

The Railway and Marine World

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Grand Trunk Railway Oil Burning Motor Car.

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

For a great many years the G.T.R. has had a small motor car operating on the International Bridge over the Niagara River, between Bridgeburg, Ont., and Black Rock, N.Y. This car is of very small proportions, about the same as a small sized electric street car, only with steam motive power, a small coal fired boiler occupying one end. About three years ago, a larger car was built for the same service, having the same general size as that of a standard passenger car, similar in construction to the oil-burning motor car in fig. 1, which is under discussion in this article. This second car, coal-burning like its predecessor, proved such a success in this service across the bridge, that it led to the consideration of the advisability of extending the service from Black Rock to Port Colborne, Ont. The coal-burning car is now mak-

Truck One, 4-wheel, 34-in. steel tired wheels
Truck, wheel base 8 ft.
Truck journals $4\frac{1}{2}$ x 8 ins.
Doors, passenger end 6 ft. 6 ins. x 2 ft. 2 ins.
Doors, motor end 6 ft. 8 ins. x 1 ft. 9 ins.
Wheel base52 ft.

The car is divided into three compartments. The passenger compartment is 31½ ft. long, smoking, 11 ft. 7 ins., and engine room, 16 ft. All compartments are 8¾ ft. wide. The seating capacity in the passenger end is provided for by 26 double seats, and two settees, seating 6 passenger each. All these seats have medium height backs, and are upholstered in imitation leather. The accommodation in the body of the car is 42, with 16 in the smoking compartment, a total capacity of 58. Both passenger apartments are finished in mahogany, varnished and polished.

Firebox 36 3-16 ins. long x 38¾ ins. wide
Tubes 144 1½ in., 5 ft. 6½ ins. long
Heating surface, tubes 308.4 sq. ft.
Heating surface, firebox 51.6 sq. ft.
Heating surface, total 360 sq. ft.
Grate area 9.6 sq. ft.
Water tank capacity 1,620 U.S. gals.
Oil tank capacity 313 U.S. gals.

The boiler is of the usual locomotive type, considerably shortened. It is provided with sand box and steam dome, as is customary, and the safety valve, instead of being an independent dome, is attached to the top of the steam dome, a large diameter vent leading from the latter outside the roof of the car. The sand box has four leads, one for both front and rear of each driving wheel, for the car is intended to operate in either direction equally well. The smoke stack, located immediately in front of the sand box, has an outer lag-

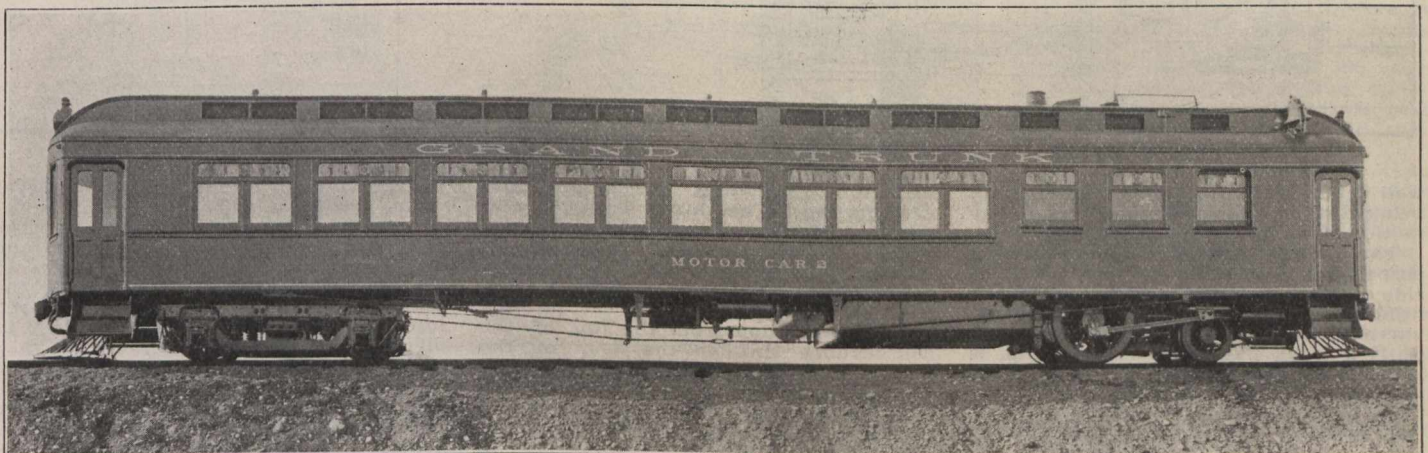


Fig. 1. Grand Trunk Railway Oil Burning Motor Car.

ing 24 round trips a day between the two border towns, accommodating people whose business calls them back and forth to Buffalo, Black Rock being a suburb of that city.

The north shore of Lake Erie, as far west as Port Colborne, is one of Buffalo's favorite nearby and summer resorts, and the summer traffic along that portion of the Black Rock to Goderich branch of the G.T.R. Middle Division is fairly heavy. This traffic, being suburban in its nature, in order to be developed properly, required a more frequent service than would be profitable were complete train units to be operated to meet this demand. This led to a further development of the coal-burning car used so successfully to cross the bridge.

An oil-burning car was built at the company's Point St. Charles shops, Montreal, of the same general size, but with the elimination of the use of coal, which made the services of a fireman unnecessary. This motor car is shown in fig. 1, the other illustrations showing the motive power details. Following are the principal dimensions of the car:—
Length over end sills60 ft.
Length over drawbars71 ft.
Width of body10 ft. 1 in.
Width of upper deck6 ft. 2 ins.
Width over lower tail lamps11 ft. 3 ins.
Height from rail to top of roof, over all...
..... .14 ft. 8½ ins.

Four acme oil lamps furnish the car lighting; the heating is by straight steam. The windows are of the plain double type, with combination art glass tops, 17 to a side, with two on the end. The blinds are pantastote roller type, with clip fixtures. The deck sashes correspond in number to the side windows. The floor covering consists of a centre strip of linoleum.

The outside painting is of the usual G.T.R. standard dark green color with broad stripe ornamental trimmings. The roof is covered in modern canvas style.

The locomotive end and its general arrangement with regard to the car body are shown in fig. 2, the car body at that end being roughly outlined about it, as indicated. Following are the principal dimensions:—

Gauge 4 ft. 8½ ins.
Service Suburban
Fuel Crude oil
Tractive power 4,876 lbs.
Weight of car, motor end 64,400 lbs.
Weight of car, total 101,100 lbs.
Wheel base, engine 6 ft. 2 ins.
Cylinders 11 x 16 ins.
Valves Slide
Driving wheels, diam. 54 ins.
Radial truck wheels, diam. 33 ins.
Driving wheel journals 7 x 8¾ ins.
Radial truck journals 6 x 7¾ ins.
Boiler Radially stayed
Boiler, diam. 3 ft. 6 ins.
Pressure 160 lbs.

ging pipe to protect the roof of the car from excessive heat. Both stack and safety valve vent project a short distance above the top of the car, as the illustration shows.

The motive power unit comprises a complete single driver locomotive, with a radial trailing truck, the frame and spring rigging, etc., being practically the same as in a locomotive of the usual construction. The car sills are attached front and rear to this frame.

A throttle lever on top of the boiler, on the engineer's side, connects with the throttle in the steam dome. The steam, on its path to the cylinders, passes along a 3-in. dry-pipe located in the boiler body over the firebox, coming out through the back head and passing down around the firedoor opening to a tee head, where it branches out each side to the cylinders attached to the outside of the frames. The exhaust from each cylinder passes into a 2½-in. looped pipe leading halfway along under the boiler, connecting there through a tee head having sweeping curves to a 3½-in. pipe leading forward between the frames and up into the smokebox. An exhaust pipe of good design provides ample draft.

The cylinders, located under the platform at the rear end of the boiler, are different from the usual locomotive type

used in America, though somewhat similar to the outside attached cylinders on the slab frame common in Great Britain. They are bolted to the outside of the frame, there being no saddle casting of which they can form a part. The valve chests, containing slide valves, are

as shown in the illustrations, figs. 1 and 2. The piping for oil, which is the principal feature of design in this car, is shown in fig. 3. A 3/4-in. steam pipe leading along the top of the boiler from the steam dome leads to three reducers and 3/8-in. valves. The valve to the left

tive pipe connections being at the rear end of these chambers. The steam chamber has an adjustable opening at its front end through the two pieces of copper, the lower one of which is adjustable by means of cap screws in elongated slots. The 1-in. opening can

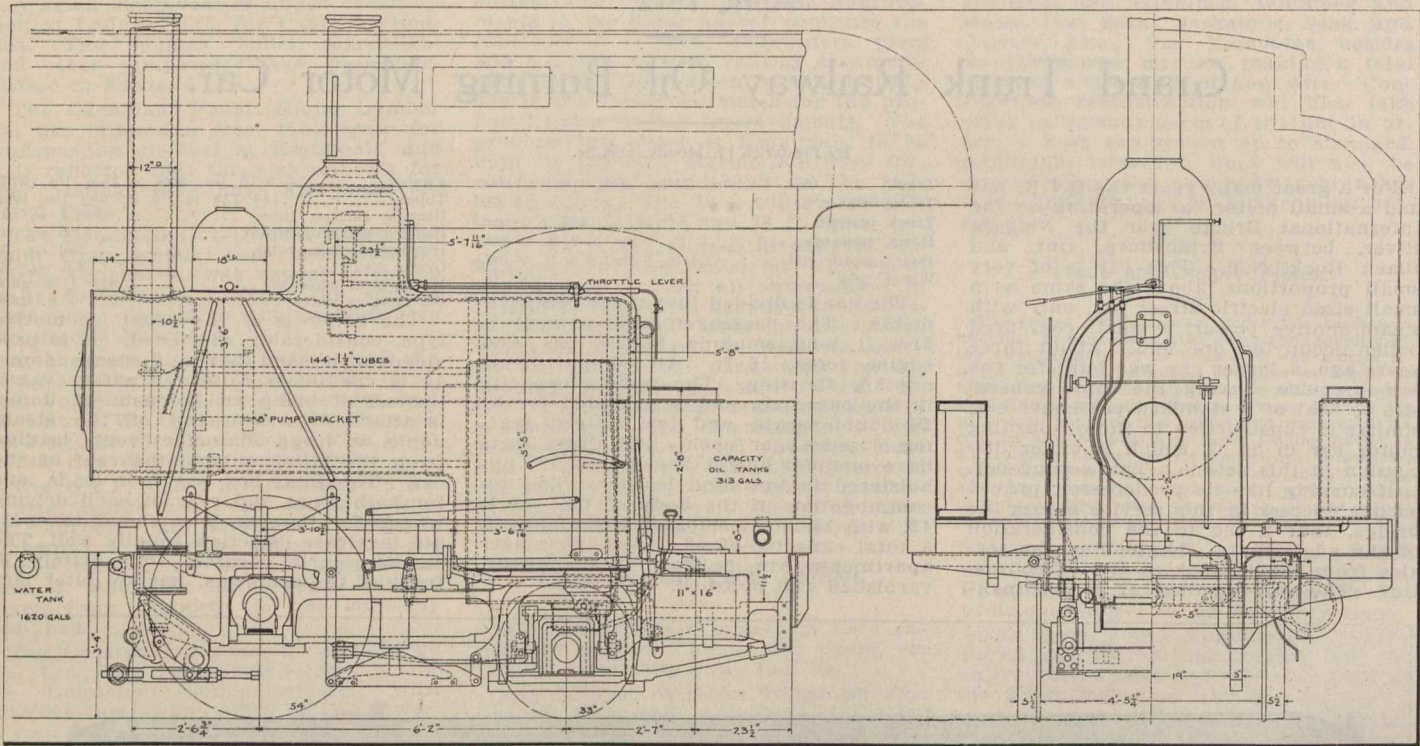


Fig. 2. Motive Power Equipment of Oil Burning Motor Car.

well set into the frames, the valve stem being directly over the wheel tread. The motion work is of the Stephenson type.

The radial truck is of simple design, suspending links allowing for a slight side movement of the truck, to allow the otherwise rigid wheel-base to negotiate curves. The locomotive end, while essentially a truck like the passenger end, is

leads to the air pump. The middle valve controls the oil heating coils in the rear oil tank of the two located on the side opposite to the engineer. This coil consists of four turns of 1/2-in. pipe bent to a 6-in. circle. The steam passing through this coil escapes under the car through a downward pipe from the top of the coil leading through the floor of the

be varied from a hair breadth to over 1/2-in., giving a wide latitude of variation to the volume of the steam jet. The oil comes into the upper chamber, and dribbling down over the front edge of the chamber, is there picked up by the steam jet, atomized by it, and sprayed into the firebox, the atomized spray of oil burning with great intensity.

The injecting steam comes from the right of the three valves in the pipe leading from the steam dome, before mentioned. The oil travels down by gravity from the tank containing the oil-heating coils. These coils prevent the oil from congealing, and cause the flow of oil to be steady. The first section of pipe leading from the oil tank is 1 1/4 in., and has a stop cock in it. The section next the oil injector is 1 in., and contains the engineer's control valve or feed cock, the oil control wheel for which is located near the throttle lever conveniently for the engineer. The controlling wheel and the oil valve are connected through rods with intermediate bevel gears.

The oil injector, located directly under the mud ring at the front of the boiler, impinges the hot flames under a brick arch in the firebox. The furnace is provided with a brick lining part way up, along the sides and front, the latter bending up over to form a deflecting arch. This protects the boiler tube sheet from the intense heat of the oil flame, the heat of combustion being at the same time conserved, passing up over the arch into the tubes. The face pieces of the oil injectors are made of copper to withstand this intense heat, which might otherwise melt the face of a metal that is not as good a conductor of heat as copper.

The usual firedoor opening is bricked up, leaving only a small opening in the centre for cleaning purposes. The use of oil fuel in a boiler causes the tubes to become coated with a hard, oily carboniferous matter that if allowed

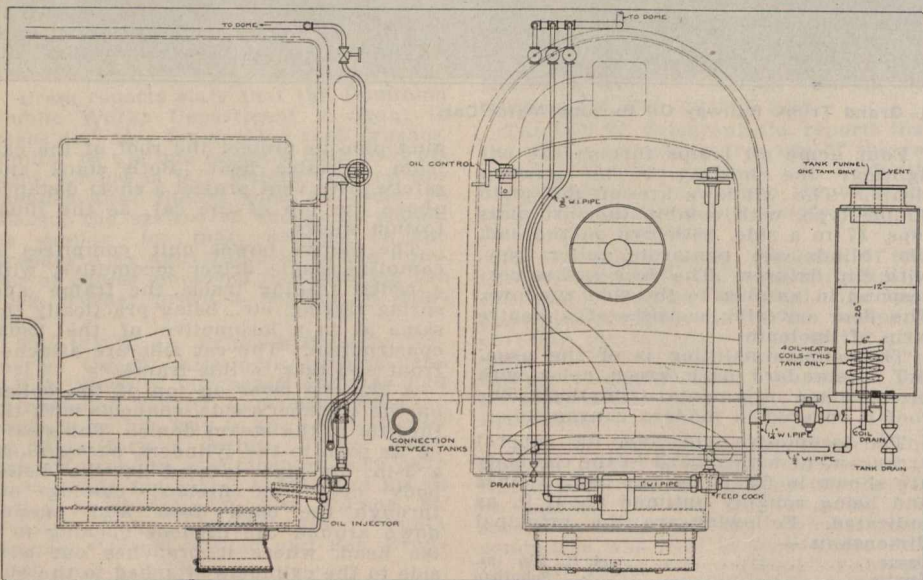


Fig. 3. Oil Piping on the Boiler, showing Location of Oil Injector.

not mounted on a bogie truck, free to adjust itself to curves; hence the radial truck is required for the leading wheels.

The spring system is so designed as to cause the major portion of the weight to fall on the drivers. The lower lever is fulcrumed on its spring off centre. The water tank is located directly forward of the drivers, under the centre of the car,

car. Another drain is provided in the pipe running to the coil itself, and is controlled by another valve in the location shown.

Oil is injected into the firebox by steam pressure, the nozzle used being shown in fig. 4. This nozzle consists of a two-chambered casting, the upper for oil and the lower for steam, the respec-

to accumulate would eventually clog up the tubes to the passage of the gases. This would reduce the conductivity of the tube in the same manner that the boiler scale reduces the boiler efficiency. This difficulty of clogged pipes has been overcome in the same way as that employed in marine practice. Through the small opening in the brick-ed-up door, a small shovel filled with sand is introduced. The draft is strong enough to pick up the particles of sand and draw them through the tubes, the sharp edges of the sand cutting away the caked carbon, thoroughly cleaning the insides of all the tubes. This cleaning is done about twice a day, and is being found sufficient to keep the tubes in good shape.

The combustion of oil is always regulated in oil-burning plants by the color of the gases escaping up the stack. This being difficult of accomplishment under ordinary conditions in a car of this type, without going outside the car to make observations, an ingenious provision has been made so that no difficulty will be experienced in making this inspection of the escaping gases. A small window, which may be observed beside the stack in fig. 1, in combination with a couple of mirrors conveniently located inside the engine room, makes an observation of the escaping gases at all times possible to the engineer.

This car, together with the other two cars previously mentioned, are housed in

of the objectionable features of coal-burning are done away with.

The writer is indebted to the G.T.R. Motive Power Department for the details of construction and the features of operation.

Lubrication of Superheated Steam Locomotives.

At the annual meeting of the Traveling Engineers' Association in Chicago recently, the committee on "Lubrication of Locomotives using Superheated Steam," of which M. H. Haig was Chairman, presented a report containing the results of observations on 14 of the 30 roads having locomotives equipped with superheaters, which is abstracted as follows:—

The effect of superheat on lubrication, depends upon the temperature of the superheated steam. Smoke-box superheaters give the lowest degree of superheat, none of those reported exceeding 490 degrees F.; this was obtained with a drum type in service on the Santa Fe. The Baldwin superheater has a temperature of 430 degrees F. for the highest. At the temperatures obtained with smoke-box superheaters, little trouble has been experienced from the use of the same methods of lubrication employed on saturated steam locomotives, and

The only effect discernable, both with saturated and superheated steam, was that the quantity of oil consumed was increased. Some railways feed directly to the cylinder, while others feed in the usual manner to the steam chest. Satisfactory results are obtained by the following methods of feeding oil to the steam chest, all cases applying to piston valves, as no cases were known of superheated steam being applied with slide valves:

(a) Two feeds per steam chest, with a delivery near each admission port, preferably a little toward the centre of the steam chest;

(b) The customary one feed per steam chest, introducing the oil into the centre of the steam chamber;

(c) One feed per steam chest, introducing oil into the steam channel at a point near the steam chest; and

(d) Three feeds per steam chest, one in centre of steam chamber, and one at each end near the admission ports, each port of delivery having an individual lubrication feed.

To insure proper lubrication at all times, it is recommended by some that steam be admitted to the cylinders when drifting; it has been found that even though proper lubrication is obtained while working steam, the valves and cylinder walls become dry after drifting for some time. A drifting valve will let sufficient steam into the valve chambers and cylinder if properly handled by the engineer. These results were obtained from direct observation of two roads equipped with and without means of admitting steam while drifting. By proper care on the part of the engineer in always opening the drifting valve before closing the throttle, it is possible to obtain material increase in the life of packing rings.

The use of mechanical feed lubricators is reported on as being unsatisfactory, the hydrostatic type proving superior. The mechanical lubricators failed from mechanical defects, greater liability of failure, and higher cost of maintenance.

Several different grades of valve oil are used on locomotives equipped with high degree superheaters. Flash points of from 550 to 600 degrees F. were reported, in most cases the same oil as that provided for saturated steam locomotives. The oil as used by the Canadian Pacific Ry. has a flash point of 600 degrees F. for use with steam having a minimum temperature of 590 degrees F. The successful use of an arrangement of oil piping, whereby valve oil is passed through the smoke box before entering the steam chest, indicates that high temperature has no permanent effect upon its lubricating qualities when protected by steam. This should not be considered as proof, however, that oil possesses any lubricating qualities while subjected to excessive temperature, as the temperature in the steam chests and cylinders is comparatively low.

High superheat has increased the quantity of oil used in valves and cylinders, varying in different cases from 10 to 100%. The larger percentages are due to the delivery of oil directly to the cylinders without a reduction in the quantity fed to the steam chest. One road, however, reports that the reduction of water carried to the cylinders by foaming, which has been effected by the application of superheat, has enabled the locomotive to be operated with no increase in the oil allowance.

The wear of cylinder packing rings is increased by the use of highly superheated steam, and the direct introduction of oil into the cylinders has not overcome the trouble. On the other hand, the wear of piston-rod packing is but slightly affected. The C.P.R. reports that in the case of cylinder packing rings, the life was from 1 to 18 months

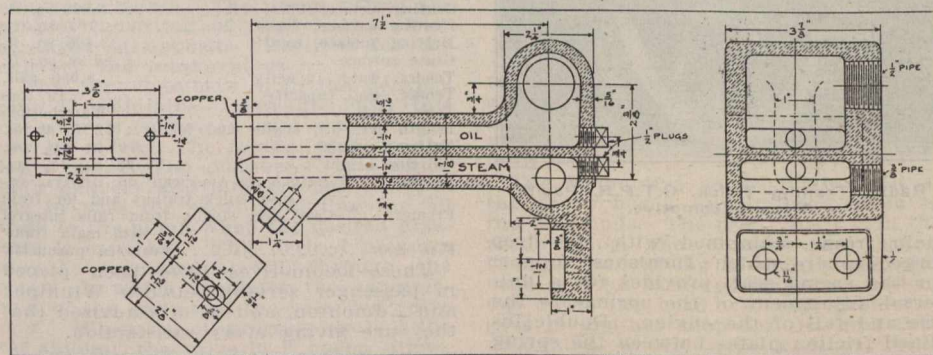


Fig. 4. Design of Nozzle for Injecting Oil into the Firebox.

a 3-stall section to the roundhouse at Fort Erie. Each stall has a pit its full length under the cars. These pits each have air, water and oil connections. The oil is brought in through a 1½-in. hose and pipe connection under 5 lbs. of air pressure, from three 7-ft. diam. and 7-ft. high tanks located in an underground chamber 15 ft. long, 10 ft. wide and 10 ft. deep, made of concrete. This chamber has four vent holes in its roof. The tanks are piped to operate independently, so that two may be filling by gravity from tank cars alongside, while the third is being used to fill the car tank. Beside the connections in the building, there are similar attachments to an outside track.

No tests have been made to determine the ultimate velocity attainable with this car, but over 40 miles an hour can be made and held for considerable periods. The 20-mile run between Black Rock and Port Colborne was made during the last summer season in the scheduled time of one hour, which included 10 stops, or at the average speed of 20 miles an hour. The car comes up to speed more rapidly than would a full train.

As might be supposed, from a fuel standpoint, this car is more expensive to operate than its coalfiring twin, for the price of oil is high as compared to coal. The fact that a fireman can be dispensed with, makes the net cost of operation less than the other. Not only that, but the service is more popular from the fact that the car is cleaner, and many

practically no changes have been made. Oil is being delivered to the centre of the steam-chest for slide valves and inside-admission piston valves; while for outside-admission piston valves, the oil is introduced into the ends of the valve chamber. In some cases, the cylinders have been tapped to receive direct lubrication at a point in the middle of the bore, and near the top. Experience with this method leads to the belief that equally good results can be obtained by the usual methods of feeding the oil to the steam-chest.

All roads reporting have found it unnecessary to change the quality of the oil with low-degree superheat; and the increased quantity consumed is but slight. Oil with a flash point of about 520 degrees F. is the kind used. Mileage reports per pint vary widely, depending upon locomotive size; the figures range from 35 to 75.

Little data were received relative to the wear of valve and cylinder packing in some cases, the wear appears to be a little more rapid. No case is cited of any change of material being made, nor was the rod packing changed.

Eight railways reported the use of smoke-tube superheaters. The superheat obtained varies from 100 to 200 degrees with corresponding steam temperatures of from 490 to 580 degrees F.

Differences in boiler pressure were found to have no influence in the proper lubrication of valves and cylinders of locomotives using superheated steam.

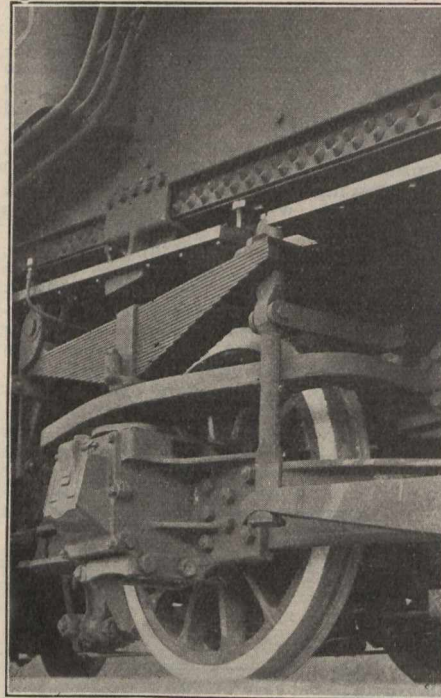
when using superheated steam, as against 12 to 24 months with saturated. Valve packing rings last from 12 to 24 months with superheated steam. In both cases, cast iron is the packing ring material.

The information received on lubrication agreed so closely that the following conclusions become certain:

1. The conditions of lubrication are practically unchanged by the degree of superheat commonly obtained from smoke box superheaters.
2. The flash point of oil should be higher than the temperature to which it will be subjected at the point where lubrication is to be effected.
3. The hydrostatic lubrication meets the requirements of proper oil delivery.
4. The life of common gray iron packing rings is too short to commend this material for use with high-degree superheat.

ing radial truck, a detailed illustration of which is given, obviates the use of outside supplementary frames secured to the rear portion of the main frames by heavy cast steel filling pieces, which some of the other designs of this style of truck require. In this way it effects a considerable saving in weight—in the ordinary design from 2,500 to 3,000 lbs.

The floating spring yoke hinged to the



Radial Trailing Truck, G.T.P.R. Pacific Type Locomotive.

main frame, combined with the drop forged sphere which furnishes support for the spring seat, provides for a universal adjustment of the springs to the rise and fall of the engine. Double inclined friction plates between the spring seat and the top of the journal box provide a resistance to transverse motion and assists the action of the spring centering device to restore the truck to its normal central position on entering a

carried on the driving wheels, and the remainder on the front and trailing trucks. With cylinders 22 ins. in diameter by 28 in. stroke, 73 in. drivers and a boiler pressure of 200 lbs., the maximum theoretical tractive power is 31,600 lbs. Other general dimensions, etc., are given in the following table:—

Gauge	4 ft. 8½ ins.
Weight on drivers	143,500 lbs.
Weight on truck	43,000 lbs.
Weight on trailers	33,400 lbs.
Weight, total of engine	219,900 lbs.
Weight of tender	143,000 lbs.
Wheel base, driving	13 ft. 4 ins.
Wheel base, total of engine	33 ft. 3½ ins.
Wheel base, total of engine and tender	62 ft. 3½ ins.
Cylinders, diameter and stroke	22 by 28 ins.
Type of gear	Walschaert
Diameter of piston valve	14 ins.
Maximum valve travel	6 ins.
Outside lap	1-1-16 ins.
Inside clearance	3-16 ins.
Lead in full gear	1-16 in. forward, 7-16 in. back
Driving wheels, diameter outside	73 ins.
Trailing wheels, diameter outside	49 ins.
Driving journals, diameter and length	9½ x 12 ins.
Trailing journals, diameter and length	8 x 14 ins.
Engine truck wheels, diameter	31 ins.
Engine truck journals	6½ x 10½ ins.
Boiler type	Straight top, radial stay
Boiler, outside diameter at first ring	70½ ins.
Boiler, outside diameter largest course	73 ins.
Working pressure	200 lbs.
Firebox, length	96¾ ins.
Firebox, width	75¼ ins.
Firebox, water space, front	5½ ins.
Firebox, water space, back and sides	4½ ins.
Tubes, material	Kerva seamless steel
Tubes, no. of	303
Tubes, spacing	2¾ ins.
Tubes, diameter	2 ins.
Tubes, length	20 ft. 6 ins.
Heating surface, tubes	3,239 sq. ft.
Heating surface, firebox	169 sq. ft.
Heating surface, total	3,408 sq. ft.
Grate surface	50.59 sq. ft.
Tender, water capacity	8,000 gals.
Tender, coal capacity	10 tons
Tank, kind	Waterbottom
Length over all, engine and tender	72 ft. 9 ins.
Extreme width	10 ft. 6½ ins.
Extreme height	15 ft. 2¾ ins.
Brakes	Westinghouse-American on drivers, engine truck trailers and for train
Frames	Cast steel single, front rails integral with main frame
Fire door	Franklin pneumatic

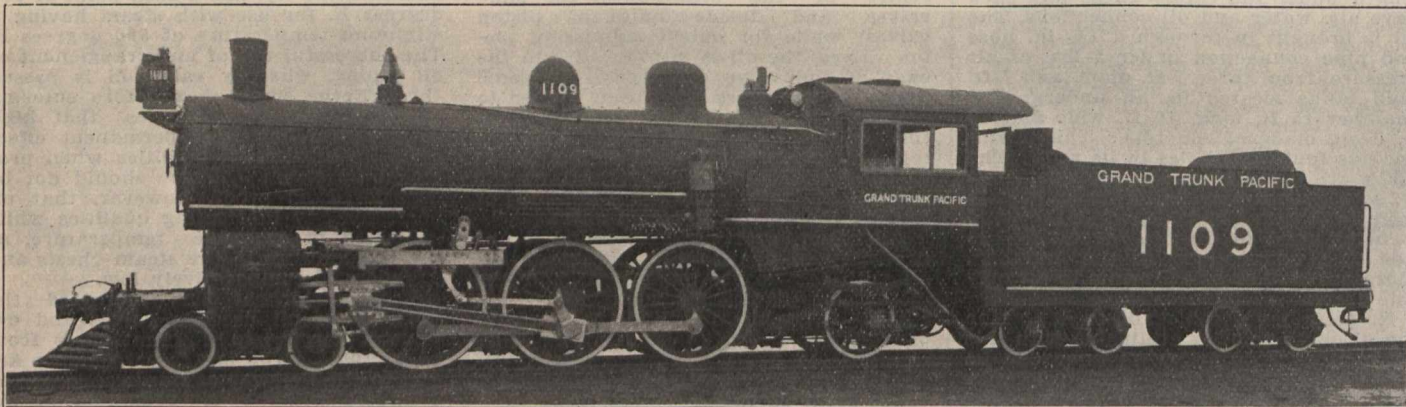
These locomotives have been placed in passenger service between Winnipeg and Edmonton, and we are advised that they are giving every satisfaction.

The Eastern Terminal Realty Co. has been incorporated under the New Brunswick Companies Act to promote immigration and settlement in the province.

Pacific Type Locomotives for the Grand Trunk Pacific Railway.

The G.T.P.R. has received recently 15 Pacific type locomotives built by the Montreal Locomotive Works, one of which is illustrated herewith. The design embodies a number of features which, while they have been successfully applied to a number of locomotives built within the past two years for railways in the United States, have not heretofore been extensively used on Canadian locomotives. It therefore possesses more than the usual interest.

Among these new features will be noticed the self-centering guide for the valve stem and the outside bearing radial truck. The valve stem guide, which is very clearly shown in the illustration of the general view of the locomotive, is made integral with the back head of the piston valve chamber, and so constructed as to be easily adjusted for wear. It can, therefore, be erected, taken down and replaced without any lining up, at the same time ensuring that the guide is absolutely in line with the piston valve chamber. This saves considerable time which is consumed with the valve stem guide of the ordinary construction employed with the Walschaert valve gear when it becomes necessary to take down the valve motion. In case of wear,



Grand Trunk Pacific Railway Pacific Type Locomotive.

liners are provided on the top and bottom of the guide which can be removed or inserted as may be required. It is self-supporting so that no bracing from the guides or any other source than the cylinder is required, which is another advantage. It also permits the use of a straight design of combination lever, without forks, which is connected to the valve stem cross head by a pin passing through the wings of the latter and thus affords greater lateral stability than is obtained in other designs.

The improved design of outside bear-

tangent after passing through a curve. This gives the track excellent riding qualities, as experience has proven. With the construction used for supporting the spring seats, not only is flexibility provided, but all the spring seats are in compression. Thus, any wear and loss motion which may accumulate is automatically taken up.

In point of weight, the locomotive here illustrated is among the heaviest of its type in service in Canada. In working order it has a total weight of 219,900 lbs., of which 143,500 lbs. are

to deal in lands, to promote the establishment of industries, and in connection therewith to build or promote the building of docks, wharves, railways and tunnels, and to own and operate steam and other vessels. The capital is fixed at \$150,000; the company's offices are in St. John, and the provisional directors are:—A. E. Massie, H. F. Puddington, D. F. Pidgeon, W. H. Harrison, St. John; T. Bell, Rothesay, N.B.

The G.T.R. is opening an uptown ticket office in Stratford, Ont., with Deacon and Trow as agents.

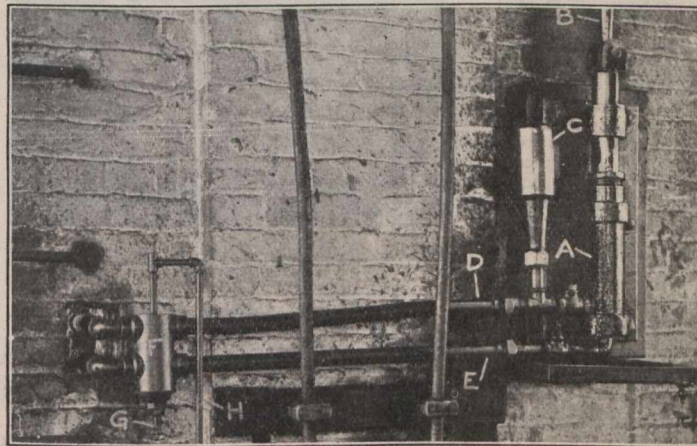
Railway Mechanical Methods and Devices.

Maintaining Fuel Oil Pressure at the Pere Marquette Rd. Shops.

The Pere Marquette Rd. shops at St. Thomas, Ont., have a very simple little pump arrangement for maintaining a pressure on the fuel oil, which is used quite extensively throughout the shops for heating purposes. Its use has been found much more satisfactory where a constant pressure is maintained, keeping the flame from fluctuating to too great an extent, thereby making it possible for the workman to obtain more uniform results.

The arrangement is bolted to the wall, about 8 ft. above the floor, and consists essentially of a pump cylinder A, in which a plunger operates, actuated by a long connecting rod, the lower end of which is shown at B. This connecting rod, of about 10 ft. length, connects to an eccentric on the main line shaft, thereby being given a short throw, sufficient to give a plunger displacement of about 3 ins. The pump is composed solely of a piece of piping capped at its lower end, with a packed joint for the plunger at the upper end; the plunger is guided still further by a bracket just above the pump. The pump valves are simple, consisting of two check valves, arranged in opposite directions for the delivery and intake pipes.

The air chambers C in the delivery pipe D maintains a steady flow; this chamber is connected in a simple manner by a tee. The intake pipe is the lower one, E. The chamber F, into which both delivery and intake pipes enter, is the by-pass for short circuiting the oil back to the pump when the desired pressure is exceeded. This desired pressure may be regulated at will through the screw G, which regulates the compression of the spring on the balanced valve in F. When the oil pressure exceeds the set amount, the valve in F opens, allow-



Wall Pump for Maintaining Fuel Oil Pressure.

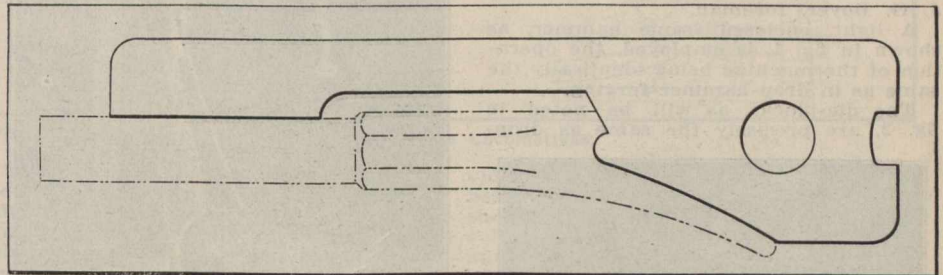
ing the oil to flow around from D through F to E, and again into the pump.

The pressure maintained may at all times be seen by connecting a gauge to the tube H, which is done at a point nearer the floor, where it may be easily read. The arrangement gives no trouble, lubricating itself and keeping in condition at all times. Being direct-connected to the line-shaft through the eccentric, insures a maintenance of the pressure as long as the shop is in operation. No means are provided for throwing the mechanism out of gear, and experience seems to show that no such means are required.

Boiler Tube Beading Tool Gauge at the M.C.R. St. Thomas Shops.

The New York Central Lines, in common with most other steam roads, have experienced considerable annoyance in the past with leaky flues. This is a difficulty that seemingly cannot be overcome, it being necessary to caulk the joints with a beading tool quite frequently—on some heavy runs as often as once a trip, although this is a rare instance.

As customarily made, both the blacksmith and toolmaker use their own judgments in the respective operations of forming and finishing the beading



Boiler Tube Beading Tool Gauge.

tool previous to tempering. The consequence is that at different points on the same railway system, different ideas prevail with regard to the depth of the bead.

The locomotive as originally built at the shops has a certain bead given to the tube ends. The first time it is in the repair shop, the chances are that a beading tool giving a slightly different bead will be used—possibly one flattening down the bead. If the locomotive goes to another shop for the next tube tightening, a tool with a deeper bead

definite form to follow, leading to a uniformity of bead, and what is more important, increased life for the tubes.

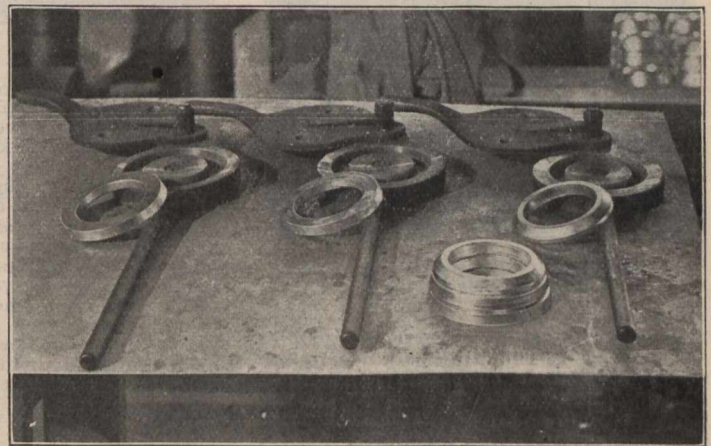
This is not an entirely new practice on steam roads, as a number now employ such a system of standard tools, but the majority of lines have yet to be shown the advantage of employing some such systems.

Piston Packing Rings at the Intercolonial Railway Shops.

Nearly every railway has its own design of piston packing rings, and it may truly be said that their number is legion.

Each one has generally been developed with a view to meeting best the requirements of the particular line with which the design is connected.

The Intercolonial Ry. has a three-piece design, such as is shown in the foreground in the accompanying illustration. These three pieces, when assembled from the hollow frustum of a cone, the inside diameter being that of the piston rod to be packed. The smaller end of this composite frustum is beveled off, the whole construction being as shown in the illustration. These several



Moulds for Piston Packing Rings.

may be used. The consequence of this last will be to form a groove in the tube sheet around the flue, resulting from the tool protruding, due to the greater depth of the tool bead. A few repetitions of this sequence of differently formed tools soon ruins the tube ends, necessitating safe-ending.

The New York Central Lines have overcome this difficulty by having the beading tools over the whole system made to a standard gauge of the type shown in the accompanying illustration. These gauges are made of 1/8-in. steel plate, different gauges being used for the various tubes to be beaded. The toolmaker and blacksmith thus have a

parts of the cone frustum construction are radially slitted to allow for inward spring for the cone surface, to compensate for internal wear from the piston rod.

The method of manufacture is interesting, a set of moulds being employed for the purpose, the whole being as shown in the illustration. The mould for each of the rings is shown with its respective ring leaning against it. The mould is entirely contained in a circular block of steel. A swinging cover fits over top, two holes in the top registering with the annular channel in the mould; these holes are for pouring and vent purposes, the cover being held

tightly down on the mould during that operation.

In practice, they are made in sets of three, the first one being sufficiently set to be removed by the time the third one is poured, and so on, making the process of manufacture continuous through the employment of the three moulds. In removing from the mould, a side blow with a hammer on the cover handle, swings the latter to one side, the spine remaining in the pouring holes being sheared off by the hole, leaving a clean surface.

Piles of the completed sets of packing rings are to be seen in the right background of the illustration.

The Steam Hammer as a Drop Forge.

The use of the steam hammer as a drop forge is rather unusual practice, but it is being thus employed in the Montreal Locomotive Works blacksmith shop, J. G. Boyer, foreman.

A light, enclosed frame hammer, as shown in fig. 1, is employed, the operation of the machine being identically the same as in drop-hammer forging.

The die-blocks, as will be noted in fig. 2, are precisely the same as drop-

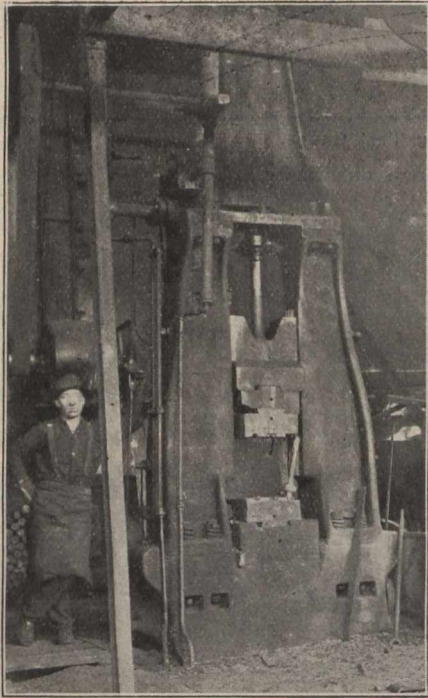


Fig. 1. Steam Hammer used as a Drop Forge.

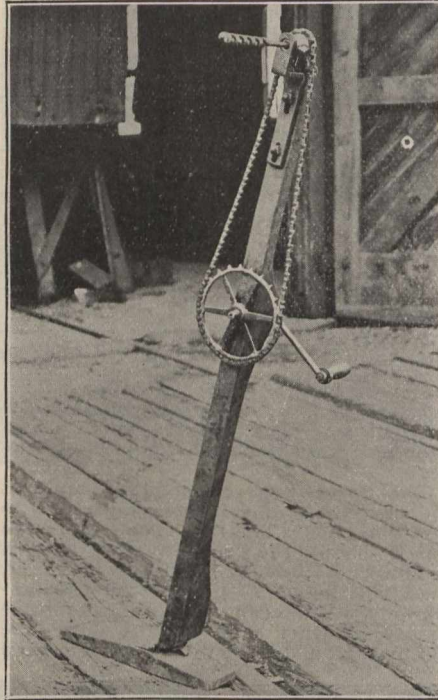
hammer die-blocks, with the usual breakdown, finishing and cutting off dies. An example of the work possible in this machine is shown in this illustration. Equally good work is possible by this machine as could be obtained from standard drop-forging machines.

Indirect Lighting of Railway Cars has been successfully accomplished by the Atcheson, Topeka and Santa Fe Ry. on several new dining cars recently placed in service. The lighting fixture, suspended from bronze chains, consists of a heavy leaded bowl of sufficient density to give a soft color and display to advantage the design, without transmitting any useful light. The illumination comes from the light in the bowl being deflected downward from the dull ivory-white ceiling, which makes a good reflector. The side walls of the car are finished in mahogany, and the floors, with green carpet. The light distribution determined from illuminometer tests, is remarkably uniform.

Drill for Boring between Car Sills at Michigan Central Rd. Shops

For boring holes in the centre sills of freight cars, the ordinary brace and bit proves of little value owing to the cramped position and the little free space for the brace to operate. Neil Marple, General Foreman, M.C.R. car shops, St. Thomas, Ont., has introduced a drill for getting into these awkward corners which has none of the defects of the ordinary brace and bit, but which is at the same time quite simple in construction, as the accompanying illustration shows.

The drill consists of a base on which the operator rests his foot while drilling to hold in the one location; to which an upright is hinged as indicated. This



Drill for Boring between Car Sills.

base and upright are both made of wood. Secured to the top of the upright is a chuck, held in two bearings, and into which the bit is secured by a set screw. The bit is driven by the chain and sprocket, the driving handle being located some distance down the upright in order to clear the sills being drilled. The whole construction is clearly shown by the illustration. Not only has this device proved of value for drilling between sills, but there are many other cramped locations around a car where its merits have been demonstrated, as an examination will show that the space required is only slightly greater than the length of the bit itself. The car builders find it an invaluable aid.

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
Jan.	1,223,100	1,004,400	223,706	123,000
	\$11,562,800	\$8,394,000	\$3,168,800	\$576,100
Inc.	\$2,693,600	\$2,117,500	\$576,100	.....

Approximate earnings for February, \$1,263,400, against \$803,100 for February, 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.	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	6,526,887.24	4,681,104.75	175,944.23
Nov.	10,570,694.80	6,583,323.31	3,987,366.46	250,244.23
Dec.	10,654,871.67	6,549,141.41	4,105,730.26	819,196.37
Jan.	7,328,781.81	6,245,924.11	1,082,857.70	426,799.83
	\$69,895,147.80	\$44,342,042.46	\$25,553,105.34	\$2,280,279.24
Inc.	\$3,367,288.82	\$6,087,009.58	\$2,250,279.24	.....

Approximate earnings for February, \$8,743,000, against \$6,180,000 for February, 1911.

Grand Trunk Railway Earnings.

Following are the earnings of the C.T.R., C.A.R., G.T. Western Ry. and D.G.H. and M.R. for Jan. as compared with those for Jan., 1911:—

	GRAND TRUNK RAILWAY.	
	1912.	1911.
Earnings	\$2,579,800	\$2,499,012
Expenses	2,276,600	2,109,240
Net earnings	\$303,200	\$389,772



Fig. 2. Drop Forge Work on the Steam Hammer.

CANADA ATLANTIC RAILWAY.			
	1912.	1911.	
Earnings	\$160,800	\$167,184	
Expenses	160,600	129,762	
Net earnings	\$200	\$37,422	
GRAND TRUNK WESTERN RY.			
Earnings	\$519,100	\$550,152	
Expenses	477,900	473,850	
Net earnings	\$41,200	\$76,302	
DETROIT, GRAND HAVEN AND MILWAUKEE RY.			
Earnings	\$162,600	\$168,885	
Expenses	190,600	162,324	
Net earnings	\$28,000	\$6,561	

*Deficit.
Approximate earnings for Feb., \$3,259,943, against \$3,103,166 for Feb., 1911.

TRAFFIC RECEIPTS OF THE SYSTEM.

Aggregate from Jan. 1 to Feb. 29:—				
	1912	1911	Increase	Decrease
G.T.R.	\$5,089,647	\$4,832,725	\$256,922	.....
C.A.R.	290,817	230,431	19,378	.....
G.T.W.R.	985,813	1,049,193	.....	\$53,380
D.G.H. & M.R.	310,531	326,400	.....	15,959
Totals	\$6,686,808	\$6,488,847	\$177,961	.....

Screw Reverse Gear for C.P.R. Locomotives.

Three of the large Pacific type passenger locomotives recently built at the C.P.R. Angus shops, Montreal, have been equipped with a screw reverse gear, the arrangement and details of which are shown in the accompanying illustrations. Screw reverse gear practice has been more or less common on European roads

weighted with an adjustable disc to balance the dead weight of radius rod and other parts indirectly suspended from the bell-crank, is connected by lengths of 2-in. extra heavy pipe to the screw reverse mechanism. These pipe lengths have an intervening section of 3-in. rod, to which they are connected by knuckles. The bearings are bolted to a stand attached to the side of the boiler, as indicated. These sections of pipe, with guiding rod, replace the customary reach rod.

bronze nut, which cannot revolve. The nut has a 2 3/8-in. triple, 1 1/8-in. pitch square thread. A square-threaded operating screw, on the end of which is bolted a 10-in. hand wheel, fits the crosshead, providing the means of moving the latter forward and backward. The operating screw is carried at the wheel end by a bearing in the holding casting. To lessen the turning friction due to end thrust when putting engine in or out of gear, ball-bearing thrust plates are pro-

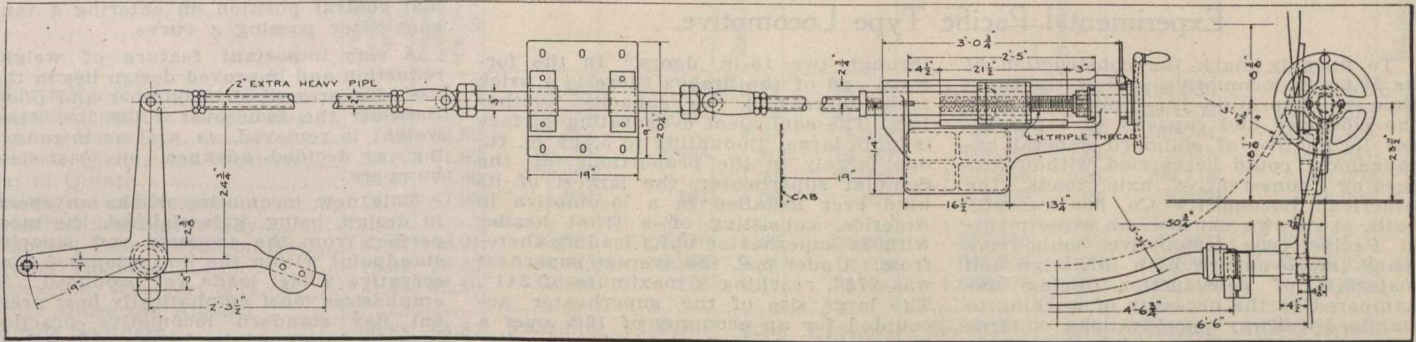


Fig. 1. Screw Reverse Gear as applied to C.P.R. Pacific Type Locomotives.

for a number of years, but it was only during the last year that the first installation was made to a locomotive on this continent, a powerful mountain type passenger locomotive built by the American Locomotive Co. for the Chesapeake and Ohio Ry. being so equipped. The most noted instance of the screw reverse mechanism is on the large experimental Pacific type locomotive no. 50,000, recently built by the American Locomo-

The screw reverse mechanism is mounted in a casting attached to the side of the firebox at such a height that the operating wheel is in line with the cab window sill, in a convenient location for the engineer to operate. The more important details of the mechanism are illustrated in fig. 2. The second pipe length is screw connected to a ball-connecting link, and a positive location obtained by a no. 8

vided, one on each side of the thrust bearing; the construction of these is shown in the illustration. A retaining collar screwed on the operating screw, and located by a no. 8 taper pin fitted after assembling, carries the backward thrust when shoving the crosshead forward. The flange of the operating screw to which the hand wheel is attached, has 10 notches around its periphery, into

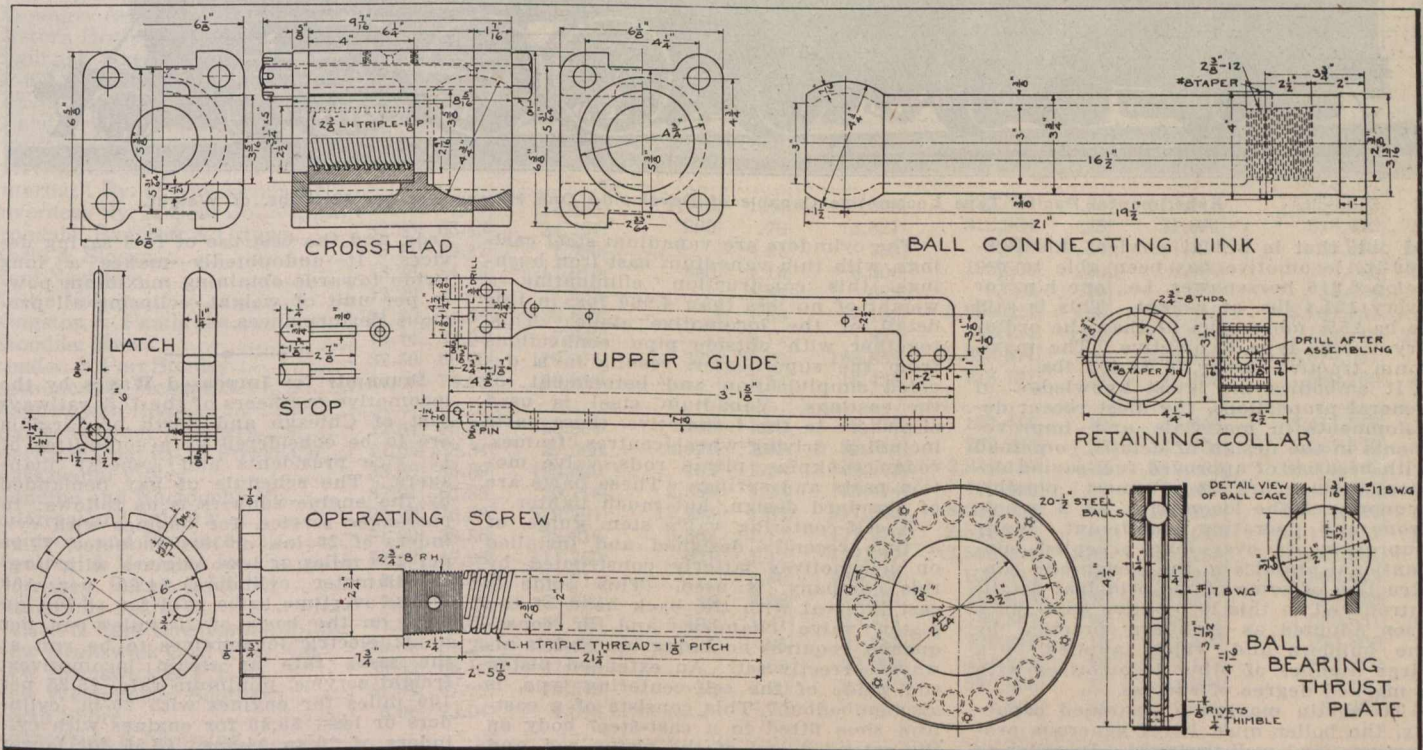


Fig. 2. Main Details of the Screw Reverse Gear Mechanism.

tive Co. for experimental purposes to determine the minimum weight per horsepower, and described in this issue. The C.P.R., always to the front in motive power improvements, has equipped the three locomotives already mentioned, and in addition, has a further series of 15 on which the gear is to be installed.

The general arrangement of the screw reverse gear and connections is shown in fig. 1. The usual bell-crank, counter-

taper pin through both members. This ball connecting link is of cast steel, turned to a true sphere on the ball end, with the balance ground smooth. This spherical end fits a built-up cast-iron crosshead which is guided in the mechanism by upper and lower guides fitting the two end pieces of the cross-head. The right-hand end piece forms half of the ball seat for the spherical end of the ball connecting link, while the other end piece retains in position a squared

which a latch, pin-connected to the end of the upper guide, fits. A stop, pressed forward in the drilled hole in the end of the upper guide into notches in the latch, holds the latter out of engagement when changing the gear location. Ten positions of latching per revolution are thus provided, and, as the pitch is 1 1/8 in., an adjustment of less than 1/8 in. is made possible.

The screw reverse gear has several inherent points of superiority over the

old reverse lever, two of which stand out most prominently. In the first place, a very fine adjustment is made possible, which for high-speed passenger work is most desirable. Secondly, at very high speeds, under the lever system, adjusting the valve travel becomes a more or less risky undertaking, due to the possibility of the reverse lever flying out of the hands of the engineer. The ordinary reverse lever is becoming quite inadequate to handle the gear of such

locomotives as are being built at the present day.

The C.P.R. Mechanical Department is considering the possibility of installing this screw reverse gear on the large Mallet locomotives described in *The Railway and Marine World* for March. Some difficulty has been experienced, due to the freezing of the power reverse gear of these locomotives, leading to the consideration of installing the screw reverse mechanism.

the gear both a safeguard, and a further means of cut-off refinement leading to increased economy.

An improved form of radial bearing truck has been used, resulting in a weight elimination of nearly 5,000 lbs. This truck provides for a universal adjustment of the springs to the rise and fall of the locomotive, and a resistance to traverse motion through the combined action of the spring centering device and the inclined friction plates, which operate to restore the truck to its normal central position on entering a tangent after passing a curve.

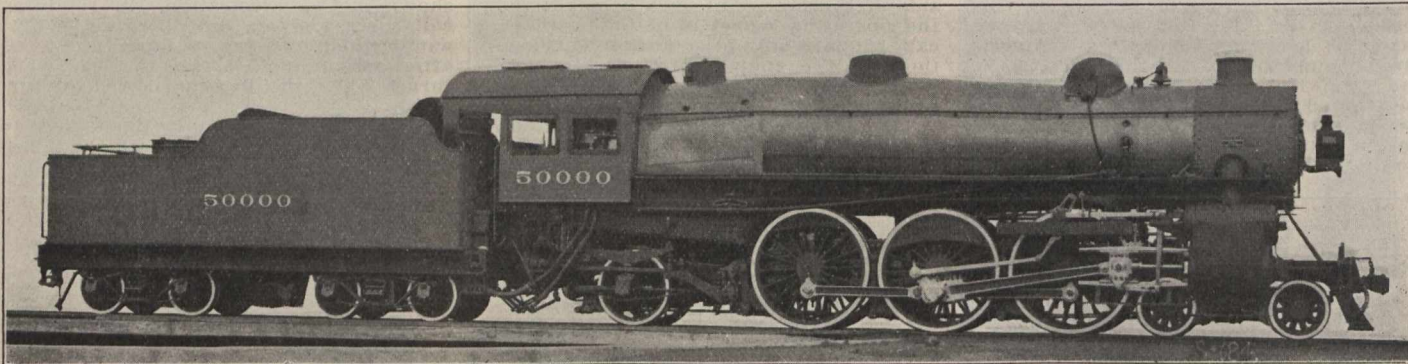
A very important feature of weight reduction and improved design lies in the use of a pressed steel bumper and pilot. Between the two, over 1,500 lbs. dead weight is removed, as well as introducing a decided advance on cast-steel bumpers.

