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Canadian Railway and Marine World

January, 1916.

The Building and Operation of the Welland Ship Canal Construction Railway.

By A. C. Harris, Superintendent, W. S. C. C. Railway.

In connection with the construction of the Welland Ship Canal, between Lakes Ontario and Erie, the Department of Railways and Canals has built, and fully equipped, a double track, standard gauge, construction railway along the west side of the ship canal's route from the lower end of section 3, near Merritton, Ont., to Lake Ontario, a distance of 6.3 miles. In addition, there is siding accommodation for 165 cars.

It is not the Department's intention that this railway should compete with commercial railways in the handling of freight and passenger traffic, the road having been constructed, and now being operated and maintained, solely for the free use of the contractors for sections 1, 2 and 3 in hauling excavated material from their respective works to Lake Ontario, where it is deposited to form dykes or embankments on either side of the new harbor at Port Weller; also for moving crushed stone from the crushing plant, and sand from the interchange tracks, near Merritton, to their different works. The contractors also handle structural steel, piling, cement, coal and other materials, which is delivered to them on the interchange tracks with the Grand Trunk, and the Niagara, St. Catharines and Toronto Railways, at Merritton, over the construction railway to points on their sections where these materials are to be utilized.

Style of Construction.—The railway was built in a semi-permanent manner with 60 lb. A.S.C.E. rails on a good class of ties, spaced 2 ft. centres and ballasted with crushed stone and gravel. The maximum gradient against southbound traffic is 1.50%, and against northbound traffic 0.5%, the maximum curvature being 60°, except in yards at Merritton and Port Weller where 12° is used. The contractors for sections 1 and 2 were required, under the terms of their contracts, to do all the grading on the railway within the limits of their contracts, and the contractors for section 2 ballasted the whole line with gravel from a pit located in the canal prism on that section. This was afterwards supplemented by crushed stone. The tracklaying was done by the Department.

Crossings.—The construction railway crosses the Niagara, St. Catharines and Toronto Ry., Lake Shore Division, at Port Weller, the crossing being protected by a 10 lever mechanical interlocking plant.

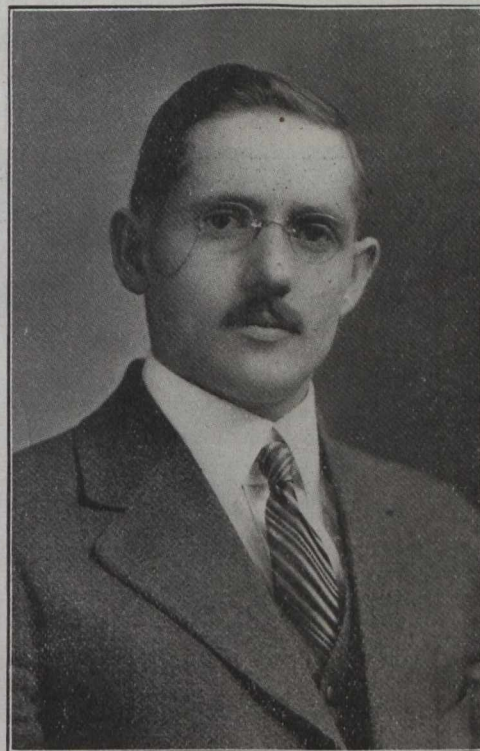
Just below lock 11, the railway crosses the present Welland Canal, and for this crossing a double track steel railway swing bridge, the superstructure of which was constructed and erected by the Hamilton Bridge Works Co., has been erected. The traffic over the bridge is protected by semaphores and derails, operated by a 2-lever mechanical interlocking plant in the bridge operator's cabin. The bridge is operated by electricity.

At the principal highway crossings of the railway, crossing watchmen are stationed and crossings are further protected by crossing gates.

Track Scales.—A short distance north of the crushing plant the 150-ton railway track scales, which will weigh a train of cars 110 ft. long, are located. All stone

leaving the crushing plant for sections 1 and 2 is weighed over these scales.

Signalling.—The railway is equipped with 11 mechanical interlocking plants, four of which are 4-lever, five 5-lever, one 2-lever



A. C. Harris,
Superintendent, Welland Ship Canal Construction Railway.

housing of the mechanical interlocking levers and telephone train dispatching instruments.

Wrecking Crane.—For the purpose of clearing up of wrecks the railway is provided with a 50-ton capacity Industrial Works locomotive crane, supplied by F. H. Hopkins & Co., Montreal, and fully equipped to safely handle at 30 ft. radius 12,000 lbs., without outriggers, and to swing the load through full circle and move along the track with boom in any position; crane also capable of hoisting and rotating with outriggers fully extended and supported, 100,000 lbs. at 16 ft. radius, the hoisting, travelling and rotating being used simultaneously or independently.

System of Operation.—The railway is operated and maintained by the superintendent of the line, the contractors furnishing their own equipment and necessary train crews, who are required to pass an examination as to hearing, sight, ability to distinguish colors, and as to the meaning of the rules and signals in use, and who are under the superintendent's order in all matters pertaining to the operation of trains over the construction railway.

The normal traffic is controlled by telephone block system, but in case of an accident where one main track is obstructed, the other track is used under single track rules, and trains are operated by train order.

During the summer and autumn, when the contractors along the line of the canal are working at heavy pressure, and day and night, night operation over the road is necessary. During the balance of the year the road is only in operation 12 hours a day.

Following is a statement showing the number of locomotives and the approximate number of the different classes of other rolling stock on the line:

Contractor.	Section.	Loco-motives.	Dump cars.	Flat cars.	Ballast cars.	Cranes.	Total cars.
Dominion Dredging Co.	1	2	15	2	..	..	17
Baldry, Yerburch & Hutchison ..	2	23	152	23	8	..	183
Confederation Construction Co. .	3	3	126	..	..	..	126
Government .....	..	1	..	2	..	1	2
Total .....	..	29	293	27	8	1	328

and one 10-lever plants, all connecting parts of which are in accordance with R.S.A. standard drawings and specifications. These plants were supplied and installed by Saxby & Farmer, Ltd., of Montreal. Provision has been made for sealing the locking in such a manner as to prevent interference by any but authorized employees.

Train Dispatching.—The road is fully equipped with a selective telephone train dispatching system and a telephone blocking system, which were supplied and installed by the Northern Electric Co., of Montreal. The equipment is so arranged that connection can be made to any of the block signal offices through the blocking circuits by means of a patching device located in the block offices, thereby making the blocking circuit and the train dispatching circuit interchangeable.

At the several points on the railway where the contractors come on to the road over their own sidings, operator's cabins have been erected and fully equipped for the

Following is a statement showing the amount of traffic handled over the railway since it was put into operation on June 25, 1914, until Oct. 31, 1915. During the two months of Feb. and Mar., 1915, the contractors were practically closed down on account of cold weather, and consequently the traffic over the road was very light.

Excavated Material.	
6-yard cars	10,438
12-yard cars	164,603
16-yard cars	51,834
30-yard cars	12,010
Total cars	238,885
Stone (233,736 tons)	8,178
Sand	1,624
Miscellaneous cars	415
Grand total of cars	249,102

The number of trains, loaded and empty, handled over the railway since operation commenced is 48,118, and there have been no accidents resulting in personal injuries to employes or other persons, and the num-

ber of accidents which have been in the nature of derailments has been comparatively small, and the consequent damage to plant and equipment very low.

