The Railway and Marine World

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Canadian Pacific Railway Mallet 0-6-6-0 Locomotives.

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

In common with the latest developments in motive power additions on United States railways, the C.P.R. has, during the past three or four years, been experimenting with Mallet locomotives for pusher service on the mountain sections of the British Columbia Division, where gradients up to 2.45 and 15-degree curves are to be negotiated. For this service Mallet locomotives are particularly adapted. The locomotives at present working on these gradients are consolidation, with 21 by 28-in. cylinders and 58-in. driving wheels, with a total weight of 185,000 lbs., 168,000 lbs. of which is on the driving wheels. These locomotives, under normal summer conditions, are capable of handling trains up to 424 tons on the accepted rating, and it is to assist such locomotives over the heavy gradients that experimental work on Mallet locomotives has been performed, leading up to the present locomotives herein referred to.

During 1909 an experimental Mallet locomotive was built by the C.P.R., to its own designs, a description of which was given in The Railway and Marine World of Aug., 1909. This locomotive contained many features that were decidedly unique in Mallet construction. Following considerable experimental work and investigation on operating performances, a number of changes were embodied in the design. This remodelled locomotive was described in detail by G. I. Evans, Mechanical Engineer, C.P.R., in The Railway and Marine World of April, 1910. That article also contained an outline and data of test runs made on the gradients near the Angus shops. Following this experimental stage the locomotive was put into service on the B.C. Division under the conditions for which it was designed. Here a very elaborate series of tests under actual operating conditions was performed, the graphical results of which were embodied in an article in The Railway and Marine World for Jan. of this year.

All this experimental work gave the C.P.R. mechanical department a great deal of data upon which to base the design of a further series of five Mallets, a description of which is embodied herewith. This new series which has only recently been finally completed, consists of 4 compounds, 1951-4, and one simple 1955, all of the same general design. The general appearance of the compound Mallets of the series is shown in the accompanying illustration, fig. 1, while fig. 2 outlines the locomotive construction more in detail.

The following table gives the principal dimensions:

Type	0-6-6-0
Gauge	4 ft. 8½ ins.
Service	Pusher
Fuel	Bituminous coal
Tractive power	57,000 lbs.
Weight, drivers	259,000 lbs.
Weight, total	259,000 lbs.
Wheel base, front engine	10 ft. 4 ins.
Wheel base, rear engine	10 ft. 4 ins.
Wheel base, total, engine	35 ft. 2 ins.
Wheel base, engine and tender	60 ft. 7 ins.
Weight on drivers÷tractive effort	4.54
Tract. effort×dia. drivers÷equiv. heat. surf..	921
Equiv. heat. surf.÷grate area	62
Weight on drivers÷equiv. heat. surf.	72
Cylinders, h.p.	23 x 26 ins.
Cylinders, l.p.	34 x 26 ins.
Cylinders (simple engine 1955 only)	20 x 26 ins.
Valves, h.p.	11 in. Piston
Valves, l.p.	12 in. Piston
Driving wheels, dia.	58 ins.
Driving axles, main, 9½x12 ins.; others 9x12 ins.	
Boiler	Radial stayed, wagon top
Pressure	200 lbs.
Firebox, size	120 x 69⅞ ins.
Firebox, sheets	5-16, ⅜, 1-12 and 7-16 ins.
Firebox, water spaces, sides, 4½ ins.; throat, 5 ins.; back, 3½ ins.	
Tubes, 154 2¼-in. dia.; 16 2-in. dia.; and 22 5¼-in. dia.	
Tubes, length between sheets	20 ft. 1½ ins.
Heating surface, tubes	2,589 sq. ft.
Heating surface, firebox	180 sq. ft.
Heating surface total	2,769 sq. ft.
Superheating surface	548 sq. ft
Equiv. heat. surf. (=total heat. surf.+super. surf.×1.5)	3,591 sq. ft
Grate area	58 sq. ft.
Tender tank, kind	Semi-water bottom
Tender frame sills	Centre, 13 ins.; sides 10 ins.
Tender trucks, kind	Equalizer
Tender wheels, diar.	34 ins.
Tender axles	5½ x 10 ins.
Water capacity	5,000 Imp. gals.
Coal	12 tons

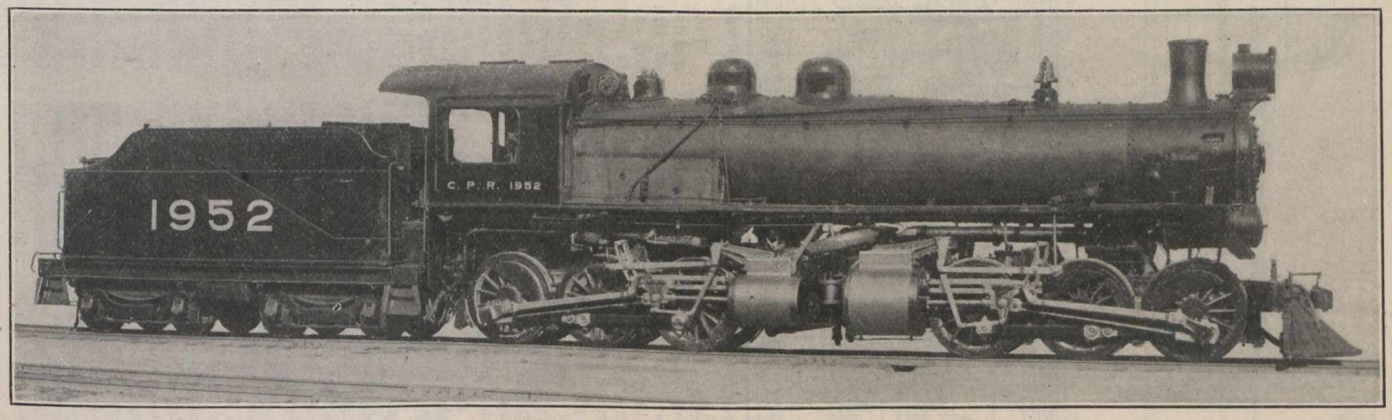


Fig. 1.—Canadian Pacific Railway Mallet 0-6-6-0 Locomotive.

A cursory inspection of both figs. 1 and 2 will show that the construction of these Mallet locomotives is decidedly different from the practice followed by U.S. roads that have added Mallets to their rolling stock. Principal among these points of difference are the arrangement of cylinders and the absence of leading and trailing wheels, placing all the weight on drivers and shortening the wheel base. The usual arrangement is to place the low pressure cylinders at the forward end of the front engine, demanding more flexible and extension joints in the steam pipe lines. The angular movement of the exhaust pipe itself, from low pressure cylinder to exhaust pipe in smoke-box, is very materially reduced by this new arrangement, as may readily be understood, from the fact that the low pressure cylinder, being near the point of swing with regard to the rear engine frame, has but little side motion. The arrangement used will be explained more fully at a later point.

THE BOILER used in this series of locomotives has been changed very materially from that used in the original experimental Mallet. In the latter, the boiler, which was of the wagon-top radially stayed type, had the barrel divided into three sections. The rear section comprised the boiler proper, extending about two-fifths the length of the barrel. In front of this there was a compartment containing the superheater tubes, which projected downward from steam headers into the path of the flue gases. From this compartment the flue gases passed on into a further plain tube section, constituting a feed-water heater. The feed water, warmed in this compartment, passed on to the rear section, was there converted into steam and passed out into the superheater tubes, and thence to the high pressure cylinders through outside pipes passing down each side from the steam dome. In this newer design, a plain wagon-top, radially-stayed boiler is used, this design being found preferable to the three-compartment type used experimentally.

The tube sheets, 20 ft. 1½ ins. apart. provide for flues of a normal length, in contradistinction to some recent U.S. designs, where tube lengths up to 24 ft. are to be found. It is in every sense a plain barrel boiler of the extended wagon-top type, with the possible exception that the corners of the firebox. both inside and outside, are greater than usual to increase the boiler rigidity, as lack of the latter is believed to be re-

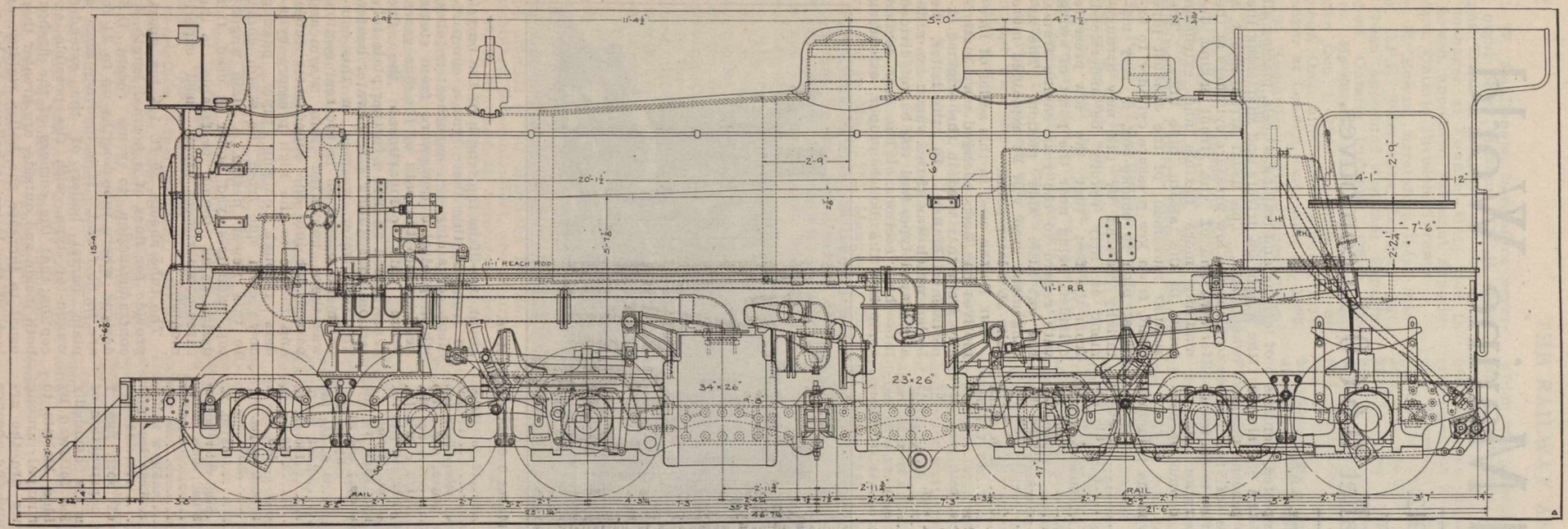


Fig. 2—Elevation of Canadian Pacific Railway Mallet 0-6-6-0 Locomotive.

sponsible for staybolt breakage in the end rows.

The feed-water heater and superheater chamber being eliminated, a superheater of the Vaughan-Horsey type is placed in the smoke-box, the arrangement of headers, etc., being noted in the elevation drawing, fig. 2. The injector check valve is located on the top centre line of the boiler, under the bell stand, and has three connections—one for the left and another for the right hand injectors, and a third for connection with pipe or hose coupling for use in filling or blowing off the boiler.

Instead of placing both sand boxes on top of the boiler as in the former design, one of them is located in the upper forward part of the smoke-box, feeders leading down on the inside of the smoke-box shell. The box is filled through a small door on the top.

The experimental locomotive had a double petticoat smoke stack. In the new design this has been eliminated and a single wide-flare stack introduced in its place.

FRAME, CONNECTIONS AND SPRING RIGGING.—The frames for each engine are one-piece steel castings, slabbed for the cylinder fit, and also for the front bumper and back foot-plate. The sections of both top and bottom rails of the frames are 4½ ins. wide by 4½ ins. deep and 4½ ins. wide by 3 ins. deep respectively.

The only feature of particular importance about the frames lies in the manner of connection between the front and rear engines. In the experimental locomotive a plain pin connection at the point of juncture of the two connecting castings served as the means of connection. This pin was in triple shear when pulling, but was relieved of all strain when pushing, by the design of the connecting castings being such as to have corresponding contact faces, taking up all thrust independently of the pin.

The new method of frame connection is clearly shown in fig. 3, a plan view of the immediate vicinity of the connection. Essentially, the connection is similar to that between engine and tender, a built-up plate drawbar, 9 ft. 8 ins. long, as shown in the illustration, being used. This connecting drawbar is pin-connected at the rear end of the cross-bracing castings between the cylinders. The faces of the castings, where they come in close proximity to each other at the inner ends, have a curved surface, with a radius to the centre of the drawbar pin. A concaved casting with similar curved surfaces acts as a filler, permitting a rolling motion between the front and rear engines when rounding curves. That is to say, the intervening piece so adjusts itself as the engine takes a curve that its centre is always in a line joining the two drawbar centres. This arrangement maintains a close alignment between front and rear sections, eliminating all play.

The drawbar was so designed as regards length that as the adjacent ends of the frames move outward when taking a curve, the centre of the drawbar is always in the centre line of movement, i.e., directly over the centre of the track, keeping the push or pull where desired, and overcoming the difficulties that would be experienced from side thrusts were the connections as in the original design.

Centring rods, to maintain the relative location of front and rear engines with regard to each other, are attached, one on each side of the connecting casting of the rear engine, these being attached by pins at the centre to the connecting casting of the front engine, as shown in fig. 3. The relative positions being thus maintained, the intervening distance casting has no tendency to jam in place.

When pulling, the front part of the forward engine of a Mallet has a tendency to lift, this condition being reversed when the engine is pushing. In this new design this undesirable feature is taken care of by means of bolts carrying compression springs passing down from lugs on the upper surface of the connecting casting of the back truck to similar lugs on the lower surface of the connecting casting of the front truck as indicated both in fig. 3, and at the point of connection in fig. 2. Thus, the connecting casting of the rear frame, through its bolts, carries the rear end of the forward frame when the front of the latter tends to rise, with a consequent depression of the rear end. The springs, mounted on the carrying bolts, absorb any quick fluctuations that may occur.

The spring rigging is of the usual type, equalized from front to rear on each truck. The forward engine has a cross equalizer at the front, but the rear engine is merely equalized along the sides.

CYLINDERS AND MOTION WORK.—Both pairs of cylinders are of the piston valve type, with inside admission on the high, and outside on the low pressure engines. They are decidedly unique, forming a radical departure from the practice heretofore followed in Canada. The low pressure cylinder, being typical of both, is shown in fig. 4.

The point of particular change lies in the fact that the cylinders are made of cast steel, lined with cast-iron bushings. Making them of steel saves a weight of no less than 6,000 lbs., which is a very important factor where weight elimination to obtain greater steaming capacity is desired. An examination will show how extremely light in construction the cylinder is, the shell being only ⅝ in. in thickness, with a corresponding high pressure thickness.

The cylinders are cast separately, divided at the centre line as usual. In the case of the high pressure cylinder, there is a cast-steel saddle common to

both cylinders and bolted to their top face, and to which the boiler is attached. The original low pressure had a small saddle bolted to the upper surface with a corresponding saddle attached to the boiler barrel, bearing upon it. In this design, this support has been dispensed with, for, on account of the movement

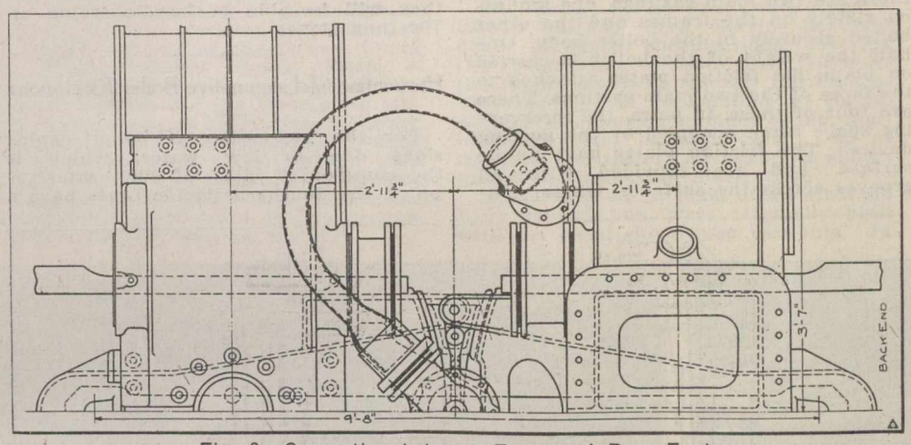


Fig. 3.—Connection between Front and Rear Engines.

possible at this point, pounding occurred, which could be attributed directly to the bearing surfaces knocking.

The Walschaert valve motion is used on both engines and is of the usual type to conform to C.P.R. standard practice with inside supported trunnioned bearings, dispensing with encompassing support. The front radius rod has a long suspension from the reach rod bell-crank, which combined with a ball and universal joint at the lower and upper ends respectively, allows the engine to take curves without much distortion to the valve motion. When rounding a sharp curve, the boiler will swing about 9 ins. off the centre line. This necessitates flexible joints. In addition, if the lifting link were short, it would swing over to a considerable angle when on this 9-in. offset, resulting in a lifting of the radius link from its normal position. This would shorten the valve travel when in forward gear, and lengthen it when in backward. The length of link here shown is sufficient to make this feature practically negligible.

Provision has been made for changing piston packing rings by simply removing the front cylinder heads, disconnecting the main rod from the crosshead and pushing the piston out into the space between the two cylinders. The piston valves have also been taken care of in a similar manner, so there can be no objection in this arrangement of cylinders on the score of inaccessibility.

An ingenious mechanical reverse mechanism, shown in fig. 5, has been designed for this engine. The operating mechanism consists of an 8-in. air cylinder, dampened in its movements by a 6-in. oil cylinder with an adjustable by-pass connecting the cylinder ends. The crosshead of the machine is attached to a fulcrumed lever, the upper end of which is connected by a short link to a rod, threaded for about two-thirds its length with a sextuple thread, 4½-in. pitch. This threaded rod is guided, attached to the top of the air and oil cylinders.

Confined in the casting above the opening between the air and oil cylinders there is a nut fitting the sextuple-threaded rod. The outer surface of this nut is notched to receive a dog from above. This dog is moved automatically by the engineer when shifting the gear by the air valve above.

The operation is as follows: Swinging the handle of the 3-way valve to the right from the notch on the quadrant, lets air into the left end of the cylinder. The same movement of the 3-way handle raises the dog which engages the sextuple-threaded nut. This is performed by a projection on the side of the handle near its point of suspension engaging another projection on the dog rod. Otherwise, the piston would not move by the air pressure, the dog engaged in the nut locking the piston in place.

The air moves the piston to the right, carrying forward the crosshead and lowering the links. The forward movement of the piston draws forward the sextuple-threaded rod, causing the nut to revolve in its retaining casting. When the gear has moved to the desired location, the 3-way valve handle is brought back to its vertical position, which drops the dog back into the nut, locking the mechanism instantly in the desired location.

The mechanism is so designed as to make it possible to change the amount of motion of the low pressure gear, without disturbing that on the high pressure cylinder. The high pressure gear receives its motion directly from the fulcrumed lever moved by the air piston. On the same shaft as this fulcrumed lever there is keyed another lever, shown at the extreme right in fig. 5. This lever has a block adjustable a couple of inches by a set screw. To a pin in this moveable block the low pressure gear reach rod is attached. As shown in fig. 2, this reach rod, being too long for one piece, is made in three sections, with the middle section guided in bearings under the runboard near the centre of the locomotive.

PIPING.—A standard throttle valve located in the steam dome of the boiler supplies steam to a long dry pipe which runs forward to the front tube sheet. Here it connects to the saturated steam header and after traversing the superheater tubes to the superheated steam header branches out each side of the smoke-box, to a lagged pipe under each runboard, leading back to the high pressure cylinder.

The piping for carrying the exhaust from the header between the two high pressure cylinders to the low pressure cylinder header is quite ingenious. This piping is shown to the best advantage in fig. 3, which, in conjunction with fig. 2, clearly outlines the arrangement. The idea was to pipe the steam from the high pressure engine to some point on the low pressure engine that had no motion relative to the latter. Such a point exists directly over the point of connection between the two connecting castings. This was absolutely the case in the old design where a pin connection was employed. By bringing the exhaust pipe to meet the intake pipe of the low pressure directly over the pin-connected point, there is no motion between the two other than a slight circular one, allowed for by a swivel joint. In this new design, however, as the locomotive takes a curve, the new drawbar arrangement causes these central joints on both frames, to part as they swing outward due to the engine negotiating the curve. That is to say, the actual centre line of the locomotive lengthens—a case of two sides of a triangle being greater than the third.

The method of making these steam connections is as follows: The steam pipe, rigidly connected to the header of the high-pressure cylinder, is bent into a large loop as in fig. 3, the section of the pipe itself being first flattened into an oval section as indicated in fig. 2, the

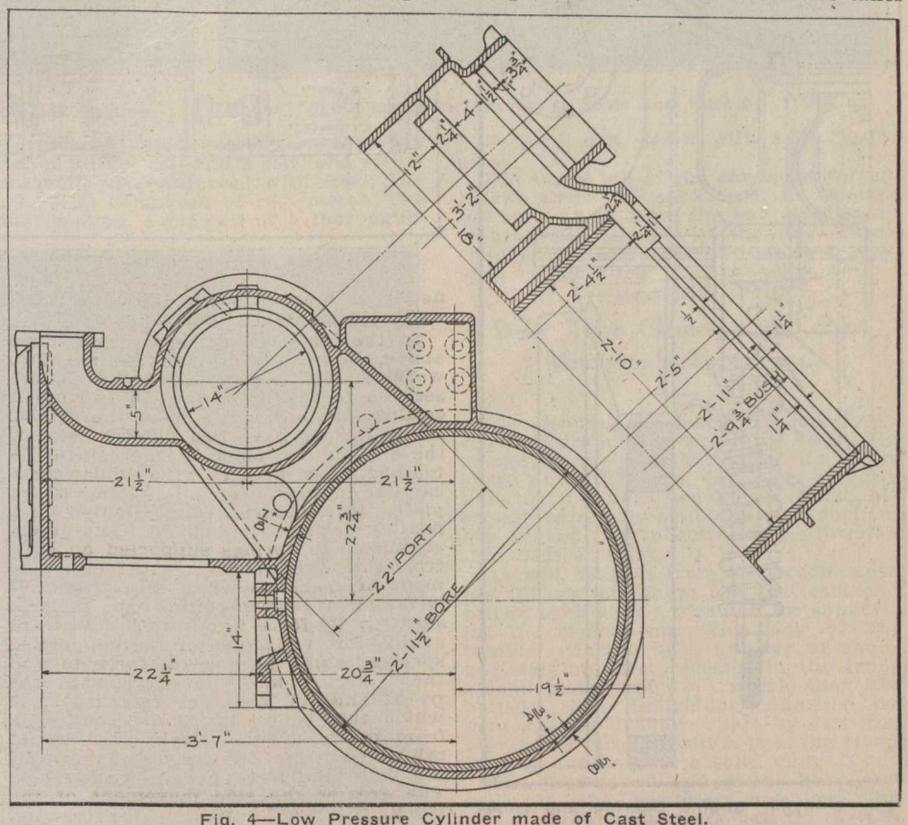


Fig. 4—Low Pressure Cylinder made of Cast Steel.

pipe thus assuming the shape of the tube of a Bourdon gauge. The other end is connected by a swivel joint to the low pressure header. Now, as the locomotive takes a curve, this central point of the swivel joint becomes further away from the corresponding point in the high pressure frame, by a fraction of an inch, causing the distance between the pipe connection centres to slightly increase. A solid pipe connection would likely break under such a strain, but having this pipe not only flattened, but also bent to a large loop, it contains sufficient flexibility to spring the necessary amount.

From the low pressure header, the steam passes through the cylinders and out through another swivel joint to the exhaust pipe. This contains another feature peculiarly different from standard Mallet practice, though similar to that of the experimental locomotive. The small side swing of the exhaust outlet of the low pressure cylinders (less here even than in the experimental locomotive, on account of the outlet being on top less than 3 ft. from the point of swing), results in the elongation of this pipe being practically negligible. Thus the expansion joints in the usual design, capable of providing for extensions up to 1½ in. are not necessary. Instead, the extension is compensated for by the sliding of the pipe flanges on the flat

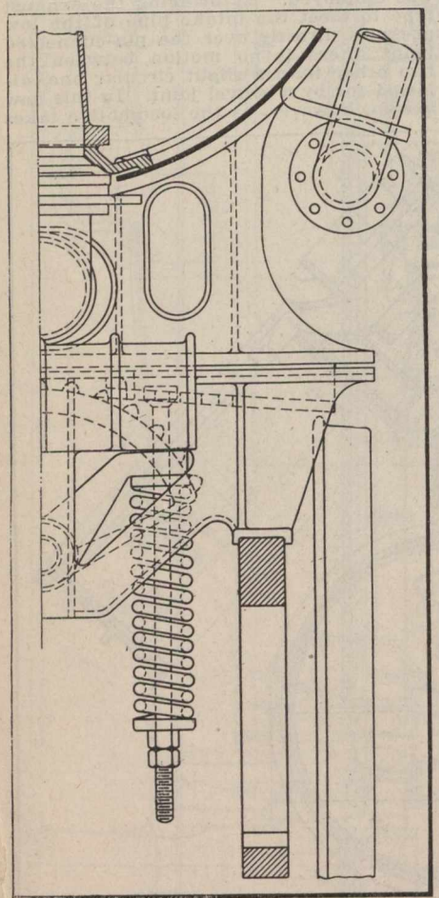


Fig. 6—Front Engine Bearing and Guiding Attachment.

faces of the ball rings. The flanges are held to their seats by 10 springs of 200 lbs. capacity each, or a total of 2,000 lbs. The exhaust from this point proceeds up the exhaust pipe.

GUIDING POWER OF FRONT ENGINE.—Guiding trucks have been dispensed with in this design of Mallet, it being believed that equally good guiding qualities may be obtained without their use. Their elimination reduces the wheel base and total weight, and the flange pressure is sufficiently low to safely warrant their absence.

In curving, it is the boiler body that offers the greatest resistance, and as the truck must swing laterally beneath it, it is supported partly by friction plates and partly by a spring suspended-roller. The arrangement of these suspending means is clearly shown in fig. 6. As indicated, there are two main castings, one mounted rigidly on the frames and the other bolted securely to the boiler body. One half the weight of the boiler is carried on plain, flat friction plates attached to the faces of the two main castings. There are four of these, in pairs, the intervening space being occupied by the floating device. The friction plates have ample surface, and are provided with oil grooves across the surfaces, which, connected with an oil box in the upper casting, ensures ample lubrication.

In the intervening space mentioned above, the floating device is located. Two wedge-shaped pieces, as indicated, are secured to the lower face of the upper casting, one on each side of the centre. These wedges have two different slopes, the steeper one being at the centre. A toothed roller engages with similar tooth cavities in the lower side of the wedge plates, this in turn being mounted on a floating shaft carried by two cross equalizers to springs supported on bolts from the lower casting. Any side movement of truck as when the locomotive is taking a curve, causes the inclined surfaces to force the roller downward against the resistance of the supporting springs, which produces a force to pull the boiler around the curve with the truck, and relieve the rear truck, to which the boiler is rigidly connected, from much of the strain, that would otherwise fall on the flanges of the leading pair of drivers of the back truck. The greater the side movement of the truck, the greater will be the reaction from the spring compression, resulting in a constantly increasing rolling resistance.

The frictional resistance of the flat friction plates decreases on taking curves, for, on account of the depression of the floating springs, a greater weight is carried by the latter part of the supporting mechanism, relieving the friction plates of a portion of their load, thereby decreasing the frictional resistance. The intensity of the assistance offered by the floating mechanism to the pulling of the front part of the boiler around a curve with the truck, may be varied at will by adjusting the compression of the spring by means of the supporting nuts.

The operation of the locomotives to date has been most satisfactory, the last of the series having been delivered some time ago. From observations made on experimental engine, it is expected that they will be able to handle trains up 700 tons alone.

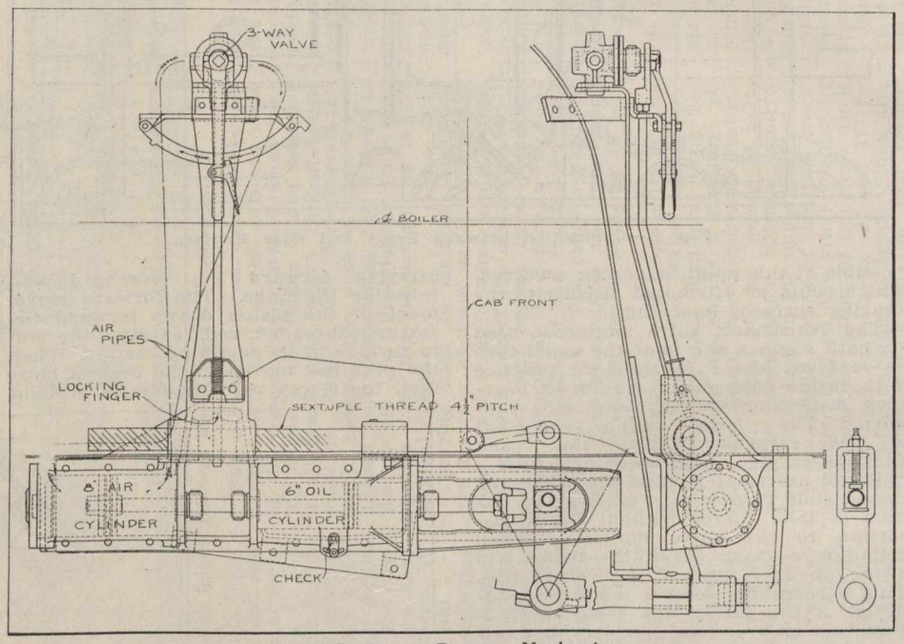


Fig. 5—Power Reverse Mechanism.

Prevention of Locomotive Boiler Explosions.

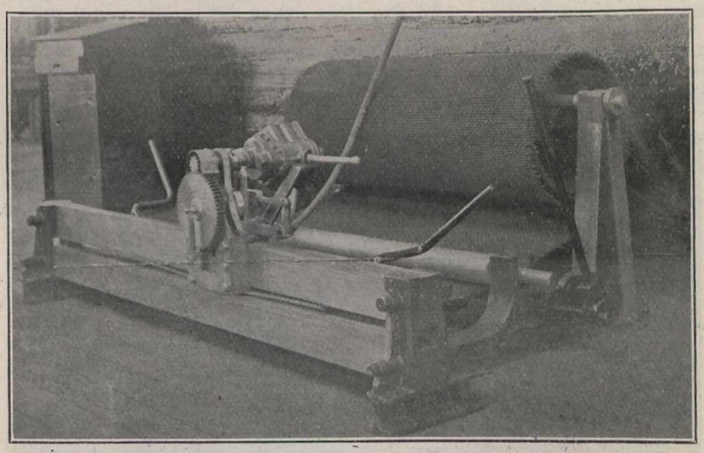
For the prevention of boiler explosions due to low water, which is the commonest cause of such catastrophies, the Southern Pacific Lines have a low water alarm of their own design in use on a number of locomotives. This alarm consists of a small cast-iron chamber of mercury, integral with a surrounding chamber communicating at the bottom directly with the boiler at the level below which it is deemed inadvisable for the water level to drop. This space under normal conditions, fills with water from the boiler, this water cooling to much below boiler pressure, due to the unlagged surface of this cylinder. The inner mercury chamber communicates with a cylinder above, a packed piston in the latter resting on the mercury. The upper end of the piston bears on a steam valve. When the water in the boiler drops below the predetermined level, the water chamber empties, allowing live steam to enter, heating the inner chamber of mercury, which on expanding raises the piston, opening the steam valve. This steam valve communicates with a steam whistle, and in oil-burning engines with an oil-control lever, and in coal-burning a firebox sprinkler for dampening the fire.

The heaviest locomotives in service are the Mallet compounds of the 2-10-10-2 class on the Atchison, Topeka and Santa Fe Ry., which weigh 308 tons (without tender) and have 225 tons on the driving wheels. Each group of five driving axles has a wheelbase of 19 ft. 9 in. The heaviest ordinary locomotives are the 2-10-2 engines of the same road, which weigh 143 tons (without tender), with 117 tons on the driving wheels and a driving wheel-base of 19 ft. 9 ins.

Railway Mechanical Methods and Devices.

Locomotive Netting Machine at G. T. R. Battle Creek Shops.

In the accompanying illustration a machine for the working of locomotive smoke-box netting at the Grand Trunk Ry. shops at Battle Creek, Mich., is shown. The customary method of cutting off sections for the locomotive netting is for three or more men to unroll the netting while another severs it along a marked line with a cold chisel. This is not only a slow operation, but also damaging to the fabric not only in the immediate neighborhood of the cutting, but also further back on the roll.



Machine for Shearing off Locomotive Smoke Box Netting.

In the device shown, the roll as it comes from the manufacturers is mounted on a drum supported on stands at the rear of the machine; these stands are integral with the base castings. The netting, taken off from the underside of the roll, passes between rollers to the front part of the machine. One of these rollers is provided with a ratchet arrangement as indicated, for the purpose of feeding the netting through. In the front of the machine it passes between two heavy steel cross bars, the lower one of which has an inset shearing knife edge on its upper forward edge.

The upper cross bar, which has a ratchet tooth surface on its upper face, carries the air-driven shearing apparatus. The front part of this apparatus is a three-layer structure down through which a shearing blade operates. This blade is actuated by a cam between the front and rear of these three plates, bearing down upon the upper face of the cutter. The spring in the front brings the cutter back after each stroke. Power is transmitted from the air motor to the pinion, and through the gear to the cam shaft.

Another cam on the cam shaft, shown just back of this three-layer body, actuates the feed mechanism. In its rotation it carries a sliding bar from side to side, a dog on one end engaging the ratchet surface, feeding across between cuts.

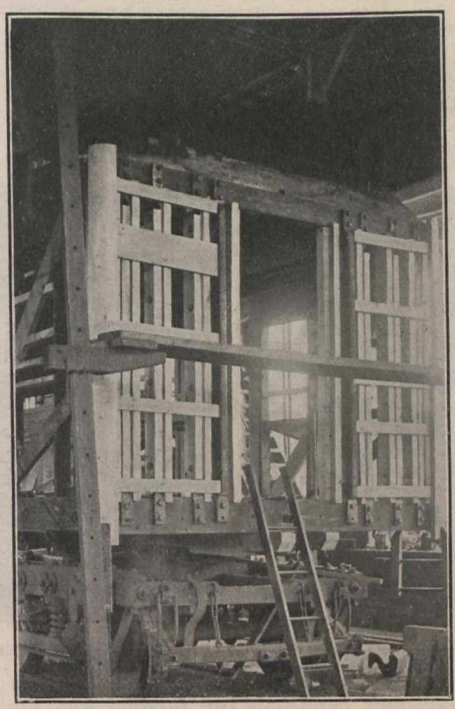
We are indebted for the above information to J. T. McGrath, Superintendent of Rolling Stock, Chicago and Alton Rd., who had the machine constructed when he was Master Mechanic of the G.T.R. Battle Creek shops.

Electric storage battery locomotives have been proposed by T. A. Edison for operating the Illinois Central Ry. suburban traffic at Chicago. Some experiments are to be made with his storage-battery motor cars, but single cars could not handle the traffic, and the suggestion was made to equip a train with a storage-battery tender to furnish the necessary power.

Reconstructing Postal Baggage Cars at Central Vermont Ry. Shops.

The United States Post Office Department's Railway Mail Service has laid down standard specifications covering the construction of postal cars. To meet the requirements called for, the Central Vermont Ry. is remodelling at its St. Albans, Vt., shops a number of old combination postal baggage cars. One of these, in process of conversion, is shown in the accompanying illustration.

These cars, 51 ft. long, of an all-wood body construction, were originally built with the usual short open vestibule. In the reconstruction these vestibules are first of all cut off, and a new end structure built up, reinforced with steel. The end sill is composed of two pieces. The inner section, composed of a thoroughly seasoned piece of white oak, 3½ by 8½ ins., is covered with a steel plate ¾ by 8 ins. the full width of the car as indicated. A similar plate ¾ by 7 ins., the full width of the car across the top in the location indicated, forms the upper reinforcing member.

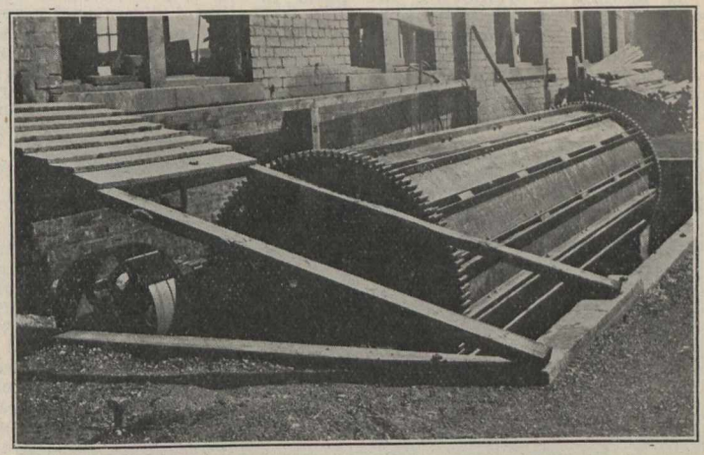


Re-constructing Postal Baggage Cars, Central Vermont Ry.

Each side of the door opening, and bolted to the cross top and bolted plates on its flattened end, there is a piece of 60-lb. rail. The intervening space between this rail and the side of the car is filled with three ¾ by 3½ in. rectangular bars between top and bottom, twisted at both ends to present the greatest strength for end impact. To these pieces the wooden studding is attached, on to which the sheathing is nailed.

The third member of the end sill is another piece of thoroughly seasoned white pine 4½ by 8½ ins. secured outside the metal cross strip. Built up over top of this is the diaphragm made up of 7 by 9-in. oak, faced with 5 by ½-in. plate.

The centre sill of the car is reinforced by two strips of steel 8 by ½ in. extending back 18 ft. from the end of the car, secured on each side of the sill. These changes added to the car make a very solid construction.



Boiler Tube Cleaner for Removing Scale and Rust by Tumbling.

Boiler Tube Cleaner at the Pere Marquette Railroad Shops.

For cleaning the tubes that have been removed from the locomotive boiler for re-ending, the Pere Marquette Rd. in its shops at St. Thomas, Ont., has recently built a tumbling machine which, although extremely simple in construction, has proved very effective in performing this class of work.

As will be seen from the accompanying illustration, there are two cast end pieces, each with a trunnion for supporting the mechanism. The body of the tumbler consists of a number of channels set into cast recesses in the trunnioned ends, and to which they are bolted. The individual channels are kept a short distance apart by cast-iron separators through which pass the rivets holding the body in a solid unit.

The trunnioned end pieces have cast teeth in the periphery meshing, with a pinion on a long jackshaft, thereby driving both ends of the machine, putting no twisting strain in the body. A tight-and-loose pulley arrangement on this shaft delivers power by a belt from a drive-shaft inside the blacksmith shop, outside of which the machine is located.

For the introduction and removal of the tubes, one of the channels is hinged to the adjoining one, and locked to the other side. In service the tumbler is filled half full of tubes, and the mechanism set in motion for several hours. This operation completely removes the accumulated scale and rust, leaving the pipes clean for re-ending and trimming.

Mounting and Dismounting Steel Tires at the C. P. R. Angus Shops.

In the tender department of the C.P.R. Angus shops, Montreal, some ingenious methods have been devised for the rapid mounting and dismounting of steel tires from tender truck wheels, in a manner that is both economical and mechanically efficient.

Customarily, truck wheels when they come into the shop for new tires have the bolts that hold the retaining ring in place so badly burred up from various causes that it is usually necessary to cut them off with a chisel, they being generally considered of no further value except for scrap or else requiring so much work to reclaim as to make such a procedure unprofitable.

A method of removing the bolts in such a way as to reclaim them for further use has been devised in these shops, the tool employed being that shown in fig. 1. The old truck wheels, mounted on their axles, are brought into the shop on special tracks, which are

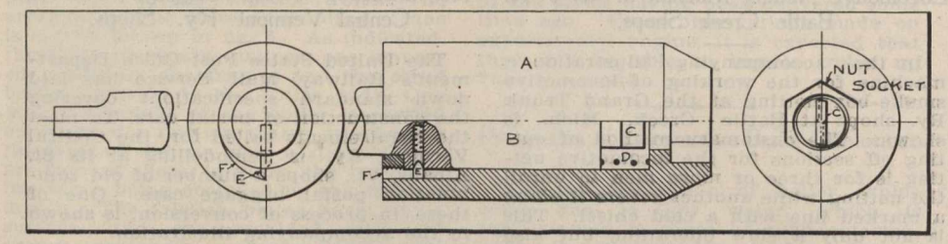


Fig. 1—Tool for Removing Burr from Bruised and Damaged Bolts and Nuts, and Unscrewing.

equipped at short intervals with stationary air jacks as indicated in fig. 2. Another of these air jacks is to be seen in the background. These air jacks are provided with cross arms, each carrying four small rollers, on which the truck wheel axle rests when jacked up to the position shown in fig. 2. The wheels in this location are in a convenient position to have the bolts worked upon. The apparatus for holding the burring and unscrewing tool is supported from a jib crane over the jacked up wheel. This will be explained later.

The burring and unscrewing tool, shown in fig. 1, consists essentially of a body A with nut socket lower end mounted on a tapered shank bar B, the lower end of which is hardened and ground to the form of a square-faced flat drill as at C. Normally the bar B is held in the upper end of barrel A by a spring D. B is free to revolve in a right-hand direction in barrel A, but it is prevented from revolving in a left-hand direction by spring pin E engaging in key way F. The nut socket end of barrel A is slipped on to the burred nut to be removed. The driving air motor is then operated in a right-hand direction, the cutter C being forced forward against the end of the bolt and nut, removing the damaged surface. During this operation the barrel A is stationary. When a sufficient amount of burred surface is removed, the air motor is reversed, the key E causing the whole tool to turn in a left-hand direction, unscrewing the nut from its bolt. The heads of both nut and bolt are thereby left in excellent condition for further use, instead of necessitating scraping as in the usual manner.

The method of applying this tool is shown in fig. 2. The air motor is supported in a carriage sliding in guides attached to the round horizontal bar shown. This bar is in turn suspended from a wall jib crane. A small pinion on the air motor carriage engages with a rack along the surface of the guiding ways, a handle attached to the former forcing the air motor into operation in the manner previously explained.

Following this bolt-removing operation, the wheels are pressed off the axles, and the tires taken off in the usual manner.

The next operation of interest is the mounting of new tires on the old centres. The method familiar to all is to heat the tire with an encircling gas or oil burning ring, and then drop the heat-expanded tire on to the centre piece to shrink in cooling. A new adaption of this method is here used, the heating apparatus for which is shown in fig. 3.

The tires to be heated—six at a time is the normal capacity of this heater—are placed in a pile on a brick base as indicated in the illustration, fig. 3. An oil burner on the end of pipe line A impinges into the combustion chamber B, the necessary supply of air being obtained from the compressed air connection C. The combustion chamber is the enlarged end of the bent-neck casting, the heat of combustion being carried along and down into the pile of tires. The brick base, on which the tires are piled, is hollowed at the centre, so that

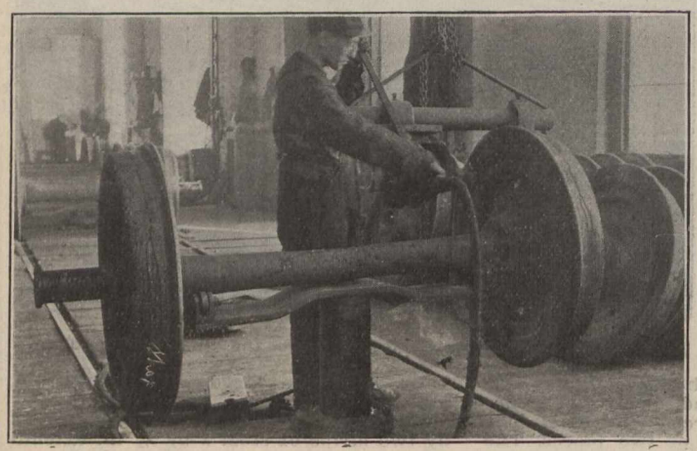


Fig. 2—Method of Operating the Burr-removing Tool.

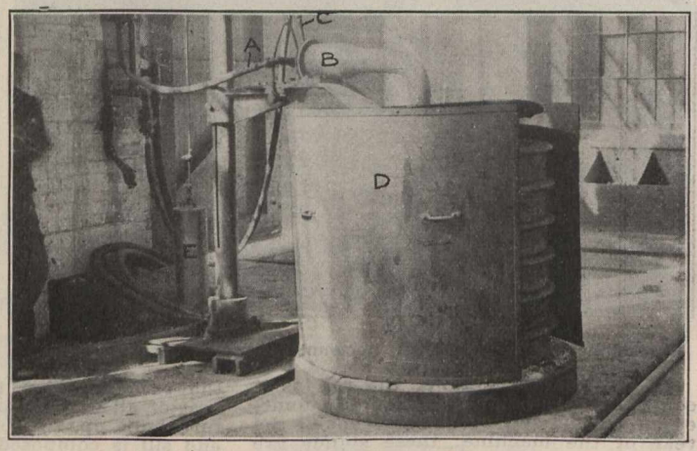


Fig. 3—Stand for Heating a Batch of Steel Tires.

Fig. 4—Steel Tires after Receiving their Steel Centres.

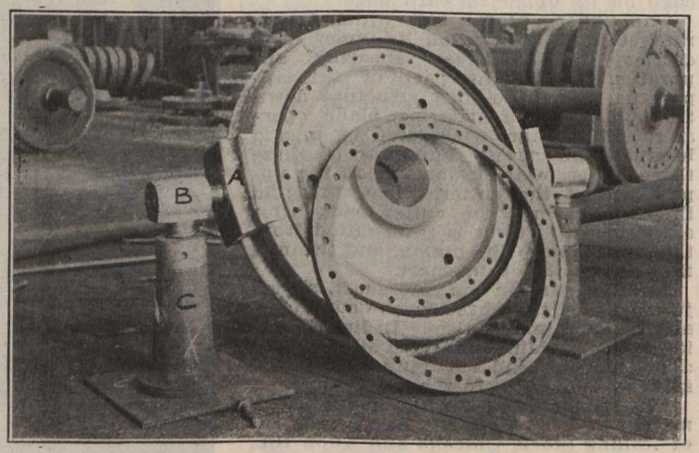
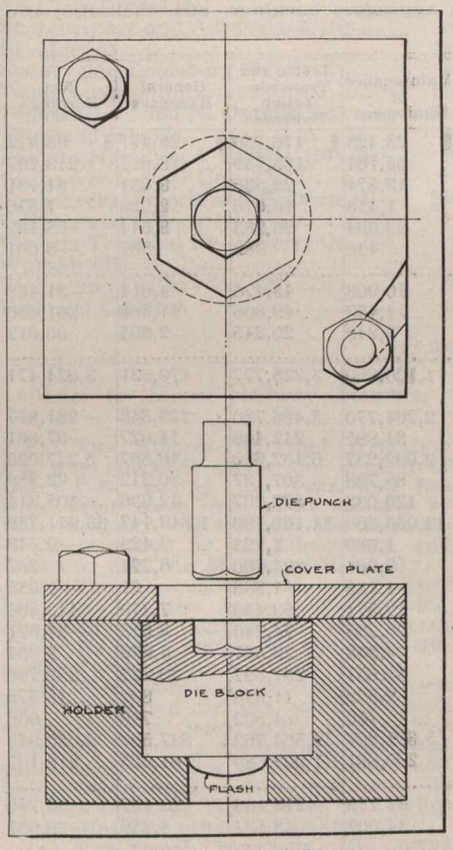


Fig. 5—Jig for Holding Tires while Bolting in Retaining Ring.

the downwardly impinging hot gases are deflected so as to rise along the inner surface of the surrounding tires, escaping at the top. To prevent the too rapid escape of heat from the top of the pile of tires, a circular plate of steel of the diameter of the tires is attached to the downward pipe of the combustion chamber casting. This plate is lined with asbestos to enable it retain heat the better.



Making Bolt-head Dies.

Around the outside of the pile there is a bent piece of sheet iron, D, to reduce radiation as much as possible. The efficiency of the device may be judged from the heating capacity, a set of six tires requiring only about 20 minutes. The lower tire, of course, is heated more than the rest, a fact which consideration will show to be an advantage, it being the last tire to be removed from the pile.

The heating apparatus, carried on a cast-iron bracket from a vertical post, is counterbalanced by a weight E, so that it may be raised or lowered at will. A set screw engaging in a channel in the post prevents the apparatus from swinging out of a central position.

While the tires are heating, six pairs of blocks are arranged around on the floor within crane swing of the heating stand, the blocks being shown in fig. 4. As soon as the tires reach the desired heat they are in quick succession lifted off the pile and placed each on a pair of the previously arranged blocks, flanges up. As each tire is located, the corresponding centre is immediately dropped into the awaiting hot tire, where it quickly cools, giving the desired shrinkage fit.

The next operation is that of bolting on the retaining ring which is shown leaning against the assembled tire and centre in fig. 5. The manner of performing this job is a material advance on the old method of loosely mounting on a wooden rod, 6 or 8 ft. long, in the manner familiar to all. In this new method the tire is held by screws from the back, two formed holders A, fig. 5, as shown. These grips, or holders, are trunnioned as at B, in vertically adjustable stands C, adapted to accommodate a wide range of sizes. Being trunnioned in this manner, the wheel held, may be swung over into the most convenient position for the operator, the bolts being put through from one side, the whole swung over, and the nuts put on from the other.

Since these photographs were taken, a further refinement in this last device has been introduced. In the positions shown in fig. 5, some little difficulty was experienced in, first of all, placing the tired wheel in the trunnioned grips, as the stands would slip apart. In the present arrangement one of the stands is bolted rigidly to the floor, while the other is mounted on a hinged plate which can be swung back for the introduction of the wheel, and when swung again into normal position the grips fit on to the flanges on both sides.

Nothing now remains but to mount the wheels on their axles in the normal manner by a hydraulic wheel press, the wheels again being ready for use.

Making Bolt-head Dies at Montreal Locomotive Works.

The diesinker at the Montreal Locomotive Works, A. Bonenfant, has devised and is using a rather ingenious method for making bolt head dies for use in the upsetting machine.

The customary method, of course, is to first drill the die blank, then cut out the hole to a hexagonal or square shape as desired, and following this, fit into the bottom of this formed hole, a heading piece containing the chamfered edges, to give the top of the head the requisite shape. All this requires rather careful diesinking, and as the wear and tear on upsetting dies is heavy, the maintenance charge is kept at a high figure.

The method used by Mr. Bonenfant is simple in the extreme. The die blocks for a given machine are all of the same size, so one holder with cover plate suffices for the production of all the dies used for bolt-heading on one machine. This holder and cover with contained die block are shown in the accompanying illustration. A set of die punches of various sizes and of the shape indicated are used in conjunction with the holder.

The holder is gripped centrally in the stationary part of the upsetting machine and the die punch lined up in the ram. The die block heated to a working heat, is then located in place in the holder, and the cover swung into place. The ram then coming forward, as in any upsetting job, forces the die punch into the die block, quickly forming the die header. The surplus stock is forced out in a "flash" through a hole in the bottom of the die holder.

The die block thus produced is still a little rough, especially at the upper surface, where the edges are somewhat "drawn." The hole is forced slightly deeper than necessary to make provision for trimming this down. Likewise, the flash is faced off.

After the necessary tempering, the die is ready for service, a good die being produced at very small cost as compared to the usual method. All the bolt dies now used at these works are produced by this method, with very satisfactory results attending their use. They are quite as good as the built up dies.

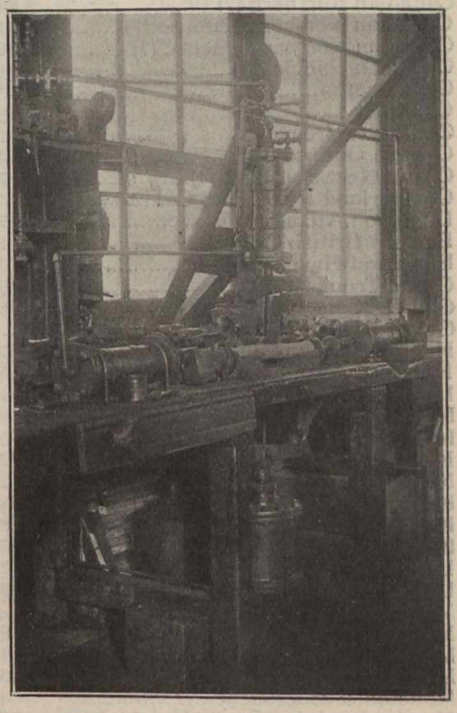
Bay of Quinte Ry.—The trustees under a mortgage dated Jan. 2, 1902, to secure an issue of bonds of $1,000 each, on Feb. 20, redeemed 50 of the bonds, the numbers of which were decided by lot, at 105 and accrued interest, out of the sinking fund.

Repairing Air Hose at the Intercolonial Ry. Moncton Shops.

It would seem as if there was no end to the number of different devices and modifications of well known devices for the repair and renewing of air hose. One arrangement has already been described in these columns, but the device shown in the accompanying illustrations is so different in construction as to warrant another description.

In the Michigan Central Rd. method, as outlined in The Railway and Marine World for Dec., 1911, there was but one horizontal cylinder, whereas in this device the rubber hose is itself held stationary by a clamp from above, very similar to the one described in the article mentioned, while the end connections are forced on by an air cylinder at each end. The principal feature of distinction in this mechanism lies in the cylinder under the bench and the functions it performs.

Instead of first removing the air hose with its forced-on end pieces for the purpose of squeezing up the hose clamps in a pneumatic vise, the hose is held in its last position, while the hose clamps are loosely slipped on. A cross bar attached to the plunger rod of the lower cylinder connects at each of its ends to a pincer arrangement like a pair of ice tongs, so designed that as the plunger rises these tong fingers encircle the hose clamp, forcing it tight on to the hose. The bolt is then introduced and tightened up, completing the whole operation in one setting. The operation of the mechanism is clearly outlined in the accompanying illustration.



Mechanism for Renewing Air Hose at One Setting.

Michigan Central Rd.—Lake Shore and Michigan Southern Ry.—The New York Central and Hudson River Rd., which controls the above named railways, has sent a circular to the holders of the 3½% gold bonds, secured by shares of the Lake Shore and Michigan Southern Ry. and Michigan Central Rd. as collateral, asking their consent to a plan of merger of either or both of these roads with the New York Central and Hudson River Rd. Co.

The Bank of Montreal will open a branch in the C.P.R. Windsor St. Station, Montreal, as soon as the addition to the building is completed.

Steam Railway Statistics for Year Ended June 30, 1911

In the following table the column headed gross earnings includes passenger and freight earnings, as well as miscellaneous earnings; the next four columns give the operating expenses classified under their various headings, while the last gives the net earnings, which are arrived at by deducting the totals of the four columns referred to from the figures in the gross earnings column. The minus mark (—) before figures in the net earnings column shows that there was a deficit in the operations of the line to the extent of the figures given. The numbers in brackets—thus (1)—after the name of a railway refer to notes on page 111. The cents have been omitted in all cases, and the figures in the totals show the aggregate earnings, etc., including the cents, omitted from the detailed items.

Name of Railway	Mileage	Passenger Earnings	Freight Earnings	Gross Earnings	Maintenance of Way and Structures	Maintenance of Equipment	Traffic and Transportation Expenses	General Expenses	Net Earnings
Alberta Ry. & Irrigation Co. (1)	111.82	$ 102,376	$ 214,353	$ 345,121	$ 80,993	$ 25,425	$ 116,759	$ 26,471	$ 95,472
Algoma Central & Hudson Bay (2)	89.64	93,538	331,665	578,699	112,869	65,761	158,159	28,611	213,297
Algoma Eastern (2)	22.70	1,961	95,201	98,621	11,926	13,574	29,536	8,831	34,751
Atlantic, Quebec & Western (3)	52.25	9,306	15,142	24,475	11,633	1,413	16,076	2,928	—7,576
Bay of Quinte (7)	89.39	44,128	165,536	216,042	29,247	23,684	96,283	8,644	58,182
Bedlington & Nelson (4)	15.30	249	1,822	2,072	8,387	436	982	867	—8,601
Bessemer & Barrys Bay (26)	5.00	.....	.....	.....	.....	.....	.....	.....	.....
Brandon, Sask. & Hudson Bay (4)	69.45	27,876	37,206	65,367	36,394	10,968	45,478	4,014	—31,488
British Yukon (5)	101.12	62,752	252,067	321,365	43,950	14,453	49,806	11,568	201,586
Brockville, Westport & N.W. (7)	45.00	34,719	32,744	67,503	11,090	3,249	20,345	2,805	30,012
Bruce Mines & Algoma (27)	17.28	.....	.....	.....	.....	.....	.....	.....	.....
Canada Southern (19)	380.04	2,827,030	6,315,307	9,169,359	1,028,417	1,120,660	3,225,777	170,031	3,624,471
Canadian Government Railways									
Intercolonial (6)	1,450 37	3,361,984	6,479,229	10,021,568	1,758,850	2,264,770	5,486,720	229,348	281,877
Prince Edward Island	269.33	187,281	144,444	342,585	119,015	84,995	212,408	14,027	—87,861
Canadian Northern (7)	3,687.70	3,214,893	11,955,363	16,360,712	2,361,956	2,092,237	6,132,600	446,897	5,327,020
Canadian Northern Ontario (7)	342.90	172,351	382,544	563,390	114,981	88,708	307,137	30,212	22,350
Canadian Northern Quebec (7)	368.81	326,186	743,662	1,080,929	240,737	120,033	572,207	42,636	105,314
Canadian Pacific (8)	10,210,30	31,117,880	64,822,980	97,599,083	15,561,086	12,056,260	34,160,799	1,849,147	33,971,789
Cape Breton	31.00	5,171	3,514	8,768	6,383	1,680	7,723	2,423	—9,443
Caraquet	84.78	19,759	35,289	55,048	16,819	7,061	24,690	6,274	202
Carillon & Grenville	13.00	1,515	79	2,856	1,761	1,125	1,888	37	—1,955
Central Ontario (7)	149.73	92,607	209,939	314,105	52,223	17,571	93,446	7,279	143,584
Crows Nest Southern (4)	74.18	23,927	114,215	139,056	81.684	26,235	74,240	8,518	—51,621
Cumberland Ry. & Coal Co. (22)	32.00	16,860	38,499	55,377	14,708	4,368	29,587	4,678	2,034
Dominion Atlantic (9)	278.87	391,318	340,578	736,011	111,588	58,657	287,697	39,272	238,796
Eastern British Columbia	16.00	3,875	34,251	38,177	7,839	2,522	11,348	892	15,575
Elgin and Havelock	28.00	3,368	7,620	10,988	4,321	760	4,502	796	606
Grand Trunk (11)	3,094.96	11,369,825	21,102,974	32,800,078	4,215,547	5,601,224	12,504,762	827,599	9,650,943
G.T.R. (Canada Atlantic) (11)	456.26	468,209	1,431,990	1,935,928	348,565	299,881	1,007,689	61,683	218,107
Grand Trunk Pacific (10)	.....	.....	.....	.....	.....	.....	.....	.....	.....
Halifax & South Western (7)	377.87	219,639	213,556	435,810	113,984	44,749	218,158	20,167	38,750
Hereford (12)	52.18	19,182	42,008	62,087	28,992	14,007	43,522	4,256	—28,691
Internat'l Ry. of New Brunswick (13)	113.50	.....	.....	.....	.....	.....	.....	.....	.....
Inverness Ry. & Coal Co. (7)	60.91	25,380	170,470	207,229	29,807	26,639	50,076	7,516	93,189
Irondale, Bancroft & Ottawa (7)	51.00	8,555	17,040	26,042	10,817	1,009	11,447	1,488	1,279
Kaslo & Slocan (4)	23.37	569	5,226	5,865	1,375	1,324	3,343	771	—950
Kent Northern	27.00	8,526	10,313	18,839	5,368	1,500	4,550	2,000	5,421
Kettle Valley	22.20	372	2,627	3,019	3,722	.....	1,832	644	—3,179
Kingston & Pembroke (8-14)	109.80	65,501	148,815	207,280	57,608	21,367	76,972	9,308	42,023
Klondike Mines	31.81	7,304	38,793	47,302	14,072	1,997	16,520	11,917	2,793
London & Port Stanley (15)	23.66	39,226	80,384	120,694	15,293	20,482	96,646	5,408	—17,436
Lotbiniere & Megantic	30.00	6,531	24,258	30,886	9,996	2,865	9,800	7,642	582
Maganata wan River (11)	1.91	.....	.....	.....	.....	.....	.....	.....	.....
Manitoba Great Northern (4)	91.77	6,548	43,984	50,587	26,517	4,285	34,612	3,603	—18,432
Maritime Coal Ry. & Power Co.	15.00	8,379	63,546	71,926	8,622	8,114	24.258	2,025	28,906
Massawippi Valley (16)	35.46	70,788	138,034	210,104	41,601	22,161	109,427	3,650	33,263
Moncton & Buctouche	34.00	9,784	16,317	26,169	8,604	2,291	8,209	3,967	3,095
Montreal & Atlantic	163.40	221,512	811,763	1,055,613	293,715	111,658	428,266	27,940	194,033
Montreal and Province (11)	58.60	60,382	54,211	116,345	23,159	5,730	37,391	1,893	48,171
Montreal & Vermont Jct. (11)	23.60	65,162	60,068	125,261	14,056	10,859	45,876	4,616	49,853
Morrissey, Fernie & Michel (17)	10.85	9,369	98,293	108,294	16,988	13,871	42,630	18,721	16.084
Napierville Jct. (21)	27.06	5,767	66,266	72,347	6,150	2,988	25,920	1,651	35,636
Nelson & Fort Sheppard (4)	55.42	33,555	42,478	80,002	79,373	7,711	48,345	7,891	—63,319
New Brunswick Coal & Ry. Co. (18)	58.00	13,216	40,747	66,476	25,025	17,550	27,721	10,469	—14,288
New Brunswick & P.E.I.	36.00	10,999	21,708	32,804	9,935	4,586	10,744	1,843	5,694
New Westminster Southern (4)	23.73	14,057	29,805	44,027	9,436	3,174	13,893	2,420	15,102
North Shore	8.63	238	3,193	3,431	890	.....	2,279	53	208
Nosbonsing & Nipissing (27)	5.50	.....	.....	.....	.....	.....	.....	.....	.....
Nova Scotia Steel & Coal Co.	12.50	2,203	3,871	6,074	3,566	494	5,920	.....	—3,906
Ottawa & New York (19)	56.90	72,996	81,570	156,677	43,353	20,476	87,039	8,885	—3,078
Pere Marquette (15)	198.81	161,037	2,286,241	2,456,882	282,686	405,484	928,855	60,452	779,403
Phillipsburg Ry. & Quarry Co.	6.00	.....	5,677	5,677	.....	.....	.....	3,110	2,567
Pontiac and Renfrew (27)	4.25	.....	.....	.....	.....	.....	.....	.....	.....
Princeton Branch W.C. Ry. (12)	5.10	7,839	19,777	27,616	1,906	2,470	7,026	318	15,894
Quebec and Lake St. John Ry. (7)	286.50	233,643	386,978	630,611	128,675	110,044	313,838	34,532	43,520
Quebec Oriental	253.00	407,221	788,439	1,204,172	157,062	135,329	455,614	72,796	383,369
Quebec, Montreal and Southern (21)	191.91	131,248	185,610	317,397	67,917	64,666	153,191	14,914	16,707
Quebec Central (3)	100.00	38,034	47,922	85,956	30,702	9,104	37,735	6,528	1,886
Quebec Ry., Light and Power Co. (20)	27.00	9,921	56,522	68,903	7,249	7,935	27,463	6,223	19,986
Red Mountain (4)	9.59	3,624	10,829	14,853	24,846	2,010	16,021	1,471	—29,495
Rutland and Novan	3.29	9,735	5,762	15,498	1,186	1,946	5,920	510	5,933
Salisbury and Albert	45.00	11,079	16,778	28,305	13,607	4,831	11,101	2.088	—3,323

(*Continued on page 111*)

Steam Railway Statistics for Year Ended June 30, 1911—*(Continued from page 110)*

Name of Railway	Mileage	Passenger Earnings	Freight Earnings	Gross Earnings	Maintenance of Way and Structure	Maintenance of Equipment	Traffic and Transportation Expenses	General Expenses	Net Earnings
Schomberg and Aurora (7)	14.40	$ 5,373	$ 6,200	$ 11,613	$ 5,135	$ 1,026	$ 8,021	$ 334	$ – 2,904
Stanstead, Shefford and Chambly (11)	43.00	39,713	49,588	89,603	30,308	2,168	44,782	1,885	10,457
St. Clair Tunnel (11)	1.13	.....	293,014	293,014	34,512	12,861	54,882	3,203	187,555
St. Lawrence and Adirondack (19)	46.12	234,664	325,020	565,759	74,622	33,900	253,939	9,838	193,457
St. Martins	30.00	5,547	9,429	15,194	3,774	1,407	6,355	1,087	2,569
Sydney and Louisburg (22)	64.06	35,581	418,884	455,710	66,818	98,574	188,520	17,039	84,709
Temiscouata	113.00	65,073	141,190	211,113	48,072	30,707	69,795	13,606	48,932
Temiskaming and N. Ontario (23)	294.78	624,562	803,331	1,490,251	352,501	145,806	825,948	78,362	387,632
Thousand Islands	6.33	11,828	22,221	37,181	4,163	2,902	21,893	3,822	4,400
Toronto, Hamilton & Buffalo (19)-(24)	80.15	333,998	860,076	1,206,090	140,832	90,540	421,983	29,085	523,687
Vancouver Copper Co. (27)	12.00	.....	.....	.....	.....	.....	.....	.....	.....
Vancouver, Victoria and Eastern (4)	219.40	232,912	446,948	690,620	216,233	66,582	319,423	25,418	62,962
Victoria and Sidney (4)	15.97	25,057	29,120	54,321	9.049	3,098	18,446	3,115	20,611
Victoria Terminal Ry. & Ferry Co. (4)	0.91	2,428	2,228	4,788	597	212	1,264	209	2,503
Wabash (25)	.....	697,697	1,701,617	2,402,010	246,122	514,323	1,116,342	89,776	435,448
Wellington Colliery Co. (27)	10.75	.....	.....	.....	.....	.....	.....	.....	.....
York and Carleton	10.50	2,466	3,379	5,845	1,447	115	2,232	51	1,998
	25,399.86	58,317,998	126,570,533	188,733,493	29,245,093	26,127,638	71,175,014	4,487,039	57,698,709

Notes to Steam Railway Statistics.