This new locomotive marks an epoch in design, being, it is claimed, the most perfect from the economy and capacity standpoint within the limitations of conservative wheel loads yet produced. It emphasizes most emphatically how present day standard locomotive practice may be improved by better proportioning of boiler and engine capacity, greater refinement in the design of details, and modification of present day stand-

Experimental Pacific Type Locomotive.

To fittingly mark the construction of its 50,000th locomotive, and at the same time to determine the limit to which the efficiency and capacity of a passenger locomotive of standard general arrangement could be carried without exceeding conservative axle loads, the American Locomotive Co. has recently built, at its own expense, an experimental Pacific type locomotive, embodying many improvements both in design and materials of construction. Being unhampered by the necessity of working to standard railway specifications, a free scope was offered towards using those designs in locomotive engineering practice that to the designers appeared best. So well have the refinements been work-

through two 15-in. doors. In the forward end of the firebox there is a brick arch, increasing the capacity another 10%. The equivalent evaporating surface is quite large, amounting to 5,394 sq. ft., due largely to the proportions of the Schmidt superheater, the largest of its kind ever installed in a locomotive in America, consisting of a front header with 36 superheater units leading therefrom. Under test, the average superheat was 276°, reaching a maximum of 341°. The large size of the superheater accounted for an economy of 13% over a locomotive of similar size but smaller superheater capacity. The boiler has 207 2½-in. tubes, 22 ft. long. The boiler pressure is 185 lbs.



Experimental Pacific Type Locomotive Capable of Developing One Horsepower per 121.4 lbs. of Weight.

ed out, that in actual service, this 269,000-lb. locomotive has been able to develop 2,216 horsepower, i.e., one h.p. for every 121.4 lbs. of weight. This is said to be 25% more efficient than the ordinary Pacific type locomotive. The maximum tractive power is 38,400 lbs.

It embodies the latest knowledge of general proportions, the most recent developments in materials and improvements in the design of details, combined with best use of approved fuel-saving devices to secure the utmost possible economy of the locomotive as a whole from the operating standpoint. Many improvements over long accepted conventional practice in the design and construction of some of the principal details introduced in this locomotive have since been adopted as standard practice by the builders and widely applied to a large number of other locomotives with a marked degree of success.

To obtain maximum sustained capacity, the boiler must be of generous proportions, and well designed. In order to increase the boiler size without unduly increasing the total locomotive weight, a process of weight elimination in all parts of the locomotive was resorted to. The boiler, of a conical construction, received the most attention. The difference in diameters between the front and rear courses provides a large steam space, decreasing the tendency for wet steam to be carried over into the superheater. The dome course is 87 ins. in diameter, and the front course, 75 ins. The firebox, 114 by 75¼ ins., has a grate area of 59.75 sq. ft., and is fed

The cylinders are vanadium steel castings, with thin vanadium cast iron bushings, this construction eliminating a weight of no less than 4,000 lbs. in this detail of the locomotive alone. This, together with outside pipe connections from the superheater, results in a decided simplification and betterment of the castings. Vanadium steel is used elsewhere in the locomotive, these parts including driving-wheel centres, frames, rods, crankpins, piston rods, valve motion parts and springs. These parts are of standard design, but much lighter.

A self-centering valve stem guide, of a type recently designed and installed on locomotives latterly constructed by this company, is used. This guide is cast integral with the back head of the piston valve chamber, and in consequence, requires no lining up, and is always correctly set. An extended piston rod guide of the self-centering type, is also embodied. This consists of a cast-iron shoe fitted to a cast-steel body on the extended end of the piston rod, and to which it is securely attached. The shoe slides in a guide bolted to the cylinder head, corresponding circular faces correctly aligning it in place. The top of the guide casting is open, so that the shoe may be readily removed when on either centre without bumper interference. The bearing surface is circular.

This locomotive is one of the first in America to apply the screw reverse mechanism, the design of which is very similar to the C.P.R. one outlined elsewhere in this issue. The locomotive being so large makes the application of

ards, and the best use of fuel saving devices. It undoubtedly makes a long stride towards obtaining maximum power per unit of weight, eclipsing all previous performances.

Demands for Increased Wages by the locomotive engineers of the U.S. railways east of Chicago and north of Virginia are to be considered by a committee of 12 vice presidents and general managers. The schedule of pay demanded by the engine runners is as follows: In passenger service, for engines with cylinders of 20 ins. or less diameter, \$4.20 per 100 miles or less; engines with larger diameter cylinders, \$4.60 per 100 miles; overtime to be paid for at 70c. an hour on the basis of 20 miles run per hour; electric locomotives to be run at the same rate as steam locomotives; freight service, minimum rate, \$5.25 per 100 miles for engines with 20-in. cylinders or less; \$5.50 for engines with cylinders of 20 to 24 ins., \$5.55 for larger cylinders; Mallet locomotives, \$7. One hundred miles or less, or 10 hours or less, is to constitute a day's work. Overtime is to be paid for on the minute basis at an average speed of 10 miles an hour. Switching engines and yard service, \$4.50 per day of 10 hours; belt-line locomotives, \$5 per day of 10 hours.

H. G. Barber, Assistant Engineer, C.P.R. Construction Department, Calgary, Alta., in remitting his renewal subscription, writes:—"The Railway and Marine World becomes more necessary to railway men all the time."

Steam Railway Statistics for Year Ended June 30, 1911.

The table given in our last issue showed the financial results of the operations of steam railways for the year ended June 30, 1911. The following table gives the percentages and the principal statistical information compiled by the companies. The table published last issue and the one given below contain all the information given prior to 1910 in our compilation of these statistics, but the columns have been rearranged so as to combine in the first table the financial and in the second the statistical information.

Name of Railway	Proportion of total Passenger service to train revenue	Proportion of freight revenue plus switching revenue, &c., to total earnings	Revenue Train Mileage	Mileage of Non Revenue Trains	Earnings per Train Mile	Passengers Carried	Passengers Carried One Mile	Passenger Earnings per Train Mile	Tons of Freight Carried	Tons of Freight Carried One Mile	Freight Earnings per Train Mile
Alberta Ry. & Irrigation Co.....	29.63	62.10	142,583	5,343	\$ 2.42	79,446	3,225,998	\$ 1.08	165,088	8,555,606	c. 2.50
Algoma Central & Hudson Bay.....	16.16	57.31	57,972	5,449	9.98	21,466	761,465	2.12	395,635	10,633,079	1.99
Algoma Eastern.....	1.99	96.52	20,212	.....	4.87	5,256	49,276	.09	465,744	4,718,429	1.88
Atlantic, Quebec and Western.....	38.02	61.87	30,231	1,255	.80	15,767	349,382	.33	13,115	401,851	3.76
Bay of Quinte.....	20.42	76.62	173,290	.....	1.24	97,435	1,491,055	.26	299,718	7,791,000	2.12
Bedlington and Nelson.....	12.01	87.93	1,884	107	1.09	622	4,229	.13	2,238	16,008	11.38
Bessemer and Barrys Bay.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brandon, Sask. & Hudson Bay.....	42.64	56.91	63,581	6,559	1.02	26,800	857,465	.65	42,851	2,064,541	1.80
British Yukon.....	19.84	78.43	61,624	8,957	5.21	8,809	645,806	1.08	28,940	2,425,323	10.39
Brockville, Westport & N. W.....	51.43	48.50	57,595	195	1.17	66,099	1,982,976	.61	25,815	774,450	4.22
Bruce Mines and Algoma.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canada Southern.....	30.83	68.87	3,832,915	104,931	2.39	1,164,571	93,881,546	1.46	6,892,022	1,094,623,993	.57
Canadian Government Railways	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Intercolonial.....	33.54	64.65	7,090,578	242,540	1.41	3,286,942	166,122,542	1.10	4,254,803	1,112,203,132	.57
Prince Edward Island.....	54.66	42.16	329,197	12,039	1.04	361,458	8,114,430	.57	109,345	3,846,066	3.75
Canadian Northern.....	19.65	73.07	6,788,269	548,668	2.41	1,394,361	113,506,430	1.16	4,675,405	1,385,711,579	.84
Canadian Northern Ontario.....	30.59	67.90	486,210	32,400	1.15	169,388	7,389,130	.49	506,124	39,245,162	.95
Canadian Northern Quebec.....	30.17	68.79	641,403	15,281	1.68	483,878	15,580,374	.77	791,199	59,247,769	1.25
Canadian Pacific.....	30.85	66.36	40,822,186	2,140,287	2.39	11,928,943	1,440,649,164	1.63	22,536,214	7,859,966,837	.81
Cape Breton.....	58.97	40.07	19,654	.....	.44	7,523	169,289	.26	5,679	90,917	3.86
Caraquet.....	35.89	64.10	43,832	.....	1.25	16,864	659,477	.45	27,404	1,233,180	2.86
Carillon and Grenville.....	53.08	2.80	2,834	.....	1.00	4,329	53,127	.53	52	676	11.78
Central Ontario.....	29.48	66.83	205,152	8,033	1.53	148,848	3,665,571	.57	263,977	8,388,723	2.50
Crows Nest Southern.....	17.20	82.13	105,380	7,537	1.31	21,147	545,257	.53	177,558	8,649,590	1.32
Cumberland Ry. & Coal Co.....	30.44	69.52	42,372	.....	1.30	33,697	442,557	.43	122,361	1,386,896	2.76
Dominion Atlantic.....	53.16	46.27	537,009	5,012	1.37	401,028	17,645,232	.77	282,415	12,708,675	2.67
Eastern British Columbia.....	10.16	89.71	7,476	48	5.10	6,278	66,377	.51	123,130	1,449,632	2.38
Elgin and Havelock.....	30.65	69.35	19,220	.....	.57	10,719	150,066	.17	15,548	209,272	3.65
Grand Trunk.....	34.66	64.33	17,521,716	704,986	.87	10,517,109	525,533,909	1.39	16,635,352	2,958,973,320	.70
G.T.R. (Canada Atlantic).....	24.18	73.96	1,337,922	73,891	1.44	541,490	19,450,481	.64	1,554,119	177,512,282	.75
Grand Trunk Pacific.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Halifax and South Western.....	50.39	49.00	357,413	9,543	1.21	202,466	7,011,604	.66	236,695	11,996,660	1.74
Hereford.....	30.89	67.65	74,149	1,664	.83	28,481	743,473	.34	119,207	2,716,150	1.54
Internat'l Ry. of New Brunswick.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Inverness Ry. & Coal Co.....	12.24	87.13	112,583	1,443	1.84	39,808	922,074	.58	315,313	17,658,817	1.02
Irondale, Bancroft & Ottawa.....	32.85	65.43	34,251	200	.76	13,821	312,954	.25	21,664	518,453	3.19
Kaslo & Slocan.....	9.71	89.12	1,390	.....	4.21	733	8,979	.40	1,427	20,945	24.95
Kent Northern.....	45.25	54.75	17,010	540	1.10	8,500	195,500	.50	8,000	184,000	5.60
Kettle Valley.....	12.32	87.00	1,953	.....	1.54	623	9,503	.19	5,205	38,094	6.09
Kingston & Pembroke.....	31.60	71.84	132,863	.....	1.56	87,163	2,059,524	.50	127,948	5,937,651	2.16
Klondike Mines.....	15.44	82.01	7,662	.....	6.17	1,823	43,184	1.61	18,044	153,418	25.28
London & Port Stanley.....	32.50	66.60	119,975	338	1.00	158,859	2,888,871	.48	483,430	7,974,037	.89
Lotbiniere & Megantic.....	21.08	78.53	20,014	.....	1.54	13,428	218,137	.34	47,422	530,780	4.57
Magnetawan River.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Manitoba Great Northern.....	12.94	86.94	38,904	340	1.30	8,576	197,416	.19	57,606	3,411,866	1.27
Maritime Coal Ry. & Power Co.....	11.65	88.34	27,068	6,520	2.65	25,348	232,288	.57	215,534	2,287,177	2.77
Massawippi Valley.....	33.69	65.69	193,520	463	1.08	156,702	2,842,129	.72	519,632	15,006,798	.91
Moncton and Buctouche Ry.....	37.01	62.35	20,718	2,558	1.26	20,474	430,460	.47	24,399	436,503	3.74
Montreal and Atlantic.....	20.98	76.89	579,791	12,593	1.82	317,852	8,202,609	.71	1,254,239	68,411,126	1.03
Montreal and Province.....	51.89	38.86	98,816	3,862	1.17	171,270	2,512,850	.83	87,023	2,195,951	2.46
Montreal & Vermont Jct.....	52.02	47.95	111,760	621	1.12	137,177	2,596,267	1.02	441,258	9,867,581	.60
Morrissey, Fernie & Michel.....	8.65	90.76	30,914	.....	3.50	138,450	844,545	.30	583,712	3,560,643	2.36
Napierville Jct.....	7.97	91.59	23,589	56	3.06	14,461	195,675	.33	297,957	8,285,883	.79
Nelson & Fort Sheppard.....	41.94	53.09	56,579	5,496	1.41	25,411	759,867	.88	28,114	1,030,651	4.11
New Brunswick Coal & Ry. Co.....	19.88	61.29	69,620	.....	.95	21,287	436,813	.18	71,800	3,023,800	1.34
New Brunswick & P.E.I.....	33.52	66.17	47,195	.....	.69	22,296	441,238	.38	41,148	617,220	3.51
New Westminster Southern.....	31.92	67.69	19,549	56	2.20	23,610	272,666	.70	43,865	547,140	5.43
North Shore.....	6.96	93.04	4,848	.....	.70	954	7,632	.04	7,983	63,864	5.00
Nosbonsing & Nipissing.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nova Scotia Steel & Coal Co.....	36.26	63.70	15,800	.....	.38	8,765	59,070	.13	8,917	75,911	5.10
Ottawa & New York.....	46.59	52.06	122,212	2,938	1.28	111,285	2,965,486	.94	158,601	6,198,584	1.31
Pere Marquette.....	6.55	93.05	1,299,013	6,148	1.89	294,278	6,198,979	.55	2,287,992	437,929,056	.51
Phillipsburg Ry. & Quarry Co.....	.....	.....	.....	.....	.....	.....	.....	.....	13,447	13,447	.....
Pontiac and Renfrew.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Princeton Branch W.C. Ry.....	28.42	71.58	11,925	424	2.31	81,205	414,145	.76	182,510	930,801	2.12
Quebec and Lake St. John.....	37.05	61.36	438,864	158,115	1.43	311,900	11,216,693	.87	328,099	29,077,304	1.32
Quebec Central.....	33.81	65.47	673,199	200,804	1.78	384,685	16,797,760	.99	780,798	57,186,125	1.37
Quebec, Montreal and Southern.....	41.35	58.47	258,665	1,542	1.22	198,472	4,797,077	.60	309,207	13,243,347	1.38
Quebec Oriental.....	44.24	55.76	88,670	3,160	.96	27,631	1,256,000	.64	25,847	1,912,965	2.50
Quebec Ry., Light and Power Co.....	14.39	82.03	31,351	1,657	2.19	90,431	721,639	1.33	143,992	1,753,871	3.07
Red Mountain.....	24.39	72.90	13,041	118	1.13	8,942	80,011	.55	15,355	128,952	6.57
Rutland and Novan.....	62.82	37.18	7,169	.....	2.16	121,977	413,502	1.90	215,173	729,436	.79
Salisbury and Albert.....	39.14	59.27	38,276	.....	.73	13,786	310,177	.28	36,547	1,088,520	1.54
Schomberg and Aurora.....	46.26	53.38	22,476	.....	.51	20,345	179,036	.23	9,673	116,076	5.34

(Continued on page 168)

Steam Railway Statistics for Year Ended June 30, 1911—(Continued from page 167)

Name of Railway	Proportion of total passenger service of train revenue of total earnings	Proportion of freight revenue plus switching revenue, &c., to total earnings	Revenue Train Mileage	Mileage of Non-Revenue Trains	Earnings per Train Mile	Passengers Carried	Passengers Carried One Mile	Passenger Earnings per Train Mile	Tons of Freight Carried	Tons of Freight Carried One Mile	Freight Earnings per Train Mile
Stanstead, Shefford and Chambly..	44.34	55.34	94,005	9,607	\$.95	186,110	1,215,543	\$.62	464,680	2,127,264	c. 2.32
St. Clair Tunnel.....											
St. Lawrence and Adirondack.....	41.47	57.44	297,270	6,488	1.90	535,191	12,581,391	1.35	827,705	30,292,047	1.06
St. Martins.....	36.51	62.05	17,260		.88	9,363	181,595	.32	12,373	187,735	5.02
Sydney and Louisburg.....	7.80	91.91	262,889		1.73	86,799	1,410,960	.87	3,639,187	51,428,612	.79
Temiscouata.....	30.82	66.87	155,452	5,780	1.35	72,412	2,389,515	.45	140,335	6,329,862	2.22
Temiskaming and N. Ontario.....	41.91	53.95	696,883	57,088	2.13	479,183	23,525,015	1.66	524,984	53,742,002	1.48
Thousand Islands.....	31.81	59.76	30,608		1.21	43,116	258,696	.38	34,503	207,018	10.73
Toronto, Hamilton & Buffalo.....	27.69	71.31	464,113	7,548	2.60	538,030	16,829,377	1.18	1,891,025	73,751,225	1.10
Vancouver Copper Co.....											
Vancouver, Victoria and Eastern.....	33.72	64.71	304,363	27,199	2.26	261,491	7,104,661	1.01	907,383	23,822,055	1.84
Victoria and Sidney.....	46.12	53.60	30,553		1.77	81,965	1,033,734	1.10	34,535	487,540	5.93
Victoria Terminal Ry. & Ferry Co.....	50.73	47.80	2,009		2.38	72,688	66,146	1.62	32,958	29,981	7.63
Wabash.....	29.03	70.84	1,680,961	19,838	1.42	590,738	37,513,229	.93	1,379,813	326,301,134	.52
Wellington Colliery Co.....											
York and Carleton.....	42.19	57.81	8,535		.68	7,061	70,610	.28	8,422	84,220	4.01
			89,716,533	4,478,705		37,097,718	2,605,968,924		79,884,282	16,048,478,295	

Little Leaks on Railways.

By W. C. Hunter, ex-Manager New Brunswick Coal and Ry. Co. Ltd.

The scientific management of railways appears to be a favorite theme with college professors, editors, magazine writers, lawyers and students of political economy generally. Wasteful methods of the roads are alleged, and figures are given to show what might be saved per annum if this or that theory were adopted, until it would almost seem that an absurd inference of the public must be, that the management of our railways is entrusted to a lot of untrained incompetents. However, the attention that is being paid to this subject is, after all, but a manifestation of a spirit of conservation of energy and resources that is none too soon moving our people, in this case directed at the railways, for it seems to be the fashion to criticize the railways as the greatest offenders in any case, or on all subjects. But after all there is some excuse for even this, inasmuch as the railways bulk large in the public eye, as perhaps the greatest existing single form of energy, and coming in closer contact with and affecting the masses to a more general degree than any other form of human effort.

Manifestations of the same spirit are in some degree being directed at other great industries, such as mining, lumbering, etc., and indeed with very much more reason to warrant it; for while wasteful methods exist to an all too great a degree in many fields of endeavor, it can be truthfully stated that the railways are not by any means the greatest offenders in this respect. Much has been, and can be shown, to prove this; all railway men know what enormous efforts have been made in the last quarter of a century to obtain increased service at less percentage of cost, but after all, has everything been done that can be done, practically, to obtain still further results in economy by eliminating all waste? Immense sums of money have been spent, and are being spent along the lines of betterment of the railways physically, and in increasing the size of power and in lowering the relative cost of maintenance by better shops, machinery and methods, and almost every important road is increasing the educational facilities of the employees to the end that they will be taught to do their work intelligently and effectively, with less waste of energy, a

course which cannot help but have splendid results. But after all has been said and done, there are few railways but have little leaks in every department, at almost every point, which, if they were stopped would effect a surprising aggregate saving. To name all these small wastes that are apparent to an observer, and what might be done to eliminate them, would take up a lot of space to discuss, but in these days of constantly increasing operating expense, the struggle to correspondingly increase net earnings, or even to keep them from decreasing, is such that any practicable plan to increase economy, or to stop waste, no matter how small, warrants consideration. If it has been one's good fortune to travel over many of the railway systems of the country, and to have visited storehouses, repair shops, round-houses, station agents' offices, car inspectors' quarters, section houses, trackmen's shelters, water stations, conductors' cabooses, locomotives, etc., etc., one cannot help observing, no matter how perfect the system of handling supplies may be, or how often the regular officers may inspect all points, or, generally speaking, how well managed a road may be, there is still a constant waste of material going on in small quantities, one would think almost too small to notice; but when it is going on constantly all over a large system—a little here, a little there—the aggregate loss must be very considerable indeed. At some points of course it is worse than others, as on some railways it is worse than others, but all roads are losing more or less money from these little leaks. How to apply a remedy is a very pertinent question.

As a suggestion, let the management of any of our large railways select a man of general all-round experience, entitle him say, general inspector, reporting to the general manager, but making joint reports to the heads of any of the departments, divisions or districts concerned, and turn him loose on the system with authority to do all possible to eliminate waste in every department and at every point at which he can discover the same, at any one or succession of visits he may make, and let this be his only aim and duty. Such a man would require to have had experience in several departments, to be observant,

and to be possessed of patience, tact, and common sense combined with firmness, and it would be necessary that he be supported strongly by his superior officer.

Let us see what such an officer may find in a trip of one day over, say, one division. He starts out on an early morning local passenger train; he may possibly find the trainmen do not properly announce stations, result, passengers are not ready to leave the train quickly to make room for passengers getting on the train, wasting time, which costs money to make up. He can instruct these trainmen in regard to this; he may find the trainmen do not handle the air whistle cord according to their instructions, wasting air, causing air pump to use more coal. Then he notices the car lamps are burning too long after daylight; waste of gas or oil. He gets off at a way station where there is a section house, and a water tank, and perhaps a coal chute, possibly he finds the train signal lamps still burning, or, if in afternoon, lighted too soon, more waste of oil. He may notice the agent at the station using good printed forms to scribble or figure on, or using a large train billing forms for freight shipments where the small size would do, a waste of stationery, and which waste is surprisingly general. The telegraph battery jars may show need of cleaning, so that station instruments would get full power, saving time in adjusting instruments when required. He then visits the tank; possibly the tank man is using too much fuel, or oil, on the pumping machinery, or there may be an unreported small leak in the tank, wasting water; at the section house he is likely to find scrap that should be sent to the nearest repair shop, these section tool house small scrap piles, more often than not, contain good brake gear, bolts, nuts, and pieces of scrap brass, and tools picked up on the track that have fallen from locomotives. Along the right of way are ash heaps where old ties were burned, that if raked would possibly be found to contain some good spikes, as well as many broken ones; the latter make good wrought iron scrap, and should be picked up.

About this time a freight train arrives, and the general inspector may notice the air brake rules for making water station stops are not obeyed, and damage is consequently done to draft rigging and lading. The locomotive is at last "set" to take water, and he may notice the fireman haul the drop pipe

of the tank or stand pipe down with a bang, on to the edge of the tender man-hole, causing damage to pipe, then the tender may be overflowed, waste of water, besides washing off coal or at least damaging its heating quality, or if it is in winter, ice is formed on the track, costing money to remove.

He may notice the locomotive engineer is using a leaky or broken spout oil can, or the lubricator pipe connections and packing of the sight feed glasses are leaking, causing waste of oil. If at a coaling station he may observe that the tender is overloaded, so that coal is wasted by dropping off when the locomotive is running. If he rides on the engine for a few miles he may find wasteful methods of handling fuel and rough handling of the train, and rough braking, all wasteful. When he rides in the caboose he may find worn out car journal brasses which have not been turned in, and perhaps too many new ones on hand, an over stock of spare coupler knuckles, too many spare air hose and coupling gaskets, which deteriorate fast in non-use, and quite likely there will be found a scarcity of proper tools for replacing hose or gaskets on the road, resulting in loss of time. The same remarks may, or may not, apply to all the supplies with which the caboose is supposed to be equipped.

The inspector may ride this freight train to a divisional terminal, finding opportunities to effect economy all along the road. If it is a way freight train, he may find package freight badly loaded, so that delays occur at way stations while box cars are overhauled for the "pieces" that should have been handy if "station location loading" had been followed when the car was loaded at starting point; he may find rough switching done by the crew at the way stations, damaging lading and draft gear, which may not be apparent at the time, but sooner or later has to be paid for; air hose may not be uncoupled by hand, resulting in damage to hose that will certainly have costly consequences; he may, if it is cold weather, find cars being moved from spur tracks at way stations with the brake shoes frozen to the wheels, or even if it is not cold weather the same cars being moved with the hand brakes set, resulting in slid flat wheels.

Arriving at the divisional terminal the inspector will have an opportunity to observe if the locomotive is switched to the roundhouse quickly, to avoid extra time to be paid to crew, waste of fuel, etc. He may note if car inspectors are on hand as quickly as possible to inspect the train, and if the train is going on to the next division he may note whether wasteful loss of time occurs through the actions of any of the departments concerned; he may visit the car inspector quarters, and if he looks about carefully he may find a few obsolete brass car bearings and car castings long cherished in some corner and kept for an emergency, that will never occur, because the "foreign cars that use them" are out of service long ago.

At the roundhouse the inspector may find worn out parts of injectors, lubricators, pumps, air brake parts and non-descript pieces of brass, and in the private locker of some foreman or charge hand he may find a collection of spare parts of obsolete devices, kept because they "may come in handy" some day.

If the inspector visits repair shops he may find obsolete car or locomotive castings, scrap cast or malleable iron, and scrap brass which should be disposed of more quickly, wheels of obsolete design or size of journal, or he may find broken bolts scrapped that should be recut, or he may have opportunity to point out improved methods of handling some small matters from ideas which he may have picked at another point on the system. In the storehouse he is likely

to find supplies that have been in stock so long that it is obvious they are obsolete, but are kept as stock for book-keeping reasons only. He may visit a terminal freight station and be able to point out the best methods for loading freight and way cars to avoid delay on the road or at transfer points with other railways, thus saving car delays.

And so on all over the system day in and day out, such an officer could be ever busy constantly watching for little leaks and studying more economical methods of handling detail. It may be argued that all this is the duty of the regular officers, which is true enough, but their duties are multiple, they have many questions cropping up daily; their routine work never ceases, and while, of course, they should never lose sight of the fact that strict economy is required, still it is not humanly possible for them to notice thousands of small leaks that are occurring, but which could be traced down and eliminated by an officer whose time was devoted to that and nothing else. It does not seem impossible if such an official were the right kind of a man that he could save any large railway system many thousands of dollars annually.

[The writer of the foregoing article, W. C. Hunter, was formerly Manager, New Brunswick Coal and Ry. Co., since resigning which position he has been railway representative for T. McAvity and Sons, Ltd., St. John, N.B.—EDITOR.]

Birthdays of Transportation Men in April.

- Many happy returns of the day to—
 F. T. Anderson, Car Service Agent, C.P.R. Western Lines, Calgary, Alta., born at Lambeth, Ont., April 1, 1878.
 W. H. Ardley, General Auditor, G.T.R., Montreal, born at London, Eng., Apr. 24, 1858.
 Jas. Black, Freight Claim Agent, C.P.R., Vancouver, B.C., born near Seaford, Ont., Apr. 19, 1858.
 C. G. Bowker, Joint Superintendent, G.T.R. and Wabash Rd., St. Thomas, Ont., born at Medford, N.J., Apr. 21, 1871.
 W. J. Camp, Assistant Manager Telegraphs, C.P.R., Montreal, born at Oakville, Ont., Apr. 22, 1855.
 G. Cobb, Chief Dispatcher, Reid Newfoundland Co., St. John's, Nfld., born at Coupar Angus, Scotland, Apr. 21, 1885.
 A. E. Edmonds, District Passenger Agent, C.P.R., Detroit, Mich., born at Woodstock, Ont., April 8, 1866.
 J. H. Flock, K.C., Honorary Counsel, Canadian Ticket Agents' Association, London, Ont., born at Toronto, April 6, 1834.
 B. W. Folger, General Manager, Niagara Navigation Co., Toronto, born at Kingston, Ont., April 8, 1872.
 B. C. Gesner, Moncton, N.B., formerly Air Brake Inspector, I.C.R., now travelling representative, Galena Signal Oil Co., born at Cornwallis, N.S., April 23, 1859.
 J. Murray Gibbon, Advertising Agent, C.P.R., London, Eng., born at Udewella, Ceylon, April 12, 1875.
 V. A. Harshaw, Superintendent, District 2, Atlantic Division, C.P.R., Woodstock, N.B., born at Mono, Ont., April 26, 1865.
 J. M. Horn, District Freight Agent, Canadian Northern Ry., Edmonton, Alta., born at Allanton Mills, Lanarkshire, Scotland, April 12, 1880.
 B. S. Jenkins, General Superintendent, C.P.R. Telegraphs, Winnipeg, born April 8, 1859.
 J. Kyle, Master Mechanic, Western Division, Canadian Northern Ry., Edmonton, Alta., born at Toronto, April 11, 1877.
 A. N. McIntyre, Trainmaster, C.P.R., Vancouver, B.C., born at St. Marys, Ont., April 9, 1874.
 D. McNicoll, Vice President, C.P.R.,

Montreal, born at Arbroath, Scotland, April 7, 1852.

P. Mooney, General Freight and Passenger Agent, Halifax and South Western Ry., Halifax, N.S., born at St. Catharines, Que., April 19, 1871.

J. O. Norrie, Travelling Passenger Agent, C.P.R., Atlantic Steamship Lines, Winnipeg, born at Belfast, Ireland, April 20, 1879.

G. D. Perry, General Manager Great North Western Telegraph Co., Toronto, born at Whitby, Ont., April 19, 1858.

R. A. Pyne, Superintendent of Shops, C.P.R., Winnipeg, born at Toronto, April 10, 1874.

R. S. Richardson, Superintendent, Macdonnell & O'Brien, contractors, National Transcontinental Ry., La Tuque, Que., born at Napanee, Ont., April 9, 1865.

W. A. Ritchie, District Superintendent, Pullman Co., Montreal, born at Edinburgh, Scotland, April 13, 1854.

E. W. Smith, Superintendent, Dining and Parlor Car Service, G.T.R., Toronto, born at North Bridge, Mass., April 21, 1869.

W. S. Tilston, Chief of Montreal Board of Trade Transportation Bureau, born at Manchester, Eng., April 14, 1877.

W. Wainwright, Vice President, G.T.R., and Second Vice President, G.T.P.R., Montreal, born at Manchester, Eng., April 30, 1840.

W. Woollatt, Walkerville, Ont., ex-General Superintendent, Buffalo Division, Pere Marquette Rd., born at Weedon, Hertfordshire, Eng., April 2, 1855.

Equipment Directed for Snow Ploughs.

The Board of Railway Commissioners passed the following order 16007, Feb. 17:—

That all railway companies within the legislative authority of the Parliament of Canada operating snow ploughs shall, on or before Nov. 1, 1912, equip them with direct connection between the plough and the steam whistle of the locomotive, so that the man in the plough shall be able to give all proper signals; air gauge, air controlling valve and proper air connections between the plough and the locomotive, so that the air brake may be controlled from the plough.

That snow ploughs run as push ploughs, not fitted with cupolas, and having no men in charge, shall be fitted with air pipe connections between the plough and the locomotive, so that in case of derailment and air connections being broken, the air will apply automatically.

Canadian Northern Club of Toronto.

Officials and employees of the Canadian Northern Ry. and its allied lines in Toronto have organized the Canadian Northern Club of Toronto, for the exchange of ideas for obtaining and maintaining efficient service and for the improvement of the members in knowledge of construction and operation by discussion and investigation, and for the promotion of personal acquaintance and friendship. Meetings will be held on the first Tuesday of each month, at which papers will be read and discussed, with an occasional evening of entertainment.

Following is the organization:—Patrons, Sir William Mackenzie, Sir Donald Mann; Honorary President, D. B. Hanna; Honorary Vice President, H. K. Wicksteed, M. Can. Soc. C.E., G. H. Shaw; President, A. J. Hills; First Vice President, W. Phillips; Second Vice President, H. G. Hanna; Treasurer, J. W. Nicholson; Secretary, R. Croasdell; Chairman of House Committee, P. H. Scott; Chairman of Membership Committee, R. C. Vaughan.

Cross-Ties Purchased by Canadian Railways.

The data upon which this report is based were furnished by Canadian steam and electric railways. The value given for the ties was the cost at the point of purchase. There were 9,213,962 ties, costing \$3,535,628, purchased in 1910 by steam and electric roads. This represents a decrease of 4,964,279, or 35% from the number purchased in 1909, due to the decreased purchase of ties for new steam railway lines. This decrease was general throughout the important species except with Douglas fir. The average cost of these ties at the point of purchase was 38c., an increase of 1c. over 1909. Table 1 gives the number of ties of each kind of wood purchased in 1909 and 1910, with their total and average cost, and the per cent. each species forms of the total.

Three kinds of wood supplied 77% of all the ties purchased. These were cedar, jackpine and hemlock. Though not as many cedar ties were purchased in 1909 as in 1910, cedar is still the chief species used. In 1910, it furnished 40% of the ties purchased as against 29.8% in 1909. Nearly all the cedar used is eastern cedar (*Thuja occidentalis*), as western cedar (*Thuja plicata*) is too soft for satisfactory use as cross-ties, except for electric lines where the traffic is light. Jackpine is the second in importance in tie production. In 1910 it supplied 23.5% of the ties used, which was practically the same percentage as used in 1909.

one of the cheapest ties, has fallen off greatly, 657,871 ties less being purchased in 1910 than in 1909. The decrease in the purchase of spruce is due to the same reason as that ascribed to tamarack. The remaining species, cypress,

sawn ties is oak, 95% of which were hewn ties. Cedar ties were 81% hewn, and 61% of the jackpine ties were hewn. Hemlock and Douglas fir were about evenly divided in the method of manufacture. In the case of tamarack, 98% were hewn ties, while the minor varieties were principally sawn ties. The hewn ties are nearly all pole ties, the

Kind of Wood.	Sawn Ties.				Hewn Ties.			
	Number.	Cost.	Average Cost Each	Per cent. Sawn.	Number.	Cost.	Average Cost Each	Per cent. Hewn.
Cedar.....	472,797	154,693	31	13.0	3,197,601	1,355,250	42	87.0
Jack pine.....	887,079	307,724	37	39.0	1,313,507	404,211	31	61.0
Hemlock.....	589,451	152,948	26	47.0	665,154	356,242	55	53.0
Douglas fir.....	428,012	129,111	30	48.4	457,468	132,471	29	51.6
Tamarack.....	18,236	3,801	29	2.0	650,686	237,291	36	98.0
Oak.....	250,883	185,858	74	95.0	13,764	9,277	68	5.0
Spruce.....	134,898	39,611	29	57.8	98,804	24,979	25	42.2
Cypress.....	34,305	12,487	36	90.6	10,184	4,074	40	9.4
Chestnut.....	19,184	12,243	64	100.0				
White pine.....	438	101	23	23.8	1,400	560	40	76.2
Unspecified.....	11,388	6,521	58	45.3	13,723	6,175	45	54.7
Total.....	2,791,671	1,005,098	36	30.	6,422,291	2,580,580	39	70.

chestnut, and white pine, are used to a small extent for ties. All the cypress and chestnut ties and practically all the oak were imported from the U.S. Red pine and yellow pine, which were used in 1909, were not reported in 1910.

The average price of ties in 1910 was 38c., compared with 37c. in 1909. Of the important woods, oak cost the most, 74c.

sawn ties are made chiefly from large timber.

Sawn ties cost on the average 36c. a tie. Hewn ties cost 3c. more, or 39c. a tie. Oak was the most expensive of sawn ties, costing 74c. a tie. White pine was the cheapest of the sawn ties, costing only 23c. a tie. In hewn ties oak was also the most expensive, costing 68c., and spruce ties were the cheapest, costing 25c. a tie.

Table 3 shows the number and cost of cross-ties used for steam railways in 1909 and 1910, classified by species, with the average cost per tie of each species and the per cent. each species forms of the total.

The steam railways, using 96% of all the ties, take them in about the same proportion and at the same prices as they are quoted in table 1. The decrease in use of ties in 1910, as noted above, is due chiefly to decreased purchase by the steam railways, which used 5,159,697 ties less in 1910 than in 1909. The average cost of steam railway ties is about the same as in table 1, due to the fact that nearly all the ties were purchased by steam roads. All the white pine and chestnut ties purchased in 1910 were purchased by steam roads.

Table 4 gives the number of ties purchased by steam roads in 1910, according to method by which made.

Steam roads use such a large proportion of the ties purchased that this table is practically the same as table 2. Hewn cypress ties were imported, but not used by steam roads.

Kind of Wood.	1909				1910			
	Number.	Cost.	Average Cost Each	Per cent. Distribution.	Number.	Cost.	Average Cost Each	Per cent. Distribution.
Cedar.....	4,131,380	1,859,121	45	29.8	3,670,398	1,509,943	41	40.0
Jack pine.....	3,404,501	1,021,350	30	24.8	2,150,586	711,935	33	23.5
Hemlock.....	1,850,056	610,512	33	13.2	1,254,005	509,190	40	13.8
Douglas fir.....	653,403	225,258	34	4.6	885,480	261,582	30	9.6
Tamarack (larch).....	2,811,820	1,096,610	39	19.8	663,922	241,092	36	7.1
Oak.....	34,389	21,292	62	0.2	264,647	195,135	74	2.9
Spruce.....	891,573	222,893	25	6.3	233,702	64,590	28	2.5
Cypress.....	8,362	3,010	36	(1)	44,489	16,561	38	0.4
Chestnut.....	84,669	49,809	59	0.7	19,184	12,243	64	0.2
White pine.....	92,633	27,519	29	0.7	1,888	661	36	(1)
Unspecified.....	213,462	72,577	34	1.6	12,696	50	0.2	
Total.....	14,178,241	5,210,490	37	100.	9,213,962	3,535,628	38	100.

(1) Less than one-tenth of one per cent.

Hemlock, supplying 13.8% of the total consumption, occupied third position in 1910. Hemlock has now for the first time passed tamarack as a tie producer. The advance of hemlock from the fourth position, which it previously held, is due not to an increase in the use of hemlock, but to a decrease in the use of tamarack. Douglas fir formed 9.6% of the ties purchased in 1910, as against 4.6% in 1909. About 232,000 more Douglas fir ties were purchased in 1910 than in 1909. This species was used to a greater extent by both steam and electric railways. Tamarack ties have dropped from third place in 1909, when they formed 19.8% of the total, to fifth place in 1910, when they formed only 7.1%. In 1910 only 663,922 tamarack ties were purchased, compared with 2,811,820 purchased in 1909. This great decrease of 2,147,898 ties is found entirely in the number used by steam roads, and is due to the fact that the purchase of ties for the eastern half of the National Transcontinental Ry. was completed previous to 1910. The above five species, namely, cedar, jackpine, hemlock, Douglas fir, and tamarack, represent 94% of the total number of ties used. Nearly all the remainder is made up of oak and spruce. The number of oak ties purchased in 1910 was 264,647, an increase of 230,258 over 1909. This is due to one United States railway, operating in Canada, which is using a great proportion of durable woods. Aside from this road Canadian railways use oak ties chiefly for switch ties. The use of spruce,

a tie, and spruce the least, 28c. a tie. Cedar cost 41c. a tie, compared with 45c. in 1909. Douglas fir cost 30c. a tie in 1910, or 4c. less than in 1909. The remaining woods, or all excepting these two, have advanced in price from 3 to 12c. a tie.

Table 2 gives the total number of ties purchased in 1910 by species and method of manufacture.

Kind of Wood.	1909				1910			
	Number.	Cost.	Average Cost Each	Per cent. Distribution.	Number.	Cost.	Average Cost Each	Per cent. Distribution.
Cedar.....	4,079,414	1,838,609	45	29.5	3,525,228	1,457,419	41	39.6
Jack pine.....	3,404,501	1,021,350	30	24.6	2,146,586	710,915	33	23.2
Hemlock.....	1,844,762	608,830	33	13.3	1,230,815	500,281	40	12.8
Douglas fir.....	626,946	211,864	34	4.5	788,286	217,409	28	8.8
Tamarack.....	2,803,820	1,092,130	39	20.3	650,446	234,820	36	7.4
Oak.....	21,207	13,199	62	0.2	257,947	191,155	78	3.0
Spruce.....	889,659	222,373	25	6.3	229,676	62,641	27	2.6
Cypress.....	8,362	3,010	36	(1)	34,305	12,487	37	0.4
Chestnut.....	84,669	49,809	59	0.6	19,184	12,324	64	0.2
White pine.....	92,483	27,303	30	0.7	1,888	661	36	(1)
Unspecified.....	213,296	72,502	34	1.5	25,111	12,696	50	0.2
Total.....	14,069,119	5,158,979	37	100.0	8,909,422	3,412,227	38	100.

(1) Less than one-tenth of one per cent.

Approximately 70% of all the ties purchased in 1910 were hewn. It is apparent that methods of manufacture of ties are not undergoing any great general and permanent changes. Sawn ties were 30% of the total, which is the same proportion as in 1909. The only important species which has a majority of

Table 5 shows the number and cost of cross-ties used for electric railways in 1909 and 1910, classified by species, with the average cost per tie of each species and the per cent. each species forms of the total.

The electric railways used 4% of all the ties purchased in 1910. In 1910,

195,411 more ties were used by electric roads than in 1909, an increase of 182%, mainly in the use of cedar and Douglas fir. This is due to much increased construction. Nearly 50% of the total number used were cedar ties at a cost below the average, namely, 37c. Douglas fir constituted 32% of the total. Jackpine, being at a distance from the electric railways, was used only to the extent of 0.6%, the ties costing 51c. each. In steam roads 23% of the ties used were jackpine, and they cost only 33c. each. Very little spruce and no chestnut or white pine was used in the construction of electric roads. Over 10,000 cypress ties were imported at an average cost of 40c. each. This is the first report of cypress ties being used for electric roads.

The average cost of ties used in 1910 by electric roads was 41c., compared with 47c. in 1909. This is due largely to the decrease of 2c. a tie in the cost of cedar ties and 12c. in the cost of Douglas fir ties. It is an interesting fact that, although the average tie used by electric roads is smaller than that used by steam roads, the price paid for it is generally greater, viz., 3c. a tie more in 1910. This is due not only to the disadvantages incident to contracts for smaller quantities of material, but also to the fact that the electric roads are more likely to purchase ties at points where the price includes railway transportation charges. This is shown by the electric roads paying not less than 37c.

ed at Vancouver. The plant at Fort Frances will be capable of treating 2,000 ties a day. The zinc-chloride-aluminum patent immersing process will be used, which both prolongs the life of the timber and renders it fireproof. It is questionable if this process will give as good results in Canada as would creosote.

and occurs, fire-killed, in vast areas on the mountain slopes of Alberta and British Columbia. It cannot be used for lumber, on account of checking, and, if untreated, it lasts only about 5 years when used for railway ties. At present this wood stands dead and perfectly seasoned, and would take chemical treat-

Kind of Wood.	1909				1911			
	Number.	Cost.	Average Cost Each	Per cent. Distribution.	Number.	Cost.	Average Cost Each	Per cent. Distribution.
Cedar	51,996	\$ 20,512	39	48.7	145,170	\$ 52,524	37	48.1
Douglas fir	26,457	15,394	58	24.7	97,194	44,173	46	32.2
Hemlock	5,294	1,682	32	4.9	23,790	8,909	37	7.9
Tamarack	8,000	4,480	56	7.5	13,476	6,772	50	4.4
Cypress					10,184	4,074	40	3.3
Oak	13,182	8,093	61	12.3	6,700	3,980	59	2.2
Spruce	1,914	520	25	1.8	4,026	1,949	48	1.3
Jack pine					2,000	1,020	51	0.6
White pine	150	216	1.44	0.1				
Unspecified	166	75	45	0.1				
Total	107,129	50,972	47	100.	302,540	123,401	41	100.0

This is a matter which for some years has been necessary for the preservation of the forests of Canada. At the same time it would have reduced the annual cost of railway maintenance. The average life of untreated ties as reported by the steam roads is: cedar, 9 years; tamarack, 8; hemlock, 7; Douglas fir, 7; jackpine, 6; spruce, 6. As may be noted from the tables, cedar is the species prin-

ment readily, after which it would make lasting and economical ties. By the use of such inferior qualities of timber, railway companies would assist conservation and at the same time decrease the cost of railway maintenance. The foregoing was issued recently as a bulletin by the Interior Department's Forestry Branch, having been compiled by H. R. MacMillan, B.S.A., M.F., and W. Guy H. Boyce. The zinc-chloride-aluminum process of tie preservation, which is being used by the Canadian Northern Ry. at Fort Frances, Ont., and the value of which, as compared with creosoting, is questioned, was adopted by the C.N.R. on the report of one of its officials, who recommended it in preference to creosoting.—Editor.]

Kind of Wood.	Sawn Ties.				Hewn Ties.			
	Number.	Cost.	Average Cost Each	Per cent. Sawn.	Number.	Cost.	Average Cost Each	Per cent. Hewn.
Cedar	432,877	\$ 138,669	32	12.2	3,092,351	1,318,750	42	87.8
Jack pine	837,079	307,724	37	39.0	1,311,507	403,191	31	61.0
Hemlock	579,261	148,842	26	47.9	651,554	351,439	54	52.1
Douglas fir	369,483	100,045	27	46.9	418,803	117,364	28	53.1
Tamarack	12,554	3,554	29	1.9	637,892	230,766	36	98.1
Oak	244,933	182,325	75	95.0	13,014	8,827	68	5.0
Spruce	133,398	38,496	29	58.1	96,278	24,145	25	41.9
Cypress	34,305	12,487	37	100.0				
Chestnut	19,184	12,243	64	100.0				
White pine	438	101	24	23.8	1,400	560	40	76.2
Unspecified	11,388	6,521	57	45.3	13,723	6,175	45	54.7
Total	2,674,900	951,010	36	30.	6,226,522	2,461,217	39	70.0

for the ties, while many used by the steam roads were bought for 27c. Table 6 gives the number and cost of ties purchased by electric roads in 1910, according to method by which made.

With electric roads 61.4% of the ties purchased were hewn, as contrasted with the steam roads, where 70% were hewn. Douglas fir constituted 50% of the sawn ties and cedar constituted 34%. Cedar made up 57% of the hewn ties, and Douglas fir 20.7%. The species which are chiefly used sawn are cedar, Douglas fir and oak. The species which are chiefly used hewn are hemlock, tamarack, cypress, spruce and jackpine. All the cypress and jackpine ties used were hewn.

The average price of hewn ties was 37c., or 2c. a tie less than was paid by steam roads. It is interesting to note that whereas with steam roads hewn ties cost 3c. a tie more than sawn ties, with electric roads sawn ties cost 9c. a tie more than hewn ties.

Imports from the United States of cross-ties in 1910 amounted to \$1,096,832. Exports in 1910 were 1,995,582 ties at a value of \$463,508. Of this total \$376,913 was to the U.S. The balance of imports over exports was \$633,324, which represents about 891,000 ties at the average price paid for ties in Canada in 1910.

PRESERVATION.—Two plants have been established for the chemical treatment of railway ties, one at Fort Frances, Ont., and the other near Winnipeg. It is stated that a plant will also be erect-

ed at Vancouver. The plant at Fort Frances will be capable of treating 2,000 ties a day. The zinc-chloride-aluminum patent immersing process will be used, which both prolongs the life of the timber and renders it fireproof. It is questionable if this process will give as good results in Canada as would creosote.

Kind of Wood.	Sawn Ties				Hewn Ties.			
	Number.	Cost.	Average Cost Each	Per cent. Sawn.	Number.	Cost.	Average Cost Each	Per cent. Hewn.
Cedar	39,920	\$ 16,024	40	72.5	105,250	\$ 36,500	35	27.5
Douglas fir	58,529	29,066	49	60.2	38,665	15,107	39	39.8
Hemlock	10,190	4,106	40	42.9	13,600	4,803	35	57.1
Tamarack	682	247	37	5.0	12,794	6,525	51	95.0
Cypress					10,184	4,074	40	100.0
Oak	5,950	3,530	68	88.8	750	450	60	11.2
Spruce	1,500	1,115	74	37.3	2,526	834	33	62.7
Jack pine					2,000	1,020	51	100.0
Total	116,771	54,088	46	38.6	185,749	69,313	37	61.4

reated ties were used, which would cost about 30c. extra per tie for creosoting and equipping with tie plates, the inferior species, which are very plentiful and cheap in Canada, could be used with economy. With such a treatment these woods would last at least 15 years, and if protected from wear would probably last much longer.

The lodgepole pine of the west would be greatly increased in usefulness by this treatment. This species is used chiefly for mining timbers and props,

mittes formed of the men themselves, render invaluable assistance, for it is by the care exercised by the individual workman that the results are largely obtained. Standing committees, the personnel of which is changed from time to time make various suggestions covering the improved construction and arrangement of the various tools and appliances around the shop, wherever such improvements would result in a greater safety to the workman without decreasing the efficiency of the machine.

The First Locomotive into Vancouver.

As illustrative of the rapid development of the locomotive during the last quarter of a century, an inspection of the three accompanying illustrations will prove interesting. The locomotive shown in figs. 1 and 3 is that used to haul into Vancouver on May 23, 1887, the first C.P.R. train from Montreal. Nearly a year previously, on July 4, 1886, the first C.P.R. train from Montreal to the Pacific Coast, reached Port Moody, on Burrard Inlet, which was the temporary ocean terminus. We are indebted to A. B. Calder, until recently General Agent, Passenger Department, C.P.R., Chicago, and now of Winnipeg, for the photograph, and to G. I. Evans, Mechanical Engineer, C.P.R. for the drawings of figs. 1 and 2.

Figs. 1 and 2 show more graphically the development of the locomotive during this past quarter of a century, both the drawings being to the same scale. Fig. 2 is one of the modern Pacific type locomotives now hauling passenger trains into Vancouver. The old 8-wheel or American type freight and passenger locomotive, fig. 1 is a C.P.R. class A6, with a 65% capacity, the new Pacific locomotives are of the C.P.R. class G2, with a 140% capacity. The present locomotive has a drawbar pull of 28,000 lbs., as against 13,000 lbs. of the older type of 24 years ago, the capacity being more than doubled.

The old locomotive, which is shown as fig. 3, on page 173, is still in active service, running out of Minnedosa, on the Manitoba Division, its number having been changed from 374 to 245.

The Economic Organization and Maintenance of the Freight Car Repair Yard at a Terminal Point.

By J. Thos. Warde.

The question of the proper maintaining of a repair plant where there are from 200 to 250 cars repaired daily, is a very serious one, and calls for careful

must be at least 16 ft. apart, alternate tracks, have a supply track of standard gauge and a third rail to form narrow gauge, and each end of yard should be connected by a lead. The yard must be well drained, and, if possible, equipped with sewer and water system, compressed air system, electric power and light, and the yard should also be as near shops, as possible.

I would recommend a central building under one roof, accessible from all

have air device for emptying of oil barrels, should contain waste bin, oil tanks for soaking and proper treatment of, and making of dope.

Paint room should have a galvanized-iron covered table for cleaning of stencils, rack for storing stencils, iron tanks for paint, oil, etc.

The store room should be fitted with drawers, pigeon-holes, racks, etc., for the proper storing of material and small supplies.

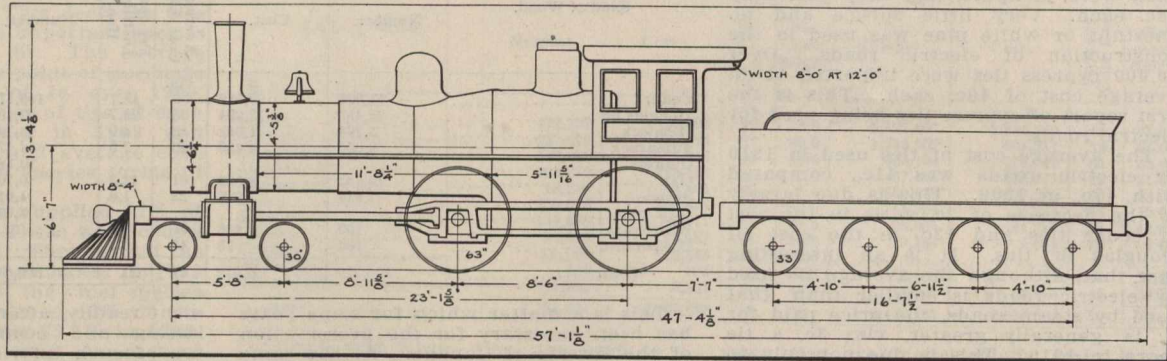


Fig. 1. Diagram of First Locomotive into Vancouver.

parts of the yard, consisting of the foreman's office, general office, time office, stores, carpenters' shop, paint shop, oil house, triple rack, blacksmith and machine shop, men's lunch room and lavatory, also lumber racks, material platforms and racks, and wheel tracks for b.o. and serviceable wheels. The advantage of one building lies in the fact of one heating, this can be very economically arranged for, by an old boiler and fed by the scrap wood, etc., thus overcoming to a great extent the danger of fire, on account of having stoves.

By having a drive-over about the centre of the yard and a standard gauge track, with a third rail making a narrow gauge track with turntables at intersections, you can connect all supply tracks. This can be used for handling wheels as well as other material, and also as a means of keeping yard clear of scrap, etc.

The fact of supplying a repair yard with a sufficient supply of necessary tools, quick lifting jacks, etc., and machinery should not be lost sight of, as (supposing yard is equipped and wired for electricity) individual electric motor power is not only economical, but desirable for the running of machinery. It will be found economy to install cut-off and rip saw, band saw, buzz planer,

The general office for use of assistant foreman, inspectors, clerks, etc., should have a private office for foreman in charge.

The efficiency of the organization depends on the executive and personal individuality of the foreman in charge. He should be a man of ability, an energetic nature and resourceful, his staff should average for the number of cars mentioned, six assistant foremen on a monthly salary, one inspector, four car oilers, 30 freight carpenters, 170 car repairers, 30 laborers, two painters, two assistant painters, one clerk, two boys, one storeman, one leading laborer, two checkers, one leading air cleaner and tester, eight cleaners and two testers, and one pipe man and helper.

The assistant foremen should oversee the work, under the general supervision of the foreman. These men should be taken from the rank and file, who have proved themselves adapted to the general overseeing of men and work; they should be practical and thoroughly conversant with the details of their work. The duty of the car inspector consists of inspecting all cars leaving yard, this man must be thoroughly conversant with the M.C.B. rules. Records of all foreign cars should be kept, re repairs. Repair and defect cards must

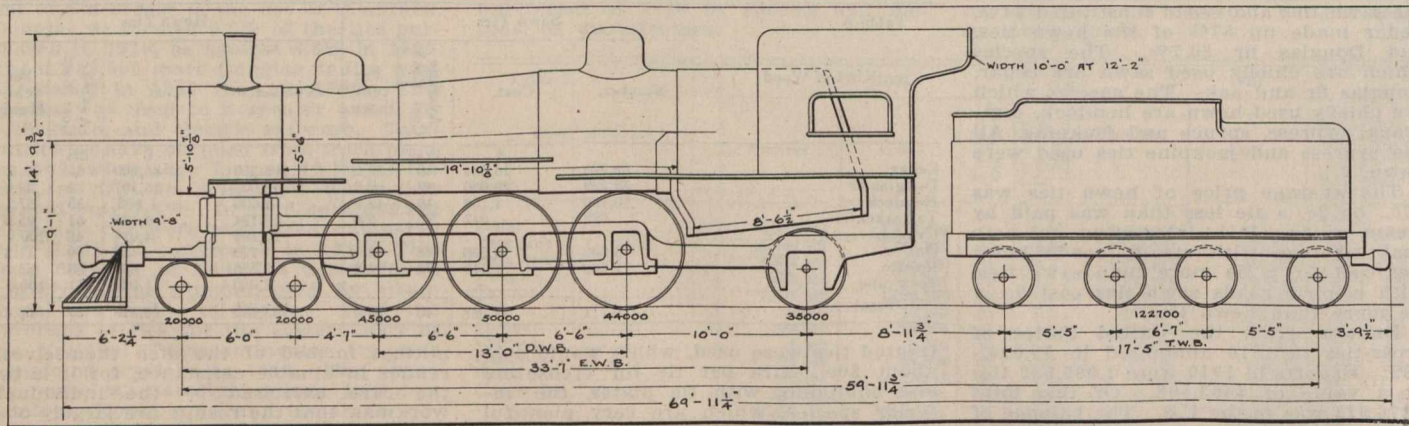


Fig. 2. Diagram of Modern Pacific Type Locomotive for Comparison with Early American Type Locomotive.

consideration, not only to handle the work expeditiously but also to handle it, in an economic manner.

The yard's location must be carefully selected. When possible, select a position where you can have 12 tracks of a capacity of 25 to 30 cars; tracks

little giant borers, drills, portable forges and riveting hammers for steel car repairs, with a capable man in charge and helpers, blacksmith's forges with electric power fans.

Oil house should have (underground, if possible) tanks. This point should

be made and affixed according to M.C.B. rules.