There are, at present, five track gangs at work on the line doing the necessary track repairs and other maintenance work. Owing to the abnormal traffic over the road, and the fact that it has been constructed re-

cently, the maintenance work is necessarily very heavy, and much attention must be given to this work at all times.

A storehouse and a small machine and general shop for the handling of necessary repair and maintenance work of the railway are located at Port Weller, the northern terminus.

The Superintendent's headquarters and

dispatching offices, a commodious two story building, is located at Homer, Ont.

The road was constructed by J. F. Pringle, B.A., A.M.Can.Soc.C.E., Resident Engineer, and the operation and maintenance is under the jurisdiction of A. C. Harris, Superintendent, under the direction of J. L. Weller, M.Can.Soc.C.E., Engineer in Charge, Welland Ship Canal.

The Canadian Northern Railway's Bridge Over the Riviere-des-Prairies.

The Canadian Northern Ry.'s Montreal-Hawkesbury section of its main trans-continental line approaches Montreal from the west, crossing the west and main channels of the Riviere-des-Prairies, or what is commonly called the Back River, 12 miles northwesterly from Montreal. The main crossing is composed of two through truss spans 150 ft. c. to c. of bearings, one through truss span, 275 ft. 0 $\frac{3}{4}$ in., and one 75 ft. through plate girder span, making a

real and anchored securely in place under the projecting portion of span. Upon the scow was built necessary blocking to reach the lower chords of truss. The counterweight was then removed, and a very heavy truck, running on a standard gauge track, was placed under the extremity of the land end of the truss.

The next work was to pump out sufficient water from the scow to raise it and thus take most of the weight of the truss

further lowering to seats and removing blocking was carried out by the use of powerful jacks. This operation was carried out successfully on Sept. 17, 1914. The erection of the two 150 ft. trusses was carried out on falsework.

The crossing of the west channel, about $\frac{1}{2}$ mile west, is of much less importance, the channel being almost dry for a short period in summer. It is composed of five 80 ft. half through plate girder spans with central piers on the angle of the stream. All the substructure of concrete. The weight of steel in this crossing is about 689,000 lbs., and of concrete 1,600 cu. yds.

All the steel work was designed to the Dominion Government specification, 1908, class heavy loading, and was fabricated and erected by the Dominion Bridge Co., Montreal, with E. Mackinnon, Resident Engineer, in charge. The substructure was built by J. P. Mullarkey, Montreal. We are indebted to W. P. Chapman, M.Can.Soc.C.E., Engineer of Bridges, Mackenzie, Mann & Co., Ltd., for the foregoing information and for the photographs of the main span of the east channel crossing, from which the accompanying illustrations are made.

Railway Electrification in England.—The electrification of a portion of the Lancashire and Yorkshire Ry., between Manchester and Bury, approximately 11 miles, is expected to be ready for operation early in January. The work has been carried out by the company's staff, and the rolling stock has been built in the company's shops at Newton Heath, Manchester. The cars are of all steel construction, and each unit is a 5 car train, of 3 motor cars and 2 trailers. The motor cars are each equipped with four 200 h.p. motors.

Toronto Transportation Club.—The annual dinner was held, Nov. 29. The officers for the current year are,—M. G. Murphy, C.P.R..

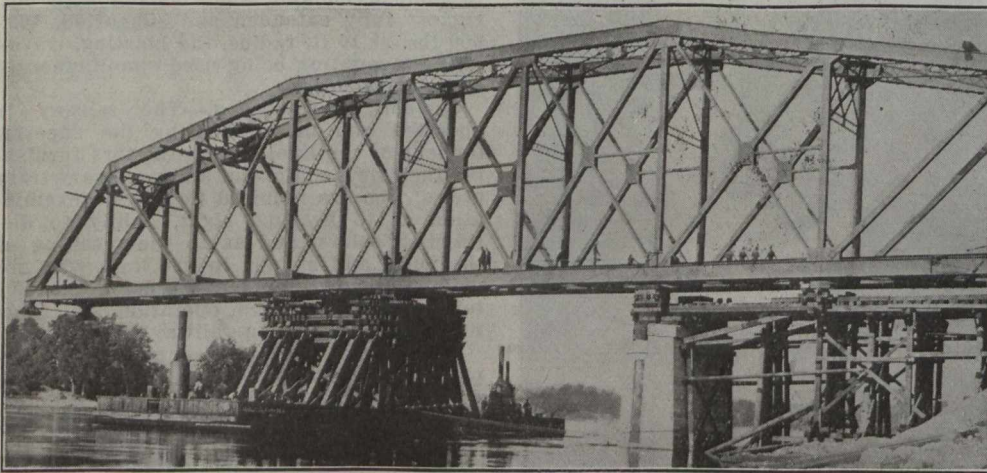


Fig. 1.—First Stages of Launching Span, Riviere-des-Prairies Bridge.

total length between face to face of ballast walls of 662 ft. 5 $\frac{3}{4}$ ins. The piers and abutments are of the usual concrete type, with spread footings, and are at right angles to the centre line of the track, which track is a tangent and has a level grade over the whole crossing.

The 150 ft. spans are 6 panel through Pratt trusses of the following dimensions: 150 ft. c. to c. end bearings, 18 ft. c. to c. trusses, 30 ft. c. to c. chords. The 275 ft. 0 $\frac{3}{4}$ in. span is of the curved top chord type and has the following dimensions: 275 ft. 0 $\frac{3}{4}$ in. span c. to c. end bearings, 31 ft. c. to c. chords at the hips, and 45 ft. at the centre of the span, the trusses being 19 ft. c. to c. The 75 ft. through plate girder span is of the standard type with the girders placed 17 $\frac{1}{2}$ ft. c. to c. The stringers are four to a panel and the distance, base of rail to centre of bottom chord, varies from 3 ft. 8 $\frac{3}{4}$ in. for the 150 ft. spans to 3 ft. 4 in. for the 275 ft. 0 $\frac{3}{4}$ in. span. The total weight of steel in the channel (275 ft. 0 $\frac{3}{4}$ in.) span is 550 tons, and in the whole crossing about 2,000,000 lbs. About 2,100 cu. yds. of concrete were used in the whole crossing.