(1) The Alberta Ry. and Irrigation Co. was operated under the control of the C.P.R. during the year, and has since been taken over in its entirety by that company. It includes the railways formerly owned by the Alberta Ry. and Coal Co., and the St. Marys River Ry.

(2) The Algoma Central and Hudson Bay Ry. and the Algoma Eastern Ry. (formerly the Manitoulin and North Shore Ry.) are owned by the Lake Superior Corporation.

(3) The Atlantic, Quebec and Western Ry. is operated by the same interests as the Quebec Oriental Ry., which was originally the Baie des Chaleurs Ry., and subsequently known as the Atlantic and Lake Superior Ry. The A.Q. and W. Ry. has trackage rights over 1.75 miles of the lines of other companies.

(4) The Great Northern Ry. owns and operates the following lines in Canada: Brandon, Saskatchewan and Hudson Bay Ry.; Manitoba Great Northern Ry.; Crow's Nest Southern Ry.; Red Mountain Ry.; Nelson and Fort Sheppard Ry.; Vancouver, Victoria and Eastern Ry. and Navigation Co.; New Westminster Southern Ry.; Victoria Terminal Ry. and Ferry Co.; and Victoria and Sidney Ry. The Manitoba Great Northern Ry. has trackage rights over 0.99 mile of another company's line. The Bedlington and Nelson Ry. mileage includes 8.67 miles operated under lease. The Nelson and Fort Sheppard Ry. mileage includes 5.42 miles of leased lines. The New Westminster Southern Ry. and the Vancouver, Victoria and Eastern Ry. have each trackage rights 1.48 miles over the Fraser River Bridge owned by the British Columbia Government.

(5) The British Yukon Ry. is the Canadian portion of the line operated as the White Pass and Yukon Route, connecting with steamboats on the Yukon River to Dawson in the summer, and with stages in the winter.

(6) The Intercolonial Ry. mileage does not include the Windsor branch 32 miles, operated by the Dominion Atlantic Ry. It has 16 miles of second track. It operates its trains into Montreal over the G.T.R., its trackage rights over foreign lines being 40.36 miles.

(7) Mackenzie, Mann and Co., Ltd., interests own or control and operate the following railways: Bay of Quinte Ry.; Brockville, Westport and North Western Ry.; Canadian Northern Ry.; Canadian Northern Ontario Ry.; Canadian Northern Quebec Ry.; Central Ontario Ry.; Halifax and South Western Ry.; Inverness Ry. and Coal Co.; Irondale, Bancroft and Ottawa Ry.; Quebec and Lake St. John Ry. and Schomberg and Aurora Ry. The Bay of Quinte Ry. has trackage rights over 19 miles of another company's lines. The Central Ontario Ry. operates the line owned by the Marmora Ry. and Mining Co. (formerly the Ontario, Belmont and Northern Ry.). The Toronto-Ottawa section of the C.N.O.R. connects with the Central Ontario Ry. at Trenton, and runs over the B. of Q. Ry. between Deseronto and Sydenham. The Irondale, Bancroft and Ottawa Ry. connects with the C.O.R. near Birds Creek. The Canadian Northern Ry. figures include the statistics relating to traffic over the Manitoba Ry., which it operates under a lease from the Government of Manitoba. The lines included in the Manitoba Ry. are the Northern Pacific and Manitoba Ry., Winnipeg Transfer Ry., Portage and North Western Ry., and Waskada and North Eastern Ry. The Canadian Northern Quebec Ry. has trackage rights over 58.65 miles of other companies' lines. The Canadian Northern Ontario Ry. has trackage rights over 3.80 miles into the Union Station, Toronto. The Halifax and South Western Ry. has 2.30 miles of trackage rights over the Intercolonial Ry. into Halifax.

(8) The Canadian Pacific Ry. mileage includes 2,909.60 miles of main lines owned, 3,103.20 miles of branches and spur lines owned; 2,623.60 miles of lines of proprietary companies; 1,389.90 miles of lines operated under lease; 184 miles of lines operated under contract, and 37.30 miles of lines operated under trackage agreements. It has 451.70 miles of second track, on lines owned, and 165.80 miles on leased lines. The C.P.R. returns include the earnings and expenses of the Esquimalt and Nanaimo Ry. The lines operated by the C.P.R. include the Montreal and Atlantic Ry., which has 6.40 miles of second track, and a leased line—Lake Champlain and St. Lawrence Junction Ry. The C.P.R. also owns with the New York Central and Hudson River Rd., the Toronto, Hamilton and Buffalo Ry., and controls the Kingston and Pembroke Ry., which continues to report independently.

(9) The Dominion Atlantic Ry. operates under agreement the Windsor branch of the Intercolonial Ry., 32 miles, which is included in the D.A.R. mileage, but not in that of the I.R.C. It has also trackage rights over 14.42 miles of other lines. The D.A. Ry. has since passed under C.P.R. control, and is, since Jan. 1, being operated by it under lease, but a separate organization is maintained.

(10) The Grand Trunk Pacific Ry. is reported to be under construction, although it is being operated from Winnipeg to beyond Edmonton.

(11) The G.T.R. mileage includes the Buffalo and Lake Huron Ry., 161.30 miles, leased and partly owned. The G.T.R. figures include the earnings, etc., of the Magnetawan River Ry. It has 706.81 miles of second track, and has trackage rights over other lines totaling 13.71 miles. It also owns the Canada Atlantic Ry. and the St. Clair Tunnel Co., which report separately, and the G.T. Pacific Ry. The Central Vermont Ry., which operates the Montreal and Province Line; the Montreal and Vermont Jct. Ry. and the Stanstead, Shefford and Chambly Ry.

(12) The Hereford Ry. is owned and operated by the Maine Central Rd., which also owns the Princeton branch, Washington County Ry.

(13) The International Ry. of New Brunswick was originally known as the Restigouche and Western Ry. It was not being operated when the returns were sent in.

(14) The Kingston and Pembroke Ry. passenger and freight earnings are in excess of the amount given in the column headed gross earnings, the difference being that $7,035 marked "Cr" in the account of earnings other than from operation has to be deducted before the gross earnings can be ascertained.

(15) The London and Port Stanley Ry., practically owned by the city of London, Ont., is leased to the Lake Erie and Detroit River Ry., which is owned and operated by the Pere Marquette Rd., a U.S. company. The P.M.R. has trackage rights over 136.57 miles of other Canadian lines.

(16) The Massawippi Valley Ry. has trackage rights over 2.95 miles of another company's lines. It is operated by the Boston and Maine Rd.

(17) The Morrissey, Fernie and Michel Ry. includes 5.03 miles of leased lines. It is owned by the Crow's Nest Pass Coal Co.

(18) The New Brunswick Ry. and Coal Co. is operated by a commission appointed by the New Brunswick Government.

(19) The New York Central and Hudson River Rd. owns the Ottawa and New York Ry., and the St. Lawrence and Adirondack Ry. It also controls the Toronto, Hamilton and Buffalo Ry.; the Rutland Rd., which owns the Rutland and Noyan Ry.; and the Michigan Central Rd., which controls the Canada Southern Ry. This line has 226.18 miles of second track on main lines, and 16.80 miles of second track in branches and spurs. The Ottawa and New York Ry. operates 1.90 miles under trackage rights. The St. Lawrence and Adirondack Ry. mileage includes 13.30 miles of leased lines, and it has also trackage rights over 8.92 miles of other companies' lines.

(20) The Quebec Ry. Light and Power Co. reports as to the operation by steam over the old line of the Quebec, Montmorency and Charlevoix Ry. There

are 6 miles of second track and 3 miles operated under contract.

(21) The Quebec, Montreal and Southern Ry. includes the old East Richelieu Valley Ry., the United Counties Ry. and the South Shore Ry. It is owned by the Delaware and Hudson Co., which also owns the Napierville Jct. Ry.

(22) The Sydney and Louisburg Ry. is owned by the Dominion Coal Co. It operates 1.09 miles of line owned by a proprietary company and has trackage rights over 1.20 miles of other lines. It also owns the Cumberland Ry. and Coal Co.

(23) The Temiskaming and Northern Ontario Ry. is owned by the Province of Ontario and is operated by a Commission. It also owns the Nipissing Central Ry., an electric line.

(24) The Toronto, Hamilton and Buffalo Ry. is owned by the New York Central and Hudson River Rd., and the C.P.R. It has 4.16 miles of second track and has trackage rights over 4.36 of foreign lines.

(25) The Wabash Rd. does not own any track in Canada, but operates over G.T.R. tracks under lease.

The Bessemer and Barrys Bay Ry., the Bruce Mines and Algoma Ry., the Pontiac and Renfrew Ry., and the Vancouver Copper Co.'s railway are not being operated. The Nosbonsing and Nipissing Ry., and the Wellington Colliery Co.'s line have apparently not reported.

PROPOSED LENGTHENING OF RAILWAY TIES.

Discussion by the Canadian Society of Civil Engineers.

The question of the best length for ties has been under the Canadian Society of Civil Engineers' consideration during the past two years. At the annual meeting in Winnipeg, in January, 1911, the chairman of the committee of ties, D. MacPherson, then Assistant Chief Engineer, National Transcontinental Ry., now Assistant to the Chairman, N.T.R. Commission, presented a report, from which some members of the committee dissented, arguing strongly in favor of longer ties than were in use, and suggesting experimental tests with ties 10½ ft. long. This report was published in full in The Railway and Marine World for March, 1911, together with the views of the dissenting members of the committee. As it was evident that there was considerable divergence of opinion on the question, we obtained the views of a number of leading railway engineers, roadmasters, etc., and published the same in our issues of April and May, 1911, the whole forming a valuable collection of opinions on a very important subject.

The committee's report that experimental tests be made with 10½ ft. ties does not appear to have been carried into effect.

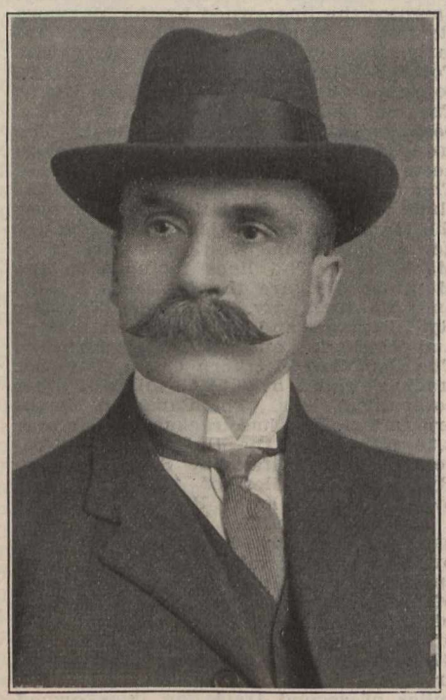
In May, 1911, the Society's Secretary notified the members of the committee of their reappointment.

J. G. Sullivan, C.E., C.P.R. Western Lines.

Mr. Sullivan wrote Mr. MacPherson, June 5, 1911, agreeing to serve on the committee, and pointing out that in the committee's report above referred to "there was not only an error in figures, but also a very serious error in principles." Mr. Sullivan continued: "Leaving aside all the features that make it unnecessary to tamp under the centre of the ties, and assuming that it would be good railroading to so tamp ties (which, of course, I do not admit), the only place a tie is apt to break is under the rail or at the centre. Now, if you will figure up the strain, putting the moment at the centre of the tie equal to the moment underneath the rail, I think you will soon discover the error I allude to. To make the case a little more clear. Imagine the tie turned upside down, the rails a support, and the tie carrying a uniform load, I think you will find that theoretically the length of tie for a safe load is considerably less than 9 ft."

Mr. MacPherson's Reply

On July 20, 1911, Mr. MacPherson wrote Mr. Sullivan as follows:—"If all members of the committee, in addition to the interest they take in this matter, would show that interest as practically as you are doing, we should soon thresh out some useful information. We must, however, each be careful to try to look at the matter, not only from our own, but from the other fellow's point of view. I am quite willing to admit the words 'firmly tamped for its entire length,' may be misleading. It would be better to say tamped for its entire length in such a way as to give, as nearly as possible, uniform support, having regard



D. MacPherson,
Chairman, Canadian Society of Civil Engineers' Committee on Ties.

to the distribution of the load, that is, tamped hard under the rail and for a distance say 18 ins. each way, from edge of rail base, and outer ends tamped more firmly than at centre of track. I have not entirely overlooked the principles of the bending moment you refer to, and agree with you that the moment is greater under the rail for a 10 ft. tie than for an 8 ft. tie, but it is less at the centre for the longer tie. Ties are more apt to break at the centre than under the rail, when frost is coming out, and that is about the only place and time good ties ever break, therefore, the lessening of the moment at centre should be an improvement. I have used 10 ft. and 12 ft. ties, with excellent results, over bogs and places where track could not be kept in surface or line with 8 ft. ties, and have never known a long tie to break under such circumstances. Does not this indicate that the bending moments in the tie may not be as important as providing an increased area of foundation for the immensely increased weights of recent years. Your illustration of turning the tie upside down, supported on the rails, and assuming load uniformly distributed, certainly facilitates calculation of the stresses, but unfortunately we know the load is not uniformly distributed, hence calculations based on that assumption are inconclusive. In any case, they only refer to the strength of the tie and not to its effectiveness in providing, as nearly as is possible uniform minimum unit pressures on the ballast. I will, in turn, make a suggestion to illustrate my point of view. Assume that the ties are sawn straight through in the centre and the spreading of the track taken care of by steel, the rods bolted to the rails. Would not the outer ends of 8 ft. ties be immediately crushed into the ballast and the inner ends be cocked up? Would this happen if ties were of equal length each side of rail, and if not, does it not prove that lengthening the ties is not altogether folly?"

Circular to Members of Committee.

In July, 1911, Mr. MacPherson sent the following circular to members of the committee:—"As the committee on ties has been continued from last year, with the understanding that only those who expressed a willingness to act need be considered as members, I would advise you that the men whose names appear on this letter have stated their readiness to act, which should assure a good live report for next annual meeting. Unless the majority of the members of the committee wish otherwise, it might be well to confine our work this year entirely to determining what, in our opinion, are the best dimensions for ties for a standard trunk line railway, and not go into tie preservation or cost at all. Of course the question of cost is very vital, but the first and most important things to determine are the proper dimensions to give the best results. I enclose copy of some correspondence between one member of the committee and myself, which may help to set the ball rolling, and I would ask each member to contribute something definite on the subject as early as possible, avoiding generalities and giving logical reasons for all theories advanced. As soon as all the members contribute something on the subject, I shall call a committee meeting, when we can exchange views more fully and perhaps evolve matter for further enquiry or discussion. In the meantime, I hope you will pitch into the two of us who have so far committed ourselves to paper and handle our theories without gloves, so long as you evolve something better or advance arguments which prove our points of view to be erroneous."

The members who consented to act on the committee were D. MacPherson, Chairman; F. P. Gutelius, H. G. Kelley, Wm. McNab, J. G. Sullivan, T. C. Burpee, H. A. Woods, M. H. MacLeod, W. A. Bowden, W. B. Mackenzie.

H. G. Kelley, Chief Engineer, G.T.R.

Mr. Kelley wrote Mr. MacPherson July 31, 1911, as follows:—I have read with interest the letter from J. G. Sullivan to you upon the subject of ties, and your circular letter to the committee. The matter seems to have been well studied from a mathematical point of view, yet without reaching a unanimous conclusion. I intend, therefore, in this letter, to discuss it purely from practical conclusions derived from experience and observation.

"Upon first class rock ballasted track with embankments and ballast, old and well settled, there is but little trouble with ties breaking. Upon good gravel track, well maintained, the breakage under the rail is more frequent than breakage in the centre of the track, except in the case of centre bound track. Upon unballasted or earth surfaces track, the breakage is about evenly divided; if

there is any difference, I believe the breakage under the rail is in excess. In the above three cases, I am considering track laid with the ordinary sized tie, 6 by 8 ins. by 8 ft. long. Would not the above indicate that so far as strength is concerned, the extension of an 8 ft. tie beyond the rail is already as long as it should be to balance the stress upon the middle of the tie?

"Upon all track, the primary object to be attained is drainage, and any type of construction which retards the drainage, injures the track and places a greater physical stress upon the ties.

"In the Southern States many years ago, where ballast was scarce, rains plentiful and track bad, a road running from Memphis, Tenn., to Little Rock, Ark., tried the experiment of using ties 9 ft. long. After a few years their use was abandoned as being a detriment to the track on account of the retarding of the drainage, and the company returned to the use of ties 8 ft. long. Other roads in the northern parts of the U.S. have used 9 ft. ties, but so far as I know, their use has been discontinued, and only in some instances have the roads adopted as their standard ties 8½ ft. long.

"In view of the above facts, I believe that the maximum length of the tie should not exceed 8½ ft., and that a tie 8 ft. long will answer all purposes for modern traffic, and enable the maintenance departments of railroads to maintain first class track. I believe, however, that ties 6 ins. thick are not sufficiently strong, and that ties for main line traffic should be 7 ins. thick by at least 8 ins. wide, but that in no case should they be more than 10 ins. wide."

H. A. Woods, Asst. Chief Engineer, G.T.P.R.

Mr. Woods wrote Mr. MacPherson, on Aug. 9, 1911: "I think the committee will agree that the ordinary tie 6 by 8 ins. by 8 ft. in length, with, as generally spaced, 22 in. centres, does not give sufficient bearing for the rolling stock now in use. To add to this bearing surface, shall we increase the length of the tie, as suggested in your report last season, or adopt some other conclusions. Evidently, there is a diversity of opinion as to the actual theoretical length of a tie for a safe load, and there will doubtless be a further discussion on that subject.

"Personally, I think the increased length suggested is hardly justified by past experience. Several railways in the U.S. at one time called for ties 9 ft. long, but I do not know of any using that length at the present time. The Pennsylvania Rd. and the New York Central, with some of its allied lines, are calling for ties 7 ins. by 7 ins. by 8½ ft. long. Would not this indicate, in a measure at least, that ties even 9 ft. in length were undesirable, either on account of additional cost, or difficulty in procuring them?

"In my opinion a 10 ft. tie, aside from the difficulty in procuring it, and the additional cost (which would be almost prohibitive), has other disadvantages, among which are increased breakage over the shorter tie, retarded drainage, and additional ballast required.

"Personally, I believe that ties should not be less than 7 ins. in thickness, 8 ins. on face, and 8 or 8½ ft. in length; that they should be laid with 20 in. centres, 20 to a 33 ft. rail length. Ties are so spaced on several railways at the present time. With this number of ties of the dimensions named, and with proper ballast, I believe that first class track can be maintained."

F. P. GUTELIUS, then General Superintendent, Eastern Division, C.P.R., wrote Mr. MacPherson Oct. 7, that he desired to put himself on record as being opposed to making ties more than 8 ft. long.

Report by the Chairman.

Mr. MacPherson wrote the Society's Secretary on Nov. 28, 1911, as follows:—

"I attach for the council's information copies of correspondence I have had in this connection, from which it will appear that only four out of the nine members have taken any part in the discussion, and that two of them are in favor of using ties not longer than 8½ ft.; one sticks to the 8 ft. length without, however, advancing any reasons to support his views. Under these circumstances it seems impossible to present anything that could be called a report of the committee, hence I submit the correspondence for such action as the council may deem advisable, and in doing so desire to say that this year's discussion, in my opinion, has not disclosed any definite or conclusive reasons to approve that ties shorter than 10 ft. meet the requirements of the standard modern track, required to support the immensely increased loads of up-to-date rolling stock.

"Perusal of the reports and discussions of the American Railway Engineering Associations' committee on ties for several years past will disclose the fact that many members of that association are of the opinion that longer ties are necessary, but that they hesitate to recommend the same definitely for fear of seeming to commit the roads they represent to large increases of expenditure. It would be equally logical to advocate using a 56 lb. rail for the same reason. The chief engineers of the London and North Western Ry., and of the Midland Railway, of England, inform me that their standard tie is 9 ft. long. These are two of the best maintained roads in the country, but their locomotives are probably not more than two-thirds the weight of the heavy locomotives used on this continent, and the axle loads are lighter in proportion.

"Ties 9 ft. long have been used in Texas over 30 years, with mud ballast, which would indicate that the advantage of increased bearing must more than offset the disadvantages of drainage, even in bad ballast, and these disadvantages would not be so great in gravel ballast.

"The Chief Engineer of the Louisville and Nashville Ry. informs me that they used 10 ft. ties with sand ballast, and had no difficulty with drainage, or trouble with ties breaking under the rail. They now use blast furnace slag for ballast in place of the sand, and their standard tie is 9 ft. long.

"Some ten years ago I had personal experience with a piece of track, about one-half mile long, over muskeg, on the C.P.R., which piece of track it was impossible to keep in surface or line with ties 8 ft. long. An experiment was tried with ties 12 ft. long, and that length of tie has been used there ever since with perfectly satisfactory results. The roadmaster recently informed me that he had no trouble with the long ties breaking, and that this summer he had treated another muskeg the same way, with the result that a half-mile of 7 mile section, which with 8 ft. ties had taken 50% of the time of the section gang to keep in order, had, since the placing of the 12 ft. ties, scarcely needed any attention, and remained in good surface and line.

"These examples would indicate that there is not much danger of 10 ft. ties breaking, and that they do give the much needed additional support.

"I am sending a copy of this letter to each member of the committee, but do not propose to submit any further formal report."

The matter came up at this year's annual meeting Jan. 26, but was not discussed, as it was decided to request all the Society's branches to discuss the various reports and send the discussion to the Secretary by March 1. Each committee is then to take the discussion on its report into consideration, and ask by July 1 for a letter ballot of the Society's members on the final draft of the report.

CANADA'S GREAT MARKET FOR EQUIPMENT AND SUPPLIES.

From the Toronto News, Feb. 6:

"All the Canadian railways have been recently forced to go abroad with orders because they could not secure the necessary number of locomotives at home within a reasonable time.

"The same remark applies to other lines of equipment, such as passenger and freight cars, and altogether the outlook for companies interested in railway equipment and supplies appears to be particularly good."

Adirondack and St. Lawrence Railroad Locomotive.

The Adirondack and St. Lawrence Rd. has received recently a Mogul locomotive for freight service which exerts a tractive force of 24,800 lbs. The equipment includes automatic and straight air brakes, and M.C.B. couplers front and back. Pilots and headlights are also applied at each end, the pilots being of pressed steel of a new design. The fire-box is placed above the frames and is fitted with a brick arch supported on studs. The frames are of forged iron with double front rails. In all other respects this locomotive is designed and equipped in accordance with the present day practice for engines of this class. Following are the principal dimensions:—

Cylinders		18 x 24 ins.
Valves		Balanced slide
Boiler	—type	Wagon top
"	Material	Steel
"	Diameter	56 ins.
"	Thickness of sheets	5/8 & 11-16 ins.
"	Working pressure	180 lbs.
"	Fuel	Soft coal
"	Staying	Radial
Fire Box	—Material	Steel
"	Length	74 11-16 ins.
"	Width	40 ins.
"	Depth, front	61½ ins.
"	Depth, back	60 ins.
"	Thickness of sheets, sides	5-16 in.
"	Thickness of sheets, back	5-16 in.
"	Thickness of sheets, crown	3/8 in.
"	Thickness of sheets, tube	½ in.
Water Space	—Front	4 ins.
"	Sides	3½ ins.
"	Back	4 ins.
Tubes	—Material	Iron
"	Thickness	No. 11 W.G.
"	Number	206
"	Diameter	2 ins.
"	Length	11 ft.
Heating Surface	—Fire box	111 sq. ft.
"	Tubes	1,177 sq. ft.
"	Total	1,288 sq. ft.
"	Grate area	20.7 sq. ft.
Driving Wheels	—Diameter, outside	48 ins.
"	Diameter, centre	42 ins.
"	Journals, main	8 x 9 ins.
"	Journals, others	8 x 9 ins.
Engine Truck Wheels	—Diameter, front	26 ins.
"	Journals	5 x 8 ins.
Wheel Base	—Driving	12 ft. 6 ins.
"	Total engine	20 ft. 0 ins.
"	Total engine & tender	46 ft. 11½ ins.
Weight	—On driving wheels	101,000 lbs.
"	On truck, front	17,500 lbs.
"	Total engine	118,500 lbs.
"	Total engine & tender	210,000 lbs.
Tender	—Wheels, number	8
"	Wheels, diameter	30 ins.
"	Journals	4¼ x 8 ins.
"	Tank capacity	4,500 gals.
"	Fuel capacity	8 tons

It was built by the Baldwin Locomotive Works, Philadelphia.

The Canadian Transfer Co.'s annual meeting was held at Montreal, Jan. 30. The following were re-elected directors: C. Cassils, Hugh Paton, G. R. Starke, Sir Montagu Allan and H. M. Molson. F. M. McRobie is General Manager and Secretary.

How to Remedy Soft Spots in the Roadbed.

At the Roadmasters and Maintenance of Ways Association's last annual meeting at St. Louis, Mo., the committee on the above subject presented the following report:—

Before suggesting a remedy for the cure of soft spots in a roadbed, we think it would be well to determine the cause of the troublesome places, as we think it would be far more economical to avoid them, in the first place, than later to spend the greater part of the allowance for maintenance trying to keep the track at such places in surface line and gauge, and ultimately go to the expense of tile and cross draining, which is the only effective method after the pockets have reached a depth where it is impossible to drain them by ordinary surface ditches.

Soft spots in roadbed, on fills, are caused usually by objectionable material (usually clay from the bottom of barrow pits, or stumps or other timbers

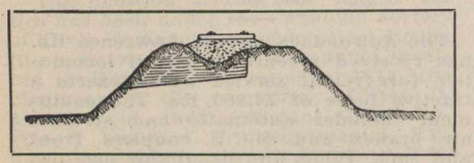


Figure 1.

which are placed in the dumps by the contractors in order to complete the job as quickly and cheaply as possible). Decomposing timber and the gumbo clay of which the sub-grade is constructed fail to support the track under heavy traffic and the weak places are shortly replenished with ballast of some kind and a typical soft spot is formed. Where these spots are caused by stumps or timbers placed in the dump they should be removed or one may expect to have trouble until they have rotted entirely away.

When the sub-grade is constructed of clay of various kinds, the worst material perhaps is what is familiarly known as gumbo. Where rainfall is great, this clay gives little chance for water to run off, and it generally stands in pockets in the dump and changes from one side of the track to the other, causing the clay to heave upward and bulge out on sub-grade at base of ballast. To overcome this a trench should be dug as shown in fig. 1, beginning at the opposite side of the track and digging through the bulge to the base of the dump. This trench should be dug a foot or 18 ins. below the bottom of the pocket and as far apart as the formation of the sub-grade requires them. They should be 18 ins. wide to allow free working of men. Fill in the bottom with coarse engine cinders to a height of 15 ins., the balance of trench with ordinary cinders, using care to keep the outlet free at all times.

In cuts, soft spots are formed by pockets of plastic clay or depression in the sub-grade which, on account of insufficient drainage, become thoroughly saturated during wet weather. This forms poor support for the ballast and allows the track to settle and forces the ballast below the subgrade. Ballast of some kind is ordered and in the meantime mud shims, or often crossing plank or ties are placed under the track ties to maintain the surface temporarily. Very often the timber is left there when the ballast is finally received and applied. The renewal of the ballast is repeated at intervals until it is from 18 ins. to 5 ft. deep. The clay that has been displaced by the ballast is forced outward and upward just outside the ballast line which intercepts the passage of water from the pocket to the open ditch, making it a difficult matter to drain it properly.

Many methods have been tried, with varying success, to remedy these soft spots, and we will take them in order, as their location and the amount of money available, must determine, very often, the method to be employed. Before considering the more expensive methods we will take up the question of surface drainage.

Where the conditions require it, a surface ditch should be constructed and maintained on the top of the cut, to care for the water running toward the cut from adjoining fields, and an open ditch on each side of the track in cuts should be constructed only deep enough to carry the water it is expected to take care of. Open ditches should be kept clean and free from obstructions, so that no water will stand in them. Where standing water cannot be taken care of the ditches should be tile drained.

Where good surface drainage has failed, on account of the bottom of the pocket at a soft place becoming lower than the bottom of the adjoining ditch, making it impossible to drain it, the ballast may be removed, together with

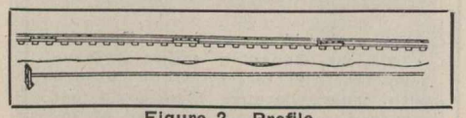


Figure 2. Profile.

the clay shoulder which has heaved at either side, and the cavity should be filled with harder material, practically forming a new sub-grade. This will remove the pocket which causes the trouble and will be found very satisfactory.

Where authority for tile draining ditches and roadbed may be had, it will be found to give the best results, however, and it is only a question of the best kind of tile to be used and the best and most economical method to be employed in order to get the best and most lasting results.

COST PER DRAIN

Depth of ditch.....	.3	.4	.5	.6	.7
Material, tile.....	.04	.04	.04	.04	.04
" cinder. ..	.04	.05	.06	.07	.09
Labor, maximum.....	.18	.37	.56	.75	1.00
" minimum.....	.10	.15	.21	.27	.35
" average	.13	.20	.26	.33	.42

to shape the bottom of the trench, so that the tile will lie in a round surface instead of on flat ground. This will have a tendency to keep the tile in perfect alignment and surface. When the tile is laid, fill the trench with engine cinders. Cross trenches should be dug as the conditions require it and filled with engine cinders as shown in fig. 2. The cost of this work varies greatly, being governed a great deal by local conditions and the kind of labor employed. The figures given in connection with fig. 1, however, were taken from a job recently completed and are authentic.

COST PER FOOT

Depth of drain.....	.3	.4	.5	.6	.7
Yards of material....	2.5	3.4	4.4	5.4	6.6
Material, cinder.....	.55	.76	.98	1.21	1.47
Labor, averages.....	1.10	1.49	1.93	2.50	3.20

Fig. 3 shows a method of tiling and cross-draining which has been found very satisfactory. The depth of the tile drain should be governed entirely by local conditions, but should be below the

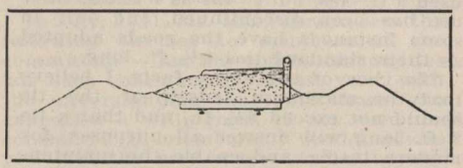


Figure 2. Section.

frost line. The grade line should be determined by a competent engineer, in order to insure satisfactory results and perfect drainage. Use vitrified tile with bell ends not less than 6 ins. in diameter. A line may be laid on one or both sides of the cut, as may be deemed necessary. The trench should be excavated 3 ins. below the grade line and dirt should be trucked out of the cut and placed on the fill for widening the roadbed. Then fill the trench 3 ins. deep with engine cinders well tamped. Then lay tile with the bell ends up stream on cinders in perfect line and surface, after which back fill the trench with cinders. Where pockets have formed in the roadbed, cross drains should be put in. Where a drain is constructed on both sides of the track, cross drains should be put in alternately from the centre of track to the drains on either side, as the local conditions may require it, and should be connected with the tile with a "T." Vitrified tile or short lengths of cast iron pipe is best for cross draining. Care should be used in establishing a grade line so that the tile will be laid deep enough to permit cross drains to be put in at any time below any deformation or pocket in the roadbed.

Fig. 4 shows a plan for draining a cut which is expected to be double-tracked later. A single line of pipe on one side,

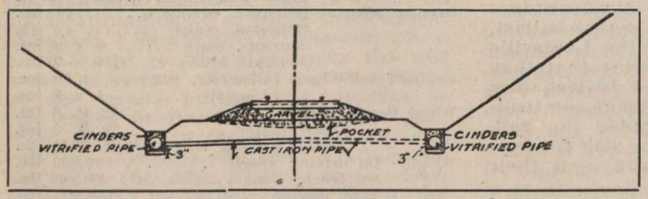


Figure 3.

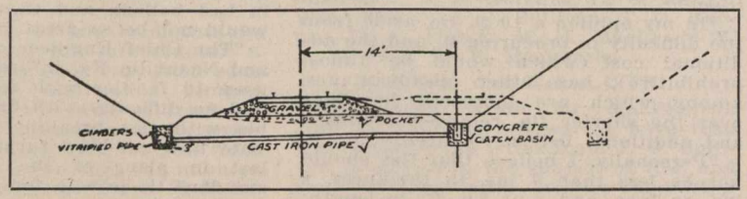


Figure 4.

laid as shown in fig. 3, with cast iron cross drains at intervals to a catch basin on the opposite side to take care of surface water. When second track is laid the ditch should be partly filled with cinders, which will insure good drainage for the second track and an additional line of pipe should be laid outside of the new track.

To get good results, these tile ditches should be cleaned off as often as it is necessary, which is governed by weather conditions and the nature of the cut in which they are placed. Concrete catch basins placed at intervals as conditions

Fig. 2 shows a method of tile and cross draining the roadbed which has been found satisfactory. Beginning at the outlet, dig a trench 18 ins. wide parallel with the track, so that the tile when laid will be 9 ins. out from the ends of the ties and not less than 18 ins. below the pockets to be drained, being careful not to get less than 12 ins. fall in 1,000 ft. Lay either 4-in. or 6-in. glazed tiling with bell joints the entire length of the cut, carrying the water from the apex both ways, or all one way, as the conditions may require. Before laying the tile, use a round-pointed tool

require, to care for the surface water more quickly, will be found very satisfactory in times of heavy rainfall. There is a great difference of opinion as to the kind of tile which is best for this work. We would say to use the kind of tile best suited for the soil and local conditions which will be encountered at the point to be drained. The cost of construction for labor varies so greatly, being governed by the kind of labor employed and the conditions under which the work is to be done, that figures will be of little value, as it runs from 10 to 30 cents per foot, but at the maximum figure the benefits derived are so great that they warrant the expenditure.

We would recommend that more attention and care be given to roadbed construction when railways are constructed, and that such important matters should not be left to the discretion of contractors.

In the construction illustrated by fig. 1 use engine cinders for back-filling and cap with recovered ballast. The fall of the bottom of the drain should not be less than 12 ins. in 1,000 ft. and should reach at least 18 ins. below working gumbo.

In the construction illustrated by fig. 2 a concrete headwall is recommended with sufficient drop to prevent back filling of the drain. The fall of the drain should not be less than 12 ins. in 1,000 ft. The tile should be laid at least 18 ins. below the heaving gumbo. Use 6-in. tile, and engine cinders for back-filling, with cinder laterals where necessary.

In the construction illustrated in fig. 3 the trench should be excavated 3 ins. below the grade line and filled to that depth with cinders, tamped. The trench should be back-filled with cinders after pipe is laid. All dirt excavated from trench should be removed from the cut and used in widening banks. The vitrified pipe used should not be less than 6 ins. in diameter. Where conditions warrant vitrified pipe may be placed on one side only. Where there are signs of water percolating through the earth under the track, cross drains should be constructed under track extending from centre of track to vitrified pipe. These cross drains should be constructed alternately from one vitrified pipe, and then the other end placed at such intervals as local conditions may warrant. Cross drains under track should be cast iron and not less than 4 ins. in diameter and of short lengths. Where cross drains are used they should be connected with vitrified pipe by the use of a "T" connection. The ends of cross drains under track should be covered with broken stone to keep out the dirt. The vitrified pipe, where possible, should be laid deep enough so that cross drains, when used, can be placed below any pocket or deformation in roadbed.

In the construction illustrated in fig. 4 the trench should be excavated 3 ins. below the grade line and filled to that depth with cinders and well tamped. The trench should be back filled with cinders after the pipe is laid. All dirt excavated from trench should be removed from cut and used in widening banks. The vitrified pipe used should not be less than 6 ins. in diameter. The pipe used for cross drains should be less than 4 ins. in diameter and should be of short lengths. Cross drains should be connected with vitrified pipe by the use of a "T" connection. Cross drains and catch basins should be constructed at such intervals as local conditions may require, but generally never nearer than 400 feet apart. Catch basins should be provided with a grated cover. Water on the catch basin side of the track should be drained into catch basins through open ditches. When second track is constructed catch basins should be covered with broken stone and additional pipe constructed in the ditch outside of second track.

Steam Railway Statistics for Canada for 1910-1911.

The statistics for the year ended June 30, 1911, show that the total mileage of main track was 25,400, an increase of 669 miles over June 30, 1910. In addition there were 7,159 miles of second and other tracks, making altogether 32,559 miles in operation. Over 7,000 miles of line were reported to be under construction, of which 1,578 were in actual operation, although not on June 30, declared to be so by the Board of Railway Commissioners. The railway mileage in the several provinces in operation, as compared with June 30, 1910, was as follows:—

	Miles.	Miles.
Ontario	8,322	8,230
Quebec	3,882	3,795
Manitoba	3,466	3,221
Saskatchewan	3,121	2,932
British Columbia	1,842	1,832
New Brunswick	1,548	1,522
Alberta	1,494	1,488
Nova Scotia	1,354	1,351
Prince Edward Island	269	269
Yukon Territory	102	91
Total	25,400	24,731

The total capital liability was $1,528,689,201, of which $749,207,687 represented capital stock, and $779,481,514 funded debt. This is an increase of $61,650,300 in stocks, and $56,741,214 of funded debt, a total of $118,391,514 for the year. After making deductions for duplication of stocks and bonds owing to amalgamations, etc., and the situation with respect to Government lines, the capital liability is shown to be $55,829 a mile. The total amount paid in dividends on the capital stock was $30,577,740, or at the rate of 4.08%, against an average of 3.16% paid on the $687,557,387 of capital stock for 1909-10. The net earnings—the difference between operating income and operating expenses, was $57,698,709 against $53,550,777 or 7.70% on the capital stock, against 7.78% on the capital stock in 1909-10.

The cash aid given during the year totalled $1,426,192, of which $1,284,892 was paid by the Dominion Government, $82,000 by the provinces, and $59,000 by municipalities. These figures bring the amount paid in aid of railway construction by the Dominion Government to $148,217,072; by the Provincial Governments to $35,919,360, and by municipalities to $18,042,823, making a total of $202,179,255. In addition land grants by the Dominion and Provincial Governments have aggregated 55,256,429 acres, and outstanding guarantees on June 30, 1911, reached $148,336,357.

The earnings from all sources aggregated $188,733,494, an increase of $14,777,277 in the year, the sources of revenue being as follows:—

	1910-11.	1909-10.
Passengers	$ 50,566,893.98	$ 46,018,879.56
Mails	1,869,413.89	1,799,887.80
Express	4,674,135.27	4,143,837.52
Baggage, parlor cars, etc.	1,207,555.31	993,613.63
Freight	126,570,533.52	117,497,604.03
Station and train privileges	826,251.92	679,061.12
Telegraphs, rents, etc.	3,018,709.92	2,823,333.47
	$188,733,493.81	$173,956,217.13

The operating expenses increased $10,629,344.53, the comparative distribution being:—

	1910-11.	1909-10.
Way and structures	$ 29,245,093.22	$ 27,035,603.46
Equipment	26,127,638.12	26,002,301.30
Traffic expenses	4,831,744.50	4,366,176.92
Transportation	66,343,269.58	58,928,170.74
General expenses	4,487,039.53	4,073,188.00
	$131,034,784.95	$120,405,440.42

The railways carried 37,097,718 passengers and 79,884,282 tons of freight, an increase of 1,203,143 passengers and 5,401,416 tons of freight over 1909-10. The following tables give general statistics regarding traffic:—

PASSENGER TRAFFIC.	1910-11.	1909-10.
Number of passengers	37,097,718	35,894,575
Passengers carried one mile	2,605,968,924	2,466,729,664
Passengers one mile per mile of line	102,597	99,742
Passengers per mile of line	1,460	1,451
Average passenger journey (miles)	70	69
Average number of passengers per train	60	59
Passenger train mileage	36,985,911	35,022,541
Mixed train mileage	6,277,468	6,441,440
Earnings from ticket sales	$50,566,894	$46,018,880
Earnings from passenger service	$58,317,998	$52,956,219
Average receipts per passenger	$1.360	$1.282
Average receipts per passenger per mile (cents)	1.944	1.866
FREIGHT TRAFFIC.	1910-11.	1909-10.
Tons hauled	79,884,282	74,482,866
Tons hauled one mile	16,048,478,295	15,712,127,701
Tons hauled one mile per mile of line	631,829	635,321
Average haul, miles	200	211
Freight train mileage	52,498,866	50,184,108
Mixed train mileage	6,277,468	6,441,440
Revenue from freight	$124,743,015	$116,229,894
Average tons per train	305	311
Average cars per train	18.03	18.15
Average tons per car	16.91	17.13
Average receipts per ton per mile (cents)	.777	.739

The freight business was distributed among the following classes:

	Tons		
Products of agriculture		13,809,536	12,891,351
Products of animals		3,190,702	2,765,006
Products of mines		28,652,236	26,152,022
Products of forest		13,238,347	13,068,940
Manufactures		13,573,987	10,014,279
Merchandise		2,438,089	2,518,190
Miscellaneous		4,981,385	7,073,078
Totals	Tons	79,884,282	74,482,866

Further details of earnings and operating expenses are as follows:

Gross earnings	$188,733,494	$173,956,217
Net earnings	57,698,709	53,550,776
Gross earnings per mile	7,430.45	7,033.93
Net earnings per mile	2,271.60	2,165.83
Earnings per passenger	1.363	1.282
Earnings per ton	1.561	1.560
Earnings per passenger train mile	1.348	1.277
Earnings per freight train mile	2.376	2.316
Earnings per train mile, all trains	2.103	2.036
Operating expenses	131,034,785	120,405,440
Operating expenses per mile	5,158.85	4,868.60
Cost of running trains one mile	1.460	1.409

TRAIN MILEAGE.	1910-11.	1909-10.
Passenger trains	36,985,911	35,022,541
Freight trains	46,220,813	43,742,668
Mixed trains	6,277,468	6,441,440
Special trains	232,341	202,592
Total	89,716,533	85.409,241

FREIGHT CAR MILEAGE.	1910-11.	1909-10.
Loaded freight cars	946,946,917	910,858,711
Empty freight cars	311,984,866	280,255,329
Caboose cars	47,834,318	45,367,459
Total	1,306,766,101	1,236,481,499

There were 4,219 locomotives, 4,513 passenger cars, 127,158 freight cars, and 9,578 cars in the service of the several companies, against 4,079 locomotives, 4,320 passenger cars, 119,713 freight cars, and 8,648 cars on June 30, 1910.

The returns of accidents show that 493 persons were killed and 3,329 injured, a decrease of 120 in the number killed, but an increase of 1,190 in the number injured as compared with 1909-10. There were 465 persons killed and 1,906 injured by the movement of trains, distributed as follows:—

	Killed.	Injured.
Passengers	28	288
Employes	202	1,314
Trespassers	185	154
Non-trespassers	48	135
Postal clerks, etc.	2	15

One passenger in every 1,324,919 was killed and one in every 124,489 injured. Accidents at highway crossings resulted in the killing of 36 persons, against 63, and in the injuring of 108 against 155 as compared with 1909-10.

The number of railway employes on June 30, 1911, was 141,224, against 129,768 on June 30, 1910. The aggregate of salaries and wages paid was $74,613,738, an increase of $7,445,945.

Birthdays of Transportation Men in March.

Many happy returns of the day to:—

W. G. Annable, General Passenger Agent, C.P.R. Atlantic Steamship Lines, Montreal, born at Ottawa, Mar. 3, 1875.

P. S. Archibald, M. Can. Soc. C.E., Commissioner New Brunswick Coal and Ry. Co.'s Railway, and General Manager, Elgin and Havelock Ry., Moncton, N.B., born at Truro, N.S., Mar. 21, 1848.

George Bury, Vice President and General Manager, C.P.R. Western Lines, Winnipeg, born at Montreal, Mar. 6, 1866.

Allan Cameron, General Traffic Agent, C.P.R., New York, born near Owen Sound, Ont., Mar. 14, 1864.

F. G. J. Comeau, General Freight Agent, Dominion Atlantic Ry., Halifax, N.S., born at Meteghan River, N.S., Mar. 10, 1859.

A. E. Cox, Storekeeper, Canadian Northern Ry., Winnipeg, born at Huddersfield, Eng., Mar. 12, 1863.

N. Curry, President, Canadian Car and Foundry Co., Ltd., Montreal, born in King's county, N.S., Mar. 26, 1851.

Patrick Dubee, Secretary, Montreal Tramways Co., Montreal, born there, Mar. 4, 1876.

G. R. Fairhead, District Freight Agent, Canadian Northern Ry., Hamilton, Ont., born at Toronto, Mar. 6, 1882.

C. Forrester, Trainmaster, G.T.R., Stratford, Ont., born at Wanstead, Ont., Mar. 5, 1876.

C. O. Foss, District Engineer, National Transcontinental Ry., St. John, N.B., born at Wentworth, N.H., Mar. 20, 1852.

H. M. Gain, Passenger Trainmaster, Eastern Division G.T.R., Montreal, born at Lindsay, Ont., Mar. 21, 1879.

R. A. Gamble, Car Service and Fuel Agent, C.P.R., Moose Jaw, Sask., born at Dublin, Ireland, Mar. 1, 1876.

H. W. Gays, General Manager, Ottawa and New York Ry., Ottawa, Ont., born at Brant, Erie Co., N.Y., Mar. 21, 1848.

J. Halstead, Division Freight Agent, C.P.R., Calgary, Alta., born at Bracebridge, Ont., Mar. 2, 1877.

R. M. Hannaford, M. Can. Soc. C.E., Chief Engineer, Montreal Tramways Co., Montreal, born there, Mar. 22, 1865.

C. A. Hayes, Freight Traffic Manager, G.T.R., Montreal, born at West Springfield, Mass., Mar. 10, 1865.

H. T. Hazen, Chief Engineer, Duluth, Winnipeg and Pacific Ry., and District Engineer of Construction, Canadian Northern Ontario Ry., Port Arthur, Ont., born at Truro, N.S., Mar. 14, 1870.

Joseph Hobson, M. Can. Soc. C.E., Consulting Engineer, G.T.R., Hamilton, Ont., born at Guelph, Ont., Mar., 1834.

N. J. Holden, President, The Holden Co., Ltd., Montreal, born at Nobelton, Ont., Mar. 22, 1866.

A. R. Holtby, Master of Bridges and Buildings, Mountain Division, G.T.P.R., Prince Rupert, B.C., born at Rawdon, Que., Mar. 23, 1859.

Frank Lee, M. Can. Soc. C.E., Division Engineer, C.P.R., Winnipeg, born at Chicago, Ill., Mar. 7, 1873.

R. W. Long, Division Freight Agent, G.T.R., Hamilton, Ont., born at Appin, Ont., Mar. 20, 1873.

T. W. Lowe, General Boiler Inspector, C.P.R. Western Lines, Winnipeg, born at Montreal, Mar. 30, 1858.

J. M. McKay, Trainmaster, C.P.R., Winnipeg, born at Tiverton, Ont., Mar. 13, 1868.

Owen McKay, M. Can. Soc. C.E., Chief Engineer, Essex Terminal Ry., Walkerville, Ont., born in Ross tp., Renfrew co., Ont., Mar. 13. 1848.

Col. H. H. McLean, K.C., M.P., Vice President, St. John Ry., St. John, N.B., born at Fredericton, N.B., Mar. 22, 1855.

Sir Donald D. Mann, Vice President, Mackenzie, Mann & Co., Ltd., and First Vice President, Canadian Northern Ry., Toronto, born at Acton, Ont., Mar. 23, 1853.

D. J. Murphy, Jr., Superintendent of Transportation, Dominion Atlantic Ry., Kentville, N.S., born at Caledonia, Ont., Mar. 3, 1874.

R. Patterson, Master Mechanic, G.T.R., Stratford, Ont., born at Brantford, Ont., Mar. 13, 1860.

F. W. Peters, Assistant to Vice President, C.P.R., Winnipeg, born Mar. 25, 1860.

E. H. Sewell, City Passenger Agent, C.P.R., Sherbrooke, Que., born at Quebec, Mar. 17, 1875.

C. J. Smith, General Manager, Richelieu and Ontario Navigation Co., Montreal, born at Hamilton, Ont., Mar. 10, 1862.

G. Somerville, agent, Merchants Line Steamers, Toronto, born at Kingston, Ont., Mar. 21, 1855.

W. Y. Soper, director, Ottawa Electric Ry. Co., Ottawa, Ont., born at Oldtown, Me., Mar. 9, 1854.

W. C. Starke, Travelling Car Service Agent, G.T.R., Montreal, born there, Mar. 9, 1867.

W. F. Tye, President, Canadian Society of Civil Engineers, ex-Chief Engineer, C.P.R., consulting engineer, Toronto, born at Haysville, Ont., Mar. 5, 1861.

G. W. Vaux, Canadian Passenger Agent, Union Pacific Rd., Toronto, born at Montreal, Mar. 21, 1866.

A. T. Weldon, General Freight and Passenger Agent, Black Diamond Steamship Line, Montreal, born at Dorchester, N.B., Mar. 6, 1876.

D. O. Wood, General Freight Agent for Ontario, Allan Line Steamships, Toronto, born at Kleinburg, Ont., Mar. 16, 1864.

Dominion Government Aid to the Grand Trunk Pacific Railway.

A resolution was passed by the House of Commons Feb. 2 authorizing the payment out of the consolidated revenue fund such sums as may be sufficient to discharge the obligations of the Dominion to the Grand Trunk Pacific Ry. Co. under the provisions of par. 5 of the schedule attached to chap. 54 of the statutes of 1904, in accordance with the interpretation of the paragraph by the judgment of the Imperial Privy Council, Nov. 2, 1911. The Minister of Finance, in moving the resolution, stated that the agreement between the Government and the G.T.P. Ry. was made July 29, 1903, and under it the Government was to guarantee the company's bonds up to $13,000 a mile for the prairie section, and $30,000 a mile for the mountain section, the rate of interest to be 3%; the G.T.R. to guarantee the bonds to the extent of the remaining 25%. A supplementary agreement was made in the following year, under which the guarantee of the bonds in respect of the mountain section was to be 75% of the actual cost, and the guarantee in respect of the bonds of the prairie section 75% of the cost, but not to an amount in excess of $13,000 a mile, and paragraph 5 of the agreement, which was attached as a schedule to the Act of 1904, contained the words: "the Government may and shall . . . implement . . . its guarantee." In 1905 a trust mortgage was executed over the entire line from Winnipeg to Prince Rupert, securing a bond issue of £14,000,000 of bonds to be guaranteed by the Government.

A difference arose between the company and the Government as to the meaning to be placed on the words implementing the guarantee. The Government contended that the words mean that the G.T.P. Ry. would issue its bonds to an amount which would realize $13,000 a mile on the prairie section, and pay for the amount of bonds required to pay 75% on the cost of the mountain section. The company contended that the Dominion should implement or make up the difference between the net selling price of the bonds, and par, and that there was no obligation on it to issue its bonds further than to the amount of $13,000 a mile for the prairie section or of 75% of the cost of the mountain section, no matter what they realized. The case went to the courts and the judgment of the Privy Council sustained the company and reversed the decision of the Supreme Court. A memorandum had been prepared showing the liability of the Dominion to the company under this judgment. In 1905 there were sold £3,200,000 of bonds at 92½; in 1909, there were sold £2,000,000 of bonds at 80, and in 1910, a further £2,000,000 of bonds at £80 3s. 9d. In respect of these bonds the Dominion has to pay under the judgment $4,900,000. On the basis of the estimated cost of the construction of the mountain section as made by the consulting engineer for the Government, there are yet unsold £5,515,220 of these bonds to make up the 75 per cent. upon which there is the Government guarantee, and upon which the Government will be called upon to make up in cash whatever difference there may be between the total amount issued and the amount realized for them.

A bill giving effect to this resolution was subsequently introduced in the House of Commons.

The Making of a Great Canadian Railway is the title of a volume of 350 pages by F. A. Talbot, published by Seeley, Service and Co., London, Eng., and by the Musson Book Co., Toronto. The great Canadian railway referred to is the National Transcontinental, which is being built by the Dominion Government between Moncton, N.B., and Winnipeg, and by the Grand Trunk Pacific Ry. between Winnipeg and the Pacific coast, and which will be operated by the G.T.P.R. In the opening chapter, which deals with the birth of the project, reference is made to the coming to Canada as General Manager of the G.T.R. of C. M. Hays, who is now President, both of the G.T.R. and the G.T.P.R., and by a most unaccountable error it is stated Mr. Hays "first set foot in Canada in 1899," and again "His mission to Canada in 1899 was somewhat curious." As a fact, Mr. Hays was appointed General Manager of the G.T.R. in 1896, following the reconstruction of the company under the presidency of Sir C. Rivers Wilson. The various chapters deal with the making of surveys, and the work of construction from end to end of the line, and are filled with stories of adventure by mountain, field and flood, of difficulties faced and conquered, and of the wonderful development that has sprung up in the country as section after section of the line was built and opened for traffic. The romance rather than the science of the work is dealt with and a very interesting and readable book has been written. Mr. Talbot spent the greater part of 1910 in going over the route gathering the materials for the book, which is embellished by 43 illustrations made from photographs. The price of the volume is $2.50.

The Dominion Transfer Co. has been incorporated under the Manitoba Companies Act to transport by land or water or through the air by means of vehicles, cars, ships or other methods, and whether propelled by horse, gas, steam, electricity or other power, passengers, goods, wares and merchandise of all sorts and descriptions, both within and without the province of Manitoba, and to charge and collect therefor, and other incidental business. The capital is fixed at $50,000; the office is at Winnipeg, and the following are provisional directors:—A. T. Bowes, J. A. Dack, C. Dowling, Winnipeg, and Jos. Wood, Brandon.

The Mond Nickel Company's Railway.

The Mond Nickel Co., which has for some years been located at Victoria Mines, Ont., on the C.P.R. Sault Ste. Marie branch, where it operates a smelter plant, is building a large and more extensive smelter, with all the accessories, about eight miles east of Sudbury, where the company has secured a tract of land most advantageously situated, lying in the triangle bounded by the C.P.R. main line, the C.P.R. Toronto-Montreal line, and the Canadian Northern Ry. The natural physical shape of the property has been most carefully taken advantage of in locating the different portions of the plant, giving great facilities for obtaining and handling the ore from the mines until the products leave for market. The shape of the ground affords a site for smelter, ore bins, rock houses, slag dump, track scales, shops, etc., where the ore can be handled at a minimum of cost.

The company built last year a standard gauge railway laid with 80 lb. rails, connecting the C.P.R. and the Canadian Northern Ry., running cars, its property, with spur lines and switchbacks reaching every part of the plant. The grading and bridging work is on C.P.R. specifications, cuttings 22 ft. wide, embankments 16 ft. Curvature and gradients are as light as can be secured in reaching the various elevations of the different part of the plant, and the lines were located after exhaustive surveys. The roast yards are situated on a level bench adjoining the Canadian Northern Ry., branching off from two parallel sidings on the company's main line, where it leaves the C.N.R. The yard is half a mile long by 350 ft. wide, with six tracks in pairs and three beds.

The property is all timbered, which gives the necessary fuel sufficient to last a long time. At the junction with the C.P.R. the latter company has laid long sidings, and is building a station with loading platform, etc. Water supply for the smelter works is obtained from the Wanapitei River, where the company has installed a pump house and laid a pipe line of about two miles to the works. The electrical power is obtained from the Wanapitei Light and Power Co., whose plant is situated a short distance from the junction of the Mond Nickel Co.'s main line with the C.P.R.

During the past summer all the railway sidings, amounting to about 10 miles, were completed by Angus Sinclair, C.E., contractor, and at present the smelter building of concrete is being built, the work being carried on successfully during the winter months by the use of hot water for cement.

The whole work is under the charge of C. V. Corless, Manager of the Victoria Mine, and J. F. Robertson, Chief Engineer for the company, and it is expected the new plant will be in operation towards the end of this year.

A Mallet Locomotive of large size recently built for the Pennsylvania Rd. by the American Locomotive Co., has the special feature of being a simple instead of a compound engine. It has 16 driving wheels of 56 ins. diameter, which are arranged in two groups, with a pair of 27 x 28-in. cylinders to each group. The weight of engine and tender is about 335 tons, which is 136 tons heavier than the largest freight engines now in service on this road. The total heating surface is 7723 sq. ft., and the steam pressure is only 160 lb. The total length over engine and tender is 98 ft. 4 in. The locomotive has been built largely as an experiment, and will be tried in freight service on the steep grades of the line in western Pennsylvania.

Uniform Specifications for Railway Roadbed and Ballasting.

At the Canadian Society of Civil Engineers' annual meeting in Montreal recently a report was submitted from the committee on roadbed and ballasting, of which J. G. Sullivan, Chief Engineer, Western Lines, C.P.R., is chairman, recommending for consideration specifications under the following headings:—General, clearing, grubbing, grading, excavations and embankments, borrow pits, side ditches, etc., classification, price and measurement of grading, alternate optional overhaul clause, foundations, tunnel excavations, timber structures, piling, sheet piling, frame trestles, log and timber culverts, concrete culverts and culvert pipes, riprapping, paving, revision of existing line or widening for additional track, track, general provisions and conditions.

W. B. Mackenzie, Chief Engineer, Intercolonial Ry., said he heard nothing of the proposed specifications until about a month before the meeting. He spent a couple of days going over it and sent a memo of his views on certain portions to the chairman of the committee, but the report had been presented as originally prepared, without any change. He expressed himself in favor of the Association adopting standard specifications and proceeded to discuss the specifications as submitted in detail, pointing out numerous paragraphs which he thought should be revised.

After considerable discussion by other members, including G. A. Mountain, Chief Engineer, Board of Railway Commissioners; S. B. Clement, Chief Engineer, Temiskaming and Northern Ontario Ry.; G. H. Duggan, Chief Engineer. Dominion Bridge Co., and others, and the proposal of a motion and several amendments it was decided to refer the report to the society's various branches for discussion and report, that members who cannot attend the meetings be asked to send in their opinions or suggestions by March 1; that the committee consider the same and ask for a letter ballot of the members on the final report by June 1.

Telephone Train Dispatching on the Canadian Pacific Railway.