The leading air brake tester should have charge of air brake cleaner, testers and pipe-man, and should be responsible under the car inspector for all air brake work. All triples should be

cleaned and tested at the triple-rack, and a stock kept on hand for replacement. It would be policy, although not recommended for a yard of this size, to have a leading car oiler; his duty would be to see that all matter is properly made, and a supply always on hand; he should inspect all boxes, and advise the oiler as to the re-packing. I recommending, pull box and renew packing, journal boxes, that a proper system be organized, and boxes re-packed and stenciled, and in the event of six months elapsing, pull box and renew packing, or in other words, renew the packing every six months; packing removed to be treated, and the oil and waste reclaimed. Two car checkers should be able to take record of repairs made to cars, same should be reported to foreman and filed. Cars handled should be recorded by index system, and I recommend that a system be adopted to show, time placed, time o.k., and dates, this can be handled by one of the boys. Carpenters and car repairers should be placed with assistant foremen as necessary,

from the ranks of car repairers, as being familiar with the work, he can handle the position to advantage. The foreman should insist on a careful record being kept of all work supplies and general conditions as erecting work naturally falls to the repair yard. It is the foreman's duty to insist on maintaining an efficient staff, and the wrecking crew should not be less than 20 men taken from the car repairers. From these men selected, at least two of them should be first aid men holding certificates, and who have become conversant with the work. The men should be selected as required, according to nature of wreck; they should be under the charge of an assistant foreman, who should be held directly responsible for everything in connection with wrecking work, and the proper up-keep of the auxiliary equipment, and he and his crew should be available day or night. One man should be assigned to the duty of factotum of the dining and sleeping car, and be able to satisfy the inner-man; his duties would also include that of commissary,

such as light patching, draught timber and gear bolts, brakes, side doors or any light work that can be handled in one day, show class C or 3. Tracks should be designated by the symbol or figure and cars placed as marked.

The foreman should place with yard-master a switch list showing cars o.k. and location, listing cars he requires changed to other tracks to arrange his repairs, but the whole secret of success lies in co-operation with operating department, in providing a proper and efficient system of switching.

The foregoing paper was read before the Western Canada Railway Club in Winnipeg recently, the writer being chief clerk to the General Car Foreman, C.P.R.

In a brief discussion which followed A. McCowan stated that bad order cars had nothing to do with the freight congestion in Winnipeg, as far as the Canadian Northern Ry. was concerned.

Recent British Columbia Legislation.

The following acts affecting steam and electric railway interests were passed at the British Columbia Legislature's recent session:—

BRITISH COLUMBIA RAILWAY ACT.—Amending general act.

CANADIAN NORTHERN PACIFIC RY.—Making provision for extension of lines on the mainland and in Vancouver Island.

ESQUIMALT AND NANAIMO RY.—Confirming agreement as to exemption of lands from taxation, and providing for building an extension to Courtenay.

GRAND TRUNK PACIFIC RY.—Confirming agreement made between the G.T.P. Ry., the G.T.P. Development Co., the city of Prince Rupert, and the B.C. Government.

KETTLE VALLEY RY.—Ratifying agreement for building a line from near Merritt to the Fraser River; and confirming bylaw of Penticton municipality granting aid to the company.

PACIFIC GREAT EASTERN RY.—Act of incorporation. Confirming agreement with Foley, Welch and Stewart for building the line, and confirming agreement between Foley, Welch and Stewart and the G.T. Pacific Ry. for interchange of traffic, etc.

RAILWAY SUBSIDY LANDS.—Respecting repurchase by the crown of certain railway subsidy lands.

SOUTH EAST KOOTENAY RY.—Extending time for construction.

VANCOUVER INCORPORATION ACT.—Authorizing the city to provide a fund for the purchase of the British Columbia Electric Ry. on the expiry of the franchise if thought desirable.

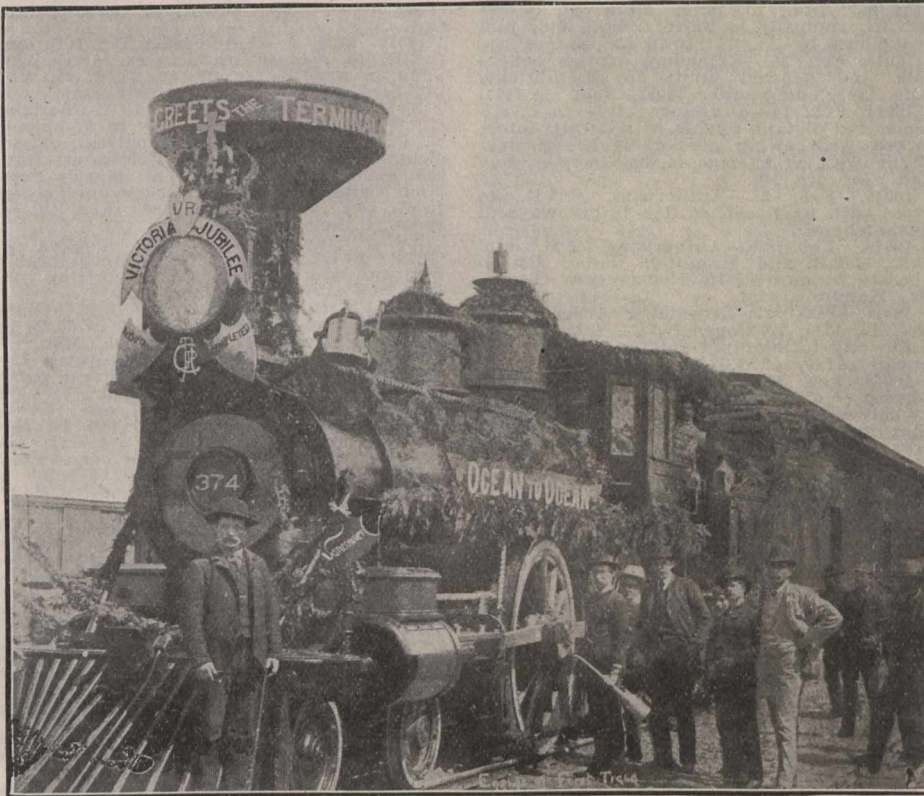


Fig. 3. First Locomotive into Vancouver (See page 172).

but no assistant foreman should have more than 40 men. Painters should have well in hand the work of painting, etc. All sheathing, roofing, etc., should be painted ready for use. The advantage in this is manifold, you have always something to keep your painters busy, your sheathing for patching is ready for the stencil, and finally your car is o.k.'d. in one day instead of three. Laborers should be under charge of a leading hand. His duties are manifold, from seeing that the scrap, etc., is gathered and placed in proper receptacles to seeing material placed at stores, also heavy material placed in a convenient position to handle. The storeman should have charge of supplies and be directly responsible for their up-keep. The foreman should furnish the general storekeeper every day a list of material supplied, attaching requisitions received and furnish list of requirements. The foreman should be in close touch with stores and be in a position to anticipate requirements, this would be of mutual benefit both to storekeeper and himself. For clerk, I prefer training a man

which is no small part of the wrecking equipment.

The auxiliary equipment should consist of a serviceable dining and sleeping car (an old coach makes a good car for this purpose), a tool car, heavy wrecking steam crane, block, tie and rail car, truck and wheel car. Tool car should be equipped with a first aid cabinet complete, with supplies and a modern equipment, quick lifting, traversing and other jacks, a plentiful supply of cables, tail ropes, chains and tools, and one man should be held responsible for their proper up-keep.

In arranging work for efficient handling on the repair tracks, a set of rules governing proper marking of cars by inspectors in the traffic yards would aid repair yard men, and the rules of marking of cars should be respected by switchmen in placing cars on the repair tracks. Defects should be classed, in A, B and C, or 1, 2 and 3 classes. Heavy work (three days) such as sills, roofs, etc., show A or 1 class, sill splices, ends, draught timbers, trucks, etc.; medium work (two days), as class B or 2; light,

The Montreal Tunnel Co. has been incorporated under the Dominion Companies Act, with a capital of \$15,000,000, and office in Montreal, to construct railway, tramway and steamship terminals, transportation, warehousing and storage facilities, tunnels and approaches, yards, stockyards, stores, buildings, "of every description, and tracks and equipment for the movement, storage or handling of any merchandise or traffic, passenger facilities and accommodation," together with grain elevators, vessels, and various other businesses. The provisional directors are: D. McDonald, L. H. Timmins, D. McMartin, J. Carson, P. Dubee, H. A. Ekers, L. J. S. Morin, K.C.; J. M. Fortier, T. Bastein, Montreal. (Mar., pg. 121.)

During Jan., nine employes were killed and 12 were injured in the course of their work in connection with railway construction in Canada. Of the fatal accidents, five were caused by explosions, three by falling material and one by a collision.

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 assigned to them.

16006. Feb. 17.—Authorizing C.N.O.R. to cross with its Montreal-Port Arthur line G.T.R. overhead in Nepean tp., mileage 14.2 from Ottawa.

16007. Feb. 17.—General order re air connections, etc., between snow ploughs and locomotives. (Published in full on another page.)

16008. Feb. 15.—Approving revised location of C.N.O.R. Toronto-Hamilton line through part of Toronto and York and Etobicoke tp., mileage 3.98 to 7.42 from Yonge St., Toronto, with leave to G.T.R. to apply to Board with regard to Belt Line property within 30 days, if so advised.

16009. Feb. 20.—Authorizing C.P.R. to take land for enlargement of Windsor St. passenger terminals, Montreal.

16010. Feb. 22.—Authorizing C.P.R. to open for traffic diversion of its line in Thunder Bay district, Ont., from mileage 92.24 to 93.42 and 93.92 to 95.12, and rescinding order 15932, Feb. 12, 1912.

16011, 16012. Feb. 23, 19.—Authorizing C.P.R. to use bridges 27.3, MacLeod subdivision, and 11.9 and 24.4, Souris subdivision.

16013. Feb. 19.—Authorizing C.P.R. to build spur for Britnell and Co. at Cooksville, Ont.

16014. Feb. 20.—Authorizing C.N.R. to build across five highways on its Prince Albert-Battleford line.

16015. Jan. 23.—Authorizing Nakusp and Slocan Ry. (C.P.R.) to build spur for 6 miles into Truro mineral claim, unsurveyed.

16016. Feb. 23.—Extending for 60 days time for installation of interlocking plant by Essex Terminal Ry., in Windsor, Ont., crossing to be used for construction purposes during extended period.

16017. Feb. 20.—Approving Klondike Mines Ry. standard freight mileage tariff for carload traffic C.R.C. 5.

16018. Feb. 20.—Ordering G.T.R. to file plans within two months for bridge where it crosses Perche drain, Sarnia tp., Ont.

16018. Feb. 22.—Ordering that plan approved by order 7200 and filed Apr. 27, 1909, re Toronto grade separation be amended by showing York St. opened to Lake St., and that subway full width of street be provided through elevated portion of tracks; question of compensation for land damages, etc., to be reserved.

16020. Feb. 24.—Authorizing James Bay and Eastern Ry. (C.N.R.) to cross road on lot 19, between r. 1 and 2, Dufferin tp., Que.

16021. Jan. 30.—Authorizing Georgian Bay and Seaboard Ry. (C.P.R.) to use bridge across road at mileage 56.4, Victoria county, Ont.

16022. Feb. 23.—Approving Napierville Jct. Ry. standard tariffs of maximum freight and passenger tolls C.R.C. 102.

16023. Feb. 17.—Authorizing G.T.P. Branch Lines Co. to build spur for Prince Albert Lumber Co., Prince Albert, Sask.

16024. Feb. 22.—Correcting errors in G.T.P. Branch Lines Co.'s Yorkton-Canora branch location plan.

16025. Feb. 23.—Relieving C.P.R. from fencing portions of its right of way, MacLeod subdivision.

16026. Feb. 23.—Authorizing C.P.R. to build spur for W. Milne and Sons, Shedden tp., Ont.

16027. Feb. 24.—Authorizing G.T.P. Branch Lines Co. to build its Cutknife branch across 11 highways in Saskatchewan.

16028. Feb. 20.—Approving standard freight and express tariff C.R.C. 6, for less than carload traffic.

16029. Feb. 26.—Appointing W. S. Sekler, senior judge Lanark county court, as arbitrator to assess damages to be awarded property owners injuriously affected by closing of streets, etc., by C.P.R. in Smiths Falls, Ont.

16030. Feb. 24.—Dismissing application of town of Dorval, Que., re G.T.R. early morning train into Montreal.

16031. Feb. 23.—Approving Napierville Jct. Ry. bylaw authorizing D. I. Roberts, General Manager, to issue tariffs of tolls.

16032. Feb. 24.—Dismissing application of city of Lachine, Que., for order directing G.T.R. to make Convent station the chief station there.

16033. Feb. 26.—Approving location of Dominion Atlantic Ry. North Mountain branch from Lakeville to Weston, 10 miles.

16034. Feb. 26.—Authorizing James Bay and Eastern (C.N.R.) to cross public road in Demeules tp., Que.

16035. Feb. 27.—Approving C.P.R. plans for transfer track with C.N.R. at Winnipeg.

16036. Feb. 24.—Authorizing G.T.R. to use bridge 45 at mileage 87.88, District 8, over C.P.R. and Scugog river, Ont.

16037. Feb. 27.—Authorizing M.C.R. to use drawbridge over Welland canal, just east of Welland station, Ont.

16038. Feb. 29.—Ordering C.N.O.R. to file plan within 30 days of overhead bridge, with clearance of 60 ft. over Metcalfe Road, Ottawa; city to pay cost in excess of that for 54 ft. bridge.

16039. Feb. 27.—Naming express collection and delivery limits for Fernie, B.C.

16040. Feb. 27.—Authorizing C.N.O.R. to cross public road between lots 6 and 7, con. B, Murray tp.

16041. Feb. 29.—Authorizing G.T.P.R. to build spur into Edmonton Portland Cement Co.'s premises.

16042. Feb. 29.—Authorizing town of Vegreville, Alta., to build Main St. across G.N.R.; company to move freight shed and coal house by Aug. 1; town to pay cost.

16043. Feb. 26.—Extending express collection and delivery limits for Lethbridge, Alta., rescinding order 15082, Sept. 8, 1911.

16044. Feb. 15.—Ordering C.P.R. to install home and distant signals with derrails interlocked with swing portion of bridge over Trent canal at mileage 44, on Georgian Bay and Seaboard Ry.

16045. Feb. 28.—Authorizing C.N.R. to cross with its Rosburn line 18 highways in Saskatchewan.

16046. Feb. 29.—Authorizing T.H. and B.R., G.T.R. and Hamilton Radial Ry. to operate trains over interlocker near Ottawa St., Hamilton, Ont.

16047. Feb. 29.—Amending order 15152, Oct. 12, 1911, re Coxwell Ave. subway, Toronto city to maintain subway so as not to impair safety of G.T.R.

16048. Feb. 26.—Dismissing application of Chambre de Commerce, Montreal, relative to delays in delivery of goods in cars, and that railway companies pay demurrage on cars arriving in yards not delivered within 24 hours.

16049, 16050. Mar. 1.—Authorizing C.N.O.R. to build bridges over Black Sturgeon river, mileage 59.3 and 78, east of Port Arthur.

16051. Mar. 1.—Authorizing Iberville municipality, Que., to build highway across Central Vermont Ry. to connect range 6 public road with Grande Ligne road.

16052. Mar. 1.—Amending order 14979, Sept. 19, 1911, re taking of B. J. Coghlin and Co.'s land in Hochelaga ward, Montreal, by C.N.Q.R.

16053. Mar. 1.—Ordering that G.T.R. install gates to be operated from tower where it crosses Hope and Woodstock Sts., Tavistock, Ont., 20% to be paid from railway grade crossing fund, remainder by G.T.R.; 15% of maintenance and operation to be paid by Tavistock village.

16054. Mar. 1.—Dismissing application of J. M. Morin, K.C., for order to compel C.N.Q.R. to macadamize and keep in good repair highways and abutments of bridge between Bout de l'Île and Charlemagne, Que.

16055. Feb. 29.—Authorizing C.P.R. to build spur for Canadian Equipment and Supply Co., Calgary, Alta.

16056. Mar. 1.—Authorizing C.P.R. to grant special rate to McGill University mining students from Montreal to Rossland, Phoenix and Greenwood, B.C., at \$40 and return, and side trip, if desired, from Slocan Jct. to some point on Sandon branch at ¼c. a mile each way, and providing that other parties desiring to travel for same purpose to B.C. or other mining district be granted equally favorable terms.

16057. Mar. 1.—Ordering that Kingston and Pembroke Ry. jointly with C.P.R. file within 30 days, tariff establishing a rate of 10% c. per 100 on ex-lake grain, in carloads, from Kingston to Montreal, including stop-over at Almonte for milling purposes.

16058. Feb. 13.—Authorizing G.T.P.R. to cross highway in St. Francois Xavier parish, and to divert highway, mileage 119 to 119.3, Winnipeg district.

16059. Mar. 4.—Disallowing C.P.R. rate of 80c. per 100 lbs. on lumber from Port Arthur and Fort William to Vancouver, and ordering C.P.R. within 30 days to substitute a rate of 55c. per 100 lbs. on lumber, including flooring, in carloads of 40,000 lbs. minimum.

16060. Jan. 12.—Authorizing C.N. Alberta Ry. to build across G.T.P.R. in s.e. ¼ sec.

31, tp. 53, r. 10, w. 5 m., interlocking plant to be installed.

16061. Mar. 2.—Amending express classification 2 by making certain changes in newspaper rates from Winnipeg to Calgary.

16062. Mar. 4.—Approving location of C.P.R. Wilkie Northwesterly branch, from mileage 0 to 12.86, and from mileage 26.85 to 32.15, and revised location from mileage 12.86 to 26.85.

16063. Mar. 1.—Authorizing C.P.R. to add 150 ft. to siding on lot 15, con. 1, Trafalgar tp., Ont.

16064. Mar. 1.—Authorizing municipality of Bridgeburg, Ont., to carry street over G.T.R. and M.C.R. by overhead bridge.

16065. Mar. 6.—Authorizing G.T.R. to rebuild swing bridge over Lachine canal, in Montreal.

16066. Mar. 6.—Exempting Vancouver, Victoria and Eastern Ry. from use of zinc covering over caps and intersections as required by order 11446, Aug. 2, 1910, where oil burning engines alone are used.

16067. Mar. 5.—Authorizing White Pass and Yukon Route to publish special tariffs for excursion business, etc., within less than statutory notice.

16068. Mar. 5.—Authorizing James Bay and Eastern Ry. (C.N.R.) to build bridge over Iroquois River, Ashuapmouchouan tp., Que.

16069. Mar. 5.—Approving plans for lowering pipe under M.C.R. in Wainfleet tp., Ont.

16070. Mar. 5.—Authorizing G.T.P.R. and C.N.R. to operate trains over interlocking plant in n.w. ¼ sec. 18, tp. 48, r. 25, w. 2 m., Sask., without coming to a stop.

16071 to 16074. Mar. 5, 6.—Authorizing C.P.R. to build spurs for city of Winnipeg; G. P. Sherwood and Co., Montreal; Stone-clough Quarry Co., near Coldwater, Ont.; and siding with spurs for St. Mary's Portland Cement Co., and rescinding orders 15667, Dec. 15, 1911, and 15969, Feb. 13, respecting the last named.

16075. Mar. 5.—Approving portion of C.P.R. Swift Current Southeasterly branch from mileage 40 to 45, and authorizing construction across three highways.

16076. Mar. 5.—Authorizing C.P.R. to build across highways from mileage 0 to 35.25, on its Boissevain to Lauder branch, Man.

16077. Mar. 4.—Authorizing Georgian Bay and Seaboard Ry. (C.P.R.) to divert public road between cons. 7 and 8, Eldon tp., and to build across same at mileage 56.4 by overhead bridge, compensation to be paid J. McArthur for damage to property, and rescinding order 15987, in this connection.

16078. Mar. 7.—Authorizing C.N.R. to cross and divert public road on its Maryfield extension.

16079, 16080. Mar. 5.—Authorizing C.P.R. to build spurs for Sidney Brick and Tile Co., Sidney, Man., and Guelph Stove Co., Guelph, Ont.

16081. Mar. 5.—Approving location of C.N.O.R. Sudbury-Port Arthur line from mileage 2 at Current River, Port Arthur, to lot 5E, McGregor tp., at mileage 6.49.

16082. Mar. 7.—Approving revised location of G.T.P. Branch Lines Co. Regina-Boundary branch, mileage 84.22 to 91.13, Sask.

16083. Mar. 5.—Authorizing South Gower tp., Ont., to build highway across C.P.R.

16084. Mar. 7.—Approving revised location of G.T.P. Branch Lines Co. Regina-Boundary branch, mileage 17.02 to 84.22.

16085. Mar. 7.—Approving Central Ontario Ry. bylaw authorizing G. H. Shaw, Traffic Manager, C.N.R., to issue tariffs of tolls.

16086, 16087. Mar. 6.—Approving location of C.N.O.R. Montreal-Port Arthur line through Crerar, Dana, Jones and Davis tps., mileage 386 to 406 from Montreal, and through unsurveyed territory, Sudbury District, mileage 191.6 to 193.7.

16088. Mar. 7.—Authorizing C.P.R. to build spur for Chinook Coal Co., near Kipp, Alta.

16089. Mar. 8.—Ordering C.N.R. to cease from blocking lanes and streets in Brandon, Man., under penalty of \$50 a day, and that it plank the track before May 1.

16090. Mar. 8.—Amending conditions of carriage and directions to agents in Express Classification 2. This is given in full on another page.

16091. Mar. 7.—Authorizing South Ontario Pacific Ry. to operate connection of its Guelph Jct. to Hamilton line with T.H. and B.R. for construction purposes only until May 31.

16092. Mar. 7.—Authorizing Vancouver, Victoria and Eastern Ry. to open for traffic its line from Princeton to Coalmont, 13 miles.

16093. Mar. 6.—Authorizing C.P.R. to build spur for city of Winnipeg.

16094. Mar. 6.—Authorizing G.T.P. Branch Lines Co. to build spur for Yellowhead Pass Coal and Coke Co., on Alberta Coal branch.

16095. Mar. 7.—Authorizing C.N.O.R. to take portion of lot 9, Brokenfront concession, Trenton, for diversion, as approved by order 12480, Dec. 7, 1910.

16096. Mar. 6.—Authorizing Midland Ry. of

Manitoba (G.N.R.) and G.T.P.R. to operate trains over crossing in parish lot 55, St. Boniface, Man., pending completion of interlocker.

16097. Mar. 8.—Authorizing G.T.R. to build branch through Holmedale district, Brantford, Ont., and across hydraulic canal and Grand River to its Brantford and Tillsonburg branch. District 20, and to close streets and highways in the city, compensation to be paid A. J. Wilkes for land taken.

16098. Mar. 11.—Approving revised location of C.N.O.R. Montreal-Port Arthur line through Capreol tp., mileage 426.53 to 429.29 from Montreal.

16099. Mar. 9.—Substituting plan A for plan filed and approved by order 15280, Sept. 11, 1911, re C.N.R. spur on Hudson's Bay reserve, Edmonton, Alta.

16100. Mar. 9.—Authorizing Central Vermont Ry. to rebuild bridge over Little Montreal River, between St. Lambert and Chambly, Que.

16101. Mar. 14.—Dismissing application of United Fruit Co., Berwick, N.S., re rate on apples to Winnipeg, Man.

16102. Mar. 4.—Authorizing C.P.R. to build subway at Decarie Ave., Montreal, to include diversion of Prudhomme Ave. by means of Western Ave., \$10,000 to be paid from railway grade crossing fund, and one-fifth of balance by the city.

16103. Mar. 7.—Ordering G.T.R. at once to arrange that train no. 7 stop at Paris, Ont., to let off passengers from Toronto and points east thereof.

16104, 16105. Mar. 11.—Authorizing C.P.R. to use bridges at mileage 0.5, 94.3, and 81.4, Windsor subdivision, and at mileage 40.3, 42.1, and 43.8, London subdivision.

16106. Mar. 11.—Authorizing C.N.O.R. to cross public road in Trafalgar tp.

16107. Mar. 11.—Approving Bay of Quinte Ry. bylaw authorizing G. H. Shaw, G.T.R., to prepare and issue tariffs of tolls.

16108. Mar. 7.—Ordering G.T.R. before May 1, to install electric bell at crossing west of Bainsville station, Lancaster tp., Ont., 20% to be paid from railway grade crossing fund.

16109, 16110. Mar. 12.—Authorizing C.P.R. to use bridges 8.2 and 9.2, Cranbrook subdivision, and bridges 80.5 and 62.8, Sirdar subdivision.

16111. Mar. 4.—Authorizing G.T.R. to take lands in York tp., Ont., in connection with its Toronto grade separation.

16112. Mar. 5.—Relieving G.T.R. from further protection of crossing of Richmond Road, Nepean tp., Ont.

16113, 16114. Mar. 4.—Approving standard station designs for Algoma Eastern Ry., and for Algoma Central and Hudson Bay Ry.

16115. Mar. 2.—Rescinding order 13818, May 31, 1911, and authorizing city of Toronto to maintain wires across C.P.R. and G.T.R., and over G.N.W. Telegraph Co.'s wires to pumping station at foot of John St.

16116. Mar. 13.—Disallowing Boston and Maine Rd. tariff 1300, re rates on granite from Beebe Jct., Que., to Montreal, Ottawa, Toronto and other points.

16117. Mar. 14.—Substituting plan A for plans filed for transfer tracks between C.P.R. and C.N.R. at Carberry, Man., approved by order 16035, Feb. 27.

16118, 16119. Mar. 13.—Relieving C.P.R. from erecting fences along right of way, Kimberly and Crownsnest subdivision.

16120. Mar. 13.—Approving revised location of C.P.R. Moose Jaw Southwesterly branch from mileage 0 to 35.59, and location from mileage 35.59 to 37.85.

16121. Mar. 14.—Amending order 16065, Mar. 6, re G.T.R. swing bridge over Lachine canal, Montreal.

16123. Mar. 14.—Authorizing C.P.R. to build three spurs for St. Mary's Portland Cement Co., Blanchard tp., Ont.

16124, 16125. Mar. 14.—Approving location of C.N.O.R. station grounds at Fallowfield and Merrivale, Nepean tp.

16126, 16127. Mar. 14.—Approving location of C.P.R. station at Drake, Sask., and plan of station at Dysart, Ont.

16128. Mar. 15.—Relieving C.P.R. from erecting fences on its Cranbrook subdivision, B.C.

16129. Mar. 15.—Authorizing G.T.R. to build temporary bridge across Beauharnois canal, at milepost 48.98, District 13, Ottawa Division.

16130. Mar. 14.—Relieving G.T.R. from further protection of fourth crossing east of London city limits, Ont.

16131. Mar. 13.—Ordering G.N.R. to erect fences from milepost 63 to 77, by June 1, under penalty of \$10 a day.

16132. Mar. 15.—Authorizing Pere Marquette Rd. to issue transportation to H. G. Shufelt, Ice Car Inspector, Dominion Department of Agriculture.

16133. Mar. 15.—Authorizing British Columbia Electric Ry. to cross Esquimalt and Nanaimo Ry., near Russell station, B.C., half interlocking plant to be installed.

16134. Mar. 15.—Approving C.P.R. plan of

interlocking and derailing apparatus at Baticscan River bridge, Quebec subdivision.

16135. Mar. 14.—Approving changes and alterations in C.P.R. station at Dufferin Bridge, Ottawa, Ont.

16136. Mar. 15.—Relieving C.P.R. from erecting fences on its Sirdar subdivision, B.C.

16137. Mar. 15.—Authorizing Georgian Bay and Seaboard Ry. (C.P.R.) to cross two highways at mileage 82.89 and 82.02.

16138. Mar. 18.—Authorizing C.P.R. to rebuild bridge 66.6, Souris subdivision.

16139, 16140. Mar. 18.—Authorizing C.P.R. to build spurs across Montcalm St., St. Boniface, Man., and for city of Medicine Hat, Alta.

16141. Mar. 18.—Authorizing C.P.R. to file new location plan for its Molsons' St. Boniface branch, showing width of land coinciding with arbitration notice filed by it.

16142. Mar. 16.—Approving revised location of C.N.R. Swift Current Branch, mileage 78.29 to 124.96, Sask.

16143. Mar. 16.—Relieving G.T.R. from further protection of second highway north of Huntsville, Ont.

16144. Mar. 19.—Extending to April 1, time for installation of interlocker at Nipissing Jct., Ont., by G.T.R. crossing C.P.R. and connecting with T. and N.O.R.

16145. Mar. 20.—Ordering that York tp., Ont., shall build and maintain bridge over G.T.R. belt line east of Yonge St., Toronto.

16146. Mar. 19.—Authorizing C.P.R. to build bridge 85.2, Portal subdivision, Sask.

16147. Mar. 18.—Naming express delivery and collection limits for Ottawa, Ont.

16148. Mar. 20.—Substituting plan for plan filed showing diversion C.N.O.R. approved by order 13952, June 14, 1911.

16149, 16150. Mar. 20.—Authorizing G.T.R. to build sidings for J. Goodwillie and Sons, Welland, Ont., and J. T. Watson, York tp., Ont.

16151. Mar. 20.—Authorizing town of Claresholm, Alta., to extend Fourth Ave. across Calgary and Edmonton Ry.

The C.P.R.'s New Line from Glen Tay to Agincourt, Ont.

We are officially advised that the C.P.R. has let a contract to Deeks and Hinds, Toronto, for the construction of a line from Glen Tay to Agincourt, Ont., 184 miles. The contract includes grading, concrete work, and tracklaying, but not buildings and steel structures. The work will be gone on with at once, and the contract calls for its completion within two years.

The Dominion Parliament in 1904 incorporated the Campbellford, Lake Ontario and Western Ry. Co. to build a railway from the C.P.R. Montreal-Toronto line between Blairton and Ivanhoe, southwesterly to Cobourg, and thence westerly rejoining the Montreal-Toronto line between Locust Hill and Leaside Jct. The object in view was the provision of a line giving a more close connection with towns on the Lake Ontario shore than the G.T.R. gives, and to provide a competing line. The provisional directors included:—J. B. Ferris, Campbellford; H. J. Walker, Warkworth; G. F. Ferris, Cobourg; H. Barrett, Port Hope; J. J. Mason, Bowmanville; F. L. Fowke, Oshawa, and E. R. Blow, Whitby, all of which places it was proposed to reach by the new line. Public meetings were held throughout the district interested, preliminary surveys were made, and the C.P.R. was finally induced to take up the project. Various routes were gone over with a view of securing a suitable location, and the company's powers were extended from time to time, and in 1911 Parliament authorized the company to build the projected line from Glen Tay to near Agincourt. This decision was protested against by several of the towns which the original line would have served, with the result that while the new powers were given, the company retains the right to build through Campbellford, etc.

The surveys on the new route were completed during 1911, and the final plans were filed, after approval, Jan. 10, 1912. The new line starts from the present Montreal-Toronto line, at Glen-

tay, 16 miles westerly from Smiths Falls, at the point to which a double line has been laid from Montreal. The route located makes straight for Belleville, 75 miles. The Kingston and Pembroke Ry. is crossed at Parham, and it is proposed, according to press reports, to build a branch from near Belleville, to the cement works at Point Ann. From Belleville the line keeps along the shore line south of the Canadian Northern Ontario Ry.'s Toronto-Ottawa line, passes through Brighton, Colborne and Grafton, and joins up with the C., L.O. and W. Ry. location, which was previously approved by the Government. This shows a route along the shore line passing through or near Cobourg, Port Hope, Newtonville, Newcastle, Bowmanville, Oshawa, and thence keeping midway between the G.T.R. and the Canadian Northern Ontario Ry. to a junction with the present line at Agincourt, eight miles east of Leaside Jct. The proposed line is to be a single track one, constructed to main line standard, and having a ruling gradient of 0.4%.

Sir Thos. G. Shaughnessy is reported as having stated in Toronto, Mar. 8, that the question of whether a carferry service across Lake Ontario would be operated in connection with the line, had not been considered.

New Brunswick Coal and Railway Co.

Following are extracts from the Commissioners' report for the year ended Oct. 31, 1911, which was presented to the New Brunswick Legislature recently:—

"We made reference in last year's report to the unsatisfactory progress being made by this company. We regret to say that there has been no improvement. For the whole year the total shipments have been only 2,605 tons, and for the past three months not a car has been shipped. To all appearances the coal mine has been abandoned. The Government has a security on the railway and fastenings as well as a deed of the right of way, so that no other creditors can legally claim them.

"The total cost of the road to Oct. 31, 1910, was \$2,003,386.48; the amount expended for rolling stock, construction, bridges, ballasting, etc., during 1911 was \$32,648.64; total, \$2,036,035.12. The gross earnings for 1911 were \$58,776.96, against \$60,009.82, a decrease of 1,232.86. There was a falling off in freight traffic of \$1,597, and in passenger traffic of \$2,236; mails and express receipts declining by \$85. These decreases are largely attributed to the interruption of traffic due to the fall of the steel bridge over the Washademoak River at Cody's, caused by the burning of one of the wooden piers. The operating expenses for the year were \$78,652.96, against \$76,435.99 for 1910. The increase of \$8,146 in the cost of maintenance of way over the previous year was largely due to the following items—rebuilding engine house at Minto, destroyed by fire, \$700 over \$2,000 received from insurance, replacing bridge at Cody's \$3,127, increase in trackmen's wages \$1,781.55, and against this there was a decrease in transportation expenses of \$2,073. The gross earnings were \$58,776.96, operating expenses \$78,652.98, deficit \$19,876.02. The New Brunswick Premier, in submitting the report, stated that 6,286 ft. of sidings were provided during the year, and 28,068 new ties placed in the track, in addition to an expenditure on ballasting and on the Salmon Harbor branch.

The Central Vermont Ry. has equipped its New London Division with a telephone train dispatching system, this being the second division so equipped. The work was carried out under M. Magiff, Superintendent of Telegraphs, C.V.R., St. Albans, Vt.

Canadian Pacific Railway Construction, Betterments, Etc.

Access to Boston, Mass.—An order was reported in the Massachusetts House of Representatives, Mar. 16, inviting the C.P.R. to extend its lines through the state to Boston.

St. John, N.B.—The New Brunswick Legislature has under consideration an act confirming an agreement between the Dominion Government, the city of St. John and the C.P.R. in connection with the carrying out of improvements in the St. John harbor. In order to enable these to be effected the company surrenders to the city the 1,600 ft. strip conveyed to it in 1893, and other adjoining lands, and the city conveys these to the Dominion Government. In consideration of the transfer of these lands by the company the city agrees to grant the company certain other lands for 990 years at a rental of \$1 a year. The company agrees to fill in the lands, and to utilize them as railway yards, or otherwise as may be required in connection with the extension of its facilities. The company also agrees, not later than May 1, 1913, to alter the location of its tracks on Germain St. on the westerly side of the harbor so that no tracks shall be located on the most westerly 20 ft. between Ludlow and Victoria Streets, and that it will provide a 20 ft. strip for use as a highway between Victoria and Union Streets. The city agrees that the taxes to be levied on the lands and improvements shall not exceed \$100 a year, except in regard to any portion which may not be used as provided for by chap. 46 of 33 Vict. The Dominion Government agrees to build wharves and docks on the lands granted to it.

Northern Colonization Ry.—The Dominion Parliament has authorized the company to continue the "construction of its line from Labelle, Que., westerly to Rapide de L'Original (now called Mont Laurier), and on to Lake Temiscamingue in Pontiac county," and has extended the time for construction. The words within quotation marks are taken from the act. The company's line was extended some years ago to Nominique, and it was proposed to extend it to Maniwaki, the terminus of the Ottawa, Northern and Western Ry. line along the Gatineau River Valley. Maniwaki is in Pontiac county, and there would be a straight route westerly to Ville Marie. The building of such a line, which is authorized by the Dominion Parliament this session, would provide a shorter and more direct line from both Montreal and Ottawa to Ville Marie, than the one also advocated via Mattawa and Kipawa.

Ottawa, Northern and Western Ry.—The Dominion Parliament has extended the time for the construction of the lines and branches authorized by chap. 84 of the statutes of 1899, and chap. 72 of the statutes of 1900.

Kipawa to Ville Marie, Que.—A deputation representing Pontiac county waited on the Quebec Government, Mar. 6, to urge the extension of the C.P.R. line now terminating at Kipawa to Ville Marie. The Premier stated that he had been advised by Sir Thos. G. Shaughnessy that the C.P.R. proposes to start the construction of a line to the north of Lake Timiskaming next spring. The Government proposes to set aside 4,000 acres of land a mile in aid of the railway. The construction of a line to the point named is necessary, and if the C.P.R. does not build it the Government will.

The C.P.R. has held a charter for the building of a line from Kipawa to Ville Marie for a number of years, but nothing has been done, and press reports state that if the C.P.R. reaches the lake it will be by means of the Northern Colonization Ry.

South Ontario Pacific Ry.—We are officially advised that track has been laid from Guelph Jct., Ont., for 7.56 miles. About seven miles of grading beyond the end of track is practically ready for the steel, and work is in progress to mileage 16.28, which is the point of connection with the Toronto, Hamilton and Buffalo Ry. at Hamilton. The principal work to be done, outside the track laying on the seven miles referred to, is trimming and some ditching. It is expected to have the line opened for traffic by June 1.

The Dominion Parliament has extended the time for the building of the lines authorized.

The Board of Railway Commissioners has authorized the operation of trains for construction purposes only, over the connection with the Toronto, Hamilton and Buffalo Ry. at Hamilton.

Ingersoll, Ont.—Press reports state that a \$30,000 bridge is to be erected, and other improvements carried out at Ingersoll, Ont.

Entrance to Stratford.—The railway committee of the Stratford, Ont., city council, was advised, Feb. 29, to prepare the agreement and bylaw granting a right of way through the city on the south side of the river.

Guelph and Goderich Ry.—C.P.R. divisional officers visited Goderich, Ont., Feb. 28, and as a result it is said that plans are being prepared for the laying of new sidings, and the building of a 500 ft. freight shed on the pier.

London Improvements.—Plans were submitted to the London, Ont., board of works, Mar. 8, for improvements at Pall Mall. This is a local improvement, and is only indirectly connected with the larger proposals which have been under discussion for a considerable time.

Press reports state that in connection with the general improvement plans a large hotel will be built in the city, but we are officially advised that the first intimation the company had of the matter was the reports in the daily papers.

Collingwood Southern Ry.—At a meeting of the Collingwood, Ont., town council held recently to consider the proposition for the building of a line from Baxter into Collingwood by the C.P.R., it was agreed to grant certain properties to the company, a free right of way 50 ft. wide across any corporation property; to close up certain streets, and, subject to the rights of the G.T.R., to lay a single track on Walnut St.

The company's surveying staff completed their work Mar. 8, and local reports state that right of way agents have commenced acquiring the land required between Baxter and the Collingwood boundary.

Thunder Bay District Division.—The Board of Railway Commissioners has authorized the opening for traffic of the diversion of line mileage 92.24 to 93.42 and 93.92 to 95.12 in Thunder Bay district, Ont., and has rescinded a previous order dated Feb. 12.

Fort William Elevators.—Superintendent Armstrong is reported as stating that elevator D at Fort William, Ont., is to be enlarged by the addition of 2,000,000 bush. storage capacity, and that a large "hospital" elevator will be built.

Transfer Track at Winnipeg.—The Board of Railway Commissioners has approved plans for the building by the C.P.R. of a transfer track with the Canadian Northern Ry. at Winnipeg.

Red River Bridge.—Press reports state that a contract has been let to the Foundations Co., Montreal, for putting in the substructure of a new bridge across the Red River at Winnipeg, so as to enable two additional lines to be carried.

Manitoba Division Buildings.—Tenders are under consideration for the erection of locomotive house additions at Bran-

don and Arcola, for a new station building at Bredenbury, and for extensions to the freight office at Winnipeg.

Gimli Branch Extension.—It is reported that owing to representations made by the Manitoba Government, it has been decided to proceed at an early date with the extension of the Gimli branch to Riverton, on the Icelandic River, Man.

Brandon Yards.—J. A. McGregor, Superintendent, is reported as having stated that the improvements to be effected in Brandon, Man., include the doubling of the capacity of the present terminals, so as to enable the yard to be operated as a double one, and the re-arrangement of tracks so that trains can enter and leave without interference. Six stalls are to be added to the locomotive house, and better provision is to be made for the repairing of cars.

Virden-McAuley Branch.—The Board of Railway Commissioners has approved location plans for the extension of this branch line from mileage 14 to 36.27.

Saskatoon.—The Saskatchewan Legislature has confirmed an agreement made Jan. 27, 1911, between the company and the city of Saskatoon. The city agrees to close up certain streets and hand over the area of the same to the C.P.R., which company agrees to pay \$3,100 in cash and release the city from the payment of the balance owing on account of strengthening the bridge over the South Saskatchewan River. Provision is made for the opening up of certain new streets at some future time and their being carried across the railway.

Regina-Pasqua Second Track.—We are officially advised that a contract has been let to W. A. Dutton, Winnipeg, for the grading for a second track from Regina to Pasqua, Sask., 34.9 miles, and from Caron to Chaplin, Sask., 37.8 miles.

Swift Current Northwesterly.—Track has been laid to Cabri, Sask., on the branch northwesterly from Swift Current, Sask., and grading has been carried for some miles beyond Cabri. We are officially advised that a contract has been let to W. A. Dutton, Winnipeg, for the grading of an additional 80 miles.

Saskatchewan Division Buildings.—Tenders are under consideration for the building of a station at Weyburn, Sask.

Press reports state that the contract for an express building and two freight sheds at Saskatoon has been let to J. Simmons, Winnipeg, and that for a six-stall locomotive house and an express building at Swift Current to J. C. McDiarmid and Co., Winnipeg.

Weyburn-Lethbridge Branch.—The present end of track is at Viceroy, Sask., and we are officially advised that a contract has been let to Foley, Welch and Stewart for the construction of an extension for 100 miles westerly.

Construction is also to be started from the western end, and a contract has been let to J. Timothy, Edmonton, Alta., for building 25 miles from Stirling. A station on the Alberta Ry. and Irrigation Co.'s line just south of Lethbridge. The contractor's grading outfit reached Stirling Mar. 1, and work is reported to have been started.

Swift Current Southeasterly.—The Board of Railway Commissioners has authorized the opening for traffic of the branch line from Swift Current, Sask., southeasterly from mileage 40 to 45.

Wilkie Northwesterly.—The Board of Railway Commissioners has approved of location plans of the branch from Wilkie, Sask., northwesterly, sometimes referred to as the Manitoba Lake branch, from mileage 0 to 12.86, revised location plans from mileage 12.86 to 26.85, and location plans from mileage 26.85 to 32.15.

Plans have been filed in the Lands Titles office, Regina, Sask., and in the local office at Battleford, Sask., showing the route of the line starting from

Wilkie, northwesterly for 41 miles. Press reports state that surveys are being extended in the direction of Fort McMurray on the Athabasca River.

Kerrobot Northeasterly.—The Board of Railway Commissioners has approved of location plans for the branch line from Kerrobot, Sask., northeasterly, from mileage 0 to 20.2.

Suffield Southwesterly.—A contract has been let to J. G. Hargrave and Co., Ltd., Winnipeg, for the grading of a branch from Suffield, Sask., southwesterly for 30 miles into the southwest Alberta irrigated land section. This work will necessitate the handling of approximately 700,000 cubic yards of earth. The material will be free to handle; it is all prairie fill and will require no heavy machinery. A portion of the grade runs along about 3 ft. above the level and makes good shell work; the balance is good machine work. Work will be started as soon as weather conditions permit. Some part of the work, we are advised, will be sublet.

Bassano Northerly.—We are advised that on the line northerly from Bassano, Alta., the contractors, J. G. Hargrave and Co., Ltd., have some grading work to complete, and that as soon as this is done the entire construction crew and outfit will be moved to Suffield to start

building of the C.P.R. hotel at Calgary, Alta. The contract is for the superstructure, the excavation and the foundations having been completed when the extension to the station was built.

Alberta Central Ry.—We are officially advised that it is intended to complete building the section of this projected railway from Red Deer to Rocky Mountain House, Alta., this year. It has not been decided when construction will be proceeded with.

Press reports from Red Deer, Mar. 10, state that the building of the superstructure of the bridge across the Saskatchewan River at Rocky Mountain House, Alta., will be started as soon as the material can be delivered. Several carloads of cement are being transferred from Red Deer to the site. The grading is nearly completed, and it is expected that track will be laid to Rocky Mountain House this season. The C.P.R. yards at Red Deer are being enlarged in view of the increased traffic which the opening of the new line will bring in.

Electrification of Lines.—Local press reports state that tenders have been asked for the electrification of the line from Castlegar Jet. to Rossland, B.C., and that A. H. Armstrong of the General Electric Co., Schenectady, N.Y., and

Recent Dominion Legislation.

The following acts affecting transportation interests were assented to at Ottawa, Mar. 12:—

ALBERTA ELECTRIC RY.—Changing name to Alberta Interurban Ry., and authorizing organization upon certain conditions.

ALBERTA RY. AND IRRIGATION Co.—Defining powers as to issue of securities.

ALGOMA EASTERN RY.—Extending time for construction of certain lines.

BARCELONA TRACTION, LIGHT AND POWER Co.—Incorporation.

BARCELONA TRACTION, LIGHT AND POWER Co.—Respecting company's powers.

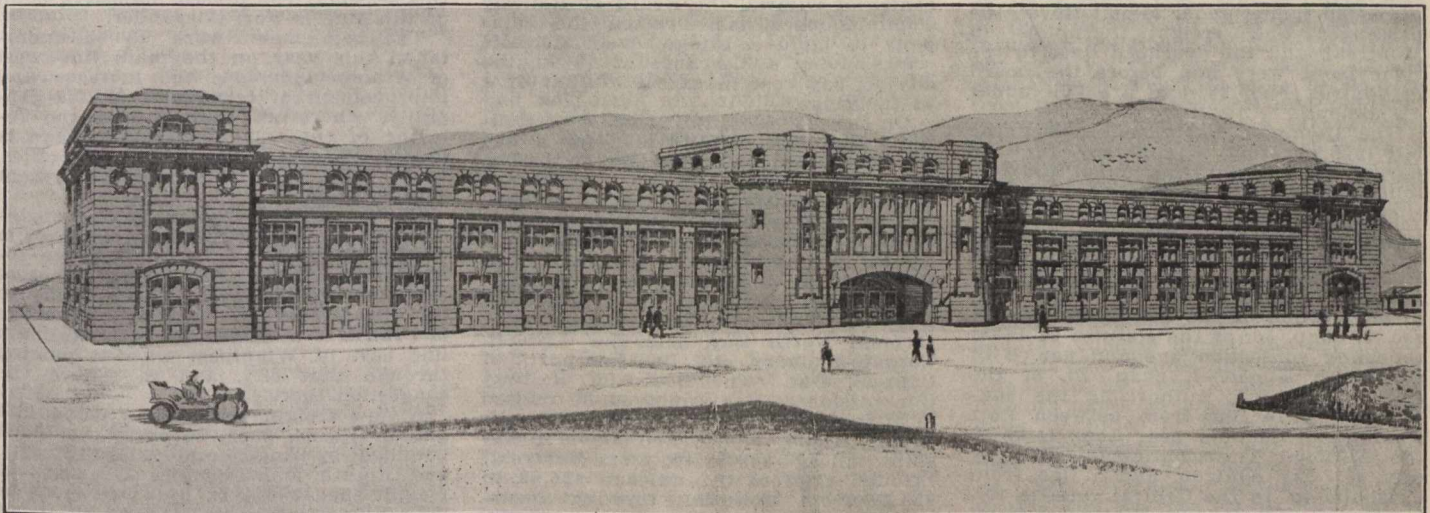
CALGARY AND FERNIE RY.—Extending time for construction.

CANADIAN NORTHERN ONTARIO RY.—Extending time for construction, and authorizing building of additional lines.

CANADIAN NORTHERN QUEBEC RY.—Extending time for construction and authorizing building of additional lines.

CAP DE LA MADELEINE RY.—Declaring line to be for the general advantage of Canada, and authorizing amalgamation with C.P.R.

COLLINGWOOD SHIPBUILDING Co.—Authorizing payment of subsidy for building drydock at Collingwood, Ont.



Canadian Pacific Railway's Station at Calgary, Alta.

work on the 30-mile branch southwesterly from that point.

Calgary Shops.—In the very full description of the new shops which was published in our Feb. issue it was stated that the contract had been let to Westinghouse, Church, Kerr and Co. We have since been advised that they have been retained by the C.P.R. both as engineers and constructors. The work will also include the design and installation of the service equipment in the various buildings, including travelling and jib cranes, wiring systems for shop and yard lighting and power, air and steam piping systems for power and heating purposes, water supply for drinking and fire protection, plumbing and toilet facilities, drainage system, transfer tables and pits, coal and ash-handling equipment, necessary switchboard and transformer sub-stations. J. G. Sullivan, Chief Engineer, Western Lines, is in charge of the work.

Maharg to Calgary Second Track.—We are officially advised that it is probable that the second track to be built from Maharg, the site of the new shops, 4.5 miles east of Calgary station, to about one mile west of Calgary station, will be done by the company's own forces.

Calgary Hotel.—Press reports state that a contract has been let to the P. Lyall and Sons Construction Co. for the

H. D. Bayne, of the Canadian General Electric Co., Toronto, visited Rossland, Mar. 4, in connection with tendering on the work.

Hammond to Vancouver Second Track.—We are officially advised that a contract for this work has been let to Grant, Smith and Co., general contractors, Seattle, Wash.

Coquitlam Yards.—In connection with the laying out of the new yards at Coquitlam, B.C., it is reported that construction will be started at an early date on a two-mile spur line to serve industrial sites along the Pitt River. The contractors for clearing the yards site—M. P. Cotton Co.—expect to have the work completed by April 30. Grading is in progress for laying tracks on to the site for the purpose of facilitating building operations. The first building put up will be a 20-stall roundhouse, the site for which has been selected, and tests for foundation purposes are being made.

Tunnel in Vancouver.—J. Osborne, General Superintendent, had a conference with the Vancouver city council, Feb. 27, relative to the construction of a tunnel to connect the local yards on False Creek, with the terminals on the inlet. The tunnel would be 4,000 ft. long and would allow of the elimination of a number of level crossings. (Mar., p. 127.)

DOMINION ATLANTIC RY.—Extending time for building North Mountain branch.

ERIE, LONDON AND TILLSONBURG RY.—Extending time for construction.

HAMILTON, WATERLOO AND GUELPH RY.—Increasing capital stock and extending time for construction.

HIGH RIVER, SASKATCHEWAN AND HUDSON Bay RY.—Incorporation.

INTERPROVINCIAL AND JAMES BAY RY.—Extending time for construction.

KOOTENAY AND ALBERTA RY.—Extending time for construction.

MONTREAL HARBOR COMMISSIONERS.—Authorizing further advances for harbor improvements.

NATIONAL TRANSCONTINENTAL RAILWAY.—Extending time for building Western division, and authorizing one commissioner instead of four.

NORTHERN COLONIZATION RY.—Extending time for construction.

NORTHERN TERRITORIAL RY.—Incorporation.

OTTAWA, NORTHERN AND WESTERN RY.—Extending time for construction.

PACIFIC AND ATLANTIC RY.—Extending time for construction.

SOUTH ONTARIO PACIFIC RY.—Extending time for construction.

VANCOUVER ISLAND AND EASTERN RY.—Extending time for construction.

WEST ONTARIO PACIFIC RY.—Extending time for construction.

Canadian Northern Ry. Construction Betterments Etc.

James Bay and Eastern Ry.—The Board of Railway Commissioners has approved locations plans for the line through Demeules tp., Que.

Canadian Northern Quebec Ry.—The Dominion Parliament has extended the time for the construction of the lines authorized by paragraphs c, e and f, sec. 3, chap. 73, of the statutes of 1907; the lines of the Quebec, New Brunswick and Nova Scotia Ry. authorized by sec. 7, chap. 178 of the statutes of 1903; the lines of the Great Northern Ry. authorized by sec. 1, chap. 104 of the statutes of 1906, and the lines of the Chateauguay and Northern Ry., authorized by sec. 2, chap. 75 of the Quebec statutes of 1899. All these lines are at present partially constructed. The company is also authorized to enter into agreements with the Canadian Northern Montreal Tunnel and Terminal Co.

Engineers are reported to be making surveys for a line from St. Eustache to St. Jerome, Que., one of the lines for the construction of which an extension of time has been obtained.

Canadian Northern Montreal Tunnel and Terminal Co.—The plans for the projected tunnel under Mount Royal, the passenger and freight terminals in Montreal, and the overhead lines to the river front were laid before the board of control, Feb. 26, and are still under discussion.

The Dominion Parliament passed the bill incorporating a company for the purpose of building the tunnel and terminals, Mar. 15.

Canadian Northern Ontario Ry.—The Dominion Parliament has passed an act extending the time for the construction of the lines authorized by sec. 3, chap. 110, of the statutes of 1905; the uncompleted portion of the line authorized by sec. 3, chap. 50, of the statutes of 1895; repealing subsection one and par. b of subsection 2, sec. 7, chap. 72, of the statutes of 1907; authorizing the construction of a line from between Port Arthur and Sudbury near Long Lake to the National Transcontinental Railway east of Lake Nipigon, and a line from Chisholm tp. to the Central Ontario Ry. between Bancroft and Whitney; fixing the amount of securities to be issued under sec. 3, chap. 57, of the statutes of 1911 at \$40,000 a mile to be issued in proportion to the length of line constructed or under contract, and authorizing entering into agreements with the Canadian Northern Montreal Tunnel and Terminal Co. and the Toronto Eastern Ry.

The line under construction from Toronto to Ottawa, which has been in operation for some time as far as Trenton, was reported completed as far as Desoronto, Feb. 29. At this point connection is made with the Bay of Quinte Ry. and trains will run over it as far as Sydenham, whence the line is under contract to Ottawa. Some betterment, including a couple of cut offs, have been done on the B. of Q. Ry. in order to provide for heavier traffic. A freight service is being operated from Toronto to Sydenham, but it is not expected that a passenger service will be put on until the summer.

The plans for the extension of the line from Toronto via Hamilton to Buffalo, and westerly from somewhere near Hamilton to Windsor or Sarnia, or both, under the Toronto, Niagara and Western Ry. charter, have formed the subject of considerable discussion for some time past in Hamilton, the Niagara peninsula, Brantford, London, St. Thomas, and other western Ontario towns. The question of the entrance into Hamilton is the most important of the points involved, and this has

been discussed with the city officials and the city council, but no definite approval of the plans has yet been given by the city council. Sir Wm. Mackenzie is reported as stating that no line had been located west of Brantford, and that what would be done beyond that point would be considered in the future, but, he added, "it is getting to be the very near future now."

Montreal-Ottawa-Port Arthur Line.—The Minister of Railways, replying to questions in the House of Commons, Mar. 4, said the Dominion Government has not guaranteed the bonds of the C.N.R. or of any of the lines connected with it, which are a charge upon the terminals at Montreal or Winnipeg. The moneys realized from the sale of the securities of the Canadian Northern Ontario Co.'s railway, guaranteed by the Dominion under chap. 6 of the statutes of 1911, are being applied in aid of the construction of a line from Montreal to Port Arthur, as provided by the act and the deed of trust made thereunder. Such sums only are paid out of these moneys as the Chief Engineer of the Department of Railways certifies as justified having regard to the proportion of work done as compared with the work of construction of the whole line.

In connection with the plans for the entrance of the company's lines into the centre of Ottawa, the Board of Railway Commissioners has directed the company to build a bridge over Metcalfe road, having a clearance of 60 ft., the city to pay cost in excess of that of a 54 ft. bridge.

On Oct. 13, 1908, the Minister of Railways approved a route plan for a line from Ottawa to Key Harbor, Ont. The route plans of the Ottawa-Port Arthur section of the Montreal-Port Arthur line, which are now being approved in short sections by the Minister, follow the route of the line approved in 1908 as far as Chisholm tp., and then proceed northerly crossing the C.P.R. transcontinental line at Nipissing Jct., and passing through North Bay, join the C.N.O.R. Toronto-Sudbury, etc., line just north of Capreol, Ont. The Board of Railway Commissioners has approved of revised location plans for the line through Crerar, Dana, James and Davis townships, mileage 386 to 406 from Montreal; through Capreol tp., mileage 426.53 to 429.29 from Montreal; through unsurveyed territory in Sudbury district, mileage 191.6 to 193.7, from Sudbury Jct.; and from Current River, Port Arthur, mileage 2 to mileage 6.49. W. H. Grant, Manager of Construction, recently completed a trip of inspection over the eastern half of the line, and is reported as having stated in an interview that work had been gone on with during the winter at different points and that by July it was expected that 10,000 men would be at work. Unless it was impossible to get a sufficient number of men on, the line would be completed by the end of 1913, by which time it was also expected that the extension from Edmonton to the Pacific coast at Port Mann and Vancouver would be completed.

Duluth, Winnipeg and Pacific Ry.—We are officially advised that the company does not contemplate building coal docks and grain elevators at Duluth, Minn., in the immediate future, as stated in recent press reports.

Canadian Northern Ry.—Preparations are being made in Port Arthur, Ont., for starting work on a new steel dock, to be built alongside the present one, at a cost of \$30,000. It is stated that the dock is to be completed in three months. The contract for its erection has been let to the Barnett and McQueen Co. It is also reported that the Barnett and McQueen Co. will build during the present season a large addition to the company's grain elevators at Port Arthur.

The betterments to be done on the line between Port Arthur and Winnipeg

include the completion of the revision work at Rainy Lake, which has been in progress for some time, and the replacing of a number of Howe truss spans with steel structures on concrete piers and abutments. The Rainy Lake revision work was fully described in our issue of July, 1911, page 621. A contract has been let to S. Brown for the substructure of a double track bridge across the Seine River near Winnipeg, and work has already been started.