Owing to the very swift and deep current, the contractors, after considering several methods of erection, decided to adopt the one of launching by use of a scow. The plan followed was to erect the whole span in a temporary position, with slightly more than half of the length projecting over the supports riverward, the land end being held down by a heavy counterweight of steel rails. With the erection practically completed a large scow was taken from Mont-

and at the same time clear the blocking over the forward pier in the stream. This having been successfully carried out, the cables from the scow were attached to a pier beyond the main channel, and taken back to a stationary engine located on the track about 50 ft. east of the end of the truss. At a given signal the engine started and the span commenced to move, being carried slowly by the scow to its position over the

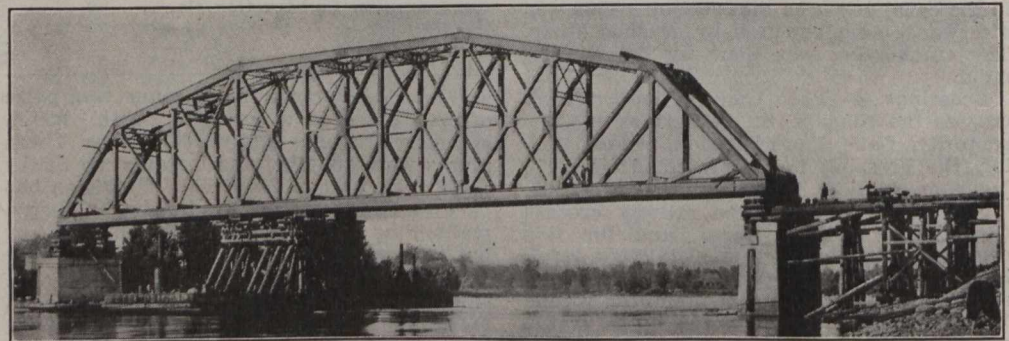


Fig. 2.—Span in Position Over Pier Ready to Lower to Permanent Position, Riviere-des-Prairies Bridge.

piers. In a work of this kind it necessarily follows there must be same adjusting of cables, guys, windlass, etc., but there was no serious hitch or delay, and the span was moved about 120 ft. to its position over piers in about an hour and a half.

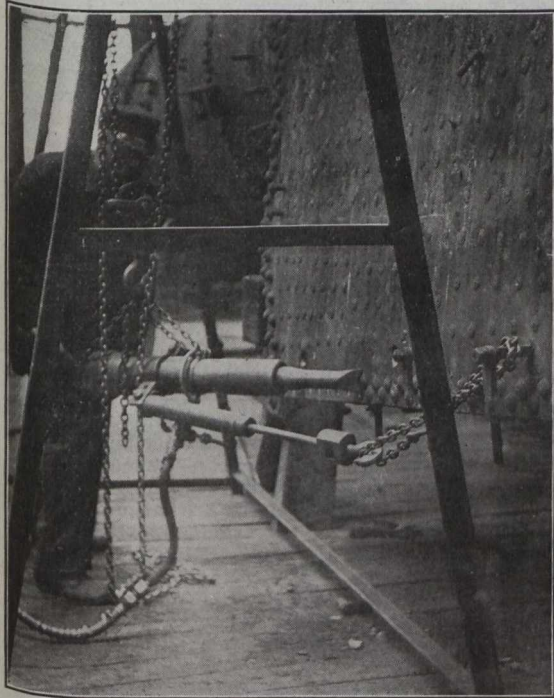
It was then necessary to allow water into the scow to sink it about 18 ins. and bring the forward end of the truss down firmly to the blocking on the mid-stream pier. The

President; T. Marshall, Board of Trade, C. E. Horning, G.T.R., Vice Presidents; W. A. Gray, Delaware, Lackawanna and Western Ry., Secretary; M. Macdonald, G.T.R., Treasurer. The executive committee consists of, John Gray, M. H. Brown, J. H. Bennett, D. C. Wood, John Thomson; and the chairmen of committees are,—F. V. Higginbottom, Entertainment; W. McIlroy, Membership; J. M. Copeland, Sick.

Railway Mechanical Methods and Devices.

Cutting Off Rivet Heads in Grand Trunk Railway Shops.

A holder-on for use with the pneumatic rivet-buster for cutting off rivet heads on the sides of boilers, is in use in the G.T.R. shops at Stratford, Ont., which facilitates the work materially, reducing considerably the labor of the operators. The bull and holder-on are shown in the accompanying illustration. The holder-on consists of a small air cylinder hinged to the side of the bull cylinder. The piston rod of the holder-on has a hook at the outer end, by which it is attached to some near by projection of the boiler, such as the ashpan studs in the illustration, so that when the chisel on the end of the bull plunger is placed against the rivet head, by turning on the air in the holder-on cylinder, the chisel is held firmly



Pneumatic Holder-on Used With the Bull for Cutting Off Rivet Heads.

against the rivet head, reducing the labor of the operators. In this particular case, the holder-on is applied to a 2 in. bull. Larger holders-on are used with the 4½ in. bull, which is used largely for cutting stay-bolts between the sheets.

In cutting off the heads of rivets along the side of the boiler, a movable trestle frame is used for holding the bull as shown. The bull is suspended from a runway along the top of the frame, so that longitudinal adjustment is thereby obtained, vertical adjustment being secured by the block and tackle which suspend the bull.

Hamilton Contributions to Patriotic Fund.
—Among the principal contributors to the Canadian Patriotic Fund in Hamilton, Ont., recently, are the Steel Company of Canada, \$12,000; Robt. Hobson, Vice President, Steel Company of Canada, \$12,000; Mrs. Robt. Hobson, \$500; Dominion Power & Transmission Co.'s employes, \$7,000; Toronto, Hamilton & Buffalo Railway, \$2,400.

Canadian Pacific Ry. shareholders holding not more than 50 shares each are said to have increased from 14,000 in 1907 to over 36,000.

Boring Stuffing Boxes in Steam Chests, Grand Trunk Railway Shops.

The tools used in boring out stuffing boxes in steam chests in the G.T.R. shops, at Stratford, Ont., are shown in the accompanying illustration. The holes for the stuffing box and the tail rod are cored in the chest. The chest is first planed on its faces and the stuffing box end, the stud holes are drilled and tapped. The chest is then bolted to a face plate under the radial drill, and squared up. On the stuffing box face is bolted a jig as shown, using the stud holes, cap bolts being used. A reamer of the shape of the stuffing box is forced down through the cored hole, reaming out the hole to the correct shape in one pass. The tail rod hole is finished in a similar manner, the jig on the left of the stuff-



Boring Stuffing Boxes in Steam Chests.

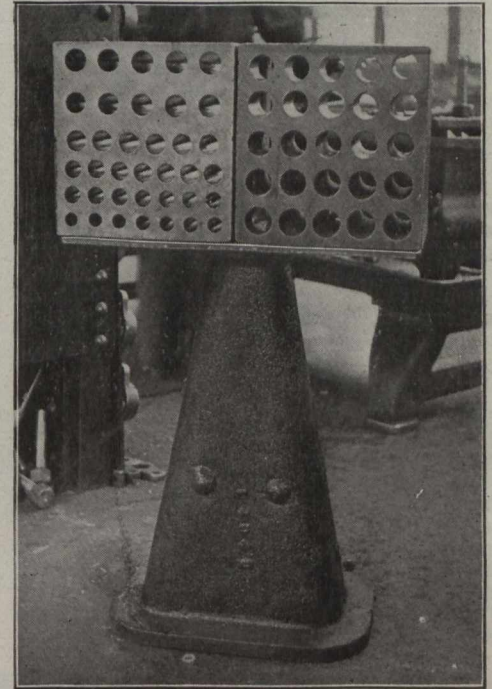
ing box in the illustration being used for the purpose. Four holes are drilled and tapped in this end, and the chest bolted to the face plate as before. Another reamer of correct shape is run down through the cored hole, finishing it to size in one pass. This practice is followed in all the sizes of chests used, different jigs and reamers being kept specially for the purpose. A clean job is obtained with a fraction of the labor that would be involved in boring the holes out. Even when the holes are cored slightly eccentric, the reamers appear to perform the work quite satisfactorily, maintaining their cutting edges in spite of the sand in the cored hole.

Taper Pin Test Block in Grand Trunk Railway Shops.