In our January issue we gave complete details of the C.P.R. telephone train dispatching circuits, showing a total of 3,932 miles so equipped, with 516 stations. We are officially advised that appropriations have been made for the equipment of the following additional circuits:—

	Miles.
Kamloops to North Bend, B.C.	121
North Bend to Vancouver, B.C.	129
Medicine Hat to Lethbridge, Alta.	116
Moose Jaw to North Portal, Sask.	167
Guelph Jct., Goderich and Listowel Branch, Ont.	112
Grand Mere and St. Gabriel branch, Que.	56
Total	701

The following equipment will be used on the different sections:—

Between Vancouver and Kamloops, selector and Kellogg telephone equipment.

Medicine Hat to Lethbridge, Gill selector and Northern Electric & Mfg. Co.'s telephone equipment.

Moose Jaw to North Portal, Sandwich selector and Kellogg telephone equipment.

Goderich and Listowell branches, Gill selector and Northern Electric and Mfg. Co.'s telephone equipment.

Grand Mere and St. Gabriel branches. Gill selector and Northern Electric and Mfg. Co.'s telephone equipment.

Railways and Canals Department's Expenditures, Etc.

The total expenditure of the Railways and Canals Department for the year ended Dec. 31, 1911, was $40,180,326.81, of which $2,369.52 was expenditure common to both branches. The total income was $10,470,532.87. The total expenditure on railways and canals prior to and since Confederation is $606,502,600.32, of which $812,727.84 is on general account common to both branches. The total revenues collected are $171,784,079.86.

The total railway expenditure for the year was $36,301,979.24, of which $24,760,029.58 was charged to capital, $1,503,070.89 to income, and $10,038,878.77 to revenue. The expenditure on capital account included $23,488,208.40 for the eastern division of the National Transcontinental Ry.; $184,149.81 for the railway to Hudson Bay, and $227,563.40 for the Quebec Bridge. The income account included $1,284,892.04 paid as subsidies to railways; $164,392.32 for the Board of Railway Commissioners, and $21,619.34 for inspection of the Grand Trunk Pacific Ry.

The expenditure on the Intercolonial Ry. included the working expenses of $9,595,976.79 charged to revenue account, and $762,869.06 charged to capital account; while $17,797.98 was charged to revenue account for the maintenance of the Windsor branch. Of the expenditure on the Prince Edward Island Ry., $424,104 was charged to revenue account and $94,320.56 to capital account.

The total expenditure prior to and since Confederation amounts to $261,414,694.87 on capital account; $214,073,844.19 covering the operation of the Government lines; $42,735,008.32 subsidies to railways other than the C.P.R. main line, making a total of $475,489,401.56. The expenditure prior to Confederation amounted to $13,881,460.65 on portions of what is now the Intercolonial Ry. and the Prince Edward Island Ry.

The total expenditure on canals for the year was $3,875,978.05, of which $2,349,474.49 was charged to capital account; $440,269.03 to income account; $595,894.79 for staff and $490,339.74 for repairs, these two amounts being charged to revenue account. Since June 22, 1905, when the tolls for the passage of vessels and goods along the canals were abolished, the revenues for the canal branch have arisen from hydraulic rents and miscellaneous sources. The amount received during the year was $221,138.49, of which $187,908.53 accrued from hydraulic rents. The total expenditure on canals prior to and since Confederation amounts to $99,331,923.86 on capital account, and $30,868,547.06 from the consolidated funds for operation, maintenance and repairs. The expenditure prior to Confederation was $20,593,866.13. The total revenue collected amounts to $14,377,492.63.

Canadian Northern Ry. Tie Preservation.—A press report recently stated that at the plant which is being established at Fort Frances, Ont., for treating Canadian Northern Ry. ties, poplar ties were to be treated instead of those of other woods usually used. We are officially advised that this is incorrect, as ties made from all woods in the vicinity of the Rainy River will be treated, including pitch pine, red pine or Norway, and tamarack, also probably some spruce.

Toronto Mail and Empire—"Fifty millions for railway extensions in the Canadian West this year! That is equivalent to $25 for every inhabitant. It is not surprising that the West experiences a few growing pains."

Orders by the Board of Railway Commissioners.

Beginning with June, 1904, we have 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 hearing 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 assignd to them.

15815. Jan. 19.—Extending to Mar. 1 time for execution of commissions and for report to the Board in connection with examination of witnesses in Dawson Board of Trade vs. White Pass and Yukon Route, as provided by order 15719, Jan. 2.

15816. Jan. 17.—Authorizing G.T.P. Branch Lines Co. to build spur from its Mountain Park coal branch for Yellownead Pass Coal and Coke Co., Alberta.

15817. Jan. 18.—Approving C.N.O.R. location through Springer, Field, Badgerow, Gibbons and Crerar tps., Nipissing district, mileage 366 to 386 from Montreal.

15818. Jan. 18.—Authorizing town of Leamington, Ont., to carry street over M.C.R. right of way.

15819. Jan. 18.—General order re less than carload freight to be carried in heated cars. This order is given in full on another page.

15820. Jan. 20.—Amending order 15741, Jan. 3, by providing that C.P.R. install cover plates where tracks pass through the sidewalk, in connection with spur for Swift Canadian Co., Winnipeg.

15821. Jan. 19.—Approving Maine Central Rd. bylaw authorizing W. K. Sanderson, G.F.A., H. D. Waldron, G.P.A., and F. S. Davis, Chief of Tariff Bureau, to issue tariffs.

15822. Jan. 18.—Authorizing International Bridge and Terminal Co. to build its bridge and railway across Church St., Fort Frances, Ont., crossing to be protected by gates.

15823. Jan. 19.—Authorizing C.P.R. to build its Lacombe Easterly branch of Calgary and Edmonton Ry. across 10 highways, divert same, and close up portions of diversions, mileage 129.47 to 139.22, Alta.

15824. Jan. 20.—Authorizing Vancouver, Victoria and Eastern Ry. (G.N.R.) to build portion of tram track on Front St., Vancouver, B.C.

15825. Jan. 19.—Approving location of G.T.P.R. station at Fitzhugh, Alta.

15826. Jan. 22.—Approving location of C.N.O.R. station grounds at Portland, Ont.

15827. Jan. 20.—Authorizing C.N.O.R. to cross public road on lot 8, between cons. 2 and 3, Dorion tp., Thunder Bay District.

15828. Jan. 23.—Authorizing Brooke tp., Ont., to build McDougall drain under Canada Southern Ry.

15829. Jan. 23.—Approving location of C.N.O.R. station grounds at Dwyer Hill.

15830. Jan. 24.—Extending to Feb. 15, time for erection of gates by G.T.R. at John St., Toronto.

15831. Jan. 24.—Extending to June 30 time for building subway at Elizabeth St., West Toronto, Ont.

15832. Jan. 24.—Authorizing city of Strathcona, Alta., to build level crossing over Calgary and Edmonton Ry. (C.P.R.) at Third Ave North.

15833. Jan. 24.—Authorizing C.P.R. to divert highway between secs. 9 and 4, Naples station, mileage 85.3, Napinka subdivision.

15834 to 15836. Jan. 24.—Dismissing applications of city of Strathcona, Alta., for level crossings over Calgary and Edmonton Ry. (C.P.R.) at three points.

15837. Jan. 25.—Approving C.P.R. proposed addition to bridge and change of grade across Mountain St., Montreal.

15838. Jan. 24.—Authorizing G.T.R. to rebuild swing bridge over Rideau canal at Ottawa.

15839. Jan. 24.—Relieving G.T.R. from further protection at Adelaide St., Mount Bridges, Ont.

15840. Jan. 24.—Authorizing British Columbia Government to build highway crossing over C.P.R. one mile north of Okanagan Landing.

15841, 15842. Jan. 23.—Authorizing C.N.O.R. to cross public road in lot 8, between cons. 1 and G, Medora tp., Muskoka District, and to cross Jane St., York tp., and build bridge to carry highway over track.

15843. Jan. 23.—Extending to Apr. 9, time for installation of bell by C.P.R. near St. Basile, Que.

15844. Jan. 27.—Disallowing G.T.R. and C.P.R. tariffs on rope, etc., until further order.

15845. Jan. 26.—Authorizing C.P.R. to build its Pheasant Hills branch across 31 highways, mileage 202.00 to 252.92, Man.

15846. Jan. 27.—Adding Halton county as party to application of Nelson tp. for protection of G.T.R. Plains Road crossing west of Burlington Jct., Ont.

15847. Jan. 25.—Authorizing G.T.R. to rebuild bridge 236 over Chateauguay River, mileage 43.82, at Brysons, Que.

15848. Jan. 25.—Amending order 15498, Nov. 28, 1911, re C.P.R. spur to ballast pit at Elson, Alta.

15849, 15850. Jan. 25.—Authorizing C.P.R. to build spurs for Redcliffe Realty Co., Redcliffe Brick and Coal Co., and Quinlan Carter Co. in Alberta.

15851. Jan. 25.—Ordering C.N.R. within six weeks to provide farm undercrossing for A. J. Hunter, Sleeman, Ont.

15852. Jan. 25.—Approving plans of Morden drain to be built under M.C.R. in Aldborough tp., Ont.

15853. Jan. 31.—Amending order 15802, Jan. 11, re Canadian Copper Co.'s spur.

15854. Jan. 31.—Naming express collection and delivery limits for Magog, Que.

15855. Feb. 8.—Extending for three weeks time for filing plans for C.P.R. interlocker at Woodstock, Ont., as required by order 15451, Nov. 7, 1911.

15856. Jan. 31.—Authorizing Smart Turner Machine Co. to erect travelling crane across G.T.R. siding at Hamilton, Ont.

15857. Jan. 31.—Ordering that cost of gates at M.C.R. crossing east of Welland station, Ont., as provided by order 10568, Feb. 26, 1910, be borne, 15% by town of Welland, 10% by Crowland tp., and remainder by M.C.R.

15858. Feb. 1.—Disallowing Supplement 1 to Boston and Maine Rd. joint and proportional class rate and commodity tariff C.R.C. 1219.

15859. Feb. 1.—Authorizing T.H. and B.R. to build siding for Armstrong Supply Co., Hamilton, Ont., and rescinding order 15745, Jan. 23.

15860. Jan. 31.—Approving revised location of G.T.P. Branch Lines Co. Cutknife Branch, mileage 31.86 to 55.84, Sask.

15861. Jan. 31.—Ordering that town of Simcoe, Ont., pay G.T.R. 15% of cost of protection of crossing at Norfolk St., required by order 15387, Nov. 15, 1911.

15862. Feb. 1.—Authorizing G.T.R. to build siding for Watrous Engine Works, Brantford, Ont., and rescinding order 15255, Oct. 11, 1911..

15863. Feb. 2.—Authorizing G.T.R. to rebuild swing bridge over Richelieu River, mileage 8.75, District 13, Que.

15864, 15865. Feb. 1.—Authorizing C.P.R. to open for traffic its Moose Jaw Southwesterly branch from near Moose Jaw, to mileage 27.4, and its Swift Current Southeasterly branch from near Swift Current to Neville, Sask., mileage 27.4, speed of trains limited to 15 miles an hour.

15866. Feb. 1.—Authorizing T.H. and B.R. to cross at grade Newport St., Brantford, Ont.

15867 to 15869. Jan. 29, Feb. 1.—Approving C.N.R. location through tps. 10-11, r. 3-4, mileage 69.78 to 77.27; through tp. 11, r. 26-30, w. 3 m., Sask., mileage 25.38 to 51.68; and through tps. 5-6, r. 26-28, w. 4 m., Alta., mileage 120.27 to 141.09.

15870. Feb. 1.—Approving location of C.N.O.R. station grounds at Richmond.

15871, 15872. Jan. 27, 29. — Authorizing C.N.R. to cross 13 highways with its Calgary southerly line, Alta., and 10 highways on its Swift Current line, Sask.

15873. Jan. 30.—Authorizing C.P.R. and Montreal St. Ry. to use crossing at Papineau Ave., Montreal, without coming to stop, interlocker being completed.

15874, 15875. Jan. 27, 31.—Authorizing C.P.R. to build spurs for McGillivray Creek Coal and Coke Co., near Coleman, Alta., and for Nicola Valley Pine Lumber Co., near Canford, B.C.

15876. Jan. 30.—Authorizing C.N.R. to open for traffic its Rossburn extension from Hamton to the main line east of Canora, 15 miles, Sask.

15877. Feb. 1.—Approving location of C.N.O.R. station grounds at Newburgh.

15878, 15879. Jan. 27.—Approving C.N.R. location through tps. 9-6, r. 25, mileage 106.37 to 120.27, and tp. 52, r. 24, w. 4 m., mileage 44.40 to 45.97, Alta.

15880, 15881. Jan. 31, 29.—Authorizing C.N.R. to cross with its Grosse Isle branch 15 highways and 9 highways in Woodlands and Rockwood rural municipalities, Man., respectively.

15882. Jan. 26.—Authorizing C.N. Pacific Ry. to use C.P.R. Mission branch crossing for construction purposes only until June 30, under condition that all trains be brought to a stop, subject to terms of order 14577.

15883. Jan. 27.—Approving location of C.P.R. standard portable station on Yahk branch, 5 miles north of Kingsgate, B.C.

15884. Jan. 27.—Authorizing Georgian Bay and Seaboard Ry. (C.P.R.) to build farm crossing, mileage 25, lot 3, con. 6, South Orillia tp., Ont.

15885. Feb. 1.—Relieving C.P.R. from further protection at crossing in Blind River. Ont.

15886, 15887. Feb. 1.—Approving change in location of C.P.R. stations at Ste. Rose and St. Martin Jct., Que.

15888. Feb. 2.—Authorizing C.P.R. to build spur for Construction and Paving Co., North Toronto, Ont.

15889, 15890. Jan. 30.—Authorizing C.P.R. to use bridge over Scugog River, near Lindsay, and to use 10 bridges between mileage 20.64 and 81.13, all on Georgian Bay and Seaboard Ry., Ont.

15891. Jan. 30.—Authorizing C.P.R. to operate trains under bridge 4.37, Walkerton subdivision, Ont.

15892. Jan. 27.—Authorizing C.P.R. and G.T.P.R. to use crossing in s.w. ¼ sec. 33, tp. 34, r. 27, w. 2 m., Sask., interlocker being completed.

15893. Jan. 27.—Certifying correction to G.T.P. Branch Lines Co.'s location plan of its Tofield-Calgary branch.

15894. Jan. 29.—Authorizing G.T.P. Branch Lines Co. and C.N.R. to use interlocking plant at crossing in n.e. ¼ sec. 20, tp. 38, r. 26, w. 2 m., at Dana, Sask.

15895. Jan. 29.—Ordering Pere Marquette Rd. to erect fences in middle part of lot 14, con. 2, Colchester South, Ont.

15896. Jan. 31.—Authorizing Gloucester tp., Ont., to continue Queen Mary St. over C.P.R.

15897. Feb. 2.—Authorizing C.P.R. to open for traffic its second track from Romford Jct. to Crete, Ont.

15898. Feb. 3.—Approving Lake Erie and Northern Ry. location from Grand River, Brantford, to Port Dover, Ont.

15899, 15900. Feb. 1.—Approving standard clearance of G.T.P.R. coal chutes, also for ice house on side tracks.

15901. Jan. 1.—Relieving C.N.R. from further protection of crossing between mileposts 475 and 476, east of Aberdeen, Sask.

15902. Jan. 30.—Amending order 15692, Dec. 27, 1911, by providing that bell at C.P.R. crossing, 1¼ miles east of Ivanhoe station, Ont., be installed before June 29.

15903. Feb. 5.—Extending to Mar. 15 time for installation by G.T.R. of interlocking plant at C.P.R. crossing, Nipissing Jct., Ont., to connection with T. and N.O.R.

15904. Feb. 6.—Approving C.N.O.R. revised location through Loughborough tp., mileage 164.59 to 164.76.

15905, 15906. Jan. 27.—Authorizing C.N.R. to cross two public roads on its Grosse Isle branch, Rockwood rural municipality, Man.

15907. Feb. 5.—Authorizing C.N.R. to cross with its Strathcona-Camrose branch, seven highways in Alberta.

15908. Feb. 6.—Further extending to June 30 time for Hull Electric Co. to complete equipment of cars with power brakes, as required by order 10462, May 3, 1910.

15909. Feb. 6.—Authorizing C.N.R. to build spur on its Vegreville-Calgary line for Rose Deer Coal Mining Co.

15910. Feb. 7.—Amending order 15709, Dec. 29, 1911, by authorizing C.P.R. to build three spurs, instead of two, for Imperial Oil Co., Winnipeg.

15911. Feb. 5.—Authorizing C.P.R. to build across and divert highway at mileage 210.03 at west boundary of sec. 18, tp. 18, r. 16, w. 3 m., Sask.

15912. Feb. 7.—Authorizing C.P.R. to build spur for Saskatchewan Flour Mills Co., Moose Jaw.

15913. Feb. 6.—Amending order 15816, Jan. 17, re G.T.P.R. spur for Yellowhead Pass Coal and Coke Co.

15914. Feb. 6.—Authorizing V.V.E.R. and N. Co. and Vancouver, Fraser Valley and Southern Ry. to use crossing near Ardley, B.C., interlocker being completed.

15915. Feb. 5.—Dismissing application of city of St. Thomas, Ont., to continue Inkerman St. across G.T.R.

15916. Feb. 5.—Removing speed limitation on G.T.P.R. Yorkton branch from Melville to Canora, Sask.

15917. Feb. 8.—Extending to June 1, time for installation of interlocking plant by C.N.R. at C.P.R. crossing near Forward, Sask.

15918. Feb. 8.—Approving location of C.N.R. station at Clyde, Alta.

15919. Feb. 8.—Authorizing C.P.R. to divert streams by 8 ft. concrete culvert at mileage 110.1, Cascade subdivision, B.C.

15920, 15921. Feb. 8.—Authorizing G.T.R. to rebuild bridges over Mud River at milepost 4.87, Rockland branch and, and at milepost 8.06, Hawkesbury branch, Ont.

15922. Feb. 8.—Relieving C.P.R. from erecting fences, gates and cattle guards, on Laggan subdivision, B.C.

15923. Feb. 6.—Authorizing village of Luseland, Sask., to build highway across C.P.R. at mileage 15.95.

15924. Feb. 10.—Authorizing C.P.R. to use five bridges on its Havelock and Toronto subdivision, Ont.

15925. Feb. 10.—Authorizing Lake Erie and Detroit River Ry. (P.M.R.) to remove derails and signals from connection with C.P.R.; and re-arrange interlocking in tower so that towerman can give freight trains a through route to and from the C.P.R. Windsor yard, Ont.

15926. Feb. 5.—Approving Lake Erie and Northern Ry. overhead crossing of T.H. & B. R. and M.C.R. at Waterford, Ont.

15927. Feb. 6.—Authorizing Lachine, Jacques Cartier and Maisonneuve Ry. (G.T.R.) to cross C.P.R. in Montreal, at entrance to Angus shops and near Nolan St., and to take C.P.R. lands. C.P.R. to re-arrange its spurs into Angus shops, compensation to be fixed by agreement.

15928. Feb. 12.—Rescinding order 15254, Oct. 11, 1911, re G.T.R. spur near Jex St., Brantford, Ont.

15929. Feb. 12.—Authorizing C.P.R. to cross with its Pheasant Hills branch, 25 highways, mileage 296.11 to 317.15, Sask.

15930. Feb. 10.—Authorizing C.N.R. to cross with its Calgary Southerly line, 20 highways in Alberta.

15931. Feb. 13.—Approving Kettle Valley Ry. location from mileage 28 to 52 from Hope, B.C.

15932. Feb. 12.—Authorizing C.P.R. to open for traffic portion of railway near Steel siding, mileage 92 to 95, Thunder Bay District, Ont.

15933. Feb. 13.—Approving location of Algoma Central and Hudson Bay Ry. station at Tagona, Ont.

15934, 15935. Feb. 12.—Authorizing C.P.R. to build spurs for Canadian Lumber Yards, Winnipeg, Man., and Crow's Nest Pass Lumber Co., near Wardner, B.C.

15936. Feb. 12.—Authorizing C.N.O.R. to cross road between cons. 1 and 2, lot 8, South Crosby tp.

15937. Feb. 12.—Dismissing application of Canadian Fraternal Association, for order prohibiting G.T.R., G.T.P.R., C.N.R. and M.C.R. from collecting 25c. from delegates attending conventions for certifying their certificates.

15938. Feb. 6.—Authorizing Lachine, Jacques Cartier and Maisonneuve Ry. (G.T.R.) to cross overhead, Rachael, Hogan, Bercy and Sherbrooke Sts Montreal.

15939. Feb. 12.—Authorizing C.N.O.R. to cross 11 highways in Markham tp., mileage 14.9 to 25.69 northerly from new union station site, Toronto.

15940. Feb. 13.—Authorizing C.N.O.R. to open for freight traffic its line from Belleville to Deseronto, 16½ miles.

15841. Feb. 3.—Authorizing British Columbia Ry. (C.P.R.) to build spur from Waldo branch to Baynes Lake across G.N.R., at mileage 1.4, lot 1899 E.K.D., semaphore protection to be provided.

15942. Feb. 13.—Authorizing N.Y.C. & H.R.R. to rebuild bridge A38 on its Adirondack Division, 0.3 miles north of Athelstan.

15943. Feb. 12.—Approving Edmonton, Dunvegan and British Columbia Ry. location through tps. 53-56, w. 4 m Alta.

15944 to 15946. Feb. 3, 10.—Authorizing C.P.R. to build spur with three sub-spurs, in Swift Current, Sask.; spur for Frontenac Breweries, Mile End, Que., and spur for D. D. Wood, Winnipeg, Man.

15947. Feb. 12.—General order re rules and regulations for inspection of locomotive boilers, etc.

15948. Feb. 5.—Approving location of G.T.P.R. station site at Stony Plains, Alta.

15949. Feb. 12.—Authrizing G. H. Shaw, G.T.M. Niagara, St. Catharines and Toronto Ry. to prepare and issue tariffs of tolls.

15959. Feb. 8.—Ordering C.P.R. before July 1 to install electric bells at crossing in Coldwater, Ont., 20% to be paid from railway grade crossing fund.

15951, 15952. Feb. 12.—Authorizing C.N.O.R. to cross Ford St., Toronto, and Toronto Suburban Ry., overhead, and to cross seven highways in Etobicoke tp.

15953. Feb. 12.—Ordering Bell Telephone Co. to amend supplement 42, C.R.C. 1708, and providing certain changes in rates to subscribers between Toronto city and island.

15954. Feb. 9.—Authorizing Georgian Bay and Seaboard Ry. (C.P.R.) to cross St. Patrick and Dermot Sts., Ops tp., Ont., at mileage 72.21, and to take certain lands of W. B. Fee for road diversion.

15955. Feb. 6.—Approving location of C.N.O.R. station at Brockville Jct.

15956. Feb. 12.—Ordering Grand Valley Ry. Co. to pay T.H. & B.R. $200 for old diamond at crossing on South Market St., Brantford, Ont.

15957. Feb. 9.—Authorizing C.P.R. to cross with its double track, McTavish St., Fort William, Ont.

15958, 15959. Feb. 9.—Authorizing C.N.O.R. to connect with G.T.R. at Cobourg, and to cross Russell Road, at Junction Gore.

15960. Feb. 14.—Ordering that G.T.R. crossing near Kettle Creek Bridge, St. Thomas, Ont., be protected day and night by watchmen, 15% to be paid by Yarmouth tp., and 15% by city of St. Thomas.

15961. Feb. 15.—General order re freight rates, west of Port Arthur, adding British Columbia to enquiry.

15962. Feb. 15.—Ordering G.T.R. to install within 90 days, electric bell at crossing of Grande Ile Ave., Valleyfield, Jue.

15963, 15964. Feb. 14.—Correcting errors in G.T.P. Branch Lines Co.'s location of Biggar-Calgary branch.

15965. Feb. 12.—Relieving C.P.R. from erecting fences, gates, and cattle guards on portions of Atlantic, Eastern Ontario and Lake Superior Divisions.

15966. Feb. 15.—Authorizing Georgian Bay and Seaboard Ry. (C.P.R.) to use bridges at mileage 20.64, 23.4 and 24.3 at Couchiching Narrows, Ont.

15967. Feb. 3.—Authorizing C.P.R. to build spur for A. Bowerman, Saskatoon, Sask.

15968. an. 31.—Authorizing C.N.R. to cross with its Grosse Isle branch, 12 highways in Woodlands municipality, Man.

15969. Feb .13.—Amending order 15667, Dec. 15, 1911, by substituting new plans re spur for St. Marys Portland Cement Co. and Horse Shoe Quarry, Blanchard tp., Ont.

15970. Feb .15.—Extending to July 1, time for completion of C.N.R. spur in Hudson Bay Reserve, Edmonton, Alta.

15971. Feb .15.—Approving coal chute clearances of G.T.P.R.

15972. Feb. 14.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to cross highways from mileage 0 to 30, Alta.

15973. Feb. 15.—Adding Bentinck tp., Ont., to application re protection of Walkerton and Lucknow Ry. (C.P.R.) crossing.

15974. Feb. 14.—Approving new plan and rescinding order 14066, June 24, 1911, which approved plan for installation of block signals by T.H. & B.R. between Hamilton and Vinemont, Ont.

15975. Feb. 15.—Correcting errors in G.T.P. Branch Lines Co.'s location plan of its Biggar-Calgary branch.

15976. Feb. 16.—Regulating connection between G.T.R. and C.P.R. trains at Brockville, Ont.

15977. Feb. 15.—Approving location of C.N.O.R. station grounds at St. Joseph, Que.

15978. Feb. 14.—Authorizing C.N.O.R. to cross C.P.R. overhead, on lot 11, con. 2, Nepean tp.

15979. Feb. 16.—Correcting errors in G.T.P. Branch Lines Co.'s location of its Biggar-Calgary branch.

15980. Feb. 15.—Authorizing C.N.R. to build spur to Round Hill Collieries, Alta.

15981. Feb. 16.—Approving T.H. & B.R. bylaw authorizing F. F. Backus, G.F. & P.A., and G. C. Martin, A.G.F. & P.A., to prepare and issue tariffs of tolls.

1592. Feb. 14.—Authorizing York tp., Ont., to build bridge over G.T.R. belt line, east of Yonge St., Toronto, and to open up new highway.

15983. Feb. 15.—Authorizing G.T.P.R to operate spur for P. Burns & Co., Edmonton, Alta.

15984, 15985. Feb. 16.—Approving revised location of C.P.R. Virden-McAuley branch from mileage 14 to 36.27, Man. and Sask., and revised location of Kerrobert northeasterly branch from mileage 0 to 20.2, Sask.

15986. Feb. 16.—Authorizing C.N.O.R. to cross three highways in Nepean tp.

15987. Feb. 16.—Rescinding order 14379, July 22, 1911, and authorizing C.P.R. to divert public road between cons. 7 and 8, Eldon tp., and to cross diversion at mileage 56.4, by overhead bridge, also to compensate J. McArthur for any damages sustained by closhighway.

15988. Feb. 17.—General order re ash pans on locomotives.

15989. Feb. 16.—Authorizing G.T.P.R. to cross C.N.R. with its second track at Empire Ave., Fort William, Ont.

15990. Feb. 15.—Authorizing C.P.R. to build spur for Manitoba Bridge and Iron Works, at Higgins Ave., Winnipeg.

15991. Feb. 16.—Approving revised location of James Bay and Eastern Ry. (C.N.R.) through Demeules tp., Que.

15992. Feb. 16.—Ordering C.N.R. under penalty of $10 a day, to provide farm crossing for E. K. Glidden, Vermilion, Alta., before May 15.

15993. Feb. 15.—Dismissing application of Dominion Sugar Co., Wallaceburg, Ont., re re-adjustment of rates on sugar in carloads from Wallaceburg to Winnipeg and western points.

15994. Feb. 17.—Naming express delivery and collection limits for Kamloops, B.C.

15995. Feb. 16.—General order respecting fireguards.

15996, 15997. Feb. 17.—Approving C.N.R. standard third and second class station plans.

15998. Feb. 6.—Ordering C.P.R. to place a caretaker at Rutter station, between 7 a.m. and 6 p.m. daily, except Sundays.

15999. Feb. 17.—Authorizing Esquimalt and Nanaimo Ry. to build two sidings near Duncans on Vancouver Island for Island Lumber Co.

16000. Feb. 17.—Authorizing C.P.R. to use bridge 4.3 on its Montreal Terminals subdivision, Eastern Division.

16001 to 16003. Feb. 17.—Approving revised locations of James Bay and Eastern Ry. (C.N.R.) through Demeules and Dufferin tps., mileage 24.2 to 24.8, 26.2 to 28.9, and 29.26 to 30.2.

16004. Feb. 15.—Authorizing C.N.O.R. to cross under C.P.R. at Lambton, Ont.

16005. Feb. 16.—Ordering that Toronto tp. pay G.T.R. 20% of cost of watchman at Stave Bank crossing, near Port Credit, Ont.

Regulations for Fireguards in Alberta and Saskatchewan.

The Board of Railway Commissioners passed the following order 15995, Feb. 16, re order 3245, July 4, 1907, respecting fireguards, and the provisions of 8-9 Edward VII., chap. 32, sec. 10. Upon hearing counsel for the Canadian Pacific, Grand Trunk Pacific, and Canadian Northern Railways, as well as perusing applications and suggestions from various persons and public bodies, it is ordered as follows:—

1. Paragraphs 8, 9, 10, 11, 12 and 14 of order 3245 are rescinded.

2. Every railway company subject to the Board's authority, operating a steam railway in Alberta or Saskatchewan, or both, shall, on or before Aug. 1 in each year, construct, along each side of the right of way, and not less than 300 ft. distant from the centre, a fireguard consisting of a plowed strip of land not less than 16 ft. wide.

3. Every railway company shall, between Aug. 1 and Dec. 1 in each year, keep the said fireguards, and each parcel or section of land between them and the railway, free from dead or dry grass, weeds, or other unnecessary combustible matter.

4. Wherever the owner or occupant of land objects to the construction of fireguards, on the ground that it would involve unreasonable loss or damage to property; or where the owner or occupant refuses to allow the construction and maintenance of such guards before the terms and conditions thereof are considered by the Board, pursuant to 8 and 9 Edward VII., chap. 32, sec. 10—the company, in either case, shall at once refer the matter to the Board, giving full particulars thereof, and shall in the meantime refrain from proceeding with the work.

5. No railway company shall permit its employes, agents, or contractors to enter upon land under cultivation to construct fireguards until it has caused to be given to the owner or occupant of such land at least two weeks notice of its intention so to enter.

6. If the agent, employe, or contractor of any railway company leaves gates open, or cuts or leaves fences down whereby stock or crops are injured, or does any other unnecessary damage to property in connection with the construction of fireguards, every such agent, employe, or contractor, shall, in addition to any civil liability for damages, be subject to a penalty of $25 for every such offence.

7. Every railway company shall have the right to apply to the Board to be relieved from the terms of this order where the nature of the country would render it either impossible or useless to construct such guards.

8. Every railway company disobeying or failing to comply with the provisions of these regulations, shall, in addition to any pecuniary liability for damages, be further liable to a penalty of $100 for every disobedience or failure.

RAILWAY DEVELOPMENT.

Projected Lines, Surveys, Construction, Betterments, Etc.

Algoma Central and Hudson Bay Ry.—The junction point of this line with the C.P.R. transcontinental line, about a mile from Hobon, Ont., has been named Franz, after the company's Vice President and General Manager. Several bridges have to be built, and 14 miles of track laid to complete the line through from Sault Ste. Marie, via Hawk Lake Jct., where connection is made with the Michipicoten branch, to Hobon, and it is expected that this work will be finished by Aug. Good progress is reported as being made with the line from Hobon to the National Transcontinental Ry., the junction point with which has been named Grant, and is about 130 miles westerly from Cochrane. (Feb., pg. 67.)

Alberta Central Ry.—See Canadian Pacific Ry. Construction, Betterments, etc., on another page.

Alberta Pacific Ry—The Alberta Legislature has extended the time within which this projected railway may be built. (Jan., pg. 21.)

Ansley Coal Co.—The Medicine Hat, Alta., council has been asked to extend its industrial spur line to the race track to meet a spur proposed to be built from the company's colliery. The new industries committee was asked to report on the matter.

Argenteuil Ry.—Application is being made to the Quebec Legislature to incorporate a company with this title to build a railway on lot 15, 16 or 17 on the boundary between Harrington and Grandville tps., in range 11, to the Grandville canal, in the first range of Grandville tp. Beique, Beique and Beique, Montreal, are solicitors for applicants.

Bagotville and St. Lawrence Ry.—The Quebec Legislature has incorporated a company with this title to build a railway from St. Alphonse or Grand Bay to Murray Bay, Que. The provisional directors are: Mayor Drouin, G. Tanguay, Quebec; A. Lepage, Bagotville, Que.; J. Tremblay, Ste. Anne, Que.; H. Patton, Albany, N.Y. (Feb., pg. 67.)

Burrard Inlet Tunnel and Bridge Co.—The North Vancouver district council has decided to subscribe for an additional $150,000 of stock in the company, bringing its interest in stock in the company up to $400,000, and the North Vancouver town council will at its next meeting consider what further amount of stock it will take. The Shipmasters' Association passed a resolution, Feb. 3, favoring the building of a high level instead of a low level bridge with a swing span as proposed. (Jan., pg. 21.)

Calgary and Fernie Ry.—In the bill before the Dominion Parliament to grant an extension of time for the building of this projected railway, it is also provided that the first section of the act of incorporation, passed in 1906, be amended by substituting of the names of J. R. Lawrey, S. S. Manahan, Victoria, B.C., and A. Mutz, Fernie, B.C., for W. R. Ross. J. S. T. Alexander, I. R. Poole. Fernie, and D. McE. Eberts, Victoria. (Dec., 1911, pg. 1137.)

Central Ry. of Canada.—We are officially advised that a preliminary location has been made from Montreal to Midland, Ont., and from the main line at St. Andrews, Que., to Ste. Agathe, Que. Complete surveys and profile and final location have been made from Montreal to South Indian, via St. Eustache, St. Placide, Oka, St. Andrews, Hawkesbury, McAlpin, Lemieux. A large amount of the right of way has been purchased, including that for a terminal in Montreal. Rails and ties have been ordered for 50 miles. The bridges over Riviere des Prairies, near Montreal, Riviere des Milles Iles, at St. Eustache, and over the Ottawa River at St. Andrews have been commenced. Other construction will be pushed directly weather permits. C. N. Armstrong, Montreal, is Managing Director; F. Stuart Williamson, Montreal, Chief Engineer, and C. J. Wills and Sons. London, Eng., and Montreal, are the contractors.

Chicago, Milwaukee and St. Paul Ry.—A free right of way is reported to have been offered to the company for a line from Fargo to Grand Forks, N.D., the line to be continued from that point to Winnipeg, Man. (Oct., 1911, pg. 935.)

Cochrane and Alberta Ry.—A company with this title has been incorporated by the Alberta Legislature to build a railway from Cochrane to Bonnie Brae coal mine, and thence southerly to the International boundary, about 20 miles. In passing through the house the name of the company was changed from that proposed—the Moose Mountain Ry.—to the C. and A. Ry. Co., and the route was more clearly defined than in the original notice. (See Moose Mountain Ry., Feb., pg. 68.)

Delaware and Hudson Co.—We are officially advised that the Quebec, Montreal and Southern Ry., which, with the Napierville Jct. Ry. form the D. and H. Co.'s lines in Canada, is not building a new bridge over the Yamaska River at Sorel, Que., as stated in press reports. The ice moved one of the piers of the existing bridge in the spring of 1911, and the work being done consists in the tearing down of the old pier, the strengthening of the foundation, and the rebuilding of the pier on the old lines. The only change made has been in the foundation work. F. D. Anthony is Chief Engineer. (Jan., pg. 21.)

Dominion Atlantic Ry.—We are officially advised that the revised location in the vicinity of Allen's Creek, Annapolis, N.S., is being made to secure a better alignment, and for more economical working in connection with the construction of the piers for the new bridge. The present bridge is a wood structure consisting of a Howe truss of 80 ft. span on piers of three braced trestles, each with 39 spans on the east and 20 spans on the west side. The new structure is made up of one 150 ft. through truss steel span with two 80 ft. half deck plate girder flanking spans on concrete piers and abutments. In connection with this there is also to be about 350 ft. of timber trestle, which will afterwards be filled in with earthwork.

Application is being made to the Nova Scotia Legislature to extend the time within which the projected North Mountain extension may be built, in accordance with the conditions prescribed in chap. 156 of the statutes of 1910, and the filing of plans with the Dominion Government. (Feb., pg. 67.)

Dominion Pacific Ry.—The provisional directors named in the application to the Dominion Parliament for the incorporation of a company with this title are:—J. E. Askwith, J. O. Carss, W. R. Askwith, O. E. Culbert, Ottawa; H. McI. McCallum, Regina, Sask. The line proposed to be built would start at the International boundary south of Pincher Creek, Alta., and pass through Calgary and Edmonton to Fort St. John, B.C., with a branch along the Old Man River to the boundary between Alberta and British Columbia. (Dec., 1911, pg. 1137.)

Edmonton, Dunvegan and British Columbia Ry.—In introducing the Alberta Government's legislation for the building of railways in the province, Feb. 6, the Premier said the proposals covered the guaranteeing of the bonds of the E.D. and B.C. Ry. for $20,000 a mile for 350 miles. This line is to be built by a separate company under an agreement with the G.T. Pacific Ry., satisfactory to both companies, and entered into for the more speedy construction of the line. Construction is to be started at once. 100 miles to be completed by the end of 1912.

Press reports state that J. D. McArthur, of Winnipeg, who controls the charter, has purchased 140 acres west of Bronx, lying east of the St. Albert Road, and 13 acres lying north of the G.T. Pacific tracks for terminal purposes. (Feb., pg. 67.)

Esquimalt and Nanaimo Ry.—The extension of the line to Cowichan Lake, B.C., about 18 miles, is expected to be completed and ready for traffic by May 1. The branch leaves the main line about a mile north of Duncan.

The right of way for the proposed extension from McBride Jct. to Union Bay is being cleared. The work is being prosecuted from the Union Bay end, and was reported to have reached beyond Oyster River, Jan. 31.

Plans have been filed with the Provincial Minister of Railways for an extension of the line now terminating at Port Alberni, by way of Sproat River and Sproat Lake to Great Central Lake. (Feb., pg. 67.)

Glengarry and Stormont Ry.—The Ontario Legislature is being asked to incorporate a company with this title to build a railway from the C.P.R. in Lancaster tp., Glengarry county, near the eastern boundary of the province, southerly and westerly to the St. Lawrence River, then westerly to Cornwall, Ont., with branch lines. C. L. Hervey, civil engineer, is interested in the promotion of the company.

Green Bay to Bay of Islands, Nfld.—The Quebec board of trade has been informed that the Newfoundland Legislature proposes to vote a subsidy of $75,000 a year to a London, Eng., syndicate, which plans to build a railway from Green Bay to Bay of Islands, Nfld., and to operate a car ferry from the latter point to Gaspe, Que., or Dalhousie, N.B. Green Bay is proposed as the terminus of a fast line of steamships running from England or Ireland.

High River, Saskatchewan and Hudson Bay Ry.—The provisional directors named in the bill now before the Dominion Parliament asking for the incorporation of a company with this title are:—H. N. Sheppard, F. Crandall, T. E. Le Claire, C. A. Gigot, G. T. Stanley, High River, Alta. (Feb., pg. 67.)

Hudson Bay, Peace River and Pacific Ry.—A special general meeting of shareholders has been called to be held in Winnipeg, Mar. 12, to authorize the issue of bonds, debentures and other securities. H. W. Adcock, Winnipeg, is Secretary. (Feb., pg. 67.)

Intercolonial Ry.—In connection with the project to build a branch line from Sunnybrae to Guysborough and Country Harbor, for which a contract was let by the late Government to the Nova Scotia Construction Co., at an estimated cost of $1,057,122.19, and for which an appropriation of $1,000,000 was voted in 1911, the Minister of Railways said in the House of Commons Feb. 1:—"Surveys of the whole of the railway had not been completed before tenders were invited. The first location of the line was from Sunnybrae easterly along the east branch of the St. Marys river through the county of Pictou, thence southeasterly to Melrose in Guysborough county. Another location which was urged was one from Sunnybrae

southerly following Barren Brook to the west branch of St. Marys river, thence easterly through Guysborough county to Melrose, a common point to both locations. The last mentioned location was examined only in a preliminary way. The question as to which of these routes should be adopted had not been settled. No reliable estimate of the cost of the work had been made. There not being at hand sufficient information to show that there was justification for the building of the line and the incurring of the outlay, it was thought well to cancel the contract and abandon the proceedings until complete and reliable data and information could be obtained, and the Minister satisfied that, before committing the country to the expenditure, the same is justified. The Government had acquired the line known as the Sunnybrae branch from the Nova Scotia Steel and Coal Co. for $100,000. The remarks as to the obtaining of reliable data and information which would justify the building of the line, applied to the proposed line between Dartmouth and Dean's Settlement, N.S.

We are officially advised that no tenders have been accepted by the Department of Railways for the building of the branch line from Alba to Baddeck, N.S. The papers with regard to this proposed line are by order of the House of Commons, Feb. 5, to be laid on the table. The Minister of Railways in a statement said the two tenders submitted averaged $69,000 a mile, and as only $200,000 had been voted on account of the work, he could not see his way clear to allow it to go on. The proposed line is 22 miles long, and the engineer's estimate of the cost was $1,485,000. The Minister added that it was the intention of the Government to investigate the matter and see if a cheaper route could be got. The member who asked for the papers stated that it was a level country and easy to build a railway through, yet the estimated cost, according to the tenders submitted, was $69,000 a mile.

A press report, Feb. 12, states that M. P. and J. T. Davis have started work near Dartmouth, N.S., on the line from Dartmouth to Dean's Settlement. (Feb., pg. 67.)

Kaslo and Slocan Ry.—It is said that an agreement has been arrived at between the company and the British Columbia Government for putting in operating condition the remaining section of the K. and S. Ry., and that the agreement will be submitted to the Legislature for confirmation. Later reports state that an arrangement has been made by which the line will be taken over by the C.P.R. (Nov., 1911, pg. 1035.)

Kettle Valley Lines.—Press reports state that a spur line will be built to Skaha Lake, and that the Okanagan River will be dredged so as to permit of the operation of steamboats in connection with the spur line.

Application will be made to the Board of Railway Commissioners in Ottawa, Mar. 5, for authority to build with the Vancouver, Victoria and Eastern Ry. of a joint track from the summit of the Hope Mountains, down the Coquihalla Valley, 26 miles, to Hope. The valley, it is stated, will only permit of the building of one line, and the maximum gradient will be 2%.

Lac Seul, Rat Portage and Keewatin Ry.—Application is being made to the Ontario Legislature for an extension of time within which the line authorized to be built by chap. 128 of the statutes of 1908 may be built. J. F. McGillivray, Kenora, Ont., is solicitor for applicants. (June, 1910, pg. 449.)

Lindsay and Minden Ry—Application is being made to the Ontario Legislature to incorporate a company with this title to build a railway, to be operated by steam, electricity or other motive power, from Lindsay to Minden Lake, in Minden tp., or to Bexley, or such other point as may be necessary to connect the same with other railways, and to build branch lines. J. H. Delemere, Minden, Ont., is solicitor for applicants.

Magrath Coal Co.—Application is being made to the Alberta Legislature to authorize the Magrath Coal Co. to build a railway, to be operated by electricity or other power, from its colliery in sec. 2, tp. 7, range 22, west 4th meridian southerly to Magrath. Shepherd and Dunlop, Lethbridge, Alta., are the solicitors.

Midland Continental Ry., etc.—Press reports state that the Midland Continental Ry. has secured funds for building its projected railway from Jamestown, N.D., to Winnipeg, Man., and that construction on the first 50 miles out of Jamestown, will be started in April. F. K. Bull, Racine, Wis., is President. (Sept., 1911, pg. 855.)

Minneapolis, St. Paul and Sault Ste. Marie Ry.—An officer is reported by a U.S. paper as saying that the company intends to build during the current year a connecting line from Drake, N.D., northeast to Fordville, 175 miles.

Moncton and Buctouche Ry.—E. G. Evans, Manager, is reported to have stated, Feb. 9, that surveys are being made with the view of extending the line from Buctouche to Richibucto, N.B., and that it is expected to start construction during the summer. Local press reports state that the extension is to be made with a view to establishing a car ferry service between Richibucto and Summerside, P.E.I.

Montreal and Northern Colonization Ry.—Application is being made to the Quebec Legislature to extend the time for the building of the projected railway, to authorize its being built through Joliette and L'Assomption counties; the building of branch lines; its connection with the National Transcontinental Ry., and the securing of an entrance into Montreal by a tunnel. (May, 1911, pg. 411.)

Montreal Tunnel Proposal.—A deputation, headed by Duncan McDonald, General Manager, Montreal Tramways Co., and accompanied by P. Feurot, representing the engineering firm of Jacobs and Davis, New York, waited on members of the Dominion Government, Feb. 12, to discuss the tunnel project. The company's plans include the building of a railway tunnel under the St. Lawrence River from Longueuil or St. Lambert, and under the city, coming out near Jacques Cartier Jct. The tunnel would be large enough for tracks for steam and electric railways, as well as ordinary traffic, and is said to be a new proposal entirely independent of any other previously proposed project. The Government promised to give full consideration to the proposals when they were matured and plans presented.

Northern Territorial Ry.—In the measure before the Dominion Parliament providing for the incorporation of a company with this title to build a railway from Fort Churchill to the Pacific coast at Port Essington, B.C., with a branch to Edmonton, Alta., the following are named provisional directors:—W. T. Stuart, Toronto; L. P. Sherwood, Ottawa; G. E. Holmes, R. Wilson, Saskatoon, Sask.; H. G. H. Neville, Edmonton, Alta. (Jan., pg. 22.)

Oregon-Washington Rd. and Navigation Co.—J. D. Farrell, President, in a recent interview at Vancouver, B.C., is quoted as saying: "We have decided to extend our line to Vancouver, but just when a start will be made is uncertain owing to the financial situation. The route has been carefully looked over and we will get right into the heart of the city." During his stay in Vancouver Mr. Farrell and the officials who were with him interviewed the Northern Pacific Ry.'s local officials and visited the water front, where the new Great Northern Ry. terminals are being laid out.

The Pacific Trans-Canada and Hudson Bay Ry. Co., the incorporation of which is before the Dominion Parliament, proposes to build a railway from Edmonton, Alta., to Fort Churchill, on Hudson Bay, with a branch line through Laurier pass to Prince Rupert, B.C. The provisional directors are: G. W. Swaland, M. Kimpe, P. O. Dwyer, Jas. Smith, Edmonton, Alta.; W. Johnston, Ottawa. (Oct., 1911, pg. 937.)

Prince Edward Island Ry.—The Minister of Railways recently stated in the House of Commons that surveys will be made to determine the points on P.E.I. and the mainland between which the proposed carferries will ply, and also as to the other works required, and that as soon as the necessary information is obtained, and the specifications prepared, tenders will be invited and the work gone on with without delay. It is expected to have the work completed within two years. It is intended to widen the P.E.I. Ry. to standard gauge, and this work will be carried on as soon as practicable. (Feb., pg. 68.)

Prince Edward Island Ry.—We are officially advised that no tender has yet been accepted for the building of the proposed branch lines from Clifton Bridge to Stanley Bridge, and from O'Leary to West Point.

A press dispatch from Ottawa states that the estimated cost of the car ferry and the changing of the gauge of the line is $1,340,000. The cost of the car ferry is put at $450,000; the changing of the gauge at $400,000, and the cost of a third rail at $490,000. This would imply that it is proposed to operate the line as a standard and narrow gauge line, the existing rolling stock being used for local traffic, and the standard gauge rolling stock of the Intercolonial Ry. being used only for through traffic from and to the island. (Feb., pg. 68 and pg. 71.)

Quebec and Saguenay Ry.—The Department of Railways has entered into a contract with the company under the act granting aid to certain railways, for the building of 170 miles of railway from St. Joachim towards Seven Islands, and including branches to Murray Bay and Baie St. Paul, Que. The first section of this line is under construction, and a part of the line from Murray Bay inland for about seven miles has been completed. (Feb., pg. 68.)

Quinze River and Ottawa Ry.—The Dominion Parliament is being asked to incorporate a company with this title, but the bill as introduced does not state between what points it is proposed to build a railway. The provisional directors are: J. A. O'Brien, F. W. Ross, P. L. Smyth, Montreal; S. G. McClenahan, W. Johnston, Ottawa. (Oct., 1911, pg. 937.)

Reid Newfoundland Ry.—W. D. Reid, President, Reid Newfoundland Co., in an interview Feb. 2, is reported to have said it was the company's intention to add 70 miles of line to its system during the year. (Dec., 1911, pg. 1139.)

St. Charles and Huron River Ry.—See Canadian Northern Ry. Construction, Etc., on another page.

St. John and Quebec Ry.—The New Brunswick Legislature is being asked to pass one or more acts respecting "The Valley Railway, so called," which is to be built by the St. J. and Q. Ry. Co. under a contract between the province and the company. The new powers proposed provide for the incorporation of sep-

arate companies, or for conferring special powers on the St. J. and Q. Ry. Co. for the building of bridges, at Andover, The Mistake and Perry's Point; and an additional act confirming an issue of first mortgage bonds up to $25,000 a mile, and second mortgage bonds up to $10,000 a mile.

Preliminary surveys have been made for the whole route, and have been approved by the Minister of Railways. The company is now making final location and revision surveys between Fredericton and Woodstock, and from Fredericton southerly towards Gagetown. Three parties are in the field:—no. 1, under L. B. Lincoln, with headquarters at Woodstock; no. 2, under B. M. Hill, and no. 3, under S. B. Wass, the headquarters of parties 2 and 3 being at Fredericton. Ross Thompson is Chief Engineer.

It is probable, we are advised, that one contract will be let for the building of the whole line, but if not the contracts will be for 30 mile sections. Construction will be started as soon as possible. (Feb., pg. 62.)

Seymour Narrows Bridge Proposals.—The Victoria, B.C., city council has appointed a committee to confer with other committees to be appointed with respect to the proposal to build a railway and general traffic bridge across Seymour Narrows, to connect Vancouver Island with the mainland. At a meeting of the committees, representing Vancouver Island, Feb. 1, it was decided to invite the co-operation of the Provincial Legislature and the Dominion Parliament in the project, and to prepare all the statistical information necessary to present the case before the governments. A resolution was passed favoring the building of a bridge across the Narrows at an early date.

Southern Alberta Ry.—The Alberta Legislature is being asked to extend the time within which the company may build the lines authorized by chap. 40 of the statutes of 1909. White and Laidlaw, Lethbridge, Alta., are solicitors for applicants.

Superior Coal Co—Surveys are reported to have been made for a line from the Coulee, just west of Taber, Alta., through Superior, and northerly to connect with the projected line of the Canadian Northern Ry. The maximum gradient, it is stated, will not exceed 1.5%. B. K. Bullock is representing the company.

Temiskaming and Northern Ontario Ry.—The speech from the throne at the opening of the Ontario Legislature Feb. 9, after a reference to the increase in the net earnings of the railway for the year 1911, to $593,000 from $420,000 in the previous year proceeded:—"The branch to Porcupine has been completed, and there is now 300 miles of the railway in operation, while another branch is being located from the main line to Elk Lake. An agreement has been entered into between the T. and N.O.R. Commission and the G.T.R. Co., granting the latter running rights over the T. and N.O.R., in consideration of which the G.T.R., in addition to an equitable share of the general maintenance of the road, agrees to pay $300,000 a year as rental for such running rights—this sum representing half the interest on the total cost of the construction of the line."

A deputation waited on the Ontario Government Jan. 31, asking that the line be extended from the present end of the Porcupine branch for about 70 miles, to a junction with the Canadian Northern Ry. at Ruel, and that an arrangement be made with that company to run over its tracks from Ruel to Sudbury.

J. L. Englehart, Chairman of the Commission, is reported to have stated in an interview Feb. 13, that tenders would be asked at an early date for the building of the branch into the Elk Lake region, about 30 miles. The surveys for the branch had been completed.

J. L. Englehart, Chairman, T. and N.O.R. Commission, is reported to have stated at Cobalt, Feb. 21, that the Elk Lake branch will start from the main line at Earlton, 129 miles north of North Bay, and not from Charlton, as first reported. Charlton is the terminus of the Charlton branch, which runs to that point from Englehart, 8 miles.

In connection with the surveys for the projected extension of the line from Cochrane to James Bay, the Ontario Government has authorized the making of a further geological survey along the projected route, and an examination of the shores of James Bay, with a view to securing a suitable terminal. S. C. Ellis is in charge of the survey, which it is expected will be completed by Sept. 30. (Jan., pg. 23.)

Toronto, Hamilton and Buffalo Ry.—Press reports state that a line is being staked out on either side of the tunnel in Hamilton, with the view of securing an additional right of way. (Feb., pg. 68.)

Winnipeg City Power Line.—The Winnipeg city council has decided that for the present the railway from Lac du Bonnet to the city power plant at Point du Bois, shall continue to be operated by J. G. Rossman, Manager of the city's light and power department. (Jan., pg. 24.)

Winnipeg North Eastern Ry.—The Manitoba Legislature is being asked to authorize the company which was incorporated by chap. 116 of the statutes of 1911, to amalgamate with other companies. Mulock, Loftus, Armstrong and Lindsay, Winnipeg, are solicitors for the company. (May, 1911, pg. 413.)

Winnipeg River Ry.—Application is being made to the Manitoba Legislature for an act amending chap. 117 of the statutes of 1911, by authorizing amalgamation with other companies. Mulock, Loftus, Armstrong and Lindsay, Winnipeg, are solicitors for the company. (May, 1911, pg. 413.)

Car Distribution for Grain Transportation.

The Minister of Trade and Commerce introduced a bill into the House of Commons, Feb. 2, providing for an amendment of sub-sec. 99b, sec. 41, chap. 45, of the statutes of 1908, regarding the distribution of cars for the transportation of grain in the discretion of the Grain Commissioner. The section, when amended, will read as follows: "The Commissioner shall have power in his discretion to order cars to be supplied, contrary to the provisions of this Act, to elevators that are in danger of collapse, to places where grain is damp and liable to become damaged, or for the purpose of distributing seed grain to any point in the Western Division, or in cases where the operator of any country elevator or warehouse reports in writing under oath that some portion of the grain in his elevator or warehouse is heated, and that in order to preserve the same it is necessary to ship such heated grain to the terminal elevator for treatment, provided, however, that no relief shall be granted in such last mentioned cases as long as the warehouseman has plenty of room in his building for the rehandling of such grain."

The Victoria Construction Co. has been incorporated under the New Brunswick Companies Act with a capital of $99,000, and office at Grand Falls, N.B., to carry on a railway and general contracting business. The provisional directors are:—J. L. White, H. M. Dowling, B. A. Puddington, J. J. McLean, Grand Falls; T. J. Carter, Andover, N.B.; E. R. Teed, Woodstock, N.B.; D. A. McDonald, Antigonish, N.B.

Great Northern Railway Lines in Canada.

United States press reports state that the company has in hand ample funds, from the sale of $25,000,000 of 4½% bonds last year, for the carrying out of its construction programme for that year. The work to be done during the year, it is stated, includes the completion and extension of several of its lines in Canada.

Midland Ry. of Manitoba—Midland Great Northern Ry.—We are officially advised that the total length of main line from St. James Jct., on the Canadian Northern Ry. Winnipeg-Emerson line, to the new freight house at Winnipeg, is 5.86 miles. The tracks in the yard have also been laid. The figure mentioned in our report of track laid in 1911, eight miles, was based on the company's report that "about eight miles of track" were expected to be laid on the line into Winnipeg.

It was reported in Winnipeg, Feb. 3, that everything was ready for the operation of G.N.R. trains into the company's Winnipeg terminals. The steel work on some of the subways was not fully completed, but it was expected that it would be finished by the end of February.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—W. H. Burns, engineer in charge of surveys in the Hope Mountain district, arrived in Hope, B.C., Feb. 6, and it is said that he is making arrangements for again starting up construction on the section of the line from Princeton to Hope. The question of the route is not yet finally decided, and application will be made to the Board of Railway Commissioners at Ottawa, May 5, for approval of the building of a joint track with the Kettle Valley Ry. from the summit of the Hope Mountains down to Hope. The ground for the application is that there is only room for a single track along the Coquihalla valley for about 26 miles. Part of this line would be on a 2% gradient. It is stated that the negotiations between the two companies are practically completed. From near Hope the company will run over the Canadian Northern Pacific Ry. to near New Westminster.

Vancouver Terminals. — The company's freight and passenger staff have moved into their offices at 314 Hastings St., Vancouver.

The Vancouver city council has passed a resolution urging the company to resume and press forward the reclamation works at False Creek. The work done up to the present has been largely of a preliminary character. Under the agreement the company has until April 9 to begin the real work of reclamation.

The proposed dock, west of the sugar refinery, plans for which are being prepared, will be 1,200 ft. long, and will be built on concrete piling. An approach of about 200 ft. is being built, and the dredging will be done as the dock is being built. (Feb., pg. 70.)

Lists of Locomotives—The Board of Railway Commissioners issued order 15947, Feb. 12, requiring all railway companies under the Board's jurisdiction to file with the Board's Chief Operating Officer within 30 days a list showing the numbers of all locomotives owned or leased by them; and also to file from time to time with the Chief Operating Officer a list giving the numbers of all additional locomotives that may be purchased, built, or leased.

A. and W. D. Wheaton, railway contractors, Amherst, N.S., who have subscribed to the Railway and Marine World for several years, in renewing their annual subscription, write: "The Railway and Marine World is steadily growing larger and better."

Mainly About Transportation People.

Edwin Hawley, President, Minneapolis and St. Louis Rd., died in New York Feb. 1.

R. W. Reford, steamship agent, etc., has been elected President of the Montreal Board of Trade.

Willis Chipman, B.A.Sc., M. Can. Soc. C.E., has been elected President of the Engineers' Club of Toronto.

W. C. Dodds, of the General Passenger Department, Canadian Northern Ry., Winnipeg, died there Jan. 20.

J. E. Laughlin, station agent, G.T.R., Windsor, Ont., is reported to have resigned after 12 years service there.

Sir Wm., Lady Whyte and Miss Whyte left Winnipeg, Feb. 5, for Augusta, Ga., where they will remain for some time.

J. M. Fotheringham, A.M. Can. Soc. C.E., District Engineer, Grand Trunk Pacific Ry., Quebec, died there, Feb. 6.

Mrs. Lash, wife of Z. A. Lash, K.C., director, and Senior Counsel, Canadian Northern Ry., Toronto, died there, Feb. 13.

H. J. Cambie. Chief Engineer, Esquimalt and Nanaimo Ry., returned to Vancouver, B.C., from a trip to Europe, Feb. 12.

C. E. Ritchie, President, Central Ontario Ry., Akron, Ohio, has been elected Vice President, Trusts and Guarantee Co., Toronto.

W. L. Garland, barrister, Winnipeg, who died there Feb. 23, aged 26, was the younger brother of Mrs. D. B. Hanna, of Toronto.

G. Belanger, agent Quebec Central Ry. at Morisset, has been appointed a justice of the peace for the county of Dorchester, Que.

Sir C. Rivers Wilson, formerly President of the Grand Trunk Ry. Co., has resigned from the British Electric Traction Co.'s board.

J. C. Hickson, K.C., who died in Montreal, Feb. 2, aged 37, was a son of the late Sir Jos. Hickson, at one time General Manager, G.T.R.

Sir Edmund Osler and W. D. Matthews, C.P.R. directors, Toronto, accompanied Sir William Van Horne on his visit to Cuba, Feb. 15.

J. Brownlee, Superintendent, District 1, Manitoba Division, C.P.R., Kenora, Ont., died there, Feb. 26, after a comparatively short illness.

H. W. Brodie, General Passenger Agent, C.P.R., Pacific Division, and Mrs. Brodie, returned to Vancouver, Feb. 15, from a trip to Honolulu.

F. L. Wanklyn, formerly Managing Director, Montreal Street Ry., has resigned his position as a member of the Montreal city board of control.

Lord Strathcona, who has been suffering from influenza, was reported, Feb. 24, to be improving, his physical strength being well maintained.

Mrs. Hogan, wife of M. J. Hogan, contractor for the Port Colborne, Ont., breakwater, died there, Feb. 5, of pneumonia and was buried in Montreal.

G. W. Hardisty, District Passenger and Freight Agent, Northern Pacific Ry., Montreal, died at Chateauguay, Que., Feb. 9. He was formerly in G.T.R. service.

Frank Potter has been appointed General Manager of the Great Western Ry. of England, succeeding the late Sir John Inglis, to whom he was chief assistant.

Geo. Kitchen, who died at Fredericton, N.B., Feb. 9, was a contractor on several important works in the maritime provinces, including bridges and other work on the C.P.R.

In our February issue it was stated that John Paul, District Freight Agent, Canadian Northern Ry., Winnipeg, was born in 1853. The date should have been given as 1858.

G. Cobb, Chief Dispatcher, Reid Newfoundland Co., St. John's, Nfld., returned to duty, Feb. 8, from Bay of Islands, where he had been recuperating after an operation for appendicitis.

C. G. Washbon, of the C.P.R. engineering staff, was married at Brandon, Man., Feb. 7, to Miss M. Coldwell, daughter of Hon. G. R. Coldwell, Minister of Education for Manitoba.

Colin Rankin, of Mattawa, Ont., formerly chief factor, Hudson's Bay Co., has been appointed a police magistrate for the National Transcontinental Ry., succeeding P. J. Loughrin.

Sir Donald Mann, Vice President, Canadian Northern Ry., returned to Toronto, Feb. 22, from the Pacific coast, where he spent several weeks recuperating after his recent illness.

James Morrison,
Secretary, Niagara Frontier Summer Rate Committee and Great Lakes and St. Lawrence River Rate Committee.

T. P. Brennan, who died suddenly in his office in Montreal, Feb. 20, was engaged as a contractor on the St. Lawrence and Adirondack Ry., and on sections of the C.P.R. in the west.

W. F. Buck, M. Am. Soc. M.E., Superintendent of Motive Power, Atchison, Topeka and Santa Fe Ry., died of pneumonia in his private car whilst en route to Los Angeles, Calif., on Jan. 31.

Sir Thos. G. Shaughnessy will, according to press reports, build a 10-story office building on his property at the northeast corner of McGill and St. Paul Streets, Montreal.

