby of one company under the name of The Grand Trunk Railway Company of Canada, and authorizing the issue by said Grand Trunk Railway Company of Canada of such additional amounts of stock of the said company as may be necessary for the purpose of carrying out the terms of the said agreement, and for other purposes.

Dated at Montreal this 3rd day of December, A.D. 1913.

W. H. BIGGAR,
Solicitor for the Applicants.

## CANADIAN NORTHERN RAILWAY COMPANY.

NOTICE is hereby given that the Canadian Northern Railway Company will apply to the Parliament of Canada, at its next session, for an Act extending the time wherein the company may construct the lines of railway authorized by the Statutes of Canada for 1912, chapter 77, section 3 (hereinafter called the said Act), shortly described as follows:—

Regina southwesterly to international boundary.

Battleford westerly to the head waters of Brazeau River.

Regina northerly to Humboldt, thence to Pas Mission, and from a point on the line between Humboldt and South Saskatchewan River north-easterly to crossing of South Saskatchewan River by company's Prince Albert branch.

Also the lines of railway authorized by section 4 of the said Act, namely:—

From Calgary westerly to Cochrane, Exshaw and Banff, and from Cochrane northerly to intersect the company's line near Pigeon Lake.

From Cochrane southerly to Nanton.

Also to confirm and ratify a lease from the Canadian Northern Montreal Tunnel and Terminal Company, Limited, to the company and to the Canadian Northern Quebec Railway Company and the Canadian Northern Ontario Railway Company, respecting the terminals and tunnel at Montreal.

Also to confirm the application of the company's navigation rights and facilities to any ports or places, whether Canadian or foreign.

Also to confirm and ratify an agreement between the Grand Trunk Pacific Railway Company and His Majesty the King respecting the western entrance to terminals at Winnipeg.

Also to confirm and ratify an agreement between the company and the Midland Railway Company of Manitoba respecting the operation of the joint section between Emerson and Portage Junction.

GERARD RUEL,
Chief solicitor.

Toronto, 10th December, 1913.

## GRAND TRUNK RAILWAY COMPANY OF CANADA.

NOTICE is hereby given that the Grand Trunk Railway Company of Canada will apply to the Parliament of Canada, at its next session, for an Act—(a) providing for the holding of one annual general meeting of the company in each year, and for the submission once a year to the shareholders, debenture stock holders, and auditors, of statements of account and balance sheets; (b) authorizing the directors, if profits be deemed sufficient, to declare and pay interim dividends for the first half of any year, notwithstanding that statements of account and balance sheets for such half year shall not have been previously submitted to the shareholders; (c) authorizing the creation and issue for the general purposes of the company of additional Grand Trunk Consolidated Debenture Stock, bearing interest at four per cent. per annum, to an aggregate amount the annual interest upon which shall not exceed £100,000 sterling, and for other purposes.

Dated at Montreal this 3rd day of December, A.D. 1913.

W. H. BIGGAR,
Solicitor for Applicants.

## KETTLE VALLEY RAILWAY CO.

NOTICE.—The Kettle Valley Railway Company will apply to the Parliament of Canada, at its next session, for an Act—

(1) extending the time for construction of the lines of railway described in section 2 (a) (b) (c) of chapter 110 of the Statutes of 1912;

(2) authorizing it to construct a branch from a point at or near the Otter Summit by the most feasible route to the Aspen Grove mineral district not exceeding 30 miles;

(3) ratifying and confirming agreement with the Vancouver, Victoria and Eastern Railway and Navigation Company respecting Coquihalla Joint Section; and for other purposes.

Dated at Toronto, the 15th day of December, 1913.

CHAS. B. GORDON,
Secretary.

Pringle, Thompson, Burgess & Cote,
Ottawa Agents.

## ALBERTA CENTRAL RAILWAY CO.

NOTICE is hereby given that the Alberta Central Railway Company will apply to the Parliament of Canada, at its next session, for an Act ratifying and confirming an agreement wit hthe Canadian Northern Western Railway Company, respecting Rocky Mountain House Joint Section in the Province of Alberta.

Dated at Montreal, 18th December, 1913.

H. C. OSWALD,
Secretary.

Pringle, Thompson & Burgess,
Ottawa Agents.