A new freight yard will be laid out on the east side of St. Boniface, about 2.5 miles from Winnipeg. The first section built will have a capacity of 700 cars, but the area of land secured by the company provides room for the laying of 100 miles of track.

Plans have been filed with the Board of Railway Commissioners for the building of a new bridge at the foot of Bell Ave., Winnipeg, for freight tracks.

The construction programme for the year includes the completion of the line started last year from near Winnipeg to Winnipeg Lake. This is an extension of the Bird's Hill branch, which was started in July last year under the Winnipeg and Northern Ry. charter, the mileage for which T. Edwards had the contract, is to be finished this year, and a further mileage to Lake Winnipeg is to be put under contract and finished this season. The present objective point of this line is Fort Alexander.

The betterment work to be undertaken this year on the main line west of Winnipeg includes the increase and improvement of terminal facilities generally, wherever required, and the relaying of the track between Portage la Prairie and Grand View, Man., 151 miles, with 80 lbs. rails instead of the present 60 lbs. ones.

We are officially advised that engineers are locating a line from Portage la Prairie towards Morris, and thence towards Stuartburn, Man. The object of this line would be to enable traffic to be carried from the lines west of Portage la Prairie to a connection with the main line east of Winnipeg, without passing through that city, and so relieve the congestion there.

A new freight terminal is being laid out in Regina, Sask., covering the block bounded by Angus and Albert Streets, and Eighth and Dewdney Streets. A freight shed 255½ ft. by 41 ft. is to be built along Albert St. About 30 ft. of the length of the shed will be used as customs offices and bonded rooms. At the Dewdney St. end of the shed will be a 2-storey and basement concrete and brick office building 41 ft square. There will be four tracks in front of the shed. On the Angus St. side of the yard will be a loading platform and three sets of tracks with a 10-ton transfer crane having a 32-ft. span.

The Saskatchewan Legislature extended, Dec. 31, the time within which certain branch lines, being built under sec. 6, chap. 3, of the statutes of 1908-9 may be completed. Another act has been passed declaring that a line from Craven, on the Craven branch of the Qu'Appelle, Long Lake and Saskatchewan Ry., northerly, west of Last Mountain Lake to the C.N.R. between Adam's Ferry and Brancepeth, about 40 miles, mentioned in the deed of trust dated Mar. 18, 1909, shall be replaced by a line to be built from Craven northeasterly and northerly for 40 miles.

The Saskatchewan Legislature incorporated the Canadian Northern Saskatchewan Ry. Co., of which F. H. Phippen, K.C., A. J. Reid, K.C., G. G. Ruel, R. H. M. Temple, and S. P. Biggs, Toronto, are named provisional directors, to build the lines mentioned in our last issue. The company may issue bonds for \$30,000 a mile in respect of lines south of the North Saskatchewan River, and for \$40,000 a mile in respect of lines north of the same river. Another act has been passed, under which the pro-

vincial Government aids in the building of these lines by guaranteeing the principal and interest of the company's bonds for \$13,000 a mile. The money raised is to be held in trust by the Government and paid out as the work on the several lines proceed upon the certificate on the order of the provincial Minister of Railways. Construction is to be gone on with this year and all the lines are to be completed by Dec. 31, 1914.

We are officially advised that the construction programme for this year covers a large mileage in Saskatchewan and Alberta. Starting from Radville, on the extension from Maryfield, a line to Moose Jaw, Sask., 86 miles, was put under contract last year. This will be finished this year. About five miles of grading has to be completed at the Moose Jaw end. The Cowan Construction Co. has the contract. An agreement has been reached with the Moose Jaw city council as to the entrance into the city, and at a recent meeting at which the agreement was finally settled it was stated that the extension would be in operation into the city by Aug. 1, and that the station and other buildings would be completed by July 1.

Beyond Radville the Maryfield extension is being operated to Bengough, and we are advised that it will probably be extended further west in the direction of Lethbridge this year. No contract has yet been let.

The line from Saskatoon, Sask., through the Goose Lake country, which is now operated to Alsask, will be continued westerly.

The Thunderhill branch, which is in operation from Swan River, Man., to Preeceville, Sask., will be extended for 30 miles. No contract has yet been let.

The line from Prince Albert to Battleford, Sask., is being operated to Blaine Lake, 64 miles, and is to be completed this year. Some work has to be finished on the mileage put under contract last year, but no contract has been let for this year's work.

The branch from Vegreville to Calgary, which is now being operated to Drumheller, will be completed by the Northern Construction Co.

It is proposed to start construction at Manson, Alta., 11 miles north of Drumheller, on a line 130 miles easterly to meet the extension of the line from Saskatoon, being built westerly through the Goose Lake country. The contract for grading this 130 miles has not yet been let.

A line is projected from Calgary to Macleod, Alta., on which it is possible some grading will be done this year, but no contract has been let. A contract was let in 1911 to the Cowan Construction Co. for grading about 35 miles southwesterly direction from Macleod, and this is to be finished up this year.

From Warden, Alta., about four miles south of Stettler, on the Vegreville-Calgary line, a line is under construction to the Brazeau River coal fields, 170 miles. The Northern Construction Co. will complete the grading started last year, and complete the whole line this season.

On the line to Athabasca Landing, Alta., about 10 miles of track have yet to be laid. This will be done as early as possible. The Northern Construction Co. has the contract.

On the main transcontinental line track has been laid to the Pembina River, Alta., and here a large bridge is being built, which it is expected to have completed in May. As soon as the bridge is finished tracklaying will be resumed and carried on to the Macleod River, 63 miles. Another large bridge has to be erected at this point, which it is expected will be completed by Sept., when track laying will be carried to the end of the grading at present completed, 166 miles from St. Albert. It is expected that grading will have been com-

pleted to the Yellowhead Pass, about 250 miles from St. Albert, Alta., by the end of the year, and that track will also be laid. The contract for this section of the line is held by the Cowan Construction Co. and the Northern Construction Co.

The revised route map of the C.N.R.'s projected line from Edmonton to Red Deer, Alta., which has recently been approved by the Minister of Railways, starts from Strathcona, and keeping west of the C.P.R. Calgary and Edmonton Ry., finally crosses it at Lacombe, and joins up with the surveys of the Canadian Northern Western Ry. near Red Deer river. Crossing the river a few miles south the line passes through Red Deer, and keeping between the C.P.R. C. and E. Ry. and the G.T. Pacific Ry., enters Calgary from the southeast on the same right of way as a line now under construction from the east.

The House of Commons has under consideration a bill amending the act of 1910 guaranteeing Canadian Northern Alberta Ry. securities in respect of 150 miles of line westerly from St. Albert.

Canadian Northern Pacific Ry.—The Premier, in answer to questions in the British Columbia Legislature, stated recently that bonds for £1,438,356 were issued by the company, Nov. 18, 1911, which had been guaranteed by the Government; the security deposited with the Government consisted of 5,000 fully paid up shares of the Canadian Northern Ry., of the value of \$500,000. The company had not made any application for any land grant under the schedule.

The British Columbia Legislature has passed an act providing for the extension of the C.N.P.R. lines. It is provided that the company shall build 150 miles from the 100th milestone on the Vancouver Island line authorized to be built under the agreement confirmed by chap. 3 of the statutes of 1910, to the east coast of the island, as arranged by order-in-council of Jan. 27; from Kamloops to Vernon, and Lumby; from Vernon to Kelowna via Long Lake; and from Vernon to the east arm of Okanagan Lake, opposite Okanagan Landing. These latter lines will have a total length of 145 miles, and were approved by order-in-council Jan. 26. The province agrees to guarantee the company's bonds in respect of these mileages for \$35,000 a mile. Construction of these lines is to be started within six months, and they are to be completed within three years of the passing of the act.

T. G. Holt, Executive Agent, and T. H. White, Chief Engineer, completed a trip of inspection over the line under construction from Port Mann as far as Kamloops, B.C., Mar. 12, and are reported to have said that everything is well forward. Satisfactory progress is being made with the driving of the 2,080 ft. tunnel at Yale, which is expected to be completed in Sept. (Mar., pg. 137.)

Recent Quebec Legislation.

In the Quebec Legislature, Mar. 14, the following acts affecting transportation and allied interests were assented to:—

- ENGINEERS' CLUB OF MONTREAL.—Amending act of incorporation.
- MONTREAL ST. RY. MUTUAL BENEFIT Association.—Amending charter.
- RAT RIVER RY.—Incorporation.
- ST. CHARLES AND HURON RIVER RY.—Incorporation.
- SHERBROOKE RY. AND POWER CO.—Amending act of incorporation.

Bever, Peacock and Co., locomotive builders, Manchester, Eng., have been licensed by the Quebec Government to deal with immovable property in the province for any operations it has a right to carry on under the British charter.

Pacific Great Eastern Railway

The British Columbia Legislature has incorporated a company with this title to build the following railways:—From Vancouver to North Vancouver, thence along the margin of Howe Sound, and the general course of the Squamish River, and continuing northeasterly to Lillooet, on the Fraser River; along the bank of the Fraser River to a junction with the Grand Trunk Pacific Ry. at Fort George, about 450 miles; and such other lines as may be authorized to be built from time to time by order-in-council. The provisional directors are: T. Foley, St. Paul, Minn.; P. Welch, Spokane, Wash.; J. W. Stewart, D. McLeod, Vancouver; V. W. Smith, Hazelton, B.C.; D'A. Tate, Winnipeg, Man.

Another act has been passed confirming agreements made between the Government and Foley, Welch and Stewart for the building of the line, and between Foley, Welch and Stewart and the G.T. Pacific Ry. and the G.T.P. Branch Lines Co., as to the interchange of traffic and as to the terms upon which control of the line may be obtained. The province agrees to guarantee the bonds issued in respect of the construction of the line to the extent of \$35,000 a mile, at 4% for 30 years, taking a mortgage of the line, exclusive of terminals, but including buildings, equipment and rolling stock. The money raised by the sale of such securities is to be held in trust by the Government and paid out from time to time during the progress of construction, upon the certificate of an officer to be appointed. Construction is to be started within three months after the signing of the trust deed securing the mortgage, but not later than July 1, within 10 miles of Vancouver, and there has to be expended an amount equal to the cost of 75 miles within a year; an amount equal to the cost of 175 miles during the next year, and the balance during the third year, so that the whole line shall be fully completed by July 1, 1915. The contractors agree to provide adequate terminal facilities in Vancouver, and are given permission to use any bridge other than their own in crossing Burrard Inlet. The Government grants a free right of way 100 ft. wide through any crown lands, land for stations, sidings, yards, etc., from any vacant crown lands, and exempts the railway and all its property from taxation until July 1, 1926. The railway is not at any time to be declared to be a work for the general advantage of Canada.

The second agreement confirmed by the act provides for the use by the P.G.E. Ry. of the G.T. Pacific Ry. terminals at Fort George. The general interchange of traffic between the two companies; the preference of the Canadian Express Co. and the G.T. Pacific Telegraph Co. to carry on their business over the line, provided the rates are as favorable as those offered by any other company; the exclusive right to operate sleeping cars on the line, provided the P.G.E. Ry. does not operate its own cars; and a provision that the G.T.P. Ry. shall have an option for 60 days to acquire the rolling interest in the P.G.E. Ry. and having received notice that a proposition for its purchase has been received by Foley, Welch and Stewart.

The valuation for taxation purposes of the Michigan Central Rd. property in St. Thomas, Ont., has been fixed at \$450,000.

Prof. H. O. Keay, McGill University, read a paper on technical education and the operating department of a railway before the Canadian Railway Club in Montreal, March 12.

National Transcontinental Railway Construction.

The Dominion Parliament has passed three acts affecting the National Transcontinental Railway. The first extends the time limit for the building of the Western Division, which is being built by the G.T. Pacific Ry. Co. under agreement. The second provides for the payment of such sums as may be necessary to meet the difference between par and the amount at which the guaranteed bonds sold, under the Imperial Privy Council's decision on an interpretation of the meaning of the word "implement" in the supplemental agreement of 1904. The third provides for the placing of the control of construction of the Eastern Division under one commissioner instead of four, with the title of "The Commissioners of the Transcontinental Railway."

Replying to questions in the House of Commons, Mar. 4, the Minister of Railways stated that F. P. Gutelius, M. Can. Soc. C.E., and G. L. Staunton, K.C., are to receive \$65 a day and reasonable expenses while engaged in investigating the National Transcontinental Railway affairs. Mr. Gutelius will be in no way connected with the C.P.R. during the period he is employed by the Government.

On Mar. 13 the Minister stated that car repair shops were being built at Winnipeg and a site was being prepared at Quebec for the National Transcontinental Ry. repair shops. To the question, "Are such repair shops intended to be for the use and benefit of the G.T. Pacific and the G.T. Ry.?" he answered "Yes."

The Minister of Public Works, the Minister of Railways, the Postmaster General and representatives of the marine interests have arranged a conference to be held at an early date, with reference to the terminal facilities for the railway in Quebec. It is desired that the waterfront property at present held by the Richelieu and Ontario Navigation Co. be acquired by the Government, but up to the present the company will not entertain the proposition.

Grand Trunk Pacific Railway Construction

Main Line.—Press reports state that it is proposed to add immediately at least five miles of sidings and spur tracks at Wainwright, Alta., and that sites are being acquired for the erection of warehouses.

The company has acquired lands between Namayo and Kinistino Streets, Edmonton, Alt. for yard purposes. The yard will have pairs of tracks, with three wagon roadways. Plans have been submitted to the city authorities for a freight shed 52 by 400 ft. fronting on Elizabeth St. It will be of frame covered with zinc sheeting, with a felt and gravel roof, on concrete pedestals.

E. J. Chalmers, V.P. and G.M., is reported as stating that owing to the fact that there is no snow in some parts of the hills and the Yellowhead Pass, and much in others, the work of getting supplies for the building of the line on the Fraser River in B.C. has been hindered. There is considerable rock cutting to be done on the lines between the present rail head and the river, but it is expected to have the track laid to that point by June 1.

It is reported that the first steel bridge in British Columbia on the line from the east crossing the Fraser at mileage 29 has been completed. It is 500 ft. long and the rail level is 75 ft. above high water.

A good deal of grading has been done from Tete Jaune Cache towards Fort George, B.C. It is reported that sub-contracts have been let for grading both

easterly and westerly from Fort George, near which point it is expected that the last spike will be driven.

The section of the line under construction easterly from Prince Rupert, B.C., to Aldermere is well advanced to completion. Track has been laid to 18 miles from the crossing of the Skeena River below Hazelton, and it is expected that it will be laid to the river early in April. This will take the rails to 170 miles from Prince Rupert. The piers for the bridge have been completed and it is expected that the bridge will be completed early in June. Grading has been practically completed to Aldermere, and it is expected to have track laid to that point by the fall. Owing to the advanced state of construction to this point, the headquarters of C.E. Van Arsdol, Division Engineer, are to be moved further east and a camp is being prepared for the construction offices near Bulkeley Summit. Sub-contracts are reported to have been let for grading from Aldermere to Burns Lake as follows:—Aldermere easterly eight miles, Jno. Boström; next 10 miles, Freeburg and Stone; next four miles, D. McLeod; next 17 miles, Sheedy and Smith; next 10 miles, I. Albi; ten miles west of Bulkeley Summit, D. Ross; five miles east of Bulkeley Summit, J. McLeod; next 10 miles, A. L. McHugh; next 10 miles, D. Stewart; 14 miles along Burns Lake and eastward, D. A. Rankin and Co.

Terminal Work at Prince Rupert.—Contracts are reported to have been let for the excavation work on the site of the dry dock terminals and hotel in Prince Rupert, B.C. The station is to be built on the site of the present town hall. The present hotel—the Prince Rupert Inn—is being removed to Centre St. and this site will be used for yard purposes.

G.T.P. Branch Lines.—We are officially advised that the company is not considering the building of a branch line from Napadoggan to Fredericton, N.B., 45 miles, as stated in press reports.

The construction for the current year includes the completion of the branch from Harte to Brandon, Man., 24 miles.

In connection with the guarantee of bonds of lines of the G.T.P. Branch Lines Co. in Saskatchewan the Provincial Legislature has extended the time within which such lines are to be completed to Dec. 31, 1912. Another act has been passed providing for the issue of guaranteed bonds or other securities for \$13,000 a mile, under the provisions of Sec. 9, chap. 4, of the statutes of 1908-09. The securities to be guaranteed under this act are in respect to additional lines to be built under order-in-council, which are to be completed by Dec. 31, 1914. Under this legislation contracts were let in 1911 for the building of several lines, certain of which it is expected to have completed by the end of the current year. These are:—

Regina boundary branch, from Regina southeasterly, 155 miles, J. D. McArthur, contractor, Winnipeg. In connection with this line the Board of Railway Commissioners has approved revised location plans from mileage 17.02 to 91.13.

Regina to Moose Jaw, 40 miles, Rigby, Hyland and Plummer, contractors.

Moose Jaw northwesterly, 40 miles, J. D. McArthur, contractor.

Prince Albert branch, to complete from 67 miles out of Young to Prince Albert, 54.5 miles, J. D. McArthur, contractor.

Battleford branch from Oban to Battleford, 48 miles, J. D. McArthur, contractor.

Cutknife branch, from Battleford, westerly, 50 miles, J. D. McArthur, contractor.

Biggar-Calgary branch, from Biggar, Sask., southwesterly to Calgary, Alta., 104 miles, Foley Bros., Welch and Stewart, contractors. The schedule of the act passed by the Saskatchewan Le-

gisature this year provides for the guaranteeing of bonds to be issued for this line for 50 miles, in addition to the 50 miles already built, and also provides for a guarantee of bonds for this or any other of the lines already guaranteed for further extensions not exceeding 40 miles in any case. For the section of this line in Alberta, an extension of time for construction has been granted by the Alberta Legislature.

The Grand Trunk Pacific Saskatchewan Ry. Co. has been incorporated by the Saskatchewan Legislature, with E. J. Chamberlin, G. W. Caye, W. Le B. Ross, D'Arcy Tate and H. H. Hansard, Winnipeg, as provisional directors. It is authorized to build the following railways: From tp. 9 or 10, range 13, west of the second meridian through Weyburn, thence southwesterly and westerly to the western boundary of the province in tps. 2 to 5; from tp. 16, range 19, southwesterly to a junction with the first mentioned line; from Saskatoon westerly and northwesterly to Battleford; from near Watrous southwesterly to Swift Current and thence to the International boundary between ranges 23 and 30 west of the third meridian; from Melville northerly, northwesterly and westerly to Watrous; from Saskatoon southeasterly and southerly to Regina; from tp. 36, range 8, west of the third meridian, southwesterly and westerly to a junction with the G.T.P. Branch Lines Co.'s Biggar-Calgary branch; and such other lines within the province as may be authorized from time to time by order-in-council. Another act has been passed authorizing the Government to guarantee the company's bonds up to \$13,000 a mile in respect of these lines. The proceeds of the sale of the guaranteed bonds shall be paid into a special account and paid out as the work proceeds upon the certificate of the provincial Minister of Railways. Part of the mileage has to be built during the current year and all the lines have to be completed by Dec. 31, 1914. The lines referred to will total 205 miles, and the act provides that the guarantee may be added to bonds to be issued in respect of the extension of any one of them for a further distance of 40 miles.

The Alberta Legislature has extended the time for the construction of lines authorized under previous legislation, for which contracts have been entered into either with the G.T.P. Branch Lines Co. or other subsidiary companies. The lines, for which contracts were let last year, or which are included in the construction programme for the current year, are as follows:—

Tofield-Calgary branch, completion of the branch involving 95 miles of construction, J. D. McArthur, contractor.

Calgary to Lethbridge, 111 miles. Tenders are reported to be under consideration.

Alberta Coal branch, completion of branch involving 25 miles of construction, Foley Bros., Welch and Stewart, contractors.

The act passed at the Alberta Legislature's recent session also provides for the guarantee of bonds for the building of a line from an unnamed point on the G.T.P. Ry. southerly for 58 miles to open up additional coal fields.

The G.T.P. steamship dock at Vancouver, B.C., which was opened for traffic Feb. 27, is fully described in a separate article in the Marine Department on another page of this issue.

Telegraph Lines.—Particulars of construction to date and the programme for this year are given on another page.

A New York press report states that the Howe Sound and Northern Ry. has been acquired in the interests of this company, the purchase price being \$375,000. The line runs from Newport northward through the Squamish River Valley for about seven miles.

RAILWAY DEVELOPMENT.

Projected Lines, Surveys, Construction, Betterments, Etc.

Ainsley Coal Co.—We are officially advised that the company's collieries are about four miles out of Medicine Hat, Alta., and that they are being developed so as to be able to produce 1,000 tons daily. The company proposes to sell coal to the city council and to manufacturers for power production at \$1.50 a ton, and in return for this concession the city is to build a spur line from the C.P.R. within the city limits to the city boundary, nearest to the collieries, about three miles. The cost of the spur is estimated at \$25,000. (Mar., pg. 120.)

Argenteuil Ry.—Application is being made to the Quebec Legislature to incorporate a company with this title to build a railway to be operated by steam, electricity or other power from the boundary between Harrington and Grenville tps. to the canal at Grenville, Que. The provisional directors are:—C. Laurin, C. Wilson, J. A. Laurin, J. Cooper, J. G. Thompson, Montreal. (Mar., pg. 120.)

Atlantic, Quebec and Western Ry.—A meeting of the shareholders of the Quebec Oriental Ry. will be held in London, Eng., April 16, to elect directors, transact other general business and approve an agreement with the A.Q. and W. Ry. Co. for the erection of joint shops at New Carlisle, Que., and for granting the A.Q. and W. Ry. running rights over the Q.O. Ry. This latter railway is the old Atlantic and Lake Superior Ry. (Dec., 1911, pg. 1137.)

Burrard Inlet Tunnel and Bridge Co.—The plans for the proposed bridge across the Second Narrows of Burrard Inlet are being prepared in London, Eng., and are expected to be completed for submission to the Board of Railway Commissioners for approval early in May. The company has been advised that the Railways Department insists that the opening span be 250 ft. wide, consequently a double leaf, instead of a single leaf bascule, as originally proposed, will be provided. The bridge will be of the Warren truss type, with a total length of 1,550 ft., concrete piers and abutments. It will provide accommodation for a single steam railway track, a 39 ft. roadway for general traffic, on which will be laid a double track for electric cars, and an 8 ft. sidewalk. The approaches will be wide enough to enable double tracks to be laid for steam traffic. The estimated cost is \$2,125,000.

In a report to the municipalities interested the company states that the capital stock issued is held as follows:—District of North Vancouver, \$250,000; city of Vancouver, \$200,000; city of North Vancouver, \$100,000; Burnaby district, \$50,000; the six directors, L. Bond, J. P. Fell, J. C. Keith, E. W. McLean, E. Mahon, and J. Y. McNaught, 25 shares of \$100 each. The provincial Government had voted \$400,000 in aid of the bridge, and the Dominion Government voted \$200,000 to the Vancouver, Westminster and Yukon Ry. towards the building of a bridge. An arrangement had been made with the V.W. and Y. Ry. for the joint building of the bridge. Application had been made to the Dominion Government for an increase of the subsidy to \$500,000. The bridge will be used by the Pacific Great Eastern Ry. and by other railways which may desire an entrance into North Vancouver. (Mar., pg. 120.)

Canadian Central and Labrador Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build a railway from Winnipeg northeasterly to south of Hamilton River on the boundary of Quebec and Labrador, with branch lines to the National Transcontinental Railway

at the Quebec-Ontario boundary, to Montreal; and from near James Bay, Que., to Port Nelson, on Hudson Bay. Smith and Johnston, Ottawa, are solicitors for applicants.

Central Ry. of Canada.—We are officially advised that surveys have been made for a line from St. Eustache, Que., to South Indian Jct., Ont., and the present intention of the general contractors, C. J. Wills and Sons, is to build 20 miles of line in Quebec, and 20 miles in Ontario this year. None of the work has as yet been put in the hands of subcontractors. Contracts have been placed for 100,000 ties, to be delivered by June 30, and it is expected to place orders for steel rails at an early date.

Press reports state that the company has completed, ready for submission to the Board of Railway Commissioners, plans for a station and terminals in the eastern part of Montreal; that a contract has been let for the building of the line from Montreal to Ottawa, and that the work will be started in the spring.

Chicago, Milwaukee and St. Paul Ry.—W. B. Dixon, Assistant General Passenger Agent, is quoted as stating that the company is not, either directly or indirectly, purchasing land for terminal purposes in Winnipeg. The company has not, he adds, for the present, any intention of going into Winnipeg over its own line, whatever it may eventually do. (Mar., pg. 120.)

Dominion Atlantic Ry.—The Board of Railway Commissioners has approved of location plans for the projected North Mountain branch from Lakeville to Weston, N.S., 10 miles

The work for repairing, strengthening and renewing the bridges is being proceeded with. The work is being done under the superintendence of — Ripley, a C.P.R. engineer. (Mar., pg. 120.)

Edmonton, Dunvegan and British Columbia Ry.—The legislation guaranteeing bonds for \$20,000 a mile for a line from Edmonton to Dunvegan, Alta., 350 miles, has been passed by the Alberta Legislature. Other acts giving the company powers to enter into agreements and confirming an agreement with the G.T.P. Ry. in respect of the interchange of traffic were also passed. In an interview at Edmonton, Mar. 11, the Premier said construction work will be pushed forward with all speed, and it is expected that steel will be laid on the section from Edmonton to the Athabasca River, 100 miles, this year. The Board of Railway Commissioners has approved of location plans for the route for the first 30 miles, through tps. 53 to 56, ranges 24 to 26, west of the 4th meridian. (Mar., pg. 120.)

Elkhorn Northern Ry.—The Manitoba Legislature is being asked to extend the time within which the line from Elkhorn northerly, authorized to be built by chap. 92 of the statutes of 1910, may be built. (Dec., 1910, pg. 1013.)

Esquimalt and Nanaimo Ry.—The British Columbia Legislature has confirmed an agreement made between the Government, the E. and N. Ry., and the C.P.R., dated Feb. 17, which sets forth that the company desires to lease its line to the C.P.R., and the Government declares that such lease shall not affect the exemption from taxation of the company's lands. In consideration of this the company agrees to pay on June 30, annually, 1½ cents an acre in respect of such of the lands mentioned in sec. 3, chap. 14, 47 Vict., as shall remain vested in the company, and therefore exempt from taxation; and shall by Dec. 31, 1915, build an extension of its line from the present northerly terminus to Courtenay. (Mar., pg. 120.)

Fredericton and Grand Lake Coal and Ry. Co.—We were officially advised recently that no contract has been let for the building of this projected railway, from Minto to Fredericton, N.B.

Later press reports state that a contract for building the first section of this projected railway has been let to A. E. Trites, of Salisbury, N.B., and that work will be started at once.

Reference was made to the projected building of the line in the speech from the throne at the opening of the N.B. Legislature, Mar. 7, and it was also intimated that legislation would be introduced providing for the leasing of the railway when built to the C.P.R., and also for the operation by the same company of the New Brunswick Coal and Ry. Co.'s line, now operated by a provincial Government commission. This line runs from Norton on the Intercolonial Ry. to the coalfields at Minto, and the projected F. and G.L.C. and Ry. Co.'s line will run from Minto to Gibson, where it will connect with the C.P.R. line. (Feb., pg. 67.)

Hudson Bay and Pacific Ry.—Press reports from Prince Albert, Sask., Mar. 10, state it is anticipated that an early start will be made with the building of this line from Prince Albert to Fort Churchill. The report adds that a construction company has been organized in London, Eng., to build the line, and that the contract for the building of terminal wharves, etc., on Hudson Bay, has been let to Pethick Bros., Plymouth, Eng. (June, 1911, pg. 505.)

Intercolonial Ry.—The speech from the throne at the opening of the Nova Scotia Legislature said the Federal Government had assumed the responsibility of providing branch railways in the Halifax, Guysboro and Victoria counties, and that financial provision had been made by Parliament for their construction.

It is reported from Ottawa that plans are being matured for the development of the line, and that they will take a definite shape after the adjournment of Parliament. One of the propositions under consideration is said to be for a general reduction of gradients on the whole line, and the other involves the building of a second track from Moncton to Halifax.

Press reports state that M. P. and J. T. Davis have sublet a portion of the contract for the building of a line from Dartmouth to Dean's Settlements, N.S., to Cavicchi and Pagano, Halifax. (Mar., pg. 120.)

Kaslo and Slocan Ry.—We are officially advised that this railway has been transferred to the British Columbia Government, and is being turned over under an agreement to the C.P.R. The line extends from Kaslo to Sandon, B.C., 28 miles, connecting at Sandon with the Nakusp and Slocan Ry., operated under lease from the B.C. Government by the C.P.R. The line is to be standardized, and the work is to be completed by Dec. 31, 1913. (Mar., pg. 121.)

Kettle Valley Lines.—The British Columbia Legislature has confirmed an agreement between the provincial Government and the Kettle Valley Ry., under which the province agrees to subsidize a railway from the Coldwater River, about 25 miles south of Merritt, to the north bank of the Fraser River, near Hope, at the rate of \$10,000 a mile; and to pay \$200,000 towards the construction of a steel bridge for railway and general traffic across the Fraser River at Hope. It is specified that the route shall be via the Coldwater and Coquihalla river valleys, and that the line to be subsidized shall not exceed 50 miles. Construction of the line and bridge is to be started by July 1, and the whole work is to be completed by July 1, 1915. A further provision stipulates that the subsidies are not to be paid until the company provides for the building of a line

from Hope to New Westminster and Vancouver, or has entered into a contract with some railway running into these two cities for the running of through freight and passenger trains from all points on the K.V. Ry. to and from New Westminster and Vancouver.

In connection with the building of the line mentioned above, it is reported that the location plans approved by the Government show a line starting at mileage 25 on the line completed south from Merritt in the Nicola Valley, and extending 10 miles up the Coldwater Valley to the summit, on a maximum gradient of 1%. West of the summit the location follows the Coquihalla River for 35 miles to the Fraser River. The maximum gradient on this section is 2.2% against eastbound traffic. Construction will be heavy on both sides of the summit, as there will be much rock cutting and several tunnels. At the Fraser River a bridge is to be built which will give connection with the C.P.R.

On the main line between Midway and Merritt, 260 miles, grading has been completed on 85 miles, and steel has been laid on 65 miles. A considerable amount of grading has been done at other points, and is being pushed forward as rapidly as the heavy character of the work will permit. It is expected to have the line completed through from Midway to Merritt by the end of 1913.

The B.C. Legislature has ratified a bylaw of the municipality of Penticton, granting aid to the company in connection with its construction in the town.

Camson, Shindahl and Co. have a sub-contract for a five mile section of the line westerly from Penticton.

The Board of Railway Commissioners has approved location plans from mileage 28 to 52 from Hope. B.C. (Mar., pg. 121.)

Lindsay and Minden Ry.—The provisional directors named in the application to the Ontario Legislature for the incorporation of a company with this title are: J. H. Delamere, M. Brown, J. J. Mortimer, Minden, Ont.; J. W. Wood, Lindsay, Ont.; S. F. Stinson, J. M. Delamere, Toronto. It is proposed to build a steam or electric line from Lindsay to Mountain Lake, and to operate vessels on Mountain Lake. (Mar., pg. 121.)

Michigan Central Rd.—The Board of Railway Commissioners has authorized the operation of trains across the new drawbridge over the Welland canal, just east of Welland station, Ont. (Feb., pg. 68.)

Midland Terminal Ry.—The Ontario Legislature is being asked to extend the time within which the lines authorized to be built by sec. 2, chap. 105 of the statutes of 1903 may be built, and to authorize the building of a line from the waterfront at Midland, south and southeasterly, to a junction with the G.T.R. at Coldwater, Ont. T. Gibson, Midland, Ont., is solicitor for applicants.

Moncton and Buctouche Ry.—We are officially advised that the press reports as to a proposed car ferry between Richibucto, N.B., and Prince Edward Island, are rather premature in so far as the construction of the extension of the line from Richibucto to Richibucto Head is concerned, as the extension proposed is contingent on the route which will be adopted by the Dominion Government for the operation of a car ferry between the Island and the mainland. It is claimed that the water route between Richibucto Head, N.B., and West Point, P.E.I., is more free from ice, and the most feasible and practicable route on which a ferry service could be operated daily during the winter, and it is said that this route may be selected by the Dominion Government. In that event of the construction of the proposed extension to Richibucto Head, 17 miles, will

be proceeded with; wharves will be built on both sides of the straits, and a standard gauge line built to connect with the Prince Edward Island Ry., either at Coleman or O'Leary's. E. G. Evans, Hampton, N.B., under whose supervision soundings and surveys have been made in the vicinity of Richibucto Head, will be the engineer in charge of the work, if construction is gone on with.

We are inclined to the opinion that any railway construction which will be undertaken on Prince Edward Island will be by the Dominion Government, and there appears to be no doubt that the car ferry service will be established and operated by the Government Railways system. (Mar., pg. 121.)

Montreal Central Terminal Ry.—The Railway Committee of the House of Commons, was informed Mar. 7, that the company's application for an act amending its powers would not be further proceeded with. (Dec., 1911, pg. 1139.)

Montreal Transcontinental Ry.—The Dominion Parliament has under consideration a bill providing for the incorporation of a company with this title, to build a railway from Montreal northerly or northwesterly to connect with the National Transcontinental Railway near Grand Lake Victoria, or at any other point in the vicinity of Migiskin River, Que., and thence to Hannah Bay, in James Bay, Ont. The provisional directors are: J. A. Vaillancourt, J. E. Vanier, T. Bastien, E. Gobier, G. E. Drummond, F. L. Wanklyn, N. Curry, Montreal; F. V. Vanier, C. E. Lafamme, R. Deschambault, St. Jerome, Que.

Nerepis and Long Island Ry.—The New Brunswick Legislature is being asked to incorporate a company with this title to build a line from the C.P.R. near Welsford to a connection with the St. John River Valley Ry. between Hampstead and Gagetown. Press reports state that a route with a gradient not exceeding 1% has been surveyed, and that in addition to tapping a rich agricultural country, some iron ore deposits at Koot Hill will be opened up.

New Brunswick Coal and Ry. Co.—See Frederick and Grand Lake Coal and Ry. Co. (Sept., 1911, pg. 855.)

North Shore Ry.—Press reports state that H. J. Von Hagen is endeavoring to arrange for the extension of the line now terminating at Adamsville, N.B., to Snowshoe Lake, on the National Transcontinental Railway. He is quoted as having stated at Beersville, that consideration was being given to a proposal to extend the line from Beersville to Chebucto Head. (Sept., 1908, pg. 618.)

Pacific and Peace River Ry.—It is reported from Edmonton, Alta., that the Pacific and Peace River Railway Development Co. is being organized in France, with a capital of \$5,000,000, to build this projected railway. The P. and P.R. Ry. Co. is authorized to build a line of 480 miles from Bella Coola, on the Pacific coast, through the Pine River Pass to Dunvegan, Alta. (Jan., pg. 23.)

Prince Edward and Hastings County Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build a railway from Trenton, Ont., to Gardenville, to Belleville, to Frankfort, and back to Trenton, with branch lines to Picton, Ferry Point, West Point, Black River, and Indian Point. The provisional directors are: G. M. Farrington, T. Walmsley, Picton, Ont.; W. H. Gough, Bloomfield, Ont.; W. P. Niles, Wellington, Ont.; H. Dempsey, Albury, Ont.

Prince Edward Island Ry.—It is reported that two routes for the proposed carferry service are under consideration, one between Cape West Point and Richibucto, N.B., referred to elsewhere in this department, under the heading of Moncton and Buctouche Ry., and the other between Cape Traverse and Cape Tor-

mentine. Other routes were suggested but it is said none of them offered the same freedom from ice as the two referred to. (Mar., pg. 121.)

Quebec and Saguenay Ry.—The Quebec Legislature has extended the time for the building of this projected railway, and authorized it to amalgamate, if, so desired, with the Quebec Eastern Ry. (Mar., pg. 121.)

Quebec Eastern Ry.—We are officially advised that this company's charter, together with the line of the Lotbiniere and Megantic Ry., which it is proposed to incorporate as a part of the projected through line from Sherbrooke to Quebec, has been acquired by Sir Rodolph Forget and J. N. Greenshields of Montreal, who represent the controlling force in the Quebec Railway, Light, Heat and Power Co. and its subsidiary, the Quebec and Saguenay Ry. The sale covers the railway 30 miles long, with rolling stock and all other equipment. The new owners have engineers in the field locating the route to connect up the present Lotbiniere and Megantic Ry., with Sherbrooke on the one hand and Quebec on the other. (Dec., 1911, pg. 1139.)

Reid Newfoundland Ry.—At the opening of the Newfoundland Legislature recently the speech from the throne referred to the opening of the Bonavista branch line, the partial construction of two others, which it is hoped will be completed by the end of this year, and the expectation that work on the other three branches provided for in the construction programme of 1910 will be started early in 1913. (Mar., pg. 121.)

St. John and Quebec Ry.—The speech from the throne at the opening of the New Brunswick Legislature, Mar. 7, referred to the signing of a contract Dec. 12, 1911, with the St. J. and Q. Ry. Co. for the building of the railway along the St. John River valley. The contract calls for the completion of the portion of the line between Centreville and Gagetown by Nov. 1, 1913, and for the completion of the whole line by Nov., 1915. An agreement to lease and operate the railway has been entered into with the Dominion Government, which will be presented for ratification. The Dominion Government agrees to guarantee the bonds for the erection of three large steel bridges on the line, and will pay the provincial Government 40% of the gross earnings of the line during the first 15 years of its operation.

Negotiations are reported to be practically concluded with the Woodstock town council for the location of divisional terminals there. The town will purchase the trotting park and the land used by the Agricultural Society as a site for the terminals and car shops, etc., which it is hoped will also be established. The town council is seeking legislation necessary to acquire the land. (Mar., pg. 121.)

Saskatoon Transfer Ry.—The Saskatchewan Legislature has incorporated a company with this title to build a line to connect up the various lines of railway centering in Saskatoon. It is proposed that the lines to be built shall be operated by either steam or electricity, or both. C. J. Alexander, Saskatoon, is one of the promoters.

South East Kootenay Ry.—The British Columbia Legislature has extended the time within which this projected line may be built. (Jan., pg. 23.)

Southampton Ry.—Press reports state that a line is well advanced in construction between Millville and Temperance Hill, N.B., 6.5 miles, and that an additional six miles is to be built to carry the line to the Southampton end of the Pokiok bridge. Some track is reported to have been laid, and it is stated that arrangements are being made for the operation of the line by the C.P.R. J. K. Pinder, M.P.P., is president of the

company. Millville is a station on the C.P.R. Fredericton-Edmundston line, and Southampton is on the St. John River.

Since the preceding paragraph was put into type, we have been officially advised that the line has been completed for 6.5 miles from the junction with the C.P.R., about one mile east of Millville. It is intended that it be operated by the C.P.R., but it is probable that it will be some time before it is opened for traffic, as it has not been approved by the Board of Railway Commissioners.

Temiskaming and Northern Ontario Ry.—In connection with the rearrangement of the boundaries of Ontario and Manitoba, on the shores of Hudson Bay, it has been arranged that a strip of territory five miles wide from the new boundary of Ontario to Port Nelson is granted to Ontario for the purpose of building an extension of the T. and N.O. Ry., from the present terminus at Cochrane, and that for terminal purposes at Port Nelson, a frontage of 10 miles on Hudson Bay and Nelson River, with a depth of half a mile, and including the river bed, etc., is set apart in the area granted to Manitoba. If the terminus of the Hudson Bay railway is fixed at Fort Churchill, provision is made for the granting to Ontario of a right of way 200 ft. wide, so that the T. and N.O. Ry. may be connected with it, and the Dominion Government agrees to grant running rights over the Hudson Bay Ry. The five mile wide strip, while remaining territorially with Manitoba is to be made free of taxation.

A contract for the complete construction (other than steel bridges) of the branch from Earleton to Elk Lake, about 30 miles, ready for the ties and rails, has been let to McCaffery and McQuiggen, Toronto, the work to be completed by Sept. 1. It is reported that track will be laid this year. The maximum gradient will be 6-10ths of 1%. McCaffery and McQuigge's contract will probably amount to about \$200,000.

Toronto, Hamilton and Buffalo Ry.—Press reports from Hamilton, Ont., state that plans are being prepared for a rearrangement of the company's entrance into that city. The proposition, it is said, includes the widening of the tunnel 250 ft. to the north from the western limits to McNab St., to divert the tracks south at McNab St., crossing James St. midway between Hunter St. and Augusta St., and joining the present right of way at Ferguson Ave. The tracks are to be depressed from the mouth of the tunnel to Ferguson Ave. A new station, it is stated, will be built on the site of the present one, and carried south across Hunter St. and the depressed tracks. (Mar., pg. 122.)

Union Pacific Ry.—T. C. Shotwell, in a recent article, states that the port of Vancouver is the key to the Pacific west situation. The U.P. Rd. through one of its subsidiary lines is said to be planning to reach that port, and he adds that in order to obtain outbound cargoes for its steamships will be compelled to extend its lines from Vancouver through the Yellowhead Pass into the Peace River district.

Winnipegosis and Northern Ry.—Application is being made to the Manitoba Legislature to incorporate a company with this title to build a railway from the Porcupine Mountains district, near Steep Rock River, to Dawson Bay, on the west shore of Lake Winnipegosis, and crossing the Canadian Northern Ry. near Mafeking station. Macdonald, Haggart, Sullivan and Tarr, Winnipeg, are solicitors for the applicants, and McGregor and Young of Winnipeg are among the provisional directors.

D. W. CAMPBELL, local manager, Elder Dempster Co., returned to Montreal, Mar. 2, from England.

Grand Trunk Railway Betterments, Construction Etc.

Southern New England Ry.—Articles of incorporation of the S.N.E. Ry. Co. have been filed in New Hampshire, the company being authorized to build from Lebanon to Concord and along the Merrimac River to the New Hampshire-Massachusetts state line. The section of the line in Massachusetts has already been approved by the State Railway Commissioners. E. H. Fitzhugh, President, submitted the plans to the legislative committee on railroads at Boston, Mass., Mar. 6, and stated that the roadbed would be prepared for a double track line, but it was only proposed to lay a single track at present. It was also proposed to build a belt line to connect the proposed sections of the line north and south of Boston and to reach the necessary terminals and docks.

The company is reported to have let a contract for the erection of 57 steel bridges on the line in Massachusetts and Rhode Island. The principal bridges will be a 1,250 ft. viaduct at Monson, Mass.; a 570 ft. bridge, 120 ft. high, at Palmer, Mass.; and a 480 ft. viaduct 60 ft. high at Melville Heights.

Bridge at Portland, Me.—A new bridge at the entrance to the company's terminals at Portland, Me., is being built. It is a 225 ft. drawbridge on concrete piers.

Lachine Canal Swing Bridge.—The Board of Railway Commissioners has authorized the rebuilding of the company's swing bridge across the Lachine canal at Montreal.

Montreal Track Elevation.—The Board of Railway Commissioners has decided in connection with the plans for the elevation of the G.T.R. tracks in Montreal, that none of the existing streets from the western limits of the city to Bonaventure station can be closed unless with the city's consent. The question of whether the tracks shall be supported by a viaduct with stone or concrete walls, or by a sloping embankment was discussed. The whole of the plans will be taken into consideration by the Commissioners. The question of the apportionment of the cost is to be dealt with later. The total cost of the work is estimated at \$8,800,000, towards which the city has offered to pay \$2,000,000, but the company asks that the city also pay 50% of the consequential damages.

West Toronto-Weston Second Track.—We are officially advised that it has not been definitely decided that a second track is to be built between West Toronto and Weston, on the Toronto-Port Huron line during this year.

Humber River Bridge.—The erection of the new four track bridge over the Humber River, near Toronto, is being gone on with. This forms part of the grade revision work in progress between Parkdale and Mimico.

Burlington Bay.—Press reports state that the company is acquiring water front lots on Burlington Bay, in the vicinity of Hamilton, Ont., on which to erect a large grain elevator.

Hamilton Yards, Etc.—Vice President Kelley, Superintendent Gillen and the company's engineer recently spent some time in Hamilton and vicinity inspecting the company's property, and it is reported that arrangements are being made to lay out a large new yard in the vicinity of Stony Creek to relieve the congestion in the Hamilton yards.

D. E. Galloway, Assistant to the President, is reported as having said, Mar. 13, that fruit sheds might be erected at Stony Creek, Ont., but that there was no truth in the report that the work

now done at the Ferguson Ave. yards, Hamilton, was to be transferred to yards to be laid out at Stony Creek.

Holmedale Switch, Brantford.—The Board of Railway Commissioners has authorized the G.T.R. to build a branch line through the Holmedale district, Brantford, Ont., across the hydraulic canal and the Grand River to its Brantford and Tillsonburg branch, and to close certain streets. This order carries out the terms of an agreement with the city council made some time ago.

Automatic Block Signalling.—It is reported that orders are being placed for the installation of automatic block signals on the line between Toronto and Niagara Falls, and from Hamilton to Lynden, Ont.

Plans are now being made to instal an automatic block signalling system between Toronto and Niagara Falls, and also between Hamilton and Lynden Jct., where the main lines diverge to Harrisburg and Brantford. The G.T.R. is also planning to instal this system on the 26th district in Indiana.

London, Ont., Improvements.—Local officials state that there is no probability of any improvements being made at London, Ont., this year. The mayor stated, Mar. 6, that while he had not received any information from Montreal he understood that plans were being prepared for very important changes, and that part of the work would be put in hand within a reasonable time.

Bay City, Mich.—A contract is reported to have been let for the erection of a bridge across the river at Bay City, Mich., to bring the G.T.R. more into the centre of the city than it is at present. The plans show a structure of five spans, of 150 ft. each, and two draw spans of 250 ft. each, resting on concrete piers and abutments. (Mar., pg. 138.)

Great Northern Railway Lines in Canada.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—The Board of Railway Commissioners has authorized the opening for traffic of the extension of the line from Princeton to Coalmount, B.C., 13 miles. The plans for the extension of the line from Princeton to near Merritt are reported to be practically complete, and press reports state it is expected that construction will be gone on with during this year. It is said that for the present the company will not build an independent line from near Merritt to Hope, but will make an arrangement with the Kettle Valley Ry. to operate over the line it is to build between these points under the new contract with the British Columbia Government, and will then make connection with the Canadian Northern Pacific Ry. and run over that company's line to near Chilliwack, where it will run over its own line into New Westminster, Vancouver and the United States.

Vancouver Terminals.—Contracts are under consideration for the moving of about 100,000 cubic yards of earth near Grove Crescent. This is the first piece of work to be undertaken on False Creek. The entire work of reclamation and construction will require the moving of between 3,000,000 and 4,000,000 cubic yards of material. Part of the material required for the filling will be taken from the cuts, but large quantities will have to be brought from elsewhere. When the terminal construction is completed it is probable that the Northern Pacific Ry. will be given running rights into the city.

Rapid progress is being made with the construction of the new pier, near the B.C. Sugar Refinery, and it is expected to have it ready this year. Clarke and Co., Seattle, are the contractors. (Mar., pg. 122.)

New Railway Subsidies by Dominion Government.

The Minister of Railways moved resolutions in the House of Commons, Mar. 21, granting aid for the construction of railways. The first resolution provides for the aiding of the Temiskaming and Northern Ontario Ry., out of the Consolidated Revenue Fund, under such conditions as the Governor-in-council deems expedient, not exceeding \$6,400 a mile, in respect of the following lines:—From North Bay to Cochrane, not exceeding 252.8 miles; Englehart to Charlton, 7.8 miles; Cobalt to Kerr Lake, 3.9 miles; Iroquois Falls to Timmins, 33.16 miles; Nipissing Jct. to North Bay, 2.18 miles.

The second resolution provides for the granting of aid for the construction of the following lines, at \$3,200 a mile—increasing to \$6,400 in proportion to the cost in excess of \$15,000 a mile:—

NOVA SCOTIA.

From Liverpool, via Milton to Caledonia, N.S., not exceeding 30 miles. (Renewal of subsidy granted in 1907.)

Great Northern Mining and Ry. Co.—From Little River to Eastern Harbor, not exceeding three miles.

NEW BRUNSWICK.

From St. John to Grand Falls, exclusive of a bridge across the Kennebecasis River at Perry Point, and two across the St. John River at Mistake and Andover respectively, not exceeding 228 miles. (Renewal of subsidy granted in 1910.)

From Albert Mines to Moncton, not exceeding 22 miles.

Fredericton and Grand Lake Coal and Ry. Co.—From near Gibson to Minto, with a branch line to Marysville, not exceeding 35 miles.

Southampton Ry.—From Millville to Pokiok Bridge on the St. John River, not exceeding 13 miles.

Northern New Brunswick and Seaboard Ry.—From Austin Brook to the Intercolonial Ry., and thence to Bathurst harbor, not exceeding 26 miles.

North Shore Ry.—From Adamsville to the National Transcontinental Railway, not exceeding 20 miles; from Beersville to Richibucto Head, not exceeding 20 miles.

QUEBEC.

From St. Agathe des Montes towards Howard tp., not exceeding 15 miles. (Revote of subsidy granted in 1908.)

From Montreal to mileage 837 west of Moncton, on the National Transcontinental Ry., not exceeding 200 miles. (In lieu of subsidy voted in 1910.)

From mileage 837 National Transcontinental Railway, west of Moncton, to the mouth of Nottaway River, not exceeding 300 miles.

L'Avenir and Melbourne Ry.—From Melbourne to Drummondville, not exceeding 23 miles. (Renewal of subsidy granted in 1910.)

Ha Ha Bay Ry.—From St. Mathias to Ha Ha Bay, not exceeding 20 miles; from Labrosse Jct. to the Saguenay River, not exceeding five miles; from La Terrieri Jct. northerly to Lake Kenogami, not exceeding 12 miles; from near Bagotville to St. Alexis, not exceeding three miles. (In lieu of a 40 mile subsidy granted in 1910.)

Interprovincial and James Bay Ry.—From near Temiskaming to the Des Quinge River, not exceeding 50 miles. (Renewal of subsidy voted in 1906.)

Canadian Northern Quebec Ry.—From near Arundel to Preston and Hartwell tps., not exceeding 30 miles. (Renewal of subsidy voted in 1910.)

Quebec and Saguenay Ry.—From St. Joachim northeasterly, not exceeding 62.8 miles; from mileage 62.8 from St. Joachim towards Seven Islands, 107.2 miles. (In lieu of subsidies for 170 miles voted in 1910.)

Quebec Central Ry.—From St. George to St. Sabine, 1.34 miles; from St. Sa-

bine (mileage 31.34 from St. George), to Dionne tp., not exceeding 50 miles.

Canada and Gulf Terminal Ry.—From Matane easterly to Gaspé Basin, not exceeding 200 miles.

Grand Lake and Bell River Ry.—From Bell River to Rabbit Lake, Pontiac county, not exceeding 45 miles.

St. Charles and Huron River Ry.—From Indian Lorette to Stoneham, not exceeding 7.5 miles.

ONTARIO.

Algoma Central and Hudson Bay Ry.—From Sault Ste. Marie to between White and Dalton stations on the C.P.R., not exceeding 200 miles; from Michipicoten Harbor towards the C.P.R., not exceeding 25 miles; from the C.P.R. towards the National Transcontinental Ry., not exceeding 50 miles. (In lieu of subsidies voted for 270 miles voted in 1910.) From the end of the 50 miles last mentioned to the National Transcontinental Ry., not exceeding 65 miles.

Algoma Eastern Ry.—From the Sudbury-Little Current line westerly towards the Algoma Central and Hudson Bay Ry., not exceeding 76 miles; from Sudbury northerly, not exceeding 30 miles. (In lieu of subsidy for 106 miles voted in 1910.)

Tillsonburg, Lake Erie and Pacific Ry.—From Ingersoll to Stratford, or to between Berlin and Stratford, not exceeding 35 miles. (Revote of subsidy granted in 1907.)

Lac Seul, Rat Portage and Keewatin Ry.—From Kenora to the National Transcontinental Ry., not exceeding 22 miles. (Revote of subsidy voted in 1910.)

Toronto, Lindsay and Pembroke Ry.—From Golden Lake to Bancroft, not exceeding 51 miles. (Revote of subsidy granted 1910.)

Simcoe, Grey and Bruce Ry.—From Orillia towards Kincardine, not exceeding 50 miles.

Rainy River Radial Ry.—From Fort Frances to the mouth of Little Grasse River, not exceeding 50 miles.

Lake Erie and Northern Ry.—From Galt to Port Dover, not exceeding 58 miles; from Paris to Ayr, not exceeding 10 miles.

Bruce Mines and Algoma Ry.—From Rock Lake Mine towards the C.P.R. Transcontinental line, not exceeding 50 miles.

MANITOBA

Canadian Pacific Ry.—From Teulon to Icelandic River, not exceeding 35 miles. (Revote of subsidy granted in 1906.)

Manitoba and North Western Ry.—From Hamiota to Birtle, not exceeding 30 miles.

Grand Trunk Pacific Ry.—From Harte to Brandon, not exceeding 25 miles.

ALBERTA.

Alberta Pacific Ry.—From Cardston towards Calgary, not exceeding 100 miles.

Calgary and Fernie Ry.—From Calgary, Alta., to Fernie, B.C., not exceeding 100 miles.

BRITISH COLUMBIA.

Vancouver, Westminster and Yukon Ry.—From Vancouver via Second Narrows of Burrard Inlet, northerly for 100 miles. (In lieu of subsidy voted in 1908.)

Kootenay Central Ry.—From Golden via Windermere and Fort Steele to Jukeson, not exceeding 175 miles; from near Caithness to the International boundary, not exceeding 25 miles. (In lieu of a 200 subsidy voted in 1910.)

Kettle Valley Ry.—From Grand Forks for 50 miles along the North Fork of Kettle River. (Revote of subsidy voted in 1908.) From Penticton to the International boundary, not exceeding 50 miles.

Esquimalt and Nanaimo Ry.—From Wellington to Alberni, not exceeding 60 miles; from McBride Jct. to Sandwich, not exceeding 45 miles; from Sandwich to Campbell River, not exceeding 33

miles. (In lieu of subsidy for 143 miles voted in 1907.)

Burrard Inlet Tunnel and Bridge Co.—From Eburne to mouth of Seymour Creek, not exceeding 10 miles; from Seymour Creek to Deep Cove, not exceeding five miles; from Seymour Creek to Horse Shoe Bay, not exceeding 14 miles; from Pender St., Vancouver, to North Vancouver, not exceeding three miles.

Caribou, Barkerville and Willow River Ry.—From Eagle Lake to Barkerville, not exceeding 87 miles.

Naas and Skeena Rivers Ry.—From Nasoga Gulf towards the Skeena River, near Groundhog Mountain, not exceeding 100 miles.

From near Campbell River, on the Esquimalt and Nanaimo Ry., towards Fort George, on the G.T. Pacific Ry., not exceeding 100 miles. (In lieu of subsidy voted in 1908.)

Another resolution provides for the granting of a subsidy of \$12,000 a mile to the Canadian Northern Pacific Ry. for building a railway from the Yellowhead Pass to Vancouver and the mouth of the Fraser River, 525 miles.

The Governor-in-Council is, under the resolution, authorized to grant aid towards the construction of bridges as follows:—

VANCOUVER, WESTMINSTER AND YUKON Ry.—Towards erection and completion of railway bridge across Burrard Inlet, \$350,000. (In lieu of subsidy voted in 1908.)

KETTLE VALLEY Ry.—Towards erection and completion of railway bridge across Fraser River at Hope, B.C., not exceeding \$250,000.

CARIBOU, BARKERVILLE AND WILLOW River Ry.—Towards erection of 20 railway bridges, 25% of the total amount expended, not exceeding \$95,000.

CANADIAN PACIFIC Ry.—Towards erection of bridge across the Saskatchewan River at Outlook, Sask., 15% of cost, not to exceed \$115,000. As lessees of Calgary and Edmonton Ry., 15% of cost of construction of bridge across Saskatchewan River, connecting Strathcona and Edmonton, Alta., not exceeding \$126,000.

GRAND TRUNK PACIFIC Ry.—Towards erection of bridge across Assiniboine River at Brandon, Man., 15% of cost, not to exceed \$20,000.

A further resolution provides for guaranteeing the bonds of a bridge company for \$1,000,000, and interest on the same for the following bridges on the line along the St. John River Valley, proposed to be built by the St. John and Quebec Ry. under contract between the Dominion and New Brunswick Governments, and to be operated under lease by the Intercolonial Ry., viz., across the St. John River at Andover; across the St. John River at Mistake, and across the Kennebecasis River at Perry Point, all in New Brunswick.

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

	Acres.
Calgary and Edmonton Ry.	6.14
Canadian Pacific Ry.	1,684.62
Grand Trunk Pacific Ry.	206.61
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	959.00
Total	2,856.37

The Quebec Bridge Wreck.—The recent attempt to revive the discussion of the cause of the Quebec bridge wreck by ascribing it to dynamiters is altogether foolish and without any foundation of fact. The bridge fell because its details were improperly designed. The web plates of which the bottom compression member was composed were insufficiently latticed together and the latticing tore asunder, permitting the posts to crumple up under a load less than it was intended to carry, and drop the whole bridge into the river.

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TORONTO, CANADA, APRIL, 1912

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**Reclaiming of Scrap Material at Railway
 Shops.**

By E. J. McVeigh, Storekeeper, G.T.R., Ottawa.

This matter has come to the front late-
 ly stronger than ever before, and is be-
 ing very carefully considered by railway
 officials, and the more they consider it,
 the less simple it appears. Some roads
 claim to have done wonderful things
 along this line, but we should be slow
 to accept their statements at their face
 value without proof.