Sir Donald Mann was a passenger on a Great Northern Ry. train which ran into a mud and rock slide near Ocean Park, B.C., Jan. 28. Only one passenger on the train received injuries.

Sir Rodolphe Forget has promised $50,000 to the Notre Dame Hospital, Montreal, if a similar amount is contributed by others, and $100,000 if 90 subscriptions of $5,000 each are secured.

Mrs. W. Nickle, who died at Kingston, Ont., Feb. 1, was a sister of B. W. Folger, Sr., Kingston, and mother of H. C. Nickle, Superintendent Kingston, Portsmouth and Cataraqui Electric Ry.

E. L. Brown, formerly General Superintendent, Western Division, Great Northern Ry., at Spokane, Wash., has been appointed Vice President and General Manager, Denver and Rio Grande Rd.

A. B. Overland, a construction engineer on the Canadian Northern Ontario Ry. at Pearl, Ont., is reported to be recovering from a severe illness for which he was treated in the hospital at Fort William, Ont.

M. J. Haney, M. Can. Soc. C.E., contractor, who has been confined to his house at Port Credit, near Toronto, since his return from the South, recovering from a bad attack of influenza contracted in Panama, is convalescent.

L. A. Hamilton, ex-Land Commissioner, C.P.R., now living in Toronto, is one of the directors of the Canada Timber and Lands, Ltd., which was incorporated recently under the Dominion Companies Act, with a capital of $250,000.

Mrs. Carr, wife of C. E. A. Carr, formerly General Manager, Quebec Ry., Light, Heat and Power Co., and now of New Orleans, La., is a daughter of J. S. and Mrs. Williams, who celebrated their golden wedding in Toronto, Feb. 21.

The Directory of Directors, published by Sir Thos. Skinner, director, C.P.R., states that Sir Wm. Van Horne is director of 21 companies, Sir Wm. Mackenzie, Sir H. Montagu Allan and Lord Furness of 20 companies, and Sir Henry M. Pellatt of 18 companies.

A. Butze was presented with a silver loving cup by the headquarter officials of the G.T.R. at a dinner at St. James' Club, Montreal, recently, on his retiring from the company's service, in which for 16 years he was General Purchasing Agent.

C. W. Johnston, Chief Clerk to W. P. Hinton, General Passenger Agent, G.T. Pacific Ry., Winnipeg, was presented with a diamond ring, on his transfer to the G.T.R. passenger department, Montreal. Mrs. Johnston was also presented with some cut glass.

Mrs. Eldridge Stanton, who with her husband was drowned at Niagara Falls, Feb. 4, owing to the breaking away of the ice bridge over the river while they were on it, was a daughter of N. R. Butcher, official stenographer, Board of Railway Commissioners.

Sir William Van Horne visited Cuba in the early part of February, to look after his interests in the Cuba Rd. and other properties. He stated that owing to the general prosperous condition of affairs in Cuba, his visits to the island would be less frequent.

H. J. Cowie, European Freight Agent, and T. Howell, General Immigration Agent, Canadian Northern Ry., arrived in Liverpool, Eng., Feb. 10, the former after a business trip to Canada, and the latter to make arrangements for the forthcoming season's work.

A. M. Nanton, Managing Director, Alberta Ry. and Irrigation Co., Winnipeg, and Mrs. Nanton were among the Canadians who attended the thanksgiving services at St. Paul's Cathedral, London, Eng., Feb. 6, for the safe return of the King and Queen from India.

Major Leonard, Chairman, National Transcontinental Railway Commission, was the principal guest at a dinner given by the Royal Military College Cadets' Club, Montreal, recently, at which he spoke of the importance of the new line from a military point of view.

Capt. Blakeney, R.N., who died at Bath, Eng., recently, was present at the launching of the Beaver in 1834, and was an officer on board the vessel when she was engaged on survey work on the

coast of British Columbia. The Beaver was the first steamship on the Pacific coast of Canada.

Jas. Slatterie, foreman tender department, G.T.R. shops, Stratford, Ont., was presented with an easy chair and a pipe from the men on his retiring after nearly 40 years' service. The presentation was made by R. Patterson, Master Mechanic.

Sir Wm. Mackenzie, President, Canadian Northern Ry., returned to Toronto, Feb. 3, from a trip to the Pacific coast, and subsequently, accompanied by D. B. Hanna, Third Vice President, went to Ottawa, Montreal, Quebec and Halifax, from whence they returned to Toronto, Feb. 9.

C. W. Power, who has been appointed Railway and Bridge Engineer, City Engineer's Department, Toronto, succeeding E. L. Cousins, appointed Engineer to the Toronto Harbor Commission, was formerly Resident Engineer, Middle Division, G.T.R., Toronto, in which position he also succeeded Mr. Cousins.

Gordon H. O'Hara, who has been appointed General Passenger Agent for Ontario, Allan Line, Toronto, was born at Montreal, June 22, 1879, and entered Allan Line service, Feb. 1, 1894, since when he has been in the inward freight, outward freight, passenger, and accounting departments, and has been acting cashier at intervals.

Sir Donald Mann, Vice President, Canadian Northern Ry., Colonel Davidson, Land Commissioner, and T. G. Holt, Executive Agent for British Columbia, were the principal guests at a dinner given by the New Westminster Board of Trade, Feb. 7. Sir Donald left for the east, Feb. 15, stopped over at Winnipeg, and reached Toronto, Feb. 22.

C. F. Cox, Treasurer, Toronto, Hamilton and Buffalo Ry., and of New York Central lines west of Buffalo, who died at Yonkers, N.Y., recently, was born at Staten Island, N.Y., Jan. 16, 1846. He entered the Canada Southern Ry. service in 1869, and was, successively, Accountant, Assistant Treasurer, Secretary, Vice President and President. The whole of his railway service has been with the Vanderbilt lines.

R. G. McMillan, excursion clerk, and M. Hagerty, advertising clerk, District Passenger Agent's office, G.T.R., Toronto, were presented with a correspondence portfolio and a gold locket, respectively, the former on his transfer to a similar position in the General Passenger Agent's office, G.T.P.R., Winnipeg, and the latter on leaving G.T.R. service to take a similar position in the District Passenger Agent's office, C.P.R., Toronto.

James Morrison, whose portrait appears in this issue, and who is chief rate clerk, Passenger Department, C.P.R., Montreal, has been Secretary of the Niagara Frontier Summer Rate Committee, and of the Great Lakes and St. Lawrence River Rate Committee for several years, and was re-elected at the annual meetings held at Detroit, Mich., recently, the appointment for the Niagara Frontier Summer Rate Committee being made a permanent one.

Hon. F. Cochrane, Minister of Railways and Canals, Sir Thos. G. Shaughnessy, President, C.P.R., C. M. Hays, President, G.T.R. and G.T.P.R.; Sir Wm. Mackenzie, and Sir Donald Mann, President and First Vice President, respectively, Canadian Northern Ry., will compose the Military Transport Board, which the Minister of Militia recently announced was being formed in connection with the Militia Department. They will be given the rank of honorary Colonel.

W. D. Reid, President, Reid Newfoundland Co., on behalf of himself and brothers, has offered to the Newfoundland Government to build and equip in St. John's a tuberculosis hospital at a cost of $50,000, and a sanitarium in each of the 16 external electoral districts at a cost of $3,000 each, on sites to be provided by the Government; the hospitals to be managed and controlled by the Government. The Government has accepted the offer, and propose to name the buildings "The Reid Sanitaria."

The following retired employes of the Canadian Government railways have granted the Imperial Service Medal, in recognition of meritorious service:—G. L. Blais, Levis, Que.; baggage master; F. Davison, Truro, N.S., conductor; A. Gifford, baggage master, Moncton, N.B.; H. W. Henderson, track foreman, York, P.E.I.; E. Jobin, Quebec, baggage master; W. Languille, Brookfield, N.S., track foreman; T. Morency, Trois Pistoles, Que., track foreman; J. O'Malley, Halifax, N.S., freight checker; J. O'Rourke, Moncton, N.B., watchman; L. Proulx, Quebec, conductor.

W. J. Meakin, whose appointment as Locomotive Foreman, C.P.R., Castor, Alta., was announced in our last issue,

W. J. Press,
Mechanical Engineer and Machinery Expert, National Transcotinental Railway.

was born at Toronto, Aug. 22, 1869, and entered transportation service in 1885, in the navigation of Georgian Bay, eventually obtaining a master's certificate and operating a steam tug for the French River Boom Co., for 13 years. He entered C.P.R. service, Oct. 15, 1908, at Strathcona, Alta., as a laborer, and in the summer of 1909, was given charge of the stationary boiler, pumping and heating plant there. From Dec. 1, 1910, to Jan. 5, 1912, he was shop foreman at Strathcona roundhouse.

A. E. H. Chesley, who has been appointed General Accountant, Dominion Atlantic Ry., Kentville, N.S., was born near Annapolis Royal, N.S., Aug. 27, 1877, and entered railway service, Oct. 23, 1893, since when he has been, to Oct. 4, 1894, agent and telegraph operator, Yarmouth and Anapolis Ry.; Oct. 4, 1894, to Nov. 4, 1895, agent and telegraph operator, Dominion Atlantic Ry.; Nov. 4, 1895, to Aug. 24, 1897, clerk, Traffic Auditor's office; Aug. 24, 1897, to Oct. 1, 1899, clerk in Accountant's office; Oct. 1, 1899, to June 1, 1907, chief clerk, Accountant's office; June 1, 1907, to Feb. 1, 1912, Assistant Accountant, all with Dominion Atlantic Ry.

W. L. Upson, General Manager of the projected Ottawa, Smiths Falls and Kingston Ry., was born at Canisteo, N.Y., in 1853, and started work in 1869 as water boy on a construction train between Hornellsville and Susquehanna, N.Y., advancing successively to the positions of timekeeper, brakeman and conductor, the latter appointment being received before he was 20. While serving as brakeman and conductor he studied telegraphy, and in 1873 was appointed night operator at Dalton, on the Erie Rd. In 1874 he was appointed freight agent at Main St., Buffalo, and in 1882 construction train conductor, West Shore Rd. Subsequently he became identified with the organization and building of several lines and was General Manager of the Buffalo, Hamburg and Aurora Ry.

D. J. Murphy, Jr., who has been appointed Superintendent of Transportation, Dominion Atlantic Ry., and whose portrait appears in this issue, was born at Caledonia, Ont., Mar. 3, 1874, and entered railway service Apr., 1892, since when he has been, to Mar., 1893, clerk in local freight office, Yarmouth and Annapolis Ry., Yarmouth, N.S.; Mar. to Nov., 1893, assistant agent, same road, Yarmouth, N.S.; Nov., 1893, to May, 1894, relieving agent, same road; May, 1894, to 1896, operator and relieving dispatcher, Dominion Atlantic Ry., Kentville, N.S.; 1896 to 1900, dispatcher, same road; 1900 to 1906, Chief Dispatcher, same road; 1906 to 1908, Trainmaster, same road, with supervision over car service; 1908 to Jan. 31, 1912, Assistant Traffic Superintendent, same road.

John Corbett, who has resigned the position of General Foreign Freight Agent, C.P.R., Montreal, to enter private business, as mentioned in our last issue, was born in Lanarkshire, Scotland, July 19, 1863, and commenced railway service in 1877 with the Caledonian Ry. He came to Canada in 1882, since when he has been, Nov., 1882 to Dec., 1883, in Audit Department, G.T.R., Montreal; Dec., 1883, to May, 1885, in the office of the Blue Line, Montreal; May, 1885, to Mar., 1904, in Foreign Freight Department, C.P.R., Montreal; Mar., 1904, to Jan., 1912, General Foreign Freight Agent, C.P.R., Montreal. He was entertained at luncheon at the Montreal City Club, Feb. 6, by the local transportation men, and at the Canada Club, Montreal, Feb. 8, by the members of the Montreal Corn Exchange.

R. A. Pyne, whose appointment as Superintendent of Shops, C.P.R., Winnipeg, was announced in our last issue, was born at Toronto, Apr. 10, 1874, and entered railway service, July, 1887, since when he has been, to May, 1893, apprentice C.P.R. shops, Winnipeg; May, 1893, to Dec., 1898, fitter and lathe hand, and Dec., 1898, to July, 1899, gang foreman, there; July, 1899, to Mar., 1901, Shop Foreman, Winnipeg roundhouse; Mar., 1901, to July, 1902, Erecting Shop Foreman, Winnipeg repair shop; July, 1902, to Jan., 1903, General Foreman, Calgary, Alta.; Jan., 1903, to Oct., 1906, Locomotive Foreman, Brandon, Man.; Oct., 1906, to Apr., 1909, District Master Mechanic, Moose Jaw, Sask.; Apr., 1909, to Mar., 1910, District Master Mechanic, Nelson, B.C.; Mar., 1910, to Jan., 1912, Master Mechanic, Alberta Division, Calgary.

J. G. Entwistle, who has been appointed acting Superintendent, District 2, Western Division, Canadian Northern Ry., Saskatoon, Sask., was born at Streetsville, Ont., Dec. 1, 1859, and entered railway service in 1877, in the maintenance of way department of the Credit Valley Ry., and subsequently spent six years in the C.P.R. Mechanical

Department in the west, returning to Toronto, where he had charge of the grading and tracklaying on the C.P.R. from the Union station to North Toronto, to 1889, when he was appointed Roadmaster, Erie and Huron Ry., remaining in that position to 1897, when he went to Winnipeg as locomotive driver, Northern Pacific Ry., and on the taking over of that line by the Canadian Northern Ry., transferred to the latter service, and in 1909 was appointed Road Foreman of Locomotives.

J. F. Chapman, who has been appointed Manager, Thousand Islands Ry., and Oshawa Ry., Deseronto, Ont., and whose portrait appears in this issue, was born at Frankford, Ont., Aug. 25, 1863. Having learned telegraphy, he was appointed first agent of the northern extension of the Central Ontario Ry. at Frankford, and as the line was opened up he was moved to other stations, being officially located at Coe Hill Mines, the northern terminus. On the closing down of the mines, he entered the Bay of Quinte Ry. service, being from June, 1886, to Aug., 1890, chief clerk to General Freight and Passenger Agent, Deseronto, Ont.; Aug., 1890, to Jan., 1895, Superintendent, Thousand Islands Ry., Gananoque, Ont.; Jan., 1895, to Jan., 1904, Assistant General Freight and Passenger Agent, Bay of Quinte Ry., Thousand Islands Ry., Oshawa Ry. and Deseronto Navigation Co., Deseronto, Ont.; Jan., 1904, to Jan., 1912, General Freight and Passenger Agent, same lines.

Capt. W. J. Press, whose portrait appears in this issue, was born at Melbourne, Australia, July 3, 1864, and served an apprenticeship of seven years with the South Australia Government Railways, remaining in that service from 1880 until 1899. On the outbreak of the South African war he went to South Africa attached to the Royal Engineers, graded as staff captain. He was appointed Principal Works Manager of the Imperial Military Railways on Aug. 8, 1900, and resigned Jan. 20, 1904, when he came to Canada to gain experience. He was appointed Inspector of Improved Methods of C.P.R. Angus shops, June, 1905, and resigned the latter end of 1907 to take over the management of Mussens, Ltd., machinery department, Montreal. In May, 1910, he was appointed Mechanical Engineer and Machinery Expert, National Transcontinental Ry., since which time he has had complete control of all mechanical equipment along the line, together with the design and construction of locomotive, car and repair shops.

Dr. H. T. Bovey, F.R.S., one of the founders of the Canadian Society of Civil Engineers, died at Eastbourne, Eng., of Brights disease, Feb. 3. He was for many years resident in Canada, having been appointed Professor of Civil Engineering and Applied Mechanics at McGill University, Montreal, in 1887. At that time the engineering courses in the University were managed as a branch of the Faculty of Arts, and were without buildings or equipment. The following year, however, a department of applied science was constituted with Prof. Bovey as dean, and to his management and advice the science department owes its development. He was Secretary of the Canadian Society of Civil Engineers from 1887 to 1891; also Treasurer in 1887; councillor from 1892 to 1895; Vice President, 1896 and 1897, and President in 1900. He left Canada a few years ago to return to England, and was appointed Rector of the Imperial College of Science and Technology, which position he resigned early in 1910.

Frederick Passmore Gutelius, M.Can. Soc. C.E., who has been appointed one of the commissioners to investigate expenditures and other matters in connection with the construction of the National Transcontinental Ry., as intimated in our last issue, was born at Mifflinburg, Pa., Dec. 21, 1864, and graduated from Lafayette College as civil engineer in 1887. He entered railway service in 1888, since when he has been, to 1892, Assistant Engineer and Assistant Supervisor, Pennsylvania Rd., Pittsburgh, Pa.; 1885 to 1898, General Superintendent, Columbia and Western Ry.; 1898 to 1900, Superintendent, C.P.R., Nelson, B.C.; 1900 to 1902, in various positions in C.P.R. Engineering Department; 1902 to Mar., 1906, Engineer of Maintenance of Way, C.P.R., Montreal; Mar., 1906, to Sept. 15, 1908, Assistant Chief Engineer, Eastern Lines, C.P.R., Montreal; Sept. 15, 1908, to Dec. 30, 1910, General Superintendent, Lake Superior Division, C.P.R., North Bay, Ont.; Dec. 30, 1910, to Jan., 1912, General Superintendent, Eastern Division, C.P.R., Montreal.

W. E. Mullins, heretofore General Manager, Northern Ry. of Costa Rica, has been appointed General Manager, United Fruit Co. of Costa Rica, with jurisdiction over the banana farms, railways and all of the United Fruit Co.'s interests there, E. R. Hitchcock, heretofore

D. L. Jones,
District Master Mechanic and Trainmaster, District 2, Atlantic Division, C.P.R.

Manager of the banana lands, having been assigned to other duties. Mr. Mullins was born at Stratford, Ont., Aug. 13, 1870, and entered railway service on the G.T.R., July, 1887, being employed in the freight and passenger departments until 1891, since when he has been, to 1893, in Assistant Mechanical Superintendent's office, London, Ont.; 1893 to 1897, in Assistant Superintendent's office, London, Ont.; 1897 to 1899, chief clerk to Superintendent, Middle Division, G.T.R., Toronto; 1899 to 1902, secretary to Vice President and General Manager, Central Vermont Ry., St. Albans, Vt.; 1902 to May, 1906, Superintendent of Transportation, Central Vermont Ry., St. Albans, Vt.; June, 1906, to Jan., 1912, General Manager, Costa Rica Ry., and Northern Ry. of Costa Rica.

James Oborne, who has been appointed General Superintendent, British Columbia Division, C.P.R., Vancouver, was born at Montreal, Sept. 19, 1861, and entered railway service in 1874, since when he has been, successively, two years and ten months office boy and chief clerk to Works Manager, G.T.R.; three years chief clerk to Mechanical Superintendent, C.P.R.; fifteen months chief clerk to Vice President, C.P.R., 1890 to Apr., 1896, Superintendent, Car Service, C.P.R., and from 1892 also in charge of the Fuel Department; Apr., 1896, to Apr., 1899, Assistant to President, C.P.R.; Apr., 1899, to May 1, 1901, General Superintendent, Western Division, C.P.R., Winnipeg; May, 1901, to Apr., 1903, General Superintendent, Atlantic Division, C.P.R., St. John, N.B.; Apr., 1903, to Nov., 1904, General Superintendent, Eastern Division, C.P.R., Montreal; Nov., 1904, to Jan., 1912, General Superintendent, Ontario Division, C.P.R., Toronto. This appointment practically completes Mr. Oborne's circuit of the whole C.P.R. system, as he has been General Superintendent of every division except the Lake Superior one.

W. F. Tye, who has been elected President of the Canadian Society of Civil Engineers, was born at Haysville, Ont., Mar. 5, 1861, and educated at Ottawa University, and the School of Practical Science, Toronto. He entered railway service in 1882, since when he has been, successively, rodman, leveller, transitman on location, and assistant engineer of construction, C.P.R.; 1886 to 1887, transitman and assistant engineer, St. Paul, Minneapolis and Manitoba Ry.; 1888, Engineer of Track and Bridges, Tampico Branch, Mexican Central Ry.; 1890, locating engineer, Great Falls and Canada Ry.; 1891 to 1892, engineer in charge of location, and Division Engineer, Great Northern Ry. Pacific extension; 1892 to 1894, engineer in charge of the change of gauge, Alberta Ry. and Coal Co.'s line; 1895 to 1896, Chief Engineer, Kaslo and Slocan Ry.; 1896 to 1900, Chief Engineer, Columbia and Western Ry.; 1900 to June, 1902, Chief Engineer of Construction, C.P.R.; June, 1902, to May, 1904, Assistant Chief Engineer, C.P.R.; May, 1904, to Feb., 1906, Chief Engineer, C.P.R., which position he resigned to take up private practice.

G. H. Davis, who has been appointed Assistant Engineer of Terminals, C.P.R., Toronto, was born there, Feb. 28, 1881, and entered C.P.R. service, Nov. 14, 1905, since when he has been, to Aug., 1906, rodman on preliminary, location and survey work on the Georgian Bay and Seaboard Ry.; Aug., 1906, to Apr., 1907, rodman and assistant draughtsman, preliminary surveys on the line from Tweed to Toronto, via Belleville, Ont.; Apr., 1907, to Dec., 1909, draughtsman and assistant to the Assistant Engineer, on revision and construction of Georgian Bay and Seaboard Ry. from Port McNicoll to Coldwater Jct., Ont.; Dec., 1909, to Apr., 1910, draughtsman and instrumentman, Division Engineer's staff; Apr. to Oct., 1910, in charge of construction of Mimico cut-off and double track work from Lambton to mileage 10, London section, Ont.; Oct., 1910, to Feb. 1, 1912, assistant to Resident Engineer, Toronto.

H. H. Vaughan, who has been elected Vice President, Canadian Society of Civil Engineers, and whose portrait appears in this issue, was born at Forest Hill, Essex, Eng., Dec. 26, 1868, and educated at King's College, London, Eng. He served an apprenticeship with Nasmith, Wilson and Co., Patricroft, Manchester, Eng., going to the U.S. in 1891. He was engaged with various companies as machinist, draughtsman and assistant engineer of tests, and mechanical engineer, including the Great Northern Ry., Philadelphia and Reading Ry., and the Queen and Crescent Route, and after a period of service with a supply house, was appointed Assistant Superintendent of Motive Power, Lake Shore and Michigan Southern Ry., Mar., 1902, remaining until Feb., 1904, when he was appointed Superintendent of Motive Power, C.P.R.,

which position he held until his appointment as Assistant to the Vice President, C.P.R., Dec., 1906. He is President of the Engineers' Club of Montreal, and has been a member of the Canadian Society of Civil Engineers since 1906, and a member of the council since 1910.

J. T. Arundel, General Superintendent, Manitoba Division, C.P.R., was presented with a diamond ring, Feb. 15, by the operating department of the division, on his leaving Winnipeg to become General Superintendent of the Ontario Division, Toronto. A gold brooch was presented to Mrs. Arundel on the same day.

W. F. Buck, Superintendent of Motive Power, Atchison, Topeka and Santa Fe Ry., who died on a private car between Albuquerque and Los Angeles, Cal., Jan. 31, of pneumonia, entered railway service as a locomotive engineer on the Intercolonial Ry. His father was a civil engineer on the building of the line in the vicinity of Newcastle, N.B., where W. F. Buck was born.

H. E. Bissell, whose appointment as Right of Way and Claims Agent, Grand Trunk Pacific Ry., Winnipeg, was announced in our last issue, was born near Noyan, Que., Dec. 31, 1867, and entered railway service in Oct., 1887, since when he has been, to May, 1888, baggage master, freight house foreman and manifest clerk, G.T.R., and Delaware and Hudson Co., Rouses Point, N.Y.; May to Nov., 1888, Assistant Yardmaster, Central Vermont Ry. and Ogdensburg and Lake Champlain Rd., Rouses Point, N.Y.; Nov., 1888, to Dec., 1889, billing clerk, same roads, Rouses Point, N.Y.; Dec., 1889, to Nov., 1892, chief clerk and cashier, same roads, Rouses Point, N.Y.; Nov., 1892, to Apr., 1894, station agent, same roads, and Canada Atlantic Ry., Rouses Point, N.Y.; Apr., 1894, to May, 1900, in private business; June, 1900, to May, 1904, in General Auditor's office, Central Vermont Ry., St. Albans, Vt.; May, 1904, to Feb., 1907, chief clerk of general accounts, same road, St. Albans, Vt.; Feb., 1907, to Apr. 1, 1911, chief clerk to Chief Engineer, G.T.P.R., Montreal; Apr. 1, 1911, to Jan. 1, 1912, Assistant Right of Way and Claims Agent, G.T.P.R., Winnipeg.

Duncan MacPherson, M. Can. Soc. C.E., whose portrait appears on another page, was born at Bath, Ontario, in 1858, of U.E. Loyalist parentage. He was educated at Napanee High School and the Royal Military College, Kingston, from which latter he graduated in June, 1880, standing head of the class in civil engineering, taking honors in several other subjects, and winning the Marquis of Lorne's silver medal for general proficiency. This class was the original one of 18 entering at the inception of the College in 1876, and known ever since as the "Old Eighteen." In Nov., 1880, he was employed as rodman on surveys for the extension of the Canada Central Ry., which in 1881 was merged into the C.P.R. He remained on location and construction of C.P.R. for several years, in various capacities, until he was appointed resident engineer on maintenance of way and construction of branch lines, starting with a territory of about 400 miles. Was afterwards promoted to division engineer, and duties and responsibilities continually increased until he had charge of the whole Eastern Division, comprising 1,500 miles of main track. He resigned from the C.P.R. in 1905, after about 25 years service, on his appointment as Assistant Chief Engineer of the National Transcontinental Railway, remaining in that position till Dec., 1911, when was promoted to be Assistant to the Chairman. He holds certificates of Dominion Land Surveyor and Ontario Land Surveyor, is a life member of English Institution of Civil Engineers, charter member of Canadian Society of Civil Engineers and of the American Railway Engineering Association, past Vice President, Canadian Society of Civil Engineers, and now a councillor of same, having been elected to that office for the 14th time, which is oftener than any other member of the society has been so elected. He is the inventor of the MacPherson safety switch and frog, which gives a solid continuous main line, and is in use in Canada and the United States.

The Railway to Hudson Bay.

The contractors for the grading of the first section of the Dominion Government railway from Pas Mission to near Split Lake, 185 miles, J. D. McArthur and Co., Winnipeg, are reported to have sublet the work to McMillan Bros., Winnipeg. This latter firm of contractors began Feb. 7, taking in supplies and plant. A. McMillan, in an interview, is reported to have said the work of getting in supplies and plant will be interfered with owing to the lateness of the season, and the congestion of traffic on the railways, but it is expected to get in sufficient to keep 600 men at work. Camps will be built every ten miles, and the work pushed as fast as possible. The route to be traversed by the line is interspersed with muskegs, and high ridges, with numerous lakes and water courses, but there is very little rock. A good deal of the work will be "wheelbarrow work," the nature of the ground preventing the use of horses and scrapers, so that progress will not be so fast as on the prairies. Horses and scrapers will be used where possible.

Rene Dupont,
Traffic Manager, Canada and Gulf Terminal Railway.

J. P. Gordon, who has been on location work for the past two years, has been appointed Assistant Chief Engineer.

We are officially advised that the matter of awarding contracts for track materials for the line is still in abeyance.

The Naval Department's Hydrographic Branch is said to be preparing a chart showing the results of the most recent surveys made at the mouth of the Nelson River. The chart will, it is said, show a wide channel from 20 to 60 ft. deep, with few shoals, to the point in the river where terminals have been provisionally located, and will demonstrate that with a protection wall for the roadstead, Port Nelson would be a suitable terminus for the line. However, the question of the navigation of the bay and straits is of importance, and a further survey, in charge of Captains Bernier and Bartlett, is to be made during this year. A further examination will also be made of the land terminals at Port Nelson and Fort Churchill, and engineers were expected to be sent from Ottawa for this purpose by Mar. 1.

London, Eng., press dispatches, Feb. 15, stated that a contract had been let to Pethick Bros., Plymouth, Eng., for the building of docks and grain elevators at Fort Churchill, at a cost of about $17,500,000. Ottawa officials state that tenders have not been asked for any such work, and that nothing will be done in that direction until the question of whether Port Nelson or Fort Churchill is to be the terminus has been settled. The story probably originated in the fact that an English company is endeavoring to finance the building of a railway from Fort Churchill to Prince Albert and Edmonton, and Pethick Bros. have been associated with some of the people behind that project in contracts in England and elsewhere. (Feb., pg. 79.)

Railway Route Plans Approved.

The following route plans have been approved by the Minister of Railways in addition to those mentioned on pg. 62:—

CANADIAN NORTHERN ONTARIO RY.—Dec. 22, 1911. From Chisholm tp., Nipissing district, on the Montreal-Georgian Bay line, to Capreol tp., Sudbury district, on the Toronto-Sudbury line, about 100 miles.

Feb. 13. Revision of North Bay-Capreol route, about 18 miles.

CANADIAN NORTHERN RY.—Dec. 22, 1911. Strathcona-Calgary line. Revision from Strathcona, via Lacombe, to just south of Red Deer, about 95 miles.

Feb. 9. From near Portage la Prairie southeasterly through Morris to near Stuartburn, 90 miles.

Feb. 9. Chamberlain to MacRorie, Sask., about 75 miles.

Feb. 9. From tp. 26, r. 8, w. 3rd m. to tp. 28, r. 1, w. 4th mer., part of Regina-Red Deer route, about 138 miles.

Feb. 9. From tp. 28, r. 29, w. 3rd mer. to Camrose, about 165 miles.

Jan. 1[illegible] Strathcona-Calgary line. Revision from just south of Red Deer to east side of Bow River near Calgary, about 95 miles.

CANADIAN PACIFIC RY.—Feb. 9. Revision of former approval from Lake Johnston to the Weyburn-Lethbridge branch, 30 miles.

GRAND TRUNK PACIFIC BRANCH LINES CO.—Jan. 13. Biggar-Calgary branch, from 4th meridian to tp. 32, range 18, west 4th meridian, about 105 miles.

Jan. 13. Cutknife branch. Revision from tp. 43, range 21, to tp. 44, range 25, west 3rd meridian, about 24 miles.

Jan. 13. From Cedoux southerly and easterly to International boundary in tp. 1, range 11, west 2nd meridian, about 70 miles.

HA HA BAY RY.—Jan. 13. From near St. Dominique village to Government wharf at Bagotville, with branches to St. Alexis, Lake Kenogami and Chicoutimi, Que., about 36 miles.

ST. JOHN AND QUEBEC RY.—Jan. 17. From Rothesay, on the Intercolonial Ry., along the St. John River, to Andover, about 160 miles.

Temiskaming and Northern Ontario Ry.—Revenue for Nov., 1911, $169,482.55; expenditure, $113,986.57; net revenue, $55,495.98; less hire of equipment, etc., $3,038.61, and outside operations, $304.71; net result, $52,152.66.

Canadian Pacific Railway Construction, Betterments, Etc.

The C.P.R. is applying to the Dominionion Parliament for authority to expropriate any easement, right of way, or other privileges enjoyed in, to, or over, or in respect of any lands required for the purpose of its railway or any railway controlled or operated by it.

St. John Freight Sheds.—The new freight sheds and warehouses at St. John, N.B., are reported to have been completed. Up to the present the C.P.R. has made an extensive use of the Intercolonial Ry. freight sheds.

Terminal Points on Atlantic Division.—With respect to the reported probable removal of the terminals from Megantic, Que., to Lowelltown or some other point nearer the International boundary, we are officially advised that while the question of the relocation of divisional points on the Atlantic Division has been talked of, nothing definite has been arranged.

Windsor St. Station, Montreal.—Application is being made by the C.P.R. exercising the rights and franchises of the Ontario and Quebec Ry. to the Board of Railway Commissioners, for the right to take additional lands for the purpose of securing the efficient operation of its lines in connection with the enlargement of the Windsor St. terminals, Montreal.

The outer stone work at the new section of the station is reported completed, and the interior work is being pushed ahead as fast as possible. The work of joining up the new building with the old has yet to be done. It is proposed to move the main entrance to the building from its present position on Osborne St. right on to the corner of Windsor and Osborne Streets. There will be two other entrances to the block, one at the foot of the tower and a second at the corner of Windsor St. and St. Antoine St. Nothing definite has been announced as to the train shed which is to be built over the new tracks which are to be laid.

Proposed Tunnel at Ottawa.—D. McNicoll, Vice President, is reported as having said, Feb. 8. that the company is prepared to build a tunnel under the city of Ottawa as soon as the Government gives the necessary permission. An Ottawa dispatch, Feb. 15, states that the matter will be dealt with by the Government at an early date, and that the engineers to whom the plans were referred report favorably. The cost of the work is stated to be about $3,000,000.

At a hearing before the Board of Railway Commissioners at Ottawa, Feb. 6, it was settled that the basis on which the C.P.R. shall pay the G.T.R. for the use of the Central Station shall be the rental value, not the cost, and evidence will be heard, Mar. 5, as to this point.

Georgian Bay and Seaboard Ry.—Local press reports state that C.P.R. engineers are making surveys for a line from Bethany Jct. through Bethany and Millbrook to the proposed line of the Campbellford, Lake Ontario and Western Ry., in the vicinity of Cobourg or Colborne, Ont. G. H. Garden is in charge.

Grain Elevator at Port McNicoll.—We are advised that a contract has been let to the John S. Metcalf Co., Montreal, for building a reinforced concrete addition to the elevator at Port McNicoll, Ont. The capacity of the additional storage will be 2,000,000 bush., and the estimated cost, together with the additions to the wharf to enable the travelling marine towers to reach the new storage, is approximately $350,000. The original elevator, which has a capacity of 2,000,000 bush., with a working house, was built by the John S. Metcalf Co. about a year ago.

Government House Property, Toronto.—We are officially advised that the plans for the development of this property are still under consideration, and that until definite approval has been given nothing can be said as to the layout of the proposed new yards. Under the agreement the Crown gives up possession of the property June 1.

West Toronto Yards, Etc.—The steel work of the new bridge across the tracks at Weston road, West Toronto, is being erected. Several new tracks have been laid at this point. but the principal work in progress is the laying of the tracks in the addition to the yards near Lambton. The subways at Jane St. and Elizabeth St. are being completed, and a large number of tracks are being laid and will be connected up just as soon as the steel work at the subways has been completed.

Cooksville, Etc.—The Board of Railway Commissioners has approved of plans for a new station building at Cooksville, Ont.. and it is reported that the work will be started at once. The question of the building of a second track from near Islington through there to Streetsville and other points west has been under discussion for a long time. Several surveys have been made, not only for a second track, but for an entirely new track starting from east of Cooksville station, which would cut out some curvature and reduce the gradients. An engineering party has been going over a route from Cooksville, south of Dundas St., westerly.

Entrance to Stratford, Ont.—The Stratford city council has arranged to submit a bylaw to the taxpayers approving of what is known as the South River route for the company's projected line through the town.

Interchange Track at Goderich.—The Board of Railway Commissioners has directed the C.P.R. to provide an interchange track with the G.T.R. at Goderich, Ont., by June 15.

Collingwood Southern Ry.—We are officially advised that surveys are being made by C.P.R. engineers for a line from near Baxter, on the Toronto-Sudbury line, into Collingwood, Ont., but it is not known whether any construction will be done this season or not.

H. D. Lumsden, M. Can. Soc. C.E., was in Collingwood. Feb. 1 and Feb. 6, in consultation with the town council and the Board of Trade in regard to the projected line. It is proposed to place the passenger station and freight yards on Maple St., and to build a wharf extending out from between Maple and Birch Streets. Mr. Lumsden is reported to have told the committee, Feb. 6, that if all the arrangements could be completed it was expected that construction would be started on May 1.

North Bay Yards, Shops, Etc.—Application is being made to the Ontario Crown Lands Department for a grant of water lots on Lake Nipissing, fronting the company's property at North Bay, Ont., for 3,000 ft. and extending 900 ft. into the Lake. It is proposed to fill in these lots and utilize the area for new repair shops, extensions to the existing works, and additions to the yards. General plans have been submitted to the town council for a six track repair shop to cost about $250,000. These have been approved, and the council has also consented to the water lots being transferred to the company.

Romford Jct. to Crete, Ont.—The Board of Railway Commissioners has authorized the opening for traffic of the second track from Romford Jct. to Crete, Ont.. on the Cartier subdivision.

Fort William Tracks, Etc.—The Board of Railway Commissioners has authorized the company to build a second main line track across McTavish St., and a double track across Pacific Ave., Fort William, Ont. A contract is reported to have been let to the Canada Foundry Co., Toronto, for the building of a double deck lifting bridge across the Mission River at Fort William.

Winnipeg Freight Yards, Etc.—In order to relieve the congestion in the freight yards at Winnipeg, two plans are under consideration. The first is the remodelling of the present yards and the provision of an additional yard east or west of the city, and the second is the building of a cut-off from East Selkirk to Reaburn, on what was the original survey for the line before it was determined to pass through Winnipeg. If this plan is adopted a sorting yard will have to be provided either at Reaburn or in its vicinity. Plans are being made for this work, but are not yet complete, and in fact it has not been decided what will be done. The accommodation which has to be provided in the yard wherever it is located will be for not less than 5,000 cars, and the question of $1,000,000 more or less in the cost of carrying out the plans, whatever may be decided upon, scarcely enters into the question. These are the principal statements reported to have been made by George Bury, V.P. and G.M., in reply to a deputation from Selkirk and Stonewall citizens, which waited on him in connection with the newspaper reports as to the route of the projected Selkirk-Reaburn line, which stories, Mr. Bury said, "are absolutely without foundation or authority."

Red River Bridge—Tenders are under consideration for the building of piers for a new bridge over the Red River, south of the Louise Bridge, Winnipeg. The new bridge is to be built in connection with the proposal to facilitate traffic to and from the station and yards.

Minnedosa.—A local press report states that a new bridge is to be built across the Little Saskatchewan river at Minnedosa, Man., to carry a second track, and that additions are to be made during the current year to the roundhouse and workshops.

Saskatchewan Buildings. — Tenders were received to Feb. 20 for the erection of the following buildings in the division:—Express building, outward freight shed, and extension to receiving freight shed at Saskatoon; express building, extension to freight shed, six-stall extension to engine house at Swift Current; six-stall addition to engine house at Regina; six-stall new engine house at Wilkie; standard no. 1 brick house, and six-stall engine and boiler house at Outlook; rooming house for dining car department at Moose Jaw; class A2 station buildings at Griffin, Springside, Drake and Dysart.

Weyburn-Lethbridge Line.—The Saskatchewan Minister of Railways informed the Legislature. Feb. 1, that he had been advised by the President of the C.P.R. that this line would be built to 175 miles west of Weyburn, Sask., during this year, and that a further 100 miles would be built in 1913 According to a statement credited to George Bury, V.P. and G.M., the starting point for construction this year will be at Viceroy, Sask.. and 100 miles will be graded. The construction programme also includes about 25 miles in Alberta, which will be at the Lethbridge end.

Asquith to Battleford, Sask.—We are officially advised that nothing definite has been arranged in regard to the reported early building of a branch from Asquith to Battleford, Sask. It was reported that the building of this line would have been included in the construction programme for the current year, but it was held over.

Moose Jaw Southwesterly—The Board

of Railway Commissioners has authorized the opening for traffic of the branch from Moose Jaw southwesterly for 27.4 miles.

Swift Current Branches, Etc.—The Board of Railway Commissioners has authorized the opening for traffic of the branch from Swift Current southeasterly to Neville, 27.4 miles. The work outlined for the current year includes the grading of a further distance of 85 miles on the line started last year northwesterly from Swift Current, and additions to the terminal facilities at Swift Current.

Bridge at Medicine Hat.—We are officially advised that nothing has been finally decided as to the enlargement of the bridge over the Saskatchewan River at Medicine Hat, Sask. The plans are being prepared for the work, but have not yet been completed and approved.

Alberta Division Buildings.—Tenders have been received for the concrete substructure, excavation, etc., for overhead bridges and subway at Edmonton; for the erection of Western lines class A station buildings, at Webb, Namaka, Seven Persons, Winnifred, Dunmore, Clive, Nevis, Lougheed, Aldersyde, Jaffray, Burmis and Galloway, and a Western Lines standard no. 5 station at Yahk; and for an office building in Edmonton six stories and basement, of steel construction, faced with brick and stone, with tile partitions and arches.

Lethbridge to Coaldale.—Local press reports state that surveys have been completed for changing the location of the line between Lethbridge and Coledale, Alta., to reduce the heavy gradient, and that the new route will give a line about 20 ft. lower than the present one, but as it passes through Henderson Park the citizens are opposing it.

Calgary Shops.—W. L. Murray, of Westinghouse, Church, Kerr Co., general contractors, in an interview Feb. 1, is reported to have stated that construction would be started at the earliest possible moment, and that it was expected to get most of the work done by the end of the year. A U.S. paper recently stated that a contract has been placed there for 3,500 tons of the structural steel required, but George Bury subsequently stated that the order had been placed with a Canadian firm. The construction will be in general charge of T. H. Gilmore, Railway Shop and Equipment Engineer for Westinghouse, Church, Kerr and Co., and F. E. Caldwell, of the same company, will be the superintendent in charge.

Alberta Central Ry.—We are officially advised that the C.P.R. has acquired control of this company's charter. The company originally had power to build a line from Red Deer into the Brazeau coal fields, and subsequently obtained power to extend it through the Peace River district and the Pine River Pass to the Pacific coast, and easterly from Red Deer to Moose Jaw. The company has done some grading westerly from Red Deer, and has laid seven miles of track.

In the course of the discussion on the railway bills in the Alberta Legislature recently the Premier said he had an interview with C.P.R. officials following a letter from George Bury, Vice President, on the subject of building lines in the province. The C.P.R., it was stated, was desirous of building lines without Government aid, and wished for information as to the Government plans in order that there might be no duplication of lines, and that the settled parts of the province might be more quickly given railway facilities. The interview was a satisfactory one. (Feb., pg. 67.)

Kootenay Central Ry.—H. G. Parson, M.P.P., in an interview Feb. 7, said he had been informed by J. S. Dennis, Assistant to the President, that the C.P.R. expected that track would be laid on the K.C.R. from Golden to Spallumcheen, within four or five months.

Second Track Work in British Columbia.—The construction programme for the year covers the building of a second track from Hammond to Vancouver, 24.1 miles. Press reports stated recently that the section from Hope to Spence's Bridge, 88.9 miles, would also be double tracked, but we are officially advised it is not included in the work for which appropriations had been made for this year.

Coquitlam Yards.—The first part of the plans for the extensive yards to be located at this point will be placed under contract at an early date. A considerable sum having been provided in the appropriations for this year. The work proposed to be done this year includes, it is stated, two subways at the eastern end of the property on the Dewdney trunk road under an agreement with the municipality; the laying of 25 miles of track for yard purposes; a 12-stall roundhouse, and a coaling plant; water service. The tracks will be laid so as to form the nucleus of the complete yards.

New Westminster Wharf.—Tenders were received to Feb. 20 for the building of a wharf at New Westminster, B.C., parallel to that of the British Columbia Electric Ry. The wharf will run out to deep water.

Railway to the North Shore.—The British Columbia Minister of Railways had before him Feb. 9 the plan proposed by the C.P.R. for a line along the north shore of Burrard Inlet. The North Vancouver city and municipal authorities, and the Vancouver, Westminster and Yukon Ry., and the Burrard Inlet Tunnel and Bridge Co., which are jointly interested in a railway and bridge project along practically the same route, appeared to protect their interests. The C.P.R. made its application for the approval of its plans under its general powers as to branch lines. After hearing all the parties the Minister intimated that the company's plans would be approved with the proviso that the rights of the municipalities along the waterfront would be protected, and that the company first building would give the other companies running rights. (Feb., pg. 72.)

Toronto Union Station Plans.

The question of the plans for the proposed new union station in Toronto came before the Board of Railway Commissioners in Toronto Feb. 10. When the matter was previously before the commission the C.P.R. was directed to submit plans which would be satisfactory to it. This was submitted, Feb. 10, but proved unacceptable to the G.T.R. The Board favors the G.T.R. plans for the station building, and decided that York St. be kept open. The Chief Commissioner stated that there were some matters which the commission desired to discuss with its engineering and operating officers, and upon these being decided the necessary orders would be made as speedily as possible. J. W. Leonard, Assistant to the Vice President, C.P.R., was subsequently reported as stating that that company could not work under the G.T.R. plans and sooner than do it would erect a separate station.

G. Ruel, Chief Solicitor, Canadian Northern Ry., was reported on Feb. 22 as having stated that the C.N.R. and the C.P.R. would build a union station at North Toronto, at the southeast corner of the junction of the present C.P.R. tracks and Yonge St.

The Grand Trunk Pacific Ry., during Dec., 1911, patented land grants amounting to 140.84 acres.

British Columbia's Railway Construction Policy.

The Premier of British Columbia made a statement in the Legislature, Feb. 20, as to the railway legislation to be submitted for approval.

The Canadian Pacific Ry. is to be authorized to take over under a lease the Esquimalt and Nanaimo Ry., so that the line may be used as its Vancouver Island division, and will be aided in extending the line from Parksville to Comox. On the mainland an arrangement has been completed by which the Kaslo and Slocan Ry. will be taken over by the C.P.R., the rights of the Great Northern Ry. being acquired for $400,000. During the past year the line was operated for some miles by a local syndicate. The entire line is to be brought up to standard, and for this purpose the C.P.R. is to receive $100,000 as aid from the province.

The Kettle Valley Ry. is to be aided $10,000 a mile for the building of a line from Coldwater Jct. to Hope, 50 miles. The Vancouver, Victoria and Eastern Ry. is to be given running powers over this section of the line on terms to be arranged. Two hundred thousand dollars is also to be granted in aid of the building of a bridge across the Fraser River at Hope, for the purpose of connecting up this line with the C.P.R. This will give a short line between the Kootenay district and Vancouver over the C.P.R., and a route via the V.V. and E. Ry. This line will reach Vancouver from Hope over the Canadian Northern Pacific Ry., and its own line through New Westminster.

The Canadian Northern Pacific Ry. is to be aided in building a line from Kamloops via Grand Prairie and Vernon to Kelowna, with a branch to Lumley, a distance of 145 miles, and will also be given a grant of $35,000 a mile for a line from Campbell River to Hardy Bay on Vancouver Island, about 150 miles.

The Pacific and Great Eastern Ry. will be given a guarantee of bonds on the same basis as the guarantee to the Canadian Northern Pacific Ry. for the building of its line on the mainland, for the building of a line from Fort George to North Vancouver, and on by way of the Second Narrows bridge into Vancouver and New Westminster. Provision is to be made for the operation of a car ferry service to Victoria. This is the first section of the projected line from Vancouver to the Peace River country. The contract for the building of this line, press reports state, has been arranged with Foley, Welch and Stewart.

Car Building at Port Arthur.—A tentative agreement was entered into Feb. 16 between the city of Port Arthur, Ont., and the promoters of a company for the location of a car building plant there. The city is asked to provide a site of 125 acres at Bare Point, upon which it is proposed to erect buildings and put in a plant at a cost of $1,350,000. The city is to guarantee the company bonds for $500,000. The bylaw confirming the agreement will be submitted to the taxpayers at an early date. This project, press reports state, is independent of the proposition that the Canadian Car and Foundry Co. locate a branch plant in Port Arthur.

The Canadian Forestry Convention, which met at Ottawa in February, discussed the attitude of railways to forest fires, the discussion being led by E. A. Stirling, Forester, Pennsylvania Rd.

F. Atherton, purser on the C.P.R. s.s. Empress of Britain, was charged in London, Eng., Feb. 20th, with defrauding the C.P.R. and the Dominion Express Co. of some $15,000.

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TORONTO, CANADA, MARCH, 1912.

CONTENTS.

Douglas Fir for Car Building.

In a bulletin on "Wood-using Industries, 1910," issued recently by the Interior Department's Forestry Branch, a comparison of the mechanical and physical properties of Douglas fir and yellow pine is given, which, it is claimed, shows "that, in addition to the physical qualities which render Douglas fir as easily worked, as readily polished, and as suitable for finish as yellow pine, Douglas fir possesses the mechanical qualities which render yellow pine adaptable for car building and for use in situations where durability, strength and resistance to compression are required."

It is also stated that "Douglas fir is a splendid wood for car building, the use for which the greater part of the 21,000,000 ft. of yellow pine was imported in 1910. It is strong, hard, stiff, large and clear enough for car frames, is suitable for car sidings and ceilings, and is beautiful enough for the interior finish of passenger cars. It has been used for the interior finish of private cars in the U.S."

We submitted the above to the principal Canadiaan car building companies and asked for opinions. The following replies have been received:

Canadian Car and Foundry Co., Ltd.

N. CURRY, President, writes: "Most of the railways prefer Douglas fir for passenger car sills, chiefly on account of its straight grain and freedom from knots and cross grained wood, and most of them will permit the use of Douglas fir for box car framing instead of southern pine, but the rail freight makes this wood considerably higher for this purpose than the southern wood. We have been using large quantities of Douglas fir for carbuilding and other purposes for 25 years, and it has always given good results. There will never be any trouble about the Douglas fir competing with the southern wood at the same prices; in fact, in many cases we pay from $1 to $4 per thousand feet more for the Douglas fir than for the southern wood."

Preston Car and Coach Co., Ltd.

D. M. CAMPBELL, General Manager, writes: "Douglas fir is used by us instead of yellow pine quite freely. The only reason that we do not use more of it, is because we can get yellow pine cheaper than we can get Douglas fir, on account of the long haul. But with all deference to the opinion of other experts, we consider that yellow pine is fully as durable as Douglas fir."

R. W. Burnett, General Master Car Builder, C.P.R., writes:—"We have used considerable Douglass fir and with very good results."

Extensions to Canadian Pacific Railway Hotel System.

Extensive additions, etc., are to be made to a number of the C.P.R. hotels this year, involving the expenditure of several millions of dollars. The company's hotel system, which was commenced in 1886 by the erection of mountain chalets at Field, Glacier and North Bend, B.C., has been extended as the demands of travel required until now the company is the largest hotel proprietor in Canada and one of the largest in the world.

The Banff Springs Hotel at Banff, Alta., was started in 1887 and has been repeatedly added to. This year a fireproof wing, a swimming pool, bath houses, etc., will be built at an approximate cost of $500,000.

The Hotel Vancouver, at Vancouver, B.C., was the third of the series to be built. The several additions which have been made having proved inadequate for the demands, very extensive alterations, amounting to a rebuilding of the old part, including new public rooms, are to be carried out, which will place the hotel in the front rank of the system.

The chalet at Lake Louise, near Laggan, Alta., was only a log cabin when originally built in 1890. In 1892 it was burnt down and in 1893 a small frame structure, to accommodate a dozen guests, was built. At present there are 165 rooms. A fireproof wing is to be added with 100 rooms, and three large cottages containing 100 rooms in all, which will bring the total room accommodation up to 365. The approximate cost is $500,000.

The Chateau Frontenac, Quebec, built in 1892, has already been twice added to. A scheme is in hand which, when approved and carried out, will almost double the capacity.

The Place Viger, Montreal, built in 1898, has recently had an addition completed and another addition is planned.

The Royal Alexandra, Winnipeg, built in 1906, is already too small and an addition is contemplated.

The Empress, Victoria, B.C., built in 1907, is being added to for the second time, the new wing containing large general rooms and 80 bedrooms.

The Algonquin, St. Andrews, N.B., built in 1905, was largely added to in 1910. A large wing is being added to provide enlarged kitchen accommodation and additional bedrooms.

The smaller hotels at McAdam, N.B., Field, Glacier, Sicamous and Revelstoke, B.C., have all been largely added to since they were first built.

At Calgary, B.C., construction has started on an hotel which will cost over $1,000,000.

The company's hotels, with their present capacity, can accommodate 4,500 guests. The present dining room capacity is 3,247, which gives but a slight idea of the service rendered. The number of meals served last year was approximately 2,871,922.

Railway and Allied Associations, Clubs, Etc.

The names of persons given below are those of the secretaries.

CANADIAN CAR SERVICE BUREAU, J. E. Duval, 401 St. Nicholas Building, Montreal.

CANADIAN FREIGHT ASSOCIATION, T Marshall, Union Station, Toronto.

CANADIAN FREIGHT ASSOCIATION, (Western Lines), W. E. Campbell, 502 Canada Building, Winnipeg.

CANADIAN RAILWAY CLUB, J. Powell, St. Lambert, Que. Meetings at Montreal 2nd Tuesday each month, 8.30 p.m., except June, July and August.

CANADIAN SOCIETY OF CIVIL ENGINEERS, C. H. McLeod, 413 Dorchester St., west, Montreal.

CANADIAN STREET RAILWAY ASSOCIATION, Acton Burrows, 70 Bond Street, Toronto.

CANADIAN TICKET AGENTS' ASSOCIATION, E. de la Hooke, London, Ont.

CENTRAL RAILWAY AND ENGINEERING Club of Canada, C. L. Worth, 409 Union Station, Toronto. Meetings at Toronto 3rd Tuesday each month, except June, July and August.

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.

QUEBEC TRANSPORTATION CLUB, J. S. Blanchet, Quebec.

WESTERN CANADA RAILWAY CLUB, W. H. Rosevear, 25½ Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.

Canadian Northern Railway Earnings, Expenses, Etc.

Gross earnings, working expenses, net profits, increases or decreases, compared with those for 1910-11, from July 1, 1911:—

	Earnings.	Expenses.	Net Earnings.	Net Increase
July	$1,475,900	$1,114,300	$361,600	$13,400
Aug.	1,420,600	1,105,900	314,700	51,700
Sept.	1,576,400	1,157,000	419,400	38,200
Oct.	2,028,900	1,348,500	680,400	99,900
Nov.	2,001,500	1,336,300	665,200	106.300
Dec.	1,831,400	1,327,600	503,800	144,600
	$10,344,700	$7,389,600	$2,945,100	$154,100
Inc.	$ 2,288,100	$1,834,000	$ 454,100	.....

Approximate earnings for Jan., $1,228,100, against $822,600 for Jan., 1911.

Canadian Pacific Railway Earnings, Expenses, Etc.

Gross earnings, working expenses, net profits, increases or decreases, compared with those for 1910-11, from July 1, 1911:

	Earnings.	Expenses.	Net Profits.	Net Increases.
July	$ 9,661,818.14	$5,958,789.81	$3,703,028.33	$218,408.74
Aug.	10,421,904.42	6,346,333.41	4,075,571.01	383,898.68
Sept.	10,049,084.97	6,131,638.17	3,917,446.80	5,847.16
Oct.	11,207,991.99	6,526,887.21	4,631,104.75	175,944.23
Nov.	10,570,694.80	6,583,328.31	3,987,366.46	250,244.23
Dec.	10,654,871.67	6,549,141.41	4,105,730.26	819,196.37
	$62,566,365.99	$38,096,118.35	$24,470,247.64	$1,853,539.41
Inc.	6,778,713.35	$ 4,925,173.94	$ 1,853,539.41	....

Approximate earnings for Jan., $7,201,000, against $5,650,000 for Jan., 1911.

Grand Trunk Railway Earnings, Expenses, Etc.

Subject to audit, the accounts for the half-year to Dec. 31, 1911, show the following results:—

Gross receipts		£4,135,800
Working expenses		3,110,900
Net receipts		£1,024,900
Income from rentals, outside operations, and car mileage balances		11,700
Total net revenue		£1,036,600
Net revenue charges for the half-year, less credits		530,800
Balance		£ 505,800
Deduct, Canada Atlantic Ry. deficiency for the half year	£32,300	
Detroit, Grand Haven and Milwaukee deficiency for the half year	6,600	
		38,900
Surplus		£ 466,900

This surplus of £466,900 added to the balance of £11,600 from June, 1911, makes a total of £478,500 available for dividend, which will admit of the payment of the dividend for the half year on the 4% guaranteed stock, and first and second preference stocks, and a dividend of 1½% for the year on the third preference stock, leaving a balance of about £6,800 to be carried forward.

The accounts of the Grand Trunk Western Ry. for the half year, after providing for the deficit of £31,461 at June 30, 1911, show a surplus of £12,500, which amount is carried forward to the current half year.

Approximate earnings for Jan., $3,422,296, against $3,381,239 for Jan., 1911.

CANADIAN PACIFIC RAILWAY

NOTICE.—The Canadian Pacific Railway Company will apply to the Parliament of Canada, at its present session, for an Act authorizing and empowering it to expropriate any easement, right of way or other privilege enjoyed in, to or over, or in respect of any lands and required for the purpose of its railways, or any railway controlled or operated by it, and for other purposes.

Dated at Montreal, this 8th day of February, 1912.

WALTER R. BAKER,
Secretary.

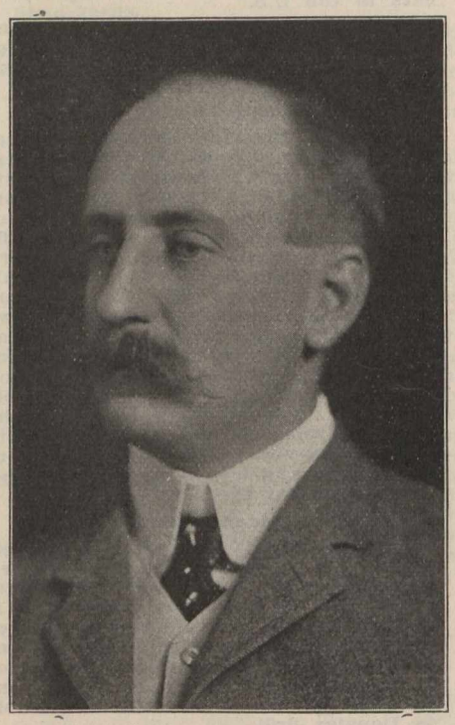
Pringle, Thompson & Burgess,
Ottawa Agents.

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:—

Heated Cars for Mineral Waters, Etc.

15819. Jan. 18.—Re application of Sanitaris, Limited, Arnprior, Ont., for an order directing railway companies to furnish, during cold weather, heated cars for the carriage of mineral water, ginger ale, and other bottled beverages, in quantities aggregating not less than carload lots, from one shipper to one or more consignees and destinations. Upon the hearing of the application on Jan. 4 last, and hearing what was alleged on behalf of the railway companies and the applicant, and judgment being withheld for further information; and upon its now appearing that railway companies had in practice systems of carrying way freight in heated cars, and upon the complaint of the Sudbury Brewing and Malting Co. that such systems had been abandoned, and upon its appearing that



H. H. Vaughan,
Vice President, Canadian Society of Civil Engineers.

at a meeting of the Canadian Freight Association, held on Nov. 23, 1911, as alleged in a circular sent to the Sudbury Brewing and Malting Company by the C.P.R. local freight agent at Sudbury, that it was resolved that shipments in less than carload lots in heated cars should be discontinued, and its appearing that no notice of the withdrawal of such privilege had been given to shippers, and such withdrawal has worked hardship, it is ordered that all railway companies subject to the Board's jurisdiction shall forthwith re-establish the system or system in practice by them of carrying less than carload lots in heated cars during the winter of 1910-1911, and shall forthwith grant to all shippers the rights and privileges of such shipping facilities in respect to such traffic as were in force upon their various lines during the said winter, until further order, or until the reasonableness of the withdrawal of such facilities can be passed upon by the Board.

Boston and Maine Rd. Tariffs.

15858. Feb. 1.—Re supplement no. 1 to Boston and Maine Rd. Joint and Proportional Class-rate and Commodity Tariff C.R.C. 1219: Whereas the said tariff was issued by the railroad company on May 24, 1911, to take effect on June 28, 1911, but was not filed with the Board until Jan. 4, 1912, and whereas, under the provisions of the Railway Act, any special tariff advancing the toll previously authorized to be charged shall be filed by the company with the Board at least 30 days previously to the date on which such tariff is intended to take effect, it is ordered that the said Supplement no. 1 be disallowed.

Freight Rates in British Columbia.

15961. Feb. 15.—The complaint of the Vancouver Board of Trade, alleging discrimination in freight rates by the railway companies operating in British Columbia having been fully heard and the Board having, during the progress and before the completion of that case, undertaken a general enquiry into freight rates in Alberta, Saskatchewan, Manitoba and Ontario west of Port Arthur, and it appearing that the questions arising in the Vancouver Board of Trade case are so intimately related with the rates now under enquiry in the other provinces above mentioned that this matter cannot be satisfactorily disposed of separately. It is ordered that the Province of British Columbia be added to those above mentioned and that the said general enquiry shall extend to and cover all the freight and passenger rates in that province; that all the evidence and exhibits as well as the argument shall form part of the record in said enquiry; that any interested party may supplement as he may desire to the said evidence and argument.

Joint Tariffs Less Than Local Rates.

At a meeting of the Board in Ottawa, April 16, railway companies under Dominion authority will be required to show cause why an order should not issue calling for the publication and filing of joint tariffs between points in Canada (where such have not already been published and filed) less than the combination of the local rates of the several companies to and from the junction point or points; also to state their views as to the extent to which the said local rates might be reduced on joint traffic.

Canadian Society of Civil Engineers' Officers.

Following are the officers for the current year, as changed by the elections at the annual meeting in Montreal recently:—

PRESIDENT—W. F. Tye, Toronto. VICE PRESIDENTS—H. Holgate, Montreal; J. G. Sullivan, Winnipeg; H. H. Vaughan, Montreal. TREASURER — E. Marceau, Montreal. SECRETARY—C. H. McLeod, Montreal. COUNCILLORS—P. S. Archibald, Moncton, N.B.; E. E. Brydone-Jack, Winnipeg; C. E. Cartwright, Vancouver; C. R. Coutlee, Ottawa; J. S. Dennis, Calgary; A. E. Doucet, Quebec; G. H. Duggan, Montreal; C. L. Fellowes, Toronto; H. E. T. Haultain, Toronto; L. A. Herdt, Montreal; J. A. Hesketh, Winnipeg; H. M. Jaquays, Montreal; P. Johnson, Montreal; J. C. Kennedy, Vancouver; J. G. LeGrand, Winnipeg; W. B. Mackenzie, Moncton, N.B.; D. MacPherson, Ottawa; C. N. Monsarrat, Montreal; R. McColl, Halifax; J. T. Morkill, Sherbrooke; P. E. Parent, Quebec; J. M. Shanly, Montreal; A. F. Stewart, Toronto; W. J. Stewart, Ottawa.