The accompanying illustration shows a taper pin testing block as used in the G.T.R. shops at Stratford, Ont. In locomotive construction, a large number of taper pins of varying sizes, but all of the same taper, are employed. These are made to fit the hole reamed for the purpose, and are driven home with a sledge. To allow

for this drift is the purpose of the block, which is a cast iron body, drilled and reamed with tapered holes, varying in diameter by sixteenths. As the pin is turned it is removed from the lathe, fitted in the block, in the hole marked a particular size, and the distance it enters noted. An allowance is made for drift, so that, if it fits in a hole a predetermined size larger than that for which it is made, up to a certain point, it is correct. The amount the diameter is to be reduced, if too large, is recorded by noting the hole in which the pin will fit.

In the Stratford shops, two of these blocks are mounted on a cast iron pedestal, as shown, which makes it convenient for all the mechanics in the shop. Other shops on the G.T.R. use the same system of blocks, but in the Montreal shops, when last visited by the writer, they were loosely mounted on blocks on the floor.



Taper Pin Test Block.

Home Made Tool Bends Reinforcing Bars of Several Sizes.

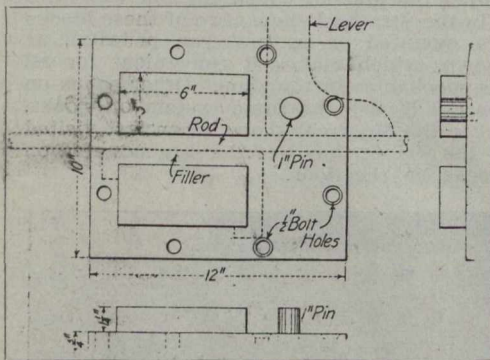
A small home made bar bender has been used successfully by the writer for bending cold bars up to 1¼ in. diameter, where not greater than 90 deg. bends were required. The apparatus consists essentially of a cast iron plate containing two lugs between which the bar is placed, a steel lever fastened to the plate by means of a steel pin, about which it acts, and a set of fillers, as shown in the accompanying sketch.

The cast iron plate can be cast of coarse metal in any foundry, the top of the plate with which the lever comes in contact being machined. The bolt holes, certain ones of which must be countersunk to allow free action of the lever, may be either cored or drilled. The space between the two lugs should be slightly larger than the largest size bar to be bent. The filler is a device made of strap iron by any blacksmith, which fits around the lug opposite the lever, to insure a tight fit for bars smaller than the maximum. A set of these to accommodate the various commercial sizes of steel bars can be made at small cost. To insure a

good fit, the edges of the lug around which the filler is placed should be machined. The lever is made of 1 x 2 in. flat steel forged to shape, with the face engaging the bar slightly upset on the upper side. Its length is about 4 ft.

The operation of the apparatus can be readily seen in the accompanying sketch, in which the lever bar to be bent and a filler are shown dotted. The apparatus is fastened to a bench by means of bolts, and counter-sunk so that the top of the plate is flush with the top of the bench.

Two men can make cold bends under one inch in diameter. On larger sizes three men

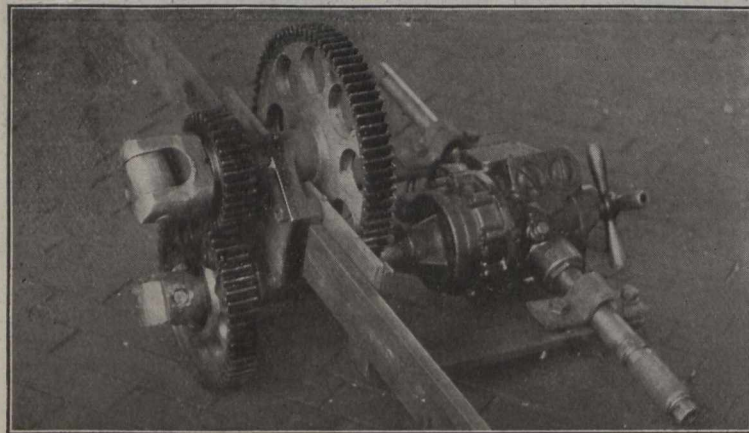


An Inexpensive Bar Bender.

are required, unless recourse is had to a pipe extension to the lever. The cost of the apparatus should not exceed \$12 to \$15, and it will readily pay for itself on a small job which will not admit of a more versatile bender.—R. C. Hardman, in *Engineering Record*.

Cutting Out Tubes in Michigan Central Railway Shops.

The usual practice in cutting out flues when the boiler is being stripped for shopping is to mount an air cylinder with reducing gear on a cross bar across the front end of the smoke box, running a shaft with universal joints from the stationary motor to the tube in which the cutter is inserted. This practice has been modified at the Michigan Central Rd. locomotive shops at



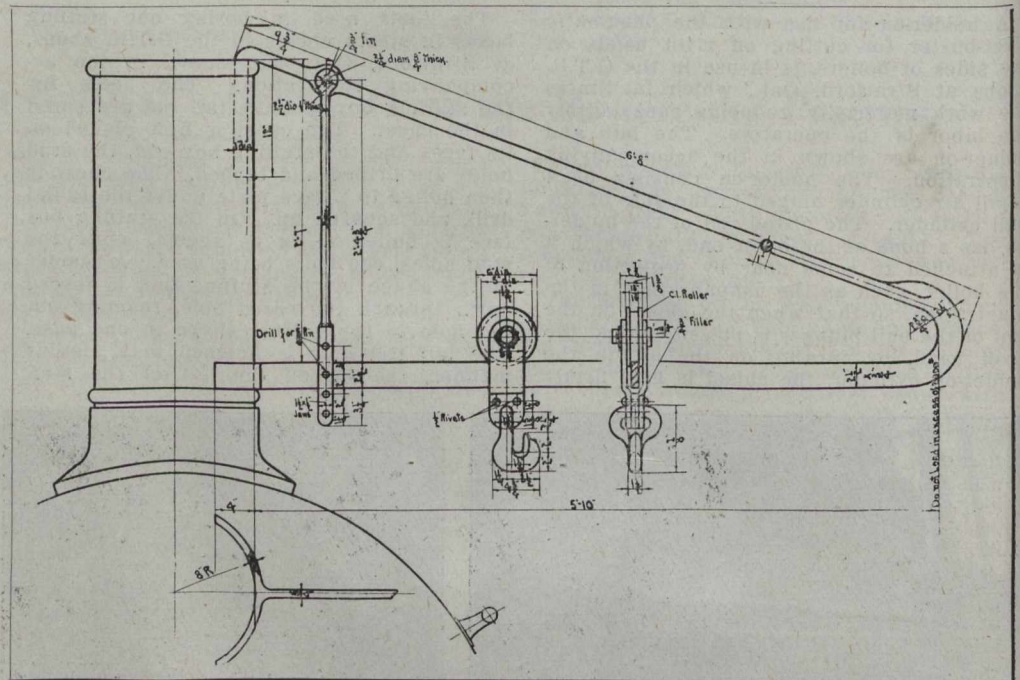
Adjustable Arrangement of Air Motor in Cutting Out Tubes.

St. Thomas, Ont., in such a way as to make the arrangements more flexible, reducing the strain on the transmission shaft with its universal joints.