In attempting to deal with the ques-
 tion of reclaiming scrap material at our
 railway works, we are confronted with
 so many conflicting elements, that we
 almost despair of laying down rules
 that, followed out, would be of general
 benefit. But one thing we must carefully
 avoid, and that is, not to be carried
 away by our enthusiasm, either in theory
 or practice. We may very easily waste,
 or lose, more than we save by going at
 a thing of this kind blindly..

Then in laying down general rules, or
 giving our own experience as an object
 lesson, we must keep in mind the fact
 that what might be good policy for one
 road might be the reverse for another,
 and that local conditions govern to an
 extent here, as in so many other matters
 in connection with our railways.

For instance, a small railway buying
 all of its metals in the open market, and
 selling all of its scrap in like manner,
 might, with advantage, go further in re-
 claiming scrap than could a large sys-
 tem operating its own rolling mills, grey
 casting foundries, brass foundry, etc.,
 etc. The reason will be plain enough.
 The small road pays an average price of
 \$2.15 per 100 lbs. for its wrought iron.
 It sells its no. 1 wrought scrap for 50
 cents per 100 lbs., difference \$1.65 per
 100 lbs. The large system turns out
 from its own mills, wrought iron at \$1.35
 per 100 lbs., turning in no. 1 wrought
 scrap at 50 cents; difference 75 cents.
 This leaves 90 cents per 100 lbs. that the
 small road might spend to advantage in
 reclaiming scrap, over and above what
 the larger system could do. The same
 thing holds good with cast and brass
 scrap, to a greater or less extent. The
 figures used are merely by way of illus-
 tration.

But there are other elements beside
 apparent cash value to be considered.
 We know that iron and steel deteriorate
 with age and use, and we must be very
 careful in selecting a piece of scrap to
 use in replacing a locomotive part. It
 would be poor economy, indeed, to save
 50 cents worth of new material, and
 cause an engine failure by so doing. Nor
 could we feel much satisfaction in sav-
 ing a few cents by cutting and re-thread-
 ing a few old car bolts, and have a set
 of draught timber pull out, because there
 was no life in the old bolts, and they
 broke. The re-setting of old coupler
 springs does not seem to cost much, but
 do we get good service from them after-
 ward? It may seem that the answer
 to this would be that it depended on the
 skill of the man who reset them; but
 this is not always the case by any means.
 The age of the steel in the spring has
 much to do with it, and here again we
 must, or should, select with care the
 material we will spend money on in re-
 claiming, rather than buy new. It is
 very easy to make mistakes in this mat-
 ter, and quite frequently, when we think
 we are accomplishing most, is when we
 may be wasting money instead of saving
 it.

Some years ago it occurred to me,
 that we might effect a considerable sav-
 ing by reclaiming a portion of the
 plucked air brake hose. I found that
 hose pulled apart, broke close to the
 nipple end, leaving the greater portion
 apparently as good as new. Two of
 these cut to proper length and joined

with a small malleable coupling, would
 give us a new hose. The saving would
 be—one new hose, \$1.10, less coupling,
 clamps and labor, 18 cents, net saving
 92 cents. This repeated fifty to one hun-
 dred times a day looked very good, and
 as a matter of fact many of our rail-
 ways were soon following this practice,
 and you could see hose so "reclaimed" in
 every railway yard in America. You
 do not see so many today. Why? Be-
 cause I found, and no doubt others did
 also, that a hose pulled apart, while
 it might look good, was, in fact, worth-
 less, the stretching having destroyed it,
 and instead of saving money we had
 been wasting it.

Another example, I found at one time
 that the track cold sets turned out of the
 shops were useless, a dozen of them
 would not cut one rail. The trouble was
 that a smart foreman had conceived the
 idea of using scrap steel tires in making
 up these sets, and he was tickled all
 over at the thought of how much new
 steel he was saving, while, as a matter
 of fact, he was wasting 75 cents on each
 cold set he turned out. "A little know-
 ledge is a dangerous thing," and nowhere
 more so than in the reclaiming of scrap.

Then if we are going to save our scrap
 on the chance that it may be useful, how
 far are we to go with it? Will we rescue
 from the scrap bin each day, or each
 week, only such material as we know
 can be at once turned back into use, or
 shall we save all that we think may by
 any chance be found useful some day?
 If we follow the latter plan how long
 would we be accumulating a mass of
 material representing a sum of money,
 the interest of which would more than
 balance any small saving we might ef-
 fect by the use of the small portion we
 found use for, and what about the extra
 room required, and the labor expended?

In this age of rapid change and ad-
 vance in railway equipment, one of the
 problems we face is the rapid accumu-
 lation of obsolete material, and scrap,
 and nice judgment is often required in
 dealing with it. Naturally, we want to
 keep it down in quantity for appear-
 ance sake, and we want to get
 out of it as early as possible, all that
 it is worth in cash. On the other hand,
 we know that some of this material may
 be found of use some time, but what
 portion of it? It is the old problem of
 the fellow who made up his mind he
 would believe one-half that his friend
 told him, then he was confronted with
 the question of which half, and there
 he stuck. Personally, after many years
 wrestling with the problem, and making
 some hits and some misses, I have come
 to the conclusion that about as good a
 plan to follow as any is this: Let each
 shop, car and locomotive, collect its
 scrap in set of scrap bins, as close to
 shop as possible. Allow your men free
 access to these bins, and encourage them
 to use from them each day as far as ad-
 visable. Dispose of scrap by sale not
 less than four times in the year, and
 when loading, hold out only such pieces
 as you think may be used at once, and
 let remainder go. If what you have
 thrown back at one loading is found still
 on hand at the next, send it away, and
 repeat the process.

[Mr. McVeigh's paper opens up a very
 interesting and important question. We
 would be glad to hear from any of our
 readers in regard to it and to receive
 their experience and suggestions.—Edi-
 tor.]

Planer Clamp for Switch Points.—The
 planer clamp for switch points at the
 Canadian Steel Foundries, Point St.
 Charles plant, Montreal, which was de-
 scribed and illustrated in our Feb. issue,
 was invented by G. D. Smith, General
 Superintendent of the company's plants.
 Through a misunderstanding of facts he
 was not given the credit he deserves in
 this connection.

Mainly About Transportation People.

C. R. HOSMER, director, C.P.R., has left Montreal for a European trip.

Mrs. Strevel, wife of G. H. STREVEL, railway contractor, Winnipeg, died there, Feb. 26.

LORD STRATHCONA has given \$25,000 towards the erection of a hospital in Strathcona, Alta.

SIR THOS. G. SHAUGHNESSY, President, C.P.R., returned to Montreal, Mar. 9, from Nashville, Tenn.

HON. J. S. HENDRIE has been re-elected Chairman of the Railway Committee of the Ontario Legislature.

C. M. HAYS, President, G.T.R. and G.T. Pacific Ry., left Montreal for England, via New York, Mar. 12.

J. H. GORDON, travelling freight agent, C.P.R., Winnipeg, Man., died there Mar. 7, from typhoid fever, aged 28.

A. R. MACDONNELL, contractor, Montreal, who died in England in July, 1911, left an estate valued at \$1,095,790.

J. H. MARBLE, a lawyer, of California, has been appointed Secretary of the U.S. Interstate Commerce Commission.

CAPT. J. W. TROUP, Manager, B.C. Coast Service, C.P.R., returned to Victoria, B.C., Mar. 4, from a short holiday in California.

H. W. MITCHELL, ticket agent, Canadian Northern Ontario Ry., Port Hope, Ont., has joined the Canadian Ticket Agents' Association.

Mrs. Hobson, wife of JOSEPH HOBSON, M. Can. Soc. C.E., Consulting Engineer, G.T.R., Hamilton, Ont., died there Mar. 23, aged 79.

MAJOR R. W. LEONARD, Chairman National Transcontinental Ry. Commission, has been elected a director of the Toronto General Trusts Corporation.

H. E. GRANT was presented with a gold watch fob by the British Columbia Electric Ry.'s sales staff, Mar. 4, on his leaving Vancouver for California.

W. D. TRUMP, General Superintendent, Pere Marquette Rd., Detroit, Mich., has resigned after 30 years service, and will take a long holiday after April 1.

J. E. LAUGHLIN, for many years station agent for the G.T.R. and Wabash Rd., at Windsor, Ont., has resigned, and expects to move to California early in April.

H. P. DURDEN, General Agent, American-Hawaiian Steamship Co., Los Angeles, Cal., who died in San Diego, Cal., recently, was a native of Hamilton, Ont.

A. R. MANN, of the Northern Construction Co., which has large contracts on the Canadian Northern Ry., left Winnipeg, with his family, to reside in Vancouver.

G. M. HIGGERSON, Chief Dispatcher, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., was presented with a gun by his associates recently, on his leaving for the west.

SIR WM. WHYTE AND A. M. NANTON, of Winnipeg, are mentioned as probable members of the Hudson's Bay Co.'s Canadian board, which, it is said, will be established shortly.

LIEUT.-COL. E. W. RATHBUN, President, Rathbun Co., which owns the Oshawa Ry. and the Thousand Islands Ry., has been elected President of the Dominion Artillery Association.

F. W. DOTY, President of the Doty Engine Works, Goderich, Ont., and formerly owner of the Doty Ferry Co., plying between Toronto and the Island, died at Goderich, Feb. 27.

T. GUILDFORD SMITH, M. Am. Soc. C.E., Manager of Sales for various subsidiary companies of the United States Steel Corporation, at Buffalo, N.Y., died there, from apoplexy, recently.

JNO. CORBETT, formerly General For-

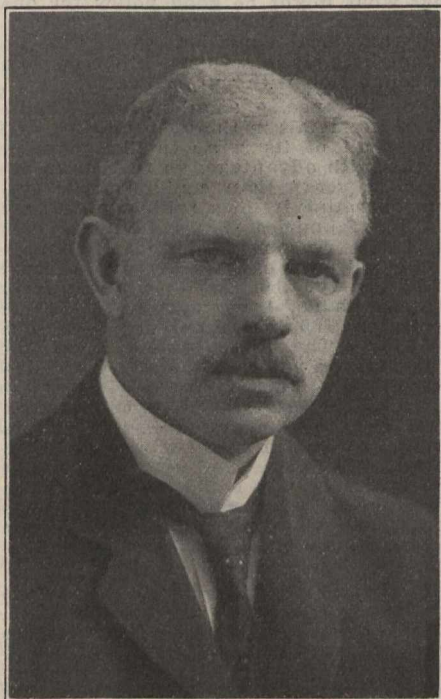
eign Freight Agent, C.P.R., and now in the marine and general insurance business, returned to Montreal, from a trip to Great Britain, Mar. 12.

W. STITT, General Passenger Agent, C.P.R. Eastern Lines, and G. H. HAM, of the C.P.R. headquarters staff, Montreal, were at the immigration conference at Fredericton, N.B., Mar. 8.

THE HON. JOSIAH WOOD, Senator, Sackville, N.B., President and General Manager, New Brunswick and Prince Edward Island Ry., has been appointed Lieutenant Governor of New Brunswick.

GEORGE BURY, Vice President and General Manager, C.P.R. Western Lines, and J. OBORNE, General Superintendent, British Columbia Division, C.P.R., were guests of the Vancouver Board of Trade, Feb. 24.

W. B. KEMP, heretofore chief clerk, District Freight Agent's office, C.N.R., Saskatoon, Sask., has resigned to enter private business with C. R. Hill, who recently resigned the position of District Freight Agent there.



F. P. Gutellus, M. Can. Soc. C.E., Who has been appointed one of the commissioners to investigate National Transcontinental Railway matters.

J. W. STEWART, of Foley, Welch and Stewart, railway contractors, expects to return to Vancouver early in April. He is at present in Pasadena, Cal., and is reported to be rapidly gaining strength after his recent severe illness.

Mrs. F. L. CLERGUE, who died in New York, Mar. 1, was widow of the late Joseph Clergue, who was associated with the initiation of the industries at Sault Ste. Marie, Ont., and Mich., now owned by the Lake Superior Corporation.

T. H. ALLEN, who died in Ottawa, Mar. 1, aged 73, was confidential secretary to Andrew Onderdonk, when the latter had a contract from the Dominion Government for building a portion of the C.P.R. in British Columbia, in the late seventies.

B. C. GESNER, the Galena Signal Oil Co.'s expert in the Maritime Provinces, has been granted the Imperial service medal in consideration of 26½ years service on the Intercolonial Ry. as locomotive engineer, air brake demonstrator and instructor.

J. F. STEVENS, M. Am. Soc. C.E., former Chief Engineer of the Panama Canal and more recently President of the Oregon Trunk Ry. and other railways of the Hill system in Oregon, is now President of the Jno. F. Stevens Construction Co., New York City.

G. ATTWOOD, Chief Engineer, Hudson Bay and Pacific Ry., Prince Albert, Sask., died in London, Eng., Feb. 9. He was one of the engineers engaged in the construction of the cable and telegraph line projected from London, Eng., via Behring Strait, through Canada, to the United States.

J. N. LEITCH, B.A. Sc., youngest son of Jas. Leitch, K.C., Chairman of the Ontario Railway and Municipal Board, died in Toronto, March 24, aged 25, of pleuropneumonia. In the summer of 1910 he was engaged in the erection of steel bridges on the Temiskaming and Northern Ontario Ry.

V. SAUCEDO, A.M. Am. Soc. C.E., has resigned the position of Chief Engineer of the Monterey (Mexico) Water Works and Sewer Co., and of the Monterey Railway, Light and Power Co., of which Sir Wm. Mackenzie is President, to enter private practice in engineering in Monterey.

J. K. SAVAGE, Chief Dispatcher, C.P.R., Brandon, Man., was presented with two leather arm chairs by the conductors and trainmen, a smoking cabinet by the telegraphers, and some silverware by the general staff, on his leaving there, Feb. 23, to take up his new duties as Superintendent at Regina, Sask.

JNO. McLEOD and Mrs. McLeod, who have resided in Winnipeg since 1879, celebrated their golden wedding Mar. 4. Before moving west Mr. McLeod was engaged in lumbering and railway contracting, and in the latter capacity built sections of the Quebec Central Ry., and of the old International Ry. (now merged in the C.P.R.)

G. A. JOYCE, formerly city ticket agent, C.P.R., at Woodstock, Ont., died suddenly from heart failure, in Chicago, Ill., March 3, aged 58. He had been connected with the C.P.R. as train dispatcher, yardmaster at West Toronto, and for seven years as ticket agent at Woodstock, and resigned some time ago to enter private business.

JNO. S. METCALF, President of the John S. Metcalf Co., Ltd., engineers and constructors of grain elevators, wharves, power plants, freight sheds, etc., Montreal and Chicago, died at his home at Evanston, Ill., Mar. 5, after several months' illness. He was born near Sherbrooke, Que., in 1847 and went to the United States when quite a young man.

W. J. HARVIE, A. Am. Inst. E.E., Chief Engineer of the Syracuse Rapid Transit Ry., Syracuse, N.Y., has been appointed Railway Manager of the operating department of J. G. White and Co., New York City, succeeding J. N. Shannahan, resigned to become Vice President and General Manager of the Newport News and Old Point Ry. and Electric Co., Newport News, Va.

W. A. MATHER, who has been appointed acting Superintendent, District 1, Manitoba Division, Kenora, Ont., was born at Oshawa, Ont., Sept. 12, 1886, and entered C.P.R. service, in the construction department, May, 1903, where he remained until Dec., 1910, when he was appointed Resident Engineer, District 2, Manitoba Division, Winnipeg, which position he held to the date of his present appointment.

W. T. DANIEL, whose appointment as Resident Engineer, District 2, Saskatchewan Division, C.P.R., Regina, was announced in our last issue, was born Sept. 10, 1886, and entered C.P.R. service, in the Engineering Department, May, 1909. In June, 1911, he was appointed assistant engineer of construction of the

Broad St. subway, Regina, Sask., which position he held to the date of the present appointment, Feb. 12.

W. C. NUNN, who died in Toronto Mar. 8, aged 76, was born in Yorkshire, England, and came to Canada in 1886, entering the G.T.R. service, in which he was agent at Whitby, Port Hope, Trenton and Belleville. He was captain of a G.T.R. company during the Fenian raid. He patented a railway signal, and subsequently went into the railway supply business, and at the time of his death was connected with the Convertible Car Co.

J. L. P. O'HANLY, civil engineer, Ottawa, Ont., died there, Mar. 22, aged 85. He had been an engineer on the Intercolonial Ry., Canadian Pacific Ry., director of the Ottawa and Gatineau Valley Ry., and Ontario commissioner in the Ontario-Quebec boundary survey in 1872. In 1881 he was on the western boundary survey of Manitoba, and reported also on the effect of the Chicago drainage canal on the level of the Great Lakes.

F. E. WARREN, who has been appointed Division Car Foreman, Ontario Division, C.P.R., West Toronto, and whose portrait appears in this issue, was born at Chelsea, Que., Aug. 29, 1872, and entered C.P.R. service, Dec. 10, 1897, since when he has been, to Dec. 1, 1902, Carpenter at Farnham, Que.; Dec. 1, 1902, to Dec. 1, 1905, charge hand at Farnham, Que.; Dec. 1, 1905, to Oct. 1, 1909, Assistant Foreman, Farnham, Que.; Oct. 1, 1909, to Mar. 11, 1912, Car Foreman at Hochelaga, Que.

S. KING, who about a year ago resigned the superintendency of the Canadian Car and Foundry Co.'s plant at Turcot, Montreal, and went to Europe for an extended trip, is now living in London, Ont. At present he is acting as one of the three commissioners who are appraising the Intercolonial and Prince Edward Island Railways' rolling stock, his colleagues being T. Williams, ex-Treasurer, I.R.C., who is the chairman of the commission, and W. Aird, ex-Master Mechanic, G.T.R. shops, Montreal.

C. K. HOWARD, whose appointment as Right of Way Agent, St. John and Quebec Ry., Fredericton, N.B., was announced in our last issue, was born at St. Andrews, N.B., Aug. 28, 1877, and entered C.P.R. service, Apr., 1894, since when he has been, to Mar., 1910, successively, operator, agent at Greenville Jct., Brownville Jct., McAdam Jct., and Fredericton, and Travelling Freight Agent, Atlantic Division, St. John; Mar., 1910, to date of present appointment, Jan. 15, Superintendent, Aroostook Valley Rd., Presque Isle, Me.

D. McDONALD, whose appointment as Superintendent, Montreal and Ste. Flavie District, Intercolonial Ry., Levis, Que., was announced in our last issue, and whose portrait appears in this issue, was born at Ste. Hyacinthe, Que., Feb. 28, 1862, and entered Intercolonial Ry. service in 1880, since when he has been, to 1882, night agent and operator, Ste. Anne, Que.; 1882 to 1885, operator at Ste. Flavie, Que.; subsequently, to Jan., 1912, joint ticket agent, I.R.C., G.T.R., and Quebec Central Ry., Levis, Que. He is the youngest brother of the late A. R. McDonald, who was a superintendent on the I.R.C. from 1879 to 1897.

J. M. MACRAE, who has been appointed District Freight Agent, Canadian Northern Ry., Saskatoon, Sask., was born at Stornoway, Scotland, July 31, 1884, and prior to coming to Canada, was connected with the coasting steamship service connecting with railways in Great Britain; from Aug., 1906, to Mar., 1907, clerk and stenographer, Audit Department, C.N.R., Winnipeg; Mar., 1907, to Feb., 1911, successively, stenographer, tariff clerk, assistant chief clerk, rates

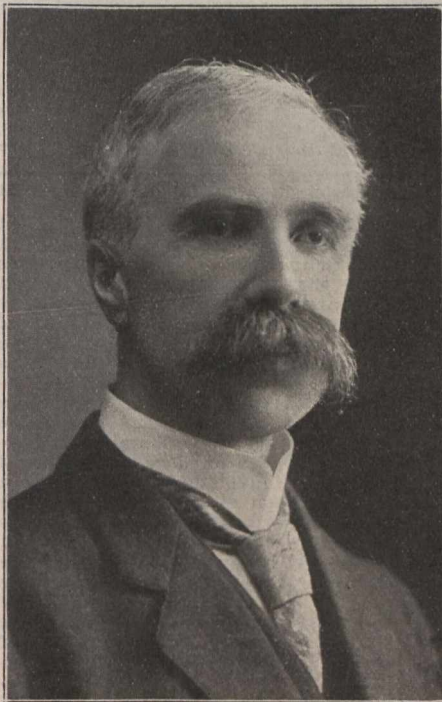
and claims, and chief clerk, Freight Traffic Department, C.P.R., Winnipeg; Mar., 1911, to Feb., 1912, Traffic Manager, Imperial Oil Co., Winnipeg.

S. B. WASS, A.M. Can. Soc. C.E., who



A. S. Dawson, B.A. Sc., M. Can. Soc. C.E., Chief Engineer, Department of Natural Resources, Canadian Pacific Ry.

has been appointed Assistant Chief Engineer, St. John and Quebec Ry., Fredericton, N.B., was born in Perth county, Ont., July 11, 1880, and graduated from the Faculty of Applied Science, Toronto University, in 1903. He has been, in



D. McDonald, Superintendent, Montreal and Ste. Flavie District, Intercolonial Railway.

1904, draughtsman, Toronto and York Radial Ry.; 1905 to 1906, Resident Engineer, same road; 1906 to 1907, Resident Engineer on Construction, C.P.R. Walkerton Branch; 1907 to 1908, Assist-

ant to Division Engineer, same road; 1908 to 1910, Chief Engineer, Aroostook Valley Rd.; 1910 to Feb., 1912, assistant to Division Engineer, C.P.R., Montreal, in charge of location.

G. HODGE, whose appointment as General Superintendent, Eastern Division, C.P.R., Montreal, was announced in our last issue, was born there, Oct. 2, 1874, and entered C.P.R. service, Mar. 24, 1890, since when he has been, to Aug. 8, 1890, junior clerk, Passenger Traffic Department; Aug. 8, 1890, to Apr., 1892, junior clerk, Vice President's office, Apr., 1892, to Jan., 1896, secretary to Vice President; Jan., 1896, to Feb., 1907, chief clerk to Vice President; Feb., 1907, to June, 1908, Superintendent, Montreal Terminals; June, 1908, to Mar., 1911, Superintendent, District 3, Eastern Division, Montreal; Mar., 1911, to Feb., 1912, Superintendent, District 2, Ontario Division, London.

C. R. HILL, who recently resigned the position of District Freight Agent, Saskatoon, Sask., to take up business as real estate and investment broker, there, entered railway service with the G.T.R. in 1900, in the local freight department, Toronto, and subsequently was in the offices of the Superintendent, Terminal Superintendent and Master of Bridges and Buildings, there. From Sept., 1902, to Apr., 1906, he was stenographer in the Traffic Manager's office, C.N.R., Winnipeg; Apr., 1906, to 1907, Travelling Freight Agent, same road, Winnipeg; 1907 to Nov., 1908, Travelling Freight Agent, same road, Saskatoon, Sask.; Nov., 1908, to May 1, 1910, Contracting, Freight Agent, same road, Regina, Sask., and May, 1910, to Feb., 1912, District Freight Agent, same road, Saskatoon, Sask.

F. L. WANKLYN, who has been appointed General Executive Assistant, C.P.R., Montreal, was born at Buenos Ayres, Argentine, Feb. 25, 1860, and educated at Marlborough College, Wilts, Eng. He was articled to C. Savie, C.E., of the Manchester, Sheffield and Lincolnshire Ry. (now Great Central Ry.), and served an apprenticeship in the locomotive works at Gorton, Manchester, Eng., and was subsequently resident engineer, Lombardy Road Ry., Milan, Italy. He came to Canada, Jan. 1, 1881, and has been Assistant Locomotive Superintendent, G.T.R., Manager, G.T.R. locomotive works, Manager, Toronto Ry., General Manager and Vice President, Montreal St. Ry., and Vice President, Dominion Coal Co., until its amalgamation with the Dominion Iron and Steel Co. He was elected a member of the Montreal board of control, Feb. 1, 1910, resigning Mar. 1, 1912, on his present appointment.

A. S. COOK, who has been appointed Inspecting Engineer, National Transcontinental Ry., Ottawa, Ont., was born at Penobscis, N.B., Nov. 20, 1873. His first engineering appointment was in 1899, as engineer in charge of construction of various parts of the Dominion Iron and Steel Co.'s plant at Sydney, N.S., where he remained until 1901, returning there for some months in 1902. He was, during 1901, on surveys for Nova Scotia Eastern Ry., and special survey work for the city of Sydney; 1901 to 1902, construction surveys and in charge of office, Cape Breton Ry.; 1902 to 1903, in charge of location and construction of electric street railway, Cape Breton Electric Co., at North Sydney, Sydney Mines and Glace Bay; 1903, Divisional Engineer, Chateaugay and Northern Ry., Quebec; 1904 to 1907, Resident Engineer, Dominion Power and Transmission Co., in charge of extension of hydraulic power plant, St. Catharines, Ont.; in winter seasons of 1906 and 1907, in charge of surveys, plans, etc., Buffalo, Niagara and Toronto Ry. proposed line from Niagara-on-the-Lake and St. Catharines to Fort Erie; 1907 to 1908, on design and construction of Coniagas smelter, Thor-

old, Ont.; Sept., 1908, to Jan., 1911, in charge of design and construction of hydraulic power plant, etc., for Merriton paper mills, Ont.; Jan. to Nov., 1911, Resident Engineer in charge of extensions, Dominion Power and Transmission Co. at St. Catharines, Ont.

Gas-Electric Motor Car for Quebec and Lake St. John Railway.

The Q. and L. St. J. Ry. has recently ordered from the General Electric Co., Schenectady, N.Y., a gas-electric car to be operated between Quebec and Lake St. Joseph, where the company has a summer hotel. While this will be the first of its kind in Canada, there have been several of like construction on United States lines, their peculiar field of adaptability being on branch steam lines where the volume of traffic does not warrant a frequent train service. It is stated that the total cost of operation and maintenance of these cars only runs up to from 18 to 20c. per mile.

These gas-electric cars are independent train units, self-contained in every particular. The power is derived from a gasoline engine, direct-connected to a generator in the cab of the car. This electric power is transmitted to electric

Fredericton and Grand Lake Coal and Railway Co.

The Fredericton and Grand Lake Coal and Ry. Co. was incorporated by the New Brunswick Legislature in 1910, with A. R. Slipp, H. P. Timmerman, C. F. Chestnut, H. W. Woods, A. B. Wilmot, D. K. Hazen and P. Glasier as provisional directors, to build a line from the Intercolonial Ry. near Gibson to Minto, to connect there with the New Brunswick Coal and Ry. Co.'s line from Norton. The company was given very general powers for developing the country along the line; was authorized to acquire the New Brunswick Coal and Railway Co.'s line and to make agreements for running rights with the C.P.R., the Fredericton and St. Marys Bridge Ry., the Intercolonial Ry., and with any other railway that may build to a connection with the National Transcontinental Ry. The company was also authorized to build a line from its line in the parish of St. Marys to Marysville, and such other branches as might be necessary for the development of the country through which the line passes.

In 1911 the Legislature passed an act, which became effective April 13, 1911, having for its object the granting of further aid for the development of the coal areas in the counties of Queens and Sunbury. The act provided that a rail-

the F. and G. L. Coal and Ry. Co. and the Provincial Government with a view to the construction of the line mentioned. During the progress of the negotiations Sir Thos. Tait secured control of the company, and after some time the negotiations were brought to a successful issue, arrangements having been made for the variation of the terms mentioned in the act of 1911, in several directions.

The Legislature has under consideration a Government measure amending the act of 1911, in accordance with the terms agreed upon in the negotiations. The important alterations are that the starting point of the line shall be Gibson, on the Intercolonial Ry., instead of Gibson on the C.P.R.; that the line is to be leased by the C.P.R. or other company for 999 years; that the New Brunswick Coal and Ry. Co.'s line is to be leased for a similar period, instead of for 99 years; and that 50,000 tons of coal are to be purchased every year for 10 years, instead of 100,000 tons a year for some period to be agreed upon. The other provisions which are amended deal with the manner in which the guaranteed bonds shall be issued, and the funds produced reach the company.

Derailment on Curves is discussed in a paper by Arthur Rogers published by the Institution of Civil Engineers, in which the author reaches the conclusion

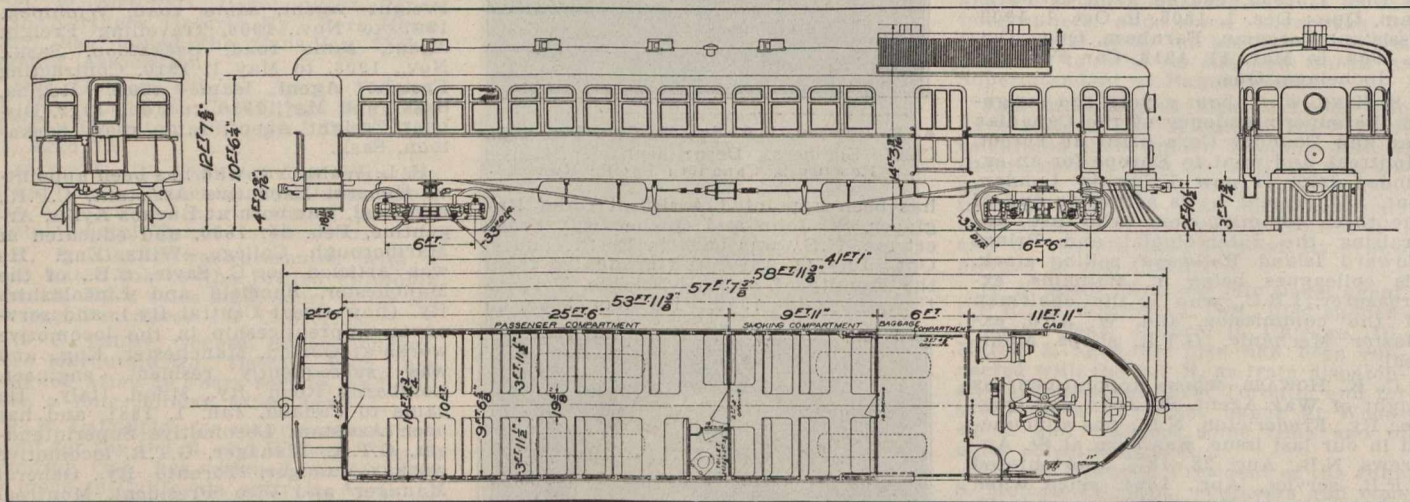


Diagram of Gas-Electric Motor Car for Quebec and Lake St. John Railway.

motors on the two axles of the truck under the cab, there being no direct mechanical drive. This truck carries from 65 to 70 per cent. of the car weight, ensuring ample adhesion. The car is operated from the forward or cab end through a controller. Motors, control and generator comprise the complete electric drive, making a simpler arrangement than a mechanical drive.

The car is divided into four compartments: passenger, smoking, baggage and cab. The general particulars are:—
 Length over couplers 58 ft. 11 3/8 ins.
 Length over platform 57 ft. 7 3/8 ins.
 Length, body 53 ft. 11 3/8 ins.
 Length, passenger compartment 25 ft. 6 ins.
 Length, smoking compartment 9 ft. 11 ins.
 Length, baggage compartment 6 ft.
 Length, cab 11 ft. 11 ins.
 Width, over all 10 ft. 4 3/8 ins.
 Width, inside 9 ft. 6 3/8 ins.
 Height, over all 14 ft. 3 3/16 ins.
 Height, roof 12 ft. 7 5/8 ins.
 Height, coupler 2 ft. 10 1/2 ins.
 Height, floor 4 ft. 2 9/16 ins.
 Wheel base, car 41 ft. 1 in.
 Wheel base, driving truck 6 ft. 6 ins.
 Wheel base, trailing truck 6 ft.
 Wheels, diameter 33 ins.
 Car weight 40.5 tons
 Seating capacity 76

The car on delivery is to be run from Toronto to Trenton, Ont., out of which point it is to operate for some time prior to being sent down to the Quebec-St. Joseph service.

way should be built from the C.P.R. at Gibson to Minto, connecting there with the New Brunswick Coal and Ry. Co.'s line, and that the Government would guarantee the bonds of any company building such a line to the amount of \$15,000 a mile. A first mortgage of the railway, buildings and rolling stock was to be given to the Government as security for the bonds, and no guarantee of the bonds of any company was to be entered into unless the Dominion Government provided a subsidy on the usual conditions, up to \$6,400 a mile; until a contract had been entered into with the C.P.R. or some other railway for the base of the line for 99 years, at a rental, payable to the province to satisfy the interest and redemption fund of the bonds, of 40% of the gross earnings of the line; that the company leases from the province for 99 years at a rental of 50% of the net earnings the New Brunswick Coal and Ry. Co.'s line, which extends from Norton on the Intercolonial Ry. to Minto; and to take for a period to be agreed upon 100,000 tons of coal mined in Queens and Sunbury counties. If the percentage of earnings of the two lines paid as rental to the Government was more than sufficient to pay the interest on the bonds, it was to be returned to the company building the line.

During 1911 negotiations were carried on between the provisional directors of

that a locomotive is likely to overturn at a critical velocity lower than that at which the overturning will be caused by centrifugal forces alone. He points out that under certain conditions, where centrifugal forces are likely to cause overturning at 71 miles an hour, the effect of the drawbar pull and of unbalanced forces in the locomotive is to make the curve dangerous at 53 miles, particularly if brakes are applied. He also concludes that superelevation should never begin on a tangent, since its effect is to set up a lateral swaying of the locomotive, which, on reaching a sharp curve at high speed, may reduce the adhesion between the inner wheels and rail enough to cause derailment.

The G.T.R. management is reported, according to a Montreal dispatch, to have decided to grant the railway telegraphers' request for extra pay for Sunday work.

The Safety Car Heating and Lighting Co., in its monthly pamphlet, gives details of its general car lighting equipment, especially such as is required for lighting dining cars.

A tracklaying record comes from Northern Nigeria, where, on the Baro Kano Ry., under British engineers, 6 1/8 miles of main track and 1,200 ft. of siding were laid with rails in one day.

Transportation Appointments Throughout Canada.

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

Algoma Central and Hudson Bay Ry., Algoma Western Ry.—W. MILLS, Master Car Builder, having resigned, the duties are being performed by T. FRASER, Master Mechanic. Office, Sault Ste. Marie, Ont.

Canadian Northern Ry.—R. CROASDELL, heretofore General Advertising Agent, reporting to the General Traffic Manager, has been appointed in charge of publicity, reporting to the Third Vice President's office. Office, Toronto.

H. J. WHITESIDE, heretofore chief clerk in the General Advertising Department's advertising branch, has been appointed Advertising Agent, reporting to the General Traffic Manager. Office, Toronto.

On account of the resignation of A. SHIELDS, General Master Mechanic, Winnipeg, as reported in our last issue, to engage in private business, all communications intended for the General Master Mechanic are to be sent to S. J. HUNGERFORD, Superintendent of Rolling Stock.

J. M. MACRAE, heretofore Traffic Manager, Imperial Oil Co., Winnipeg, has been appointed District Freight Agent, C.N.R., Saskatoon, Sask., vice C. R. Hill, resigned to enter private business.

Canadian Pacific Ry.—F. L. WANKLYN, M. Can. Soc. C.S., has been appointed General Executive Assistant, with such duties as may be assigned to him by the President, from time to time. Office, Windsor St. Station, Montreal.

C. W. P. RAMSEY, heretofore Division Engineer of Construction, Montreal, has been appointed Engineer of Construction, Eastern Lines, reporting to the Vice President. Office, Montreal.

C. B. BROWN, heretofore Division Engineer of Construction, Montreal, has been appointed Principal Assistant Engineer, reporting to the Assistant Chief Engineer. Office, Montreal.

R. H. McDONALD, heretofore Assistant Locomotive Foreman, Outremont, Que., has been appointed acting Locomotive Foreman, there, vice A. A. Scott, transferred.

F. E. WARREN, heretofore Car Foreman, Hochelaga shops, Montreal, has been appointed Division Car Foreman, Ontario Division. Office, Toronto.

H. R. MATHESON, heretofore chief clerk, Passenger Department, Chicago, Ill., has been appointed, temporarily, chief clerk to District Passenger Agent, Toronto, vice J. J. Rose, resigned to enter the Robt. Reford Co.'s service.

J. W. ORROCK has been appointed Division Engineer, Lake Superior Division, vice F. Taylor, transferred. Office, North Bay, Ont.

W. A. MATHER, heretofore Resident Engineer, District 2, Manitoba Division, Winnipeg, has been appointed acting Superintendent, District 1, Manitoba Division, vice J. Brownlee, deceased. Office, Kenora, Ont.

H. E. HAANEL, heretofore Trainmaster, District 3, Manitoba Division, Brandon, has been appointed Trainmaster, District 1, Manitoba Division, vice J. D. Scott, resigned. Office, Kenora, Ont.

D. C. CHISHOLM has been appointed Resident Engineer, District 2, Manitoba Division, vice W. A. Mather, appointed acting Superintendent at Kenora. Office, Winnipeg.

G. F. MORRISON has been appointed Travelling Car Service Agent, Winnipeg, vice R. E. Merkley, appointed Trainmaster at Brandon, Man.

D. E. FISHER, heretofore storekeeper at Field, B.C., has been appointed foreman of the lower floor, Winnipeg shops.

R. E. MERKLEY, heretofore Travelling Car Service Agent, Western Lines, has been appointed Trainmaster, District 3, Manitoba Division, vice H. E. Haanel,

transferred to Kenora, Ont. Office, Brandon.

J. H. C. PERKIN, heretofore at Winnipeg, has been appointed storekeeper at Hardisty, Man., vice R. S. Aylan, transferred to Field, B.C.

JAS. WATSON has been appointed District Master Mechanic, Saskatoon, Sask., vice J. McAnany, transferred to Revelstoke, B.C.

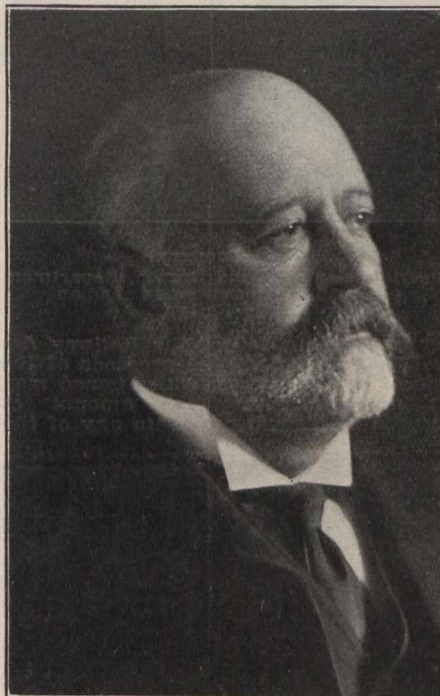
W. MCPHERSON has been appointed Locomotive Foreman, Moose Jaw, Sask., vice W. Jordan, resigned.

W. J. COLEMAN, heretofore locomotive engineer, has been appointed Locomotive Foreman, West Calgary Shops, Calgary, Alta., vice J. Doig, transferred to Red Deer, Alta.

The following appointments, some of which were reported in our last issue, have been made in connection with the recently formed Natural Resources Department:—

P. L. NAISMITH, heretofore General Manager, Alberta Ry. and Irrigation Co., has been appointed Manager, N.R.D. Office, Calgary, Alta.

T. HEENEY, heretofore Chief Account-



F. L. Wanklyn, M. Can. Soc. C.E.,
General Executive Assistant, Canadian
Pacific Railway.

ant, Alberta and British Columbia Land Department, has been appointed Assistant Manager, N.R.D. Office, Calgary, Alta.

A. S. DAWSON, heretofore Chief Engineer, Irrigation Department, has been appointed Chief Engineer, N.R.D. Office, Calgary, Alta.

LEWIS STOCKETT, heretofore General Manager, Bankhead and Hosmer collieries, has been appointed General Superintendent, Coal Mining Branch, N.R.D. Office, Calgary, Alta.

ALLAN CAMERON, heretofore General Traffic Agent, C.P.R., New York, has been appointed Superintendent, Land Branch, N.R.D. Office, Calgary, Alta.

F. W. RUSSELL, heretofore chief clerk, General Land Department, has been appointed Land Agent for Manitoba, N.R.D. Office, Winnipeg, Man.

J. HART, heretofore Assistant British Columbia Land Commissioner, has been appointed British Columbia Land and Timber Agent, N.R.D. Office, Calgary, Alta.

J. L. DOUPE, heretofore Assistant Land Commissioner, Winnipeg, has been ap-

pointed General Townsite Agent, N.R.D. Office, Calgary, Alta.

W. J. GEROW, heretofore Land Inspector, has been appointed Land Agent for Saskatchewan, N.R.D. Office, Saskatoon, Sask.

L. A. LAMBERT has been appointed chief clerk, executive branch, N.R.D. Office, Calgary, Alta.

E. S. DOUGHTY, heretofore Land Agent, Alberta and Irrigation Lands Department, has been appointed Land Agent for Alberta, N.R.D. Office, Calgary, Alta.

W. J. ELLIOTT has been appointed Superintendent of Agriculture in charge of the agricultural section of the Land Branch, N.R.D. Office, Strathmore, Alta.

J. DOIG, heretofore locomotive foreman, West Calgary shops, Calgary, Alta., has been appointed Locomotive Foreman at Red Deer, Alta., vice F. McFarlane, who has returned to the shop as a fitter.

J. H. JACKSON has been appointed temporary Locomotive Foreman, Rogers Pass, B.C.

R. S. AYLAN, heretofore storekeeper at Hardisty, Man., has been appointed storekeeper at Field, B.C., vice D. E. Fisher, transferred to Winnipeg shops as foreman of lower floor.

J. MCANANY, heretofore District Master Mechanic, Saskatoon, Sask., has been appointed District Master Mechanic, Revelstoke, B.C., vice E. E. Austin, resigned.

J. A. McDONALD, heretofore chief clerk to Assistant Passenger Traffic Manager, Winnipeg, has been appointed District Passenger Agent, Kootenay District, west of Kootenay Landing, and south of and including Arrowhead, B.C., vice W. J. Wells, resigned. Office, Nelson, B.C.

ALLAN CAMERON, heretofore General Traffic Agent, New York, having been appointed Superintendent, Land Branch, Department of Natural Resources, Calgary, Alta., as reported in our last issue, his former position has been abolished. Communications on passenger traffic are addressed to W. H. SNELL, Eastern Passenger Agent, and on freight traffic to W. F. STEVENSON, Eastern Freight Agent, New York.

Grand Trunk Pacific Ry.—F. E. CORRIGAN, heretofore Locomotive Foreman, Fitzhugh, Alta., has been appointed Locomotive Foreman, Rivers, Man.

F. LOZO, formerly Locomotive Foreman, G.T.P.R., Melville, Sask., has been appointed Locomotive Foreman, Fitzhugh, Alta., vice F. E. Corrigan, transferred.

J. MCGREEVY, formerly Roadmaster, C.P.R., Medicine Hat, Alta., has been appointed Roadmaster, Calgary branch, G.T.P.R., vice T. Johnson, Assistant Roadmaster, transferred to other duties. Office, Mirror, Alta.

Grand Trunk Ry.—J. HODGE, heretofore in special service, Middle Division, has been appointed Special Agent, Eastern Division, Montreal, vice A. C. Lanning, appointed chief clerk in Superintendent's office, Montreal.

F. W. BERGMAN, Manager, Chateau Laurier Hotel, Ottawa, has been appointed General Manager, G.T.R. and G.T.P.R. hotel systems. Office, Ottawa.

M. ADAMS, heretofore chief clerk, Freight Department, Toronto, has been appointed chief accountant, same department, there.

C. R. MORGAN, heretofore acting City Passenger and Ticket Agent, has been appointed City Passenger and Ticket Agent at Hamilton, Ont., succeeding his father, the late C. E. Morgan.

DEACON AND TROW have been appointed City Ticket Agents, Stratford, Ont.

A. H. KING, heretofore agent at Hensall, Ont., has been appointed agent at Ingersoll, Ont., vice S. J. Roy, appointed Travelling Auditor, Montreal, as announced in our last issue.

F. P. SIMPSON has been appointed

Resident Engineer at Detroit, Mich., vice T. T. Irving, promoted.

T. T. IRVING, heretofore Resident Engineer, Detroit, Mich., has been appointed Trainmaster, District 25 (C.S. and M.), and Districts 27 and 28, vice J. C. Talmage, resigned. Office, Durand, Mich.

Intercolonial Ry.—J. J. LEYDON, heretofore chief clerk, City Ticket Office, Halifax, N.S., has been appointed acting City Ticket Agent, there, vice H. A. Beck, resigned to enter the service of Cavicchi and Pagano, railway contractors.

National Transcontinental Ry.—A. S. COOK has been appointed Inspecting Engineer. Office, Ottawa, Ont.

E. P. GOODWIN has been appointed Inspecting Engineer for outside work.

New York Central and Hudson River Rd., Lake Shore and Michigan Southern Ry.—W. K. VANDERBILT, Jr., heretofore Assistant to the Vice President, New York Central Lines, has been appointed Vice President, N.Y.C. and H.R.R., and L.S. and M.S.R. Office, New York City.

M. S. BARGER has been appointed Treasurer, for lines west of Buffalo, N.Y., vice C. F. Cox, deceased. Office, New York City.

Northern Pacific Ry.—TRACEY HOWARD, heretofore chief clerk, has been appointed District Passenger and Freight Agent, vice G. W. Hardisty, deceased. Office, Montreal.

Pennsylvania Rd.—The circular, relating to the appointment of C. B. BRODIE as Canadian Passenger Agent, Toronto, announcement of which was made in our last issue, is as follows:—"With a view of bestowing more direct care and attention upon passenger travel to and from points in Canada, it has been decided to establish a passenger agency for that purpose, and C. B. Brodie has been appointed Canadian Passenger Agent, with office at 911 Traders Bank Bldg., Toronto, reporting to B. P. Fraser, District Passenger Agent, at Buffalo, N.Y."

Pere Marquette Rd.—NEWMAN ERB, President, Minneapolis and St. Louis Rd., and Iowa Central Ry., has been appointed Chairman of the Executive Committee, P.M.R., with supervising control of the executive and administrative departments. Office, New York City.

G. C. CONN, heretofore Freight Traffic Manager, has been appointed Vice President, in charge of the Freight Department, vice A. Patriarche, resigned. Office, Detroit, Mich.

W. E. WOLFENDEN has been appointed General Passenger Agent, vice H. F. Moeller, resigned. Office, Detroit, Mich.

A. WARD, heretofore at Muskegon, Mich., has been appointed General Car Foreman at St. Thomas, Ont., vice H. T. O'Toole, transferred to his former position as Coach Foreman at Grand Rapids, Mich.

St. John and Quebec Ry.—S. B. WASS, A.M. Can. Soc. C.E., heretofore assistant to Division Engineer, C.P.R., Montreal, has been appointed Assistant Chief Engineer, St. J. and Q.R., as reported in our last issue. Office, Fredericton, N.B.

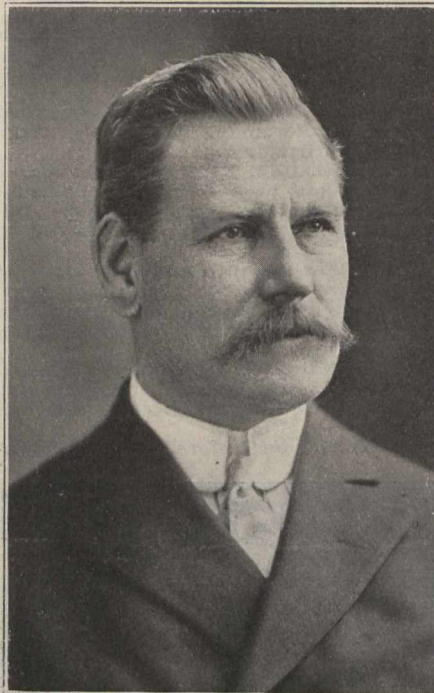
Toronto, Hamilton and Buffalo Ry.—W. J. WARNICK has been appointed Chief Dispatcher, vice G. M. Higginson, resigned. Office, Hamilton, Ont.

Western Representation on Board of Railway Commissioners.—The Minister of Railways stated in the House of Commons recently that the Government did not intend to create a western section of the Board. Two commissioners might be stationed in the west to deal with western matters, but there could not be two different boards, which might give conflicting judgments on the same matters.

The Canadian H. W. Johns-Manville Co., Ltd., has removed its Winnipeg office, storerooms, etc., to 89 Princess St. from 320 Main St., owing to increased business. M. C. Burgess is in charge.

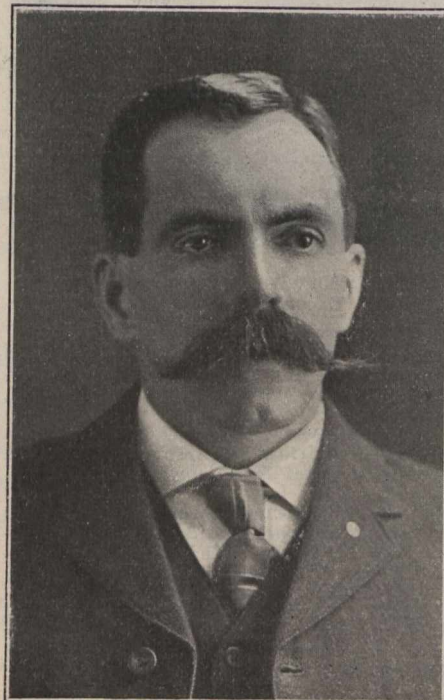
Railway Finance Meetings Etc.

Alberta Ry. and Irrigation Co.—An act has been passed by the Dominion securities to be issued and secured un-



Allan Cameron,
Superintendent of Land Branch, Department
of Natural Resources, Canadian
Pacific Railway.

der sec. 136 to 146 of the Railway Act to \$30,000 a mile. The proceeds of the sale of any of the securities issued may Parliament limiting the amount of be used to redeem pro tanto any of the



F. E. Warren,
Divisional Car Foreman, Canadian Pacific
Ry., West Toronto.

company's now outstanding mandatory securities.

Dominion Atlantic Ry. — Passenger earnings for Feb., \$28,700; freight earnings, \$53,300; total earnings, \$82,000,

against \$75,600 total earnings for Feb., 1911.

Lake Champlain and St. Lawrence Jct. Ry.—Following are the officers and directors for the current year: President, B. A. Kimball, Concord, N.H.; Vice President, W. J. Hobbs, Malden, Mass.; Secretary-Treasurer, H. Blodgett, St. Johnsbury, Vt.; other directors: W. M. Parker, Manchester, N.H.; G. M. Kimball, J. F. Webster, Concord, N.H.; L. Tuttle, Brookline, Mass. The line, which runs from Stanbridge to St. Guillaume Que., is leased to the C.P.R.

Maritime Coal, Ry. and Power Co.—A meeting of bondholders was called to be held in Montreal, Mar. 28, to pass resolutions assenting to certain proposed modifications of the rights of bondholders against the company, with the object of enabling the company to make a further issue of \$1,000,000 of bonds, and to authorize the making of the necessary supplementary trust deed.

Minneapolis, St. Paul and Sault Ste. Marie Ry.—The usual semi-annual dividends of 3 1/2% on preferred and common stocks, have been declared payable Apr. 15, to stockholders of record Mar. 22.

Ontario and Sault Ste. Marie Ry.—The annual meeting was held at Montreal, Mar. 20. The following officers and directors were re-elected for the current year:—President, C. M. Hays; Vice President, W. Wainwright; Secretary-Treasurer, F. Scott; other directors, M. M. Reynolds, W. H. Biggar, K.C., E. J. Chamberlin, R. S. Logan and Jos. Hobson.

Pere Marquette Rd.—It was announced in New York, Mar. 2, that J. P. Morgan and Co., will take up the \$650,000 equipment notes of the company now due, and that the Guaranty Trust Co. will purchase and hold them for six months.

Quebec Central Ry.—Gross earnings for Jan., \$79,668.08; expenses, \$67,499.19; net earnings, \$12,168.89, against \$64,726.17 gross earnings; \$56,910.84 expenses; \$7,815.33 net earnings, for Jan., 1911. Aggregate gross earnings for seven months ended Jan. 31, \$793,636.26; expenses, \$541,993.48; net earnings, \$251,642.78, against \$688,096.08 aggregate gross earnings; \$471,370.24 expenses; \$216,725.84 net earnings for same period 1910-11.

Toronto, Hamilton and Buffalo Ry.—At a special meeting of shareholders held in Hamilton, Ont., Feb. 29, an increase was authorized in the capital stock from \$2,500,000 to \$5,000,000.

Temiskaming and Northern Ontario Railway Report.

The report for the year ended Oct. 31, 1911, submitted in the Ontario Legislature recently, shows the following mileage:—Main line, North Bay to Cochrane, 252.8; branch lines, Charlton branch, 78; Kerr Lake, 3.9; Haileybury spur, 1.64; Porcupine branch, 28; total, 41.34 miles; yards and sidings, main and branch lines, 84.85; Liskeard spur, .64. Total mileage, 397.63.

Following is a condensed statement of revenue account for the year, compared with the previous year:—

	1911.	1910.
Revenue from transportation	\$1,708,249.02	\$1,522,020.05
Revenue other than transportation	72,715.81	69,831.97
Total operating revenue	1,780,964.83	1,591,852.02
Operating expenses	1,181,998.63	1,165,361.36
Net operating revenue	598,966.20	426,490.66
Ore royalties	17,060.56	31,762.92
	616,026.76	458,253.58
Hire of equipment, etc.	22,874.07	22,123.27
Total earnings	\$ 593,152.69	\$ 436,130.31
Paid Treasurer of Ontario	\$ 515,000.00	\$ 420,000.00

Express Companies Statistics to June 30, 1911.

Under an amendment to the Railway Act passed in 1911 the Railways and Canals Department has commenced the collection of statistics from express companies, Canadian and foreign, doing business in Canada. Returns were received from the following companies:—Canadian, Canadian Northern, Dominion, American, Great Northern, National, United States, and Wells Fargo, the forms used being those adopted by the U.S. Interstate Commerce Commission with some immaterial alterations.

The capitalization of distinctly Canadian companies was reported as follows:

Canadian Ex. Co.	\$1,705,200
Canadian Northern Ex. Co.	300,000
Dominion Ex. Co.	2,000,000
Total	\$4,005,200

The amount realized in cash for the foregoing stock issue was reported to have been \$3,165,200. The cost of real property and equipment was \$2,109,566.33. This amount is made up of the following items, applicable to Canadian companies:—

Real estate used in operation	\$ 720,200.00
Buildings and fixtures	703,816.96
Horses	\$141,423.06
Vehicles	191,063.66
Other equipment	353,052.65
Total	\$2,109,566.33

The facts relating to U.S. companies have been eliminated from the statements of capital and cost of property, as it would be confusing to include them.

The total operating mileage in Canada on June 30 was as follows:—

Over steam roads	25,377.90
Over electric lines	213.81
Over steamboat lines	1,792.00
Over stage lines	146.00
Miscellaneous	55.75
Total	27,585.46

In addition, outside operations covered 16,778 miles. This applied chiefly to ocean going steamers. The operating mileage was distributed among the provinces as follows:—

New Brunswick	1,119.43
Nova Scotia	1,396.32
Prince Edward Island	298.10
Quebec	3,914.64
Ontario	9,938.20
Manitoba	3,339.04
Saskatchewan	3,034.43
Alberta	1,371.08
British Columbia	2,814.02
Yukon	59.48
Foreign	300.72
Total	27,585.46

The foregoing mileage was divided among the various companies as follows:

American Ex. Co.	1,252.43
Canadian Ex. Co.	7,230.31
Canadian Northern Ex. Co.	4,422.29
Dominion Ex. Co.	13,709.33
Great Northern Ex. Co.	575.40
United States Ex. Co.	224.84
Wells Fargo and Co.	90.70
National Ex. Co.	80.16
Total	27,585.46

Right at the threshold of the work of gathering express statistics a difficulty arose with respect to U.S. companies operating in Canada. They did not, and could not, make an absolutely accurate separation of revenue and operating cost as between U.S. and Canadian business. A simple illustration will make the situation in that regard clear: A package is expressed from Ottawa to New York, the charges on which are say \$1. These charges might be prepaid or not. If prepaid, it would be manifestly misleading and unsound to credit \$1 to revenue in Canada, inasmuch as that sum provided for the carrying of the package over several hundreds of miles of line in the U.S. If, on the other hand, the charges were collected at the New York end, a certain proportion should be credited to revenue in Canada. What should that proportion be? After considering the whole matter, and having regard to the analogy in railway accounting, U.S. companies were in-

structed to report their earnings and operating expenses in Canada on the basis of the proportion which their mileage in Canada bore to their total mileage. That is to say, on the package to which reference has been made, the proportion of the \$1 received at either end which should be credited to Canada would be the proportion established on a mileage basis. The return of U.S. companies given in this report are in accordance with that ruling. It does not provide for an entirely accurate statement of facts, but it is the most practicable plan of accounting which could be adopted under the circumstances.

The gross receipts from operation for the year were \$9,913,018.31. From this was deducted \$4,553,861.43 as the cost of express privileges, leaving \$5,359,156.88 as the operating revenue for the year. The operating expenses were \$4,151,227.91, which was equal to 77.46% of the operating revenue. Deducting operating expenses from operating revenue, a net balance of \$1,207,928.97 is the result. To this should be added a net revenue of \$3,506.60 from outside operations, bringing the total up to \$1,211,435.57. So far as Canadian companies were concerned, the balance as between operating revenue and operating expenses was \$1,114,897.59. After deducting \$27,589.64 for taxes, which amount is slightly larger than the figures given in the balance sheet, and is taken from the taxation table, the remainder was equal to 27.14% on the capital liability. For Canadian companies, the ratio of operating expenses to operating revenue was 76.71%. After making deductions for taxes and dividends, the balance carried forward to profit and loss by all companies for the year was \$683,664.33.