J. W. Harkom, M. Can. Soc. C.E., consulting engineer, Melbourne, Que., read a paper on "Locomotive boilers, their development and troubles; some reflections and suggestions," before the Canadian Railway Club in Montreal Feb. 13.

Railway Rolling Stock Notes.

Five of the locomotives which are being built by the Montreal Locomotive Works for the C.P.R. will be changed to burn oil fuel on the British Columbia Division after they have been delivered.

The 2,000 steel frame box cars, which the C.P.R. recently ordered in the U.S., as mentioned in a previous issue, will be C.P.R. standard. 80,000 lbs. capacity, 36 ft. long inside, with steel underframes and superstructures, etc.

The 200 stone cars, which the C.P.R. is having built at the Nova Scotia Car Works, Halifax, as mentioned in our last issue, will be of steel, 41 ft. long, with wooden sides, and of 80,000 lbs. capacity. They are to be practically standard steel underframe cars.

The three Lidgerwood flat cars which were built by the Canadian Car and Foundry Co., Montreal, for the Dominion Equipment and Supply Co., Winnipeg, as mentioned in our last issue, have been forwarded to Mackenzie, Mann and Co., Winnipeg.

The Central Vermont Ry. has purchased four Pacific type locomotives, from the Baldwin Locomotive Works, Philadelphia, Pa., three switching locomotives from the Lima Locomotive Co., Lima, O., and six passenger, one dining, two baggage and two parlor cars, from the American Car and Foundry Co., St. Charles, Mo.

The 90 tank cars, which the C.P.R. is having built in the U.S., mention of which has already been made, will have a capacity of 40 tons, and tank capacity of 8.393 imperial gallons, or 10,075 U.S. gallons. They will be equipped with steel under frames and friction draft gear, and fitted with safety valves and steam heating pipes to assist the loads to be discharged.

The Northern Construction Co. and Foley Bros. have ordered one special Rodger double plough distributing car, 30 tons capacity, from the Hart-Otis Car Co. It will be built by the Canadian Car and Foundry Co. Following are the principal dimensions:—

Length over end sills	32 ft.
Width over side sills	8 ft. 9 ins.
Height from rail to floor	4 ft. 1¼ ins.
Truck centres	23 ft. 8 ins.
Wheel base of truck	5 ft. 2 ins.

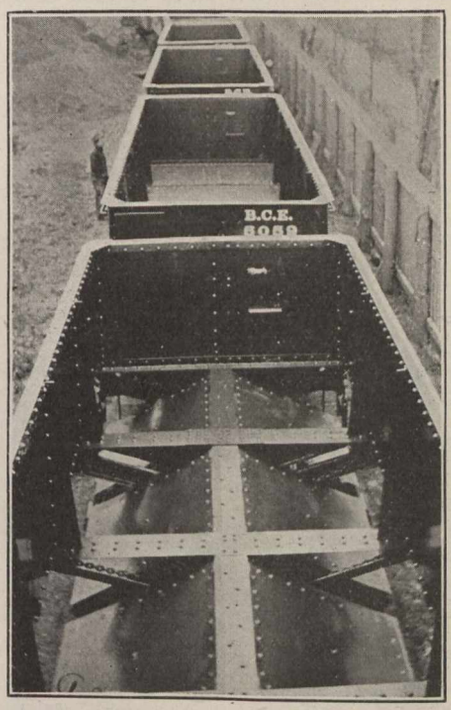
In our last issue in referring to the order given by the G.T.P.R. to the Canadian Locomotive Co., Kingston, Ont., for 15 consolidation locomotives with Schmidt superheaters, it was stated that it was in addition to the 25 already on order with the company. We are advised that the order is not an additional one. the order for 25, details of which we gave in our Jan. issue, has been reduced to 15, owing to the company not being able to make the delivery required.

The ten sleeping cars, which the C.P.R. is having built in the U.S., and which were mentioned in our Jan. issue, will be practically duplicates of the company's present type, and will be equipped with Tower couplers, Westinghouse air brakes L.N. 1612, cast steel body bolsters, Safety Car Heating and Lighting Co. lamps, Canadian Gold Car Heating and Lighting Co., hot water heating with Frumveller heater, with circulation controlled by C.P.R. standard heat controller.

The Quebec Central Ry. has ordered two mogul freight and two 10-wheel passenger locomotives from the Canadian Locomotive Co., Kingston, Ont. Following are the chief particulars:—

	Mogul.	10 Wheel.
Weight in working order	144,000 lbs.	155,000 lbs.
Weight on drivers	122,000 lbs.	123,000 lbs.
Cylinders, diameter and stroke	20 by 26 ins.	20 by 26 ins.
Driving wheels, diar.	57 ins.	63 ins.
Driving journals	8½ by 12 ins.	9 by 12 ins.
Boiler pressure	200 lbs.	200 lbs.
Tender, weight	104,000 lbs.	114,000 lbs.
Brake equipment	Westinghouse E.T. 6	

The Winnipeg board of control has under consideration tenders for the supply and delivery in that city a 44 or 45 ton steam shovel, equipped with a dipper of at least 1¼ yard capacity, and having a clear lift from rail to bottom of dipper door when open of not less than 16 ft. The city is also considering tenders for a standard gauge locomotive having a haulage capacity of at least 350 tons on a 1% gradient, and equipped both back and front with attachment for coupling to standard 80,000 lb. capacity freight cars.



Hart-Otis Dump Cars for British Columbia Electric Ry.

The illustrations on this page show Hart-Otis dump cars, of which the British Columbia Electric Ry. ordered 16, of 60,000 lbs. capacity, from the Hart-Otis Car Co., Ltd., Montreal, which have been built by the Canadian Car and Foundry Co. Following are the principal dimensions: Length inside, 25 ft.; length over buffers, 28 ft. 2½ ins.; width inside, 7½ ft.; width over all, 8 ft.; height inside, 4 ft.; height over all, 8 ft. 4½ ins.; doors on each side, 5; angle of door opening 30 degrees. They are equipped with Simplex bolsters and brake beams.

Following are chief details of the 410 Otis semi-composite general service cars, which the C.P.R. is having built by the Canadian Car and Foundry Co., under license from the Hart-Otis Car Co:—

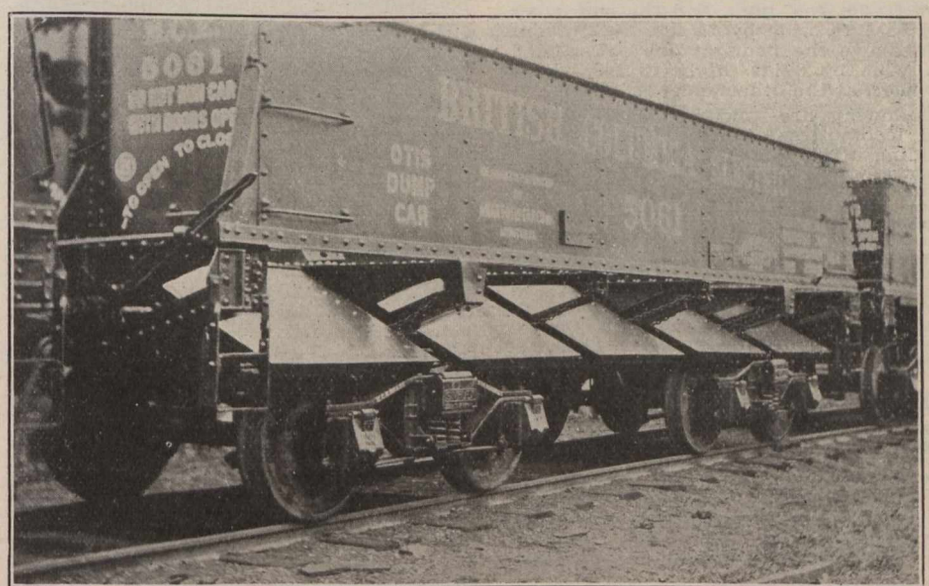
Length over end sills	38 ft. 9 ins.
Length inside	36 ft. 5 ins.
Width over all	9 ft. 11¼ ins.
Width inside	9 ft. 7 ins.
Height inside	5 ft.
Height from rail to top	9 ft. 4¾ ins.
Height from rail to floor	4 ft. 4¾ ins.
Truck centres	26 ft.
Wheel base of truck	5 ft. 6 ins.
Number of doors on each side	6
Width of door opening	2 ft. 2 ins.
Length of door opening	36 ft. 5 ins.

The Canadian Car and Foundry Co., between Jan. 15 and Feb. 15, made the following deliveries—24 Otis all steel cars to the Algoma Steel Co.; three first class cars, one sleeper, 221 ballast cars, 242 box cars, 382 steel under frame flat cars and one snow plough to the Canadian Northern Ry.; 13 steel under frame flat cars to the Canadian Pacific Ry.; one first class car, 143 steel frame box cars and 20 steel under frame flat cars to the Intercolonial Ry.; three tourist cars to the Grand Trunk Pacific Ry.; 31 steel frame box cars to the Grand Trunk Ry.; and four pay-as-you-enter composite street cars to the Montreal Tramways Co.

The Canadian Northern Ry., between Jan. 15 and Feb. 15, received the following additions to rolling stock—355 flat cars, four first class cars, one snow plough and 230 box cars, from the Canadian Car and Foundry Co., Montreal; one rotary snow plough from the Montreal Locomotive Works; 10 switching locomotives from the Canadian Locomotive Co., Kingston, Ont.; six second class cars and 30 box cars from the Crossen Car Co., Cobourg, Ont.; 188 Hart cars from the Hart-Otis Car Co., Montreal; one consolidation locomotive from the Canada Foundry Co., Toronto, and 110 box cars from the Nova Scotia Car Works, Halifax, N.S.

Following are chief details of the two G2 locomotives which the C.P.R. is building at its Angus shops, Montreal, as mentioned in our last issue:—

Weight on drivers	142,000 lbs.
Weight of engine	224,000 lbs.
Heating surface, tubes	2,730 sq. ft.
Heating surface, firebox	175 sq. ft.
Heating surface, total	2,905 sq. ft.
Superheater heating surface	539 sq. ft.
Grate area	45.6 sq. ft.
Cylinders, diar. and stroke	22½ by 28 ins.
Driving wheels, diar.	69 ins.
Brake equipment	Westinghouse ET 6



Hart-Otis Dump Cars for British Columbia Electric Ry.

Lubricator	Detroit 22
Valve gear	Walschaert
Superheater	Vaughan and Horsey
Boiler pressure	200 lbs.
Tender, weight loaded	140,000 lbs.
Capacity, water	5,000 imp. gals.
Capacity, coal	12 tons

O'Brien, McDougall and O'Gorman have ordered 100 forty-ton Hart convertible ballast and construction cars, 1912 design, from the Hart-Otis Car Co. These will be built by the Canadian Car and Foundry Co. Following are the principal dimensions:—

Length over end sills	36 ft. 8 ins.
Width over side sills	8 ft. 10 ins.
Length inside as hopper	20 ft. 10 ins.
Length inside as gondola	34 ft. 8 ins.
Width inside	8 ft. 8 ins.
Width over all	10 ft. 2½ ins.
Width at top	9 ft. 10 ins.
Height from rail to floor	4 ft. 4⅛ ins.
Height from rail to top	8 ft. 1⅜ ins.
Height inside	3 ft. 9¼ ins.
Truck centres	26 ft. 8 ins.
Wheel base of truck	5 ft. 4 ins.
Length of hopper door opening	16 ft. 8½ ins.
Width of hopper door opening	2 ft.

Following are the chief details of the 300 forty ton steel under frame Hart convertible cars, which the G.T.P.R. recently ordered from the Hart-Otis Car Co., Montreal, as announced in our last issue:—

Length between end sills	36 ft. 10 ins.
Width over side sills	8 ft. 9 ins.
Length inside as hopper car	22 ft. 4 ins.
Length inside as gondola car	34 ft. 8 ins.
Width inside	8 ft. 8 ins.
Width overall	10 ft. 2½ ins.
Width at top	9 ft. 10 ins.
Height from rail to top of floor	4 ft. 4¾ ins.
Height from rail to top of car	8 ft. 2 ins.
Height inside	3 ft. 9¼ ins.
Truck centres	27 ft. 10 ins.
Wheel base of truck	5 ft. 4 ins.
Total wheel base of car	33 ft. 2 ins.
Length of hopper door opening	17 ft. 8½ ins.
Width of hopper door opening	1 ft. 10 ins.

The C.P.R. stock cars, 308 of which are being built at its Angus shops, Montreal, as mentioned in our last issue, will have capacity for 60,000 lbs., and be 36 ft. long, 8 ft. 3¾ ins. wide by 7 ft. 5⅛ in. high, inside measurements. They will have steel centre sills and draft gear connections, four hay racks and four water troughs, extending from centre doors to ends of cars, the flooring will be extra heavy, of special quality, and the ends will have steel posts and thick lining to provide for carrying rails, etc. Two side doors will be provided, each 5 ft. wide by 6 ft. 9⅝ ins. high, and the end doors will be 2 ft. wide by 14 ins. high, about 5 ft. above the floor, at one end, and 8 ins. wide by 8 ins. high, 18 ins. above the floor, at the other end.

Following are chief details of the U3d locomotives which the C.P.R. is building at its Angus shops, Montreal:—

Weight in working order	137,000 lbs.
Boiler, type	Straight top, radial stayed
Boiler pressure	200 lbs.
Wheel base, driving	11 ft. 6 ins.
Cylinders, diar. and stroke	18 by 26 ins.
Boiler tubes, no. and diar.	232 2 ins.
Heating surface, tubes	1,406 sq. ft.
Heating surface, firebox	138 sq. ft.
Heating surface, total	1,544 sq. ft.
Grate area	29 sq. ft.
Valves	11 ins. piston
Valve gear	Walschaert
Driving wheels, diar.	52 ins.
Brake equipment	Westinghouse ET 6
Lubricator	Detroit 22
Weight of tender loaded	90,000 lbs.
Weight of tender light	44,000 lbs.
Capacity, water	3,500 imp. gals.
Capacity, coal	10 tons

Following are the chief details of the 25 consolidation locomotives which the G.T.P.R. is having built by the Montreal Locomotive Works, as mentioned in our last issue:—

Cylinders, diar. and stroke	23 by 30 ins.
Driving wheels, diar.	63 ins.
Boiler pressure	180 lbs.
Boiler, outside diar. at front end	68⅜ ins.
Firebox	96⅞ by 75¼ ins.
Grate area	50.62 sq. ft.
Wheel base, driving	17 ft.
Wheel base, total engine	25 ft. 9 ins.
Wheel base, engine and tender	57 ft. 3½ ins.
Weight on leading truck	26,400 lbs.
Weight on drivers	184,800 lbs.
Weight total of engine	211,200 lbs.
Weight of tender	144,660 lbs.
Tender capacity, water	8,000 gals.
Tender, coal capacity	10 tons
Superheater	Schmidt
Fire doors	Franklin automatic
Valve gear	Walschaert
Brake equipment	Westinghouse E.T. for engine and tender, with cross compound pump

Following are chief details of the 400 steel underframe flat cars, 40 tons capacity, which the C.P.R. is having built by the Canadian Car and Foundry Co., Montreal, as mentioned in our last issue:

Length over end sills	36 ft. 4 ins.
Centre to centre of trucks	26 ft. 5¾ ins.
Length over dead woods	37 ft. 5¾ ins.
Length over floor	36 ft. 10 ins.
Width over floor	9 ft.
Width over side sills	8 ft. 10 ins.
Width over stake pockets	9 ft. 7⅝ ins.
Height top of rail to top of floor	4 ft. 2¾ ins.
Top of rail to centre of drawbar	2 ft. 10½ ins.
Draft springs	M.C.B. Class G
Couplers	Simplex
Air brakes	Westinghouse K.C. 812
Wheels	Cast iron, C.P.R. standard for 40-ton cars
Axles	M.C.B. 5 by 9 ins.
Journal bearings	Canadian Bronze Co.
Journal boxes	McCord mall. iron
Truck springs	C.P.R. standard
Brakebeams and bolsters	Simplex
Side bearings	Susemihl
Journal bearing wedges	Drop forged
Brake shoes	Steel back

The Grand Trunk Ry. has ordered 250 thirty-ton all wood refrigerator cars from the Canadian Car and Foundry Co. Following are the chief particulars:—

Length over end sills	40 ft.
Length over buffers	41 ft.
Length inside, clear	34 ft. 5⅜ in.
Width over side sills	9 ft. ¾ in.
Width at eaves	9 ft. 6⅝ ins.
Width in clear	8 ft. 1⅜ ins.
Height top of rail to top of running board	12 ft. 8⅜ ins.
Clear height top of floor to under side of ceiling	7 ft. 2½ ins.
Draft springs	M.C.B. 6¼ by 8 ins.
Couplers	R. E. Janney
Body bolsters	Simplex
Air brakes	Westinghouse K.C. 1012
Truck, type	G.T.R. standard arch bar 30-ton
Brake beams and truck bolsters	Simplex
Truck springs	M.C.B. Class A
Wheels	33 ins. cast iron
Axles	Steel
Journal bearings	M.C.B.
Journal boxes	Cast iron

Following are chief details of the 75 ten-wheel simple superheater locomotives, class D 10, which the C.P.R. is having built by the Montreal Locomotive Works, as already reported:—

Weight on drivers	149,000 lbs.
Weight of engine	198,500 lbs.
Weight of tender	134,000 lbs.
Wheel base, driving	14 ft. 10 ins.
Wheel base, total, engine	26 ft. 1 in.
Wheel base, engine and tender	55 ft. ¾ in.
Boiler, type	Wagon top
Boiler pressure	200 lbs.
Heating surface, tubes	2,229 sq. ft.
Heating surface, firebox	180 sq. ft.
Heating surface, total	2,409 sq. ft.
Heating surface, superheater	408 sq. ft.
Grate area	49 sq. ft.
Tubes, no. and diar.	239 2ins. and 24 5 ins.
Cylinders, diar. and stroke	21 by 28 ins.
Driving wheels, outside diar.	63 ins.
Capacity, water	5,000 imp. gals.
Capacity, coal	12 tons
Axles	main 9½ by 12 ins., others 9 by 12 ins.
Brakes	Westinghouse E.T.6
Headlight	Pyle National Electric
Valve gear	Walschaert
Superheater	Vaughan and Horsey

Following are the chief details of the four Pacific type locomotives which the Central Vermont Ry. has ordered from the Baldwin Locomotive Works, as reported in our last issue:—

Cylinders	22 by 28 ins.
Valves	Balanced slide
Boiler, type	Straight, radial stayed
Boiler, diameter	70½ ins.
Boiler, pressure	200 lbs.
Firebox	96⅞ by 75¼ ins.
Tubes, no. and diar.	305 2 ins.
Heating surface, firebox	70 sq. ft.
Tubes, length	20 ft. 7 ins.
Heating surface, tubes	3,274 sq. ft.
Heating surface, firebrick tubes	28 sq. ft.
Heating surface, total	3,472 sq. ft.
Grate area	50.6 sq. ft.
Driving wheels, diar. outside	73 ins.
Journals	9½ by 12 ins.
Engine truck wheels, diar.	31 and 49 ins.
Journals	Front, 6½ by 10½, and 8 by 14 ins.
Wheel base, driving	13 ft. 4 ins.
Wheel base, total engine	33 ft. 2 ins.
Wheel base, engine and tender	62 ft. 3½ ins.
Weight on drivers	140,000 lbs.
Weight on front truck	38,000 lbs.
Weight on back truck	37,000 lbs.

O'Brien, McDougall and O'Gorman have ordered seven 10-wheeled freight locomotives, type 460, from the Montreal Locomotive Works for delivery in May. Following are the chief dimensions, etc.:—

Cylinders, diar. and stroke	18 by 24 ins.
Driving wheels, diar.	50 ins.
Boiler pressure	160 lbs.
Firebox	90 by 33¾ ins.
Tubes, no. and diar.	198 2 ins.
Tubes, length	12 ft. 3 ins.
Wheel base, driving	10 ft. 6 ins.
Wheel base, engine total	20 ft. 8 ins.
Wheel base, engine and tender	47 ft. 6 ins.
Weight on leading truck	26,000 lbs.
Weight on drivers	83,000 lbs.
Weight, total, engine	109,000 lbs.
Weight of tender	87,000 lbs.
Heating surfaces, tubes	1,261 sq. ft.
Heating surface, firebox	115 sq. ft.
Heating surface, total	1,376 sq. ft.
Grate area	21 sq. ft.
Tractive power	21,150 lbs.
Adhesion factor	3.92
Tender	Eight wheel type
Capacity, water	4,000 gals.
Capacity, coal	8 tons

Following are chief details of the eight ten-wheel locomotives which the C.P.R. is having built by the Montreal Locomotive Works, as mentioned in our last issue:—

Cylinders, diar. and stroke	19 by 24 ins.
Driving wheels, diar.	62 ins.
Boiler, diar. front end	54¾ ins.
Boiler pressure	180 lbs.
Firebox	96¼ by 41¾ ins.
Tubes, no. and diar.	117 2 ins. and 18 5 ins.
Tubes, length	11 ft.
Wheel base, driving	11 ft. 10 ins.
Wheel base, engine	22 ft. 1 in.
Wheel base, engine and tender	49 ft. 5¾ ins.
Weight on leading truck	38,500 lbs.
Weight on drivers	103,000 lbs.
Weight, engine, total	141,500 lbs.
Weight, tender	106,000 lbs.
Heating surface, tubes	926 sq. ft.
Heating surface, firebox	146 sq. ft.
Heating surface, total	1,072 sq. ft.
Grate area	28 sq. ft.
Maximum tractive power	21,380 lbs.
Factor of adhesion	4.82
Tender, type	8-wheel
Capacity, water	4,000 imp. gals.
Capacity, coal	10 tons
Weight, total engine	215,000 lbs.
Weight, engine and tender	350,000 lbs.
Tender wheels, diar.	34 ins.
Capacity, water	7,000 gals.
Capacity, coal	10 tons
Bell ringer	G.T.R. standard
Brakes	Westinghouse American E.T.
Steam heating	Gold system
Driving tires, springs and engine truck wheels	Standard Steel Works Co.
Superheater	Vaughan and Horsey
Headlight	Oil

Rutland Rd.—The Public Service Commission of the State of New York is being asked to sanction the transfer of the control of the Rutland Rd. from the New York Central and Hudson River Rd., to the New York, New Haven and Hartford Rd. The Rutland Rd. owns the Rutland and Noyan Ry. in Canada.

Manitoba and Northwestern Ry.—The Dominion Parliament is being asked to increase the company's bonding powers. The M. and N.W. Ry. is now owned by the C.P.R.

N. Curry, President, Canada Car Co., and Mrs. Curry, left Montreal, Feb. 9, for Jamaica, B.W.I.

J. L. Blaikie, who died in Toronto, Feb. 19, aged 88, was for some years a director of the old Northern Ry.

H. E. Grant, of the British Columbia Electric Ry., addressed the Vancouver branch of the National Electric Light Association, Feb. 7, on "Some Notes on Opportunity."

The American Railway Engineering Association's annual convention will be held at Chicago, Ill., Mar. 19 to 21, when the committee reports will be received and discussed. The speakers at the annual dinner will include Hon. F. D. Monk, Dominion Minister of Public Works.

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.

Allan Line Steamship Co.—H. F. Bradley, heretofore General Passenger Agent for Ontario, Toronto, has been appointed Assistant Passenger Manager, Montreal.

G. H. O'Hara, heretofore in the auditing department, Montreal, has been appointed General Passenger Agent for Ontario, vice H. F. Bradley, promoted. Office, Toronto.

F. S. MacGregor, heretofore Travelling Agent for Ontario, has been appointed Assistant General Passenger Agent for Ontario. Office. Toronto.

Canadian Northern Ry.—W. A. Trenholm, heretofore in the General Passenger Department, Intercolonial Ry., Moncton, N.B., has been appointed chief passenger rate clerk in Assistant General Passenger Agent's office, C.N.R., Toronto.

A. Shields, General Master Mechanic, Winnipeg, is reported to have resigned to look after his private business.

H. Moore has been appointed Freight Overcharge Adjuster, with jurisdiction over all overcharge and station relief claims. Office, Winnipeg.

B. R. Marsales, heretofore City Freight Agent, Edmonton, Alta., has been appointed Contracting Freight Agent, Brandon, Man., vice T. J. Petterson, resigned.

J. G. Entwistle, heretofore locomotive engineer, Edmonton, Alta., has been appointed acting Superintendent, District 2, Western Division, vice C. D. Fisher, resigned. Office, Saskatoon, Sask.

Canadian Pacific Ry.—C. F. Reed, heretofore station agent, Greenville, Me., has been appointed Travelling Freight Agent, Atlantic Division, St. John, N.B., vice C. K. Howard, resigned to enter St. John and Quebec Ry. service.

The unsold portion of the company's land grants and any lands acquired through other companies in Manitoba, Saskatchewan and Alberta, the British Columbia Southern, the Columbia and Western and the Columbia and Kootenay land grants, the company's townsite properties west of Lake Superior excepting Vancouver, Kamloops and those on Vancouver Island, the company's coal lands and coal rights in Canada, as well as the mines at Lethbridge, Bankhead and Hosmer, the company's tie and timber operations in British Columbia, the company's irrigation works, and everything connected with the sale, development or investigation of any of these properties and works have been vested in a department to be known as the Department of Natural Resources.

J. S. Dennis, heretofore Manager of Irrigation and Land Interests in Alberta and British Columbia, has been appointed Assistant to the President. He will have charge of the Department of Natural Resources, and will perform such other duties as may be assigned to him by the President from time to time. All officers and employes of the several branches of the department will be under his supervision and direction. Offices, Windsor St. station, Montreal, and Calgary, Alta.

A Calgary, Alta., press dispatch says J. S. Dennis arrived there from Montreal, Feb. 22, and announced a number of appointments.

P. L. Nasmith, heretofore General Manager, Alberta Railway and Coal Co., Lethbridge, is reported to have been appointed Manager, Department of Natural Resources. Office, Calgary.

Thos. Heeney, heretofore Chief Accountant and Treasurer, Irrigation Alberta and British Columbia Land Department, is reported to have been appointed Assistant Manager, Department of Natural Resources and head of the treasury and accounting branch. Office, Calgary.

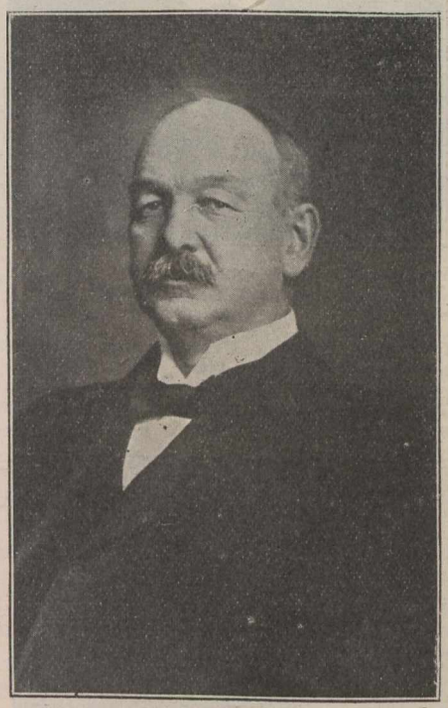
A. S. Dawson, heretofore Chief Engineer, Irrigation Department, is reported to have been appointed Chief Engineer, Department of Natural Resources. Office. Calgary.

F. Stockett, heretofore General Manager, C.P.R. collieries at Bankhead and Hosmer, B.C., is reported to have been appointed General Superintendent, Coal Mining Branch, Department of Natural Resources. Office, Calgary.

Allan Cameron, heretofore General Traffic Agent, New York, is reported to have been appointed Superintendent, Land Branch, Department of Natural Resources.

F. W. Russell, heretofore Chief Clerk, Land Department, Winnipeg, is reported to have been appointed Land Agent there.

F. T. Griffin. heretofore Land Commissioner, Winnipeg, will, it is said, remain thre in an advisory capacity.



James Oborne,
General Superintendent, British Columbia Division, Canadian Pacific Railway.

A branch office for the sale of lands in Saskatchewan will, it is said, be opened at Saskatoon, in charge of W. G. Gerrow, from the Land Department, Winnipeg.

G. Hodge. heretofore Superintendent, District 2, Ontario Division, London, has been appointed General Superintendent, Eastern Division. vice F. P. Gutelius, resigned. Office, Montreal.

Consequent on the resignation of John Corbett, as announced in our last issue, the position of General Foreign Freight Agent has been abolished and the duties merged in those of W. T. Marlow and F. G. Frieser, Import and Export Freight Agents, respectively.

T. Hunter, heretofore clerk arranging diversions, has been appointed chief rate clerk, Import Freight Agent's office, Montreal. vice J. G. Galley, appointed Contracting Import Freight Agent, Atlantic Steamship Lines, as announced in our last issue.

G. H. Bull, H. M. Haas and F. L. Jones, of the International Correspondence School, Scranton, Pa., have been appointed Apprentice Instructors on the Eastern Lines. They will also give advice on questions connected with maintenance and operation of cars and locomotives. The headquarters of the first named are at Toronto, and of the other two at Montreal.

J. T. Arundel, heretofore General Superintendent, Manitoba Division, Winnipeg, has been appointed General Superintendent. Ontario Division, vice Jas. Oborne, transferred. Office, Toronto.

H. C. Grout. heretofore Assistant Superintendent. District 1, Ontario Division, Havelock, has been appointed Superintendent, District 1, Ontario Division, vice R. King, transferred. Office, Toronto.

G. H. Davis, heretofore transitman. District 4. Ontario Division, Toronto, has been appointed Assistant Engineer, Toronto Terminals.

J. J. Brignall, Travelling Passenger Agent, Toronto, is acting chief clerk to District Passenger Agent, Toronto, vice J. J. Rose, resigned.

R. King, heretofore Superintendent, District 1, Ontario Division, Toronto, has been appointed Superintendent, District 2, Ontario Division, vice G. Hodge, promoted. Office, London, Ont.

J. Simpson has been appointed Night Locomotive Foreman at Ignace, Ont.

John McLaughlin, heretofore Electrician at Fort William, Ont., has been appointed Resident Electrician there, vice T. Doust, resigned.

T. Spence, heretofore Car Foreman at Brandon, Man.. has been appointed Car Foreman at Fort William, Ont., vice J. J. Corner, transferred to Brandon, Man.

F. Baird has been appointed Erecting Shop Foreman at Fort William, Ont.

D. C. Coleman, heretofore Superintendent of Car Service, Western Lines, Winnipeg, has been appointed acting General Superintendent, Manitoba Division, vice J. T. Arundel, General Superintendent, transferred to Ontario Division. Office, Winnipeg.

A. Hatton has been appointed acting Superintendent of Car Service, Western Lines, vice D. C. Coleman, appointed acting General Superintendent, Manitoba Division. Office. Winnipeg.

W. K. McLeod has been appointed acting Locomotive Foreman, Winnipeg, vice — Webster on sick leave.

J. J. Corner. heretofore Car Foreman at Fort William, Ont., has been appointed Car Foreman at Brandon, Man., vice T. Spence, transferred to Fort William, Ont.

T. Jones has been appointed Night Locomotive Foreman at Brandon, Man.

W. T. Daniel has been appointed Resident Engineer, District 2, Saskatchewar Division. Office. Regina.

F. J. Gage, Night Locomotive Foreman at Regina, Sask., has resigned.

F. Hill has been appointed Car Foreman at Sutherland, Sask.

C. H. Zerbach has been appointed Car Foreman at Moose Jaw, Sask.

R. Cooper has been appointed Assistant Car Foreman at Moose Jaw, Sask.

W. Jordan has been appointed Locomotive Foreman at Moose Jaw, Sask., vice G. Motta assigned to other duties.

C. W. Leggett has been appointed Car Foreman at Swift Current, Sask.

T. Bell has been appointed Locomotive Foreman at Outlook, Sask.

G. Benedict, agent at Harriston, Ont., is reported to have been appointed Supervisor of Agencies, Calgary, Alta.

R. Taylor has been appointed Locomotive Foreman at Dunmore, Alta.

C. A. Cotterell. heretofore Chief Dispatcher, District 1, British Columbia Division, has been appointed acting Superintendent, District 1, British Columbia Division, vice T. Kilpatrick on sick leave. Office. Revelstoke.

W. McKinty, heretofore Bridge and Building Master, Calgary, Alta., has been appointed Bridge and Building Inspector. Headquarters, Cranbrook, B.C.

J. A. MacDonald has been appointed District Passenger Agent, Nelson, B.C., vice W. J. Wells, resigned.

Jas. Oborne, heretofore General Superintendent, Ontario Division, Toronto, has been appointed General Superintendent, British Columbia Division, vice F. F. Busteed, at present on sick leave, but who, it is reported, will be appointed General Superintendent, Manitoba Division, Winnipeg.

Dominion Atlantic Ry.—Owing to increase in work in connection with the engineering and mechanical departments, Wm. Yould, heretofore Engineer and Mechanical Superintendent, has asked to be relieved of the duties of Engineer, and has been appointed Mechanical Superintendent. Office, Kentville, N.S.

M. A. Fullington, heretofore Resident Engineer, District 4, Ontario Division, C.P.R., Toronto, has been appointed Resident Engineer, D.A.R. Office, Kentville, N.S.

D. J. Murphy, Jr., heretofore Trainmaster and Assistant Traffic Superintendent, has been appointed Superintendent of Transportation, with which latter position the Trainmaster's duties are incorporated. Office, Kentville, N.S.

A. E. H. Chesley, heretofore Assistant Accountant, has been appointed General Accountant and Chief of Accounting Department. Office, Kentville, N.S. The position of Assistant Accountant has been abolished.

The offices of Accountant and Traffic Superintendent are abolished by the retirement of H. A. Prat and Wm. Fraser from the service.

G. A. Parker, heretofore Auditor, has been appointed Traffic Auditor. Office, Kentville, N.S.

G. Sterling, heretofore in the Paymaster's office, has been appointed Paymaster. Office, Kentville, N.S.

Grand Trunk Pacific Ry.—H. A. Woods, Assistant Chief Engineer, has transferred his office from Montreal to Winnipeg.

E. C. Ferguson has been appointed Car Foreman at Rivers, Man.

A. J. Roberts, heretofore General Foreman, Temiskaming and Northern Ontario Ry., North Bay, Ont., has been appointed Locomotive Foreman, G.T.P.R., Regina, Sask., vice C. E. Brooks, transferred.

C. E. Brooks, heretofore Locomotive Foreman, Regina, Sask., has been appointed Locomotive Foreman, Wainwright, Alta.

H. Gallagher has been appointed Roadmaster, Mountain Division. Headquarters, Prince Rupert, B.C.

Grand Trunk Ry.—S. J. Roy, heretofore station agent at Ingersoll, Ont., has been appointed Travelling Auditor. Headquarters, Montreal.

J. A. Clancy, heretofore car distributor and chief clerk to Master of Transportation, Durand, Mich., has been appointed Travelling Car Service Agent, Western Division, vice J. C. Talmage, promoted. He will investigate and report on car service conditions generally at all stations and perform such other duties as may be assigned to him from time to time. Office, Durand, Mich.

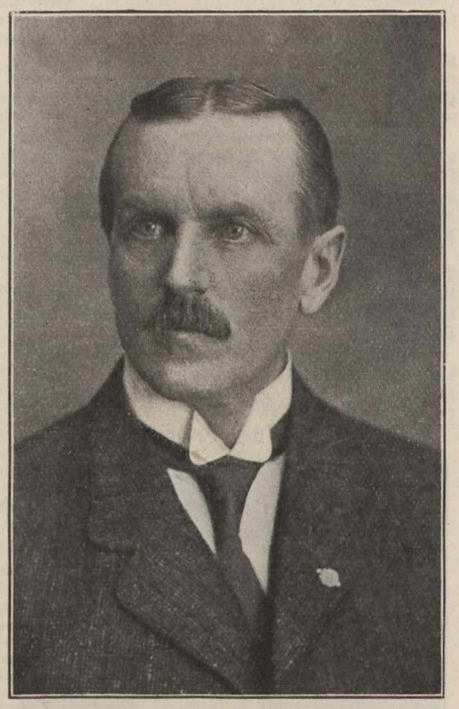
C. O. Busby has been appointed Master of Bridges and Buildings, Western Division, vice J. A. Sheedy, resigned. Office, Durand, Mich.

E. G. Hewson, heretofore Assistant Resident Engineer, has been appointed Resident Engineer, Middle Division, vice C. W. Power, resigned to enter Toronto city service. Office, Toronto.

Hudson Bay Ry.—J. P. Gordon, Winnipeg, has been appointed Assistant Chief Engineer, as reported in our last issue.

Intercolonial Ry.—D. McDonald, heretofore station ticket agent at Levis, has been appointed Superintendent, Montreal and St. Flavie District, vice W. A. Dube. Office, Levis, Que.

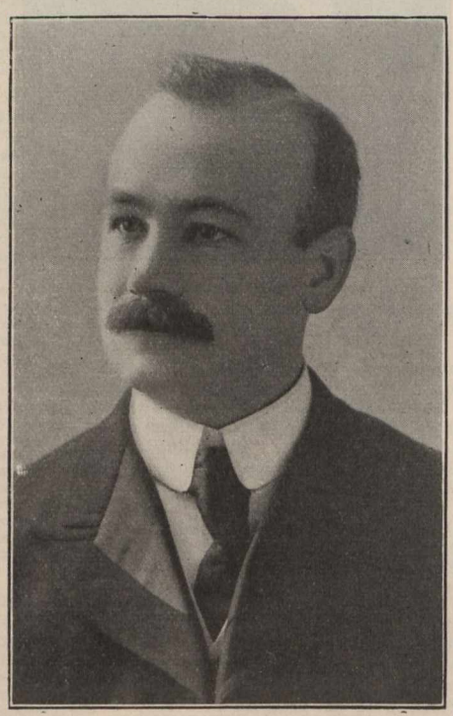
Minneapolis, St. Paul and Sault Ste. Marie Ry.—W. R. Sheldon, heretofore General Agent, Helena, Mont., has been



J. F. Chapman,
Manager, Thousand Islands Ry. and Oshawa Ry.

appointed District Freight and Passenger Agent, Calgary, Alta.

New York Central Lines.—W. V. Lifsey has been appointed General Eastern Passenger Agent, vice E. J.



D. J. Murphy, Jr.,
Superintendent of Transportation, Dominion Atlantic Railway.

O'Hayer, Jr., resigned. Office, 1216 Broadway, New York.

Niagara, St. Catharines and Toronto Ry.—Consequent on the transfer of John Paul, heretofore Freight and Passenger Agent, to Canadian Northern Ry. service at Winnipeg, the duties of W. Phillips, General Freight Agent, lines east of Port Arthur and west of Ottawa, and R. L. Fairbairn, Assistant General Passenger Agent, lines east of Port Arthur, in Ontario and Quebec, Canadian Northern Ry., Toronto, have been extended to cover the N. St. C. and T. Ry., under the direction of G. H. Shaw, General Traffic Manager, C.N.R.

Pennsylvania Rd.—C. B. Brodie, heretofore chief clerk, District Passenger Agent's office, Washington, D.C., has been appointed Canadian Passenger Agent. Office, Traders Bank Bldg., Toronto.

Quebec Ry., Light, Heat and Power Co.—R. M. Reade has been appointed Superintendent, City Division, vice A. J. McDonald, resigned. Office, Quebec.

Reid Newfoundland Co.—E. P. Hughes has been appointed Travelling Engineer, covering territory between St. John's and Clarenville, including branches.

St. John and Quebec Ry.—S. B. Wass, A.M. Can. Soc. C.E., of Presque Ile, Me., is reported to have been appointed Assistant Chief Engineer with headquarters at Fredericton, N.B.

C. K. Howard, heretofore Travelling Freight Agent, Atlantic Division, C.P.R., St. John, N.B., has been appointed Right of Way Agent, St. J. and Q.R.

Thousands Islands Ry., Oshawa Ry—J. F. Chapman, heretofore General Freight and Passenger Agent, has been appointed Manager, in charge of the Operating and Traffic Departments. He will continue to act as General Freight and Passenger Agent, Bay of Quinte Ry. Office, Deseronto, Ont.

White Pass and Yukon Route.—We are officially advised that the position of General Manager, left vacant owing to the appointment of O. L. Dickeson as President, as announced in our last issue, will not be filled for the time being at least.

Dump Ash Pans Specified for Locomotives.—The Board of Railway Commissioners passed order 15988, Feb. 17, as follows: "All railway companies subject to the Board's jurisdiction, operating steam locomotives, shall, on or before Dec. 31, 1913, equip such locomotives as may be in use with ash pans that can be dumped or emptied without the necessity of any employe going under such locomotive except in cases of emergency. After the said date it shall be unlawful for any such railway company to use any locomotive not equipped as above provided."

The Guelph Junction Ry. Co. has received from the C.P.R. $8,794.93, under the terms of the lease for the operation of the line for three months ended Dec. 31, 1911. The amount for the same period in 1910 was $7,801.07.

White Pass and Yukon Ry—Gross earnings for 12 months ended Dec. 31, 1911, $1,067,590, against $1,199,358 for same period 1910.

G. Parent, son of S. N. Parent, ex-chairman of the National Transcontinental Railway Commission, was married in Quebec, Feb. 16, to Miss K. Grenier.

A Winnipeg press dispatch of Feb. 23 says the C.P.R. Construction Department has let contracts for building 308 miles of line, principally in Saskatchewan.

E. A. Robert, President, Montreal Tramways Co., is reported as having stated, Feb. 17, that orders had been given for 65 new cars, making 100 in all ordered by the company since Jan. 1; that 20 of the first order of cars had been delivered, and that it was expected to have nearly all the cars ordered on the lines by July 1. The cars are being built by the Canadian Car and Foundry Co.

National Transcontinental Railway Construction, Etc.

The amendments to the National Transcontinental Railway Act, rendered necessary by the decision of the Government to place the control of construction, etc., under one commissioner, are two in number. The first substitutes a new section for sec. 9 in the original act, declaring that the work is to be under the charge and control of one commissioner, who shall be a body corporate with the title of the Commissioners of the Transcontinental Railway. The second substitutes a new section for the original sec. 22 and authorizes the Minister of Finance, on the recommendation of the Minister of Railways, to pay claims and accounts approved and certified by the Commissioner, provided that no money shall be so paid until a sufficient appropriation has been made by parliament for the purpose.

G. Lynch Staunton, K.C., of Hamilton, Ont., has been appointed by the Dominion Government as Chairman, and F. P. Gutelius, M. Can. Soc. C.E., who recently resigned the General Superintendency of the Eastern Division, C.P.R., Montreal, as the other member of a commission to investigate all matters bearing on the actual construction of the National Transcontinental Ry., between Moncton and Winnipeg, the expenditures thereon, the system adopted for such construction and the management of the undertaking generally. The commissioners are given power to examine witnesses under oath and to exercise the widest possible powers under the act relating to public enquiries.

In the House of Commons, Feb. 14, the Minister of Railways read a statement showing work done on the line between Moncton and Winnipeg, up to Dec. 31, 1911, and the value of the work required to complete the line, on the basis of the estimated cost, as follows:—

Items.	Value of work done to Dec. 31, 1911.	Value of work required to complete
Grading, contract items, including clearing, excavation, culverts, substructures of bridges, tracklaying, ballasting, ties, signals, interlocking appliances, telegraph lines, fencing, water supply, track scales, temporary trestles, and extra work, also pump houses and pumps and substructure of Cap Rouge viaduct	$ 79,368,700	$30,510,300
Right of way and expenses	1,964,500	2,231,500
Rails and fastenings.....	10,214,500	2,985,500
Buildings	985,300	3,971,700
Steel superstructure of bridges, including flooring	4,611,400	1,441,600
Surveys and expenses	4,148,000	22,000
Engineering and expenses	7,681,700	3,850,300
Transcona locomotive shop plant and equipment, including water supply, sewerage system and lighting	2,334,300	602,700
Transcona car shop plant and equipment	171,200	1,129,800
Proposed car ferry at Quebec	.....	650,000
Terminals at Quebec, and line from Quebec bridge to Quebec city.....	508,500	9,091,500
Rentals of joint terminals at Winnipeg	131,300	118,700
Headquarters — Salaries and expenses	1,732,900	1,267,100
Total	$113,853,300	$57,872,700

The Minister went on to state that in addition to the estimated cost of $171,726,000 represented by the two columns in the above table, it had been calculated that the cost for interest to Dec. 31, 1913, would bring the total cost of the line to $187,781,128.68. The interest on this amount for seven years would be $39,434,031; the betterments, unforeseen and unestimated, $7,884,840.32; interest charges on this amount estimated at $900,000, making the capital estimated cost of the line to Jan. 1, 1921, $236,000,000. If the line was not taken over by the G.T. Pacific Ry. Jan. 1, 1914, there would have to be added another $4,500,000 for interest, and if the line did not earn 3% in excess of working expenditure for the three years after 1920, there would be $22,050,000 to be added to the cost for interest.

The engineer's report of progress laid before the House of Commons, Feb. 15, showed that there had been completed 1,587.7 miles or 76.82% of the grading; 1,378.7 miles of main line track, and 278.7 miles of track in sidings had been laid; 982.8 miles of telegraph lines strung, and 82.75% of the bridges built. The work done in the different districts was as follows:—

DISTRICT A.—Moncton to New Brunswick-Quebec boundary, 256.61 miles. Grading completed, 256.4 miles, or 99.5%; track laid, 256.4 miles; telegraph lines strung, 253.1 miles; bridges completed, 99.9%.

DISTRICT B.—New Brunswick-Quebec boundary to east abutment of Megiskan river bridge, 578.19 miles. Grading completed, 462.6 miles, or 80%; track laid, 445.5 miles; telegraph lines strung, 286.6 miles; bridges completed, 97.5%.

DISTRICT C.—East abutment Megiskan River bridge to Quebec-Ontario boundary, 121.94 miles. Grading completed, 77.7 miles, or 63.3%; track laid, 77.7 miles; telegraph lines strung, 24.7 miles; bridges completed, 27.2%.

DISTRICT D.—Quebec-Ontario boundary to 204 miles west of Cochrane, 276.11 miles. Grading completed, 264.6 miles, or 95.8%; track laid, 239.4 miles; telegraph lines strung, 144.2 miles; bridges completed, 95.5%.

DISTRICT E.—Mileage 204 west of Cochrane to 125 miles east of Lake Superior Jct., 195.19 miles. Grading completed, 154.8 miles, or 79.3%; no track laying, telegraph line or bridge work done.

DISTRICT F.—From 125 miles east of Lake Superior Jct. to Winnipeg, 375.90 miles. Grading completed, 371.6 miles, or 98.9%; track laid, 359.7 miles; telegraph line strung, 274.2 miles; bridges completed, 91%. (Feb., pg. 82.)

R. W. Leonard, Chairman, N.T.R. Commission, at a dinner given in his honor at Brantford, Ont., Jan. 30, after referring to the inception of the project, stated that the line in the Maritime Provinces went through a splendid agricultural country, and there was also a large area of good agricultural land in Quebec and Ontario, particularly in the clay belt of Ontario. There also was a large area of rocky country, the mineral value of which it was difficult at present to say. The whole country through which the line passed was capable of great development. The building of the line was a work of great magnitude, stretching as it did between two cities 1,804 miles apart, and crossing rivers which necessitated the building of 243 bridges of large size, in addition to the Quebec bridge, which, when completed, would have the longest span of its kind in the world.

Grand Trunk Pacific Railway Construction, Etc.

A deputation from Port Arthur, Ont., waited on the Dominion Government, Jan. 31, to discuss the entrance of the G.T.P.R. into that city. The matter has been under discussion for a long time, and the citizens are anxious that the connection be secured as soon as possible.

A contract has been let for the construction of an additional unit to the elevator at Fort William, Ont., operated by the Grand Trunk Pacific Terminal Elevator Co., to the John S. Metcalf Co., Montreal. The addition will be of concrete, with 2,500,000 bush. capacity, making the total capacity about 5,750,000 bush. The estimated cost of the addition is $500,000.

E. J. Chamberlin, Vice President and General Manager, is reported as having stated that a start has been made in laying out the company's yards on the acreage secured at Springfield, outside Winnipeg. It is said to be the intention to run all freight trains through Winnipeg to Springfield on a loop line across from the west, the plans for which will be announced, he expected, shortly. A large amount of work has yet to be done in and around the union station, and as soon as this is finished the present temporary tracks will be done away with, and the space taken up by them will be used for other purposes. It is expected that this work will be finished during the summer.

Replying to questions in the Saskatchewan Legislature, Feb. 2, the Minister of Railways said the G.T.P.R. had completed the grading of 133 miles of the branch line from Regina southerly, and the company's engineer had advised him that rails had been purchased for these lines. The route of the line had been approved to the International boundary near Frobisher.

Application is being made to the Saskatchewan Legislature to incorporate the Grand Trunk Pacific Saskatchewan Ry. Co. to build the following lines:— From tp. 9 or 10, range 13 west of the second meridian to Weyburn, thence southwesterly and westerly to the western boundary of the province between tps. 2 and 5. From tp. 16, range 19, west of 2nd meridian, southwesterly, effecting a junction with the previously mentioned line. From Saskatoon westerly and northwesterly to Battleford. From Watrous southwesterly through Swift Current to the International boundary between ranges 23 and 30, west of the third meridian. From Melville to Watrous. From Saskatoon southeasterly to Regina. From tp. 36, range 8, west of the 3rd meridian, southwesterly and westerly to a junction with the G.T.P. Branch Lines Co.'s Biggar-Calgary branch. The bill also provides that such other lines may be built as are authorized by the Lieut.-Governor in Council.

The Board of Railway Commissioners has approved of revised location plans of the G.T.P. Branch Lines Co. Cutknife branch from mileage 31.86 to 55.84, Sask.

The Premier of Alberta, in laying before the Legislature the Government's railway policy recently, said it included the guaranteeing of G.T. Pacific Branch Lines Co.'s lines for $20,000 a mile for a line southerly for 58 miles from the G.T.P.R. main line for the purpose of opening up an extensive coal mining area. An extension of time for a year for the completion of the lines under construction, for which the Government had guaranteed the bonds, would be granted by additional legislation.

On the main transcontinental line track has been laid to near Moose Lake at about mileage 28 west of the B.C. boundary, and about 56 miles west of Fitzhugh, Alta., to which point a train service is being operated. Supply trains are being operated to the track end, the freight then being carried overland to Tete Jaune Cache to await the opening of navigation for transhipment on the two steamboats which are being put together on the river. E. J. Chamberlin, V.P. and G.M., returned to Edmonton from a trip of inspection as far as Tete Jaune Cache, Jan. 31, and stated that he expects to see the track laid to that point

early in June. Construction is to be gone on with from Fort George both east and west, and good progress is reported to have been made on the rock work easterly of Kitselas. Track has been laid to the mouth of the tunnel 104 miles east of Prince Rupert, and the work will be resumed as soon as it is possible to get sufficient continuous grading ahead.

A permit has been taken out in Vancouver by the company for an overhead bridge across the C.P.R. tracks at the foot of Main St. to the docks. These docks are rapidly approaching completion, and it is expected that a start will be made early in the spring on the office building.

Capt. Nicholson, Manager, G.T.P. Coast Steamship Co., is reported as having stated in Victoria that plans are ready for the building which the company proposes to erect on Wharf St. in that city for office purposes, and that a contract will be let for its erection as soon as he receives advice from headquarters.

The company is carrying out a policy of building hotels at central points along its system. The work on the Fort Garry Hotel, Winnipeg, is being pushed rapidly; plans are being prepared for an hotel at Edmonton, Alta., and for hotels at Miette Hot Springs and in the vicinity of Mount Robson, in the Rocky Mountains, and contracts are being let for the hotel at Prince Rupert.

The company, in its general operations, proposes to open up during the current year 57 new townsites, and it has been announced through the Transcontinental Townsite Co., that a contract had been entered into for the building of 25 general stores in various towns along the line. (Feb., pg. 82.)

Grand Trunk Pacific Railway Construction Programme for 1912.

We are officially advised of the following construction programme for the current year:—

MAIN LINE.—Grading is proceeding between mileage 29, west of the Yellowhead Pass and Fort George, B.C., 205 miles, and between Hazleton and Fraser Lake, B.C., 200 miles. Grading up to these points, viz.: from Wolf Creek, Alta., westerly to mileage 29, west of the Yellowhead Pass, and from Prince Rupert easterly to Hazleton, B.C., has been completed.

Tracklaying is completed on the Mountain Division from Wolf Creek westerly to mileage 29, west of the Yellowhead Pass, 158 miles, and further work on track is being held up pending the finishing of certain heavy work between mileage 29 and 50 (Tete Jaune Cache). This will be proceeed with in the spring, and it is expected to lay 150 miles. At the Pacific end of the Mountain Division track has been laid from Prince Rupert to mileage 121, and is now proceeding. It is expected to lay continuously to Aldermere, 235 miles east of Prince Rupert. Further tracklaying beyond this point will not be continued until the latter part of this season.

BRANCH LINES.—The following branches under construction last season, are to be completed this:—

Brandon branch from Harte to Brandon, 24 miles.

Regina-Boundary branch from Regina southeasterly, 155 miles.

Regina to Moose Jaw, 40 miles.

Moose Jaw, northwest, 75 miles.

Prince Albert branch from Young to Prince Albert, 111.5 miles, 67 miles already completed.

Battleford branch, from Oban to Battleford, 48 miles.

Cutknife branch, from Battleford westerly, 50 miles.

Biggar-Calgary branch, from Biggar southwesterly, 104 miles.

Tofield-Calgary branch, 202 miles; 107 miles already completed.

Calgary to Lethbridge branch, 111 miles.

Alberta Coal branch, 56 miles, 31 miles already completed.

IMPORTANT WORKS.—Among the most important works to be carried out are an addition to elevators at Fort William, Ont.; freight shed and local freight yards at Edmonton, Alta.; yards and terminals at Fitzhugh, Alta.; Regina, Sask.; Mirror, Sask., and Calgary, Alta.

Railway Finance, Meetings, Etc.

Canadian Pacific Ry.—A dividend of 2% on the preference stock for the half year ended Dec. 31, and a dividend of 2½% on the common stock for the quarter ended Dec. 31, payable April 1 to stockholders of record of Mar. 1, have been declared. The dividend on common stock is payable as to 7% per annum out of revenue, and as to 3% per annum from interest on proceeds of land sales and other extraneous assets.

Notice has been sent to the shareholders subscribing to the issue of $18,000,000 of common stock, that, in addition to the $30 a share already paid, payments are due as follows:—$30 per share on April 12, June 14, Aug. 16, and Oct. 18.

Dominion Atlantic Ry.—Approximate gross earnings for Jan., passenger $32,300, freight $54,900, total $87,200, against $47,500 total gross earnings for Jan., 1911.

Grand Trunk Ry.—Application is being made to the Dominion Parliament for authority to acquire and deal with bonds and debentures issued or to be issued by the G.T. Western Ry., not exceeding $30,000,000. Power is also asked to issue £250.000 of G.T.R. 4% consolidated debenture stock to aid in the financing of any companies now or hereafter to be incorporated, the controlling interest of which is held by the G.T.R. or the G.T. Pacific Ry., or in the name of trustees for either of these companies.

Grand Trunk Pacific Ry.—Application is being made to the Dominion Parliament to authorize a further issue of perpetual or terminable debenture stock not exceeding £5,000,000, for the purpose of completing the railway, the building of branch lines, the purchase of rolling stock, and the company's general purposes.

Intercolonial Ry.—An Ottawa press dispatch Feb. 9. says the receipts for the current financial year which ends Mar. 31, show to Jan. 31, an increase of $600,000 in excess of those for the corresponding 10 months of 1909-10. There will be an increase in the expenditure, as it is estimated the increase of wages given the employes will amount to over $400,000.

Kingston and Pembroke Ry.—Press reports state that the C.P.R. is negotiating with the holders of the minority stock with a view to securing the complete ownership of the line.

Lake Champlain and St. Lawrence Jct. Ry.—A meeting of shareholders will be held in the C.P.R. offices, Montreal, Mar. 4. for the purpose, among other matters, of authorizing the issue of certificates of capital stock to the shareholders.

The Minneapolis, St. Paul and Sault Ste. Marie Ry. has sold to W. A. Read and Co. an issue of $1,500,000 first consolidated 4% bonds, interest guaranteed by C.P.R. The bonds have been offered to the public at 97½.

New York Central Lines.—A lease and agreement between the Guaranty Trust Co., of New York, and the New York Central and Hudson River Rd., the Lake Shore and Michigan Southern Ry., the Michigan Central Rd., and the Cleveland, Cincinnati, Chicago and St. Louis Rd., has been deposited with the Secretary of State at Ottawa. The Canadian lines affected are the Canada Southern Ry., the Toronto, Hamilton and Buffalo Ry. (as to the interests outside the C.P.R.), and the Ottawa and New York Ry.

Pere Marquette Rd.—The Saginaw board of trade has petitioned the Attorney General of Michigan to take action against the P.M. Rd., in the interest of the shareholders and the public. The petition alleges that the company is insolvent, because of the high rate of interest paid on its obligations, which are said to have increased by $20,000,000 within the last four years; that the line is not being properly maintained, and that it is unable, therefore, to properly serve the transportation needs of the State.

The P.M. Rd. owns the Lake Erie and Detroit River Ry. in Canada, and runs its train through between St. Thomas, Ont., and Buffalo, over the Michigan Central Ry. It also operates, through the L.E. and D.R. Ry., the London and Port Stanley Ry.

Rutland Rd.—Application is being made to the New York State Public Service Commission in the interests of the minority stockholders of the Rutland Rd. with a view of compelling the New York, New Haven and Hartford Rd. to purchase their stocks at the same price it is paying the New York Central and Hudson River Rd. for the majority stock. The Rutland Rd. Co. owns the Rutland and Noyan Ry. in Canada.

Victoria and Sidney Ry.—The British Columbia Courts, Jan. 30, refused to grant an order, asked for by the Victoria city council, for sequestration. The difficulties between the city and the company are of long standing, and if a settlement is not made in the meantime, the matter will again come before the court in July.

Wabash Rd.—A bill for the foreclosure of a mortgage for $40,000,000 on the Wabash Rd., held by the Equitable Trust Co., New York, as trustee, was reported to have been filed in Detroit, Mich., Feb. 16. Interest on the mortgage bonds amounting to $812,000 was due Jan. 1, which indebtedness is admitted by the company. F. A. Delano, W. K. Bixby and E. B. Pryor, St. Louis, were appointed receivers, and were given permission to issue receivers' certificates aggregating $10,000,000 for the benefit of the property.

Wisconsin Central Ry.—An issue of $3,500,000 of first and refunding 4% mortgage bonds, due 1959, is being placed on the London, Eng., market at 89. The W.C. Ry. is controlled by the Minneapolis, St. Paul and Sault Ste. Marie Ry., which in its turn is controlled by the C.P.R. It is reported that about 90% of the issue has been taken up by the underwriters.

Alberta and Great Waterways Ry.—The Premier laid before the Alberta Legislature, Feb. 8, a statement of the claims made in connection with the cancellation of the contract for the building of this railway. The filed amount is $3,190,001.29, of which $2,500,000 is claimed by the construction company, $372,648.16 by the Royal Bank, and $317,353.13 for goods supplied and services rendered, for grading work done, claims against sub-contractors, damages for breach of contract, and for money advanced or promised for special services. A number of the claims are duplicated and this will be thoroughly investigated. No details are given as to how the two largest claims are made up.

Canadian Northern Railway Construction, Betterments, Etc.

The St. Charles and Huron River Ry. Co. has been incorporated by the Quebec Legislature. The route proposed starts from the Quebec and Lake St. John near St. Ambrose de la Jeune Lorette to the Huron River in St. Edmond of Stoneman, about eight miles. The provisional directors are W. S. Barclay, F. M. Spaidal, W. A. Kingsland, and L. A. Cannon, Quebec, the first three of which at least are Canadian Northern Ry. officials. The proposed line is a direct off-shoot of the Quebec and Lake St. John Ry., and is projected to bring traffic to the main line in the shape of summer residents and pulpwood.

It will run up the St. Charles river from Lorette and tap St. Charles and a very pretty country in the Laurentian mountains. The construction will be easy throughout. (Jan., pg. 23.)

Montreal Terminals.—The purchasing of land near Montreal and in the city in connection with the proposed tunnel and terminals. continues. A good deal of this is for C.N.R. purposes. The land not directly required for right of way and terminal purposes has been acquired by syndicates for disposal to industrial concerns. and for residential purposes. Plans have been prepared for laying out the new town at the back of the mountain. and it is stated that development work will be gone on with during the summer.

The general plans for the terminal station are being considered by the Montreal city council.

The financing of the project is reported to have been arranged, and that an issue of $7,500,000 of bonds having been taken by J. P. Morgan's London, Eng., house.

Montreal-Port Arthur Line. — The work on the line, which is to give a direct route from Montreal to Ottawa, is expected to be finished this year. The line which is being built by J. P. Mullarkey, runs from the portal of the proposed tunnel under Mount Royal to near Hawkesbury, Ont. The cold weather has somewhat delayed bridge construction, but it was reported, Feb. 15, that the piers and abutments for the bridge from St. Eustache to Ile Jesus were practically finished, and that the work on the piers and abutments of the bridge from Ile Jesus to Montreal Island would be started early in the spring.

The line from near Hawkesbury to Ottawa is already in operation. In connection with the question of the entrance of the company's several lines into the centre of Ottawa, Sir Wm. Mackenzie is reported to have said that he had had several conferences with the Dominion Government and city authorities, and that a complete settlement of all the points is expected at an early date.

West of Ottawa J. P. Mullarkey has a contract for building about 90 miles to Pembroke. The route crosses the Ottawa River at Fitzroy harbor, near the Chat Rapids, and follows the river in the province of Quebec as far as Portage du Fort, where it crosses to the Ontario side, and proceeds on to Pembroke. The piers and abutments of the two bridges, 2,600 ft. and 1,200 ft. long respectively, are being built.

Protests are being made by citizens of North Bay against the route of the line through the town which has been approved, and the matter was discussed by the town council, Feb. 15, when the agreement came up for ratification. The council declined to ratify the agreement, and decided to ask the Board of Railway Commissioners to decide as to the route.