In the arrangement at these shops, instead of the motor and reducing gear being stationary, the combination is so mounted on a cross bar that it may be shifted from side to side. By this means, the angularity of the connecting shaft is materially reduced, as it is always possible to place the motor vertically opposite the tube being cut; so

that only an angularity in a vertical plane is to be contended with, instead of a combined angularity in both the vertical and horizontal planes.

In the same shops, the cutter used for ripping out superheater flues is as also



Stack Crane of Simple Design.

shown in the accompanying illustration. The inner shaft, which has an angular movement through about 120 degrees, has two ball bearing races between it and the encasing shell, so that the heavy strain set up between the shaft and shell, due to the cutting tool piercing the flue, is reduced.

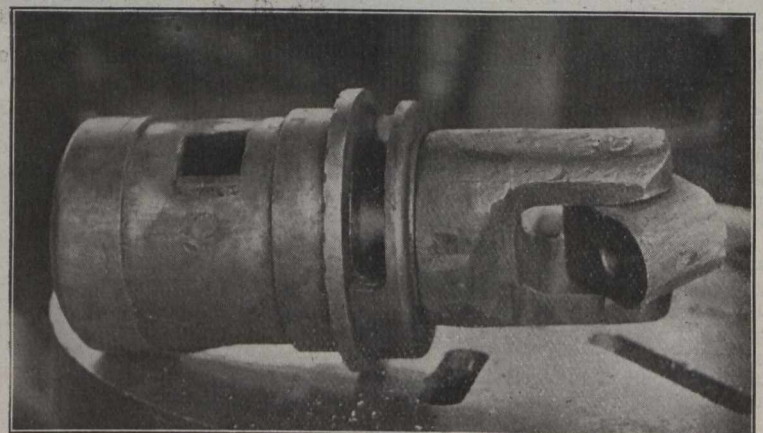
Stack Crane in Canadian Northern Railway Shops.

Stack cranes for locomotive houses and shops are in more or less general use, so that the one illustrated herewith is of

containing four pin holes for adjusting the length for varying heights of stacks, the two arms of the crane being readily sprung. A small traveller operates along the horizontal member, to which a block and tackle are attached, which makes it very con-

venient for raising and lowering the locomotive cylinder and valve parts without the use of an auxiliary crane.

Transportation Interests and the War Loan.—Among the many subscribers to the recent successful war loan issued by the Dominion Government, the following referred to in the daily press are intimately connected with transportation and allied interests in the Dominion.—Estate of the late James Ross, per J. K. L. Ross, director, C.P.R., \$500,000; R. B. Angus, director, C.P.R., \$100,000; Sir Thomas Shaughnessy, President, C.P.R., \$100,000; Sir Herbert S.



Ball Bearing Cutter Head for Cutting Superheater Flues.

interest merely in showing a simple but strong design. The frame is a one piece member, the horizontal section being 2½ x ¾ ins., and the diagonal member 1 in. diameter. The horizontal member has a two piece foot, bracing against the foot of the stack, and the diagonal member has a vertical end to fit down inside the stack. Joining the horizontal and diagonal members near the stack, there is a connecting link, permanently connected to the diagonal member, and with the lower end

Holt, director, C.P.R., \$100,000; Montreal Light, Heat and Power Co., \$100,000; Elder, Dempster and Co., steamship owners, \$50,000; Farquhar Robertson, Montreal Harbor Commissioner, \$50,000; W. G. Ross, Chairman, Montreal Harbor Commissioners, \$50,000; Hugh Paton, President, Shedden Forwarding Co., \$25,000; Dominion Transport Co., \$25,000.

The Canadian Society of Civil Engineers annual meeting will be held in Montreal, Jan. 25, 26 and 27.

Relation Between Tractive Effort and Adhesive Weight of Locomotive Driving Wheels.

Contributed by a Subscriber

Capacity is the keynote of present day operation. For the non-technical official, capacity as applied to motive power denotes one comparison only, viz., the ability of the locomotive to grip the rails and handle a certain tonnage. He does not generally consider boiler dimensions, wheel arrangement or the merit of the design involved. It is now the practice for most railways to rate locomotives by the available tractive effort at the drivers. This is a good system to follow, because it is not affected through any factor of resistance, curvature or wheel arrangement, such as would have to be taken into account with the practice of rating in terms of hauling capacity behind the tender.

The effort which a locomotive can exert to haul a train is limited by the adhesion between the driving wheels and the rails. The adhesion is simply friction between the driving wheels and the rails, acting to prevent slipping. If, for instance, the train resistance exceeds the adhesion, the driving wheels will slip, or in other words turn around without advancing.

Some 20 years ago, assuming comparatively good conditions, and for small locomotives, it was the practice to use a factor of 0.20 to denote the adhesive force. As an example, if the weight on the drivers was 40,000 lbs., the adhesive force would be 8,000 lbs. Not until 1904 was an effort made, so far as the writer is aware, to accurately determine the maximum available adhesive force at the rail. At that time one of the large locomotive builders tested six different types of locomotives, embodying the best practice at that time. These six classes comprised orders totalling 143 locomotives. The results of these tests were as follows:

Class.	Max.	Min.	Avg.
Consolidated, 2-8-0	0.283	0.186	0.233
Mogul, 2-6-0	0.222	0.184	0.210
Pacific, 4-6-2	0.246	0.202	0.220
Atlantic, 4-4-2	0.275	0.190	0.225
American, 4-4-0	0.269	0.182	0.231
Ten Wheeler, 4-6-0	0.267	0.172	0.200

The following table gives results of tests on a number of locomotives within the last seven years:

Railway.	Class.	Max. Adhes. Factor.	Remarks.
Chicago, Burlington and Quincy	Prairie, 2-6-2	0.228	Saturated
Atchison, Topeka and Santa Fe	Switcher, 0-6-0	0.202	Saturated
Erie	Pacific, 4-6-2	0.238	Superheated
Chicago and North Western	Pacific, 4-6-2	0.244	Superheated
New York Central and Hudson River	Ten Wheeler, 4-6-0	0.196	Saturated
Baltimore and Ohio	Consolidation, 2-8-0	0.218	Saturated
Chesapeake and Ohio	Mikado, 2-8-2	0.255	Superheated
Southern	Mikado, 2-8-2	0.240	Saturated
Illinois Central	Mikado, 2-8-2	0.236	Superheated
Illinois Central	Pacific, 4-6-2	0.220	Superheated
Grand Trunk	Pacific, 4-6-2	0.230	Superheated
Buffalo, Rochester and Pittsburgh	Pacific, 4-6-2	0.222	Superheated
Buffalo, Rochester and Pittsburgh	Atlantic, 4-4-2	0.255	Saturated

For several years, practically all new locomotives have been equipped with superheaters, brick arches or other appliances which tend to greatly increase the capacity and sustaining power of the boiler. In superheater locomotives, the steam is to some extent wire drawn in the superheater; hence the initial pressure at the beginning of the stroke may not be as high as in the saturated locomotives. On the other hand, owing to the superheat, the mean effective pressure under similar conditions will be higher and more constant, thus ensuring an appreciable reduction in slipping, which may be taken advantage of in designing superheater locomotives.

It is generally considered that a ratio of about 0.22 or 0.23 is the most desirable for

general conditions, but many freight locomotives have been built with a ratio of 0.25, and in some cases as high as 0.27. When the tractive force attains a factor of 0.27 of the weight on the driving wheels, there must be abnormally good rail conditions in order to realize the full power; this probably cannot be done unless plenty of sand is used. With ideal conditions there would be no real difficulty in using a ratio of 0.25.