The following balance sheet places the results of the year in convenient form for review:—

Gross receipts from operation	\$9,913,018.31
Less express privileges	4,553,861.43
Operating revenue	\$5,359,156.88
Operating expenses	4,151,227.91
Net operating revenue	\$1,207,928.97
Net revenue from outside operations	3,506.60
Other income	41.67
Total net revenue	\$1,211,477.24
Less taxes	\$ 27,589.64
Less dividends	481,624.32
Other deductions	26,492.81
Total	\$683,664.33

The charges for express privileges—chiefly the right to operate over certain railways—were equal to 45.93% of the gross revenue. For Canadian companies by themselves the cost of these operating rights was equal to 45.66% of the gross revenue.

The sources of revenue and the various amounts received were as follows:—

From transportation:	
Express revenue	\$9,590,907.99
Miscellaneous	53,796.73
Total	\$9,644,704.72
Other than transportation:	
Money orders—domestic	\$181,395.28
Money orders—foreign	16,985.06
Travellers cheques—domestic	2,895.74
Travellers cheques—foreign	1,186.21
C.o.d. cheques	39,701.71
Other earnings	26,149.59
Total	268,313.59

Gross revenue \$9,913,018.31

The operating expenses, apart from the cost of express privileges, were distributed under the following heads:—

Maintenance	\$ 33,721.75
Traffic expenses	104,307.20
Transportation expenses	3,871,901.69
General expenses	141,297.27
Total	\$4,151,227.91

The details of the maintenance account are as follow:—

Superintendence	\$ 312.19
Buildings, fixtures and grounds	90.68
Office equipment	1,313.53

Horses	3,038.87
Vehicles—repairs	11,165.15
Vehicles—renewals	558.17
Stable equipment	2,218.01
Transportation equipment	547.73
Other expenses	87.23
Total	\$33,721.75

Of the foregoing total amount, \$14,390.19 was not distributed into items.

Traffic expenses consisted of the following items:—

Superintendence	\$ 55,631.57
Outside agencies	4,162.55
Advertising	3,081.56
Traffic associations	3,700.66
Stationery and printing	12,859.38
Other expenses	13,532.00
Total	\$104,307.20

Of this amount, \$6,339.48 was not distributed.

Transportation expenses were made up of the following details:—

Superintendence	\$1,202,406.59
Office employees	278,461.55
Commissions	357,009.65
Wagon employes	138,378.99
Office supplies and expenses	26,082.42
Rent of local offices	37,645.62
Stable employes	10,282.47
Stable supplies and expenses	441,178.43
Train employes	157,788.13
Train supplies and expenses	2,286.13
Transfer employes	2,345.36
Transfer expenses	59,711.74
Stationery and printing	97,592.79
Loss and damage—freight	76,840.97
Loss and damage—money	361.31
Damage to property	54.77
Injuries to persons	680.64
Other expenses	576.73
Total	\$3,871,901.69

A total of \$364,270.09 was not distributed in the foregoing transportation expenses. The Dominion Express Company returned an aggregate of \$1,152,860.53 under the head of superintendence, which really included the salaries and wages of all classes of employes. An effort will be made to have this item adjusted, so that the value of comparison will not be lost in future reports.

The items constituting general expenses were as follows:—

Salaries and expenses of general officers	\$ 27,575.46
Salaries and expenses of clerks, etc.	50,438.05
General office supplies and expenses	14,779.04
Law expenses	2,199.99
Insurance	6,204.71
Pensions	6,006.11
Stationery and printing	2,950.72
Other expenses	576.83
Total	\$141,297.27

Items are lacking in the above for \$30,566.46 of the total.

The business transacted by companies in financial paper is very large, and for the year was as follows:—

Financial Paper.	Number.	Amount.
Money orders—domestic	2,789,691	43,361,803.54
“ foreign	87,215	2,255,980.16
Travellers' cheques, domestic	37,857	908,051.35
“ foreign	47,646	1,200,930.00
C. o. d. cheques		3,639,778.93
Telegraphic transfers		113,726.91
Letters of credit issued		156,921.01
Other forms		488,660.67
Total	2,962,439	52,165,852.57

Money orders were reported as being on sale at 4,628 offices throughout the Dominion.

The number of express offices in the Dominion was 2,720.

The total amount paid by companies in taxes for the year was \$32,869.25, distributed as follows:—

New Brunswick	\$ 468.31
Nova Scotia	316.12
Prince Edward Island	515.00
Quebec	11,683.34
Ontario	11,307.75
Manitoba	1,138.76
Saskatchewan	62.83
Alberta	869.39
British Columbia	1,131.17
Yukon	330.00
Foreign	2,256.82

The above statement is defective in that \$2,789.76 reported by the American Ex. Co. was not distributed. The difference between the total here and in

the balance sheet is due to the failure of the Dominion Ex. Co. to deduct taxes from income.

Following are returns of equipment owned on June 30, 1911:—

Equipment	Number.	Value.
		\$ cts.
Car safes, stationary.....	133	24,497.21
Double wagons.....	98	32,811.43
Four wheel trucks.....	1,917	53,737.72
Horses.....	814	148,593.06
Messengers' safes.....	685	16,344.56
Messengers' packing trunks.....	1,085	15,688.34
Office furniture, etc.....		66,507.05
Office safes.....	935	91,612.29
Single wagons.....	681	115,113.54
Sleighs.....	733	48,573.19
Stable equipment.....		27,956.21
All other equipment.....		71,803.37

The report of express companies operating in the United States for the year ended June 30, 1911, issued by the Interstate Commerce Commission, shows the Canadian Ex. Co. operating over 7,128.27 miles; the Canadian Northern Ex. Co. over 3,314.50 miles, and the Western Ex. Co. over 3,509.69 miles, against 7,794.27 miles, 3,129.62 miles and 3,456.39 miles, respectively, in the previous year. During the year the Canadian Ex. Co. issued \$199,200 additional shares.

Railway Rolling Stock Notes.

H. G. Beasley, Superintendent of the Esquimalt and Nanaimo Ry., is reported as having stated that it had been decided to use oil burning locomotives on the line to minimize the danger of forest fires.

The car body is to be very handsomely finished and replete in every detail. It is designed to run on the level at a speed as high as 50 miles an hour, running down to 17 miles an hour on a 2% grade.

The Minister of Railways stated in the House of Commons recently that the supplementary estimates will authorize expenditure for rolling stock for the Intercolonial Ry. amounting to practically the whole of the I.R.C.'s surplus.

The Intercolonial Ry. has ordered three vans to be built at its Moncton shops; two sleeping cars and one dining car from the Canadian Car and Foundry Co., and two sleeping cars and one dining car from the Pullman Co.

The C.P.R., between Feb. 14 and Mar. 14, ordered four wooden flat cars, eight stock cars, one horse car, three freight refrigerator cars, one box baggage car, one baggage and express car and two vans, at its Angus shops, Montreal, and one steam shovel in the United States.

Referring to the tenders which were recently invited by the Winnipeg board of control, for a steam locomotive and steam shovel for the operation of the gravel pit at Bird's Hill, we are officially advised that such a purchase has been abandoned, and that it is likely an electrical equipment will be installed instead.

The Algoma Central and Hudson Bay Ry. has ordered 70 Otis composite general service cars from the Hart-Otis Car Co., similar to those described and illustrated in our Dec., 1911, issue, making 195 of this type of car which the company has purchased. These cars, while having a carrying capacity of 110,000 lbs., are only 37,800 lbs. tare weight. They will be built by the Canadian Car and Foundry Co.

The Intercolonial Ry. has received the following additions to rolling stock since Jan. 19—two vans and nine platform cars from its Moncton shops; 195 box cars, 60,000 lbs. capacity and 20

platform cars, 80,000 lbs. capacity, from the Canadian Car and Foundry Co.; three 10-wheel passenger locomotives from the Canadian Locomotive Co., and 49 platform cars, 80,000 lbs. capacity, from the Nova Scotia Car Works.

O'Brien, Fowler and McDougall Bros., railway contractors, have ordered 20 Hart-Convertible ballast and construction cars, 40 tons capacity, 1912 design, from the Hart-Otis Car Co., which will be built by the Canadian Car and Foundry Co. Following are the chief dimensions:—

Capacity.....30 tons
 Length over end sills.....32 ft.
 Width over side sills.....8 ft. 9 ins.
 Height from rail to floor.....4 ft. 1 1/2 ins.
 Truck centres.....23 ft. 8 ins.
 Wheel base of truck.....5 ft. 2 ins.

The C.P.R., between Feb. 14 and Mar. 14, received the following additions to rolling stock—four tourist cars, 22 colonist cars, two first class cars, eight baggage and express cars, one business car, 12 vans, two switching locomotives class U3, and one tank locomotive class T2, from its Angus shops, Montreal; 14 steel underframes for Lidgerwood unloaders, from the Canadian Car and Foundry Co.; two steam shovels from the Marion Co., and 691 steel frame box cars from the United States.

The Canadian Northern Ry., between Feb. 15 and Mar. 14, received the following additions to rolling stock—60 steel underframe flat cars and two cafe-parlor cars from the Canadian Car and Foundry Co.; 72 Hart convertible cars from the Hart-Otis Car Co.; 75 flat cars, 20 cabooses and four second class coaches from the Crossen Car Co.; 280 box cars from the Nova Scotia Car Works; 10 ten-wheel locomotives from the Montreal Locomotive Works; five switching locomotives from the Canadian Locomotive Co., and one consolidation locomotive from the Canada Foundry Co.

Following are chief dimensions of the 13 special Rodger double plough distributing cars which the C.P.R. has ordered from the Hart-Otis Co., and which will be built by the Canadian Car and Foundry Co.:—

Length over end sills.....36 ft. 8 ins.
 Width over side sills.....8 ft. 10 ins.
 Length inside as hoppers.....20 ft. 10 ins.
 Length inside as gondolas.....34 ft. 8 ins.
 Width inside.....8 ft. 8 ins.
 Width over all.....10 ft. 2 1/2 ins.
 Width at top.....9 ft. 10 ins.
 Height from rail to floor.....4 ft. 4 1/2 ins.
 Height from rail to top of car.....8 ft. 1 1/2 ins.
 Height inside.....8 ft. 9 1/2 ins.
 Truck centres.....26 ft. 8 ins.
 Wheel base of truck.....5 ft. 4 ins.
 Length of hopper door opening.....16 ft. 8 1/2 ins.
 Width of hopper door opening.....2 ft.

Following are the chief details of the three six-wheel switching locomotives, which the Central Vermont Ry., has ordered from the Lima Locomotive and Machine Co., Lima, as mentioned, in our last issue:—

Cylinders.....20 by 26 ins.
 Driving wheels.....56 ins.
 Tires.....3 1/2 by 5 1/2 ins.
 Journals.....9 1/2 by 12 ins.
 Wheel base, engine.....12 ft. 8 ins.
 Wheel base, engine and tender.....42 ft. 5 1/2 ins.
 Weight in working order.....145,250 lbs.
 Weight, engine and tender.....247,000 lbs.
 Boiler, type.....Straight top, radial stayed
 Boiler, diam.....66 ins.
 Tubes, no. and diam.....264 2 ins.
 Tubes, length.....12 ft. 9 1/2 ins.
 Firebox.....98 1/2 by 40 ins.
 Heating surface, firebox.....148 sq. ft.
 Heating surface, tubes.....1,772 sq. ft.
 Heating surface, total.....1,920 sq. ft.
 Grate area.....27.3 sq. ft.
 Tender, capacity, water.....4,500 U.S. galls.
 Tender, capacity, coal.....8 tons
 Tender wheels.....33 ins.
 Journals.....5 by 9 ins.
 Brakes.....Westinghouse E.T. 6
 Lubricator.....Detroit triple 22

A Canadian Society of Civil Engineers branch has been established at Victoria. B.C. F. C. Gamble, M. Can. Soc. C.E., Provincial Public Works Engineer, is Chairman, and R. W. MacIntyre, M. Can. Soc. C.E., is Secretary.

Grand Trunk Pacific Railway Telegraph Lines.

A. B. Smith, Manager of Telegraphs, is reported as having stated that an additional 830 miles of line will be strung this year as follows:—Main line, 250 miles; Winnipeg to International boundary, 135 miles; between Winnipeg and Moose Jaw, 100 miles; between Biggar and Calgary, 100 miles; between Biggar and Battleford, 50 miles; Cutknife branch, 50 miles; in the vicinity of Prince Albert, 45 miles; Calgary branch, 100 miles. He is also reported to have stated that 2,000 miles of pole line have already been built, upon which is strung 6,500 miles of wire, and that the present season's construction will bring the wire mileage to 10,000.

Examination Papers for Railway Employees.—The Board of Railway Commissioners has issued a circular to a number of railway companies calling attention to the fact that the order of Nov. 9, 1910, requiring the companies to file with the Board within 90 days thereafter a copy of each examination paper for the examinations required to be passed by employes has not been complied with and directing the companies to comply forthwith.

Lighting of Main Line Switches.—The Board of Railway Commissioners has issued a circular calling the attention of railway companies to the fact that on a number of lines where trains are run at night, main line switches are not being lighted; also to point out that the rules require night signals to be displayed from sunset to sunrise, and that when weather or other conditions obscure day signals, night signals must be used in addition.

Protection of Trestles Where Oil Burning Locomotives are Used.—The Board of Railway Commissioners passed the following order:—16066, Mar. 6, Re order 11446, Aug. 2, 1910, requiring railway companies subject to its jurisdiction to provide protection for wooden trestles therein specified. And re application of the Vancouver, Victoria and Eastern Ry. and Navigation Co. for exemption from complying with the requirements of said order. It is ordered that in territory where oil burning locomotives alone are used, the applicant company may discontinue the use of "zinc covering over caps and intersections," as required under said order.

The Railway World, Philadelphia, Pa., in dealing with the future of the Panama canal, and commenting on the proposed tolls, says: "British Columbia people say that in a few years they will be able to send 10,000,000 tons of wheat via the Panama canal. If the canal toll is 50c a ton, here is \$5,000,000 from Canadian wheat alone, when northwestern Canada is the wheat granary of Europe, which it now appears destined to be, and before many years have passed."

The principal event at the demonstration of the Canadian branch of the St. John's Ambulance Association at Ottawa, March 6, was the contest between five-men teams representing the eastern and western sections of the C.P.R. The Windsor station team, Montreal, had proved itself the champion in the contests among the classes on the eastern lines, and the Winnipeg shop team champion of the Western classes. The final contest went to the Western team by 480 to 456 points out of a possible of 600 points.

G. C. Hyatt, Vice President and General Manager, Bellingham Bay and British Columbia Ry., is reported to have stated in San Francisco, Cal., Mar. 15, that the line had not been sold to the Chicago, Milwaukee and Paget Sound Ry., as press reports stated, and that its transfer was not under consideration.

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:—

Demurrage on Cars Delayed in Delivery.

16048. Feb. 26.—Re application of Montreal Chamber of Commerce relative to delays in delivery of goods in cars, and requesting that the railway companies be compelled to pay demurrage on cars arriving in yards and not delivered within 24 hours. Upon hearing of application at Montreal in the presence of counsel for the Canadian Car Service Bureau, the C.P.R., the G.T.R. and the Canadian Northern Ontario Ry., no one appearing for the applicants, it is ordered that the application be dismissed.

Rate on Hardwood Lumber from Fort William.

16059. March 4.—Re application of Seaman, Kent Co., Ltd., of Fort William, Ont., complaining against the rate of 80c per 100 lbs. charged by the C.P.R. on hardwood lumber from Fort William to Vancouver, and applying for the rate of 45c per 100 lbs. charged by the railway company on rough cedar, fir, etc., from Vancouver to Fort William. It is ordered that the present rate of 80c per 100 lbs. charged by the C.P.R. on lumber from Port Arthur and Fort William to Vancouver be disallowed; and that the railway company within 30 days from the date of this order substitute in lieu thereof a rate of 55c per 100 lbs. on lumber (including flooring), in carloads of a minimum weight of 40,000 lbs.

Grain Rates for Almonte, Ont.

16057. Mar. 1.—Re application of Wy-lie Milling Co. of Almonte, Ont., complaining that the C.P.R. discriminates against Almonte, and in favor of Renfrew, Eganville and Douglas, by carrying grain from Georgian Bay ports to Montreal, including milling-in-transit at the last named points, at a lower rate than to Montreal, including milling-in-transit at Almonte. Upon the notice to the C.P.R. to show cause why a maximum rate of 10¼c. per 100 lbs. should not be charged on ex-lake grain from Kingston to Montreal, including milling stop-over at Almonte, and upon the hearing of the application in Ottawa, Oct. 17, 1911, and what was alleged; and upon the report of the Board's Chief Traffic Officer, it is ordered that the Kingston and Pembroke Ry. Co., jointly with the C.P.R., shall file a tariff within 30 days from the date of this order establishing a rate of 10¼c. per 100 lbs. on ex-lake grain, in carloads, from Kingston to Montreal, including stop-over at Almonte for milling purposes. The application, in so far as it alleges discrimination against Almonte and in favor of Renfrew, Eganville, and Douglas, in the carriage of grain from the Georgian Bay ports to Montreal is dismissed.

Rates on Granite from Beebe Jct., Que.

16116. Mar. 13. Re application of Stanstead Granite Quarries Co., Ltd., under sec. 323 of the Railway Act, for an order disallowing that part of Tariff C.R.C. 1300 covering the rates on granite shipments from Beebe Jct., Que., to Montreal, Ottawa, Toronto, and other points, filed by the Boston and Maine Rd., effective Mar. 14, it is ordered that item 31 of the said tariff be disallowed; the company to have leave to apply, upon notice to complainants, for permission to reinstate in the said tariff the rates hereby disallowed.

White Pass and Yukon Route Rates.

The Board has given judgment in this case, but the formal order had not been issued when this page was sent to press. An order was made in Jan., 1911, after

a lengthy hearing at Vancouver, reducing the freight and passenger rates of the railway by a third, to go into effect on April 1. The company appealed to the late Government, and the operation of the new schedule was stayed by the Board. The appeal contained new evidence of decreased earnings and diminished traffic in 1910, and the case was re-opened by the Board. It is now found that if the cut previously ordered had gone into effect the company in 1910 would have defaulted to the extent of \$127,560.90 in the payment of interest on its bonds, and there would be nothing for the stockholders. The judgment states that while people should be protected from extortionate charges, it is of equal importance that the capital invested in transportation companies should be permitted to earn fair and reasonable dividends. The order of Jan., 1911, is rescinded. At the same time, the company is making substantial reductions. The case is not to be finally disposed of until the company at the end of its fiscal year has submitted statements showing the results of the new rates.

Discriminating in Town Tariffs.

At the Board's sitting in Ottawa, April 16, railway companies subject to its jurisdiction will be required to show cause why the existing discrimination between localities with reference to their town tariffs should not be removed, as far as possible, by widening the scope of their application.

Joint Tariffs in Canada.

At the Board's sitting in Ottawa, jurisdiction 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.



NOTICE TO CONTRACTORS.

Tenders for a Sewer Diversion on Verandrye and Archibald Streets, St. Boniface, Man.

SEALED TENDERS addressed to the undersigned, and marked on the envelope "Tender for Sewer Diversion," will be received at the office of the Commissioners of the Transcontinental Railway at Ottawa until 12 o'clock noon of the fifteenth day of April, 1912, for the construction, in accordance with the plans and specifications of the Commissioners, of a reinforced concrete sewer at St. Boniface.

Plans, details and specifications may be seen and Forms of Tender may be obtained at the office of Mr. Gordon Grant, Chief Engineer, Ottawa, Ont., and Mr. A. G. Macfarlane, District Engineer, St. Boniface, Man.

Tenders must be made on the forms supplied by the Commissioners and must be signed and sealed by all the parties to the tender and witnessed, and be accompanied by an accepted cheque on a Chartered Bank of the Dominion of Canada, payable to the order of the Commissioners of the Transcontinental Railway, for a sum equal to ten per cent. (10 p.c.) of the amount of the tender.

The right is reserved to reject any or all tenders.

By order,

P. E. RYAN,
Secretary.

The Commissioners of the
Transcontinental Railway.

Dated at Ottawa this 22nd day of March, 1912.

Newspapers inserting this advertisement without authority from the Commissioners will not be paid for it.

The Railway to Hudson Bay.

Reports from Pas Mission, Sask., state that the last of the piers for the sub-structure of the bridge across the Saskatchewan River is about completed, and that preparations are being made for the erection of the superstructure, the steel for which is on the way. This work is being done by Mackenzie, Mann and Co.

The contractor for the grading of the line from the north side of the river to Split Lake, J. D. McArthur, had a conference with the Minister of Railways at Ottawa, Feb. 29. He stated that every effort would be made to get the 185 miles completed within a year. A subcontract has been let to McMillan Bros., who are establishing supply camps at points about ten miles apart, and have everything in readiness to go on with the work at the earliest possible moment.

It was reported in Ottawa, Mar. 8, that a further distance of 130 miles from Split Lake to the crossing of the Nelson River at Kettle Falls will shortly be put under contract. It is stated that the reports of the engineers show that whether Port Nelson or Fort Churchill is chosen as the terminus of the line, the route will be the same as far as Kettle Falls.

A survey party in charge of F. P. Moffatt has started over the route from Kettle Falls to Port Nelson, and another party under F. L. Lawledge left Pas Mission, Mar. 5, to go over the route from Kettle Falls to Fort Churchill. An expedition is being fitted out to make further explorations of the approaches to both ports, and when all three reports are in the Government will be able to make a final decision as to where the bay terminus will be located.

A report from J. Armstrong, Chief Engineer, presented in the House of Commons, Mar. 4, gives details of the season's survey work and shows that the line to Port Nelson will be 415 miles long and to Fort Churchill, 498 miles. The reports as to the conveniences of the two ports show that while both sides of the Nelson River are suitable for terminals, the available space at Fort Nelson is inadequate. The cost of constructing terminals at Port Nelson is estimated at \$2,205,000, and at Fort Churchill at \$2,625,000. Except for a natural breakwater at Fort Churchill the advantages are said to be all with Port Nelson, both as a terminus and from a navigation standpoint. (Mar., pg. 126.)

Douglas Fir for Car Building.—Our last issue contained some information on this subject from the Interior Department's Forestry Branch, and also opinions we elicited from N. Curry, President, Canadian Car and Foundry Co.; D. M. Campbell, General Manager, Preston Car and Coach Co., and R. W. Burnett, General Master Car Builder, C.P.R. G. R. Joughins, Superintendent of Motive Power and Rolling Stock, Intercolonial Ry., N.B., has since written us as follows:—"In regard to a comparison of the mechanical and physical properties of Douglas fir and yellow pine. We have been specifying Douglas fir for a number of years in the construction of freight cars, to be used as sills, side plates, ridge pole, purlins and sub-purlins; and on passenger cars to be used as sills, upper flooring and belt rails, with very satisfactory results. We have not as yet specified this wood for interior finish on passenger cars; it might, however, be suitable for the interior work on baggage, postal and even colonist cars, but it would hardly be a rich enough wood for day cars or sleeping cars."

Electric Railway Department

Jig for Boring and Facing Small Bearings in the Drill Press.

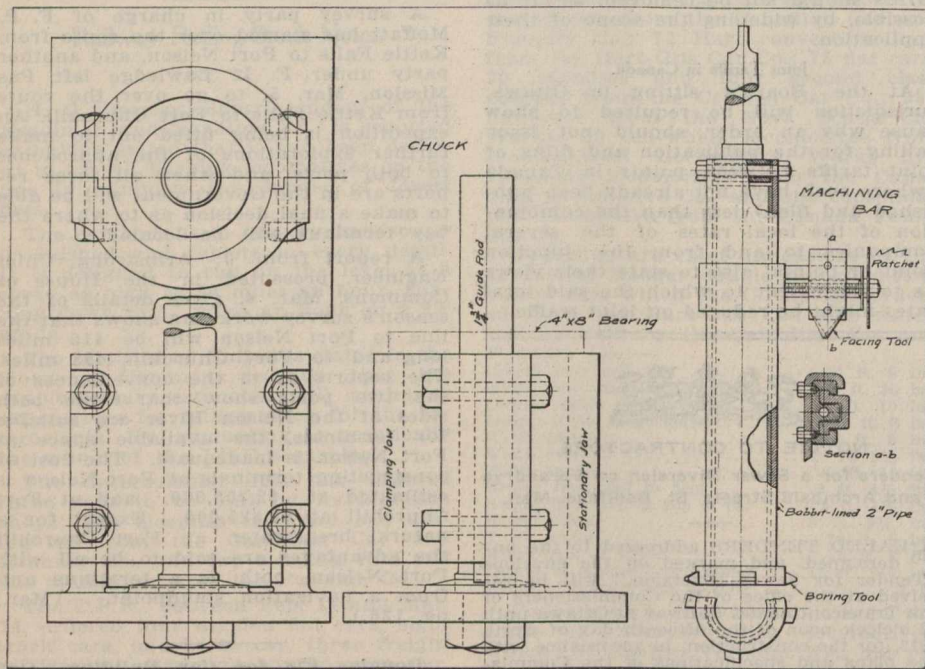
In the Halifax Electric Tramway Co.'s shops at Halifax, N.S., D. B. Logan, Foreman Machinist, has devised several ingenious little jigs for expediting the repair work on the cars of the company. Of these jigs, the one shown herewith is among the best.

Not having a specially designed journal boring machine, nor having a sufficient amount of work to warrant the installation of one, the brasses were originally bored in an engine lathe, being mounted in a temporary rig on the lathe carriage for the purpose; a boring bar between centres bored the brass to size. This inconvenient method of boring led to a consideration of the possibility of producing them on the drill press by the use of a properly constructed jig and tool. The result was the introduction of the outfit shown in the accompanying illustration.

The babbitt lined brass bearing is se-

tion, constituting as it does a universal joint. The taper shank is integral with a block of just such size as to fit loosely into the barrel of the boring bar. A $\frac{3}{8}$ -in. bolt through the bar diameter, passes through this block, the hole it passes through being about 1-16 in. larger in diameter than the bolt, giving a loose action. The socket end is thus free to sway through one plane on its carrying bolt, and through a small angle in a plane at right angles by reason of the loose fit on the cross bolt. This provides a universal joint motion, a feature that is essential in view of the fact that otherwise the chuck must be very carefully levelled on the drill table to give a correct alignment with regard to the spindle, should the boring bar be solid with its driving end. The bar with this construction is guided on the guide rod, the chuck being merely prevented from turning on the table, the flexibility of the boring bar taking up any incorrectness in original alignment.

The boring tool, screwed on the end of the boring bar, as indicated, is in form very similar to a milling cutter,



Jig for Boring and Facing Small Bearings in the Drill Press.

cured with a corresponding mate in a jig or chuck of the form and construction noted in the illustration. This consists of a cast iron base with a projecting sleeve, one half of which is a stationary jaw, forming part of the base, while the other part, or clamping jaw, is secured to the stationary jaw by bolts in the manner indicated. The two bearings are secured in place by tightening up the clamping jaw on the contained brasses. Extending up through the clamp base, and concentric with the bore there is a $1\frac{3}{4}$ -in. guide rod, rising 6 ins. above the top of the clamp. The reasons for this rod will be apparent later.

The boring bar is shown to the right in the illustration. Its body consists of a 14-in. piece of 2-in. wrought-iron pipe, lined with babbitt through nearly its full length, giving an inside diameter of $1\frac{3}{4}$ ins. to make a snug working fit over the $1\frac{3}{4}$ -in. guide rod of the chuck. The drive from the upper end is one of the most noteworthy features of construc-

tion, having cutting teeth on its circumference. The usual feed of the drill carries this cutter down the guiding bar, boring out the babbitt lining of the journal bearing through its full length. At the completion of this operation, a facing tool is brought into play. The tool for the end facing is mounted on a small carriage, running on guides attached to the boring bar. This small carriage is moved along its guiding ways by a 5-16-in. screw with a ratchet wheel on its outer end, to give the necessary cross feed at each revolution.

Accurate work with rapidity of production has attended the use of this contrivance. It is now possible to completely machine a pair of brasses in 15 minutes, making a considerable reduction in operating periods.

B. L. Jones, of Buffalo, N.Y., General Manager, Lewiston and Youngstown Frontier Ry., has been elected Vice President of the company. He is also Treasurer and General Manager, Niagara Gorge Rd.

The Handling of Snow by Electric Railways.

SARNIA STREET RY.—H. W. Mills, Manager:—"We depend upon scrapers, with which our double truck cars are equipped, to keep our lines open during the winter. We have not missed a trip this winter, in spite of the fact that we have had a large quantity of snow at zero weather nearly all January, the thermometer going as low as 20° below."

WINNIPEG ELECTRIC RY.—Wilson Phillips, Superintendent:—"We have very little snow in this city; so far this winter we have had practically none. At present there is not enough snow on the streets for good sleighing. We have about 120 miles of single track laid and six snow sweepers; we have also a rotary plow. This was ordered a number of years ago when we had a very severe storm in March, but we have never had any necessity for using it since."

EDMONTON RADIAL RY.—R. Knight, Superintendent:—"The snow problem in this locality is much less difficult than in the case of roads in the eastern parts of the country. The snow in Edmonton is very dry and the snowfall is very light. The heaviest snow storm we have had to contend with this year occurred several weeks ago, when the fall amounted to from 6 to 8 ins. No difficulty is experienced in handling the snow with sweepers, of which the railway has two, one a single truck, and the other a double truck sweeper."

TORONTO AND YORK RADIAL RY.—C. L. Wilson, Assistant Manager:—"We are using a nose plough, having two double end equipments of this description. We also have a snow plough of the steam road type, equipped with motors and wings, and flanges, which has proved very satisfactory. We also use a rotary snow plough for severe conditions. The steam road snow ploughs have been used extensively on our road, and more than the rotary, on account of the speed at which the rotary works."

BERLIN AND WATERLOO ST. RY.—V. S. McIntyre, Superintendent:—"We manage to keep our lines open very well by the use of a sweeper which handles approximately $6\frac{1}{2}$ miles of track. Two men can operate this sweeper when out in country where there are no horses to look after, but through towns it is necessary to carry an extra man to hold horses, as the sweeper throws a big cloud of snow and invariably frightens horses. We use, on the average, about four sets of brooms per winter on this sweeper. These brooms cost us, installed, \$8.60 a set. In the towns of Berlin and Waterloo the snow is carted off the streets, on which we run, immediately after each snow storm. We pay one-fifth of the total cost for this cartage. At several places along our lines we erect snow fences. These fences are placed about 100 ft. away from track, and they help very much to keep the snow from drifting over the tracks. The total cost to us for removing and fighting snow last year was \$374.86. The sweeper we have would be of no use to open up a line that has 4 or 5 ft. of snow on it, but it will clear tracks which have up to 2 ft. of snow on them. We find the best way to keep our road open is to get the sweeper in operation as soon as a snow storm starts and keep it going until the storm is over. We have not been tied up at all so far this winter, although it has been the most severe we have had for some years."—Electric Traction Weekly.

Interurban Line from Sault Ste. Marie.

Press reports say that some people at Sault Ste. Marie, Mich., have completed arrangements for the construction of an interurban railway from Sault Ste. Marie to the "Snows" this year. The survey has been completed, a private right of way over the entire length of the route secured and sufficient capital to finance the deal practically assured. Application will be made to the railway commission for authority to incorporate with \$500,000 capital stock. While a small amount of outside capital has been subscribed the promoters announce the road will be controlled by local capital. Work on the new road will be started early this spring and will probably be completed late in the fall. The terminal of the route will be on Island 8 and a car ferry will be operated from that point 22 miles across Lake Huron to Cheboygan, connecting there with the Detroit and Mackinac Ry. for the south and east. Gasoline-electric cars will be used on the run and a locomotive and freight cars will handle the bulk of the heavier freight traffic at night. The new road will open up a section of the upper peninsula that has never known travel excepting by means of stages.

Winnipeg Electric Railway Company's Annual Report.

Following are extracts from the report for the year 1911, presented at the annual meeting recently:—

The net earnings were \$1,110,573.69, after providing for all operating expenses, taxes, the city's proportion of earnings, and other fixed charges. Out of these net earnings four quarterly dividends were paid, amounting to \$690,000, leaving a surplus of \$420,573.69, which has been transferred to the credit of profit and loss account, making a total credit to this account at Dec. 31, 1911, of \$1,616,773.25.

All the properties have been efficiently maintained. In accordance with the plan of extensions adopted at the last annual meeting, the following improvements and additions to the equipment and system have been made: 10.842 miles of track was laid as follows: 9.70 miles with 80 lb. rails with concrete foundation and asphalt pavement; and .981 miles of surface track. Thirty large double-truck closed motor cars with wide vestibules equipped with air brakes and all other modern appliances to insure safety of passengers and operators, were constructed in the company's Winnipeg shops and put in service, together with 2 double-truck open cars of latest modern design, and 1 motor flat car and 1 trail flat car for construction purposes; 1,134 new poles were erected, and 216,424 lbs. of wire with 189 transformers put up, in extension of the light and power distribution system; 50,358 feet of new gas mains were laid, and 895 new gas services were installed in extension of the gas distribution system. The new 1,000,000 cubic feet gas holder was completed and put in operation. A new auxiliary steam plant of 12,000 h.p. capacity was constructed and is in operation, which gives a capacity of 20,000 h.p. of auxiliary steam plant to protect the company and its customers from any serious break-down at the hydraulic works.

WINNIPEG ELECTRIC RAILWAY COMPANY.		
	1911.	1910.
Gross receipts	\$3,829,749 67	\$3,284,241 83
Operating expenses ..	1,900,967 67	1,654,833 60
Operating expenses per cent. of earnings ..	49.64	50.89
Net earnings	1,928,782 00	1,629,508 23
Net income per cent. of capital	49.64	15.58
Passengers carried ..	40,281,245	31,369,421
Transfers	10,012,048	8,003,038
Railway earnings per capita	10.46	10.02

WINNIPEG, SELKIRK AND LAKE WINNIPEG RY.	
Gross earnings	\$89,185 85
Gross expenses	45,891 43
Net earnings	\$43,294 42
Fixed charges—	
Interest on bonds	20,000 00
Taxes, etc.	14,565 34
	34,565 34
Surplus for year	\$ 8,729 08
SUBURBAN RAPID TRANSIT COMPANY.	
Gross earnings	\$57,995 49
Gross expenses	46,161 81
Net earnings	\$11,833 68
Fixed charges—	
Interest on bonds	25,000 00
Taxes, etc.	2,542 12
	27,542 12
Deficit for year	\$15,708 44

The directors for the current year, who were re-elected, are:—President, Sir Wm. Mackenzie; Vice President, Sir Wm. Whyte; Sec.-Treas., F. Morton Morse; other directors, Sir Wm. C. Van Horne, Sir Donald D. Mann, D. B. Hanna, A. M. Nanton, Hugh Sutherland, R. J. Mackenzie.

Halifax Electric Tramway Company's Annual Report.

Following are extracts from the report for the year 1911, presented at the annual meeting recently:—

Compared with previous years the results of operations are gratifying. Gross and net earnings were increased. During 1910 the rates to general consumers of electric light were reduced 10%. On May 1, 1911, a further reduction in these rates was made (equivalent to about 1% on the capital stock). The rates of wages to employes were substantially increased during the year, consumers and employes thus participating with the shareholders in the general prosperity of the company.

During the year, the Point Pleasant tram line was, at the request of the Park Commissioners, extended into Point Pleasant Park. This extension has proved a great convenience to the large number of persons who frequent the park.

During 1912 it is proposed to further increase the efficiency of the tram service by double tracking the belt line (which will include the construction of about 3 1/4 miles of single track) purchasing additional cars, providing increased car house accommodation and installing an additional unit in power house—the whole involving an expenditure of approximately \$200,000.

In addition to expenditure on capital account, a large amount was expended for repairs and improvements to the property, the physical condition of which has been well maintained.

INCOME ACCOUNT.	
Passenger receipts	\$229,927 84
Light and power earnings ..	203,119 88
Gas earnings	61,310 24
Sundry earnings (less provision for bad debts)	9,041 36
	\$502,399 32
Operating expenses	\$256,874 00
Interest on bonds	30,000 00
Net earnings to surplus account	215,525 32
	\$502,399 32

Dividends aggregating \$112,000 were paid and \$22,288.43 was appropriated to renewals and betterments in 1911, depreciation in securities, provision for bad debts, and accident claims prior to 1911.

The percentage of operating expenses to income was 51.97%; passengers carried, 5,212,257; car mileage, 918,121.

The directors for the current year, who were re-elected, are:—President, Hon. David MacKeen; Vice President, J. Y. Payzant, W. B. Ross; other directors, A. Kingman, J. C. Mackintosh, C. C. Blackader, F. B. McCurdy, M. C. Grant, O. E. Smith.

St. John Railway Company's Annual Report.

Following are extracts from the report presented at the annual meeting, Feb. 26, for the year 1911:—

The year's business shows a net profit, after providing for interest on bonds and all other charges, of \$54,232.41, out of which four quarterly dividends of 1 1/2%, amounting to \$48,000, have been paid, leaving a balance of \$6,232.41, which has been transferred to profit and loss account. The accrued dividend of 1% for Nov. and Dec., 1910, was included in the first quarterly dividend paid April 19, 1911.

During the year the following works have been undertaken:—

New brick and steel car barn on Wentworth St., 55 by 212 ft. Brick and steel office and supply building on Nelson St., 28 by 41 ft. In connection therewith we purchased the Fisher and Cathers lots adjoining. We purchased during the year a lot of land owned by the Lantalum estate, on which part of our power house is situated. A large amount has been expended for repairs and improvements on the railway and light system, the physical condition of which has been well maintained. It is proposed to remove the railway tracks from Britain St., between Wentworth and Charlotte Sts., and place them on Broad St.

It will be necessary to provide additional cars, and we propose to have built at once six new p.a.y.e. combination cars.

At the last session of the Legislature, authority was given the company to construct and operate lines for the transmission of electric current for light, heat and power throughout Kings county; and power was also granted to develop and operate water powers in that county. Your directors propose to extend the electric light service during the present year to Rothesay, Milford and Crouchville. We have acquired all the property, franchises and privileges granted to the Carleton Electric Light and Power Co.

At the last session of the Legislature, authority was given the company to issue bonds or debentures for \$250,000. It will be necessary to sell these bonds to provide for capital expenditure.

Your directors have been conducting negotiations with the Provincial Government for crossing the new cantilever bridge, to be erected at the falls. The terms proposed to us have been too onerous, but we hope to arrange a fair settlement.

We are about completing arrangements with the Dominion Government for crossing the Intercolonial Ry. at Haymarket Square, so as to extend our railway service to the cemetery and Crouchville.

The directors for the current year, who were re-elected, are:—James Ross, President; Col. H. H. McLean, K.C., M.P., Vice President; R. B. Emerson, J. Manchester, J. J. Tucker, W. Downie, F. E. Sayre, F. R. Taylor, J. M. Robinson.

The New Orleans and Grand Isle Traction Co., Ltd., has been incorporated under the Dominion Companies Act with \$10,000,000 capital stock and office at Toronto. The principal object, no doubt, is to acquire and operate the New Orleans Southern and Grand Isle Ry. and the Algiers Ry. and Power Co., which were referred to in our Feb. issue, pg. 88, and of which C. E. A. Carr, formerly General Manager, Quebec Ry., Light, Heat and Power Co., is General Manager, C. D. Warren, of Toronto, being President of the New Orleans, Southern and Grand Isle Ry.

Electric Railway Projects, Construction, Betterments, Etc.

Alberta Electric Ry.—The Dominion Parliament has authorized the Alberta Electric Ry. Co. to change its name to the Alberta Interurban Ry. Co., and has authorized organization as soon as 25% of shares to the extent of \$10,000 a mile of the section first proposed to be built shall have been subscribed, and 10% thereon paid in cash. The construction of the other sections of the line can only be undertaken on the same conditions.

We are officially advised that the prospect prepared sometime ago was not issued, and a new one has been put out by the Land Traction Co. of Canada, which was incorporated under the Alberta ordinance 1417, on Sept. 15, 1911. The authorized capital of the L.T. Co. is \$500,000, and the capital of the A.E. Ry. Co. is \$10,000,000, with power to issue bonds at the rate of \$30,000 a mile on 1,200 miles of railway. There have been put on the market \$250,000 "A" shares of the L.T. Co. at par, and \$450,000 of 30 year 5% (2% sinking fund) first mortgage bonds of the A.E. Ry. Co. with a bonus of one share of the A.E. Ry. common stock to each \$100 bond. The L.T. Co. has acquired such share of the A.E. Ry. stock as has been thought fair and reasonable remuneration for the work it has done and has arranged to do, and the balance of the A.E. Ry. stock is held by trustees for future construction. The directors of the L.T. Co. are:—J. Breckenridge, S. E. Beveridge, W. R. Wood, W. A. Lowry, and C. S. Drummond, Calgary, Alta.

The first section of the line proposed to be built extends from Calgary passing through Rocky View, Yankee Valley, Irricana and Carbon to Red Deer, and we are advised that the location surveys are practically completed. A large number of the local improvement district councils have already passed the formal resolution required for the free use of the highways for the railway.

A general meeting of the shareholders has been called to be held at Calgary, April 16, for organization purposes, and to enter into a contract with the Land Traction Co. for the construction of the first section of the line, and to authorize the issue of the mortgage bonds in respect of the same. (Mar., pg. 147.)

Berlin and Bridgeport Electric Ry.—The general plan for the extension of the line, for which legislative sanction is being asked, shows a route via Bloomingdale, connecting with Conestogo with a spur of about a mile, crossing the C.P.R. by an overhead bridge at Montrose, and thence to Elora and Fergus, Ont. The distance between Bridgeport and Elora by the proposed route will be about 15 miles. It is proposed to have a switching connection with the C.P.R. at Montrose. (Mar., pg. 147.)

British Columbia Electric Ry.—We are officially advised that the line under construction on the Saanich Peninsula, Vancouver Island, runs north 23 miles from Victoria to Deep Cove, near the head of the peninsula. There will be a branch to Union Bay. Both these points are on the sheltered waters of Saanich Inlet. At Union Bay the company has secured the extensive tract of land, known as Meadlands, which it is proposed to develop as a residential and pleasure resort, and a wharf is to be built. It is quite possible that a ferry service may be established to the mainland, as well as a line connecting with the various islands, but at present the company has no plans in this direction. A contract for building the first 18 miles was let to Moore and Pethick, in Nov., 1911. Grading is being gone on with.

Press reports state that work will be started at once, on the projected cut off

of 3.5 miles from Highland Park to New Westminster, and that the work will be finished in six months. It is said it will be double tracked, with a maximum gradient of 2.7%.

Burrard, Westminster Boundary Ry. and Navigation Co.—W. McNeill, Assistant General Manager of the Western Canada Power Co., is also President of a railway company with the above title, which proposes to build an electric railway from Vancouver to Mission, B.C. The plans which have been filed with the Dominion Railways Department show a line, starting from Main and Keefer streets, Vancouver, east to Nanaimo St., across Hastings townsite, via Burnaby to Port Moody, on by the projected C.P.R. yards at Coquitlam, crossing the Pitt River, and continuing along the Dewdney trunk road to the Stave River falls, where the Western Canada Power Co.'s plant is situated, and then southerly to the Fraser River at Mission. There will be some heavy grading and embankment work to provide an easy and uniform gradient. It is proposed to build the section of the line from Mission to Pitt River first, and it is expected to have this completed by Mar. 31, 1913. It is estimated that the bridge crossing the Pitt River will cost \$750,000. The Western Canada Power Co. has just completed the installation of the first two units of a 54,000 h.p. hydro-electric plant at Stave River Falls. (May, 1911, pg. 409. See also Western Canada Power Co., Mar., pg. 149.)

Calgary Municipal Ry.—Work on the construction of the extension to the site of the C.P.R. new shops at Maharg, Alta., was started Feb. 26. (Mar., pg. 147.)

Cape Breton Electric Co.—We are officially advised that the company will make surveys during the summer for extensions to New Waterford, N.S. At present is not possible to give any definite statement as to what construction may be done. (Mar., pg. 147.)

Coteau Power Co.—We are officially advised that surveys are being prosecuted vigorously both at the point where it is proposed to develop power, and for the location of the projected lines of railway in the Okanagan district, B.C. (Mar., pg. 147.)

Edmonton Radial Ry.—It is proposed to build during this year new lines and extensions on five streets, the total length of which will be 5.09 miles.

The city commissioners have decided to erect the new car barn on the site of the present barn at Syndicate Ave. and Gallagher St. The new building will be built over and around the present barn, which will then be torn down and taken away. The estimated cost is \$60,000. (Mar., pg. 147.)

Forest Hill Electric Ry.—Application is being made to the Ontario Legislature to incorporate a company with this title to build an electric railway from the northern boundary of Toronto, on Forest Hill road, northerly and north-westerly to two miles north of Eglinton Ave.; from Eglinton Ave. southerly along Bathurst St. to the northern boundary of Toronto; along Eglinton Ave. from Yonge St. to Dufferin St., and branches. Mills, Raney, Lucas and Hales, Toronto, are solicitors for applicants.

The Galt, Preston and Hespeler Electric Ry.'s franchise in Galt, Ont., has been renewed for 10 years. (Dec., 1911, pg. 1171.)

Halifax Electric Tramway Co.—We are officially advised that the company is building a second track on the loop line, a length of 5.5 miles. Some of the work has already been done, and there

remains about 3.3 miles of the second track to be laid. The work proposed to be done this year will be on Oxford St., Quinpool Road, Windsor St., Almon St., and Agricola St. It is expected to have the work completed by the summer of 1913. It is intended also this year to extend the track from the corner of Cunard and Gottingen streets, along the latter street for nearly a mile.

It is also proposed to enlarge the two car barns during this year. At the power house a new 1,500 k.w. steam turbine, 80% power factor, with all necessary auxiliaries, is to be installed. (Mar., pg. 147.)

Hamilton, Grimsby and Beamsville Electric Ry.—At the annual meeting of shareholders, Feb. 27, President Dixon stated that the directors were not in a position to say when the projected extension from Beamsville to St. Catharines, Ont., would be gone on with. (Mar., pg. 147.)

Hamilton Radial Ry.—Survey parties have been at work since Feb. 20, between the end of the track at Oakville, and a point of junction with the Toronto and York Radial Ry. at Port Credit, or an extension of the Toronto Suburban Ry.

Hamilton, Waterloo and Guelph Ry.—New York engineers who have been going over the route, completed their work Mar. 15, and it is reported that construction will probably be started within a month. The engineer who will have charge of construction for McArthur Bros., who are undertaking the financing, was expected to be in Hamilton Mar. 30, to make final arrangements for construction.

Hull Electric Co.—We are officially advised that the company will build an extension from the main line to the Ottawa Racing Association's track, a distance of over half a mile, as soon as arrangements have been completed. The extension will have a double track, with a loop at the race course end to permit the use of single end cars. (Dec., 1911, pg. 1069.)

Humber Valley Electric Ry.—The provisional directors named in the application to the Ontario Legislature for the incorporation of a company with this title are:—R. H. Smith, C. M. Garvey, F. Regan, W. G. Jackson, Toronto. The company proposes to build an electric railway from Dundas St., in Lambton Mills, southerly along the west bank of the Humber River, to the Lake Shore road, and thence easterly to Sunnyside Ave., Toronto. Power is asked to connect with existing railways. The Legislature has approved of the principle of the measure, and proposes to defer its coming into operation until Jan., 1913, to give the city time to decide whether it will build the line. (Feb., pg. 91.)

Kawartha Transportation Co.—The applicants to the Ontario Legislature for the incorporation of a company with this title are: L. H. Grahame, E. R. Tate, C. W. S. Dunn, H. G. Fitzgerald, Lakefield, Ont.; L. M. Hayes, Peterborough, Ont. They propose to build electric railways from Peterborough through Lakefield to Stoney Lake, and thence to Apsley; from Peterborough to Chemong Lake, and from Peterborough to Rice Lake, Ont. (Feb., pg. 91.)

Ladner, B.C., to Huntingdon, Wash.—Press reports state that the International Railways and Development Co. has under consideration a proposition to build an electric railway from Ladner to New Westminster, B.C., and thence to Blaine and Huntingdon, Wash.

London and North Western Ry. of Canada.—Press reports state that a syndicate of English and Belgian capitalists is negotiating for the control of this company, as well as of other companies having electric railway charters west of London, Ont., with a view of

completing through lines from London to Windsor and Sarnia, and giving connection to all towns in the district. (Mar., pg. 148.)

London Street Ry.—Bids will shortly be asked for the fitting up of an additional steam plant for power production. (Mar., pg. 148.)

Maharg Electric Ry.—The Alberta Legislature last session incorporated a company with this title, to build an electric line radiating from Maharg, Alta. C. A. Owens, G. O'Grady, J. Ruse, Calgary, are provisional directors. (Mar., pg. 148.)

Medicine Hat, Alta.—At a meeting of the city council, Feb. 29, notice was given that at the next meeting a bylaw authorizing the building of a municipally owned electric railway would be introduced. (See Medicine Hat Electric Ry.)

Medicine Hat Electric Ry.—The Alberta Legislature has incorporated a company with this title to build from Medicine Hat to Dunmore, returning by a different route into the city; and for another line to Elkwater Lake. The provisional directors are:—A. F. Krapfel, D. W. Brown, W. Overplank, Medicine Hat, Alta. (Feb., pg. 148.)

Montreal.—The section in the Montreal city bill, before the Quebec Legislature, authorizing the borrowing of \$5,000,000 to build a system of underground railways, was abandoned in committee, Mar. 8. (Mar., pg. 148.)

Montreal and Southern Counties Ry.—A bylaw granting a franchise through the municipality of Laprairie, Que., has been approved by the taxpayers, and a bylaw granting a franchise in Granby, Que., is being considered by the town council.

The railway committee of the Granby, Que., city council has approved the plans of the company's proposed line from Montreal to that city. W. B. Powell, Vice President, is reported to have stated on his return from Granby, Mar. 15, that petitions had been received from Pauline and Abbotsford, asking that branches be built from the Montreal-Granby line to serve them.

Montreal Tramways Co.—We are officially advised that track was laid on Sherborne St. East, from St. Lawrence St. to Cadieux St., 0.10 of a mile, in Jan. The construction was temporary, but the line will be put in a permanent condition in the spring.

President Robert is reported to have stated, Mar. 14, that the company is prepared to go on with an extension of lines in the city, even before a contract is signed by the city council. The company is not prepared to build lines into open fields in order to please land speculators, but is anxious to build lines in the city to accommodate the people and to provide an adequate service. If the council will get down to business, the company is ready to start building the lines at once.

Morrisburg and Ottawa Electric Ry.—The Ontario Legislature is being asked to grant an extension of time for the building of this projected railway from Ottawa to Morrisburg, Ont. G. D. Kelley, Ottawa, is solicitor for applicants. (Dec., 1911, pg. 1171.)

Niagara, Welland and Dunnville Electric Ry.—The Ontario Legislature is being asked to extend the time within which the lines authorized by chap. 10 of the statutes of 1910 may be built, and to increase the capital stock to \$500,000, and the company's bonding powers to \$30,000 a mile.

The directors and officers are: President, H. C. Schofield, M.P.P.; Vice President and Managing Director, C. J. Laughlin, jr.; Secretary-Treasurer, H. Rooke; other directors, W. W. Near, W. W. Butler; Superintendent, T. F. Swayze.

A press report, Mar. 6, says that negotiations are in progress with an English firm for the building of the line, a short piece of which has already been built in Welland. (Mar., pg. 148.)

Nipissing Central Ry.—It is expected that work on the extension from Haileybury to New Liskeard, Ont., will be started before May 1. (Mar., pg. 148.)

Ottawa and Lake McGregor Ry.—The provisional directors named in the bill before parliament providing for the incorporation of a company with this title are: N. McK. Retallack, W. S. Mackenzie, J. C. Cote, Ottawa; G. Clement, Angers, Que.; J. A. Duquette, Perkin's Mills, Que. (Mar., pg. 148.)

Ottawa Electric Ry.—The city council and the O.E. Ry. have agreed that the Preston St. extension shall be built as soon as the street is prepared by the city; that the Bank St. line will be extended; and that a line will be built on Wellington St. from Bank St. to Mackenzie Ave. as soon as the Government gives the desired permission. Other proposed extensions are still under discussion. (Mar., pg. 148.)

Porcupine Rand Belt Electric Ry.—The provisional directors named in the application to the Ontario Legislature for the incorporation of a company with this title are:—S. F. Adalia, H. A. Rowland, F. Regan, W. H. Best, Toronto. It is proposed to build an electric railway from the eastern boundary of Ontario in McGarry tp. westerly and southerly to Ladner city, thence westerly to the headquarters of the Montreal River, and on to the eastern bank of the Mettagami River at Kenogamisse Lake, with branches. Authority is also asked to connect with the Temiskaming and Northern Ontario Ry., and any other railway that may be built through the country traversed. (Jan., pg. 39.)

Port Arthur and Fort William Electric Ry.—The taxpayers of Port Arthur, Ont., have passed bylaws authorizing the building of a second track on the Arthur St. line from Bay St. to Algoma St., and on Bay and Algoma Streets; to extend the street railway from Hill St. westerly along Dawson Road to Algonquin Ave., and to build a siding at the fair grounds.

In connection with the power asked for from the Ontario Legislature to build lines outside the city limits, we are officially advised that for several years there has been talk of extending the line into the townships of McIntyre and Oliver, and it is now desired to have power to do so when the proper time arrives.

The Manager of Public Utilities of Fort William, Ont., reporting as to the street railway, gave details of the work done during 1911. The total expenditure was \$80,793.90, or, adding departmental and miscellaneous expenditures, \$84,498.55, and deducting credits, \$73,997.22. Four double truck, double end cars had been purchased at a cost of \$28,101.19. The city now owns 12 double truck closed cars, one double truck single car, and two single truck cars. There are in the city 3.4 miles of double track and 6.2 miles of single track, altogether 13 miles of line calculated as single track. The total expenditure on construction has been \$390,863.01, and the city has a balance of \$37,136.99 of the \$428,000 of debentures sold, unexpended.

Regina Municipal Ry.—A bylaw providing for the expenditure of \$400,000 additional upon this line is under consideration by the Regina, Sask., city council. It has been decided that the work left uncompleted in 1911 shall be finished, and that a further six miles of track will be laid during the current year. (Jan., pg. 39.)

St. Thomas Street Ry.—The committee of the St. Thomas, Ont., city council

having charge of the operation of the street railway has had the question of improving the lines under consideration. The committee is of opinion that the citizens would defeat any bylaw calling for any larger immediate expenditure than \$20,000, and the City Engineer was directed to prepare estimates showing what could be done with that amount. (Mar., pg. 149.)

Sarnia Street Ry.—We are officially advised that the company proposes to build an extension to Lake Huron Park pavilion, Sarnia, Ont., owing to the increasing business to the park.

Plans are being prepared for a new car barn and machine shop. The building will be of concrete, with steel girders for roof and concrete. The building will be equipped with all the latest appliances, and will have accommodation for 20 double truck cars.

A contract has been placed for two new generators for the power house, which are expected to be set up early in April. (Mar., 1911, pg. 261.)

Saskatoon Electric Railway and Power Co.—The Saskatchewan Legislature has incorporated a company with this title to build an electric railway in Saskatoon, and also to take over an agreement made with H. M. E. Evans, of Edmonton, and the Saskatoon Power Co. The S.P. Co. is incorporated by chap. 154 of the statutes of Canada of 1907-08, and the bylaw of the city of Saskatoon adopting the agreement was approved, July 6, 1911. The Legislature also confirmed the agreement with the city council.

The Legislature inserted clauses in the act under which the company cannot transfer its charter and franchises without the consent of the city; nor extend its lines outside the city limits without the consent of the city, the municipality concerned, and the Lieut.-Governor-in-Council. (Jan., pg. 39.)

Sherbrooke Ry. and Power Co.—The power transmission line to Stanstead, Que., 32 miles, has been completed, and power was turned on Feb. 28. Press reports state that arrangements are being made for the building of an electric railway between Sherbrooke and Stanstead, and that the first section of the line to be built will be between Sherbrooke and North Hatley. (Jan., pg. 39.)

The Springhill Fruit Lands Co. is considering a proposition for the purchase of a storage battery electric car and the making of an arrangement for its operation over the St. John Valley Ry., when it is built, between Fredericton and Springhill, N.B., about five miles. F. deL. Clements, Springhill, N.B., is President.

Sudbury-Copper Cliff Electric Ry.—The provisional directors named in the application to the Ontario Legislature for the incorporation of a company with this title to build the lines mentioned in our last issue are:—Jos. Bell, W. Cochrane, J. Mackey, D. M. Morin, L. Laforest, Sudbury, Ont. (Mar., pg. 149.)

Three Rivers Tramway Co.—Application is being made to the Quebec Legislature for the incorporation of a company with this title, to build a tramway to be operated by electricity in the city of Three Rivers, and in the surrounding parishes. The provisional directors are: R. Ryan, N. Lamy, F. A. Verette, J. F. Bellefeuille, O. Beauclacé, C. Bourgeois, Three Rivers. The city council has passed a bylaw granting a franchise for the building of an electric line along certain streets in the city. The plans approved show lines covering the principal streets of the city, and extending to Ile St. Christophe, in the St. Maurice river. (See Three Rivers, Que., Jan., pg. 40.)

Toronto City.—The Toronto city council, Mar. 19, referred back for further consideration, a recommendation of the board of control to employ Ford, Bacon and Davies, New York, at a cost of \$30,000 in addition to certain expenses, to make a report on a metropolitan system of street railways for the city. It was intended that the experts employed should report upon the civic car lines now being built, and also on the handling of the Toronto Ry. system when the franchise expires in 1921. (Mar., pg. 149.)