The Board of Railway Commissioners has approved of location plans for the line through Nepean, March and Tarbolton tps., mileage 14.3 to 27 from Ottawa; through Ross, Westmeath and Pembroke tps., mileage 67 to 83.45 from Ottawa; through Springer, Field, Badgerow, Gibbons and Crerar tps., mileage 366 to 386 from Montreal, and through unsurveyed territory in Algoma district, mileage 327 to 343.15 from Sudbury Jct., Ont.

Canadian Northern Ontario Ry.—The Board of Railway Commissioners has authorized the company to build a line from Stanley St., Trenton, to the railway bridge across the Trent river, to connect the Central Ontario Ry. with the company's Toronto-Ottawa line. The Commissioners have also authorized the opening for traffic of the line from Harrowsmith to Sydenham, mileage 160.50 to 163.60 from Don Jct., Toronto. From Sydenham to Ottawa the line is under contract, and considerable progress has been made with the grading. It is expected that track will be laid over it by Dec. 31.

The plans for the company's line across North Toronto are being worked out, as also are the plans for the line from Toronto to Hamilton and Buffalo. Several surveys have been made through Hamilton and the Niagara peninsula, and plans have been filed. Those for the line through Hamilton were filed Feb. 22, but have not been approved.

Press reports stated recently that the company was considering plans for a line to Kincardine, Ont. We are officially advised that while at some distant date such a line might be built, the company is not considering it at present.

Canadian Northern Ry.—Speaking in a general way at Winnipeg, Jan. 29, on his way back to Toronto from the Pacific coast, Sir Wm. Mackenzie is reported to have said that the company has in contemplation the spending of $25,000,000 on construction west of the Great Lakes this year. Work on the branch lines in the prairie provinces will be pushed in all directions as far as men and materials can be got. The building of a second track from Port Arthur to Winnipeg will have to be undertaken very shortly. A large stretch of the main line between Edmonton and Port Mann will be completed during the year. Several miles of steel had been laid at either end, and it is hoped to get steel laid to the Yellowhead Pass from the east, and to Kamloops from the west, by the end of the current year. The main line from Winnipeg to the coast will be completed by the end of 1914.

In connection with the press reports that additional storage facilities are to be provided at Port Arthur in time for handling the crop of the current year, we are officially advised that nothing definite has been decided on.

We are officially advised that the betterments to be undertaken during the current year include the completion of the fill across Rainy Lake, a solid rock bank wide enough to permit of the laying of a double track; the increase of yard accommodation at Port Arthur, Rainy River, Winnipeg, Dauphin, Saskatoon, and Edmonton; building passing tracks at a large number of places along the entire line; the building of station and section houses at various points on the line; a considerable amount of ballasting all along the line; and the replacing with 80 lb. steel of a considerable mileage of the track between Portage la Prairie, Man., and Kamsack, Sask.

In an interview at Winnipeg, Feb. 15, M. H. MacLeod, General Manager and Chief Engineer, is reported to have said that the work of reducing the gradient on the line from Winnipeg to Fort Frances to 0.4% will occupy a lot of attention this year. There is no intention of double tracking the line as yet, but the bridges on the route will be made ready to carry a second track. The work of grade reduction and general betterment is about completed between Port Arthur and Fort Frances.

In an interview a few days previously Mr. MacLeod is reported as having stated that several miles of tracks would be added to the yards at Fort Rouge, but that nothing definite had been arranged in regard to a suggested new yard east of Winnipeg.

Sir Wm. Mackenzie is reported as saying that a project is under consideration for building a cut-off from Morris to Vita, so as to enable traffic from southern Manitoba to be handled without going through Winnipeg, but that it is still in the future. In connection with this project, press reports state that surveys are being made for a line from near Portage la Prairie, via Culross and Sperling, to Morris, the construction of which would enable through freight from all parts to be hauled to Port Arthur without going into Winnipeg.

The Board of Railway Commissioners has authorized the opening for traffic of the line from Grosse Isle, Man., to the end of track, 31 miles.

Application is being made to the Saskatchewan Legislature to incorporate the Canadian Northern Saskatchewan Ry. Co. to build the following lines of railway:—From Kipling westerly to New Warren; from Lampman northerly to a junction with Brandon-Saskatchewan line of the C.N. Ry.; from Moose Jaw easterly to Regina; from the Delisle branch to the western boundary of the province; from Chamberlin southerly to Moose Jaw: from Craven northeasterly to Hudson Bay Jct., with a branch to near Yorkton on the C.N.R. Rossburn branch; from Humboldt westerly to Saskatoon: from Langham southeasterly to Saskatoon; from Melfort northeasterly, to the eastern boundary of the province; from Hudson Bay Jct. southerly, to near Maryfield, on the C.N.R. Brandon-Regina line; from Swift Current northerly to Battleford; from Chamberlin westerly and north of the North Saskatchewan River to the western boundary of the province; from Prince Albert northeasterly to the eastern boundary of the province; from the C.N.R. Prince Albert-Denholm line to the C.N.R. North Battleford-Jackfish line; from near Moosomin to the southern boundary of the province; and also such other lines as are authorized by the Lieut.-Governor-in-Council.

The Board of Railway Commissioners has authorized the opening for traffic of the Rossburn extension from Hamton to a connection with the Edmonton line east of Canora, Sask., 15 miles.

Tenders were received to Feb. 23 for building the substructure for a subway under the company's railway on 23rd Street, Saskatoon. The work is being done jointly by the company and the city council.

We are officially advised that the company is not making a survey for a line from Bruderheim to Medicine Hat, Alta., as press reports state.

We are officially advised that the construction programme for the year had not yet been definitely settled. It is expected, however, to grade and have track laid on the main line from Edmonton to Yellowhead Pass by the close of the year, in addition to the work going on in British Columbia, which is referred to further on. It is also expected to complete the line between Vegreville and Calgary, Alta., and the line between Alsask and Munson, Alta. This latter will give the company a through line from Saskatoon to Calgary. The line to the Brazeau coal fields, 170 miles, is also expected to be completed this year.

The proposals for aiding railway

building in Alberta, as stated in the Legislature by the Premier recently, provide for the guaranteeing of Canadian Northern Western Ry. and C.N. Ry. bonds for 1,405 miles of line, but as the guarantees in respect of 150 miles are revotes of former votes, the new mileage guaranteed is 1.255. The guarantees are at the rate of $20,000 a mile in respect of 250 miles; at the rate of $15,000 a mile in respect of 415 miles (150 miles being revotes of former guarantees); and at the rate of $13.000 a mile in respect of 640 miles. The lines covered by these guarantees are as follows:—Peace River line from Onoway towards the Peace River, 250 miles; from Athabasca Landing for 100 miles in the direction of Peace River; from Athabasca Landing to Fort McMurray, 175 miles, and a branch line therefrom to Lac la Biche, 40 miles; from north of the Saskatchewan River towards St. Paul de Metis, 100 miles; from south of the Saskatchewan River through Bruderheim to the western boundary of the province, 200 miles; from west of the Calgary and Edmonton Ry. to the west of Pigeon Lake, 100 miles; extension of the Brazeau line southeasterly to the C.N.R. Goose Lake line, 130 miles; extension of the line from Camrose for 80 miles; from Calgary, east of the Calgary and Edmonton Ry., 100 miles. Under the C.N.R. the guarantees will be given for the extension of the Goose Lake line from the eastern boundary of the province to the junction with the Vegreville-Calgary line at the crossing of the Red Deer River, 130 miles. The C.N.R. and its subsidiary companies has under construction in the province 957 miles of railway, including 253 miles of the mine line west of Edmonton. Of these lines, 742 miles have been graded, including 150 miles of the main line, and 380 miles of track, including 35 miles on the main line, has been laid. There is therefore about 600 miles graded and ready for tracklaying, and that mileage can be got ready for operation this year. Of the lines on which track has been laid, 207 miles have been placed in operation. It is expected to have the lines already guaranteed and partly constructed, as well as the whole of the lines now to be placed in operation within four years. The company will be given, under extra legislation, an extension of time for the completion of the lines under construction for which the Government has guaranteed the company's bonds. The acts giving effect to the guarantees have been passed by the Legislature.

A press dispatch Feb. 5, stated that track had been laid into Athabasca Landing, and that it would take a month to finish up the work on the branch.

Canadian Northern Pacific Ry.—The British Columbia Minister of Railways informed the Legislature recently that the C.N.P.R. Co. had deposited with the department plans and profiles of its railway, as required, and that the same had been approved. The maximum gradient on the mainland is 0.4%, and on Vancouver Island 1.50%. The maximum curvature is 10 degrees, and the minimum 0.30 of a degree.

Tracklaying on the line from Port Mann easterly was reported to have reached Chilliwack, Feb. 10. The building of the bridge over the Coquihalla River near Hope was started Feb. 1. G. Brant being engineer in charge. The grading and other work on the line easterly from Hope is making rapid progress, and it is expected to have track laid to Kamloops by the end of the year.

Press reports state that engineers are making surveys for a branch line from Kamloops to Vernon, about 80 miles, and that A. E. Ashcroft is in charge of the party working out of Vernon. Mr. Ashcroft is understood to be making surveys for the Coteau Power Co.'s line, an electric project, which Mackenzie, Mann and Co. have acquired control of.

Vancouver Island—In an interview at Victoria, on the occasion of his recent visit, Sir Wm. Mackenzie is reported as stating that the grading on the first 35 miles of the line out of Victoria is practically completed, and that the work on the rest of the 100 miles is under way. Arrangements are reported as being made to secure ferry terminals on the island as well as on the mainland. (Feb., pg. 74.)

Grand Trunk Railway Betterments, Construction, Etc.

Central Vermont Ry.—E. H. Fitzhugh, President, C.V. Ry., and other officers are named as provisional directors of the Barre Granite Ry., a company incorporated in Vermont State to build a line of 10 miles from Barre, Vt., to a connection with the C.V.R. at Williamstown, Vt.

New England Proposals—The Southern New England Ry., Feb. 8, invited bids for the building of the line from Palmer, Mass., to Providence, R.I. Contractors are asked to submit prices for the completion of everything in connection with the extension of the line, the work to be completed by Dec. 31, 1913. The company is applying to the Massachusetts Legislature for authority to build the following lines:—from Windsor, Vt., to Boston; from Boston to Blackstone, and from a point in Douglas county to Worcester, Mass. The authorities in control of Boston harbor propose to expend $50,000,000 upon its improvement in order to provide for the increasing business and to facilitate the entrance of the new line.

Lachine, Jacques Cartier and Maisonneuve Ry.—The Board of Railway Commissioners has approved of the location of this line from 40 ft. west of the C.P.R. crossing at Iberville St. to the terminal at St. Catherine St., Montreal, through C.P.R. lands, subject to an agreement between the two companies.

Montreal Grade Revision.—The proposed grade revision in Montreal continues to be discussed by the city board of control, as well as by local representative bodies. Deputations representing St. Henry, Ste. Cunegonge and St. Joseph wards waited on the board of control recently and argued in favor of the depression of the tracks instead of their elevation in the city.

East Toronto Yards.—The company is reported to have purchased a large area of land between Carlaw and Boston Avenues, east of the Don, from the Toronto city council and other owners for yard purposes.

Orillia, Ont.—We are officially advised that the press reports stating that a site had been purchased in Orillia on which to erect an office building, and that a new station would be built opposite the C.P.R. station at Mississaga St. in that town, are without foundation.

West Toronto to Weston.—A press report states that it is proposed to lay a second track from West Toronto to Weston during the present year, and that the possibility of building a second track right through to Sarnia is being considered.

Hamilton, Ont.—Press reports state that there is every reason to believe that the plans for the new station in Hamilton will be submitted to the city council at an early date. The City Engineer states that the plans, when submitted, will provide for a station on Ferguson Ave., between King and Barton Streets.

St. Catharines, Ont.—A deputation from the city council waited on G.T.R. officers at Montreal, Jan. 30, with regard to the proposed high level traffic bridge over the old Welland canal on the road to the G.T.R. station, and also about the proposed new station at St. Catharines. The cost of the bridge is estimated at $175,000, and the city is asking the company to contribute $50,000 towards its construction. The Chief Engineer promised to visit the city and look into the project early in March. The deputation was informed that the company had under consideration a plan for building a spur from the main line to the northern section of the city to connect with the Welland division line.

Port Colborne, Ont.—Press reports state that the company has leased from the Dominion Government all the Government land lying between the G.T.R. Welland line and Welland St., and is purchasing adjoining lands. The land, it is said, will be used for yard and station purposes.

International Bridge.—We are officially advised in connection with the press report that the International bridge at Black Rock was about to be rebuilt; that during 1911 the portion of the bridge over the Black Rock harbor was replaced, owing to improvements being made in the channel by the U.S. Government, and that at present the company is not considering the replacement of the bridge. (Feb., pg. 85.)

Automatic Signals on the Canadian Pacific Railway.

The C.P.R. has placed an order for automatic block signals to equip 192 miles of line, including about 33 miles of double track. This is probably the most extensive installation of automatic signals in Canada. The termini of the sections to be signalled are as follows:—

St. John, N.B., to Vanceboro, Me., 90.25 miles single track.

Brigham Jct., Que., to Montreal Jct., 34.5 miles single track and 9.5 miles double track.

Place Viger, Montreal, to Ste. Therese, Que., 20 miles double track.

West Toronto to Bolton, Ont., 21.6 miles single track.

Islington to Streetsville, Ont., 12.9 miles single track.

Romford Jct. to Sudbury, Ont., 3.2 miles single track and 3.8 miles double track.

The Hall Signal Co.'s style K top post signals, with the arms working in the upper quadrant and three positions, will be used, and the work of installation will be begun in the spring after the frost is out of the ground. On the C.P.R. the night signal colors are green for proceed, yellow for caution and red for stop. The signals will be arranged to stand "normal danger," and the apparatus and construction will conform to the specifications of the Railway Signal Association.

Papers on Transportation.—Collingwood Schreiber C.M.G., General Consulting Engineer for the Dominion Government and Chief Engineer, National Transcontinental Ry. Western Division, read a paper, "A short sketch of the development of transportation facilities in Canada" before the Canadian Society of Civil Engineers in Montreal, Feb. 8. At the same meeting A. Surveyer read a paper on the cost of transportation by land and water.

Vancouver Branch Canadian Society of Civil Engineers.—At the annual meeting, Feb. 4, the following were elected officers for the current year:—Chairman, C. E. Cartwright; executive committee—J. C. Kennedy, L. G. Robinson, H. P. Archibald; Secretary-Treasurer, W. A. Kennedy. The branch has a membership of over 100.

Electric Railway Department

Steel Body Cars for the Montreal Tramways Company.

The Montreal Tramways Co. is having a series of steel-body cars built to the designs of D. E. Blair, Superintendent of Rolling Stock. The first of these cars, shown in the accompanying fig. 1, was delivered about the beginning of the year by the Canadian Car and Foundry Co.

In general appearance they closely resemble the last series of cars built for the company, the principal point of difference lying in the careful design which has in view the elimination of as much weight as possible without at the same time decreasing the strength. This feature has been successfully accomplished, a considerable saving in car weight being obtained with a stronger and more substantial car.

The elimination of excessive weight in street car design has been made a subject of exhaustive study by Mr. Blair. He partially bases his claims for more attention to weight reduction on the fact that "careful investigation would seem to indicate that the cost of maintenance of car equipment is in direct proportion to the total weight of the car, and there is every reason to believe that the wear and tear of track and roadway increases to an equal ratio. This is especially so if the car weights have increased beyond the capacity of the older roadbeds and rails, and it has been deemed advisable to replace a soft and resilient rail foundation with a hard, unyielding bed of concrete in direct contact with the rail." This subject was thoroughly treated by him in a paper read at the Canadian Street Railway Association's annual meeting in 1910 and published in The Railway and Marine World for Sept., 1910, from which the foregoing extract is taken.

He went on further to show from deductions made on other roads that taking the conservative figure of 5 cts. for the operating cost per lb. of car per year, it would be a paying investment for any road to pay $1,000 for every one-ton reduction in car weight. Under operating conditions not as favorable as that just cited, an even greater premium might profitably be paid for weight reduction. This alone is based on the cost of power as produced, neglecting the fact that all power saved means a greater operating capacity for a given plant, without further power plant additions. This incidentally relieves much capital from being tied up in this manner.

A marked advance in car weight reduction has been accomplished in these cars. The former cars of exactly similar general size and seating capacity—to seat 40—weighed complete 53,000 lbs. The cars of the new 1,200 series here to be described weigh 44,000 lbs., a saving of about 9,000 lbs. So much, in fact, has the body weight been reduced that the truck manufacturers were willing to supply a size lighter truck than those used in the last cars, it being felt that these new cars were sufficiently light to warrant their use as safely as the heavier truck with the old design. Other savings might be had were the equipment manufacturers as interested in weight reductions as the operating companies. More mention will be made of this later.

FRAME.—The main point of design towards weight elimination, lay in the careful and studied design of the car frame, to place the members just where they will do the most good, and at the same time make a careful selection of those shapes which are of such inherent construction as to increase the strength of the general design with the use of less metal. To further quote Mr. Blair:

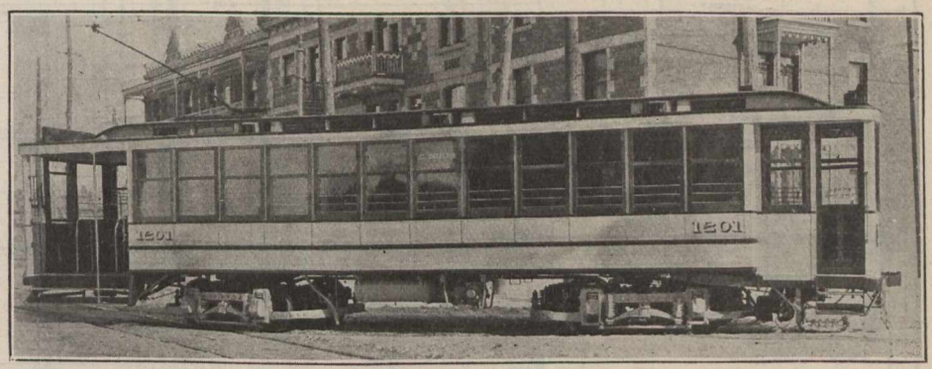


Fig 1—Steel Body Cars for the Montreal Tramways Co.

"There has been no limit set to the weight of car, and the builder finds it more convenient, perhaps on account of limited shop facilities and perhaps because it is cheaper, to use standard commercial shapes and dimensions where a lighter shape of better design would have done as well."

The essential part of the design upon which all the rest of the design depends, is that of the girder plate. This new design is shown in fig. 2. In the former design a long beam was built up of ⅛-in. plate, the depth from belt rail to bottom of car body. It being impossible to secure plates of sufficient size to make the side out of one continuous piece, riveted joints had to be resorted to. This new design dispenses with such a construction.

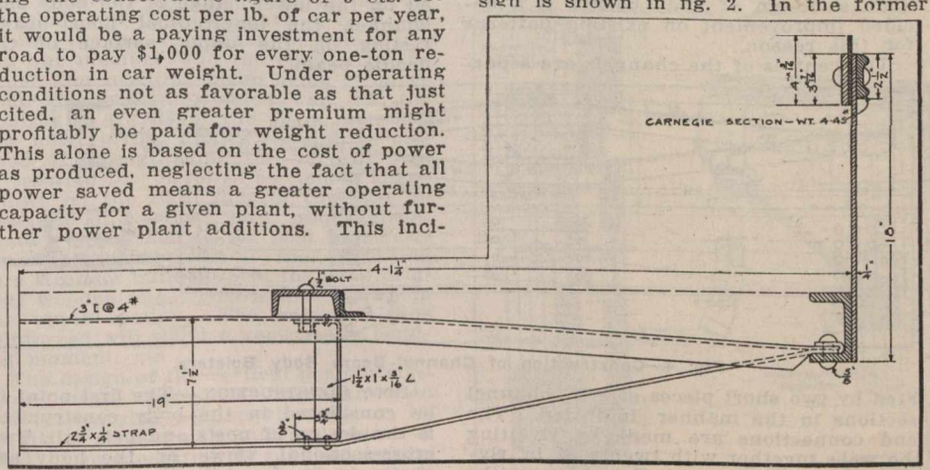


Fig. 2—Construction of Girder Plate and Needle Beam.

It was felt that while ⅛-in. was sufficiently great, as far as strength alone was concerned, it was not sufficient to withstand all the wear and tear to which the side of a car is subjected, especially in narrow, crowded thoroughfares such as exist in Montreal. Simplicity of repair was also a question of equal importance with that of weight elimination, these two being the big desiderata.

If a thicker sill plate could be employed, as a natural consequence it would not have to be as deep for a given strength when acting as a beam. What was even more important, narrow plates could be secured from the mill in sheets of such length as to require no splicing. This, combined with the fact that a heavier plate is less subject to injury from side blows, led to the adoption of a shallower but thicker plate, the depth only being about half that used in the former design. This girder is the narrow strip between the two black lines at the bottom of the car body, as seen in fig. 1. The construction of this supporting girder plate is shown in fig. 2, which also shows one of the needle beams.

This girder plate, as fig. 2 shows, is a composite member, built up so as to resemble in qualities an I-beam girder. A ¼-in. web plate, 18 ins. deep, is secured by a single row of rivets to a heavy 4x2½x½ in. ship channel at 13.6 lbs., in the manner indicated. This forms the tension member of a built-up girder. At the top of the web plate a composite member is built up, composed of a bar section, and a special Carnegie section of such a shape as to have the outside rivets come below the surface. This composite section forms the upper member of the girder. The upper, or compression member, is further reinforced for a distance of 5 ft. from the rear end by the addition of a 3 x 7-16 in. plate as shown in the illustration. Such a construction constitutes a strong, light, rigid girder, in various ways superior to the old design. This girder runs the full length of the car body, following the corner curvature at front and rear vestibules, producing a strong corner construction for the withstanding of shocks.

Particular emphasis might be drawn to the fact that while weight reduction was one of the great desiderata, the main factor kept in mind throughout the design was to produce a car both strong and rugged in design, yet light, which would still be proof against the many abnormal bumps and consequent stresses to which large cars are subjected in crowded thoroughfares.

The balance of the frame, of which these side girders are the principal members, is shown in fig. 3. It is 32 ft. 3 ins. long. The 4x2½x½ in. heavy channel which forms the tension member of the side girders continues along both sides. The ends, joined to the sides by gusset plates, are 6 1-16 x 3 9-16 x 7-16 in. Z-bars at 18.3 lbs. These sections across the ends are each further reinforced by a 2 x ½ in. truss plate supported on a 12-in. length of 6-in. channel, in the manner indicated. This construction is calculated to make the car body uncol-

lapsible from any reasonable end impact, the assumption being that the affected vestibule will crush, leaving the body comparatively free from damage. This is in line with the contentions being advanced by many railway car builders to the effect that vestibule construction should be weak as compared with the balance of the car, acting either as a resilient or collapsible body to protect the main structure.

A front vestibule projecting forward a distance of 5 ft. 7¾ ins. is carried on two 6-in. channels at 10 lbs., one at each side, supported from the main frame in the manner indicated in the plan and elevation of the end construction. On the outer end of these channels there is a steel bumper, built up of a 6-in. 10.5-lb. channel and 3-16-in. cover plate.

Intermediate to the outside supporting channels, there are two 6-in. 9-lb. angles for the support of the vestibule floor structure. They are carried at the front by the bumper, and at the rear by the body end Z-bars.

The rear vestibule construction required some very careful designing, on account of the great overhanging weight carried by it. This platform projects back 7 ft. 9¾ ins., and from the centre of the back truck to the rear of the platform is over 13 ft. This platform construction would seem to be abnormally large, but is considered advisable for the P-A-Y-E system of fare collection. The design here developed is on the assumption of it being possible to concentrate 30 normal individuals on the extreme rear end of the platform. This condition never existing, the design can readily be seen to be strong enough to meet all requirements. Incidentally it may be mentioned that as light a car construction is not possible with such cars as is practicable on cars with shorter vestibules, owing to the heavy reinforcing necessitated.

The back vestibule is carried on a rather ingeniously designed arrangement of channels in the manner indicated, two 4-in. at 6 lbs. being used on each side. As shown in the sectional view, a 10-in. 25 lb. piece of I-beam acts as a separator directly under the end of the car body end Z-bar, with lighter separators at other places. Extra metal had to be introduced into these overhanging beams, on account of the side offset, to allow for the car steps being inside the outside clearance line. This arrangement, it will be noted, has been well designed, resulting in not only a substantial but clean-cut design. A rear-end bumper, built up of channels and plates, is carried on these overhanging beams. Intervening 6-in. 10-lb. channel beams, as at the front, support the floor.

BODY BOLSTER.—The design of body bolster is rather ingenious, from the fact that the arrangement permits of a very low setting of the car body for a given height of truck. The design is illustrated in the accompanying drawing, fig. 4. As will be noticed, it is constructed of two lengths of channel steel, the upper 12 ins. at 20.5 lbs., and the lower 10 ins. at 20 lbs. Both are placed web upwards. The advantage of such an arrangement is that the upper surface may be brought as close as practicable to the car floor, while the truck bolster centre fits up between the flanges of the lower channel, making the distance between truck bolster and floor a minimum, for a maximum distance of the centres of gravity of the channel sections. This is readily seen from an inspection of the drawing. Such a design of body bolster is a decided improvement on existing patterns for this reason.

The centres of the channels are separated by two short pieces of 8-in. channel sections in the manner indicated. The end connections are made by rivetting the webs together with twenty ¾ in. rivets, which is amply sufficient to withstand horizontal shear.

The construction of sidebearing plates is indicated in the cross-sectional view of a-b. A flanged piece serves the double purpose of distance piece between compression and tension member of the bolster, the flange securing the circular bearing surface. A Z-bar between the flanges of the lower channel provide additional stiffness to the bearing surface.

Instead of the car body being built up on longitudinal sills supported at intervals across the body bolster, the body frame is made in one unit as previously described, and illustrated in fig. 3, this completed unit being attached to the body bolster by the heavy ship channels along the sides in the manner shown by the dotted channel in fig. 4. The floor and end strengthening beams of the body frame are clear of the body bolster, as shown, the whole weight being carried directly from the built-up plate girder on to the ends of the body bolster. The advantage of such a construction lies in the fact that the floor being unsupported from the body bolster, which is carried on the truck bolster, is freed from the vibration that the truck would otherwise transmit. The life of the floor is thereby increased, and the comfort of the passenger provided for.

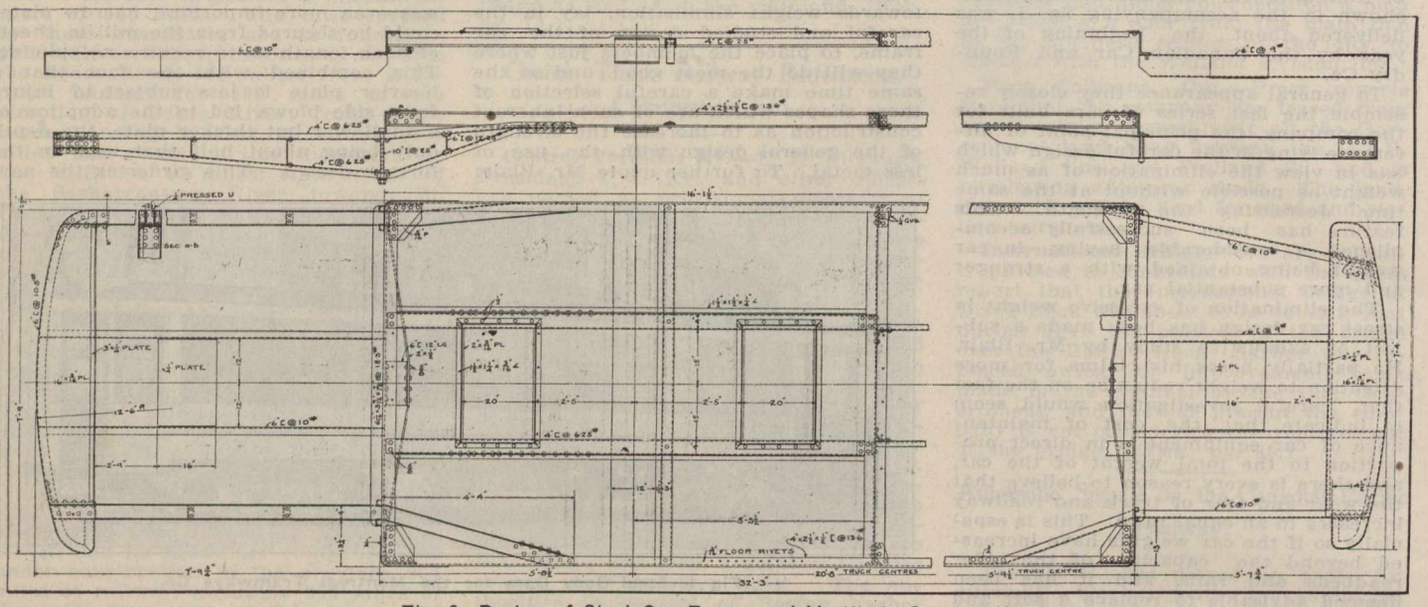


Fig. 3—Design of Steel Car Frame and Vestibule Construction.

The construction of the cross floor beams or needle beams shown in the frame illustration, fig. 3, is shown to better advantage in fig. 2. The construction of these needle beams is quite similar to that of the body bolster, only the lower member is a plain 2¾ x ¼ in. plate strap, the forces acting being reversed. The upper member is a 3-in. channel at 4 lbs. This beam is supported on the lower flange of the body ship channel, the longitudinal floor beams resting on the upper surface of the needle beam.

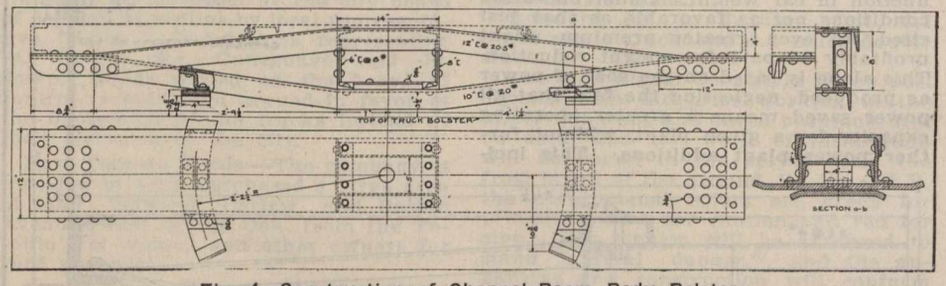


Fig. 4—Construction of Channel-Beam Body Bolsters.

BODY CONSTRUCTION.—The first point to be considered in the body construction is the design of posts and belt rail. Two cross-sectional views of the body are shown in fig. 5, while fig. 6 shows some of the more important details on a larger scale.

A casual glance at the three sections to the left in fig. 6 will suffice to emphasize the fact that the wall construction is unusually thin—only 3 7-16 ins., giving a clear inside width of 7 ft. 8½ ins., which is somewhat more than is ordinarily found in cars of similar outside dimensions. To obtain this extra width, very careful design was required.

The weak point usually occurs at the juncture of posts and belt rail, both these members requiring to be recessed in order that they may fit into each other with flush surfaces. This weak point usually necessitates much heavier members in order that the place may be of sufficient strength. A simple modification has here been introduced to make

the post and belt rail construction not only thinner but stronger than usual. The belt rail is recessed on its inner face, similar cut-outs on the outer face of the posts fitting into them. These recesses make the belt rail weak on its inner face, and the posts, on their outer face. attached by wood screws through holes in the brass-rod fittings, engaging the window sash from the inside, drawing the sash inward. No objectionable and unsightly screw holes are thus left visible when the double windows are removed for summer service. Special precautions This is clearly objectionable, for from the long unsupported length, unless unduly strong, it will tend to sag at the centre from its own weight. Consequently, in this design, no beam construction has been attempted, the whole weight of clerestory and roof being supported on

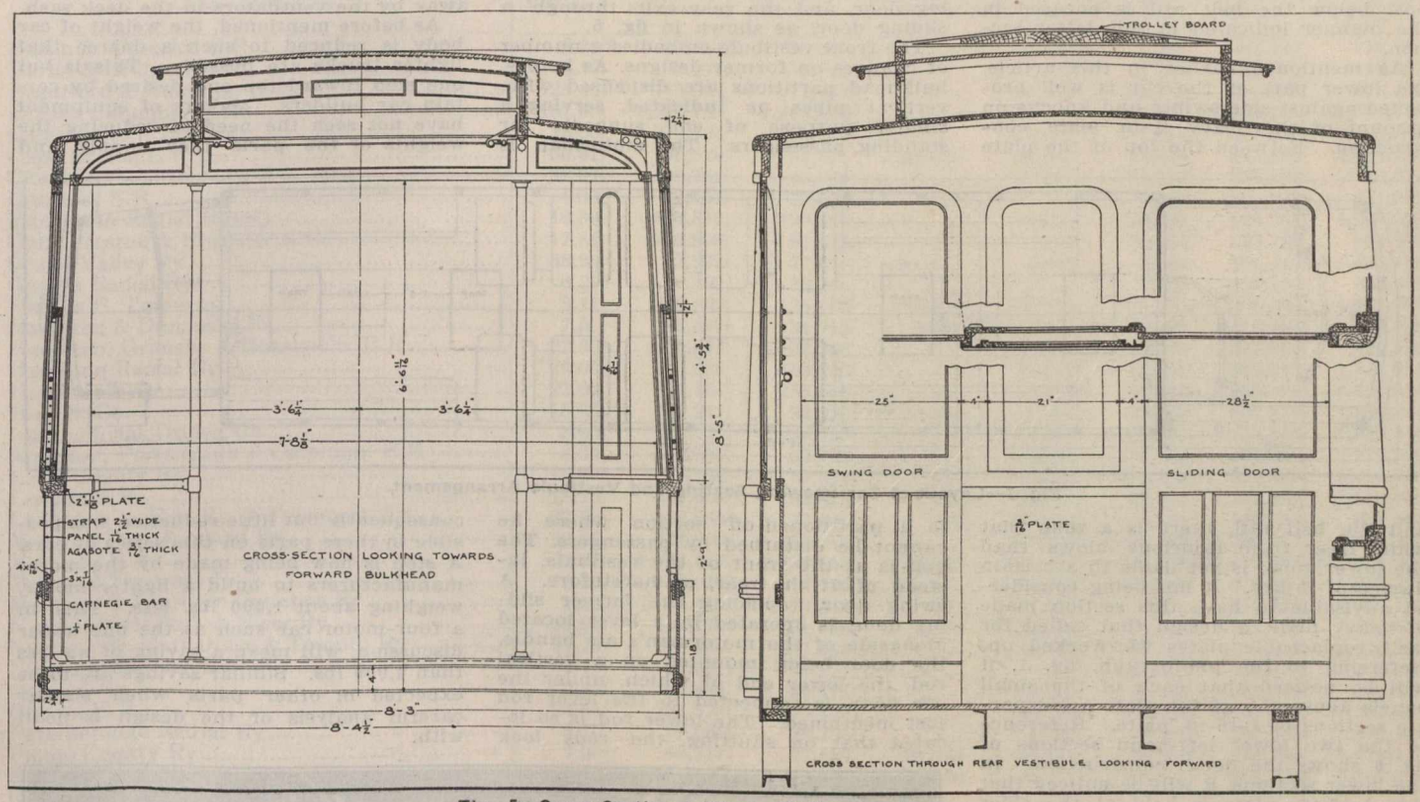


Fig. 5—Cross-Sectional Views of the Car Body.

To strengthen the belt rail, a ⅛-in. steel band shown under the wooden strip on the left face of the belt rail in "section of window sill," is attached to the rail belt by screws the full length of the car. The belt rail thus becomes a built up girder, the uncut wooden section forming one member, and the steel strip the other, the resulting beam being stronger than the original wooden rail, as the centres of gravity of the beam members are now further apart. A similar method of strengthening the vertical post is resorted to. A rolled section of shape shown on the right face of the post in "section of vertical post above girder plate," is fastened to the post by screws from the girder plate to roof, resulting in a stronger built-up post than the original wooden one. This is also shown in the upper section. The belt rail thus reinforced will stand a very heavy bending moment.

The design of the vertical posts is simplicity itself. Instead of an ornamented post of varying section throughout its length, a rectangular uniform section is used. Ornamentation is supplied by the attached strips shown in the sections through sashes in the upper left-hand corner of fig. 6. These strips serve the double purpose of guides and decoration, for while extremely plain, their neat lines present an ornamental appearance.

The inner windows are made in two sashes, the upper one of which is stationary. The lower one is opened by raising up into an opening in the upper part of the car, shown in "roof corner details." Double windows, which are also provided, are secured in an excellent manner. As shown in the sections showing "roof corner details," the top of this outer window fits under a holding-in strip. The lower end, instead of being secured by wood screws from the outside screwed into the vertical post, are at- have been taken that these outer windows fit snugly, for when the intervening space is made air tight, no trouble will be experienced from frosted windows. the carlines. Protection is provided against the weather at the point at which the carline vertically enters the roof, by encasing the exposed section

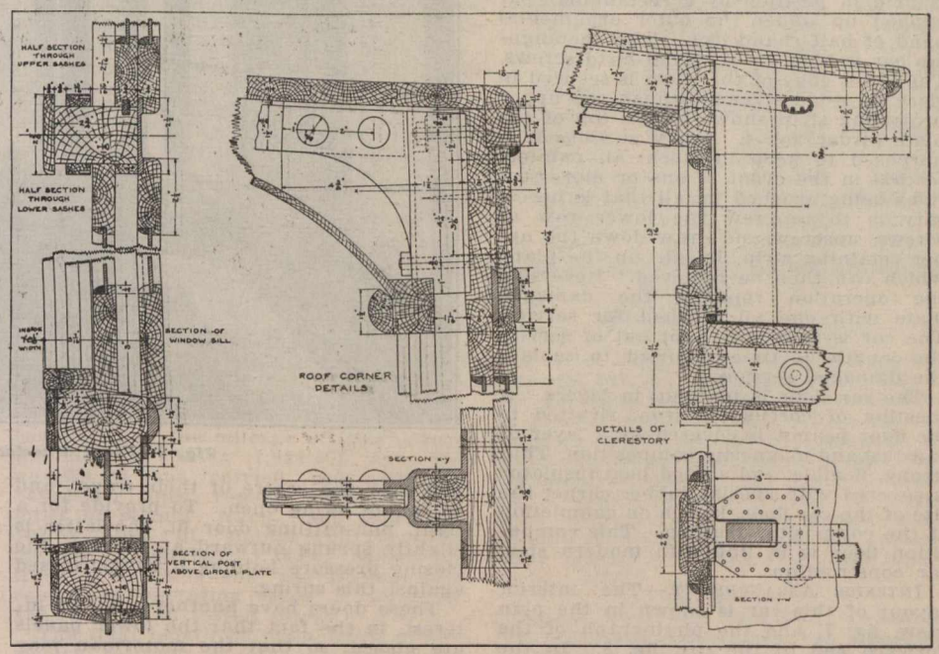


Fig. 6—Details of Wall and Roof Construction.

The roof structure is supported on carlines bolted to malleable castings on the heads of the vertical posts, the construction being clearly outlined in the sections in fig. 6. It is customary to construct the roof members on which the clerestory rests, from a heavy beam extending from end to end of the car body. with sheet metal, and rivetting both top and bottom to the clerestory and roof.

The trolley support is indicated in fig. 5. The whole weight is carried over to the clerestory walls by a trolley board, instead of being supported directly on the clerestory roof. The latter construction is decidedly undesirable from the

thundering noise it creates in the car by the trolley vibration being carried down on to the vibratory roof of the clerestory.

The inner wall of the car between floor and belt rail is lined with 3-16-in. agasote, as indicated both in fig. 5, and the lower left-hand section of fig. 6. The post below the belt rail is encased in the manner indicated in this latter section.

As mentioned earlier in this article, the lower part of the car is well protected against side swipes and knocks on account of the heavy ¼-in. plate construction. Between the top of the plate and the belt rail, there is a zone that while freer from injurious blows than the lower zone, is yet liable to a certain degree of injury. It not being considered advisable to have this section made of heavy plate, a design that called for easily replaceable plates was worked up. Referring to the photograph, fig. 1, it will be noticed that each of the small panels above the girder plate are separate sections of 1-16-in. plate. Reference to the two lower left-hand sections of fig. 6 shows the detail construction. In the lower sections, it will be noticed that this 1-16-in. plate is held at the sides under the edges of the vertical reinforcing strip. To put into place, the thin section is buckled up and slipped under these edges. Referring next to the vertical "section of window sill," the plate is held in position by a rectangular bar slipped up under the outer ornamental band of half-round iron. This rectangular bar is held on by round-head screws. The lower edge of the sheet is secured in place by wood screws through the upper projecting strip shown at the top of the plate girder, fig. 4. These sections it is purposed to keep in stock, all painted, so that in the event of one or more sections being crushed in, all that is necessary is to unscrew the lower row of screws, unscrew and draw down the upper retaining strip, buckle up the plate, which can then be removed. Reversing the operation replaces the damaged plate with one all finished for service. The car is thus only kept out of service the length of time required to replace the damaged section.

The car floor is built up in layers. A sheeting of corrugated iron, rivetted to the floor beams, is covered by a layer of sawdust and magnesite composition. This, strong, flexible, and a good heat insulator is covered with special rubber carpet the size of the car floor, laid in on completion of the composition setting. This composition floor is in line with modern steel car construction.

INTERIOR ARRANGEMENT.—The interior layout of this car is shown in the plan view, fig. 7, and the photograph of the forward end of the car, fig. 8. In the earlier designs of cross-seated cars, this company had cross-seats right up to the front door. Each design since that time has had a gradually decreasing number, the present design calling for only 10 such seats, the balance of space being occupied by longitudinal side seats. The cross-seats used this time are of a new design, rattan seats and backs carried on a pressed-steel frame, the seat complete only weighing 35 lbs.

The rear vestibule arrangement is the same as heretofore used, a large platform being required for the P-A-Y-E system. The rear rail is to separate the platform standers from those entering, while behind the other rail, the conductor stands. Entrance is through a swinging door, and the rear exit through a sliding door, as shown in fig. 5.

The front vestibule embodies a number of changes on former designs. As before, bulkhead partitions are dispensed with, vertical pipes as indicated, serving a similar purpose of end supports for standing passengers. The motorman is in a partitioned-off section where he cannot be disturbed by passengers. The exit is at the front of the vestibule, instead of at the rear, as heretofore. A swing door, replacing the former sliding door, is operated by a lever located alongside of the motorman's air handle, the door being mounted on a vertical rod, the lower end of which, under the car floor, is connected to the lever rod just mentioned. The lower rod is so located that on shutting, the rods lock just over the centre of their travel, and so cannot swing open. To provide for a tight, non-rattling door fit, the latter is slightly sprung outward at the top, the closing pressure holding it snugly closed against this spring.

These doors have another point of interest, in the fact that the lower panels are glazed, so that the motorman may observe the movements of the passenger on alighting, and be sure the latter is clear before moving. This is a feature being introduced into most cars that have been recently built.

TRUCKS AND EQUIPMENT.—The trucks are Brill type 27G, each equipped with two Westinghouse 101 motors. Westinghouse straight air system of braking is used, a type D1E motor-compressor supplying the air.

Ventilation is obtained by an exhaust ventilator. Provision is made for the entry of fresh air by placing small tubes through the floor directly beneath the electric heaters attached to each seat. Fresh air is then drawn through the floor and heated, the foul air being carried away by the ventilators in the deck sash.

As before mentioned, the weight of car body is reduced to such a degree that lighter trucks are possible. This is but one step toward the end desired by certain car builders. Makers of equipment have not seen the need of reducing the weights of the parts they supply, and consequently but little reduction was possible in these parts on this series of cars. A step is now being made by the motor manufacturers to build a lighter motor, weighing about 1,000 lbs. less. This, in a four-motor car such as the one under discussion, will mean a saving of no less than 4,000 lbs. Similar savings are to be expected in other parts when similar careful analysis of the design is dealt with.

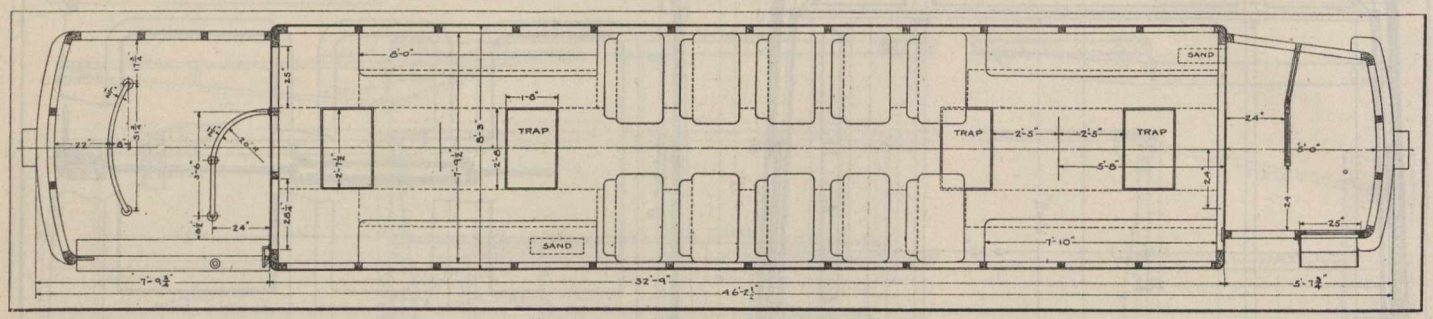


Fig. 7—Layout of Car Showing Seating and Vestibule Arrangement.

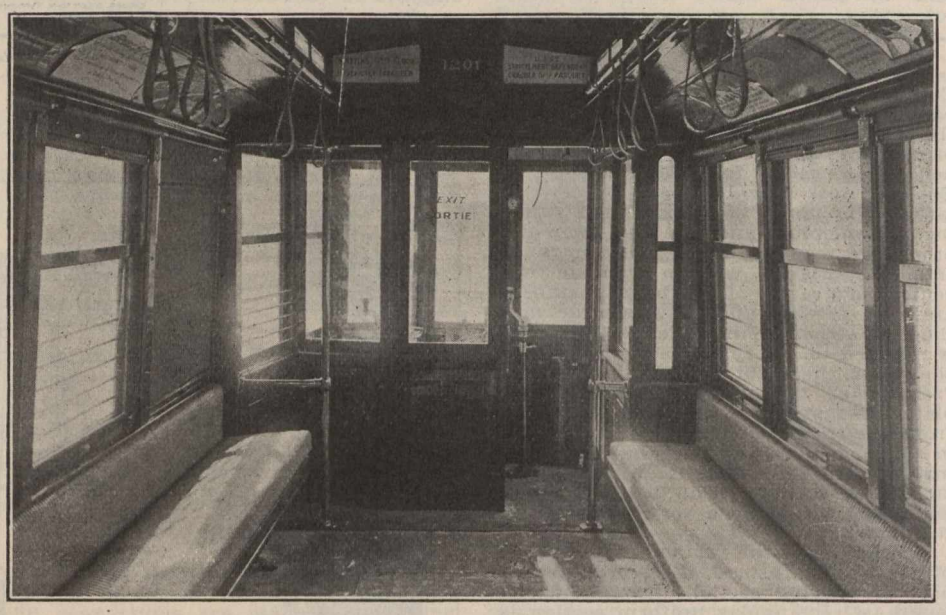


Fig. 8—Front Interior Arrangement of Car.

Lake Erie and Northern Ry.—A director is reported to have stated that the right of way between Brantford and Port Dover has all been secured. Brantford city council has given the right for an entrance to the city terminating at the old Great Western Ry. station. It is said that certain municipalities will now be applied to for a guarantee of bonds.

The Hamilton Street Ry., press reports state, has ordered six trucks of the 27 G.I. type.

The Ottawa Electric Ry. has ordered 15 steel body, pay-as-you-enter cars from the Ottawa Car Co., Ottawa, Ont.

The Calgary Municipal Ry. has received four single truck city cars from the Preston Car and Coach Co., Preston, Ont.

Electric Railway Statistics for Year Ended June 30, 1911

The following abbreviations are used in the names of railways—E., electric; E.R., electric railway; E.S.R., electric street railway; Ry., railway; S.R., street railway. The minus mark (—) in the column for net income or deficit, shows that there was a deficit in the operation of the line to the extent of the figures given.

Name of Railway	Mileage	Gross Earnings	Operating Expenses	Miscellaneous Income	Taxes, Interest, etc	Net Income or Deficit	Total Car Mileage	Fare Passengers Carried
Berlin & Waterloo S.R	3.20	$ 34,552	$ 23,987	.....	$ 6,636	$ 3,928	92,134	714,730
Berlin & Bridgeport Ry	2.30	7,274	5,767	.....	997	509	32,000	145,587
Brantford & Hamilton E.R	23.00	115,904	77,878	.....	62,441	- 24,415	330,667	426,246
British Columbia E.R	182.6	2,710,150	1,866,379	.....	.....	843,771	8,079,224	46,541,448
Calgary Municipal Ry	18.00	275,434	139,601	.....	23,220	112,612	801,086	6,420,086
Cape Breton E.R	30.52	150,536	91,471	93,054	74,142	77,986	470,394	2,817,761
Chatham, Wallaceburg & L. Erie	38.94	103,282	48,309	.....	32,961	22,012	286,466	340,677
Cornwall S.R	4.00	29,134	22,212	.....	.....	6,921	209,876	371,558
Edmonton Radial Ry	18.86	196,552	180,860	.....	44,025	—28,332	636,705	4,669,928
Galt, Preston & Hespeler S.R	17.81	162,996	91,612	345	6,177	65,551	275,769	994,568
Grand Valley Ry	38.29	87,932	77,076	.....	2,515	8,340	333,417	1,095,488
Guelph Radial Ry	6.00	30,367	23,130	.....	.....	7,237	205,200	668,952
Halifax E. Tramway	5.12	220,800	125,180	150,467	40,913	205,174	908,690	4,972,597
Hamilton & Dundas S.R	7.00	53,497	34,713	2,795	15,099	6,480	115,434	595,896
Hamilton, Grimsby & Beamsville E.R	22.00	119,344	92,386	2	10,247	16,712	347,054	622,915
Hamilton Radial Ry	25.00	152,985	103,206	.....	71,746	—21,967	513,712	1,422,551
Hamilton S.R.	22.00	414,434	255,605	.....	68,184	86,645	1,652,498	10,625,054
Hull E. Co	15.03	110,242	92,930	35,586	904	51,993	802,374	1,716,394
International Transit Co	3.68	76,221	38,733	.....	16,610	20,877	314,806	1,650,540
Kingston, Portsmouth & Cataraqui E.R	8.00	8 32,099	32,025	.....	3,556	—3,482	199,680	776,736
Levis County Ry	10.25	66,656	57,619	474	13,338	—3,826	311,469	1,412,918
London S.R	25.73	265,608	182,643	126	34,823	48,267	1,432,858	7,210,642
London & L. Erie Ry. & Transport. Co	27.50	122,988	77,699	136	35,908	9,445	388,067	637,861
Montreal Park & Island Ry	29.37	387,999	251,245	.....	161,143	—24,388	1,348,157	4,999,336
Montreal S.R	76.67	4,670,827	2,664,148	130,852	577,079	1,560,079	16,117,398	115,445,207
Montreal Terminal Ry	18.22	134,019	122,116	.....	48,693	—38,789	678,643	1,917,795
Montreal & Southern Counties Ry	7.80	84,416	79,445	694	1,586	4,079	215,524	1,050,428
Niagara Falls Park & River Ry	11.91	162,171	81,839	7,303	33,395	54,239	333,195	1,331,645
Niagara, St. Catharines & Toronto Ry	47.76	316,267	207,599	.....	81,091	27,577	823,212	3,226,995
Nipissing Central Ry	5.10	57,672	31,227	.....	546	25,898	138,470	710,395
Oshawa Ry	7.81	83,885	59,475	.....	4,324	20,185	58,375	146,579
Ottawa E.R	24.54	787,575	473,170	.....	59,141	255,261	4,171,449	17,787,662
Peterborough Radial Ry	5.10	37,060	28,706	.....	4,132	4,220	255,218	810,124
Pictou County Ry	7.90	48,711	27,569	29,023	35,786	14,378	135,546	1,016,115
Port Arthur & Fort William S.R	22.33	154,072	97,526	2,176	38,771	19,951	654,075	3,407,918
Quebec Ry. Light & Power Co.								
Citadel Division	17.22	351,441	218,217	.....	.....	133,224	1,556,973	7,857,680
Montmorency Division	25.10	176,135	117,264	.....	.....	96,370	360,842	1,340,319
Sandwich, Windsor & Amherstburg Ry	36.06	205,884	105,359	30,045	34,220	58,870	875,040	3,428,634
Sarnia S.R	8.25	45,926	30,904	.....	4,424	10,597	143,990	800,210
Sherbrooke Ry. & P. Co	5.63	40,973	37,243	.....	35,000	—31,305	289,925	727,090
St. John S.R	12.50	191,412	148,266	96,030	51,613	87,561	1,003,454	1,572,930
St. Stephens S.R	7.0	30,596	25,496	1,846	5,532	1,413	183,960	602,839
St. Thomas S.R	7.50	16,343	24,828	.....	2,371	—10,856	281,700	401,196
Sydney & Glace Bay Ry	.....	6,364	32,198	225	11,617	20,052	143,542	1,159,763
Suburban Rapid Transit	.....	59,161	34,052	.....	29,957	—1,848	303,866	980,519
Toronto Ry	51.17	4,590,245	2,315,355	.....	981,596	1,293,292	16,354,791	114,824,464
Toronto Suburban Ry	9.84	63,675	40,946	295	11,248	11,774	234,128	1,235,377
Toronto & York Radial Ry	72.43	424,532	249,607	.....	117,411	57,513	1,212,084	4,136,794
Windsor, Essex and Lake Shore Rapid Ry	36.16	113,735	71,964	.....	55,286	—13,518	346,966	383,667
Winnipeg S.R	69.50	1,422,260	723,934	1,101,853	380,282	1,419,896	5,453,432	34,937,661
Winnipeg, Selkirk & L. Winnipeg Ry	20.96	80,730	39,231	.....	22,923	18,575	106,920	261,725
Yarmouth S.R	3.00	20,617	16,161	.....	2,246	2,210	98,340	167,175
	1,223.72	$20,356,951	$12,096,134	$1,683,336	$3,352,818	$6,792,067	72,618,806	426,296,792
						—200,732		
						$6,591,335		

Notes to Electric Railway Statistics.

The statistical returns for the operation of the electric railways for the year ended June 30, 1911, are given in somewhat more detail than formerly by the Comptroller of Railway Statistics, J. L. Payne. The accompanying table shows the same information formerly given in these columns in previous years, except that the passenger and freight car mileage has been combined in one column instead of being given separately, and a new column is given showing the miscellaneous income received by the various companies. By deducting the operating expenses from the receipts from operation, the net earnings from operation will be ascertained. Adding the miscellaneous earnings, the corporate income will be ascertained; the next column gives the total deductions from income, and the following column shows the profit or loss.

The various lines carried 111,857,040 transfer passengers, making the total number of passengers carried 538,153,832. Twenty-three of the companies carry freight, the mileage of freight cars for the year being 1,084,678, and the number of tons carried was 2,496,072. Seventeen lines report having 259.74 miles of second track, and there are 103.54 miles of sidings and turnouts, making altogether 1,587.01 miles of track of all kinds laid. Seven companies report as operating over a total of 160.09 miles of leased tracks.

The total length of main track of the electric railways in Canada on June 30, 1911, was 1,224 miles, an increase of 175 miles of first and an increase of 17 miles of second track over the figures for June 30, 1910. The capital liability increased during the year from $102,044,979 to $111,532,347. The total earnings for the year were $20,356,952 and the operating expenses $12,096,134, leaving net earnings from operation $8,260,818.

The total number of passengers carried was 426,296,792, against 360,964,876 in the previous year; while 2,496,072 tons of freight were carried. The various railways employed 13,671 persons, to whom $8,559,215 was paid in wages; the comparative figures for 1909-10 being 10,557 employes and $6,316,777 wages paid. During the year 102 persons were killed and 2,670 injured on the various lines, against 109 killed and 2,438 injured in 1909-10.

James Anderson, President, Canadian Street Railway Association, and Manager, Sandwich, Windsor and Amherstburg Ry., has been appointed a member of two of the American Electric Railway Association's committees, viz., public relations and permanent membership. He attended the association's mid-winter meeting in New York recently.

Donald Robertson has been appointed Purchasing Agent, Montreal Tramways Co., succeeding W. A. McNaught.

Ottawa Electric Railway Company's Annual Report.

Following are extracts from the report for the year 1911:—

The gross earnings were $840,680.52, compared with $748,708.75 in 1910. 19,270,521 passengers were carried, compared with 16,967,334 in 1910. The net earnings were $354,691.08, which have been disposed of as follows:—

Interest on bonds and loans	$ 37,031.55
Four quarterly dividends of 2½%, a bonus of 2% and one of 3%, making 15% for the year	187,155.00
Mileage payments	13,667.75
Taxes	8,440.13
Placed to the credit of contingent account to be applied to reduction of track renewal, car equipment and other accounts	78,000.00
Transferred to credit of profit and loss account	30,396.65
	$354,691.08

The balance at credit of profit and loss account is now $107,355.84, and of rest account $200,000. The business of the company has practically doubled in six years, the passengers carried in 1905 being 9,891,311, and in 1911 19,270,521.

The new power house was completed towards the end of the year, and the storage battery was renewed. 13,492 ft. of light rails were taken up, and relaid with 80 lbs. tee rails. 8,800 ft. of these were laid in permanent pavement of asphalt and stone blocks. Our office accommodation having become too small, and the space being required for other purposes, a lot has been secured on the south side of Albert St. near Bank St., on which it is proposed to build new quarters as soon as can be arranged. With the great development going on in the city your directors look for marked advances in the company's business as the years go on, and, as in the past, the company will endeavor to provide an up-to-date service.

The statistical tables appended to the report show that the percentage of operating expenses to receipts was 57 6-10 per cent., against 63% in 1910.

The directors and officers for the current year are:—President, T. Ahearn; Vice President, W. Y. Soper; other directors—G. P. Brophy, Hon. G. A. Cox, T. Workman, T. F. Ahearn, E. N. Soper. Secretary, J. D. Fraser.

Toronto Railway Co's Annual Report.

Following are extracts from the report for 1911, which was presented at the annual meeting, Feb. 7, over Sir Wm. Mackenzie's signature:

The operations for the year show very gratifying results. The passenger earnings, $4,800,467.48, show an increase of $464,098.43 over 1910. The various charges against these earnings for operation, maintenance, etc., were $2,653,361.86 or 55.2% of the earnings. The payments made to the city were $822,233.24, an increase of $94,752.94, or 13.02% over 1910.

Expenditure on capital account was $1,113,867.69 for the year. The different works in progress referred to in the report for 1910 were completed and as a result better car-housing facilities now exist at the Lansdowne Ave. car house, and the rolling stock has been increased by about 100 double-truck cars. Track and overhead construction upon various streets has been completed, which has enabled the company to change the routing of several of its lines, thus relieving some of the congestion upon several of the busy thoroughfares in the downtown districts.

The directors subscribed for and purchased at par 20,000 shares of $100 each of the capital stock of the Toronto Power Co., Ltd., aggregating $2,000,000.

The shareholders on Aug. 14, 1911, authorized an increase in the capital stock by $4,000,000, and there was offered for subscription to the shareholders of record on Aug. 25, 1911, at par, $2,000,000 of the new stock.

Under the mortgage deed dated Sept. 1, 1892, covering the currency and sterling bond issues, the company is obliged to redeem by drawing annually, 5% of the outstanding bonds. The first drawing was for payment on Aug. 31, 1911. The bonds drawn amounted to $168,693.33, of which there was presented up to Dec. 31, $133,413.33, leaving a balance of $35,280.00 deposited for redeeming the balance.

Careful attention has been paid to the maintenance of the plant, rolling stock equipment and other properties.

The directors declared out of the accumulated surplus earnings a stock bonus dividend of 12½% to shareholders of record at Aug. 25, two quarterly dividends of 1¾% paid Apr. 1 and July 1, and two quarterly dividends of 2% the first paid Oct. 1, 1911, and the second payable Jan. 2, 1912.

The Toronto and York Radial Ry. reports that the earnings continue to show very satisfactory increases—the gross income amounting to $449,059.16, compared with $399,615.69 for 1910, an increase of 12.3%, while the net earnings, after providing for all operation and maintenance charges, bond and loan interest, etc., show a surplus of $63,266.20, an increase over the previous year of $7,268.17.

The Toronto Power Co., Ltd., the capital stock of which is owned either directly or indirectly by the Toronto Ry. Co., purchased during the year over 99% of the $4,000,000 paid up capital stock of the Toronto Electric Light Co., which has for 11 years paid dividends ranging from 7 to 8% on its outstanding capital stock. During the past five years the dividend has been 8%. The company's accumulated surplus is in excess of $1,500,000.

INCOME ACCOUNT.

Gross earnings		$4,851,541.42
Operating, maintenance, etc.	$2,653,361.86	
Interest on bonds, etc.	198,553.69	
Percentage on earnings..	687,650.44	
Pavements, taxes	134,582.80	
		3,674,148.79
Surplus earnings		$1,177,392.63

PROFIT AND LOSS ACCOUNT.

Balance from last year		$3,619,660.65
Surplus earnings, after payment of all expenses, interest, taxes, etc.		1,177,392.63
		$4,797,053.28
Dividends:—		
Stock bonus dividend	$1,000,000.00	
Two dividends at 1¾%	280,000.00	
Two dividends at 2%	391,158.95	
		$1,671,158.95
Balance from 1910	$3,619,660.65	
Less stock bonus dividend	1,000,000.00	
	$2,619,660.65	
Surplus for 1911 carried forward	506,233.68	
		3,125,894.33
		$4,797,053.28

COMPARATIVE STATEMENT.

	1911.	1910.
Gross income	$4,851,541.42	$4,377,116.19
Operating, maintenance charges, etc.	2,653,361.86	2,237,187.75
Net earnings	2,198,179.56	2,139,928.44
Passengers carried	120,997,844	109,415,264
Transfers	48,730,671	42,630,756
Percentage of charges, etc., to passenger earnings	55.2	51.6

The officers and directors for the current year are:—President, Sir Wm. Mackenzie; Vice President, F. Nicholls; other directors—Sir Henry M. Pellatt, Sir Rodolphe Forget, Hon. G. A. Cox, W. D. Matthews and James Gunn.