As a general proposition, where two locomotives have the same comparative boiler capacity, the one locomotive having a ratio of tractive power to adhesive weight of 0.25, and the other of 0.20, in rating it would be feasible to take full advantage of the power up to a ratio of 0.25, unless the rail conditions are out of the ordinary. The above considers maximum conditions only, and should therefore not be exceeded.

Great Northern Railway's Annual Report.

The 26th annual report of the Great Northern Ry. Co. (U.S.A.) for the year ended June 30, 1915, shows that the total capital stock outstanding was \$249,476,722; and the bonded debt \$194,773,909.09, an increase of \$1,649,000. The expenditures during the year on new lines were \$686,788.66, of which \$7,916.08 was on the line south of the International Boundary in Montana, west of Niobe to Surrey; \$1,591.47 on the line from Niobe to a connection with the Grand Trunk Pacific Ry. at Gateway, Sask.; and \$446,095.34 on the line from Wenatchee, Wash., to Oroville, making a junction with one of the sections of the Vancouver, Victoria and Eastern Ry., passing into Washington State.

The company's investments in Canadian lines on account of advances made to pay for property, construction, additions and betterments has been increased during the year as follows: Crowsnest Southern Ry., \$8,289.60; Vancouver, Victoria and Eastern Ry., \$951,524.48; New Westminster Southern Ry., \$2,017.46; Midland Ry. Co. of Manitoba, \$84,203.48, total, \$1,046,035.02.

expenses were \$36,828,274.60 against \$47,769,773.98 for 1913-14. After meeting all fixed charges, paying four quarterly dividends of 1 3/4% each, and providing for accrued interest and taxes, there remained to be carried to profit and loss account \$2,096,762.32.

The balance sheet shows liabilities of \$687,459,879.11 with assets of various kinds valued at that figure. The assets include the following investments in Canada:—Midland Ry. of Manitoba, \$2,356,773.61; Manitoba Great Northern Ry. \$2,066,000; Brandon, Saskatchewan and Hudson Bay Ry., \$2,150,000; Crowsnest Southern Ry., \$4,218,487.02; Bedlington and Nelson Ry., \$65,000; Nelson and Fort Sheppard Ry., \$2,119,019.51; Red Mountain Ry., \$310,619.07; Vancouver, Victoria and Eastern Ry. and Navigation Co., \$21,881,524.48; New Westminster Southern Ry., \$280,250.27; total, \$35,347,673.96.

The company operated over 8,121.52 miles of line at June 30, 1915, against 7,822.01 miles at June 30, 1914, being an increase of 299.51 miles, which included 25.39 miles of the Vancouver, Victoria and Eastern Ry. between Colemount and Brookmere. The mileage operated included 7,112.99 miles of line owned (the company owns 17.66 miles in addition which are leased to other companies) by the G.N.R.; lines owned by controlled companies 690.93, of which the following are in Canada:—Midland Ry. of Manitoba, (jointly with the Northern Pacific Ry., 6.40 miles; Manitoba, Great Northern Ry., 91.77 miles; Brandon, Saskatchewan and Hudson Bay Ry., 69.45 miles; Crowsnest Southern Ry., 74.18 miles; Bedlington and Nelson Ry., 12.04 miles; Nelson and Fort Sheppard Ry., 58.42 miles; Red Mountain Ry., 9.59 miles; New Westminster Southern Ry., 23.73 miles; Vancouver, Victoria and Eastern Ry., 261.67 miles; the remaining mileage representing trackage rights over other companies' lines of which the following are in Canada:—Canadian Northern Ry., from International boundary at Noyes, Minn., to a connection with the Midland Ry. of Manitoba tracks at Winnipeg, 66.57 miles; Canadian Northern Ry. and Grand Trunk Pacific Ry. at Winnipeg, 1.68 miles; G.T.P. Ry., at Portage la Prairie, Man., 0.99 of a mile; Canadian Pacific Ry., Tramp Jct. to Nelson, B.C., 5.42 miles; Province of British Columbia, New Westminster Bridge, 1.48 miles.

Successful Transportation of Canadian Overseas Expeditionary Forces.

The railway and steamship companies have performed a remarkable service in sending overseas over 100,000 of the Canadian forces without the loss of a single man, and practically without a single hitch in regard to commissariat arrangements for troops en route. Out of all the men who have gone overseas there was only one casualty recorded during transport, and that happened early in the war, when a Canadian soldier was killed by jumping off one of the troop trains.

Up to Nov. 26, the total number of Canadian troops who had actually been transported from Canada was 104,600, of whom 102,245 had been landed in England, while 988 had been sent to Bermuda and 196 to St. Lucia. In addition, nearly 800 nurses have been taken over, also about 20,000 horses. Counting the troops now en route, it is estimated that there are now on active overseas service over 110,000 officers and men from Canada.

The Ontario License Board will, it is said take steps to stop the sale of intoxicating liquor on railway trains in the province.

During the year the Vancouver, Victoria and Eastern Ry.'s line from Coalmount to Brookmere (formerly Otter Summit), 25.39 miles, was completed, and was opened for traffic, June 1. The total addition to spur, siding and yard mileage was 21.55 miles, of which 3.10 miles represented additions to lines owned by controlled companies in Canada. About half a mile of new right of way fence was built in Canada, and 250 lin. ft. of new crib work were built on the line between Blaine, Wash., and White Rock, B. C. The filling in of the False Creek tide lands at Vancouver, B.C., which was discontinued for a time, has been resumed.

The gross operating revenues were \$97,162,857.66 against \$76,854,937.50 for the year ended June 30, 1914. The operating

Tie Renewals and Distributions.

By M. Henry, Supervisor, C. & E. I. Rd.

The question of tie renewals for the coming season will soon come up. Ties will begin to arrive and their proper distribution is of the greatest importance. In order to properly distribute the ties arriving for use in the next season's renewals a knowledge of the actual condition of the ties now in the tracks is necessary. The only right way to get this information is for the roadmaster, or some other responsible person, and the section foreman to go over all tracks carefully and spot all ties that should be renewed next season. Very often, even when this method is followed, sufficient information is not obtained for distributing ties, as only a record of the total number per section or per mile is made up, which does not show just where the ties are needed. As most roads now number the telegraph poles between each mile post, marking every fifth pole, records can be made and kept for reference, so that ties, when distributed according to the record, will not have to be rehandled and trucked, in fact worn out before they are finally distributed where they should have been when thrown off the cars. The labor that would be required to shift ties to points more or less distant can be used in applying the ties which will mean a considerable saving in time and the cost of the renewals.

filled out, and put in his hands, will enable him to make the distribution as well as the regular foreman who is away. There will be no excuse for an oversupply at one point or too little at others.

Records kept in this way for several consecutive years are most interesting and instructive as comparisons of the records of the years previous will indicate clearly what progress is being made in bettering the track conditions as far as ties, at least, are concerned. Also whether or not the percentage of tie renewals at certain points is decreasing and gradual improvement is being made. This method will increase the efficiency of the track foreman. It will ensure economy and the track supervisor will know that the ties he is allowed will be distributed and used in such a way that all tracks in his charge will be left safe at all times.—Maintenance of Way Bulletin.