Toronto Suburban Ry.—Plans have been filed in the York county registry office for the extension of the line now terminating at Weston, Ont., to Woodbridge, 7.97 miles; for the extension of the line now terminating in Lambton Mills, to Islington, 2.54 miles, and from that point in the direction of Georgetown as far as mileage 15.12.

A deputation from Guelph waited on the management recently, and was informed by W. H. Moore that the company expected to have its line completed from Toronto to Guelph by the fall. It was not proposed to take over the People's Ry. scheme at Guelph, but the company would be prepared to aid the Guelph Radial Ry. in building a line out of Guelph north and south.

Representatives of the Stratford city council and of the Stratford Ry., who also interviewed the management, state that they were informed that it was desired to take over the Stratford charter, with a view of making it a centre for radial lines designed as feeders for the Canadian Northern Ry. lines in Western Ontario when built. Some further negotiations having taken place, A. Waddell, one of the directors of the S. Ry., is quoted as having stated, Mar. 4, that he was only waiting orders from Toronto to sign the transfer of the company's powers to the Mackenzie, Mann and Co. interests.

Work has been started on the construction of the extension of the line from Weston to Woodbridge, Ont., and the work will be pushed forward to completion as soon as the frost is out of the ground. The present line from Keele St., which is 4 ft. 10 1/4 ins. gauge, will be converted to standard 4 ft. 8 1/2 ins.

On the proposed extension from Lambton to Guelph, right of way agents are out between Islington and Meadowvale, and it is expected that construction will be started soon.

Application is being made to the Ontario Legislature for authority to build an additional line from some point on the company's located line through Toronto tp., Peel county, to Brampton, thence easterly to a junction with the company's present line near the G.T.R. station at Davenport, Toronto. (Mar., pg. 149.)

Watrous Radial Ry.—The Saskatchewan Legislature has incorporated a company with this title to build an electric railway within the town of Watrous and into surrounding municipalities. N. B. Wilks, Watrous, is one of the provisional directors.

The Legislature has also authorized the Watrous town council to grant a franchise for a street railway within the town, and also to guarantee the bond of a company building such a railway.

Winnipeg Electric Ry.—We are officially advised that the company is negotiating under its Winnipeg, Selkirk and Lake Winnipeg Ry. charter, with the municipalities interested, for the building of a line to Stonewall and Stony Mountain, Man. It has not been decided from what point on the present line the new line will start, or what route will be followed. The new line will be about 20 miles long, and it is expected that construction will be started this year.

The company is applying to the Manitoba Legislature to amend its powers in several particulars.

The Winnipeg board of control passed a resolution Mar. 14, calling upon the company to construct about eight miles of new tracks this year.

Electric Railway Finance, Meetings, Etc

British Columbia Electric Ry.—Gross earnings for Jan., \$517,247; working expenses, \$313,408; net operating earnings, \$203,839; renewal funds, \$37,935; net earnings, \$165,904; approximate income from investments, \$25,000; net income, \$190,904; against \$368,754 gross earnings; \$218,428 working expenses; \$150,326 net operating earnings; \$29,770 renewal funds; \$120,556 net earnings; \$20,000 approximate income from investments; \$140,556 net income, for Jan., 1911. Aggregate gross earnings for seven months ended Jan. 31, \$3,318,641; net earnings, \$1,170,091, against \$2,360,402 aggregate gross earnings; \$970,452 net earnings, for same period 1910-11.

Calgary Municipal Ry.—Earnings for Feb., \$37,366.75, against \$19,383.21 for Feb., 1911.

Cape Breton Electric Co.—Gross earnings for Jan., \$28,327.44; operating expenses, taxes, etc., \$17,495.31; net earnings, \$10,832.13; interest charges, \$4,495.83; balance, \$6,336.30; sinking and improvement funds, \$1,140; balance, \$5,196.30, against \$27,442.73 gross earnings; \$15,289.56 operating expenses and taxes; \$12,153.17 net earnings; \$4,152.50 interest charges; \$7,640.67 balance; \$1,141.67 sinking and improvement funds; \$6,499 balance, for Jan., 1911.

Dominion Power and Transmission Co.—An action has been entered at Hamilton, Ont., by C. W. Moodie, and some other shareholders against the directors. The plaintiffs ask for damages for alleged breach of trust in procuring and permitting the acquisition by the company of its properties for a fraudulent and excessive consideration; an order to recover from the individual defendants and the company all profits made by defendants in connection with the acquisition by the company of its properties; an order to recover from them all fees as salaries received by them in excess of services rendered; a declaration that the stock of the company, issued in pursuance of the transactions complained of is not fully paid up; an injunction against the continuance or repetition of the alleged wrongful acts; an account in respect of the above matters and the appointment of a receiver. This action has been threatened for some time, the shareholders who are bringing it having complained that the directors withhold dividends on preferred stock and used them in connection with the company's business without interest.

Edmonton Radial Ry.—During Feb. the revenue was \$25,101.92, and 613,351 passengers were carried. It is stated that when the report for the month is fully prepared, a conspicuous item will be the minimum amount of current used per car mile. The system of metering the current used by each car and offering a bonus for economy is expected to show its effect on the monthly power bill.

Grand Valley Ry.—The proceedings in the courts at Toronto for the appointment of a receiver for this company are stated to have arisen in respect of \$125,000 of bonds issued on the Brantford St. Ry., prior to the amalgamation, and it is stated that this is the first step to the reconstruction of the company. A Brantford press report states that the present interests have secured sufficient capital to carry out the financial reconstruction

of the company, and that there is no prospect of the Brantford St. Ry. being taken out of the G.V. Ry. control and taken over by the Brantford city council.

Hamilton Grimsby and Beamsville Ry.—Following are the officers and directors for the current year:—President, J. Dixon; Vice President, J. Dickenson; other directors, J. Moodie, W. C. Hawkins, J. V. Sutherland; Treasurer, J. Knox; Secretary, G. D. Fearman. It was reported at the annual meeting, Feb. 26, that the total earnings for the year 1911 were \$121,000 and that about \$37,000 was expended upon maintenance.

Montreal St. Ry.—Passenger earnings for Jan., \$412,826.23; miscellaneous earnings, \$5,135.70; total earnings, \$417,961.93; operating expenses, \$267,369.52; net earnings, \$150,392.41; city percentage of earnings, \$24,143.04; interest on bonds and loans, \$15,959.84; rent of leased lines, \$661.37; taxes, \$5,000; total charges, \$45,764.25; surplus, \$104,828.16; expenses per cent of earnings, 63.97, against \$363,147.35 passenger earnings; \$6,997.25 miscellaneous earnings; \$370,124.60 total earnings; \$239,982.64 operating expenses; \$130,141.96 net earnings; \$18,352.08 city percentage of earnings; \$15,495.86 interest on bonds and loans; \$607.30 rent of leased lines; \$4,700 taxes; \$39,155.44 total charges; \$90,986.52 surplus; 64.84 expenses per cent of earnings for Jan., 1911; passenger earnings for Feb., \$388,748.03; miscellaneous earnings, \$5,247.44; total earnings, \$393,995.47; operating expenses, \$270,123.42; net earnings, \$123,872.05; city percentage on earnings, \$25,555.64; interest on bonds and loans, \$15,724.04; rent leased lines, \$661.37; taxes, \$5,000; total charges, \$46,941.05; surplus, \$76,931; percentage of expenses to earnings, 63.56, against \$326,628.34 passenger earnings; \$4,109.33 miscellaneous earnings; \$330,737.67 total earnings; \$227,604.44 operating expenses; \$103,133.23 net earnings; \$21,024.29 city percentage of earnings; \$15,642.58 interest on bonds and loans; \$607.10 rent leased lines; \$4,700 taxes; \$41,973.97 total charges; \$61,159.26 surplus; 68.82 percentage of expenses to earnings, for Feb., 1911. Aggregate total earnings for five months ended Feb. 29, \$2,105,765.24; operating expenses, \$1,298,599.44; net earnings, \$807,165.80; total charges, \$205,781.19; surplus, \$601,384.61; percentage of earnings to expenses, 61.67, against \$1,830,922.44 aggregate total earnings; \$1,135,988.40 operating expenses; \$694,934.04 net earnings; \$182,782.64 total charges; \$512,151.40 surplus; 62.04 percentage of expenses to earnings, for same period 1910-11.

Quebec Ry., Light and Power Co.—The directors have decided not to pay any further dividend on the common stock for the present, but to devote the surplus earnings to betterments and the creation of a surplus.

Regina Municipal Ry.—Passenger earnings for Jan., \$5,154.95; miscellaneous earnings, \$270; total earnings, \$5,424.95; operating expenses, maintenance of way and structures, \$736.41; rolling stock, \$230.26; electrical equipment, \$186.08; conducting transportation, \$1,871.73; power, \$1,025.25; general, \$295.49; total, \$4,345.22; net earnings, \$1,079.73. Gross earnings per car mile, 26.746c; operating expenses per car mile, 21.423c; net earnings per car mile, 5.323c. Passengers carried, 114,067; cost of power per car mile, 5.054c.

Toronto Ry.—Gross earnings for Jan., \$656,110; operating expenses, maintenance, etc., \$326,672; net earnings, \$329,438, against \$590,418 gross earnings, \$293,150 operating expenses, maintenance, etc.; \$297,268 net earnings for Jan., 1911. Commencing with the foregoing figures for Jan., the company's return will cover the combined earnings, etc., of the Toronto Ry., Toronto and

York Radial Ry., Toronto Power Co., Toronto Electric Light Co., and the Electrical Development Co. of Ontario.

Winnipeg Electric Ry.—Gross earnings for Jan., \$319,433; operating expenses, \$175,412; net earnings, \$144,021, against \$346,144 gross earnings; \$188,349 operating expenses; \$157,795 net earnings for Jan., 1911.

Electric Railway Notes.

H. Doughty, Superintendent of the Regina Municipal Ry., resigned his position, Mar. 31.

The American Electric Railway Association's convention will be held in Chicago, Ill., Oct. 7 to 11.

The Regina city council has decided to order three additional cars for its electric railway, for delivery in Sept.

The Erie Rd. is reported to be about to electrify 208 miles of its New York suburban lines, at an estimated cost of \$12,000,000.

The New Brunswick Public Utilities Commission has under consideration the fixing of rates for the Moncton Tramways, Electricity and Gas Co.

The Moose Jaw Electric Ry. has ordered three single end, semi-convertible, pay-as-you-enter car bodies, 31 ft. long over all, from the Ottawa Car Co.

The Toronto and York Radial Ry. has ordered five passenger cars and two express cars for its Metropolitan Division from the Preston Car and Coach Co.

J. B. Rannie, heretofore Traffic Superintendent, has been appointed Traffic Agent, British Columbia Electric Ry., Vancouver, and has been succeeded by Jas. Hilton.

Hon. L. P. Pelletier, Postmaster General, has resigned as director of the Quebec Ry., Light, Heat and Power Co., and has been replaced by Elsear Baillargeon, his nephew and legal associate.

The Halifax Electric Tramway Co., during 1911, added vestibules to both ends of 24 of its closed cars, at a cost of \$2,500. It is purchasing for fall delivery four box cars, and for delivery by the summer of 1913, four open cars.

H. E. Grant, of the British Columbia Electric Ry. Co.'s light and power department, will read a paper on the education of central station employes, at the National Electric Light Association's convention at Seattle, Wash., in June.

The Ontario Legislature's private bills committee has struck out of a bill introduced in the interest of the town of North Toronto a clause which provided that no electric railway should transport freight on any highway in the town.

The Port Arthur and Fort William Electric Ry. has ordered two double end, semi-convertible, pay-as-you-enter car bodies 32 ft. long overall, and one double-end double truck semi-convertible pay-as-you-enter car body 33½ ft. long over all, from the Ottawa Car Co.

The Montreal Tramways Co. informed the Quebec Public Utilities Commission, Mar. 12, that all cars in the service had been equipped with emergency brakes, and all double truck cars were equipped with air brakes. The single truck cars were being got rid of at the rate of 50 a year, being replaced by 30 double truck P.A.Y.E. type cars.

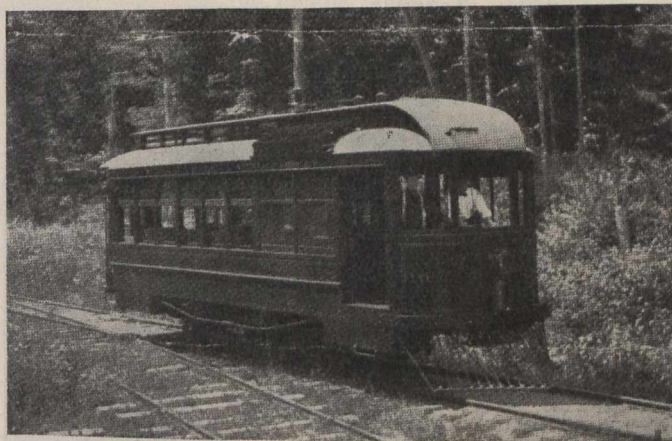
The deal transferring the Algiers Ry. and Lighting Co.'s property to the Canadian syndicate that owns the New Orleans, Southern and Grand Isle Rd. was completed Mar. 1, and the property will pass to the New Orleans and Grand Isle Traction, Light and Power Co., incorporated in Ontario, Mar. 1, with a capital stock of \$10,000,000. C. E. A. Carr, general manager, Algiers Ry. and Lighting Co. and New Orleans, Southern and

Grand Isle Rd., and formerly of Quebec, says that no definite plan for the improvement on the property will be decided upon until it is formally transferred.

T. W. Casey, general manager, Prepayment Car Sales Company, New York, and formerly of Montreal, has returned from a trip through Europe in the interest of the International P-A-Y-E Tramcar Co., Ltd., of London, Eng. He reports a cordial reception among European electric railway officials and great interest in and willingness to discuss prepayment car operation as judged from the experience of the operation of this type of cars in the United States. The General Omnibus Co., of London, is changing some buses to prepayment operation. If these should prove practicable and successful a general conversion of all its buses is contemplated. The General Omnibus Co., of Paris, is also changing some of its buses operating between Paris and St. Germain to prepayment operation.

Gasoline Motor Car for Winnipeg City Power Railway.

The city of Winnipeg has bought a gasoline motor car for use on its railway between the C.P.R. station at Lac



Gasoline Motor Car for Winnipeg City Power Plant.

du Bonnet and the city power house at Point du Bois. The accompanying illustration of the exterior of the car shows its general features. It has a four-wheel steel frame truck with 10 ft. wheel base, standard gauge, and the total weight is about 22,000 lbs. Power is supplied by a heavy type four cylinder gasoline engine of special design, and with a conservative rating of 50 to 60 h.p. at 600 r.p.m. The transmission is of a gear type, and is so designed that there is no possibility of gear trouble in changing from one speed to another. There are three speeds in each direction, and two chains transmit the power from the gear box to the front pair of wheels. The maximum speed so far obtained is 42 miles an hour, but on good track this can be considerably increased. With this car the travelling time between Lac du Bonnet and Point du Bois has been decreased from one hour and a half (the schedule time of steam train) to 55 minutes, the present schedule. The gasoline consumption is from 7 to 8 miles per gallon. The car has hauled with ease a loaded 40-ton freight car, and has taken a 5% grade ¾ of a mile long on the high gear. There is seating capacity for 35 people, the body being divided into two compartments, the rear having reversible seats upholstered in rattan, and the forward containing engine and having ample room for light baggage and express. The forward compartment may

also be used as a smoking compartment, as it is provided with drop seats. Steam heat is supplied from a small boiler at the front end of the car. Westinghouse straight air equipment is provided. The car was supplied by the Canadian Fairbanks-Morse Co., Ltd.

Telegraph Lines in Canada.

In moving recently in the House of Commons for the appointment of a commission to investigate the systems of telegraph, etc., in Canada, with a view to submitting such data to the Post Office Department, J. E. Armstrong, M.P. for East Lambton, Ont., quoted the following figures relating to the operation and equipment of various telegraph companies in the year 1910-11:

The Dominion Government owns 8,406 miles of telegraph line and cables, 8,150 miles being land lines. There are 603 offices and 249,915 messages were sent in the year. The expenditure was \$432,970.04, and the revenue \$169,585.15, a deficit of \$263,384.89.

The C.P.R. Telegraphs operated 12,257 miles of telegraph line, with 76,175 miles of wire, sending 3,431,493 messages. It has 1,372 offices.

The Great North Western Telegraph Co. operated 11,234 miles of pole lines, with 50,092 miles of wire, sending 2,907,495 messages, and has 1,183 offices.

The Western Union Telegraph Co. had 2,639 miles of pole lines with 11,024 miles of wire, sending 551,764 messages, with 217 offices.

The North American Telegraph Co. operated 605 miles of line, with 783 miles of wire, and sent 38,015 messages, with 83 offices.

The Grand Trunk Pacific Ry. operated 1,699 miles of pole lines, with 5,081 miles of wire, sending 71,154 messages, with 73 offices.

The Algoma Central Ry. had 130 miles of line, 174 miles of wire, and sent 3,639 messages with four offices.

The Temiskaming and Northern Ontario Ry. had 265 miles of pole line and 1,865 miles of wire, sending 131,106 messages with 22 offices.

The total mileage of pole line owned by all the companies in Canada was 28,729, and the line mileage operated by telegraph, telephone and cable companies was 145,997. Messages taken and delivered over all these lines, not including press messages, 7,134,665, and total number of offices 2,934.

Canadian Street Railway Association.

PRESIDENT, James Anderson, General Manager, Sandwich, Windsor and Amherstburg Ry.; VICE PRESIDENT, P. Dube, Secretary Montreal Tramways Co.; SECRETARY-TREASURER, Acton Burrows, Managing Director, The Railway and Marine World.

ASSOCIATION'S OFFICE, 70 Bond St., Toronto. EXECUTIVE COMMITTEE.—E. P. Coleman, Manager of Railways, Dominion Power and Transmission Co.; H. M. Hopper, General Manager, St. John Ry.; J. E. Hutcheson, Superintendent, Ottawa Electric Ry.; C. B. King, Manager, London St. Ry.; D. McDonald, General Manager, Montreal Tramways Co.; M. N. Todd, President, Galt, Preston and Hespeler St. Ry.

ASSISTANT SECRETARY, Aubrey Acton Burrows, Secretary and Business Manager, The Railway and Marine World.

OFFICIAL ORGAN, THE RAILWAY AND MARINE WORLD.

Marine Department

Fuel Oil and Its Installation on the G. T. P. Steamships Prince Rupert and Prince George.

By C. H. Nicholson, Manager, Grand Trunk Pacific Ry. Steamships.

The adoption of oil as fuel for steamships' use is a question which involves the careful study and solution of many problems peculiar to each individual case. Some of these are:—The advantages to be gained in economy and efficiency; the abundance of the supply, means of securing proper delivery, storage facilities and convenience in fueling ships; quantities required to be carried, location of proper storage on board, ships' trim and stability, fresh water storage, etc.; and, not the least important, the system of oil burners to be adopted.

The advantages gained in the use of oil as fuel as against coal vary according to the conditions under which it is to be used, and are generally well recognized. Briefly enumerated, they are as follows: The quantity required to perform the same service is less both in weight and the space occupied, with a proportionate decrease in fuel bills. This is particularly true on the Pacific coast, where the oil supply is abundant, and coal is somewhat limited in quantity, high in price, and of comparatively poor fuel value. Such expenses as renewing of grate bars, stoke hold floor plates, slice bars, rakes, etc., which every coast engineer knows are considerable, are done away with.

It has been the experience also of ship owners who have changed from coal to oil that charges for boiler maintenance have practically disappeared. The constant opening of furnace doors for firing up, and the time required to clean fires on account of the large amount of ashes and clinkers, with the consequent inrush of cold air, and the resultant lowering of furnace temperature, cause an immense amount of contraction and expansion. This cannot but have a serious effect on joints and rivets, and as a consequence a large unnecessary expense for repairs, to say nothing of the rapid deterioration of the plant, with the ultimate necessity of replacing the boilers long before their time. I have known ships to carry a gang of boilermakers trip after trip, and when laid off for overhaul the principal expense would be boiler repairs. One superintendent engineer whose fleet made long off-shore voyages, told me it used to be a regular thing to have boilermakers waiting a ship's arrival in port, but since his line adopted oil fuel he "had not seen a boilermaker."

Another most important economy is the reduction in the number of firemen and trimmers required, with the consequent lowering in payroll and cost of subsistence. One man of ordinary intelligence on a watch, in oil burning ships with single stoke holds, will tend 18 fires and have an easy time of it, whereas with coal 18 firemen and six to nine trimmers would constitute the stoke hold crew of such a ship, and they would earn their money, too. The difficulty of securing so large a crew of efficient firemen is very often a serious one. This is greatly lessened with oil, as its use does not require nearly so many nor any more skillful men, and the cleanliness and lightness of the work appeals to them. Crews are easier to keep and are more useful on that account.

Because of the absence of smoke, cinders and coal dust, oil burning ships are

not only cleaner, but the supplies required for scrubbing and painting are much less, and while the economies from such sources are difficult to calculate, they are appreciable nevertheless.

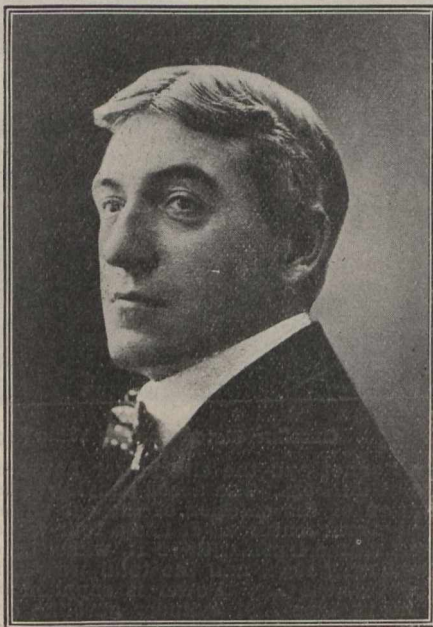
In point of efficiency the advantages are quite as marked. The calorific value of oil far exceeds that of coal. After deducting the percentage of moisture and ash from coal, the latter from experience having been found to run as high as 20% and 25%, the average run of coal will be found to represent 7,000 to 9,500 b.t.u., whereas oil will give as high as 18,500 b.t.u. The combustion of coal is most incomplete with very high stack temperatures, while with oil combustion it is practically perfect, and stack temperatures of from 400° to 450° F. are easily obtained. Boiler efficiency (under coal usually about 57%) is in consequence increased to

seven months. The California and Texas oil fields are by no means exhausted; new wells are being sunk constantly, and from indications in Alaska, Alberta and South America, other fields will be developed equally as important, so that notwithstanding the immense increase in consumption, the supply promises to be adequate, and the price will probably go lower rather than higher.

Fueling facilities are becoming more adequate, and ships may now take oil at all California ports, Portland, Ore., Tacoma and Seattle, Wash., and Vancouver, B.C. In a few instances oil barges are kept and will come alongside and fuel a vessel up while at her own pier, but in most cases it is necessary to proceed to a shore station for oil, at the expense of moving the ship and the loss of time entailed. For our own purposes, where a rigid schedule is maintained and time is a most important factor, it is desirable that the ships may be fueled, watered, freighted, and take on or discharge passengers, baggage and mails at one and the same time without requiring the ships to move from their berths. This has been accomplished by the erection on the new Grand Trunk Pacific dock, Vancouver, of an oil storage tank holding 32,000 bbls., a measuring tank holding about 1,000 bbls., and a pumping plant of 1,000 bbls. per hour delivery. An 8-in. pipe line leading down the dock, with two connections to the ship, enables both forward and after tanks to be filled at the same time. A contract has been made which calls for a constant supply of oil, having the required flash test and gravity. The pump house is of concrete, and the tanks stand on heavy concrete foundations laid on piles driven to 3 ft. centres, with retaining walls of reinforced concrete. The walls themselves form an outside tank with a capacity 10% greater than the steel tanks, and are circular in shape, with panels set in, making them more ornamental than otherwise. By the plan the rate of insurance on our own and surrounding property is not effected, and the maximum degree of safety from leaks or fire is obtained.

Individual requirements must govern the quantities required to be carried. The route the vessel is on and the frequency with which she can be fueled are to be considered. A handy rule is the i.h.p. developed, divided by 10, which will give the consumption in barrels per steaming day of 24 hours, or, generally speaking, 4 bbls. of oil will equal one ton of good coal, although on vessels with modern and well maintained equipment, 3½ bbls. will be nearer the actual consumption, including the usual auxiliaries.

The location of oil storage on board is perhaps a more difficult problem. Double bottoms are frequently used in ships where they are required for water ballast only. The principal difficulties in such cases are those of proper venting arrangements, and owing to the low temperature of the sea water, and the density and low viscosity of oils required to stand British Admiralty and Dominion Government tests, it will be found necessary to fit steam heater coils to the suction pipes to secure a free and constant flow to the pumps. Such coils, from their location, are difficult to over-



C. H. Nicholson,
Manager, Grand Trunk Pacific Ry.
Steamships.

something over 80%, especially where forced draft installations are found. The water evaporation is thereby increased. Instead of an evaporation of from 7 to 9 lbs. of water per pound of fuel with coal, from 15 to 16 lbs. of water per pound of fuel is secured with oil. The steam pressure is steady and easily obtained, a given speed is readily maintained, thereby adding greatly to the accuracy of dead reckoning, the safety of the ship and those travelling on her, as well as their comfort and convenience. When all these things are considered there seems little argument left in favor of coal as against oil, except the supply.

While it is difficult to calculate definitely the future oil supply, still there are no present indications of failure in this direction. It was reported a few months ago that there was in storage in California alone a quantity sufficient to take care of the world's consumption for

haul, and are attended with the possibility of developing leaks and the consequent introduction of water into the oil.

In high speed vessels like the Prince Rupert and Prince George, questions of displacement, trim, stability and centres of gravity are very carefully worked out by the designer and builders, and it is most important that such conditions once established should not be disturbed. These being the only ships on the Pacific coast fitted with full hot and cold running water service in all staterooms they require far more than the average supply of fresh water. The double bottoms being utilized for this purpose, it became obvious if fuel oil was to be carried there that an equal amount of water storage must be provided elsewhere. It was decided that oil tanks built in the regular bunker spaces would create the least disturbance to the domestic and boiler feed water systems of the ships, the distribution of weights and other questions of trim and stability. Besides this the plan possessed the additional advantage of convenience in filling and venting arrangements without disfiguring the vessels' cabins or exteriors, and such tanks being located above the ships main tank tops no suction heaters were necessary. The space provided contains sufficient to carry the ships a round trip (about 1,700 nautical miles) at 18 knots an hour, with ample for port consumption.

These tanks, five in number, are built of heavy steel, and are well provided with fore and aft and 'thwart ship bulkheads to prevent swathing. In addition to the usual flanged fittings required by law, full sized gate valves have been provided on the inside of pipe openings, operated by spindles from the top of the tanks, which permits closing any pipe line in case of a break, and absolutely confining the oil to the tanks. The tank plans were approved by Lloyd's, the British Board of Trade, and Dominion steamboat inspectors before the contracts were let.

The filling arrangements are most complete and simple. The forward and after tanks can be filled separately, but in addition, the after filling pipe leads to an 8-in. manifold, by which not only can the filling of any tank be controlled, but being connected with the pumping system, any tank can be filled from any other or discharged overboard if necessary. This brings all working valves in one place and constantly under observation.

Lastly, on the system of burners adopted depends the entire efficiency of the plant, and to a large extent the economy to be obtained. As is well known, there are three methods of atomizing fuel oil employed, viz., by the use of compressed air, steam, or by mechanical process. The first entails considerable initial expense for compressors, etc., and the cost of operation; the second, while not so costly to install, uses a large amount of live steam, which is unreclaimed, and a consequent drain on the fresh water supply, and in addition, the roaring of the burners is disagreeable and a nuisance. The third, or mechanical system, consists of heating the oil to a high temperature, and putting it under pressure, from which, when escaping at the burners it bursts into a vapor and readily ignites. It is practically noiseless. After carefully considering all methods with the idea of procuring the very best, the mechanical atomizing system was decided upon as cheapest to operate and most efficient.

The particular system adopted after thorough investigation is not only very simple, but less costly to install than some others, and particularly well adapted to the forced draft, with which these ships are fitted. It consists of three specially designed heaters tested to 700 lbs. pressure, which can be used singly

or in series, two being sufficient to carry the ship working under full power, the third being held in reserve. Pumps, strainers, etc., are in duplicate, one of each to be held in reserve for emergencies, thermometers, oil meter, fire brick quarl and adjustable metallic cone for regulating the supply of air. The burners are very simple as to design and arrangement for changing or cleaning. A burner can be taken out and changed in five seconds, and has various sized tips which can be changed as required, for increasing or diminishing the consumption. During a visit by the writer to San Francisco to inspect this system, a practical test was made, using a Scotch marine boiler with forced draft, an accurate record of stack and feed water temperatures were taken, and the quantities of fuel and water used were carefully computed. Very satisfactory results were obtained both as to evaporation and fuel consumption.

The contract for the tanks and for installation was given the B.C. Marine Railways, Ltd., at Esquimalt, B.C., and the s.s. Prince George was retired from service for the purpose of making the change, in Nov., 1911. Some delay was experienced in assembling the material, but the vessel went into service again March 3, relieving the s.s. Prince Rupert, which will be similarly changed and ready for service about April 15.

Much study and care has been given this installation in arranging the plans and working out the details, and it is considered the best and most complete yet made on this coast, this opinion being borne out by other steamship and oil men who have seen the work being done. It is confidently expected that when these ships are again in service, not only will the desired economy and increased efficiency be affected, but many improvements will be found possible under the new conditions, not the least of which will be clean and white painted stoke holds, smokeless stacks, and sootless decks, the latter features being a consummation devoutly to be wished, and which will be much appreciated by the travelling public.

Changes Suggested in Examinations for Masters' and Mates' Certificates for Inland Waters

The Dominion Marine Association adopted the following resolution at its annual meeting last year:—

"That the present system of examining candidates for masters' or mates' certificates is very unsatisfactory, and that the uncertainties and irregularities due to the discretionary powers now vested in individual examiners should be eliminated, and that in the opinion of this Association it would be advisable to have examinations conducted only at stated times and at stated places, and by at least two examiners present at the same time; and that the examination papers should be printed as required at Ottawa and sent sealed to the examiners; to be opened at the times and places specified, in the presence of the candidates; and that the written answers should be submitted to headquarters for judgment."

This resolution was re-affirmed at the Association's recent annual meeting and was personally urged on the Minister of Marine and Fisheries at that time by the Association's Counsel, F. King. While the matter was being presented, two points were emphasized in accordance with information received, which appeared during the discussion which ensued to have been either inaccurate or misunderstood. These were, first, that it was objectionable to have examiners paid by fees, and, secondly, that it was objectionable to have individual examiners pass upon the papers of candidates. The answer suggested by the Deputy Minister that the fees are remitted to Ottawa does not entirely dispose of the first objection, as it is still considered inadvisable that the examiners

should deal with the fees in any way. It is said that in the case of certain examiners, candidates are referred to tutors, who for a consideration will coach a candidate for a few days prior to the examination. In this and in other ways there is room for dissatisfaction with the present system, so long as there are individual permanent examiners with discretionary powers of any kind. With regard to the second point, and the suggestion made by the Deputy Minister that the papers are passed upon in Ottawa rather than by the individual examiner, explanation was made during the interview to the effect that the Association's objection was largely aimed at the exercise of discretionary powers by the individual examiner in the oral part of the examination which it was admitted was dealt with exclusively by the individual examiner, and that in the second place it is not strictly correct to say that the candidates' answers are passed upon in Ottawa, the fact being, it appears, that the individual examiner makes a report upon the examination, which report is the subject of consideration at Ottawa, the views of the individual examiner receiving considerable weight in this manner.

The suggestion embodied in the above resolution seems one which is not open to serious objection, and would at least remove from the field of discussion the various items of dissatisfaction which have given rise to a fairly unanimous impression among vessel owners that the examinations are not conducted just as they should be.

It has been suggested that if the Department could devise some method of establishing or assisting schools for the instruction of candidates in some of the principal ports on the lakes, it would improve the situation a great deal and prevent the shortage of available material in the way of masters and mates which sometimes threatens when too many of the best men seek employment in the larger field and better paid positions on the United States side of these waters.

The further suggestion has been made and very special attention is called to it, that examiners for certificates on the inland waters do not necessarily require to be men of salt water experience. The conditions on the lakes are very different from those on the ocean, and a master's duties are largely the duties of a pilot so far as navigating his ship is concerned. Examinations for the lake and river trade should, therefore, be confined to questions which relate exclusively to the requirements of navigation in these waters.

Handling Vessel Lines at Canal Entrances.

On the Dominion Marine Association's urgent requests from time to time men have been provided by the Department of Railways and Canals at certain lock entrances on the St. Lawrence canals to receive and handle the lines of approaching vessels. Some time since the Association requested that men be provided at the entrances of all the St. Lawrence canals, at lock 4 in the Soulanges canal and at Cote St. Paul in the Lachine canal, but this request was not acceded to. It has now been repeated by the Association and it is most important that the request be granted. It is often difficult for a vessel to make a landing and get a man ashore for the purpose of handling the lines, and this is particularly difficult under adverse conditions of wind and current. More than one life has been lost in the efforts to get a line ashore, and that in the interests of the safety of vessels and of lock entrances, provision should be made for men to handle lines at all the points mentioned.

Important Official Ruling on the Coastwise Passenger Trade.

The United States Attorney General, G. W. Wickerham, has given an opinion on the subject of the coastwise passenger trade which is of great importance to Canadian vessel owners and which confirms in every particular the argument presented to the U.S. Department of Commerce and Labor by the Dominion Marine Association's counsel, F. King, when the first trouble arose in August, 1911, and which he renewed at Washington in December before Acting Secretary Cable and the Commissioner of Navigation. Subsequently, at the request of the Department of Commerce and Labor, Mr. King put his views in a brief, which was forwarded to the Attorney General, and he has since received letters from the Department of Commerce and Labor stating that the position its officials took last August, and which threatened to interfere very seriously with international passenger travel all along the border, will be reconsidered and that, unless Congress makes some change in the law, the future treatment of the matter by the department and by collectors of customs will be governed by the Attorney General's opinion. Mr. King has also been informed that in view of the Attorney General's opinion bill 20626 introduced in the U.S. House of Representatives in the interest of Pacific coast lines will be withdrawn and that they will not attempt any modification of the present law. It was proposed to exempt the Great Lakes and St. Lawrence River from the operation of the bill, but the present news will be gratifying all the same, particularly to British Columbia coast vessel owners. As the Attorney General's opinion referred to is of great importance we give it in full as follows: It is addressed to the Secretary of Commerce and Labor, under date of Feb. 12.

"I have had under consideration your letter of Dec. 27, 1911, in which you say that in the course of the administration and enforcement of the coastwise shipping laws of the U.S. your Department finds it necessary, prior to the opening of navigation on the St. Lawrence River and the Great Lakes during the coming season, to deal with a situation brought to its attention toward the close of the season last past, and to issue appropriate instructions to collectors of customs and other officers concerned.

"Your letter states that 'a custom has grown up within recent years on the St. Lawrence River and the Great Lakes, whereby foreign vessels of Canadian ownership have been permitted to take on passengers at U.S. ports to transport them on excursions through domestic and foreign waters, returning them to the port of departure. Sometimes these vessels clear from the American port for a Canadian port, in which case the vessel usually makes a call at the latter port long enough to obtain clearance therefrom for the former. When such calls are made at a Canadian port, the passengers are in some cases permitted to land for a short time, and in other cases no such opportunity to land is afforded; but in either case the voyage is practically continuous and the passengers virtually remain with the vessel until her return to the port of departure in the U.S. The traffic in question is essentially domestic, since it originates and terminates in the U.S., and is supported by the American public, and is only foreign in so far as it passes through foreign ports or waters and is permitted to move in foreign vessels.'

"Upon this state of facts you request my opinion—whether the transportation by foreign vessels of passengers taken on board in the U.S. under the circumstances mentioned constitutes a violation of sec. 8 of the Act of June 19,

1886, as amended by sec. 2 of the Act of Feb. 17, 1898.'

"The amended statute provides: 'Sec. 8. No foreign vessel shall transport passengers between ports or places in the U.S., either directly or by way of a foreign port, under a penalty of \$200 for each passenger so transported and landed.'

"The legislative history of this statute is set out in the opinion rendered you under date of Feb. 26, 1910, in the case of the Cleveland, and need not be repeated.

"It is manifest that the passenger transportation referred to by you—excursions from U.S. ports through domestic and foreign waters, sometimes touching at a foreign port, but returning to the port of departure—does not come within the terms of the statute, which deals only with transportation 'between ports or places in the United States, either directly or by way of a foreign port.' These words imply a transportation beginning at one port or place in the U.S. and ending at another port or place therein. So, too, the clause imposing a penalty of \$200 for 'each passenger so transported and landed' implies landing at the port or place of destination.

"You state, however, that 'the traffic in question is essentially domestic, since it originates and terminates in the U.S., and is supported by the American public, and is only foreign in so far as it passes through foreign ports or waters and is permitted to move in foreign vessels.' But this is not sufficient to bring the transportation referred to within the Act. I know of no authoritative rule of construction which will permit a penal statute to be construed to cover cases not within its terms simply because it may be identical, or substantially identical, in principle with those embraced in the Act. The remarks of Mr. Justice Story in *Taber et al vs. United States*, where it was held that a whaling voyage was not a foreign voyage within the meaning of the statute, are very appropriate in this connection: 'And it is not decisive in a case of this nature, that the mischiefs to be guarded against and remedied by the Act of 1803, are equally as applicable to whaling voyages, as to voyages to foreign ports for the general purposes of trade. Where a penalty, or a provision in the nature of a penalty, is to be enforced, the general rule is, that the statute is to be construed strictly; and the language is not to be enlarged to cover a case standing upon similar grounds, if the ordinary interpretation of the terms would not reach it.'

"In the recent case of the *United States vs. Baltimore and Ohio Southwestern Rd.*, the appropriate rules of statutory construction are thus sufficiently stated by Mr. Justice McKenna, in delivering the opinion of the Supreme Court: 'If, however, there be no ambiguity, the words of the statute are the measure of its meaning. If there be ambiguity, the character of the statute determines for a strict or liberal construction. A criminal statute is strictly construed. Courts are not inclined to make constructive crimes.'

"In the case before me, I am unable to perceive any ambiguity in the statute; certainly none which warrants the construction suggested by the statement that 'the traffic in question is essentially domestic, since it originates and terminates in the U.S., and is supported by the American public.' The answer to this suggestion is that Congress in the statute in question was not dealing with that particular kind of traffic, even if it may properly be classed as domestic, but with transportation of passengers 'between ports or places in the U.S., either

directly or by way of a foreign port.' In other words, it was legislating with respect to what is generally termed coastwise traffic, whereas the transportation referred to by you is not coastwise, but outward, into foreign waters or to a foreign port. I am unable to perceive now the fact that passengers so transported are returned to the port of departure in the U.S. bring the case within the statute.

"In the case of the *Cleveland supra*, it was held that a tourist voyage around the world on a foreign steamship, the passengers embarking at New York and landing ultimately at San Francisco, was not within the Act in question. It was said in that connection that the return of the passengers to the port in California was a mere incident of the object of the voyage, and, so far as the nature of the commerce was concerned, 'precisely the same as if, after a voyage to Japan, they had been returned over the same route and relanded in New York'—the very case now presented and which was there considered as clearly not within the statute. In the case of *Cleveland*, the transportation came within the letter of the statute, since the tourists were actually transported from one port in the U.S. to another port therein, via a foreign port or ports. But that case was held not to be within the spirit of the statute, because the real object of the voyage was the trip around the world. In the present case the transportation referred to—from a domestic port to a foreign port or into foreign waters, and return—is, in my judgment, neither within the letter nor the spirit of the law."

Specifications of Steel Hopper Scows.

The following are the principal particulars of two steel hopper scows of 150 yards capacity each, for which the Dominion Department of Public Works received tenders to March 11:—Length of hull, inside of fenders, 75 ft.; beam, moulded, 26½ ft.; depth, moulded, 8¼ ft.; length of each hopper, 16 ft.; breadth of each hopper at top, 18½ ft.; breadth of each hopper at bottom, 8 ft. They are intended for use at Pictou, N.S., and are to be delivered there.

They are to have steel hull and wooden doors, fender strakes and hopper linings, to have three hoppers or pockets each, four watertight bulkheads, rounded bilges and the bottom at ends is to be carried up to deck in a circle. The material to be open hearth steel, ship quality, tested at the mill in accordance with English Lloyd's rules. Rivets to be of steel, soft and ductile, and must stand the usual Lloyd's tests.

The scantlings of the hull will be as follows: side frames, 3½ ins. x 3 ins. x 7.9 lbs.; angles, spaces, 24 in. centres; end frames, same size angles, spaced, 24 in. centres; deck beams, 4 ins. by 3 ft. by 8.5 lbs.; angles, floors, 5 1-16 ins. by 3 5-16 ins. by 13.9 lbs.; Z bars. The shellplating, duckplating and hopper plating all to be 12.5 lbs., excepting the bilge end plates, which will be 15 lbs. The bows from frames 3 and 35 to ends and all around ends a 12.5 lbs. reinforced plate will be fitted outside of shell plating, forming a pocket between it and shell, and this pocket will be filled with cement. There will be two doors to each pocket, made of 8 in. thick maple. Hinges will be solid, without links. Doors tight enough to hold the finest sand without leakage.

On each hopper will be fitted on alternate sides a modern hand lifting mechanism so as to close the doors, wind up chains 1¼ in. and door bridles 1 in. The scows will be provided with anchor davit, anchor, chain, ladders; double headed towposts, checks, etc., and with improved chainhoist.

Earlier Opening and Continuous Operation of the St. Lawrence.

Among the things brought before the Minister of Railways and Canals during the Dominion Marine Association's annual meeting in Ottawa recently was the necessity for an earlier opening of the St. Lawrence canals and also their continuous operation during the season. It was urged that the special circumstances this year render it much more desirable than usual that the St. Lawrence canals be open for navigation at the earliest date at which cargoes can come down and get through the Welland canal. It was pointed out that heretofore the Department has reserved practically the whole of April for making repairs in the lower canals, and that while navigation may open as early as April 15, 20 or 25, vessels are debarred from entrance into Montreal harbor from the west until May 1. This year there are some 6,000,000 bush of grain already afloat at Canadian Lake Superior ports waiting for the opening of navigation. Ice breakers have been used at Fort William to bring boats alongside of elevators for loading, in order to relieve the elevators and have the cargoes ready on board. If navigation at Sault Ste. Marie and the St. Mary's River happens to be open shortly after the middle of April, it will cause great hardship and inconvenience if the St.

substantial part of this being imposed for the extra risks of the upper St. Lawrence River. Montreal harbor facilities are such that one can find in them a large part of the reason for the export of Canadian grain via Buffalo. Last season lake freighters were so seriously delayed in Montreal harbor through lack of room in the elevator, which was being used for storage rather than for transshipping purposes, that some owners preferred to charter elsewhere whenever possible. It was submitted that the imposition of the further handicap in the way of closed canals was extremely discouraging.

It was pointed out that the canals are now open from and after the first or second Sunday in September in each year to accommodate the fall traffic, and that they remain open practically until daylight and after dark on Sundays throughout the whole year. It was, therefore, argued that so far as the principle of Sunday observance is concerned consistency might call for continuous opening or for complete closure from midnight to midnight throughout the year.

In answer to the suggestion that the Lord's Day Alliance were the objecting parties, it was stated that the effect of the present system is simply to tie vessels up at some point along the canal or river bank with no corresponding advantages whatever to the crews. It is understood that the Lord's Day Alliance has based its recent arguments strictly

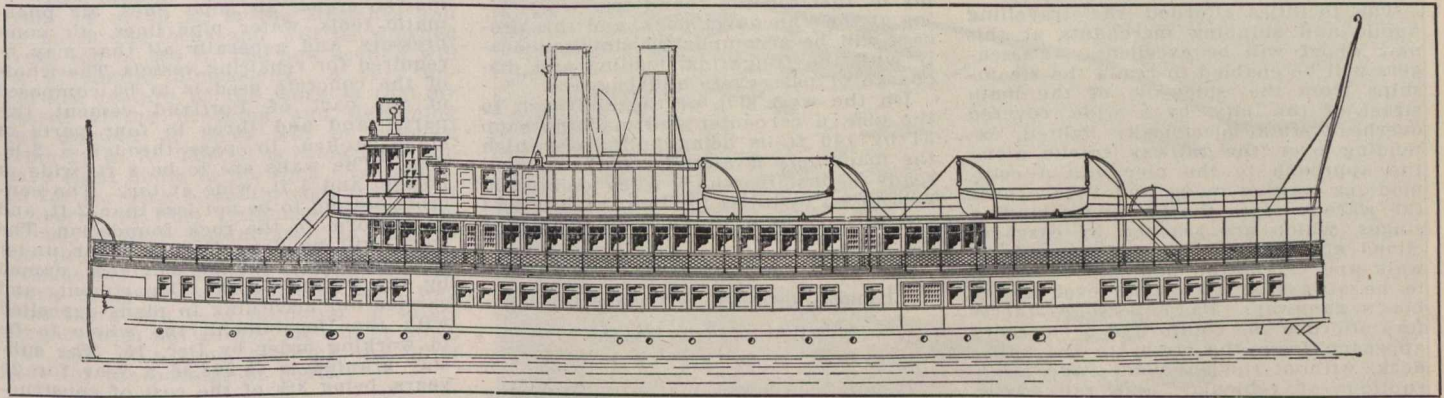
the Canadian Lake Protective Association.

It was also urged that under the conditions which have prevailed for the last year or two, great inconvenience has been occasioned in the Department, as well as to vessel owners, when necessity has arisen for the making of urgent pleas that the canals should be open on certain Sundays to relieve the congestion of traffic due to accidents or other special conditions. All this would be obviated if the Association's request were granted.

The Association's counsel, F. King, has received the Minister's promise that he will make every effort to facilitate an early, and, if possible, a continuous operation of the canals during the season.

Thousand Island Steamboat Co's New Vessel.

The steel passenger steamboat, which is being built at Toledo, Ohio, for the Thousand Islands Steamboat Co., which has its headquarters at Kingston, Ont., is illustrated on this page. She will be 172½ ft. long over all, 32 ft. beam moulded, and 9½ ft. deep from top of deck beams at side of hull to base line. Her draught will be about 6½ ft. She will be of the observation type, with the dining room on the main deck aft, the cabin upon the promenade deck, and



Thousand Islands Steamboat Co.'s New Steamboat.

Lawrence canals are not ready for navigation at a suitable date immediately thereafter. It was urgently recommended that provision be made this year for opening these canals at the earliest date possible, having regard to the time at which boats may pass through the St. Mary's river.

It was also urged that the closing of the Welland and St. Lawrence canals for part of every Sunday during part of the season of navigation constitutes a very grave difficulty and hindrance to navigation, placing the Canadian route under a serious handicap with reference to United States competition, and rendering it very difficult indeed for most of the lines to live up to any kind of schedule time. It was pointed out that Sault Ste. Marie canal was opened continuously in order to meet the competition of the adjoining U.S. canal. It was also shown that the tolls were removed from this canal for the same reason that for years tolls were charged lower down on the route, while none were charged at Sault Ste. Marie. In 1903 this anomalous condition was changed and the canals to tide water were rendered as free as the ocean. It was urged on behalf of the association that the arguments which prevailed at that time applied with equal force to the present petition. Attention was called to the serious handicaps under which the St. Lawrence route already labors. A vessel pays 8% upon the insurable value of her hull to reach Montreal harbor, a

upon a claim for the consideration of employes being entitled to one day off in the seven. It is submitted that the crew of a vessel thus tied up have to do extra work at night in consequence and gain no special advantage. It is also a question whether they have to work much harder while a vessel is canalling than when she is tied up. As to the lock men, canals are now electrically operated and little or no labor is involved in putting a vessel through. The circumstances in any event justify employment of extra men or provision for extra pay.

It was pointed out that the Lord's Day Act itself contemplates the very thing for which the Association is asking. For instance, sec. 3, sub-sec. (h) provides for the continuance to their destination of trains and vessels in transit when the Lord's Day begins and for work incidental thereto. Sub-sec. (g) provides for the conveying of travelers and work incidental thereto. It is submitted that under these and other sub-sections such vessels should enjoy the same freedom as passenger trains and that similarly freight boats should enjoy the same freedom as freight trains.

It was urged that the closing of the canals during certain hours on Sundays leads to violation of the rules and undue risks in the effort to race a boat through and prevent her being tied up. There were instances last year of racing such as this which were condemned by

the hurricane deck also available for passengers. Her appointments will be modern and adapted for the regular and excursion traffic in connection with the New York Central Rd., via Clayton, N.Y., and with capacity for 1,000 passengers. She will be equipped with twin screw propellers driven by two compound engines, cylinders 15 and 30 by 20 ins., 210 revolutions a minute. The engines will develop 1,000 h.p., 500 h.p. each. There will be one independent jet condenser; two Scotch boilers 12½ ft. diameter, 10½ ft. long, 1,240 horse power; four 45 in. inside diameter furnaces; allowed 150 lbs. steam; 3,246 ft. heating surface, 82½ sq. ft. grate surface. Hot air forced draft to insure best known economy. She will be equipped with a powerful searchlight for service in evening trips among the Islands, and her speed will be about 18 miles an hour. She is expected to be placed in service early in June. She will have capacity for 1,000 passengers.

The company offered a prize of \$25 for the most appropriate name for the new boat, the replies to be mailed by April 1, it being stipulated that the name be suggestive of the route and the territory to be served.

During Jan., one fatal and five non-fatal accidents were reported in connection with the navigation of Canadian waters. The fatality was the result of a fall.

Grand Trunk Pacific Steamships Dock at Vancouver.

Shortly after the advent of the G.T.P. steamships on the Pacific coast the officials realized the importance of securing terminals of their own in such an important centre as Vancouver, and after considering a number of propositions, finally decided, in the latter part of 1910, on the old Albion Iron Works site and foreshore facing it, on which they held an option. This property, before its acquisition by the G.T.P.R., presented the usual uninteresting and dilapidated, not to say disreputable appearance generally associated with discarded and early pioneer buildings. This the new owners soon started to demolish and improve, with the result that today at the foot of Main St. is to be seen one of the most modern and convenient docks on the Pacific coast. The work has been ably carried on under the supervision of Capt. C. H. Nicholson, Manager of G.T.P. Steamship Co., and F. T. Lucas, Resident Engineer of the company, and it is expected that operations will continue until another cargo pier is built for oceangoing steamships of the largest type at the eastern end of the property and a handsome terminal building is erected on the site facing Main St. The water terminals are at the foot of one of the main thoroughfares and in the centre of the city's population and business district, adjacent to the North Vancouver ferry.

The facilities afforded the travelling public and shipping merchants at this new wharf will be excellent. Passengers will be enabled to reach the steamships from the sidewalk of the main street of the city by a wide, covered overhead walk, electrically lighted, extending over the railway tracks along the approach to the pier into a commodious waiting-room, and thence over the warehouse to the passenger landing stages, which are reached by easy inclined approaches from the overhead walk and carried on pontoons, designed to be always at the same level as the boat's gangway. Passengers are therefore afforded the comfort of a clear dry approach from the street to the ship's deck, without the annoyance and interruptions of vehicular and rail traffic, also being entirely devoid of the dangers of grade railway crossings. The principal entrance to the dock for vehicles and drays is by the Gore Ave. crossing, and there is also a private entrance from Alexander St., a little west of Main St.

Off the waiting-room are the general offices of the G.T.P. Steamship Co. and ticket office, which are very commodious and well laid out and have a strikingly fresh and bright appearance.

The dock is about 870 ft. long from shore line to outer end, and for 350 ft. from the shore is 280 ft. wide. From this part a pier 100 ft. wide extends to the outer harbor line, giving a slip on the west side 515 by 60 ft., and on the east side a slip 550 by 130 ft. With the exception of the shore end, where the dock will be filled in, creosoted bearing piles are used throughout, the specifications for which called for piles to be first growth fir, a minimum of 9 ins. in diameter at the top and 14 ins. at the butts, penetration of oil to be 1 to 1½ ins. under a 12-lb. treatment. The piles have been spaced at distances varying from 10 ft. centres at inner to 3½ ft. centres at outer end, depending on the penetration and depth of the water, with special provision for piles to carry the spur track. The dock is strongly braced, with brace piles at every bent, driven on a batter, and in addition is braced both laterally and longitudinally with 6 by 12 in. creosoted bracing; also a system of diagonal bracing between the caps is

used. On the east side of the dock is a spur track from the C.P.R., depressed so that the car floor will be on a level with the warehouse floor. The dock is equipped with six adjustable slips, three on each side, worked by a worm, four of which are 11 ft. wide and two 8 ft. wide, railway tracks on east side being carried over slips by means of bascule bridges. At each slip is located a power plug for use of electric conveyors. Fender piles of tight bark fir are driven two at every bent, fastened to 12 by 12 in. stringers by means of ¾ in. bolts; they are spaced 5 ft. apart at sea end and clusters of seven were driven at outer corners and lashed with ¾ in. steel cable to act as dolphins.

Space has also been allowed for fuel oil tanks and pump house, which are now in process of erection. These consist of one storage tank, 76 ft. in diameter and 40 ft. high, with a capacity of 32,000 barrels, and one measuring tank 16 ft. in diameter and 24 ft. high of 1,000 barrels capacity, from which a 6-in. pipe line will lead along the base of the dock to the ship's side for the vessels supply of fuel oil, so that in future the regular passenger steamers of the line on which the oil burning system has been installed, and fuel oil tanks built, instead of suffering the delay of three or four hours to call at a coal port en route between here and Prince Rupert as has been the custom since the inauguration of the service, to the discomfort of everybody on board, will be enabled to receive their full supply of fuel for the round trip while lying at the Vancouver dock, and this process will be accomplished simultaneously with the freighting, loading and discharge of passengers and baggage.

On the west side of the approach to the pier, a carpenter and machine shop 34 by 140 ft. is being built, for which the machinery is already on the ground ready to install, which when completed will afford facilities for light repairs and general overhaul of the steamships of the line.

Changes Suggested in Certificates for Masters of Tow Barges.

It has been suggested to the Minister of Marine by the Dominion Marine Association, that a lower grade of certificate should suffice for the master of a barge which is used only as a tow barge. Except in the case of a broken tow line the sole duty of the barge is to follow the towing steamer, and the technical skill required in the case of an ordinary mariner is never exercised. Under the present system only the low class of men holding full certificates engage in services on tow barges, and they are not at all fitted for the service in question. The man who is required is one without a fund of technical knowledge, and yet at the same time skilled in the special business of a tow barge master, which involves, among various other things, skill in the way of managing his lines and his boat with reference to the towing steamer.

The only technical skill required from the master in the way of navigation would be such as emergency might require in the case of a broken tow line. For instance, he might have to know enough to hoist his sail and get the boat to anchorage. This, however, is a very limited matter.

The suggestion made by the Association is that its members would be able to procure splendid men for their services on tow barges, better qualified, in fact, than the material now available if a grade of certificates were permitted which would not require the technical knowledge now required by a master mariner on the great lakes.

Additional Dry Dock at Collingwood.

The specifications for the additional dry dock which the Dominion Government has entered into a contract to subsidize, at Collingwood, Ont., will be built in what was formerly known as the town slip, at the bottom of Hurontario St., and will be of the following dimensions—length over all, 420 ft.; width at coping level, 104 ft.; width at bottom of dock, 100 ft.; depth on the sill at low water, 16 ft. The construction will consist of a substantial earth cofferdam with a toe of concrete bags and stone on the lake side, the removal of the existing walls of the town slip, including masonry, crib work, rock and earth excavations, the excavation to the proper depths of the area occupied by the masonry, the dock proper, the entrance walls, wells, etc., masonry work, the fixing in place of all bottom timber, keel blocks, bilge blocks, entrance works, partly of concrete and partly of crib work with concrete superstructure, a caisson gate with a clear opening of 93 ft., the removal of the cofferdam and of all filling between entrance walls to a depth of at least 18 ft., the erection of a gantry crane with proper steel frame for elevated tramway, equipped with electric hoist and conveyor, electric lighting, excavation and construction for the laying of 46 in. piping to connect the dock with the existing pumping station, enabling the dock to be pumped in less than two hours, the providing of a locomotive crane, air pipe lines, air pneumatic tools, water pipe lines, air compressors, and generally all that may be required for repairing vessels. The whole of the concrete used is to be composed of one part of Portland cement, two parts sand and three to four parts of stone broken to pass through a 2-in. ring. The walls are to be 8 ft. wide at bottom and 3 ft. wide at top. The concrete bottom to be not less than 2 ft. and to conform to the rock foundation. The work will be done by day labor under the supervision of an engineer named by the Public Works Department, and carried out according to plans deposited with the Department, the whole to be in working order by Dec. 15. The subsidy granted is \$9,208.96 a year for 20 years, being 3% of the cost of construction.

Stranding of s.s. Celtic.

The following judgment was delivered recently at Vancouver, B.C., by Capt. Jas. Gaudin, agent, Marine Department, concurred in by C. Eddie and J. Stewart, as nautical assessors, re the stranding of the s.s. Celtic on Noble island in the Goletas channel, Oct. 5, 1911, while en route from Vancouver to Prince Rupert and way ports.