Montreal.—The city council decided Jan. 13 to ask the Quebec Legislature to grant it power to build one or more underground tramways, to be operated by electricity. (Jan., pg. 38.)

London Street Railway Company's Annual Report.

Following are extracts from the report for the year 1911, presented at the annual meeting in London, Ont., Feb. 7:

Earnings:	1910.	1911.
Passengers	$250,897.34	$274,887.95
Miscellaneous	5,381.14	4,718.98
Gross earnings	$256,278.48	$279,606.93
Expenses:		
Maintenance:		
Way and structures	$ 21,736.67	$ 22,325.91
Equipment	25,102.23	30,337.48
Transportation:		
Power plant	$ 31,609.98	$ 35,556.80
Car service	73,851.44	74,985.98
General	29,891.36	29,530.59
Total operating expense.	$182,191.68	$192,736.76
Net earnings	$ 74,086.80	$ 86,870.17
Deductions:		
Interest on bonds	$ 28,750.00	$ 28,750.00
Interest on overdraft		93.59
Total deductions	$ 28,750.00	$ 28,843.59
Net income	$ 45,336.80	$ 58,026.58

The reconstruction of the tracks in the down-town district on Dundas St. and on Richmond St., equalling 1.52 miles of single track with 80-lb. T rail in 60-ft. lengths, was completed during the year. This included several large pieces of track special-work, all of which were renewed. At several other places throughout the system, new pieces of special-work, such as curves, switches and crosses were renewed and the tracks generally maintained in good condition.

A new single-truck sweeper was added to the rolling stock, making the maintenance of service during snow-storms very much more reliable.

As a result of the census of 1911, the city is entitled to 1.73 miles of additional track. Various routes and localities have been considered for this new trackage, but no definite agreement has yet been made with the city regarding it. Some of it will be used for double tracking congested sections, and the remainder used in the form of extensions into those portions of the city requiring car service the most, and which should result in greater accommodation to the public.

The gross earnings and surplus for the past year having shown very substantial increases, it has not been necessary to dispose of any more bonds. The substantial increase in earnings of 12% for Dec. and for Jan., 1912, is very gratifying to your directors, who confidently expect the coming year to be the most successful in the history of the company.

PROFIT AND LOSS ACCOUNT.

Surplus, Jan. 1, 1911	$37,536.06
Unclaimed wages, etc.	72.81
Net income for year	58,026.58
	$95,635.45
Dividends, July 2, 1911, and Jan. 2, 1912, 3 per cent. each	$33,120.00
Directors' and auditors' fees	1,420.00
Grant to late secretary's relatives	634.12
Surplus	60,461.33
	$95,635.45

Statistics: Expenses, per cent. of earnings, 68.9; net income, per cent. of capital, 10.51; passengers carried, 7,582,120; car earnings per revenue passenger, 3.67c.; transfers, 1,178.88; total passengers, 8,761,005; car earnings per passenger, 3.13c.; car mileage, 1,440,611; gross earnings per car mile, 19.10c.; operating expenses per car mile, 13.37c.; net earnings per car mile, 6.03c.; number of miles of track, 33.25; gross earnings per mile of track, $8,409.23.

There are 33.25 miles of single track, covering about 26 miles of territory, 20.08 in the city and 5.2 outside.

It was finally decided not to use hydro power from Niagara, but to extend the company's steam plant. An addition of 80 x 40 ft. will be built to the power house. Three modern boilers, 300 h.p. each, will be added to the present six return tubular boilers of 150 h.p. each and a 750 or 1,000 k.w. generator will be

added to the present equipment, which consists of one 400 k.w. direct connected generator and six old Edison 80 k.w. generators.

The board as re-elected for the current year is: President, H. A. Everett, Cleveland, Ohio; Vice President, T. H. Smallman, London; other directors, H. S. Holt, Montreal; E. M. Moore, Cleveland; W. M. Spencer and C. H. Ivey, London. The Manager is C. B. King and the Secretary-Treasurer, J. H. Williams.

Electric Railway Finance, Meetings, Etc.

Brantford St. Ry—The moveable chattels of the Brantford St. Ry., except those used as public utilities, were seized on Feb. 10 for unpaid taxes.

British Columbia Electric Ry.—Gross earnings for Dec., 1911, $523,003; operating expenses, $319,298; net operating earnings, $203,705; renewal funds, $37,935; net earnings, $165,770; approximate income from investments, $25,000; net income, $190,770, against $389,234 gross earnings; $224,549 operating expenses; $164,685 net operating earnings; $25,417 renewal funds; $139,268 net earnings; $20,000 approximate income from investments; $159,268 net income, for Dec., 1910. Aggregate gross earnings for six months ended Dec. 31, 1911, $2,801,394; net earnings, $979,187, against $1,991,648 aggregate gross earnings, and $829,896 net earnings for same period 1910.

An issue of £800,000 4¼% perpetual guaranteed debenture stock of the Vancouver Power Co., was recently placed on the London, Eng., market at 96%. The stock is guaranteed unconditionally both as to principal and interest by the British Columbia Electric Ry. Co., which owns all the issued share capital of the V.P. Co., amounting to $7,000,000. The B.C.E.R. Co. was incorporated in 1897 and has an issued capital of £3,000,000 divided equally into preference, preferred ordinary and deferred ordinary stock, quoted on the exchange at the end of 1911, at 110, 112 and 139½ respectively. The company's operations are carried on in Victoria, Vancouver, North Vancouver, New Westminster, Steveston and Chilliwack, and it operates 232 miles of fully equipped electric railway, in addition to its lighting and power systems. The company's power is generated by the Vancouver Power Co., the waters of Lakes Buntzen and Coquitlam being utilized for the purpose. The power house is about 16 miles from Vancouver and 11 from New Westminster. The B.C.E.R. Co. has a steam power plant in reserve.

The estimated earnings for the year ending June 30, 1912, are £484,042, and the estimated London charges and capital amortization charge are £25,000. The amount required to pay interest on the bonds and debentures at present outstanding is £101,457, to which may be added the interest on the present issue of stock, leaving an estimated surplus of £323,585 available for renewals, maintenance, dividends, etc. The accumulated reserves total £337,000.

Calgary Municipal Ry.—Following are particulars of operation for January:—Earnings, 1912, $37,575.90; 1911, $19,878.82; operating expenses, 1912, $23,370.98; 1911, $13.409.86; net profits after crediting 5% of gross receipts to contingent account and providing for interest and sinking fund, 1912, $7,062.80; 1911, $2.759.14; revenue per car mile, 27.752c, operating expenses per car mile, 17.261c; gross profit per car mile, 10.491c; cost of power per car mile, 3.265c; proportion operating expenses to revenue, 62.1%.

Cape Breton Electric Co.—Gross earnings for Dec., 1911, $31,417.93; operating expenses, $15,187.38; net earnings, $16,230.55; interest and taxes, $5,123.33; balance, $11,107.22; sinking and improvement funds, $1,140; net income, $9,967.22, against $29,519.63 gross earnings; $14,194.45 operating expenses; $15,335.18 net earnings; $5,051.29 interest charges and taxes; $10,283.89 balance; $1,141.68 sinking and improvement funds; $9,142.21 net income for Dec., 1910. Aggregate gross earnings for year ended Dec. 31, 1911, $337,554.88; net earnings, $161,923.73; fixed charges, $73,962.61; net income, $87,961.12, against $326,010.11 aggregate gross earnings; $155,822.88 net earnings; $73,834.88 fixed charges; $81,988 net income for same period 1910. During 1911 the construction charges were $81,185.95, against $10,394.30 in 1910. The assets total $2,907,636.34, and the liabilities, including Sydney and Glace Bay Ry. bonds $195,000, total $2,503,978.26, the balance of $403,658.08 constituting sinking and improvement funds, replacement reserve and surplus.

Edmonton Radial Ry.—The accounts of the city of Edmonton, Alta., for the year ended Oct. 31, 1911, issued Feb. 1, contain the accounts of the Street Railway Department, which manages the E.R. Ry. The gross earnings were $245,264.64, from which is deducted $763 on account of outstanding tickets, making the net earnings, $244,501.64; interest on unexpended balances brings this up to $250,514.84. The expenditure includes:—Operation, $165,606.65; maintenance, $34.540.38; management, $40,357.92; interest and redemption, $64,636.04; special charges, $4,190.92; total, $285,340.94. This shows a deficit of $34,826.07. The returns for the year ended Oct. 31, 1910, showed a deficit of $29,269.74, on receipts of $147,287.39, and expenditures of $176,557.43. The capital account shows that there have been issued $980,446.66 of debentures on account of the lines, of which $11,642.23 have been redeemed, leaving $968,804.43 outstanding.

Halifax Electric Tramway.—Railway receipts for Jan., $17,772.99, against $16,380.69 for Jan., 1911.

Hamilton St. Ry.—The earnings for 1911 were $454,010.52, an increase of $75,000.18 over 1910. The city's percentage for the year was $36,320.84, an increase of about 20%.

International Ry. Co.—The question of the local fare at Niagara Falls, Ont., between the upper and lower bridges, which has been in dispute for some time, has been settled by the company reducing it from 10c to 5c, and this reduction has been approved by the Queen Victoria Park Commissioners and the Ontario Railway and Municipal Board, the Court of Appeal has decided that these bodies have joint jurisdiction. The company has refused to reduce the fare from the lower bridge to the Dufferin Islands to 5c.

Montreal Tramways Co.—The amalgamation of the Montreal Tramways Co. and the Canadian Light and Power Co. will, it is said, be effected by a holding company taking up the common stock of the two companies to be absorbed. The holding company will be the Montreal Tramways and Power Co., with a London, Eng., charter, and a capital of $20,000,000. The shareholders of the Montreal Tramways Co. and the Canadian Light and Power Co. will receive 1½ shares of the Montreal Tramways and Power Co. for each share now held by them. The holders of $2,000,000 of common stock of the Montreal Tramways Co. will receive $3,000,000 stock of the consolidated company, and the holders of the outstanding $6,000,000 of Canadian Light and Power Co. will receive $9,000,000 stock of the consolidated company. The Montreal Tramways and Power Co.'s outstanding stock will, therefore, be $12,000,000 of the $20,000,000 authorized.

Ottawa Electric Ry.—Press reports state that the directors have arranged to issue $600,000 of the unissued stock of the company to the existing shareholders, at par, in the proportion of one share of the new stock to every two shares now held.

Regina Municipal Ry.—The street railway committee of the Regina, Sask., Municipal Ry. had before it, Jan. 30, the Superintendent's estimates for the current financial year. He estimated the necessary expenditures for operation at $102,700, and the probable receipts at $155,000.

St. Thomas Street Ry.—The report of operations for the year 1911 was laid before the street railway committee of the St. Thomas, Ont., city council Feb. 2. The passenger receipts were $9,435.55, and miscellaneous receipts, including $1,413.86 from the London and Lake Erie Ry. and Transportation Co., $2,361.83, a total income of $11,797.38. The total expenditures were $28,412.57, the deficit on operation being $10,357.48 against $12,944.44 in 1910.

Sherbrooke Ry. and Power Co.—The gross receipts for the six months ended Dec. 31, 1911, were $44,800.81, and operating expenses $25,945.73. After meeting bond interest and general expenses there was a surplus of $2,371.31, which is carried to the credit of profit and loss account, which now stands at $6,065.77. The company's properties are valued at about $2,000,000. The new power plant and transmission line were put in operation during Feb.

Winnipeg Electric Ry.—Gross earnings for Dec., 1911, $319.900; operating expenses, $169,121; net earnings, $150,779, against $340,281 gross earnings; $177,754 operating expenses; $162,527 net earnings for Dec., 1910. Aggregate gross earnings for 12 months ended Dec., 31, 1911, $3,829,749; net earnings, $1,928,782, against $3,284,341 aggregate gross earnings; $1,629,508 net earnings for same period 1910.

Winnipeg Electric Railway Sustained by the Privy Council.

The Imperial Privy Council, London, Eng., gave judgment, Feb. 21, in the appeals of the Winnipeg city council and of the Winnipeg Electric Ry. Co. against the Canadian decisions in the action brought by the council to have the company's poles and lines for the supply of light and power removed from the streets on the ground that no franchise existed, and that the company was not manufacturing power within the city as provided. The W.E. Ry. Co. has absorbed a number of other concerns, each of them having franchises in the city. It had been held that the amalgamations had not been technically completed in every case, but the Privy Council decided that the city had acquiesced, by having from time to time given permission for the erection of poles and the stringing of wires in the city. It was also decided that the erection and maintenance of transformer stations and plants for the distribution of power within the city was a substantial fulfilment of the condition requiring the manufacture of power in the city. The decision went so far as to find that there was nothing in the agreements forbidding or restricting the importation of power from outside the city bounds. The appeal of the company was allowed, and that of the city was dismissed with costs.

J. L. Englehart, Chairman, Temiskaming and Northern Ontario Ry. Commission, is reported to have announced at Cobalt, Feb. 23, that a passenger service will be started to Timmins, on the Porcupine branch, March 11.

Sandwich, Windsor and Amherstburg Railway.

The annual report of the Detroit United Ry. Co. for 1911 covers all the subsidiary companies, including the Sandwich, Windsor and Amherstburg Ry., of which the following particulars are given:—Mileage, 36.636; funded debt, $35,260.66; revenue passengers, 3,543,765; transfer passengers, 487,255; employe passengers, 23,828; receipts per revenue passenger, 0.0542c.; receipts per passenger, 0.0473c.; car mileage, 911,109; earnings per car mile, 0.2188c.; expenses per car mile, 0.1096c.; net earnings per car mile, 0.1092c.; expenditure on extension of lighting plant, new track and purchase of six cars, $45,056.64. In the D.U.R. balance sheet, under investments, the S.W. & A. Ry. is given as $253,134.91, and under accounts current as $257,732.11.

BALANCE SHEET, SANDWICH, WINDSOR AND AMHERSTBURG RY.

Capital stock		$ 297,000.00
Mortgage bonds		490,000.00
Accrued interest on bonds		4,987.50
Detroit United Ry.		257,732.11
Accounts payable		1,253.94
Injuries and damages reserve		1,766.70
Insurance reserve		868.26
Unredeemed tickets		3,437.80
Profit and loss		18,096.56
Investment	$1,045,113.78	
W. & T.E. Ry. Co. (stock)	10,000.00	
W. & T.E. Ry. Co.	17,009.18	
Accounts receivable	802.38	
Stores	1,395.02	
Cash	822.51	
	$1,075,142.87	$1,075,142.87

BALANCE SHEET, WINDSOR AND TECUMSEH ELECTRIC RY. CO.

Capital stock		$ 100,000.00
Mortgage bonds		189,000.00
Sandwich, Windsor and Amherstburg Ry.		17,009.18
Investment	$ 306,009.18	
	$ 306,009.18	$ 306,009.18

The earnings and expenses of the Windsor and Tecumseh Electric Ry. are included in the operations of the S., W. and A Ry., which latter owns all of the capital stock of the W. and T.E.R.

Dominion Power and Transmission Co's Annual Report

This company, which includes among its properties five electric lines, the Hamilton St. Ry., Hamilton Radial Ry., Hamilton and Dundas Ry., Hamilton, Grimsby and Beamsville Electric Ry., and Hamilton and Brantford Ry., held its annual meeting in Hamilton, Ont., Feb. 19. The statements presented show the combined results of operations of the various subsidiary companies, power, light and railway, and do not give any separate information as to the operations of the railway lines. This information, up to June 30, 1911, will, however, be found in the general electric railway statistics on another page of this issue.

The directors' report said:—"Much was done in the betterment of the Hamilton St. Ry. tracks, and its rolling stock was largely improved and added to. The power plant for the street railway was increased by 50%. These improvements, while costly, are well made and well warranted. Three cars were added to the interurban equipment and three more have been ordered."

The President, in moving the adoption of the report, said:—"During the past three years over 60% of the Hamilton St. Ry. tracks have been reconstructed in a very thorough and substantial way, while the rolling stock has been added to and greatly improved, and probably during the present year a new car per month will have to be added, while some additions will also be made to the rolling stock of the suburban lines. The addition of two new units in the power-house at Power Glen—7,500 h.p. each—enables the company to take on further considerable blocks of power and to feel amply prepared for any increasing demands on railway business."

Reference was made to the payment of dividend 19, one of the arrears of preference cumulative dividends. One or two shareholders objected to certain dividends having been diverted to pay for street railway improvements, but the directors' action was overwhelmingly endorsed.

The following directors were re-elected:—J. R. Moodie, President; J. Dixon, J. Knox, W. C. Hawkins, Sir John M. Gibson, J. Sutherland, Lloyd Harris and W. Southam. The vacancy caused by S. O. Greening's death will be filled later.

Operating Rules for Interurban and Suburban Electric Railways.

A special committee of the Canadian Street Railway Association, which has for some time past, at the Board of Railway Commissioners' request, had under consideration the question of uniform operating rules for interurban and suburban railways, met in Ottawa Feb. 16, those present being J. Anderson, Manager, Sandwich, Windsor and Amherstburg Ry.; P. Dubee, Secretary, Montreal Tramways Co.; E. P. Coleman, Manager of Railways, Dominion Power and Transmission Co.; G. Gordon Gale, General Superintendent, Hull Electric Co.; J. E. Hutcheson, Superintendent, Ottawa Electric Ry.; A. Eastman, General Manager, Windsor, Essex and Lake Shore Rapid Ry.; W. R. Robertson, Superintendent, Niagara, St. Catharines and Toronto Ry.; and Acton Burrows, Managing Director, Railway and Marine World, Secretary-Treasurer of the Association.

A long conference was held with A. J. Nixon, Chief Operating Officer, Board of Railway Commissioners, who was accompanied by J. Murphy, Electrical Expert, and J. Ogilvie, Inspector of Equipment, on the Board's staff.

In view of the great differences in local conditions it was found to be most difficult to frame rules which would be generally adaptable, and it was finally decided that each company under the Board's jurisdiction should submit its rules for separate approval.

The members of the committee were entertained at luncheon at the Ottawa Golf Club by G. Gordon Gale, General Superintendent, Hull Electric Co., traveling to and fro in the company's private car.

Electric Railway Employes' Hours of Labor in Ontario.

Sir James Whitney has introduced a bill in the Ontario Legislature to amend the Ontario Railway and Municipal Board Act by adding the following clauses:—

"The board may regulate the hours during which conductors, motormen, or other employes of a street railway company may be required or permitted to work

"The power conferred by subsection 1 may be exercised, notwithstanding the provisions of any agreement between a municipal corporation and a railway company as to hours of labor.

"Every company and every director, superintendent, manager or officer of a company who contravenes the provisions of any order of the board made under the authority of subsec. 1 shall for each contravention incur a penalty of not less than $10 and not more than $50 recoverable under the Ontario Summary Convictions Act."

Street Railway Track Construction in Toronto.

In his presidential address at the Canadian Society of Civil Engineers' annual meeting in Montreal recently, C. H. Rust, City Engineer of Toronto, said: "The construction of street railway tracks in city streets is a work involving many difficulties. Experience in Toronto has shown that T-rails, weighing from 70 to 80 lbs., and grooved girder rails, weighing from 90 to 100 lbs., are the most satisfactory. T-rails are used on residential streets and in the outskirts, but the heavy grooved girder type of rail is used upon streets subjected to heavy traffic. The rails are laid upon steel ties, 6 ft. centres, with suspended joints. Under the whole of the track allowance pavement for about a width of 18 ft., a concrete foundation 12 ins. in depth is used. This is increased to 18 ins. at intersections. The city of Toronto has been experimenting this year with wooden ties, having 2 ft. centres, to ascertain if the vibration and noise caused by the use of the rigid type of construction necessarily involved by the steel ties could not be got rid of."

Ottawa Electric Railway Advances Wages.

J. E. Hutcheson, Superintendent, Ottawa Electric Ry. Co., announced recently a voluntary increase of wages of conductors and motormen, dating from Jan. 1. First year men now receive 20c, second year men 21c, and those in the service over two years 23c an hour for week days, with 2c an hour advance on above rates for Sunday work. In addition to this all men get free transportation and those in the service over one year receive two suits of uniform clothing each year free. First year men pay half cost of such uniforms. The company provides special cars to bring the men to work in the early morning, and also to take them home at midnight. Following are extracts from the bulletin announcing the advance:—

Regular men will only be booked to work alternate Sundays without their consent. They will, however, be expected to work when booked, unless given leave of absence. Spare men will be expected to work every Sunday if required. If leave of absence is desired, application must be made to the inspector on duty.

The rates for work on snow sweepers and plows are:—From 6 a.m. to 12 midnight, 23½c an hour; from 12 midnight to 6 a.m., 25c an hour.

The hours of work for regular men remain as before, 10 hours constituting a day's work, or as near 10 hours as the schedule of runs will permit. Men will not be required to work beyond the full day of 10 hours unless they wish to do so, except in cases of absolute necessity.

Snow on the Hull Electric Co.'s Ry.—G. Gordon Gale, General Superintendent, Hull Electric Co., Deschenes, Que., writes in reference to snow clearing:—"We have 8.6 miles city track and 16.2 miles of private right of way in use during the winter months. In the city we keep the full width of the street clear of snow. The tracks are cleared by means of single-truck sweepers of the standard design, and the roadway is cleared by a double-truck, double-end, double-sidewing plough, built by the Ottawa Car Company. The private right of way is cleared of snow by a double-end, right-hand, double-truck snow plough. Our snow expenses amount to about $50 per inch of snow fall, or an average of approximately $2 per inch of snow fall per mile."

Electric Railway Projects, Construction, Betterments, Etc.

Alberta Electric Ry.—We are officially advised that progress with the organization of this company, the title of which it is proposed to alter to the Alberta Interurban Ry., has been somewhat delayed owing to legal technicalities. It is stated that these matters have now been arranged, and that the organization work is being proceeded with. (Jan., pg. 38.)

Aroostook Valley Rd.—U.S. press dispatches state that the Maine Railroad Commissioners have approved the company's plans for the extension of its line to Sweden, Me. This relates to the line already built between Washburn and Sweden, Me. This is the line which is to be connected with the St. John Valley Ry. in New Brunswick, to form part of the through line between St. John, N.B., and Quebec, to be known as the St. John and Quebec Ry. (See St. John and Quebec Ry., Feb., pg. 62.)

Bassano Electric Power and Traction Co.—The proposed electric railway from Bassano, Alta., to the C.P.R. irrigation dam, a distance of about five miles, is to be built by a company being organized under a provincial act, with the title of the Bassano Electric Power, Light and Traction Co. The provisional organization has the title of the Bassano Power and Electric Co., to which the municipality has, under a by-law, granted a franchise for the building of the railway, as well as for the supply of light within the municipality. We have been advised that it was expected to be able to supply light in the town early in March. S. E. Whiting, mayor of Bassano, is President of the company, and among those associated with the company are F. D. Murchison, Bassano, and W. H. McLaws, of Lougheed, Bennett and Co., solicitors, Calgary.

We have been further advised that the franchise for building an electric railway from Bassano to the C.P.R. irrigation dam was originally granted to a company in which S. E. Whiting, W. J. Robinson, I. W. Shoop, Pegler and Darby, Murchison and Haines and other Bassano men are interested. The Canadian Development Co. of Calgary is also interested. The company proposes to supply power and electric light, as well as to operate the railway. A contract has been let to Gorman, Clancy and Grindley, Ltd., Calgary, which has, as a subsidiary company, the Western Canada Engineering, Construction and Paving Co. S. A. Clancy, the Secretary of both companies, informs us that his firm will build the electric railway for the Bassano Electric Traction Co., and that construction will be started as soon as the frost is out of the ground. The line from Bassano to the C.P.R. irrigation dam will be about 12 miles. It has not been definitely decided whether the line will be operated by electricity or by gasoline cars, but it is probable that electricity will be used. The 50 ft. double end type of car, provided with smoking and baggage compartments, will be used. (Jan., pg. 38.)

Berlin and Bridgeport Electric Ry.—The Berlin, Ont., town council passed a resolution, Feb. 19, endorsing the company's proposal to extend the line through Bloomingdale, West Montrose and Winterbourne to Elora. The Ontario Legislature is being asked for power to build this line.

Brandon Electric Ry.—Application is being made to the Manitoba Legislature for an act amending chap. 76 of the statutes of 1911, by authorizing amalgamation with other companies. Mulock, Loftus, Armstrong and Lindsay, Winnipeg, are solicitors for applicants. (See also Brandon, Man., and Wheat City Electric Ry.)

Brandon, Man.—The city council has had under consideration propositions for the building of an electric railway in the city. The latest proposition comes from B. C. Donham, of New York. Other offers came from J. D. McGregor and Col. O'Grady. Mr. McGregor did not renew his proposition, consequently only the other two offers came before the council Jan. 30. The city solicitor suggested the insertion of certain additions to the agreement, and a public meeting was held Feb. 8 to discuss the matter. No decision has been reached. (Feb., pg. 91.)

British Columbia Electric Ry.—The question of the company's franchises in what is known as greater Vancouver continues to be discussed in the various municipalities interested. The franchise bylaw in Point Grey was defeated, and it is stated that the franchises in Hastings and D. L. 301 are void. The Vancouver city council, Feb. 4, appointed a special committee to obtain the views of the company with the object of consolidating the franchises throughout the whole district.

It is reported that the work of building a second track on the Vancouver-New Westminster interurban line will be completed this year. The double track at present ends at Highland Park.

The Saanich extension out of Victoria will terminate at Deep Cove, but press reports state that a branch is to be built to Union Bay. It is also reported that wharves and ferry terminals will be built at Deep Cove, and that a ferry service to the mainland will be established. The construction gangs have reached mileage 18, and it is expected tnat the line will be completed by the autumn.

The Vancouver, Fraser Valley and Southern Ry. is applying to the Dominion Parliament for an act extending the time within which the following lines of railway may be built; from New Westminster to the International boundary near Douglas; from the southern end of the Fraser River Bridge near New Westminster easterly to Chilliwack; from the south bank of the Fraser River westerly to Ladners Landing. It is also desired to have power to enter into agreements with the British Columbia Electric Ry. and its subsidiary, the Vancouver Power Co. (Feb., pg. 91.)

Buffalo and Fort Eric Ferry and Ry. Co.—We are officially advised that the company has not in contemplation the building of a line from Crystal Beach to Port Colborne, Ont., and a second track on the line between Crystal Beach and Fort Erie, as stated in press reports. (Feb., pg. 91.)

Calgary Municipal Ry.—Surveys are being made and plans prepared for an extension to the site of the C.P.R. new shops at Maharg, Alta. It is expected that construction will be started early in the spring. (Feb., pg. 91.)

Cape Breton Electric Co.—Surveys are being made, according to press reports, for lines from Sydney and Dominion to New Waterford, N.S. The first line mentioned would be 14 miles long, and the second about six miles. (Jan., pg. 38.)

The Chestermere-Calgary Suburban Ry. has begun the construction of an electric railway about 18 miles long to connect Calgary, Chestermere Lake, Hubalta, Belvedere, Victoria Square, Gladstone Heights, and six other subdivisions of Calgary, Alta. Everything has been purchased excepting the cars and substation equipment. The company will operate 10 cars and will furnish power for lighting purposes. Its repair shops will be located at Chestermere Lake, and it will purchase power from the Calgary Power Co. Following are the officers:—President, General Manager and Purchasing Agent, J. A. McCullough; Vice President, G. A. Shipps; Treasurer, A. D. McGillis; Secretary, W. H. Horner; Chief Engineer, J. H. Turner. The offices are in Calgary, and the capital is $250,000 authorized and issued. (Dec., 1911, pg. 1171.)

Coteau Power Co—Engineers are reported to be locating the route for an electric railway between Vernon and Kelowna, B.C., about 12 miles. The company, which is controlled by Mackenzie, Mann and Co., Ltd., is developing water powers near Vernon, and it is reported that work on the electric railway will be started this season. (Oct., 1911, pg. 973.)

Crows Nest Pass Electric Ry.—The Alberta Legislature is being asked to incorporate a company with this title to build an electric railway from Crows Nest Lake easterly to Cowley, Alta., about 25 miles. The provisional directors named are: W. A. Bebe, R. Coulthard, T. B. George, Blairmore, Alta. The line proposed to be built would serve Coleman, Blairmore, Frank, Bellevue, Passburg, Burmis, Lundbreck and Cowley.

Edmonton Radial Ry.—A bylaw authorizing the expenditure of $602,006.34 on extensions of the municipally owned electric railway system in Edmonton, Alta., has been approved by the taxpayers by 335 to 88. (Jan., pg. 38.)

Grand Valley Ry.—It was reported, Feb. 12, that the G.V. Ry. between Brantford and Galt, Ont., had not been operated for about a month, and the Paris town council passed a resolution calling on the company to reopen the line, and authorizing an application to the Board of Railway Commissioners in the event of it not being reopened at once. (July, 1911, pg. 683.)

Guelph Radial Ry.—The Guelph, Ont., city council has voted $13,500 for the extension of the electric railway in the city. (Jan., pg. 38.)

Halifax Electric Tramway Co.—Press reports state that the company is preparing to build about three miles of new track in the city. (Nov., 1911, pg. 879.)

Hamilton, Grimsby and Beamsville Electric Ry.—At a meeting held in St. Catharines, Ont., Jan. 31, one of the company's officials is reported to have stated that the projected extension of the line into that city would undoubtedly be made if satisfactory conditions could be secured. It is said that the difficulty lies in the cost of the right of way. The original surveys ran through a lot of fruit land, the cost of which is high, and an alternative route along the brow of the mountain is being considered.

Press reports have referred to a probable extension of the line from Beamsville to St. Catharines. It is more likely that a direct line would be built from Hamilton to St. Catharines on private right of way, the present line between Hamilton and Beamsville being on the highways.

Hamilton, Waterloo and Guelph Ry.—In an interview recently, the promoter, J. Patterson, of Hamilton, is reported as stating that arrangements were being completed for the building of this line; that there was no truth in the press reports that it would be built in the interests of the Canadian Northern Ry.; that the English interests behind the project were represented by Sir Robt. Perks; that the line would be built by McArthur Bros., of New York, and that construction would be started early in the spring.

We were officially advised Feb. 6 that nothing had been closed with McArthur Bros. or the International Bond and Share Corporation, but that the project was being examined and it was quite likely that some arrangement would be concluded in six or eight weeks. (Jan., pg. 33.)

International Railway (British Columbia).—A proposition is being made by representatives of this company for the building of an electric railway into the Delta district. The municipal council, Feb. 6, promised to give consideration to a definite proposal and the company's representatives undertook to submit one in about a month. H. T. Thrift, —. Leeson and —. McDuff stated that the company was backed by British capital; that it had about £1,000,000 on deposit ready to proceed with the development of its power plant and railway plans as soon as the various negotiations were successful; that it had secured ample water rights within 150 miles of Ladner, and that its engineers were at work on plans for developing them.

Lake Erie and Northern Ry.—The Minister of Railways has approved the route plan of this projected railway between Brantford and Port Dover, Ont., and the Board of Railway Commissioners has approved location plans for the line from the Grad River, Brantford to Port Dover. The route passes through Waterford and Simcoe, and the Board has also granted the right to cross at grade, subject to conditions, the Grand Valley Ry., the Toronto, Hamilton and Buffalo Ry. and the Michigan Central Rd. The question of crossing the G.T.R. in Simcoe, where a subway is asked, was referred to the Board's engineer. The Brantford city council has granted rights in the city to a terminus near the old G.T.R. station. (Oct., 1911, pg. 975.)

London and North Western Ry. of Canada.—Press reports state that plans are being prepared for the building of a dam and power plant at Rock Glen, near Arkona, Ont., the work being in charge of Smith, Kerry and Chace, Toronto. The estimated cost is $3,000,000. (Dec., 1911, pg. 1171.)

London Street Ry.—The extension of the electric lines in the city was considered by the London, Ont., city council Feb. 9. C. B. King, the company's Manager, said the question presented difficulties, as the wants of the city for the next ten years had to be considered. The building of a second track on certain of the existing lines was necessary to take care of existing traffic and to prevent congestion of traffic when the extensions were made. The company was ready to meet the city and discuss the question at length. (Feb., pg. 91.)

Maharg Electric Ry.—Application is being made to the Alberta Legislature to incorporate a company to build an electric railway in and radiating from Maharg, Alta., which is 4½ miles east of Calgary, and is the site of the new C.P.R. shops. Lougheed, Bennett, McLaws and Co., Calgary, Alta., are solicitors for applicants.

Medicine Hat Electric Ry.—Application is being made to the Alberta Legislature for the incorporation of a company with this title, to build an electric railway within the city of Medicine Hat, easterly to Dunmore, returning by a different route, and from Medicine Hat southeasterly to Elk Water Lake. W. A. Begg, Medicine Hat, is solicitor for applicants.

A public meeting was held in Medicine Hat, Jan. 31, when the proposed charter was discussed. The meeting favored the idea of municipal ownership, and a resolution favoring the franchise granted by the city council was passed, provided that it did not conflict with the rights of the municipality owning all public utilities. The proposed incorporation act contains a section, approved by the city council, providing that the city may on six months notice acquire the company's works within the city boundaries as they are at present or as they may be extended at any time hereafter.

Montreal.—The Montreal city council is asking the Quebec Legislature to authorize the building by the city of a boulevard, with a street railway on the banks, and in the vicinity of the aqueduct, and for the building of an underground railway in the city. (Jan., pg. 38.)

Montreal and Southern Counties Ry.—We are officially advised that the proposed extensions of this line are the electrification of the Central Vermont Ry. branch lines from St. Lambert to Richelieu, Que., 14 miles, work on which is now under way, and the following:—Richelieu to Marieville, five miles; Marieville to St. Cesaire, nine miles; a new line, St. Cesaire to Granby, 14 miles; and the line from Granby to Waterloo, 15 miles; a new line along the east side of the Richelieu River, from Richelieu to Sorel, 45 miles; a line from Longueuil to Boucherville, six miles; a line from St. Lambert to Laprairie, seven miles, and a line of about 120 miles from Laprairie through the counties of Huntingdon, Chateauguay and Beauharnois. The surveys for the necessary work on these lines are being made, but no definite decision has been reached as to when work on them will be started. The Quebec Government has been asked to grant a subsidy in aid of the building of the line from Richelieu to Sorel, 45 miles, but the Premier, while promising consideration, said a difficulty in the way was the fact that the company was operating under a Dominion charter.

The Montreal city council had under consideration, Feb. 15, the company's application for the extension of its lines to the main retail business streets of the city. W. B. Powell, General Manager, stated the case for the company, which is being given consideration.

A contract was reported let, Feb. 15, for the building of a new car barn and power substation in St. Lambert.

A contract is about to be placed for building a substation and four track barn in St. Lambert. (Jan., pg. 38.)

Montreal Tramways Co.—We are officially advised that the company has extended its Guy St. line with a single track from Cote des Neiges Road and Westmount Boulevard to the Roman Catholic cemetery, .75 of a mile.

The Montreal West corporation is asking the Quebec Legislature for power to grant the Montreal Terminal Ry., one of the M.T. Co.'s constituent companies, a franchise for 50 years.

Negotiations are still reported to be in progress between the M.T. Co. and the C.P.R. for the building of an extension along the C.P.R. right of way on the south side of the canal from Cote St. Paul to Lachine. (Feb., pg. 91.)

Moose Jaw Electric Ry.—Press reports state that arrangements have been made for the building of five miles of additional track during the current year. Our latest official advice stated that the laying of one mile of new track had been decided on, and that other extensions were under consideration. (Dec., pg. 1171.)

Mount McKay and Kakabeka Falls Ry.—The Ontario Legislature is being asked to authorize an increase of the capital stock to $500,000, and to extend the time for the completion of the company's authorized line of railway to April 30, 1916. J. E. Swinburne, Fort William, Ont., is the solicitor. (July, 1911, pg. 683.)

Nanaimo, B.C.—Application is being made to the British Columbia Legislature to confer upon the Nanaimo city council the right to build and operate a street railway within or without the city, subject to the approval of the ratepayers, and to authorize the council to obtain the necessary charter therefor under the provisions of the general Railway Act of the province. (Dec., 1911, 1911, pg. 1171.)

Niagara Fruit Growers' Tramway.—The Ontario Legislature is being asked to incorporate a company with this title to build an electric railway from Niagara-on-the-Lake to St. Catharines, Port Dalhousie and Queenston, all in Lincoln county, and to make connections with and obtain running rights over the lines of other companies. J. S. Campbell, St. Catharines, Ont., is solicitor for applicants.

Niagara, Welland and Lake Erie Ry.—A trust mortgage deed dated Sept. 1, 1911, between the company and the National Trust Co., Toronto, securing an issue of bonds, has been deposited with the Secretary of State at Ottawa.

We are officially advised that the company has a section of its line built through the principal streets of Welland, Ont., from the G.T.R. station to the Michigan Central Rd. and Toronto, Hamilton and Buffalo Ry. stations, 1.5 miles. The line is not yet being operated, but it is the intention to give a 15 minute service, using three cars. These are already on hand, and it is expected to start the service as soon as spring opens. Extensions are contemplated to be built in the early spring, the surveys for which are being made by H. Leach, the company's engineer. Contracts are being arranged for track and overhead material for these extensions. (Jan., pg. 39.)

Nipissing Central Ry.—It is understood, from an interview with J. L. Englehart, Chairman of the Temiskaming and Northern Ontario Ry. Commission, that tenders will be asked at an early date for building an extension of the N.C.R. from Haileybury to New Liskeard, about five miles. (Dec., 1911, pg. 1171.)

North Midland Ry.—The Ontario Legislature is being asked to confirm a bylaw voting a subsidy of $25,000 to the company, notwithstanding the fact that although approved by the large majority of taxpayers voting, it did not receive the requisite proportion of votes. (Feb., pg. 91.)

North Midland Ry.—The Ontario Legislature is being asked to extend the time within which the company may build its authorized lines of railway. T. H. Luscombe, London, Ont., is the solicitor. (Feb., pg. 91.)

Ontario West Shore Ry.—The municipalities which have been called upon to pay interest on the company's bonds which they had guaranteed, do not propose to take any action against the company at present. It was intimated to them recently that the company was making arrangements for the completion of the line, and for the paymnet of interest without calling upon the municipalities. (Feb., pg. 91.)

Ottawa and Lake McGregor Ry.—The Dominion Parliament is being asked to incorporate a company with this title to build a steam or electric railway from Ottawa to Hull, Gatineau Point, Perkins Mills and Lake McGregor, Que. Power is also asked to lay out pleasure parks and to develop summer resorts. J. A. Ritchie, Ottawa, is solicitor for applicants. (See Ottawa Electric Ry., Jan., pg. 39.)

Ottawa Electric Ry.—The company proposes to make additions to its power plant, build new car barns, and make certain additions to its lines, for which purpose $600,000 of the unissued stock is to be disposed of to the shareholders. It was said that one of the lines to be extended will be the Division St. line. The whole programme of extensions of the lines is being discussed with the street railway committee of the city council. The building of about 6.5 miles of new lines and extensions is being asked by the council.

Ottawa, Smith's Falls and Kingston Ry.—Application is being made to the Ontario Legislature to extend the time within which the company's lines may be built; to authorize the building of a line to Gloucester tp., Carleton county, and to change the name of the company to the Ottawa, Rideau Lakes and Kingston Ry. F. B. Proctor, Ottawa, is solicitor for the company. (Jan., pg. 39.)

Port Arthur and Fort William Electric Ry.—Application is being made to the Ontario Legislature by the Port Arthur city council for confirmation of a number of bylaws, including one to authorize the expenditure of $17,500 upon an extension of the street railway in the city easterly. Power is also sought to extend the railway outside the city limits. (Aug., 1911, pg. 783.)

Quebec Ry. Light and Power Co.—We are officially advised that it is the company's intention to extend its lines to the National Transcontinental Ry. shops near the north approach to the Quebec Bridge, as soon as the building of the shops is under way. The line will start from the present Sillery branch and will be about 3.5 miles long. (Feb., pg. 91.)

St. John's, Nfld., Electric Ry.—W. D. Reid, President, Reid Newfoundland Co., is reported to have stated in an interview recently that a car service would be given to the Waterford Bridge district during the summer, but he was unable to say whether it would be an extension of the present street car lines, or by the operation of electric cars on the steam railway. (Nov., 1911, pg. 1069.)

St. Thomas Street Ry.—The city engineer is preparing estimates for improving the line and for the building of extensions on Ross and Elgin Streets, St. Thomas, Ont. (Feb., pg. 91.)

Simcoe Ry. and Power Co—The Ontario Legislature is being asked to extend for five years the time within which the company may build the electric railway authorized to be built. W. Finlayson, Midland, Ont., is solicitor for the company. (June, 1911, pg. 557.)

Stratford Electric Ry.—J. A. Rothery, Manager of the Toronto and Eastern Ry., and connected with other of Mackenzie, Mann and Co.'s enterprises, is reported as having stated in Stratford, Ont., Feb. 7, that a start would be made with the building of the line by May 1. He had been in the city for several days, and it is said that the charter has been acquired by the Mackenzie, Mann and Co. interests, or that negotiations with that end in view are in progress. (Nov., 1911, pg. 1071.)

Sudbury-Copper Cliff Suburban Electric Ry.—Application is being made to the Ontario Legislature to incorporate a company with this title to build a line, with branches, from Sudbury westerly to Copper Cliff, and from Sudbury easterly to Coniston, Ont. Clary and Buchanan, Sudbury, Ont., are solicitors for applicants. (See Sudbury-Copper Cliff, Jan., pg. 29.)

Toronto City.—Application is being made to the Ontario Legislature by the city of Toronto for an act confirming, among other bylaws, one notifying the Toronto and York Radial Ry. of the city's intention to take over the line built under the franchise granted to the Toronto and Scarboro Electric Ry., Light and Power Co., by the agreement of Nov. 16, 1892. A declaration is asked that the city may take over such railway under the provisions of the Street Railway Act, chap. 171, of the Revised Statutes of Ontario, notwithstanding the repeal of the act; authority is asked to take over the line on Nov. 16, even if the arbitration to fix the value has not been completed, on payment into court of a sum to be fixed by a High Court judge; and to issue such debentures as may be necessary to provide the money required for taking over the line. Power is also asked to connect the line with the Toronto Ry., and to authorize the entering into agreements for the interchange of traffic and for running rights with the Toronto Ry.

The confirmation of a bylaw providing for the issue of debentures for $139,488 for the building and equipping of a double track line of street railway on Danforth Ave., from Broadview Ave. to 200 ft. east of Greenwood Ave., is also asked. (Feb., pg. 91.)

Toronto Civic Car Lines—The Lieut.-Governor has issued a proclamation bringing into effect the act authorizing the city to build lines within its boundaries, within which the Toronto Ry. operates under its charter. The act was passed by the Ontario Legislature in 1910, and gives the city power to build lines within the area in question if the T. Ry. Co. fails to build such lines as the city demands, within a certain time. In preparation for the coming into force of the act the council has finally passed the bylaw, carried by the taxpayers Jan. 1, for building a line on Danforth Ave.

Tenders were received to Feb. 20 by the Toronto board of control for the supply of track intersections and other special work layouts. (Feb., pg. 91.)

Toronto and York Radial Ry.—The Etobicoke tp. council has under consideration a proposition to extend the franchise of the Lake Shore division through the township for a further period of 21 years. The company's engineers are making surveys at Mimico Creek with the view of providing a private right of way. The proposed route would take the line 300 yards nearer the centre of the village and cut out a curve at New Toronto.

The question of the double tracking of the Metropolitan Division in North Toronto is still under discussion. The company has declined to accept the proposition made by the council, and on Feb. 4 the council appointed a committee to confer with the company with a view to arriving at some basis of agreement. (Jan., pg. 40.)

Toronto Suburban Ry.—W. H. Grant, Manager of Construction, Mackenzie, Mann and Co., Toronto, is reported as having stated in Guelph, Feb. 1, that the electric railway projected from Toronto to Guelph would be built as speedily as possibly, it being expected to start work in the spring, and that the plans for the entrance into Guelph were being prepared, but were not ready for submission to the city council.

In addition to the plans for the extension of the line from Weston to Woodbridge, Ont., which it is expected will be built this year, the plans for the extension of the line now ending at Lambton, to Georgetown, 25.5 miles have been approved. The route of this line is on a private right of way, through Lambton Mills village, south of Dundas St., crossing under the C.P.R. near Islington and alongside Dundas St., on the north side to Summerville, thence to the south side, and parallel with the C.P.R. from Dixie station to Cooksville station. The route then turns north, passing north of Cooksville and near Streetsville, and on through Meadowvale, Churchill, and near Huttonville and Norval to Georgetown. It is said construction will be started early in March. (Feb., pg. 91.)

Western Canada Power Co.—Plans for the building of an electric railway on the north shore of the Fraser River from Mission Jct. to Vancouver, B.C., about 40 miles, are under consideration. W. Neill, Assistant Manager, W.C.P. Co., has been advocating the construction of the line before the Vancouver board of trade and several of the municipal councils in the townships through which the line will pass. The proposed line would follow the Dewdney trunk road from Mission to Coquitlam, and would proceed thence to Vancouver by a direct route. The Provincial Government will be asked to grant aid towards the building of a railway and general traffic bridge over the Pitt River near Coquitlam. It is reported that a considerable portion of the land required for the right of way has been purchased.

Wheat City Electric Ry.—Application is being made to the Manitoba Legislature to incorporate a company with this title to build an electric railway in the city of Brandon and vicinity. Hull, Sparling and Sparling, Brandon, Man., are solicitors for applicants.

Winnipeg Electric Ry.—Plans for the extension of the company's Winnipeg-Selkirk line by the construction of a line to Stony Mountain and Stonewall, starting from near Middle Church, have been prepared. The plans for the line, so far as the Rockwood municipality is concerned, were approved at the council meeting held Feb. 8. The company is given a free right of way along the roads in the municipality, and the company agrees to have the line completed in two years. (Feb., pg. 91.)

SUPPLY OF RAILS, TIES AND FASTENINGS.

Separate tenders on prescribed forms will be received by registered post only, addressed to the Chairman of the Board of Control, City Hall, Toronto, Canada, up to noon on Tuesday, March 19th, 1912, for the supply of the following:—

1. 250 tons 45-lb. "T" rail, A.S.C.E. section.
2. 100 kegs 5 in. x 9-16 in. spikes.
3. 1,400 pair angle bars for 45-lb. "T" rail.
4. 25 kegs ¾ in. x 3 in. bolts.
5. 810 tons 80-lb. "T" rail, similar to Lorain Section 335.
6. 972 tons 90-lb. girder rail, similar to Lorain Section 392.
7. 1,100 pair splice bars for Lorain Section 335.
8. 1,250 pair splice bars for Lorain Section 392.
9. 60 kegs 1 in. x 3⅝ in. track bolts and nuts (200 lbs. per keg.)
10. 5,300 pair of ⅞ in. x 5 ft. 3¾ in. steel tie rods.
11. 6,000 steel ties and necessary rail fastenings.
12. 4,000 wood ties, 5 in. x 6 in. x (6 ft., 7 ft., 8 ft. long).

Specifications and form of tender may be obtained on application to the Department of Railways and Bridges, City Engineer's Office, Toronto.

Envelopes containing tenders must be plainly marked as to contents.

Prospective tenderers will please only ask for the specifications covering those items on which they propose to tender.

Quick delivery will be required on Items No. 1, 2, 3, 4 and 12.

The tenderers shall submit with their tenders, the names of two sureties (approved of by the City Treasurer, not Members of the City Council or Officers of the Corporation of the City of Toronto), or in lieu of said sureties, the bond of a guarantee company approved of as aforesaid.

The lowest or any tender not necessarily accepted.

G. R. GEARY (Mayor),
Chairman of the Board of Control.
City Hall, Toronto, February 26th, 1912.

Regina Municipal Railway.

Following are details of the operation for the five months ended Dec. 31, 1911, the railway having been in operation 135 days.

EARNINGS.

Cash fares	$14,467.88
Ticket sales	8,328.70
	$22,996.58
Advertising on cars, etc.	641.00
	$23,637.58

OPERATING EXPENSES.

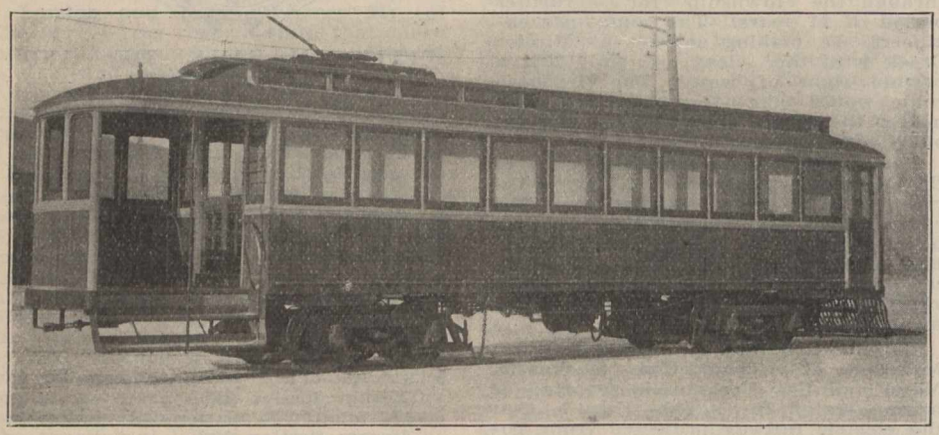
Maintenance of way and structure	$2,023.31
Maintenance of rolling stock	1,160.92
Maintenance of electric equipment	656.16
Conducting transportation	9,254.16
Power	2,898.30
General expense	1,654.11
	$17,646.96
Net earnings	$5,990.62

Car Mileage, 86.885 Miles.

Gross earnings per car mile	27.205 cts.
Gross operating expenses per car mile	20.311 cts.
Net earnings per car mile	6.894 cts.
Cost of power per car mile	3,334 cts.
Passengers carried	480,695
Gross earnings per day	$175.09
Net earnings per day	44.37
Gross operating expenses per day	130.72

Electric Railway Notes.

The Ottawa Electric Ry. has received one double truck locomotive type snow sweeper from the Ottawa Car Co. A full description with illustration of this sweeper was given in our January issue.



Winnipeg Electric Ry. Double Truck Car.

The Winnipeg Electric Ry. has ordered motors and trucks for 30 double truck cars which will be built at its shops this year. They will be 45 ft. 4 ins. long over all, and 8 ft. 5 ins. wide over all, and will be similar to the car which is illustrated in this issue.

The Winnipeg city council, Jan. 30, ratified an agreement with the Winnipeg Electric Ry., providing for the adoption of a single fare for a service to 2 a.m., instead of an all night service, which had been advocated. The agreement is terminable on a three months notice.

The Edmonton Radial Ry. has ordered 15 double end, double truck, pay-as-you-enter cars, the bodies of which will be built in the U.S., the electric equipment supplied by the Canadian General Electric Co., and the air brake equipment by the Canadian Westinghouse Co.

A special committee which has been investigating matters in connection with the Regina, Sask., Municipal Ry., recommended the city council, Feb. 14, to dismiss Superintendent Doughty. Citizens, Feb. 16, got up a petition to the council asking that the recommendation of the committee be rejected.

The Regina Municipal Ry.'s six cars, which are being built by the Preston Car and Coach Co., Preston, Ont., and mention of which has been made in previous issues, will be equipped with Westinghouse 101B2 electric motors, etc. The bodies will be 22 ft. long, and the length over all will be 31½ ft.

The Winnipeg Electric Ry. has ordered motors, trucks and equipment for 30 double truck cars, similar to the one illustrated in this issue, and which will be built at the company's shops this year. They will be 45 ft. 4 ins. long and 8 ft. 3½ ins. wide over all. Truck centres will be 21 ft. 11½ ins., with deep vestibules front and rear. The rear one is to be 7 ft. 4 ins. deep, with double entrance doors leading from the steps.

J. N. Shannahan has resigned as railway manager of the operating department of J. G. White and Co., Inc., of New York City, to become Vice President and general manager of the Newport News and Old Point Ry. and Electric Co., of Newport News, Va., now controlled by Allen and Peck, Inc.

The Ottawa city council has forwarded to the Ottawa Electric Ry. a petition asking for an extension of the workingman's ticket until 8 a.m. instead of to 7.30 a.m. as at present. In an interview, Feb. 10, the President said he thought the limit had about been reached in making further departures from contract requirements. In addition to concessions, not in the contract, as to tickets, the company was giving a service considerably beyond contract requirements. A recent report of the Superintendent showed that on the Bank St. line, except between 6 and 6.30 p.m., there were 50% more seats provided than were required, and that during that half hour the cars were only filled to 10% above their seating capacity.

The International P-A-Y-E Tramcar Co., Ltd., of London, Eng., expects to close early contracts to remodel about 4,500 busses and tramcars for P-A-Y-E operation. These contracts will include certain trial busses for the London General Omnibus Co. to be passed upon by the police authorities, in order to have the main features approved in connection with the best possible model platform for the proper collection of fares, based upon the zone system. This will affect about 3,300 vehicles. Then there will be one entire line for the Gateshead and District Tramways Co., a subsidiary of the British Electric Traction Co., to be ready for operation by March 1. There will also be a number of cars for the city of Leicester and on the Continent; 700 tramcars for the city of Paris; and a possible 1,000 omnibuses for a new company. T. W. Casey, General Manager of the P-A-Y-E Corporation, is now in Europe in connection with the matter.

Among the Express Companies.

F. H. McGarrett has been appointed agent, Dominion Ex. Co., Cobalt, Ont., vice G. Sims.

W. Cuthbertson has been appointed General Agent, Canadian Ex. Co., Liverpool, England.

H. Campbell Oswald, Assistant Secretary, C.P.R., has been appointed Secretary, Dominion Ex. Co., Montreal, vice A. R. G. Heward.

Billet, Seigle and Co., Grenoble, and the Agence Lubin, St. Etienne, France, have been appointed receiving agents in the respective towns for the Dominion Ex. Co.

The Dominion Ex. Co. has opened offices at Arthurette, N.B., Baxter and Sherwood, Ont., Tregarva, Sask., and Colwood, Fitzgerald, Malahat and Port Alberni, B.C.

The Quebec Public Utilities Commission has dismissed the application of the town of Montcalm, for an order directing the Dominion and American Ex. Cos. to deliver parcels and packages within the limits of the municipality, on the ground that it has no jurisdiction to deal with the matter, as express companies are under the jurisdiction of the Board of Railway Commissioners for Canada.

The Canadian Northern Ex. Co. has issued instructions to its agents at transfer points, to the effect that they must not accept in local transfer nor on through waybills, any shipments waybilled or transferred, with charges to collect, when the packages are marked prepaid, either by the originating company's regular sticker or in any other legible manner to indicate that charges were paid in advance. The company offering the shipment in transfer must correct the billing or the entry on the transfer sheets to agree with the marks on the package.

The Dominion Ex. Co. has instructed its agents at common points with the Canadian and Canadian Northern Ex. Cos., that in case of shipments from points on either of the two lines mentioned, and which have to be handed back again to the originating company to complete transportation, it will be necessary for the agent at the point where the waybill is handed back to the initial company, to keep a record showing the name of the company, the number and date of the waybill, where from, where to, particulars of shipment, weight and charges, and the point at which waybill was originally transferred to the Dominion Ex. Co. A monthly report of such transfers, signed and dated by the agent, and showing the name of the office, must be sent to the audit office, using, in the meantime, form 53, and retaining an impression copy.

The Dominion Ex. Co. has notified its agents that on presentation of Government warrants properly filled out and signed in the space provided at the head of the form for the signature of the officer issuing the requisition, the person delivering the shipment also signing his name at the foot of the form, agents will accept and forward on regular waybills, shipments of military supplies, equipment, etc. The charges must be billed prepaid, and the Government warrant or requisition, together with a copy of the waybill, must be expensed on the agent at Ottawa for collection. In case of shipments to points on connecting lines, with which the company has a regular freight interchange, the charges to destination must be shown as prepaid, settlement with such lines being made in the usual manner. A separate warrant or requisition must be presented for the transportation of horses, stores, etc., such document to cover the actual movement from any one station to one destination only. One warrant or requisition will not be accepted to cover movement to camp and return, but a separate document must be obtained to cover movement each way when necessary.

Marine Department

The Dry Dock at Port Arthur, Ontario.

By A. V. Powell, M. Am. Soc. C.E.

Thunder Bay, on Lake Superior, is a body of water 16 by 26 miles in extent. It forms one of the best harbors—if not the best—on the great lakes. It is connected with Lake Superior by two outlets, two and four miles in width, and is protected from the winds by the palisades of Thunder Bay and Pie Island, 1,200 and 1,500 ft. high. The cities of Port Arthur and Fort William are located on the northern shore of the bay, near the western end, and except in name form a single commercial centre, the only port on the Canadian side of Lake Superior. To this port the three great transcontinental railways bring the products of the grain fields of central western Canada, and to it also the shipping of the great lakes carries the manufactured commodities and fuel for the great northwest. Ships encounter storms and meet with disasters, hence dry-docks are needed for repairs. Ships are lost, and more ships are needed to carry the increasing traffic, so shipyards are required. These needs account for the formation of the Western Dry-Dock and Shipbuilding Co., Ltd., of Port Arthur, Ont.

LOCATION OF DRY-DOCK.—In order to carry out the proposed undertaking in the manner that the enterprise seemed to justify, and to provide room for extending the facilities when the growth of business required, about 100 acres of land were needed, so located as to give not less than half a mile of dock frontage for dry-docks, shipbuilding berths, fitting-out slips, etc., and room in front for laying up ships for repair during the winter. In addition to this, an absolutely safe foundation must, if possible, be secured for the dry-dock. The site must also be as near as possible to the shipping centre of the district.

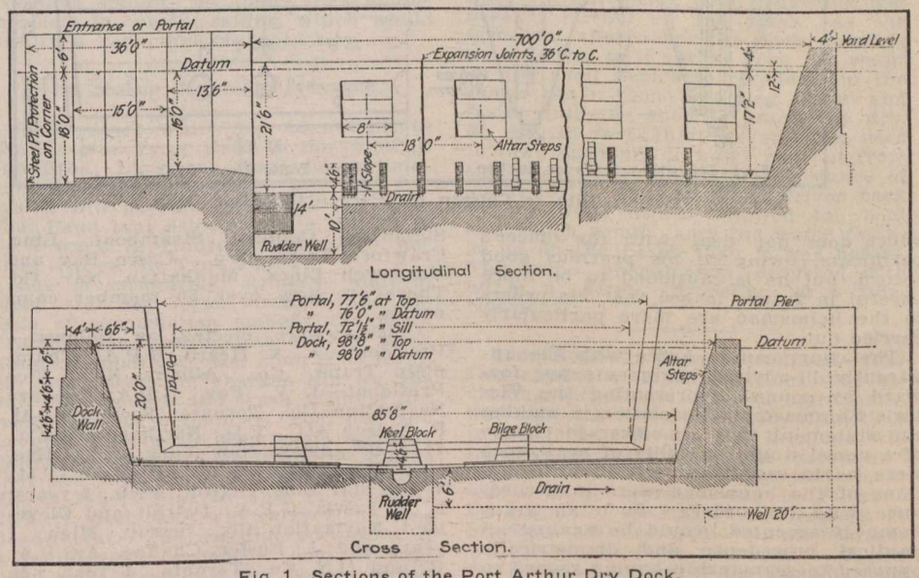


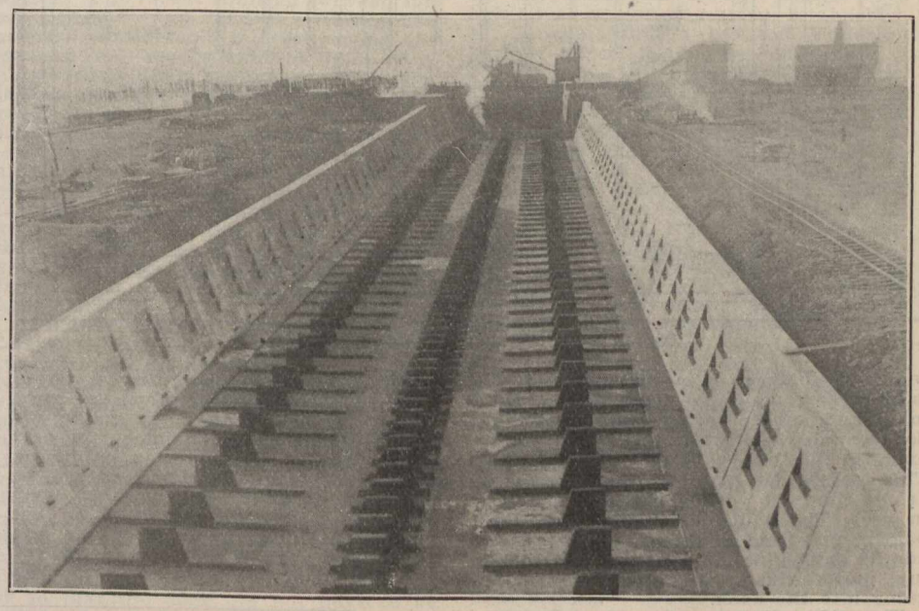
Fig. 1. Sections of the Port Arthur Dry Dock.

With these requirements in mind, nine locations were prospected, covering a bay frontage of seven miles. At all these points borings were made, and where satisfactory foundation was found preliminary estimates of cost were prepared. Finally a report was submitted, which was adopted, fixing on the Current River site for the plant. This location met all the conditions mentioned above in regard to foundations, water front, area and railway facilities, and was sufficiently near the shipping district.

Very complete borings were taken over the property before the docks were located (room having been reserved for another dock of the same size as the one constructed, and served by the same pumping plant). The place fixed upon put about two-thirds of the length of the docks outside the original shore line, the portal of the present dock being where the water was about 10 ft. deep.

FOUNDATION.—The entire dock is built on solid rock. Above this was found the hardest kind of hard-pan, with many boulders. About 90% of the material excavated was hard-pan. The remainder was shale rock.

CONCRETE.—The nature of the foundation precluded the use of timber in the construction of the dock, even had it been otherwise desirable, and concrete



Concrete Dry Dock at Port Arthur.

was adopted. A 1:3:5 mixture was used, which was run soft in the large masses, side walls, portal piers, etc. It was dumped from cars running over the top of the forms, the drop ranging from 5 to 30 ft., and I believe resulted in a mass as nearly voidless as it is possible to get concrete. Timber was used for keel and bilge blocks, but not elsewhere.