Birthdays of Transportation Men in January.

Many happy returns of the day to:—
 J. Abrams, Wharf Freight Agent, C.P.R., Vancouver, B.C., born at Manchester, Eng., Jan. 24, 1870.
 W. U. Appleton, General Master Mechanic.

continental Ry., Transcona, Man., born at Forres, Scotland, Jan. 1884.

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

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

D. W. Houston, Superintendent, Regina Municipal Ry., Regina, Sask., born at Bathurst, N.B., Jan. 3, 1879.

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

H. J. Humphrey, acting Superintendent Car Service, Eastern Lines, C.P.R., Montreal, born at Berrys Mills, N.B., Jan. 26, 1879.

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

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

John Macrae, Locomotive Foreman, C.P.R., North Bend, B.C., born at Springburn, Glasgow, Scotland, Jan. 30, 1879.

J. J. Nelligan, Division Freight Agent, Canada Steamship Lines, Ltd., Montreal, born at Hamilton, Ont., Jan. 20, 1876.

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

W. Phillips, European Railway and Steamship Manager, Canadian Northern Ry., London, Eng., born at Toronto, Jan. 31, 1870.

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

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

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

B. G. F. Rutley, ticket agent, Canadian Northern Ry., and Grand Trunk Pacific Ry., Fort Garry Union Station, Winnipeg, born at Chatham, Ont., Jan. 25, 1879.

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

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

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

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

A. Wilcox, General Superintendent, Central Division, Canadian Northern Ry., Winnipeg, born at Kincardine, Ont., Jan. 2, 1865.

Canadian Railway Club.—A. D. Thornton, Technical Superintendent, Canadian Consolidated Rubber Co., Montreal read a paper before the Club recently, on "Rubber as related to the war," in which he explained Great Britain's action in regard to crude rubber at the outbreak of the war and also of the uses of rubber in the war.

Some interesting facts are being circulated regarding the repairs to the Pacific cable, which was severed by the German raiding vessel Nurnberg, since dealt with, in the early stages of the war. After attacking the cable station at Fanning Island, the Nurnberg severed the cable near shore, and towed the end into deep water, where it was dropped. To locate the end, a glass bottomed vessel was designed, and one of the operators dived in 40 ft. of water, where sharks are frequent, and attached a line and the cable was hauled aboard.

Cross Tie Programme for subdivision no. for 1915.
 Section no. Foreman.....

T. P. to T. P.	No ties spotted main track	Ties on hand	Ties needed to complete renewals.	Ties applied.	Remarks.
.....
.....

Chart for Tie Conditions, etc.

The above merely shows the heading of the columns. Any number of ruled lines can be put in below according to the size of chart used.

I am showing herewith a blank chart that I have used several years, on which a complete record of the tie conditions and the progress of the tie distribution and renewals for each section is made up when ties for renewal are spotted. This is filled in by the track foreman in duplicate. He retains a copy and sends the original to me. From the information shown on the chart it is not a difficult matter to arrive at the actual tie conditions of each section or what is necessary to take care of the tracks for the following season. Column 1 shows locations on main track and the name of each siding. Column 2 shows the number of bad ties between each numbered telegraph pole in main track and in each siding. Column 3 shows the number of ties now on hand, if any, that can be used for renewals. Column 4 shows the number of ties yet needed at that point to complete renewals. Column 5 is a record of the progress of the track foreman which can be kept from his reports. Column 6 can be used to explain why more ties have been applied than are spotted, as often is necessary on account of derailment or other unforeseen reason. The figures at the bottom of the chart give the roadmaster all of the information that he requires for his tie requisitions and for the distribution of his allowance over his subdivision.

The charts for each section can be arranged in section order and bound, to be used for reference all through the season. Often an old foreman will leave the service, or be off duty at the time when ties are arriving, leaving the work of distributing the ties to a foreman who is entirely unfamiliar with the conditions. The chart, if properly

Intercolonial Ry., Moncton, N.B., born there, Jan. 29, 1878.

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

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

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

E. Bower, Travelling Passenger Agent, Canadian Northern Ry., Calgary, Alta., born at Nottingham, Eng., Jan. 17, 1889.

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

R. F. Chapman, Chief Dispatcher, District 1, Saskatchewan Division, C.P.R., Regina, born at Coal Branch, N.B., Jan. 21, 1874.

W. A. Cowan, Division Engineer, National Transcontinental Ry., Cochrane, Ont., born at Galt, Ont., Jan. 22, 1877.

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

A. Davidson, General Agent, Grand Trunk Pacific Ry., Prince Rupert, B.C., born at St. Henri, Montreal, Jan. 29, 1885.

G. J. Desbarats, C.M.G., Deputy Minister of Naval Service, Ottawa, Ont., born at Quebec, Que., Jan. 27, 1861.

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

J. Gordon, General Electrical Foreman, Motive Power Department, National Trans-

Pacific Great Eastern Railway Company's Annual Meeting.

At the fourth annual meeting in Vancouver, Oct. 26, the following report was presented:—Of our securities guaranteed by the Province of British Columbia there were outstanding at June 30, 1914, \$13,991,475.00; on July 17, 1914, £50,000 (or \$243,330.00) of the company's 1st mortgage 4½% guaranteed debenture stock was sold at 96½, making the total securities disposed of \$14,234,605. Since July 17, 1914, the date of the last sale of the company's securities, there has been no market, consequent upon the war. The total securities guaranteed applying on the main line amount to \$16,800,000 secured by a first charge on the line, and \$3,360,000 secured by a second charge, making a total of \$20,160,000.00, of which, as above stated, \$14,234,605 have been issued. The balance of the above securities, \$5,925,195.00, has been pledged to secure a loan of \$4,800,000 obtained by the company in pursuance of the authority granted the directors at the last annual meeting. Applying on the Peace River extension, securities to the extent of \$11,550,000 have been guaranteed by the B.C. Government, but on account of the adverse conditions no disposition could be made of them; and it has been impossible to start work on the grading of this extension. At the next session of the Legislature, your directors propose to apply for an extension of the time in which to commence and carry on that work.

Satisfactory progress, notwithstanding present financial conditions, has been made with the work of construction on the main line. The Chief Engineer reports that the grading of the entire line is finished with the exception of the Howe Sound section between Horseshoe Bay and Squamish, about 30 miles, and about 30 miles of comparatively light work near Horse Lake. During the past year, track has been extended north of Squamish to some miles beyond Lillooet, and the company has been authorized by the Minister of Railways to carry traffic over it between the above named towns. The contractor is operating this train service under his agreement with the company. He is also maintaining train service on the North Vancouver-Horseshoe Bay section to comply with our agreements with the municipality of West Vancouver and various property owners there. Track-laying is still in progress, but the work is proceeding slowly of necessity on account of our having to haul to the site of the structures by rail material for the construction of the bridges, the cost of hauling such a large amount of material by teams, in order to have the structures completed by the time the track reached their sites, being absolutely prohibitive. The track between Squamish and Lillooet has been ballasted. A six-stall locomotive house has been erected at Squamish, and our terminal yard at that place laid out.

Those studying the situation appear unanimously to have reached the conclusion that on the cessation of European hostilities Canada will benefit largely by a great influx of high-class British emigrants. Many of these, on account of the climatic and other advantages that this province affords, will be attracted to British Columbia. As no other line of railway serves the central portion of the province, the importance to the country of the completion of our line is manifest, if British Columbia is to be in a position to take advantage of this expected immigration. The early completion of the railway will continue to be the aim of those charged with that responsibility.