The court finds that safe and proper compass courses were not set and steered from Masterman island, and that there was no allowance made for deviation, leeway or tidal stream; that a good and proper lookout was not being kept on board, and that the vessel was not navigated with seamanlike care by the first mate, S. Carlson, who assumed responsibility, notwithstanding his orders to call the master on any change of weather or doubt as to his position. The court also finds that his assertion regarding the inefficiency of the red sector of Scarlet Point light is not substantiated by other evidence, and suspends his certificate as mate of a passenger steamer in the coasting trade for four months from Dec. 13, 1911. It also finds that the master, A. N. Dick, has to some extent lost sight of the responsibilities of a shipmaster in depending too much on what he was told of the mate's abilities, and entrusting him with the navigation

of the vessel in such narrow waters; he is admonished to be more careful in future. The attention of the Marine Department is called to the unsatisfactory custom of vessels being allowed to proceed to sea without a properly situated and adjusted compass, whereby bearings can be taken all round, and disapproval is expressed at the slipshod manner in which the Celtic's log book was kept.

Plans for Welland Canal Enlargement.

An Ottawa press dispatch of Mar. 23 says:—"Engineers who for the past three years have been engaged in surveys of alternative routes for the new Welland Canal have submitted their report to the Minister of Railways and Canals, and J. L. Weller, superintendent of the canal, who had charge of the surveys, has been here in connection with the matter. Several propositions were looked into, careful surveys being made, test pits sunk and calculations figured out in connection with each.

"The plan which has been recommended by the engineers and accepted by the Government provides for the widening and deepening of the present canal from Port Colborne to a short distance north of Thorold, where the new cutting five miles long will start and run west of the present canal, crossing it and the G.T.R. en route and entering Lake Ontario at Ten-Mile Creek, three miles east of Port Dalhousie.

"The present canal will be deepened from 14 to 25 ft. in the stretches and 30 ft. in the locks and will be widened from 150 to 200 ft. The new section will be of similar dimensions. A very important feature of the work is that by reason of the dredging and deepening the number of locks will be reduced from 22 to 7. This, it is calculated, will save eight hours in the time now required for carrying boats through from Port Colborne to Port Dalhousie and is obviously a large consideration in favor of the project. The total estimated cost is \$45,000,000. The plans provide for the work being carried ahead in such way that there will be a minimum of interference with navigation. It will be done, one side at a time, allowing the other side for the passage of boats."

Prosecution of a Mate on his Application for Master's Certificate.

The Court of Appeal gave judgment in Toronto, Mar. 19, in the case of the King vs. Gordon S. Wright, which was started by the senior County Court Judge of the County of York. Wright was charged with having on Mar. 12, 1910, at Windsor, Ont., fraudulently made use of a certificate of service to which he was not justly entitled, contrary to the Canada Shipping Act, and that he made a false representation for the purpose of obtaining a certificate of competency contrary to the Act. Wright was a mate on inland waters, and made application before a Government examiner at Windsor for master's papers. The misrepresentation which was charged arose out of the fact that the Government recognizes only one kind of mate. Wright held mate's papers, but served as second mate for a while, and then, for a few months immediately previous to his application to the examiner, served as first mate. In his certificates of service he stated that he had served as mate for over a year.

The County Judge held that there is nothing in the Act to indicate that service as a second mate is not worth as much as service as a first mate for the purpose of acquiring experience in order to become a master, so long as first mate papers are held during all the time. Both

kinds of mates exist in reality, although not recognized by the Act. The County Judge found him not guilty, but at the solicitation of the Crown granted a reserved case on the questions (1) Was I right in holding that the use made by defendant of the document was not an offence under the first count; (2) Upon the evidence was I right in law in such a false representation as to constitute an offence under the second count.

The Court of Appeal answered the questions in favor of defendant and sustained his acquittal.

The contractors are Norton Griffiths and Co., Ltd., Montreal and Vancouver, of which W. Burton Stewart is Managing Director and P. R. Warren, Chief Engineer.

The illustration, which is reproduced from The Sphere, London, Eng., doubtless gives a good general idea of the harbor works, but there are some errors in the view of the surrounding country. The city shown as "Salisbury" is Moncton, N.B., the Intercolonial Ry. headquarters, "Port Duchene" should be Point du Chene. "Quaco" should be



Bird's Eye View of Harbor Works at St. John, N.B., as they will appear when completed. Reproduced from The Sphere, London, Eng.

The Harbor Works at St. John, N.B.

The illustration on this page shows the extensive nature of the harbor works to be constructed at Courtenay Bay, St. John, N.B., by the Dominion Government, with some of the contiguous territory.

The contract provides for a 4,600-ft. breakwater, 9,900 lineal feet of quay walls, a Dreadnought dry dock, 1,000 ft. long, built to the latest British Admiralty specifications, and the reclamation of large tracts of land.

shown as St. Martins, the terminus of the St. Martins Ry. The starting point of the line to Montreal is incorrectly shown.

The Dominion Public Works Department will receive tenders to Apr. 9 for the machinery of a 3 1/2 yd. dipper dredge.

G. W. Stephens, Chairman, Montreal Harbor Commission, has been appointed to represent the Dominion Government at the International Association of Navigation Congresses at Philadelphia, Pa., May 23-28.

Coast, Lake and River Officers for 1912.

The following appointments made by the principal navigation companies engaged in Canadian navigation, for their various steam vessels and tugs for the current year, have been officially reported to The Railway and Marine World by the managements. In the first column is given the name of the vessel, in the second, that of the captain, and in the third, that of the chief engineer.

Table listing appointments for various companies including Algoma Central Steamship Line, Bays of Fundy and Minas Basin Steamship Co., Brunswick, Lady of Gaspe, Bras d'Or Steamboat Co., Marion, Mary Jane, Robie M., Butler Freighting and Towing Co., Grainer, Cornwall, Frontenac, India, Parthia, Prince Rupert, Simla, W. Johnston, Canada Atlantic Transit Co., Arthur Orr, George N. Orr, Kearsarge, Newona, Canadian Fishing Co., Celestial Empire, Flamingo, Canadian Lake Transportation Co., Arabian, Corunna, Kenora, Nevada, Regina, Tagona, Canadian Northwest Steamship Co., Neebing, Canadian Pacific Car and Passenger Transfer Co., Charles Lyon, C.P.R. British Columbia Coast Service, Beaver, Charmer, Czar, Joan, Nanoose, Otter, Princess, Adelaide, Princess Alice, Princess Beatrice, Princess Charlotte, Princess Ena, Princess Mary, Princess Royal, Princess Victoria, Qualicum, Queen City, Tees, C.P.R. British Columbia Lake and River Service, Aberdeen, Castlegar, Columbia, Hosmer, Kokanee, Kootenay, Kuskanook, Minto, Moyle, Okanagan, Proctor, Sandon, Sloean, Valhalla, Whatshan, C.P.R. Detroit River Car Ferries, Michigan, Ontario, C.P.R. Upper Lake Service, Alberta, Assiniboia, Athabasca, Keewatin, Manitoba.

Table listing appointments for various companies including Hugh Cann and Sons, British Columbia, Celtic, Clansman, Fingal, Crystal Stream Steamship Co., Sincennes, Majestic, Dominion Atlantic Ry., Boston, Prince Albert, Prince Arthur, Prince George, Prince Rupert, Yarmouth, Eastern Manitoulin Royal Mail Steamship Line, Bon Ami, John Haggart, Farrar Transportation Co., Collingwood, Meaford, Conveyor, Distributor, Omineca, Operator, Gaspesian, Grand Manan Steamship Co., Grand Trunk Pacific Coast Steamship Co., Escort No. 2, Henriette, Prince Albert, Prince George, Prince John, Prince Rupert, Carleton, Iona, Sindbad, Roberval, Mink, Numinko, Inland Lines, Donnacona, Dunelm, Dundee, Dundurn, Emperor, Empress of Fort William, Empress of Midland, Glenellah, Midland King, Midland Prince, Neepawah, Rosedale, Stadacona, Strathcona, Wahcondah, Winona, Jaques Transportation Co., Keenan, Kilkeel, Keystone Transportation Co., Keyport, Keystorm, Keywest, La Have Steamship Co., Samson, Trusty, Lake Ontario and Bay of Quinte Steamboat Co., Caspian, North King, Colomb, Lauzon, Levis, Plessis, Lady Sybil, Maritime Steamship Co., Connors Bros., Meaford Transportation Co., Bothnia.

Table listing appointments for various companies including Montreal and Cornwall Navigation Co., Britannic, Montreal and Great Lakes Steamship Co., Bickerdike, City of Hamilton, City of Montreal, City of Ottawa, Niagara Navigation Co., Cayuga, Chicora, Chippewa, Corona, Macassa, Modjeska, Ongiara, Turbinia, Niagara, St. Catharines and Toronto Navigation Co., Dalhousie City, Garden City, Northern Navigation Co., Doric, Germanic, Hamonic, Huronic, Ionic, Majestic, Saronic, Waubic, North Vancouver Ferry Co., North Vancouver No. 2, North Vancouver No. 3, Nova Scotia Steel and Coal Co., Wasis, Wobun, Ontario and Quebec Navigation Co., Aberdeen, Aletha, Alexandria, Brockville, Geronia, Lloyd S. Porter, Varuna, Water Lily, Ontario Car Ferry Co., Ontario No. 1, Ottawa Forwarding Co., Hall, Ottawa, Scotsman, Ottawa River Navigation Co., Empress, Princess, PARRY SOUND TRANSPORTATION CO., Seguin, Pointe Anne Quarries, John Rolph, Juno, Renvoye, Peninsula Tug and Towing Co., Crawford, Thos. R. Scott, Port Huron and Sarnia Ferry Co., Grace Dormer, Hiawatha, James Beard, Omar D. Conger, City of Belleville, Miss Vandenberg, Quebec Transportation and Forwarding Co., Florence, J. H. Hackett, New tug under construction, Revelstoke Navigation Co., Revelstoke, Richelieu and Ontario Navigation Co., Belleville, Berthier, Boucherville, Kingston, Longueuil, Montreal, Murray Bay, Quebec, Rapids King, Rapids Prince, Rapids Queen, Ste. Irene, Saguenay, Tadousac, Terrebonne, Three Rivers, Toronto, Richelieu and Ontario Navigation Co., Rochester.

ST. JOHN RIVER STEAMSHIP CO., LTD., ST. JOHN, N.B.		
Elaine	R. D. Flowers	J. F. Lewis
Hampstead	H. C. Crabber	W. L. Hueder
Victoria	C. W. McLean	W. Roberts
ST. LAWRENCE AND CHICAGO STEAM NAVIGATION CO., LTD., TORONTO.		
E. B. Osler	W. H. Wright	E. J. O'Dell
G. R. Crowe	P. J. Shaw	W. Robertson
Iroquois	C. E. Robinson	W. Harwood
W. D. Matthews	J. Williams	C. Robertson
SEVERN RIVER AND LAKE COUCHICHIING NAVIGATION CO., LTD., ORILLIA, ONT.		
Soncie	T. W. Wood	W. C. Wood
STEAMSHIP ROTUNDUS CO., LTD., SUMMERVILLE, N.S.		
Rotundus	E. Zwicker	H. L. Lockhart
SPARROW LAKE STEAMER LINE, SPARROW LAKE, ONT.		
Glympse	A. F. Stanton	
Lakefield	F. Stanton	
TEMISKAMING NAVIGATION CO., LTD., HAILEYBURY, ONT.		
City of		
Haileybury	J. Ladouceur	A. Morissette
Jubilee	J. Burns	T. Lanctot
Meteor	A. J. Gaul	J. B. Seguin
Silverland	D. Burns	C. M. Lloyd
Temiskaming	McC. Burns	O. Croteau
TURRET CROWN, LTD., TORONTO.		
Turret Crown	J. N. Foote	J. W. McLeod
UNION STEAMSHIP CO. OF BRITISH COLUMBIA, LTD., VANCOUVER, B.C.		
Camosun	A. Dickson	A. Beattie
Capilano	W. P. Collis	W. Rutherford
Cassiar	G. Gaisford	G. W. Matthews
Chelohsin	J. Cowper	G. H. Foster
Cheslakee	J. Cockle	L. P. Thomas
Comox	J. Brown	A. T. Roy
Coquitlam	J. F. Edwards	R. Holborn
Cowichan	C. Moody	R. Whyte
Vadso	J. E. Noel	J. Mowat
Venture	J. Parks	W. Arthur
VALLEY STEAMSHIP CO., LTD., ANNAPOLIS ROYAL, N.S.		
Granville	C. W. Collins	A. McCullough
VANCOUVER TUG AND BARGE CO., LTD., VANCOUVER, B.C.		
Clayburn	H. Jones	A. McGuire
Dola	W. J. Verge	W. McGuire
VICTORIA NAVIGATION CO., LTD., OTTAWA, ONT.		
Victoria	F. Elliott	P. Belanger
VICTORIA STEAMSHIP CO., LTD., BADDECK, N.S.		
Blue Hill	D. Macrae	J. Blesedell
WALKERVILLE AND DETROIT FERRY CO., LTD., WALKERVILLE, ONT.		
Ariel	W. Nowell	P. McLaren
WHITE PASS AND YUKON ROUTE, VANCOUVER, B.C.		
Casca	C. Bloomquist	J. R. P. Gaudin
Dawson	J. O. Williams	J. R. Young
Gleaner	J. Roberts	J. Lauderdale
Scotia	J. McDonald	D. Suilvan
Selkirk	—, McMasters	W. C. Vey
White Horse	W. Turnbull	P. Larssen

Canadian Notes to Mariners.

The Department of Marine has issued the following:—

10. Feb. 15. 22. Nova Scotia, Cape Breton island, east coast, Great Bras d'Or, off McNeill beach, Seal reefs, red conical buoy to be replaced by gas buoy.

23. Nova Scotia, Cape Breton island, east coast, Great Bras d'Or, Man of War point, lighthouse established.

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 lighthouse.

12. Feb. 23. 26. Quebec, Chaleurs bay, Bonaventure river, wharf increased in length, light moved to end of wharf.

27. Quebec, Saguenay River, Riviere du Moulin, front range light, correction.

28. Quebec, River St. Lawrence, channel between Hare island and Hare island south reef, change in position and color of buoy.

13. Mar. 4. 29. Ontario, River St. Lawrence, Wolfe island, Quebec point, lighthouse rebuilt.

30. Ontario, Lake Ontario, Welland canal entrance, Port Dalhousie, change in characteristic of back range light.

31. Ontario, Lake St. Clair, Mitchell bay, range lights established.

14. Mar. 6. 32. Ontario, Georgian bay, Nottawasaga island, period of flashes of light.

33. Ontario, Lake Huron, north channel, Badgeley island, range lights established.

15. Mar. 7. 34. New Brunswick, Bay of Fundy, Chignecto channel, Fort Folly point, change in color of lighthouse.

35. Nova Scotia, south coast, entrance to Halifax harbor, Sambro outer bank,

change in position of light ship. 36. England, west coast, Bristol channel, King road, new range lights established.

37. England, south coast, Spithead approach, St. Helens fort, intended alteration in character of light.

16. Mar. 18. — 38. New Brunswick, River St. John, Hampstead, light pole replaced by tower.

49. Nova Scotia, Cape Breton Island, east coast, Sydney harbor, southeast bar, change in position of lighthouse.

40. Canada, Hudson Bay, Port Nelson, March point, description of beacon.

17. Mar. 20.—41. Nova Scotia, Bay of Fundy, Minas basin, Cobequid bay, Spencer point lighthouse, correction.

42. Nova Scotia, southwest coast, intended change in position of Blonde rock gas and whistling buoy.

43. Nova Scotia, George bay, off northern entrance to Gut of Canso, whistling buoy established.

44. Quebec, Restigouche river, Oak point gas buoy, change in color of buoy, change in characteristic of light.

45. Quebec, Gulf of St. Lawrence, Anticosti lightship, characteristic of fog alarm.

The Loss of the s.s. Renwick.

Following is a summary of the judgment in the matter of the total loss of the Renwick Co.'s s.s. Renwick, operated by the Port Hood Richmond Ry. Coal Co., occasioned by a collision with the s.s. St. Pierre Miquelon, off Country Harbor, N.S., Dec. 27, 1911, delivered by L. A. Demers, Dominion Wreck Commissioner, and concurred in by Capt. N. Hall, Halifax Port Warden, and Capt. J. W. Harrison, Superintendent, Furness, Withy and Co.

The court having carefully weighed the evidence, which is exceptionally contradictory, finds that the s.s. Pierre Miquelon is alone responsible for the collision resulting in the total loss of the s.s. Renwick and three of her crew. Capt. Lacerdair, of the St. Pierre Miquelon, was bound, according to the elementary laws of humanity, to lower a boat and proceed to the rescue as well as make thorough searches in the vicinity of the wreck, and his unparadonable neglect in this respect will be brought to the attention of the French consul in order that he may advise his Government. The captain and second officer of the s.s. Renwick are exonerated from all blame in so far as the collision itself is concerned, but the court cannot overlook the fact that very little effort was made to ascertain if all hands had mustered before leaving the wrecked ship, and in view of this neglect and his subsequent action in not even attempting to search for bodies. Capt. Chapman stands censured, and Chief Engineer F. Meehan, for similar neglect in regard to his staff, is warned that in a like instance he should assure himself that the men under his charge are out of danger.

The Necessary Carrying of Men on Tugs and Wrecking Steamboats.

The present law re carrying men on tugs and wrecking steamboats without passenger licenses is continually being broken, and necessarily so in a great many cases where boats without passenger license require to carry men other than the master and crew. An instance may be given of a tug boat which has disposed of its raft of logs and requires to take back to the starting point the men who worked the raft during its progress. If these men are not carried back by the tug it would sometimes be necessary to pay railway fares, etc., for them. Another case is that of the ordinary wrecking vessel which takes extra men to the scene of disaster to engage in the work of rescue, lighter-

ing or other operations, and has no license to carry men other than its actual crew.

It has been suggested to the Minister of Marine by the Dominion Marine Association that the definitions of "passengers" and "passenger steamboats" in the Canada Shipping Act should be limited by the re-insertion of the words "carried for hire," so that if a party has not paid for his passage he will be on the same footing as a member of the crew, and in this way, if no passage money of any kind is paid, the vessel will be exempt from the ordinary requirements applicable in the case of a passenger steamboat. This would be perfectly fair to all parties.

If, on the other hand, the Minister feels that protection must be afforded to the men other than the crew who permit themselves to be carried, the members of the association would not consider it unreasonable to have provision required for lifeboat accommodation, and would also be content with certain limited requirements in other respects such as might be considered absolutely necessary. Provision should, however, be made for cases of emergency in order that men might be carried irrespective of the requirements of the law where the safety or protection of life or property required such carriage to take place.

Atlantic and Pacific Ocean Marine.

The Russian East Asiatic Steamship Co.'s s.s. Lituania arrived at Halifax, N.S., Mar. 3, from Libau. This is the first steamship sent to Canada by this company, which proposes to operate a fortnightly service all the year round.

It is reported from Kingston, Jamaica, that the C.P.R. is negotiating for the establishment of a fast steamship service between Canada and Jamaica, and asking for a subsidy of \$300,000 a year, half from Canada and half from Jamaica.

With reference to the appointment of F. S. MacGregor as Assistant General Passenger Agent, Allan Line, Toronto, as mentioned in our last issue, we are officially advised that Mr. MacGregor continues also to act as Travelling Agent for Ontario.

The Dominion Government recently presented R. G. Richards, master of the British s.s. Glenmay, with a silver cup, in recognition of his services in rescuing the crew of the Lunenburg, N.S., schooner Renown, which was abandoned at sea Oct. 5, 1911.

The Dominion Government has continued the arrangement with the Allan Line for the service between Montreal and Havre, France, for the forthcoming season. It is reported that the company will this year operate the steamships Ionian, Sicilian, Corinthian and Lake Erie in this service.

Furness, Withy and Co.'s s.s. Hochelega, recently launched at Middlesbrough, Eng., of which mention was made in our last issue, will, on completion, together with her sister vessel Lingan, also under construction at Middlesbrough, be chartered to the Dominion Coal Co. Both vessels are being built specially for the coal trade.

The Canadian Northern Steamships, Ltd., s.s. Royal Edward was delayed a week at Bristol, Eng., recently owing to the coal strike throughout Great Britain. The s.s. Royal George, which has been laid up for the greater part of the winter, has been thoroughly overhauled, and it is anticipated that her speed will be materially increased this season.

An official of the Japanese Government railway bureau, who arrived at Victoria recently, is reported to have stated that unless a sum, practically

equal to the value of the hull, be spent on the C.P.R. s.s. Empress of China, which was wrecked off the Japan coast some time ago, and which is now docked at Uraga, it will be impossible to make her seaworthy. In his opinion, after an examination of the hull, the only course is to scrap her, as the engines appear to be the only parts which are not damaged to any extent.

In connection with the proposed fast service between Canada and Great Britain, which it was recently stated in England would be a joint scheme in which the principal steamship companies in Canada and British capital would be concerned, Sir Thos. G. Shaughnessy, on his return from the southern States, Mar. 10, is reported to have stated in Montreal that the C.P.R. would be connected with the scheme in its entirety, or not at all, and that although favoring Halifax as a winter port, he considered that the St. Lawrence route should be used in the summer.

The Donaldson Line s.s. Letitia, recently launched at Greenock, Scotland, is of the following dimensions—length between perpendiculars, 470 ft.; breadth, 56 ft. 8 ins.; depth, moulded, 39½ ft. to shelter deck. She has been designed chiefly for the immigrant service, and is of the highest class at Lloyds. The accommodation for second class passengers is arranged on the bridge, shelter and upper decks, for about 300. The third class passenger accommodation, for about 600, is arranged on the shelter, upper and main decks. The machinery consists of two sets of triple expansion engines, driving two screws.

At the recent annual meeting of the Union Steamship Co. of New Zealand, at Dunedin, the chairman, in referring to the Canadian service, said that it may be looked upon as an established route, and having regard to the enormous growth of the population in Canada, it was necessary to look to the future, and it had been decided to build a large passenger vessel of the highest class for the mail service. The company had placed a contract for the construction of a vessel at Clydebank, Scotland, the dimensions of which would be—length, 522½ ft.; beam, 66 ft.; depth, 37½ ft.; gross tonnage, about 13,500 tons. She will have accommodation for 278 first class, 224 second class, and 202 third class passengers, and will be equipped with combined reciprocating and turbine engines for a speed of 17 knots an hour. Four of the boilers will be fitted for oil burning and six for coal burning, and the bunkers and ballast tanks will be built with a view to using oil entirely for the experiment with the four boilers proves satisfactory and oil is obtained at a reasonable cost in Australia or en route. She is expected to be ready for delivery in December, and should be placed in service early in 1913.

Maritime Provinces and Newfoundland.

The assets of the Miramichi Pulp and Paper Co., Chatham, N.B., which are to be offered for sale by public auction, Apr. 23, under an order of the Chancery Court, included the steam tug Edith and other vessels.

The Reid Newfoundland Co. is reported to have placed orders for two new vessels, to be built at Newcastle, Eng., for its Port aux Basques to Sydney route, with a view to operating a daily service between these ports.

The French Government has entered into a contract with the Newfoundland Produce Co., St. John's, Nfld., by which the latter will run its s.s. Sagona between Halifax, N.S., and St. Pierre, Miquelon, for a subsidy of 90,000 francs a year.

The Beaver Dredging Co., Ltd., has been incorporated under the Dominion Companies Act, with \$300,000 capital and office at Lancaster, N.B., to carry on a general dredging business. The incorporators are G.S., L. La T., and H. Mayes; C.B., and T. A. Lockhart, St. John, N.B.

The Atlantic Dredging and Construction Co. is applying for incorporation under the New Brunswick Companies Act, with \$250,000 capital and office at Loggieville, N.B., to carry on a general dredging and construction business; the incorporators being R. O'Leary, Richibucto; F. W. Sumner, Moncton; T. Nagle, St. John, and F. Ryan, Sackville.

The British s.s. Isleworth, from Boston, Mass., to Louisburg, N.S., in ballast, ran on the rocks off Chebucto Head, near the entrance to Halifax harbor, Mar. 13, and became a total loss. She had previously lost three of her four propeller blades in the ice, and in the high sea and fog was unmanageable. She was a new vessel, on her way from Great Britain to take up a charter for the Dominion Coal Co.

The Dominion Coal Co.'s s.s. Bonavista, which ran ashore at Blacks Cove, on the Bay of Fundy, off Long Island, just west of the Digby Boar's Head light, Mar. 16, is reported to be a total wreck, and, it is stated, was not insured. She was built at Newcastle, Eng., in 1884, and was equipped with engine of 160 n.h.p., driving a screw. Her dimensions were—length, 240.4 ft.; breadth, 33.5 ft.; depth, 18.3 ft.; tonnage, 1,306 gross, 837 register.

The litigation between the St. John River Steamship Co. and the Crystal Stream Steamship Co., in connection with the use of what is known as the Star Line wharf, at Indiantown, St. John, N.B., was closed, Mar. 8, when \$1,000 damages were awarded to the Crystal Stream Steamship Co. for dispossession and use up to the present time, and \$11.50 for 23 days' use, to the St. John River Steamship Co., which is to pay all costs. It is stated that an appeal may be entered.

The Consolidated Pulp and Timber Co., Ltd., has been incorporated under the New Brunswick Companies Act, with \$5,000,000 capital and office at St. John, to carry on a general pulp and paper manufacturing business, to operate tramways, steam and other vessels, etc. Among the properties taken over is the St. John Forwarding Co. The incorporators are—N. M. Jones, Bangor, Me.; D. Morrice, Hon. R. Mackay, Montreal; T. McAvity, A. H. Hannington, H. W. Schofield and C. S. Hannington, St. John, N.B.

The decision of the Dominion Wreck Commissioner in the enquiry into the loss of the Renwick Co.'s s.s. Renwick, operated by the Inverness Ry. and Coal Co., and the s.s. St. Pierre Miquelon, which occurred in Dec., 1911, exonerates the master of the s.s. Renwick from blame in connection with the collision, but censures him for not standing by to save, if it were possible, all the members of the crew, three of whom were drowned. The officers of the s.s. St. Pierre Miquelon were made responsible for the collision, and the Renwick Co. has entered action for \$48,000 damages for the loss of the vessel.

The improvement works at Courtenay Bay, St. John, N.B., the contract for which was recently awarded to Norton Griffiths and Co., cover an area of about 400 acres, which will be enclosed by a breakwater 4,570 ft. long, averaging 20 ft. wide at the top and 150 ft. at the bottom. The area so enclosed will be dredged to 32 ft. below low water, and on the city side of the bay a large tract will be reclaimed for railway terminals. Berthing accommodation will be provided

for 22 vessels, up to 800 ft. long, and about 4,734 ft. of wharves will be built. A dry dock 900 ft. long, which is also included in the contract, will be built on the eastern side of the bay. P. R. Warren, engineer in charge for the contractors, is reported to have said recently that construction of the breakwater would be proceeded with first so that dredging might be commenced at the earliest moment.

Province of Quebec Marine.

J. A. Masse has been appointed Superintendent of the Montreal harbor yard.

The Department of Railways and Canals will receive tenders to Apr. 1 for the leasing of the Tate dry dock on the Lachine canal for five or ten years.

The St. Lawrence Navigation Co.'s s.s. Mahone sailed from Riviere du Loup, Mar. 3, for Seven Islands, and returned, calling at Trinity Bay, Bersimis and Escoumains, Mar. 8.

Capt. L. O. Belanger, who was for 35 years in the Richelieu and Ontario Navigation Co.'s service, and for 15 years as master of the s.s. Quebec, died at Montreal, Mar. 10, aged 73.

Two tugs are under construction at the Tate dry dock, on the Lachine canal, one being for the superintendent's service and the other for dredging on the canal. The first one is 93 ft. long, and the other, 60 ft. long.

The Ungava Exploration Co., Ltd., has been incorporated under the Dominion Companies Act, with \$1,000,000 capital and office at Toronto, to carry on a general exploration and development business and to own and operate vessels, wharves, docks, etc.

The Marine Department is making surveys for the placing of five new range lights in the St. Sulpice channel, St. Lawrence River, thus making it possible for tows and light draught vessels to use the north channel, instead of obstructing to some extent the main ship channel.

A number of shipping companies have forwarded a memorial to the Dominion Premier, protesting against the proposal to build the projected Quebec dry dock on the Beupre Flats at the mouth of the St. Charles River, instead of at St. Joseph de Levis, as at first decided. They also suggest that the dock be not less than 110 ft. wide and 40 ft. deep at high water.

The Quebec Transportation and Forwarding Co. is having a steam tug built at Quebec. Following are the chief dimensions—length, 110 ft.; breadth, 23 ft.; depth, 10½ ft. She will be equipped with fore and aft compound surface condensing engines with cylinders 20 and 40 ins. diam., by 30 ins. stroke. A new boiler has been installed in the company's tug Florence.

Work on the construction of the floating dry dock for the Montreal harbor is reported to be progressing at Barrow-in-Furness, Eng., where it is being built by Vickers, Ltd. It is anticipated that it will be completed early in the summer, when it will be towed across the Atlantic, and placed in position in the basin, which is being prepared at Maisonneuve. The trip across is expected to be accomplished in a month.

A deputation representing the Shipping Federation of Canada waited on the Dominion Government recently to urge the building of a dry dock at Levis. A. A. Allan, President, stated that more than a dozen vessels now plying on the St. Lawrence route were too large for any dry docks at present existing in the vicinity, and pointed out the necessity of adequate dock accommodation in order to keep down insurance rates.

Ontario and the Great Lakes.

Capt. B. Todd, of St. Catharines, a well known navigator on the Great Lakes, died at Buffalo, N.Y., Mar. 15, aged 58.

The Niagara, St. Catharines and Toronto Navigation Co.'s steamboat Garden City has had new boilers installed.

The Brockville Transportation Co.'s steamboat Senator Derbyshire is having her hull and machinery generally overhauled.

G. M. Arnold, heretofore Chief Engineer, Niagara Navigation Co., has been appointed Dominion steamboat boiler inspector at Toronto.

The Northern Navigation Co. will, it is stated, not make calls at Sault Ste. Marie, Mich., this season, as heretofore, on account of the raising of the wharfage rates for the season.

E. L. Cousins, Engineer, Toronto Harbor Commission, is on a tour of the harbors along the U.S. Atlantic coast, being accompanied over a portion of the route by J. G. Sing, Consulting Engineer for the commission.

The Canadian Lake and Ocean Navigation Co. has entered four actions against insurance companies for \$37,995 for the loss of the s.s. Turret Cape, which was wrecked on Cove island, Lake Huron, Nov. 17, 1911.

Capt. D. A. Kiah, who died at Detroit, Mich., Mar. 2, was for some time a resident of Collingwood, Ont., and was master of the Chicago, Ogdensburg and Lake Champlain Line's steamboat Canada, then operating between Collingwood and Chicago.

The headquarters of the C.P.R. Upper Lake Service will, we are officially advised, be changed from Owen Sound to Port McNicoll as soon as navigation opens. All the vessels of the Upper Lake Service will sail from Port McNicoll, and one of them will call at Owen Sound on its way up.

The Minister of Railways and Canals, in response to questions in the House of Commons recently, stated that 375,239 tons of coal and 488,366 bush. of wheat passed through the St. Lawrence canals during 1911, in Canadian or British bottoms, and 381,235 tons of coal and 1,235,434 bush. of wheat in U.S. bottoms.

Owen Sound taxpayers, by 1,794 to 85, have passed a bylaw ratifying the agreement granting a bonus of \$10,000 a year for 20 years, the taking of \$50,000 common stock and granting exemption of taxation for 10 years, to a company for the construction of a dry dock and shipbuilding plant at an approximate cost of \$1,500,000.

The Montreal and Cornwall Navigation Co.'s s.s. Britannic has been overhauled and repairs made, including the installation of a new combustion chamber in the boiler, and new bulwarks. The steamboat Filgate, which was considerably damaged by fire last year, is also being repaired and will be operated during the coming season.

The St. Clair and Erie Ship Canal Co.'s bill, extending for two years the time within which it may commence the construction of its undertaking and expend 10% of its capital stock thereon, and for five years the time for the completion and putting in operation of same, was read a second time in the Senate, Mar. 13.

The Inter-American Steamship Co., Ltd., has been incorporated under the Dominion Companies Act, with \$50,000 capital, and office at Toronto, to carry on a general shipowning, shipping and navigation business. The incorporators are—G. M. Clark, R. W. Hart, M. Gordon, G. M. Miller and C. H. C. Leggett, Toronto.

Press reports from Sault Ste. Marie

state that the Sault Dry Dock and Shipbuilding Co.'s charter has been acquired by F. H. Clergue and associates, who were formerly connected with the Lake Superior Corporation. It is stated that work on the construction of the dry dock and shipbuilding plant will be commenced as soon as the weather permits.

The Merchants Mutual Line, Ltd., Toronto, has recently placed orders for the construction of two steamboats for general lake traffic. One of these vessels is being built at Port Arthur and the other was ordered at Glasgow, Scotland, on the recent visit of J. W. Norcross, General Manager, to Great Britain.

It is reported that the underwriters have given the contract for the raising of the s.s. Turret Cape, which went ashore on Cove island, Lake Huron, towards the close of navigation last year, to the Reid Wrecking Co., Sarnia, Ont., who have taken the work on the "no cure, no pay" basis, with the intention of taking the vessel to Collingwood for overhauling.

The city of Toronto's tug, G. R. Geary, was launched, Mar. 7, being named after the mayor and christened by his mother. The tug was built by Polson Iron Works, the dimensions being—length 70 ft., beam 15 ft., draft 7 ft. She is equipped with high pressure single cylinder engine, with cylinder 18 ins. diam., by 20 ins. stroke, and with Scotch marine boiler.

The Algoma Central Steamship Line's steamboat Paliki is being overhauled at Collingwood. Her two Scotch boilers are being replaced by one boiler of similar type, 15½ by 10½ ft., with three furnaces, each 47 ins. diam., and the bushing of the high pressure cylinder of the engine is being changed. The new boiler will carry 180 lbs. of steam, instead of 160 lbs., as in the old boiler.

Capt. W. Tate Robertson, one of the pioneer captains of the upper lakes, died at Owen Sound, Mar. 17. He was born at Chatham, Ont., in 1863, and was for some time purser on the old steamboat Francis Smith, and subsequently captain. He retired from navigation service in 1902, since when he was for a period deputy consul for the U.S., and for the past three years harbor master at Owen Sound.

Press reports state that an additional steamboat service will be operated between Toronto and Lewiston, N.Y., on the Niagara route this summer, to be known as the People's Line, and that wharfage accommodation is being arranged for at Niagara-on-the-Lake, Lewiston and Queenston. H. W. Crawford, who last year ran a steamboat between Toronto and Olcott, N.Y., is said to be the promoter.

The Inland Lines has been having a number of its vessels overhauled. The Midland King is having her between deck beams moved for convenience of unloading. The Dundurn is being fitted with new steam steering gear, and the hull of the Rosedale is being repaired, a number of plates being taken off and re-rolled, and about 20 plates being replaced, consequent on damages received in the St. Lawrence canals last season.

The Northern Navigation Co.'s vessels will this season be improved by the addition of several conveniences for the comfort of passengers. The steamboats Majestic, Germanic and City of Midland are having electric push buttons fitted in all the staterooms and other parts of the vessels, and annunciators and bell boys will be provided. Running water is also being put in on the steamboats Germanic and City of Midland, and a new pantry and new lavatories on the latter vessel. The Huronic's hull and machinery are also being repaired.

The Montreal Harbor Commissioners, Mar. 12, considered the case to be presented by Canadian navigation interests

before the U.S. Secretary of War, at Washington, Mar. 27, against the request of the Chicago sanitary district for permission to divert from 4,000 to 10,000 ft. of water per second of the water flow of Lake Michigan, for a drainage canal. The proposed canal will be 28 miles long, 200 ft. wide and 28 ft. deep, and it is estimated that one-sixteenth of the total low water flow of the lake would be taken, which would lower the level of the lake by from 4½ to 6 ins., thus materially reducing the carrying capacity of vessels operating on the Great Lakes, and thereby enhancing the cost of carrying cargoes. The Minister of Marine appointed John Kennedy, Consulting Engineer of the Montreal Harbor Commission; J. Stewart, of the Hydrographic Department, and V. W. Forneret, St. Lawrence Ship Channel Engineer, to examine the whole situation and report in time to permit of the presentation of Canada's case.

The Port Colborne and St. Lawrence Navigation Co., the incorporation of which we announced in our last issue, has purchased the St. Lawrence and Chicago Steam Navigation Co.'s steamboat Algonquin, which it will operate between Montreal and Port Colborne, and it has also purchased the steamboat Cataract, which it proposes to remodel as a lighter to take care of the freight at Montreal. The Algonquin was built at Glasgow, Scotland, in 1888, and is screw driven with engine of 150 n.h.p. Her dimensions are—length, 245 ft.; breadth, 40.1 ft.; depth, 20.6 ft.; tonnage, 1,806 gross, 1,172 register. The company is closely allied to the Maple Leaf Milling Co., and has the following officers and directors:—President, H. Shaw; Vice President, Cawthra Mulock; other directors, C. W. Band, J. S. Barker and W. D. Robertson.

Manitoba, Saskatchewan and Alberta.

The Standard Shipping Co., Ltd., Winnipeg, is applying to the Manitoba Legislature to confirm the increase of its capital stock from \$5,000 to \$50,000.

The Lake Winnipeg Shipping Co. has applied to the Winnipeg city council for a lease of the ends of Broadway and Water St., on the Red River, for the construction of a dock.

The South Harbor Sand Co., Ltd., has been incorporated under the Manitoba Companies Act, with \$50,000 capital and office at Winnipeg, to carry on a stone quarrying and sand business, to operate vessels, and carry on a general transportation business in freight and passengers. A. J. Andrews, C. A. Millican, R. Hall, W. H. Hall and M. W. Julien, Winnipeg, are the incorporators.

With reference to the report mentioned in our last issue, that the Hudson's Bay Co. had made arrangements for the construction of two boats at Athabasca Landing, Alta., during the coming summer, we are officially advised that one of them will be 120 ft. long and the other about 160 ft. One will be operated on the Slave River and the Lesser Slave Lake, and the other on the Athabasca River.

The Hudson Bay Navigation Association has been formed at Grand Forks, N.D., by a number of the mayors of towns and cities in the Red River valley to secure recognition of the importance of the Red River as a possible waterway to the sea, by way of the Hudson Bay. It is stated that the question of improving the Red River between Winnipeg and Grand Forks will be taken up at a meeting of navigation men, to be held in Winnipeg in the summer.

A report which has been submitted to the U.S. Congress with reference to the proposals to improve the navigation of the Red River, so as to make a

through waterway to Hudson Bay, states that the construction of large storage reservoirs in the vicinity of the Red River is not necessary nor desirable in the interests of navigation. It is pointed out that the district drained by the river is covered with a network of railways, which in some cases offer better shipping facilities to elevator centres than the water routes, and that no increase in expenditure is warranted by present or prospective commerce on the Red River to the north.

The bill to incorporate the Winnipeg and St. Boniface Harbor Commissioners, introduced by the Minister of Marine, and read a first time in the House of Commons, Mar. 13, provides that the limits of the harbor shall include all the waters within the cities of Winnipeg and St. Boniface at the time of the passing of the act, and that the board shall consist of five members, three being appointed by Winnipeg and two by St. Boniface, each holding office for three years, and being eligible for re-appointment. The Manitoba Legislature has amended the Winnipeg city charter, permitting it to guarantee the commission's first mortgage bonds to the extent of the value of the works and improvements carried out, on the authority of a bylaw passed by the ratepayers.

British Columbia and Pacific Coast Marine.

The California Steamship Co., Ltd., has changed its registered office from Vancouver to Victoria.

The Union Steamship Co.'s s.s. Chelohsin, which was recently built in Ireland, made her first trip from Burrard Inlet, at the end of February, attaining a speed of 12 knots an hour.

The G.T.P. Coast Steamship Co.'s s.s. Prince George, which has been equipped with oil burning apparatus, was returned to service early in March, and made her first trip from Victoria to the north, Mar. 3.

The Merchant Service Guild of British Columbia has been formed, with headquarters at Victoria, consisting of officers in the merchant service on the coast, for the protection and guidance of masters and mates.

The Minister of Marine has decided that sick mariners' dues shall be collected once only in each voyage, in the case of vessels arriving from overseas, the term voyage being deemed to include outward and homeward passages.

The Dominion Government has awarded the mail contract for the Gulf Islands to the C.P.R. This service was formerly carried out by the s.s. Ironquois, which was wrecked last year, since when it has been performed by the B.C. Packers' Association.

L. Coste, Dominion Government engineer, has reported favorably on the proposal to construct a breakwater 1,000 ft. long at Victoria, at a cost of about \$1,250,000, in preparation for the anticipated increased business on the completion of the Panama canal.

Work is reported to have been commenced on the construction of the bulkheads for the dock project at North Vancouver. The Norton Griffiths Steel Construction Co. are the contractors, while the dredging will be done on completion of the bulkheads by the Puget Sound Bridge and Dredging Co.

The Skeena River Syndicate, Haysport, Skeena River, is having a number of vessels built at Vancouver, specially designed for the fishing business on the river, the first of which was launched recently. The dimensions are—length 70 ft., breadth 16 ft., depth 8½ ft., schooner rigged with auxiliary engine of 50 n.h.p.

Press reports from Victoria recently

stated that the C.P.R. had placed a contract there for the construction of a vessel 232 ft. long for its Vancouver Island service, are most likely erroneous. Probably the report refers to the s.s. Princess Sophia, which has been built in Scotland, and, at the time of writing, is on her way to the coast.

Capt. B. Johnson, of the G.T.P. Steamship Co.'s s.s. Prince Rupert, has prepared a paper on the peculiar tidal conditions prevailing in the Seymour Narrows, for the Department of Naval Service. In his opinion these have been responsible for several strandings and wrecks, the variations of rise and fall along the coast ranging from plus 23 ft. to minus 0.6 ft.

The formal transfer of the Canadian Mexican Pacific Steamship Co.'s stock to J. H. Welsford, President, Union Steamship Co., was reported to have been made, Mar. 1. T. H. Worsnop, President of the first named company, will remain with the new company as a director, and will act as joint manager with J. Beazley, of the Canadian-Mexican line. It is stated that a vessel is under construction in Great Britain, especially for the Mexican service.

Press reports state that the C.P.R. will commence on June 1 a weekly service between Victoria and Skagway, and that it will this season run a vessel direct between Victoria and Prince Rupert, calling at Goose Bay, instead of allowing its Queen Charlotte Islands and Skagway vessels to call at Prince Rupert as last season. The s.s. Princess Royal, which has been lying up for some time, will, it is stated, be hauled out on the ways at Esquimalt to have her hull scraped and to be generally overhauled.

The Pacific Coast Steamship Co. is receiving tenders for the construction of two steamships for its Puget Sound-San Francisco service, which, it is stated, will replace the present smaller steamships now operating between Victoria and San Francisco. The dimensions given are—length 417 ft., breadth 48 ft., depth 29 ft., tonnage 5,250 gross, 2,401 register; 5,000 i.h.p., bunker capacity 880 tons; dead weight cargo 2,817 tons, measurement capacity 3,367 tons. The engines must be suitable for a speed of 18½ knots an hour, and both vessels must be ready for service in 12 or 15 months.

Collection of Freight Rate Statistics from the Inland Marine.

It is the Department of Railways and Canals' intention to give effect this year to at least one important change in statistics relating to traffic on Canadian inland waters. These statistics are said to be satisfactory as far as they go; but they are defective in not disclosing the freight rate per ton per mile. For this reason it is quite impracticable to make a comparison between water and rail rates, and it is proposed to correct the situation.

The Comptroller of Statistics has notified all statistical officers in the canals service that each vessel's report must hereafter show the freight rate actually being charged on cargo. He gives the assurance that this information will be received in strict confidence by the Department, that it will not be published, but will merely be run into totals, so as to show the rate per ton per mile on the aggregate traffic passing through the canals.

The matter has been carefully considered by the Dominion Marine Association, and its Counsel, F. King, has notified the Comptroller that the members of the Association have no objection to giving instructions to the masters of their vessels to furnish the statistical officers with the rates on all bulk cargoes carried, as the Association is desir-

ous of doing everything possible to further the Department's work in improving navigation and navigation methods, and realizes that statistics are very essential in a great many ways. In regard to the package freight trade, which is increasing very rapidly, an enormous number of manifests in the case of each cargo would have to be dealt with to get at an average rate, and consideration would have to be given to a number of charges of varying kind and extent which would be made against the rate shown in each individual manifest. To get over this difficulty it is suggested that owners would have no serious objection to furnish from these offices the net results, either of the season, or possibly each trip, of each vessel.

The Association's Counsel has also pointed out that care will have to be taken to distinguish between cases where a rate is free to the vessel and where there are unloading or discharging or other expenses to be made against it.

Dominion Marine Association.

PRESIDENT, F. Plummer, Toronto; COUNSEL, F. King, Kingston, Ont.

Great Lakes and St. Lawrence River Rate Committee.

CHAIRMAN, W. F. Wasley, Gravenhurst, Ont. SECRETARY, Jas. Morrison, Montreal.

International Water Lines Passenger Association.

PRESIDENT, A. A. Heard, Albany, N.Y. SECRETARY, M. R. Nelson, New York.

The Shipping Federation of Canada.

PRESIDENT, A. A. Allan, Montreal; MANAGER, AND SECRETARY, T. Robb, 526 Board of Trade, Montreal.

Ship Masters' Association of Canada.

GRAND MASTER, Capt. J. H. McMaugh, Toronto, Ont.; GRAND SECRETARY-TREASURER, Capt. H. O. Jackson, 376 Huron St., Toronto.

Among the Express Companies.

The Canadian Northern Ex. Co. has opened a waybill office at Ridpath, Sask.

The Board of Railway Commissioners has defined the collection and delivery limits for express companies in Fernie, B.C., and has extended the limits for Lethbridge, Alta., rescinding its order 15082 of Sept. 8, 1911, which fixed previous limits.

G. Kennaugh, who was charged with conspiring with J. D. Chilman, now serving sentence in connection with the recent robbery of the Canadian Ex. Co.'s office at Hamilton, Ont., has been acquitted. It is stated that an appeal for pardon will be made in Chilman's case.

The Board of Railway Commissioners issued order 16090, Mar. 8, adding another rule to the conditions of carriage and directions to agents in Express Classification 2, as follows:—A shipment tendered at a common point, which cannot be carried to its destination except through a connecting company, which connecting company also has an office at the common point, must be refused, and the shipper referred to the company which can give the through service, unless having been notified of the charges by the joint route, he requests acceptance and specifies the route in writing, in which case the shipment may be forwarded at the sum of the local rates to and beyond the transfer point specified by the shipper. The transfer point must be endorsed on the agent's receipt, and the shipper's written request attached to the waybill.

Trade and Supply Notes.

The matter which appears under this heading is compiled, in most cases, from information supplied by the manufacturers of, or dealers in, the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers to distinctly understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

The Canada Iron Corporation has ordered for its ore mine near Bathurst, N.B., a 300 h.p. Robb-Armstrong horizontal Corliss engine and a 72-in. return tubular boiler.

The C.P.R. has ordered two Robb-Armstrong vertical enclosed compound engines direct-connected to 175 k.w. electric generators supplied by the Canadian General Electric Co., to be installed in the Hotel Vancouver, and to operate at 400 revolutions a minute. Each engine is to be equipped with a pressure oiling system which will maintain oil on all the bearings under 15 to 20 lbs. pressure per square inch.

Clark, Lyford and Sterling, a new firm of forest engineers, have opened offices in Philadelphia, Pa. The members are J. F. Clark, Vancouver, B.C.; C. A. Lyford, Montreal, Que., and E. A. Sterling, Philadelphia. Messrs. Clark and Lyford are also members of the firms of Clark and Lyford, Vancouver, and Lyford, Clark and Lyford, Montreal. Mr. Sterling has resigned his position as Forester of the Pennsylvania Rd., which he has held for the past five years. This organization is making a specialty of timber estimates and forest maps, and is prepared to examine and report on timber properties anywhere.

P. A. Hinds, the Ohio Brass Co.'s travelling representative in Canada, who was knocked down by an automobile in Toronto towards the end of February and badly injured, and who was taken to the General Hospital, where two operations had to be performed, is convalescing satisfactorily, but it is likely to be some little time before he is able to resume duty. He left Toronto Mar. 21 for Muncie, Ind. The Ohio Brass Co. has issued a circular to its Canadian customers, asking them, until Mr. Hinds is able to travel again, to send enquiries and orders direct to it at Mansfield, Ohio, where they will receive prompt attention. A salesman will be sent from Mansfield or one of the branch offices to care for special enquiries.

Stuart, Drinkwater and Hingston, Ltd., has been incorporated under the Dominion Companies Act, with office in Montreal. The new company will represent for Canada the Brush Electrical Engineering Co., dealing in its complete line of electrical machinery, electric rolling stock and electric supplies. It will also represent A. W. Penrose and Co., of London, Eng., manufacturers of the Penrose electric elevators. The company will take over the Canada Ford Co., Ltd., of which company C. A. Stuart is President; K. E. Drinkwater, Vice President, and H. R. Hingston, Secretary-Treasurer, these three constituting the sole shareholders of the companies. Mr. Stuart commenced his business career with the Bell Telephone Co. of Canada, being Assistant Purchasing Agent until the company disposed of its Manitoba plant to the Provincial Government, when he went west to conclude the arrangements. Almost immediately after his return to the east, he entered into partnership with E. H. Ford and K. E. Drinkwater, under the name of the Canada Ford Co., H. R. Hingston joining the firm later. In Sept. last Messrs. Stuart, Drinkwater and Hingston acquired the interests of Mr.

Ford, who retired from the business. Mr. Drinkwater started his business life with Allis-Chalmers-Bullock, Ltd., leaving it to join the Canadian Fairbanks Co., which company he left to enter into partnership with Mr. Stuart. Mr. Hingston's entire business career has been with the Canada Ford Co.

Transportation Conventions in 1912.

May 7-10.—Air Brake Association, Richmond, Va.

May 10-11.—American Association of Demurrage Officers, San Francisco, Cal.

May 14.—Railway Industrial Association, Kansas City, Mo.

May 14-17.—Master Boiler Makers' Association, Pittsburgh, Pa.

May 15.—Freight Claim Association, Buffalo, N.Y.

May 15.—American Association of General Baggage Agents, New York City.

May 15.—American Railway Association, New York City.

May 20-22.—Railway Storekeepers' Association, Buffalo, N.Y.

May 21-23.—Association of Railway Claim Agents, Los Angeles, Cal.

May 22-25.—International Railway Fuel Association, Chicago, Ill.

June 12-14.—Master Car Builders' Association, Atlantic City, N.J.

June 16-18.—Wood Preservers' Association, Chicago, Ill.

June 17-19.—American Railway Master Mechanics' Association, Atlantic City, N.J.

June 18.—Train Dispatchers' Association of America, Louisville, Ky.

June 18-21.—American Association of Freight Agents, Detroit, Mich.

June 24.—Association of Railway Telegraph Superintendents, New York City.

June 25, 26.—Association of Transportation and Car Accounting Officers, Bluff Point, N.Y.

June 26.—Association of American Railway Accounting Officers, Quebec, Que.

July 23-26.—International Railway General Foremen's Association, Chicago, Ill.

Aug. 15.—International Railroad Master Blacksmiths' Association, Chicago, Ill.

Aug.—Travelling Engineers' Association.

Sept. 10-12.—Roadmasters' and Maintenance of Way Association, Buffalo, N.Y.

Sept. 10-13.—Master Car and Locomotive Painters' Association of United States and Canada, Denver, Col.

Oct. 7-11.—American Electrical Railway Association, Chicago, Ill.

Oct. 15-17.—American Railway Bridge and Building Association, Baltimore, Md.

Oct. 17-19.—American Association of Dining Car Superintendents, Denver, Col.

Nov. 6-10.—Association of Railway Electrical Engineers, Chicago, Ill.

Nov. 15.—American Railway Association, Chicago, Ill.

Dec. 12-13.—Association of Transportation and Car Accounting Officers, Louisville, Ky.

The P. Lyall and Sons Construction Co. has been organized under the Dominion Companies Act, with a total capitalization of \$4,300,000, and office in Montreal. An issue of \$1,250,000 of 20-year 6% first mortgage gold bonds, with 25% bonus of common stock, was placed on the market recently at 96. The directors are: P. Lyall, W. Lyall, T. Lyall, J. N. Greenshields, R. Mackay, H. W. Beauclerk, Montreal. The company has been licensed to do business in Ontario, using a capital not exceeding \$40,000, G. G. McCullough, Toronto, being its attorney.

Telegraph and Cable Matters.

The C.P.R. Telegraph Department has opened offices at Eau Claire and Grand Valley station, Ont.; Bergen, Man.; Druid, Siltou, Holdfast and Keddleston, Sask.; Standard, Alta., and Galloway, B.C.

The Dominion Government has established wireless telegraph communication between Pictou, N.S., and the Magdalen Islands. The service, which at present will be limited to the sending of news, weekly, will be operated by the Post Office Department.

The British Government has accepted the Marconi Wireless Telegraph Co.'s terms for the erection of long distance wireless telegraph stations at London, Egypt, Aden, Bangalore, Pretoria, Singapore and other points, to link up the various scattered parts of the empire. The Government will pay the company \$300,000 for each station and 10% of the receipts for 28 years.

The British Postmaster General in a speech in London, Eng., Mar. 13, is reported to have stated that, before long, the Government would obtain control over all the cable business. It is stated in the dispatch that this statement is understood to have reference to the lapsing of landing licenses at an early date, and which can only be renewed on the condition that the Government shall have control of the rates to be charged.

Following on the leasing of the Anglo-American and Direct United States Cable companies' systems by the Western Union Telegraph Co., the eight trans-Atlantic cables of the three companies have been consolidated under one management, and are known as the Western Union Cable System. The European headquarters are at the Anglo-American Bldg., New Broad St. London, Eng., and the American headquarters at the Western Union Bldg., 195 Broadway, New York. J. H. Carson has been appointed General Operating Manager, London, Eng.; T. W. Goulding, European Commercial Manager, London, Eng., and J. C. Willever, United States Manager, New York. Mr. Goulding was at one time in telegraph service at Winnipeg.

The Leahy Engineering and Contracting Co. has been incorporated under the Dominion Companies Act, with the capital of \$26,000, and office at Montreal, to carry on a dredging and general contracting business. The provisional directors are: J. H. Leahy, G. Bourdeau, J. E. Morier, E. H. Godin, Montreal; J. G. de Lorimier, Westmount, Que.

The Canada Central Construction Co. has been incorporated under the Dominion Companies Act, with a capital of \$300,000 and office at Montreal, to carry on a railway and general contracting business. The provisional directors are: F. Dufresne, St. Laurent, Que.; J. W. Le Pailleur, A. S. Laplante, R. Carignan, Lachine, Que.; J. A. P. Descarries, Montreal.

Western Canada Railway Club.—At the regular meeting in Winnipeg, Mar. 11, a paper on foundry practice, prepared by A. Knight, foreman at the Canadian Northern Ry. shops, was read in his absence through illness in his family, and J. G. LeGrand, Bridge Engineer, G.T. Pacific Ry., showed a series of lantern slides picturing bridge and other construction work on the G.T. Pacific Ry.

The International Supply and Construction Co. has been incorporated under the Dominion Companies Act, with a capital of \$100,000 and office at Hull, Que., to carry on a railway and general contracting business, and to deal in contractors' plant and machinery. The provisional directors are: D. Chene, P. Wilton, H. P. Dupuis, I. V. Couture, Hull, Que.; W. J. Code, Ottawa.

Canadian Collieries (Dunsmuir), Ltd.
—The report for the past year shows that the properties acquired included all the coal in and underlying some 1,900,000 acres of land, known as the Esquimalt and Nanaimo Ry. Co.'s land grant, together with the operating mines, railways, shipping docks and certain timber lands, in addition to other small areas not included in the land grant. During the year contracts were made for railway coal tonnage in Mexico, and this field is being thoroughly investigated to secure the best results possible. With the nearness to completion of the Panama canal the directors look forward to greatly increased business.

Electricity continues to be the supreme power for urban and suburban railway service, and note should be made of the fact that the Edison stor-

age battery cars which have been operating during the past year in New York city have been giving reliable and satisfactory service. The application of electric traction to steam roads is not making the progress which was expected when the New York Central and the New Haven and Hartford installations had proved how reliable and punctual a service could be given. Figures of cost are difficult to obtain, but, as the report on the proposed electrification of Boston suburban roads showed, the first cost of these changes from steam to electric power is so great as to discourage investments of this character. There is a consensus of opinion that the alternating-current, overhead trolley will be used for long distance service, and the direct-current, third-rail system for terminal and suburban work.

THE GRAND TRUNK RAILWAY COMPANY OF CANADA.

NOTICE is hereby given, that the ordinary general half-yearly meeting of the Grand Trunk Railway Company of Canada will be held at the City Terminus Hotel, Cannon Street, London, E.C., on Thursday, the 18th April, 1912, at twelve o'clock noon precisely, for the purpose of receiving a report from the directors, for the election of directors and auditors, and for the transaction of other business of the company.

Notice is also given, that the transfer books of the company in London and Montreal will be closed from Saturday, the 16th day of March, to the day of meeting, both days inclusive.

By order,

ALFRED W. SMITHERS,
Chairman.

H. H. NORMAN,
Secretary.

Dashwood House, 9 New Broad Street,
London, E.C., 9th March, 1912.

NOTICE.

The General Railway Signal Company, the owners of the exclusive rights to Canadian patents No. 92323, No. 93127, No. 96256, and No. 97758, issued to Young and Townsend, and covering methods of signalling electrified railways, wishes to call the attention of all possible users of the devices and systems covered by such patents, to the fact that it is prepared to sell and furnish, at short notice, all such devices and to install such systems upon any railway in the Dominion of Canada.

All inquiries regarding the above should be addressed to the office of the company, Room 506, Eastern Townships Bank, 263 St. James St., Montreal, Que.

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