DIMENSIONS OF DOCK.—In fixing the dimensions of the dock we were governed to a degree by past experience. The first dry-dock I designed was constructed in 1891. At that time, after much thought on the part of the owners, and after getting the opinions of vessel men, we concluded that 400 ft. would dock any ship that would ever be built on the lakes. I have since lengthened that dock 150 ft., but it is now altogether too short to take the largest boats. The largest ships on the great lakes at present are 600 to 608 ft. long over all, 60 ft. beam and 32 ft. deep. They draw (aft) light about 12 ft. of water. A ship of these dimensions will have about 450 ft. of dead flat frames, that is, frames of the same dimensions as the midship section. The "dead rise" will not exceed 6 ins. and the turn of the bilge 4 ft.

In other words, the vessel is a steel box sharpened at the ends and rounded at the lower corners. As a carrier it cannot be excelled. Its model is the outgrowth of the combined experience of shipbuilders and vessel owners covering a period of 30 years, and it is fair to presume that the type will continue. It is admitted by the majority of experts that the length of the lake boats cannot be increased very much without increasing the depth of the hull, thereby increasing the weight, and consequently

the draft of the ship. As the ships operating on the lakes are now loaded to the full working depths of the channels and harbors no material benefit can be obtained from increased size without the expenditure of unknown millions for harbor improvement.

However, there is always the man who wants the biggest of everything, and he is liable to come to the front with a ship in advance of the harbor appropriations. So we made the Port Arthur dock 700 ft. long to give him a chance to come in. This length also gives a chance to dock at one time two vessels of a class largely in use. The width of the dock on the bottom was fixed at average 85 ft. This admits light, gives ample room for working, and a clear passage for material going into the dock.

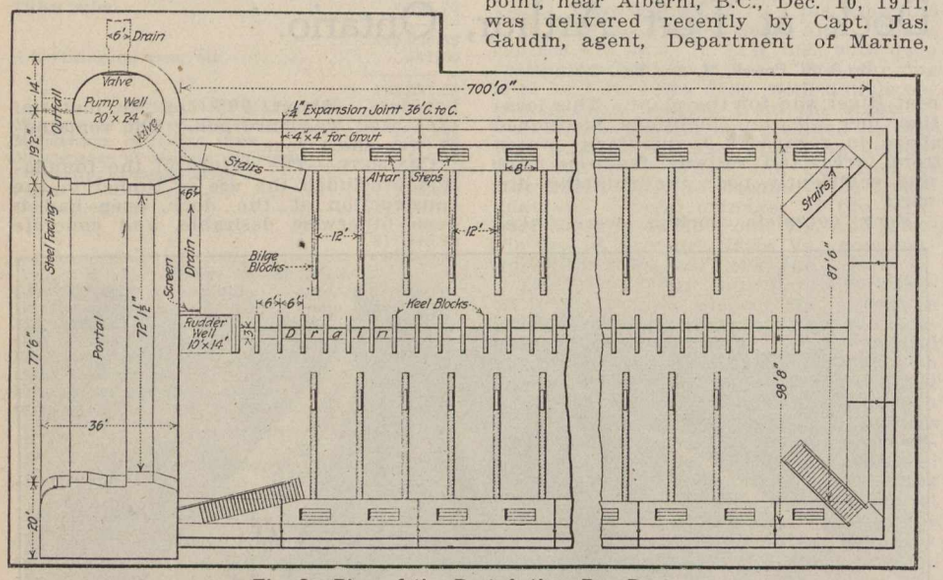


Fig. 2. Plan of the Port Arthur Dry Dock.

The sidewalls are given a moderate amount of batter for two reasons. First, as the spaces on both sides of the dock are to be used as building berths (ships 600 ft. or more in length will be launched into this dock), the walls are kept back so that the ship's bilge will not strike when it is launched. Second, the modern ship in dry-dock rests entirely on the keel and bilge blocks and shores are unnecessary. For this reason the altars used in the old dry-docks are also unnecessary. Provision is made, however, for shoring by stepping into the side walls at intervals near the top of the dock.

PORTAL AND CAISSON.—The clear width in the portal at the line of the sill is 72 ft. and the depth over the sill is 16 ft., Government datum. This gives ample depth, as loaded ships are never docked in lake dry-docks. The sill and jambs are steel. The caisson is constructed of steel, and its dimensions are given in fig. 3. It was erected in place between the piers of the portal.

PUMPING PLANT.—The pumping plant consists of two 30-in. centrifugal pumps driven by 200 h.p. d.c. vertical direct-connected motors. There is also an 8-in. centrifugal motor-driven pump for drainage. The pump well is located in the west pier of the portal and is provided with openings and valves to connect with dock no. 2 when that becomes necessary. Current for the motors driving the pumps and also the machinery of the shipyard is taken from the Current River hydro-electric plant owned by the city of Port Arthur and located alongside the dry-dock property.—Engineering News.

We are indebted to the contractors, the Canadian Stewart Co., Ltd., for the photograph from which the half tone illustration showing the interior of the dry dock is made.

Stranding of the s. s. Queen City.

The following judgment re the stranding of the s.s. Queen City at Dunsmuir point, near Alberni, B.C., Dec. 10, 1911, was delivered recently by Capt. Jas. Gaudin, agent, Department of Marine, Victoria, B.C., concurred in by Capts. Eddie and Shenton as nautical assessors.

The court finds that the stranding was due to an error of judgment on the part of the officer of the watch in estimating the distance from the shore, as well as the distance run by the ship, it being evident that had the ship been on her course with Dunsmuir point abeam, and the channel open to the southward, the stranding could not have occurred. The court does not deal with the officer's certificate, owing to his previous good record, but he is cautioned to be more careful in future to see that his orders to the helmsman are more particularly carried out.

The court cannot agree with the apparently ill-advised arguments put forward by counsel representing the Victoria Shipmasters' Association in making the statement that an officer in charge of a vessel would be guilty of negligence were he to satisfy himself that the actions of the helmsman were in accordance with his orders. Such an argument, if accepted, would be against all nautical precedence and diametrically opposed to seamanship having regard to the safety of life and property.

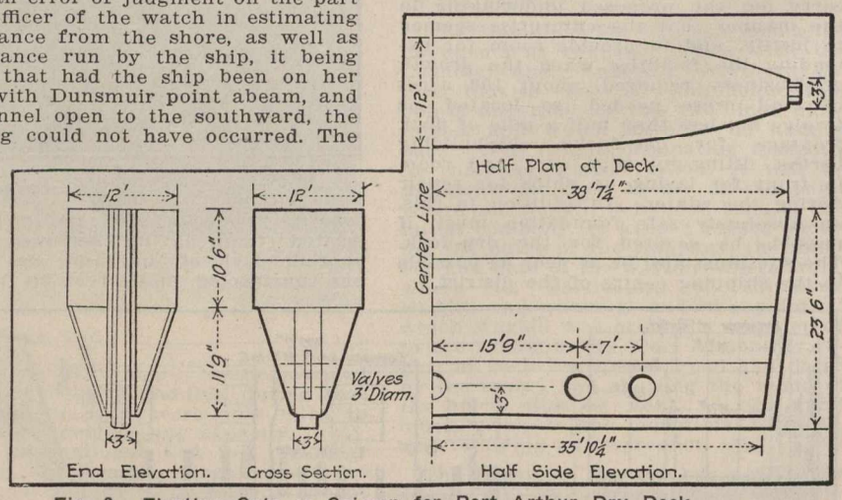


Fig. 3. Floating Gate or Caisson for Port Arthur Dry Dock.

The Soo Dredging and Construction Co., Ltd., has been incorporated under the Dominion Companies Act, with $100,000 capital and office at Sault Ste. Marie, Ont., to carry on a general dredging, towing, freighting, drydocking and construction business.

International Water Lines Passenger Association.

At the annual meeting in Detroit, Mich., recently, B. W. Folger, General Manager of the Niagara Navigation Co., on behalf of himself and G. Poole, Jr., of Chicago, presented the retiring President, T. Henry, Traffic Manager, Richelieu and Ontario Navigation Co., with a gavel. The handle of the gavel consists of a part of the steamboat Chicora, originally a blockade runner in the war between the Northern and Southern States, her name being Let Her Be. After the war she was brought to the Great Lakes and converted into a passenger vessel. She was the first steamboat owned by the Niagara Navigation Co., and was the mother of the present fleet of steamers plying between Toronto and Niagara River. Owing to her exceptionally strong construction she is still a popular passenger steamer on Lake Ontario. In the head of the gavel there is a part of the steamboat Cayuga, the latest addition to the N.N. Co. fleet. There is also a portion of the new steamboat Detroit III., building at Detroit for the Detroit and Cleveland Lines, and the largest ship of her class. Also a portion of the Washington Irving, recently contracted for by the Hudson River Day Line, which will carry 6,000 people, this being by far the largest certificate issued in the world. There is, in addition, a part of the twin screw river steamboat under construction at Toledo for the Thousand Islands Steamboat Co.

The following lines were admitted to membership:—Catskill Evening Line of Steamers, Coburn Steamboat Line, Crawford Trans. Co., Casco Bay and Harpswell Lines, Manhattan Nav. Co. There are now over 50 member companies.

Officers were elected as follows:—President—A. A. Heard, G.P.A., Champlain Trans. Co., Albany, N.Y.; Vice President—J. V. Foy, G.P.A., Niagara Navigation Co., Toronto; Secretary—M. R. Nelson, C.C., P.D., Northern S.S. Co., 1184 Broadway, New York, N.Y.; Executive Committee—C. F. Bielman, T.M., White Star Line, Detroit, Mich., 2 years; L. G. Lewis, G.P.A., Detroit and Cleveland Navigation Co., Detroit, Mich., 1 year; and J. Foster Chaffee, A.G.P.A., R. and O.N. Co., Toronto., 1 year. M. R. Nelson, C.C., P.D., Northern Steamship Co., New York, was re-elected Secretary, and the appointment was made permanent.

The Niagara Navigation Co. has been authorized by supplementary Dominion letters patent to increase its capital stock from $1,000,000 to $3,000,000.

The Iroquois-Noname Collision.

Following is a summary of the judgment re the collision between the International Steamship Co.'s s.s. Iroquois, under charter to the C.P.R. for its Pacific coast passenger service, and the steam tug Noname, off the Fraser River sandheads, Oct. 22, 1911, delivered recently by Capt. Jas. Gaudin, agent, Marine Department, Victoria, B.C., and concurred in by C. Eddie and W. Ladds, as nautical assessors.

The court finds that both vessels were approaching each other without any material change of bearing, a risk of collision existed, and both vessels acted either in ignorance or otherwise of article 16, International Rules of the Road, which provides under certain circumstances for the stopping of the engines, and cautious navigation, until the risk of collision is passed. Neither vessel made use of the signal prescribed by law, to indicate the direction it intended to take. At the time of collision the Iroquois was travelling at about 13 knots an hour and the Noname at approximately six knots an hour in the opposite direction, and the court is of opinion that the collision was entirely attributable to the speed at which the vessels were being navigated, and holds that both were at fault for non-compliance with the rules of the road. The court considers that the action of the officer in charge of the Iroquois in maintaining what is considered an excessive speed, under the circumstances, and in such a locality, contributed largely towards bringing about the collision, and refrains from commenting on the internal economy or discipline of the vessel, as she is of foreign register, but states that the use of the danger signal made by the Iroquois is not recognized in Canadian coasting waters. After giving full consideration to the matter of the master of the Noname, the court considers a reprimand sufficient. The court does not acquiesce in the idea generally prevalent amongst local navigators of the Pacific coast, that in order to make their courses good in foggy weather, they must maintain a comparatively high rate of speed. Assuming that those in charge of these vessels are conversant with the rate and direction of the tidal currents, recourse should be had to a simple problem in current sailing, which would justify a reduction of speed.

The Sealing Steamship Nascopie.

This vessel, which has been built at Wallsend-on-Tyne, Eng., to the order of Job Bros., Liverpool, Eng., in conjunction with the Hudson's Bay Co., and which will be employed in the Newfoundland seal fishery and in the H. B. Co.'s work in Hudson Bay, made her trial trip on the Tyne Jan. 24.

She is excessively strongly built of steel, and her form, strength and details of construction embody the latest practice for vessels intended to work amongst thick ice. Her stem is so formed that when she charges the ice she will glide upon it and crush it under her weight. The machinery, shafting and propellers have all been made specially heavy in order to cope with the shocks that she must receive amongst the ice. She is 285 ft. long by 43½ ft. beam by 29¾ ft. deep, and will carry 2,500 tons deadweight. The machinery consists of a set of triple expansion engines, supplied with steam by two boilers working under forced draught. On the trial trip, although the sea was rough and the weather decidedly unfavorable, she attained a speed of over 14 knots, being considerably in excess of the contract requirements. She has been constructed to attain the highest class at Lloyds, and has comfortable accommodation for the navigating staff, engineering staff and crew. She will also, when necessary, accommodate nearly 800 sealers.

The owners were represented on the trial trip by R. and T. B. Job and by Mr. Ingram, of the Hudson Bay Co.

After her trials, she left for Cardiff, where she shipped coal for St. John's, and also took on board the shipwrecked crew of the Newfoundland brig Bella Rosa, which was lost in mid-ocean recently. She sailed from Cardiff for St. John's, Feb. 7, arriving Feb. 14.

The Behavior of Water in Advance of a Steamboat on the Niagara River.

J. L. Jones, Assistant Professor of Mechanical Engineering, Oklahoma Agricultural and Mechanical College, writes: "The recent collision between the s.s. Olympic and H.M.S. Hawke has aroused considerable interest among engineers, and has brought to light many observations that have been appearing in the periodicals for some little time past. These things are not necessarily discoveries, but, rather, buried knowledge —things that have been seen so often and have become so familiar to the people who have lived among them that they had come to believe them to be known equally well to everyone. It is the same with many things in the engineering line; occurrences become so familiar that their importance is not appreciated.

"On the Niagara River there is a ferryboat that has been running between the foot of Ferry St., Buffalo, N.Y., and Fort Erie, Ont., for many years. Every time this ferryboat approaches its dock on the Canadian shore it causes a peculiar action of the water in its immediate vicinity. The water immediately offshore is very shallow, the depth reaching probably 4 ft. at a distance of about 50 ft. out. At this point there is a very steep bank, and in the next few feet out from the shore the depth of the water increases very rapidly so that the dock did not have to be extended very far out, as the boat could run right along the edge of the deep water. There is considerable current in the deeper part of the river just outside the dock, but on the 'shelf,' where the water is only 4 ft. deep, there is very little current owing to a projecting ice-breaker farther up the river. As the ferryboat approaches the dock, heading up the river as it always does, the water on the shelf begins to recede from the shore, the motion becoming faster and faster until the shelf is practically dry. So dry, in fact, that the children used to (and probably do now) run out from the shore after the water a distance of about 40 ft. They would be driven back by the wave which followed the boat and which would carry the water farther up on the beach than it was before. This same phenomenon occurred with either a screw propeller or a side-wheeler."

True Bearings to be Introduced.—The Department of Marine notifies that beginning with Jan. 1, true, or astronomic, bearings are being given in all notices to mariners issued. The bearings will be given in degrees, true, or astronomic, reading from 0 to 360, measured clockwise. These bearings may be followed by magnetic bearings, in degrees, in brackets. Where applicable all bearings will be given from seaward. In the forthcoming edition of the Canadian list of lights and fog signals, corrected to Apr. 1, true bearings only will be given, numbered from 0° at north, measured clockwise to 360.

The Civil Service Commissioners received applications, to Mar. 1, for the position of assistant to the Chairman of Steamboat Inspection at a salary of $2,100 a year.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

5. Jan. 27. 6. New Brunswick, south coast, Bay of Fundy, St. John harbor entrance, off southeast end of Partridge island, gas and whistling buoy to be permanently withdrawn. 7. New Brunswick, south coast, Bay of Fundy, approach to St. John, off Black Point, whistling buoy to be replaced by gas and whistling buoy. 8. Nova Scotia, southwest coast, Frenchman point to Wedge point, buoys established, Goose bay, stakes placed. 9. Nova Scotia, Cape Breton island, Bras d'Or Lake, Barra strait, Derby point, name of lighthouse. 10. Newfoundland, south coast, Placentia bay, Placentia road, Verde point lighthouse station, fog alarm established. 11. Canada, Hudson bay, off Fullerton harbor, Barrel island, beacon rebuilt.

6. Jan. 30. 12. Quebec, Lake St. John, east side, Grande Decharge, Mistook, lights established. 13. Quebec, River St. Lawrence, Lanoraie to Ile Deslauriers, Repentigny channel, buoys renumbered.

7. Feb. 5. 14. British Columbia, Strait of Georgia, Active pass, Mayne island, Georgian point, change in fog alarm. 15. British Columbia, North Skeena passage, Inverness, Mid rock, conical buoy replaced by spar buoy. 16. British Columbia, Dixon entrance, Queen Charlotte islands, Langara island, lighthouse and fog alarm under construction.

8. Feb. 8. 17. Nova Scotia, Bay of Fundy, Chignecto channel, Joggins Mines, lighthouse established. 18. Nova Scotia, south coast, entrance to Halifax harbor, Sambro outer bank, lightship placed for winter months. 19. Nova Scotia, Cape Breton island, east coast, South Ingonish, wooden spar buoys replaced by iron buoys.

9. Feb. 10. 20. Ontario, Detroit river, lower end, changes in buoyage. 21. Ontario, Lake Superior, Michipicoten harbor, Little Gros Cap, hand fog horn at light station.

11. Feb. 20. 24. British Columbia, Vancouver Island, west coast, Quatsino sound, Entrance island, hand fog horn at light station. 25. British Columbia, Strait of Georgia, sandheads of Fraser river, change in position of gas and whistling buoy, change in position of light ship.

Farrar Transportation Company's Report.

The report of operations for 1911, which was presented at the annual meeting, at Collingwood, Ont., Jan. 30, showed gross earnings of the steamboats Collingwood and Meaford, $119,082, and expenses of all departments, $74,357. The assets are $442,815.37, and total liabilities $358,045.75. A dividend of 10% was declared. T. I. Thompson, President, in presenting the report, suggested that the construction of another steamboat be considered for the 1913 season. The following is the board for the current year:—President, T. I. Thompson, Owen Sound, Ont.; Vice President, E. R. Wayland, Fort William, Ont.; Secretary-Treasurer and Manager, G. E. Fair, Collingwood; other directors—E. Stubbs, Sault Ste. Marie.; W. E. Allen, Toronto; W. T. Toner, G. P. Pearsall, Collingwood; M. Snetsinger, Thornbury; J. Shultis, Port Colborne, Ont., and D. D. Lewis, Philadelphia, Pa.

It is announced that a bill will be introduced into the British House of Commons shortly to authorize the construction of a railway and harbor at Galway, Ireland, with a view to the establishment of a quick Atlantic route between Galway and Halifax, N.S. It is claimed that the passage by this route can be made in from 2¾ to 3½ days.

Dominion Marine Association's Annual Meeting.

The Association's annual meeting was held in Ottawa Feb. 14, the President, Frank Plummer, of the Canadian Lake Transportation Co., in the chair.

The report of the executive committee showed that the membership, as well as the tonnage, had steadily increased, there being enrolled a registered steam tonnage of 150,364 tons and barge tonnage of 37,269 tons, making altogether 187,633 net registered tons, as against 175,594 net registered tons in 1910. The report dealt very fully with the past year's work, including the coasting laws, pilotage, St. Lawrence River power schemes, the grain trade (including the Montreal Harbor Commission, the Lake Shippers Clearance Association, trimming spouts on elevators, and trimming charges, the grain act shortages, bill of lading), entrance to Soulanges canal at Coteau, the Morrisburg canal upper entrance, G.T.R. air line bridge, Welland canal, Sault Ste. Marie lock, handling lines at canal entrances, opening of canals on Sundays, examinations and educational facilities for masters and mates, sick mariners dues, and U.S. tonnage tax in U.S. ports, Dominion legislation (including bill of last session to amend the Shipping Act, bill respecting wireless telegraph system on vessels, loadline bill, bill to amend the Water Carriage of Goods Act, bill respecting the pollution of navigable waters, the waterways treaty, the reciprocity measure and the grain bill), low water in the lakes and St. Lawrence, the Lighthouse Board, the Canadian Lake Protective Association, Fort William harbor, proposed harbor basin at Sarnia, Port Arthur harbor, dredging at Byng Inlet, eastern entrance Toronto harbor, Telegraph channel, Bay of Quinte, Salt Point channel, Kingston harbor, closing of navigation in 1911, aids to navigation.

The association's committee on aids to navigation presented a separate report, stating that a general list of recommendations had been submitted to the Lighthouse Board of Canada early in the year, that further requests had been submitted at later dates, and that favorable action had been taken in the majority of cases. The recommendations made and the action taken were set out in detail.

The reports having been adopted the unsatisfactory condition of affairs at Port Arthur and Fort William, and the great delays to vessels in loading there were discussed at considerable length, a committee, consisting of J. Playfair, F. Plummer, A. A. Wright, L. Henderson, and the Association's Counsel, F. King, being appointed to take the whole matter up with the Lake Shippers Clearance Association, with power, unless more satisfactory arrangements can be made with that association, to appoint other agents. It was the unanimous opinion that all surrenders should be in before the time fixed for a vessel's arrival to load.

The incoming executive committee was instructed to lay before the Dominion Government, particularly the Ministers of Railways and Canals, and of Public Works, the urgent necessity of widening and deepening the channel in the St. Marys River at Sault Ste. Marie approaching the entrance to the Canadian locks, particularly from a point east of the ferry dock to a point west of the New Ontario dock in line with the front of the ferry dock. This would widen the channel and eliminate the possibility of strandings, such as experienced by the steamboats Wexford and Turret Crown, and would greatly benefit Sault Ste. Marie harbor by making the Government dock and the New Ontario dock more easy of access. This applies particularly to the New Ontario dock, which is in general use by Canadian ships for fueling purposes, and it would be of great benefit to all boats of Canadian passenger and package freight lines making Sault Ste. Marie a port of call.

The following were appointed a committee on aids to navigation:—S. C. Calvin, J. Donelly, W. H. Featherstonhaugh, R. Fraser, J. B. Foote, H. H. Gildersleeve, D. Noonan, C. J. Smith, A. A. Wright, J. Playfair.

Under the bylaws four members of the executive committee retired, but were eligible for re-election, viz.: A. E. Mathews, S. C. Calvin, D. Murphy, and J. W. Norcross. Two other vacancies were caused by the death of G. B. Greene, and the resignation of J. P. Kavanagh. The following were elected to fill the vacancies:—A. E. Mathews, D. Murphy, J. W. Norcross, F. S. Wiley A. A. Wright, L. Henderson.

The dues in the Association for the current year were fixed at 2½c. a ton.

Officers were elected as follows:—President, J. Playfair, Midland, Ont.; First Vice President, D. Murphy, Ottawa; Second Vice President, L. Henderson, Montreal.

Deputation to Dominion Government.

The various representatives of steamship companies attending the meeting formed a deputation which was received in the House of Commons railway committee room in the morning by the Minister of Railways and Canals, the Minister of Marine, and the Minister of Public Works. The deputation was introduced by W. F. Nickle, M.P. for Kingston, Ont., and the ministers were addressed by the Association's Counsel, F. King, who urged that the lower St. Lawrence canals be repaired earlier each year, so that they could be opened earlier, and that the Welland and St. Lawrence canals be opened for traffic on Sundays. Recommendations were also made in reference to wrecking boats and tugs with tows of logs being allowed to carry passengers without license; to the necessity of better arrangements for the handling of lines at entrances to the canals, and to changes desired in the arrangements for the examinations of masters and mates. It was also strongly urged that in any power developments on the rivers or canals, the navigation interests should be paramount.

Dinner at Ottawa Golf Club.

In the evening the representatives attending the meeting, accompanied by a number of guests, went by special cars on the Hull Electric Ry. to the Ottawa Golf Club, a beautifully situated and splendidly appointed building where they dined amid most charming surroundings. J. Playfair, President-elect of the Association, occupied the chair. The speakers in connection with the various toasts included Hon. G. E. Foster, Minister of Trade and Commerce, who emphasized the duty of his department to secure an increase of interprovincial, as well as external trade; Hon. J. D. Hazen, Minister of Marine, who dealt at length with his department's work for the marine interests, and with the great improvements made in aids to navigation, etc.; G. A. White, A.G.M. Hudson River Day Line, President of the Association of Passenger Steamboat Lines; A. A. Schantz, General Manager, Detroit and Cleveland Navigation Co.; W. F. Nickle, M.P. for Kingston, Ont.; D. Murphy, President Ottawa Transportation Co.; A. A. Wright, Managing Director, St. Lawrence and Chicago Steam Navigation Co.; F. Plummer, Vice President, Canadian Lake Transportation Co.; F. Cooke, ex-mayor of Ottawa; F. King, the Association's Counsel; Messrs. Prindiville, Hopkins and Dart, of underwriting firms, and Acton Burrows, Managing Director, The Railway and Marine World.

Richelieu and Ontario Navigation Company's Annual Report.

Following are extracts from the report for the year 1911 presented at the annual meeting in Montreal Feb. 19:—

	1911.	1910.
Gross receipts	$1,556,159.84	$1,437,931.42
Operating expenses	1,050,289.50	1,016,233.23
Fixed charges, interest, etc.	57,629.44	58,582.50
Net profit	$448,240.90	$363,115.69

The following quarterly dividends were paid:—March 1, 1½%, $46,980.00; June 1, 1½%, $46,980.00; Sept. 1, 1½%, $72,505.98; Dec. 1, 2%, $105,106.58; total, $271,572.56.

The authorized capital stock has been increased to $10,000,000. The paid-up capital has been increased by $2,179,875, to provide for the natural expansion of the company and the purchase of the Northern Navigation Co.

During the year $24,333.33 of the outstanding debentures have been redeemed and cancelled.

The insurance fund has been credited with $36,000 out of the year's earnings and $275,939.98 now stands to the credit of this account. This fund is in addition to the general insurance carried with insurance companies on shore properties, steamers, etc.

The new steamboat Rapids Prince for the Rapids Division, completed and delivered in Sept., 1910, went into commission June 1, 1911, and is fully up to expectations and requirements.

The twin-screw passenger and freight steamboat Saguenay, built on the Clyde, arrived from Glasgow under her own steam, June 26, 1911, and has run, in through service, direct from Montreal to Quebec, Murray Bay, Tadousac and the Saguenay River, in connection with the hotel and tourist traffic and has proved very satisfactory.

The company's hotels, the Manoir Richelieu and Tadousac, were very well patronized during the season.

Your company acquired control of the Northern Navigation Co. by the purchase of 9,648 fully paid-up shares of the capital stock, amounting in all to 10,000 shares. Your directors are pleased to report that the acquisition of this company is proving of material benefit.

The company has a fleet of 21 steamboats, ferries and tugs, with an aggregate tonnage of 36,713.

ASSETS.

Steamers, real estate and buildings, docks, wharves, etc.	$4,774,396.11
Stocks and bonds of acquired companies	1,507,956.62
Bonds in treasury	13,560.03
Accounts receivable	224,478.14
Coal, stores, provisions, etc.	74,974.52
Collateral loans	455,800.00
Cash on hand	24,921.52
Insurance fund investment	275,958.13
	$7,352,045.07

LIABILITIES.

Capital stock	$5,311,875.00
Bonds 5% sterling	1,233,633.33
Accounts payable	72,233.44
Unclaimed dividends	174.75
Accrued fixed charges	18,939.44
Insurance fund	275,939.98
Surplus	439,249.13
	$7,352,045.07

INCOME ACCOUNT.

Surplus Dec. 31, 1910	$391,464.69
Net profit, year 1911	448,240.90
	$839,705.59
Dividends	$271,572.56
Carried to insurance fund	36,000.00
Written off steamboats, depreciation, etc.	92,883.90
Net surplus	439,249.13
	$839,705.59

At the Western Canada Railway Club's monthly meeting in Winnipeg, Feb. 19, a paper was read on the value of statistics by D. C. Coleman, acting General Superintendent, Manitoba Division, C.P.R.

Canadian Lake Protective Association's Annual Meeting.

The first annual meeting was held at Ottawa, Feb. 14. The report presented by the committee dealt fully with the reasons for the formation of the Association. One result of its work is covered in the following paragraph:—"The English underwriters were the first to give the Association full recognition, and announced in good time a rate of 5¾% as a basis rate for vessels belonging either to this Association or to the Great Lakes Protective Association of Cleveland. Both associations were thus placed exactly on the same basis and at a rate which was ¼% better than the basis rate of the preceding year. On the other hand, underwriters in New York, for various reasons which are not pertinent to this report, hesitated in coming to a conclusion. Ultimately they announced for members of the Canadian Association the same rate quoted in the English market, but as a concession to the United States organization at Cleveland, announced a rate for their vessels of 5½%, or ¼% less than that quoted for Canada. The result naturally was that members of the Canadian Association placed insurance so far as possible in the English market, where they received equal recognition with the Great Lakes Protective Association. Some fleets, however, had a good deal of their insurance covered in New York, and these suffered the discrimination of ¼ of 1% mentioned, to the extent to which they covered their risks there. Underwriters later announced that full recognition was withheld only until the Association should get in full working order, and prove that it could carry out its present intentions."

Reference was made to the establishment of casualty reports, and to the prevention of overloading. "During the year six masters and one engineer were censured by the committee. In addition, three masters and two mates have been summarily dismissed, and with the assistance of the Wreck Commissioner's court the certificates of two of the masters have been suspended. One case was referred to the Great Lakes Protective Association, as the offending vessel belonged to that organization. The complaint so far as known received no attention. A few cases are still under the committee's consideration.

"The cases in which the assistance of the Wreck Commissioner has been invoked are the wreck of the Turret Cape, the stranding of the Corunna on one of the Welcome Islands, the accident to the Emperor at the Sault Ste. Marie lock, and a collision between the Haddington and the Keystorm in the Cornwall canal. The first two cases are those in which the certificates were suspended as above stated, and these are two of the cases in which the men were dismissed by the owner. The investigation regarding the Haddington and Keystorm was asked for in the hope of settling questions regarding the proper method for meeting boats to pass each other in canals, but has not yet been held. In the Emperor case, the master was absolved and a set of rules has resulted to govern the locking of boats at Sault Ste. Marie, Ontario.

"The committee deeply regrets that the stranding of the Turret Cape, under circumstances which seem to afford no reasonable excuse for those in charge of her, should occur in a season which would otherwise have recorded no total loss. As it is, there is room for congratulation that the stranding of the Corunna, with one or two fairly serious casualties, including the breaking of the gates at lock 21 in the Welland canal, are the only other substantial disasters to record in which fault could be found with navigators. In one or two rather serious cases pilots specially engaged were at fault.

"The committee believes that the Association has already proved its efficiency for the purpose for which it was designed, and that the direct supervision of the navigation of all vessels enrolled; the recording of all faults and the punishment of all culpable negligence will have a distinctly beneficial effect and tend to reduce the ratio of losses to premiums very materially. It is, however, essential that there should be no half-hearted support of the policy adopted, and that on the other hand the members of the Association should assist in every way in forwarding the work of the committee."

ANALYSIS OF ACCIDENTS, 1911.

Strandings	5
Groundings	18
Collisions	18
Striking obstructions	5
Striking locks or lock gates	6
Striking bridges, docks, piers and banks	19
Burning boilers	1
Stress of weather	1
Damaged machinery	2
Fire in lamp room	1
Overran her own anchor	1
Total	77

Three broken or fouled transmissions included in above.

The following were elected as the committee for the current year:—J. Playfair, F. Plummer, S. Crangle, R. Fraser, J. W. Norcross, W. H. Featherstonhaugh, H. H. Gildersleeve, J. T. Mathews, C. A. Jaques.

Niagara Navigation Company's Official Organization, Etc.

Consequent on the absorption of the Hamilton Steamboat Co. and the Turbine Steamship Co. by the Niagara Navigation Co., the latter's staff of officials has been somewhat augmented. The following N.N. Co. officials continue in their respective positions:—B. W. Folger, General Manager; J. M. Sullivan, Secretary; R. H. McBride, Treasurer; J. V. Foy, General Passenger Agent; S. J. Murphy, Travelling Passenger Agent; H. E. Weller, City Ticket Agent; J. Sullivan, Chief Steward.

W. E. Bishop, heretofore General Manager, Turbine Steamship Co., has been appointed General Agent, N.N. Co. at Hamilton; J. A. Goodearle, heretofore Manager Turbine Steamship Co., has been appointed General Freight Agent, N.N. Co., at Toronto; J. P. McConnell, heretofore City Ticket Agent, Turbine Steamship Co., has been appointed Assistant Freight Agent, N.N. Co., at Toronto.

The route between Toronto, Niagara-on-the-Lake, Queenston, Ont., and Lewiston, N.Y., will be served by the Corona, which will open the season, to be followed by the Chippewa and later by the Cayuga. Plans are being prepared for another vessel which will not probably be ready before 1914. The Toronto-Hamilton service will be opened by the Macassa; the Modjeska and the Turbinia will be put on as the season advances. The Chicora will be put on the route from Toronto to Olcott, N.Y., about the middle of June.

Lake Grain Shipments.

The following statement, prepared by F. Symes, acting Grain Inspector, Fort William, Ont., shows the bushels of grain shipped by vessels from Fort William and Port Arthur, Ont., during the 1911 navigation season, from April 21 to December 10, compared with similar figures for 1910. The figures in each column, after the period, represent lbs.

1911	Wheat	Oats	Barley	Flax
Canadian vessels to Canadian ports	37,403,216.50	20,331,245.18	1,311,923.22	598,379.00
Canadian vessels to Foreign ports	997,068.40	.....	195,000.00	.....
Total Canadian Vessels	38,400,285.30	20,331,245.18	1,506,923.22	598,379.00
Total Foreign vessels to Foreign ports	32,548,076.10	1,191,348.05	788,615.29	621,119.26
Total shipments, 1910	70,948,361.40	21,522,593.23	2,295,539.03	1,219,498.26
Canadian vessels to Canadian ports	38,343,487.30	15,471,822.24	1,041,698.41	471,564.10
Canadian vessels to Foreign ports	1,772,153.10	382,948.24	62,965.10	480,960.16
Total Canadian vessels	40,115,640.40	15,864,771.14	1,104,664.03	952,524.26
Total Foreign vessels to Foreign ports	16,640,800.00	479,630.11	495,667.46	2,138,193.34
Total shipments	56,756,440.40	16,344,401.25	1,600,331.46	3,090,718.04

In addition to the foregoing, 451,100.50 bushels of wheat screenings, 2,697.18 bushels of flax screenings and 3,964.09 bushels of rye were shipped in foreign vessels to foreign ports, during 1911.

Cunard Steamships for Canadian Trade.

The Cunard Steamship Co. has ordered two steamships at Plymouth, Eng., for its Canadian service. The dimensions will be, approximately—length 538 ft., beam 63¾ ft., depth 46 ft. to shelter deck, with a gross tonnage of about 13,000 tons. They will be twin screw driven, and the equipment will include all the most modern improvements for the comfort and safety of passengers. Superior accommodation will be provided for 500 second class passengers, and approximately 1,500 third class passengers, the latter accommodation being arranged in two and fourth berth rooms. The machinery will consist of two sets of quadruple expansion engines, balanced on the Yarrow, Schlick and Tweedy system, with cylinders 26, 37, 53 and 76 ins. diar., by 54 ins. stroke, supplied with steam by double ended boilers.

The Northern Navigation Company's Annual Meeting.

The Northern Navigation Co.'s annual meeting was held Jan. 30, when the directors' report was adopted. Plans are in course of preparation for the building of a new vessel for the company's fleet, and it is expected that construction will be commenced in the spring. The following directors retired:—E. Bristol, M.P., W. G. Morden, T. P. Birchall and F. F. Pardee, M.P. The board for the current year is as follows:—President, Jas. Playfair, Midland, Ont.; First Vice President, J. R. Binning, Montreal; Second Vice President, C. J. Smith, Montreal; other directors, C. Caverhill, H. M. Molson, W. Wainwright, W. E. Davis, A. H. Sims and J. E. Dalrymple, Montreal; H. B. Smith, Owen Sound, Ont.; H. W. Richardson, Kingston, Ont., and F. A. Magee, Hamilton, Ont.; H. H. Gildersleeve, Sarnia, Ont., continues as Manager; F. P. Smith, Secretary of the Richelieu and Ontario Navigation Co., Montreal, has been appointed Secretary, and C. A. Macdonald, Assistant Manager, has also been appointed Treasurer.

The net profits for 1911 were about $152,000, or over 15% on the total capital.

Trans-Atlantic Fast Steamship Service.

An Ottawa press dispatch of Feb. 19 stated that negotiations in progress between the Government and certain Canadian and English transportation companies operating trans-Atlantic steamships will probably result in the establishment of a new fast service between Canada and England. The proposals involve the formation of a new steamship company in which English capital will be interested, and which will be backed by the C.P.R., C.N.R., G.T.P.R., and the Allan Line. It is stated that the proposed company will put into service steamships with a speed of 24 knots an hour, thus shortening the time across the Atlantic to 4½ days, and involving an expenditure for new vessels of about $30,000,000. A later dispatch stated that any such undertaking as that mentioned would be undertaken by the C.P.R. alone, neither of the other companies mentioned being concerned.

Atlantic and Pacific Ocean Marine.

The Quebec Steamship Co.'s s.s. Trinidad has been chartered for a voyage to the West Indies and the Panama canal in March.

The Union Steamship Co. of New Zealand's steamship, which is under construction for the Canada-Australia service, at Glasgow, Scotland, is expected to be ready early in 1913.

The Allan Line announces that it has arranged for vessels on its London route to call at Plymouth, the first being the s.s. Sicilian on Apr. 19, and after May 17 a call will be made there on each of the fortnightly trips between London and Quebec and Montreal.

Lamport and Holt of Liverpool, Eng., owning and operating steamships to various parts of the world, but chiefly concerned with the South American trade, have appointed D. E. Brown and Macaulay, Vancouver, B.C., as their agents for the Pacific coast.

Fanning Island, in the Pacific Ocean, is reported to have been sold to C. N. Armstrong and associates, Montreal, for $350,000. It is stated to be the intention to make the island a free port, and to erect large wharves with all the necessary shipping facilities, oil tanks and coal bunkers for steamship service in connection with the Panama canal operation.

It is announced from Ottawa that the Government has decided to send out two engineering parties to make a hydrographic survey of the west coast of Hudson Bay before coming to any decision as to the adoption of either Port Nelson or Fort Churchill as the deep water terminus of the projected Hudson Bay railway. One party will go over the route by land and the other by water, the land party being expected to leave Winnipeg towards the end of February.

The Vancouver Board of Trade is asking the Dominion Government to grant a subsidy to the Canadian Mexican Pacific Steamship Co. for the service between Vancouver, Victoria and Salina Cruz, with permission to call at San Francisco. The former company operating this line was granted a mail subsidy on condition that the service was a direct one between B.C. ports and Salina Cruz. Two vessels are being run on a monthly schedule, but it is intended, if a subsidy is obtained, to make it a 21-day service.

The Dominion Line s.s. Southwark, which has been operating for several years between Great Britain and Canada and the United States, has been sold to ship breakers, the price paid being given as £14,250. She was built in 1893 at Dumbarton, Scotland, and was equipped with quadruple expansion engines with cylinders 25½, 37½, 52½ and 74 ins. diar., by 54 ins. stroke, 1,237 n.h.p., driving twin screws. Her dimensions were—length 477.9 ft., breadth 46.1 ft., depth 24.9 ft., tonnage 8,697 gross, 5,642 register.

The Allan Line has purchased the s.s. Romanic, formerly New England, from the Oceanic Steamship Co. She was built at Belfast, Ireland, in 1898, and is twin screw driven, with quadruple expansion engines, with cylinders 30, 50, 58 and 58 ins. diar., by 54 ins. stroke, 985 n.h.p. Her dimensions are—length 550.3 ft., breadth 59.3 ft., depth 35.9 ft., tonnage 11,394 gross, 7,416 register. For the past few years she has been operating between Mediterranean ports and Boston, Mass. It is stated that she will be re-named Scandinavian.

An Ottawa press dispatch states that on the completion of the projected Hudson Bay railway and the necessary terminal facilities at either Port Nelson or Fort Churchill, a responsible steamship company operating on the Atlantic will be prepared, provided a suitable arrangement is made, to establish a fast freight service to Great Britain by the Hudson Bay route. In the meantime, it is stated, the Government will send out an expedition to fix the exact route, marking straits and locations for lighthouses and wireless telegraph stations, a start being made with this work this winter, to settle just how soon the passages are free.

Following on the recent visit of D. B. Hanna, Second Vice President, Canadian Northern Steamship, Ltd., to Great Britain, in connection with the arrangements for the forthcoming immigration season, an arrangement has been made with the Cunard-Thomson Line, whereby the Canadian Northern third class passengers, which the company is unable to accommodate on its vessels, will be taken by the Cunard-Thomson Line, the latter transferring to the former any surplus first class passengers. The Cunard-Thomson Line will continue to run from London and Southampton, probable also calling at Plymouth, and Bristol. The report that the Cunard Line is to absorb the Royal Line is without foundation.

The White Star s.s. Titanic, which is being built for the Atlantic trade, is scheduled to make her maiden trip in April and to leave New York again in April 20 for Plymouth, Cherbourg and Southampton. The masts and all four funnels are now erected, the machinery on board and the ironwork of the superstructure well advanced. The inside work is also proceeding apace. The first and second class passenger elevators are fitted, the floors are well advanced, and an interesting feature is the cementing and tiling of the swimming pond, which is progressing rapidly, as also the elaborate decorative work in the public apartments.

Muskoka Lakes Navigation and Hotel Co.—In our last issue, in referring to the annual meeting held in Toronto in January it was stated that J. S. Playfair, who had been President for several years, had retired and had been succeeded by H. C. MacLean, of Toronto. It has since been learned that Mr. MacLean and his associates control about 90% of the capital stock, which amounts to about $170,000, having recently bought out most of the other interests at about 80% of the par value. The company does not issue a financial statement, but it is said that the transportation department made a net profit in 1911 of some $25,000, while there was a loss of some $500 on the Royal Muskoka Hotel, leaving a net profit on the whole operations of something over $24,000.

Maritime Province and Newfoundland.

C. W. Seeley, Inspector of Steamboats, Halifax, N.S., died there Jan. 30, aged 64, after a short illness.

The plans for the year announced by the Governor of Newfoundland, at the opening of the Legislature, Feb. 14, include improvements in the fisheries, additional coastal steamships and better wireless and other telegraphic facilities.

The Navigation Syndicate, Ltd., has been incorporated under the New Brunswick Companies Act, with $30,000 capital and office at Nordin, to own and operate steam and other vessels, and carry on a general navigation business.

The Dominion Government is reported to have awarded the contract for the construction of harbor works and improvements at Courtenay Bay, St. John, N.B., to Norton Griffiths, Ltd., of England, involving an expenditure of about $7,500,000.

The Reid Newfoundland Co.'s s.s. Bruce, which has been built at Glasgow, Scotland, sailed from the Clyde, for St. John's, Nfld., Feb. 4, arriving Feb. 12, when she was immediately placed on her route between Port aux Basques and Sydney, N.S.

The dredging plant operated by A. and R. Loggie, Loggieville, N.B., is reported to have been sold, together with the Eastern Dredging Co.'s plant, to J. F. Gleason, T. Nagle and H. McInerney, for about $250,000. The headquarters of the new concern will probably be at Newcastle.

Crosbie and Co.'s sealing steamer Sagona, which has been built at Dundee, Scotland, was expected to arrive at St. John's, Nfld., towards the end of February. Her dimensions are: length, 175 ft.; breadth, 28 ft.; depth, 13½ ft.; tonnage, 700 gross, and she is equipped with triple expansion engines for a speed of 12 knots an hour.

It is reported from Ottawa that the Government intends to appoint a commission of three to investigate the various systems of pilotage prevailing in different parts of the Dominion, with a view to adopting a uniform system, and that the commission will consist of one representative from the shipowners, one from the pilots, and a third, independent of either.

W. D. Reid, President, Reid Newfoundland Co., who was visiting Newfoundland early in February, is reported to have stated that it is likely that the company will order another vessel during the year, probably to take the place of the s.s. Invermore, between Port aux Basques and North Sydney. The Invermore will probably be transferred to the Labrador route.

The Reid Newfoundland Co.'s s.s. Bruce, recently built at Greenock, Scotland, arrived at St. John's, Nfld., Feb. 12, having taken seven days and 21 hours on the voyage. The average speed was 12 knots an hour. She is built of steel, and specially designed for service among ice. Her dimensions are—length 250 ft., breadth 36 ft., depth, 25¼ ft., 1,700 gross tons, and she is equipped with triple expansion engines having cylinders 25, 42 and 68 ins. diar. by 45 ins. stroke, supplied with steam from four boilers at a working pressure of 180 lbs., giving about 3,000 i.h.p. She has been placed on her route between Port aux Basques and North Sydney.

One of the most remarkable developments of shipping in connection with the use of oil fuel is reported from Liverpool Journal of Commerce. Contracts are stated to have been given recently for the building of 21 oil tank steamships of large dimensions which will be adapted for the consumption of either coal or oil. Several of these are for owners on this side of the Atlantic.

Province of Quebec Marine.

P. A. Jodoin, heretofore overseer of the Chambly canal, has been appointed Inspector of Stores, Quebec canals, and E. Robitaille has been appointed overseer of the Chambly canal.

The Minister of Marine, replying to questions in the House of Commons, stated that the total debenture debt of the Montreal Harbor Commission was $16,707,000, of which $1,872,000 was due to the public, and the balance to the Government. The interest payable to the Government was 3% on $9,195,000, and 3½% on $5,540,000. The interest due on Jan. 1 was $218,430.99.

The Department of Marine is dredging a 15 ft. channel in the St. Lawrence River, north of the ship channel, leaving the deep channel near Lanoraie, leading up past Lavaltrie, St. Sulpice and Repentigny, and rejoining the ship channel above Ile Deslauriers The buoys in this channel will bear the letter R, preceding a number, whereas the buoys in the ship channel will bear the letter M, preceding a number.

The Minister of Marine has given notice of a resolution in the House of Commons, providing for a further loan of $6,000,000 to the Montreal Harbor Commissioners for the completion of the terminal facilities of the harbor according to the plans already approved by the Government, and to retire debentures amounting to $600,000, maturing in equal portions in 1913, 1914 and 1915. The terms of the loan will be the same as previous loans, the interest being 3½%, and the loan repayable within 25 years.

A deputation consisting of A. A. Allan. President, and T. Robb, Manager of the Shipping Federation of Canada, J. Thom, Manager, International Mercantile Marine Co., Montreal, and G. T. Davie, of Levis, waited on the Minister of Marine, Feb. 8, to urge that the Levis dry dock and ship repair plant be taken over by the Government. It was stated that the plant is not prospering, but if it were taken over and enlarged it could be made into a very valuable repairing and salvage plant able to look after the largest vessels using the St. Lawrence route.

The Department of Marine received tenders to Feb. 26 for the supply of a steel single screw hopper barge, and one or two single screw bucket dredges for the St. Lawrence ship channel service. Following are the chief details—for the barge, length between perpendiculars, 180 ft., breadth moulded 32 ft., depth moulded 14½ ft., draught, mean to bottom of keel plate, 12 ft., deadweight on foregoing draught 785 tons, coal supply 90 tons, complement of officers and men 16, indicated horse power 500, net capacity of hopper, 530 cub. yds., to be built of steel throughout, classed 100A1, Lloyds' river service, under their special survey and Government inspection; for the dredge, length between perpendiculars 195 ft., breadth moulded 37½ ft., depth moulded 14 ft., normal draught in fresh water 9½ ft., deadweight on foregoing draught 150 tons, coal supply 130 tons, indicated horse power 800, dredging depth 52 ft., capacity of buckets 27 cub. ft., speed of buckets 10 to 12 and 18 to 20, to be built entirely of steel, to Lloyds' 100A1 dredger class, under their special survey and Government inspection.

Ontario and the Great Lakes.

Capt. T. J. Jones, who sailed on the St. Lawrence and Rideau Rivers, died in Ottawa. Feb. 20, aged 92.

The St. Clair and Erie Ship Canal Co. is applying to Parliament for an extension of the time within which it may build the works authorized in the act of incorporation.

C. Noble. Manager, Dominion Transportation Co.. Owen Sound, operated by the United States and Dominion Transportation Co., Chicago, Ill., died at Collingwood, Feb. 13.

A. Taylor is reported to have been appointed superintendent of the construction work on the breakwater and harbor improvements, which are being undertaken by the Public Works Department, at Port Stanley.

I. B. Folger, Kingston, is reported to have purchased the steamboat Robert McDonald, which went ashore at Chaumont Bay last year, and it is stated that he intends having her refitted for the lake and river service.

A bill was introduced into the U.S. Congress, Feb. 16, providing $250,000 for a survey and estimate of cost of a ship canal to connect the navigable waters of the Niagara River, making a continuous water route between the five great lakes.

The Shenango Steamship Co.'s steamboat William P. Snyder, Jr., was launched at Detroit, Mich., Jan. 28. She is, with the same company's steamboat Schoenmaker, the largest vessel on the lakes. The dimensions are: length overall, 617 ft.; breadth, 64 ft.; depth, 33 ft., with a deadweight capacity of 14,200 short tons on a draught of 19½ ft.

The Minister of Public Works has given notice of a resolution in the House of Commons, providing for the ratification of an agreement for the building of another dry dock at Collingwood, and authorizing the payment of a subsidy for a dry dock of the second class of 3% each year for 20 years on $306,965, the cost of construction.

The Port Colborne and St. Lawrence Navigation Co., Ltd., has been incorporated under the Dominion Companies Act, with a capital of $100,000 and office at Toronto, to carry on the business of a navigation company, and for other purposes. The incorporators are:—Cawthra Mulock. E. H. Laschinger, W. D. Robertson, and C. W. Band, Toronto.

The Calvin Co. has purchased the steamboat Cornwall from the Richelieu and Ontario Navigation Co., and intends to fit her out completely for wrecking purposes. She was built at Kingston in 1874, and was formerly named Algerian. She is paddle wheel driven, equipped with engine of 88 n.h.p., and her dimensions are—length 175.3 ft., breadth 27.1 ft., depth 9.9 ft., tonnage 914 gross, 576 register.

An Ottawa press dispatch states that the Government has practically decided to commence work in the spring on the enlargement of the Welland canal in part, and the construction of a large new section for the remainder of the distance, the whole being 22 ft. deep. Surveys in connection with this work were made last summer, and it is stated that the plans are practically completed. The cost is estimated at $30,000,000.

The Northern Navigation Co. has made the following appointments to its vessels for the forthcoming season:—

City of	Captain.	Chief engineer.
Midland	M. Livingstone	J. Osburn
Doric	S. Hill	.....
Germanic	F. Noles	S. Burgess
Hamonic	R. D. Foote	S. Brisbin
Huronic	A. L. Campbell	F. Norris
Ionic	J. D. Montgomery	J. Louden
Majestic	W. G. Cox	S. Beatty
Saronic	A. M. Wright	W. Whipp
Waubic	W. Carson	S. Murray

Recommendations for improvements to the harbor at Kingston, made to the Public Works Department, include the erection of a new bridge on the site of the present one. with a draw in the centre, 140 ft. wide, the inner and outer portions being made 300 ft. wide, made into a causeway and use for wharfage, the dredging of the inner and outer harbors, and the building of a wharf on the Martello Tower shoal.

E. L. Cousins, Engineer of the Toronto Harbor Commission, commenced a hydrographic survey of the bay, Feb. 7. The work is being carried out by two parties, one on shore, and the other working on the ice. On the completion of this, a geographical survey will be made. J. G. Sing, M. Can. Soc. C.E., District Engineer, Dominion Public Works Department, Toronto, has been appointed Consulting Engineer to the Commission. The appointment will not interfere with his Government duties.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tidewater, for January, as follows:—Superior, 601.75; Michigan and Huron, 579.32; Erie, 571.30; Ontario, 244.76. As compared with the average January levels for the past 10 years, Superior was 0.38 ft. below; Michigan and Huron, 0.76 below; Erie, 0.37 ft. below, and Ontario, 0.63 ft. below. It was anticipated that Superior would fall 0.2 ft. during February, that Michigan and Huron would remain stationary, Erie fall 9.1 ft., and Ontario rise 0.1 ft.

The Department of Railways and Canals is reported to have awarded W. B. Russell, Toronto, the contractor for the construction of the Newmarket canal, which work has been abandoned by the Government, $1,000 as compensation for the cancellation of the contract. In addition to this it is stated that he has been awarded the contract for the rebuilding of all the bridges over the canal and the repairing of the highways demolished in the course of the construction work. An engineer's report on the matter states that over 80% of the work has been completed, and that the amount required to complete it would be about $200,000.

At a recent meeting of the Owen Sound council, the mayor announced that he had received a communication from the C.P.R. stating that the company would remove its vessels to the Port McNicoll route in the spring, and intimating that it might be possible to have one of its vessels call each week at Owen Sound on the up trip. It was also stated that the volume of grain traffic to Owen Sound would not justify the company in rebuilding the grain elevators recently destroyed by fire. A deputation was appointed to meet Vice President McNicoll, and discuss the matter fully, with a view to arranging a more frequent service.

At the recent annual meeting of the Mutual Steamship Co., Toronto, it was announced that the majority of the stock had been acquired by J. W. Norcross, Toronto, and R. M. Wolvin, Winnipeg. It is reported that the company has two vessels under construction for its service during the forthcoming season, but we are officially advised that the company is not in a position at present to state that it will make any additions to its fleet this year. Following are the officers and directors for the current year:—President, R. M. Wolvin; Vice President and Managing Director, J. W. Norcross; other directors, H. Munderloh, C. D. Secord and T. White.

Manitoba, Saskatchewan and Alberta.

The Hudson's Bay Co. is stated to have made arrangements for the construction of two steamboats at Athabasca Landing, Alta., one for operation on the Athabasca River, and the other on the lake The former will be 150 ft. long, and will be equipped with the machinery from the company's steamboat Hazleton, which, until last season, was run on the Skeena River. The second boat will be 110 ft. long.

British Columbia and Pacific Coast Marine.

It is reported that plans are in preparation for the construction of a fisheries protection cruiser for B.C. waters to replace the Kestrel.

A small steamboat is under construction at Ladner, B.C., for Capt. Martinolich. The engines, boiler, searchlight and other equipment have been purchased in England.

The Canadian Puget Sound Lumber Co. has ordered a steel tank scow for transporting oil fuel at Esquimalt, and it is reported that three steamboats for the coasting trade have also been ordered there

The Dominion Government steam tug, Point Grey, which has been built at North Vancouver, was expected to be ready for service towards the end of February. She is to act as tender to the dredge Mastodon.

At the recent annual meeting of the Victoria Shipmasters' Association, Capt. D. L. Jones was re-elected President, and H. Bilton, W. Heater and E. Parsons, were elected First and Second Vice Presidents, and Secretary, respectively.

The G.T.P. Coast Steamship Co.'s s.s. Prince George has been equipped with oil burners at Esquimalt, and is scheduled to take the place of the s.s. Prince Rupert, on the northern route, Mar. 3, when the latter vessel will be taken from service to be similarly equipped.

The Coastwise Steamship and Barge Co., Ltd., has been incorporated under the Dominion Companies Act, with $250,000 capital and office at Vancouver, to own and operate vessels, and carry on a general water transportation business. The incorporators are, J. Griffiths, Seattle, Wash., W. R. Dockrill, T. Ludgate, G. F. Cameron and C. Stewart, Vancouver.

The contract for the construction of about 6,900 ft. of jetty, at the mouth of the Fraser River, for $171,000, is reported to have been awarded by the Dominion Public Works Department, to T. F. Sinclair, New Westminster. Of the length of jetty named, 3,100 ft. will be single bulkhead, and the remainder, double bulkhead. It will commence from about 968 ft. from the Garry Point tide gauge, near Steveston.

Press reports state that the Dominion Public Works Department is about to place an order for another rock crusher, similar to the one recently built in Scotland, for use in B.C. waters. It is recommended that should such an order be placed, the system of anchoring should be similar to that adopted on the dredges Ajax and Mudlark, as the number of cables employed in anchoring the rock crusher prove a menace to shipping.

The C.P.R. s.s. Princess Patricia, formerly Queen Alexandra, which the C.P.R. recently purchased and has had re-modelled for its Vancouver-Nanaimo route is on her way to the coast by way of the Horn. Owing to her small bunker capacity a number of calls have to be made for coal. Among the places called at are Cardiff, Las Palmas, St. Vincent, Bahia, Monte Video, Punta Arenas, Coronel, Callao and San Francisco.

It is reported that the master mariners of British Columbia are forming a guild, with objects similar to those of the Imperial Merchant Service Guild. It is proposed to include all certificated masters serving in British Columbia waters, and to adopt a policy which will not be antagonistic to shipowners, but which will be calculated to aid master mariners in matters affecting the efficiency and responsibility of their profession, and to provide legal assistance at marine enquiries.

The Minister of Public Works is considering the plans for a series of proposed improvements in the harbor at Victoria. In the inner harbor the whole area is to be deepened and a number of obstructions removed, and the improvements in the outer harbor comprise the construction of two breakwaters, piers and warehouses with railway accommodation. The Government included $500,000 in the recent estimates for the proposed outer harbor improvements. The proposed dry dock at Esquimalt, to be built by the B.C. Marine Railways Co., will also add considerably to the harbor facilities. The dock will be 1,000 ft. long, 1,000 ft. wide and 34 ft. wide.

At the recent annual meeting of the Shipmasters' Association at Victoria it was decided to ask all shipmasters in British Columbia to forward to the association a list of aids to navigation which, in their opinion, were necessary for the safety of passengers and for facilitating the navigation of freight vessels. The information thus obtained will be tabulated and forwarded to the Marine Department with a recommendation. Following are the chief officers of the association for the current year:—President, L. Rogers; Treasurer, John Newcombe; Secretary, J. R. Stewart.

Telegraph and Cable Matters.

Wireless telegraph messages were exchanged between Canada and Spain, via Poldhu, Cornwall, Eng., Jan. 29.

The Marconi Wireless Telegraph Co., London, Eng., paid a dividend Feb. 1 for six months ended Dec. 31, 1911, on the 7% cumulative participating preference shares.

E. W. Humphrey, President, Northern Commercial Co., Montreal, and at one time connected with the Dominion De-Forrest Wireless Telegraph Co., died at Brooklyn, N.Y., recently, aged 51.

The G.N.W. Telegraph Co. is making arrangements to install eight new motor generators in its Ottawa office, replacing a storage battery plant, which has been in use there for some years.

The Mackay Companies' report for 1911 shows a surplus of $950,838. R. A. Smith, Toronto, and H. C. Meredith, Montreal, were re-elected among the trustees for the current year.

The G.N.W. Telegraph Co. reports that the public is making free use of the reduced rate cable services, and evidently appreciates the reductions through the cable letters, week-end letters and deferred rate messages.

J. W. Baker, lately Manager of the G.N.W. Telegraph Co.'s branch office in the cheese district, Montreal, has been appointed an inspector of the company, covering the eastern portion of the province of Ontario and western portion of the province of Quebec. He was at one time manager for the company at Brockville.

A joint meeting of the eastern and western divisions of the Association of Railway Telegraph Superintendents will be held in Chicago, Ill., Mar. 20. A special meeting of the entertainment committee was held in New York, Feb. 16, when plans were outlined for the entertainment of the members at the annual convention in New York, June 24.

At a meeting of the Canadian Society of Civil Engineers Ottawa branch recently, C. P. Edwards, General Superintendent of the Government Radio Telegraphs, and formerly an assistant on Marconi's technical staff, read a paper on the development of wireless telegraphy, illustrated with diagrams and lantern slides. He attempted to show in as simple a way as possible the general development of the art of wireless telegraphy and the principles on which it depends.

The C.P.R. Telegraph Department will this year erect additional copper wire between Canso, N.S. and Montreal, Montreal and Winnipeg, Winnipeg and Moose Jaw, Sask., Saskatoon, Sask. and Calgary, Alta., via Edmonton, besides several shorter circuits, making a total of about 6,000 miles of new wire. Considerable reconstruction will also take place on various parts of the line in order to keep the system up to standard. Additional telegraph lines will also be erected along the new railway branches to be built during the forthcoming season.

Trade and Supply Notes.

The matter which appears under this heading is compiled, in most cases, from information supplied by the manufacturers of, or dealers in, the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers to distinctly understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

American Vanadium Facts, issued monthly by the American Vanadium Co., Pittsgurgh, Pa., has tool steel as the principal subject in its February issue.

The H. W. Johns-Manville Co. has acquired the sole selling agency for the entire products of I. P. Frink, including the Frink reflectors and fixtures.

The Safety Car Heating and Lighting Co.'s monthly pamphlet contains an illustrated article on the indirect lighting method of illuminating passenger cars.

The Baldwin Locomotive Works, Philadelphia, Pa., has acquired the right to build the Garrett type locomotives for service in Canada and the United States. The special feature of these locomotives is that they are of high capacity and will operate on lines having sharp curves.

Lyford, Clark and Lyford, forest engineers, Montreal and Vancouver, have issued a booklet, "Forest Surveys, what they are, wherein they serve, what they cost," which contains considerable interesting and valuable information, and will be found useful to anyone interested in timber properties.

Æmilius Jarvis & Co. have issued the following statement respecting the Canadian Locomotive Co.: "For the first six months ended Dec. 31, 1911, the books show that notwithstanding the unprofitable contract which has formed the bone of contention between Mr. Harty and ourselves and has occupied the plant for the greater part of that time, profits in completed locomotive contracts, interest on the company's investment (amounting to about $17,000 for the period) and miscellaneous earnings total at least $85,000 for the six months; and by June 30 next, the end of the company's fiscal year, with the business at present in hand at profitable prices, the General Manager informs us there is no doubt whatever that the company will have more than earned its full bond interest and preferred stock dividend. In addition, the company will have on hand available as further profits, $105,000, which we and our associates paid it to make good the estimated profits upon the unprofitable contract referred to, the absence of profit upon which we did not know of at the time the old company was taken over and the new securities issued by us. Orders on hand are sufficient to keep the company's plant operating for the entire year 1912, and with additional contracts in sight, considerably beyond that time."