The following comprise the board for the current year:—President, J. W. Stewart;

Vice President and General Counsel, D'Arcy Tate, K.C.; Vice President, T. Foley; Land Commissioner, F. Wilson; other director, E. F. White. The other officers are:—Secretary-Treasurer, R. D. Thomas; Chief Engineer, J. Callaghan; General Manager, A. H. Sperry.

The Pacific Great Eastern Development Co.'s annual meeting was held on the same day. The directors elected are:—J. W. Stewart, T. Foley, P. Welch, D'Arcy Tate, K.C. R. D. Thomas is Secretary, and E. F. White, Treasurer.

Difficulties in the Way of Electrification of Chicago Terminals.

Electrification of railway terminals in Chicago is impracticable for financial reasons, according to advance statements regarding the comprehensive work of the Chicago Terminal Electrification Commission on electrification and smoke abatement. The cost is estimated at \$290,000,000 for 3,356 miles of track which would have to be included in a complete system. This is for the terminal system as a whole, with electric service extended to points 15 to 20 miles distant. Of this amount \$188,000,000 is said to be the direct cost and \$102,000,000 the cost of changes and betterments in connection with the work. The committee has not considered the practicability of electrification for individual roads. As far as the smoke problem is concerned, railway locomotives are said to be a minor factor, and a permanent commission is proposed to study this problem. One conclusion reached is that the complete elimination of steam locomotives is not necessary as a means of smoke abatement. A second finding is that no existing contact system is well adapted to some of the Chicago trackage. A third point is that the longer electrification is delayed the more the technical difficulties will be reduced through developments of the art.

Release Form for Beer Shipments West of Lake Superior.

Sir Henry L. Drayton, Chief Commissioner, Board of Railway Commissioners, gave the following judgment, Nov. 19, which was concurred in by Commissioner McLean: A complaint was made by the Fernie-Fort Steele Brewing Co., Ltd., of Fernie, B.C., as to the heated car service supplied by the C.P.R. It appearing in consideration of that case that, although the circulars issued by the railway governing shipments west of Lake Superior of perishable freight liable to be easily damaged by frost, required the movements to be made at the owner's risk, the railway in that case affected and which had received a revenue of \$1,171.89, nevertheless paid out on claims for damages by frost no less than \$2,134.52. Taking 67% as the operating ratio then applying, although that ratio as applied to the l.c.l. movements will be low, it cost the railway, in the first instance, \$784.06 to earn the freight charges of \$1,171.89, resulting in an apparent profit of \$386.72. In view of the amount actually paid for damage claims the railway, after having performed the service, was as a result some \$1,747 out of pocket. For reasons set out in a considered judgment, relief was given the railway.

Based on this judgment, the railway has issued a general form of release, which in terms applies to the movement of all perishable freight, such as beer, fruit, and vegetables during the cold periods, west of Port Arthur. Clause 2 of the original order, however, limited the effect of the judgment as follows: "That this order ap-

ply only to shipments of the Fernie-Fort Steele Brewing Co., Ltd., and the Elk Valley Brewing Co., Ltd., and any others who may apply for the same service on the lines of the C.P.R. west of Port Arthur, during the winter of 1915-1916."

Complaints have been made by different boards of trade on behalf of shippers. The Board is not in a position to determine, from the record as developed merely on complaints of the Fernie-Fort Steele and Elk Valley Brewing Companies, whether or not the order which was intended to deal with that specific case, resulting as it did in a specific hardship to the railway company which could not be justified, should be extended in like manner to other perishable commodities. I am of the opinion that order 23997, July 22, 1915, should be amended, so as to confine the portion of the release form there considered solely to shipments west of Lake Superior of beer in less than carload quantities, in cold or stormy weather.

Tree Windbreaks on the Canadian Pacific Railway.

Canadian Railway and Marine World for Sept., 1913, contained information as to trees to replace portable snow fences being tried on a large scale on the C.P.R. lines between Winnipeg and Calgary. The Superintendent of the Forestry Branch of the Department of Natural Resources has given us the following additional information:

"The work was started in 1908 and it took two years to get the ground ready for planting. The prairie sod had to be broken the first year, then backset and summer fallowed in order to accumulate sufficient moisture for tree growth. The conditions affecting tree growth east and west of Moose Jaw were found to be absolutely dissimilar. East of Moose Jaw trees planted three years can be left without any further maintenance; west of Moose Jaw it is necessary to cultivate each year in order to keep the trees free from weeds, which would deprive them of needed moisture. The district west of Moose Jaw is in what is known as 'The Dry Belt.' In territory similar to this in the United States one of the railways tried watering the trees, but that is a mistake; cultivation is all that is needed.

"The cost of the portable panel snow fence anywhere in Western Canada, Minnesota, Dakota, or other western states is from \$2.39 to \$2.51 per 16 ft. panel. The depreciation and annual maintenance per 16 ft. panel is 47c. The cost of 16 feet of tree snow fence, including three years maintenance, is \$1.95. The three years cost of maintenance is necessary before the fence may be said to be established; west of Moose Jaw it may take five years.

"The tree snow fence has been remarked upon by hundreds of tourists, and has helped very considerably in demonstrating to intending settlers the possibilities of proper cultivation in the dry areas. The tree snow fence also is just as good, if not better, than the panel fencing.

Australian Transcontinental Railway.—A progress report to the Australian Government shows that track has been laid for 660 miles and grading completed for 662 miles, on the line from Kalgoorlie to Port Augusta. The telegraph line has been erected for 656 miles. Progress has been somewhat slower on the western end owing to bad weather. On that end 1,190 men are employed, and 1,200 on the south. The contract for the supply of portable telephones and contact rods has been awarded to the Western Electric Co.

Steam Railway Freight Statistics.

The aggregate tonnage of freight carried by Canadian railways during the year ended June 30, 1914, was 101,894,753 tons, against 106,992,710 tons in 1913-14, and 89,444,331 in 1912-13. Of the total tonnage carried during the last statistical year 57,873,657 tons originated on home lines, 19,904,087 were received from other lines in Canada, and 23,553,833 were received from U. S. lines.

Name of Railway.	Received from other lines in Canada.		Received from U.S. lines.	
	Tons.	Tons.	Tons.	Tons.
Algoma Central and Hudson Bay	336,478	32,610		
Algoma Eastern	716,986	14,942		
Atlantic, Quebec and Western	6,780	27,345		
Bay of Quinte	122,385	122,435		
Bedlington and Nelson	868		450	
Brandon, Sask. and Hudson Bay	44,339	340	17,692	
British Yukon	43,307			
Brockville, Westport and N.W.	11,979	15,548		
Canada and Gulf Terminal	22,460	3,887		
Canada Southern	888,488	412,074	6,240,303	
Canadian Northern	5,560,634	684,570	292,212	
Canadian Northern Ontario	698,214	465,914		
Canadian Northern Quebec	745,758	370,254		
Canadian Pacific	20,296,434	5,690,385	1,814,398	
Cape Breton	3,468	2,911		
Caraquet	20,503	12,398		
Carrilton and Grenville				
Central Ontario	245,342	100,085		
Crow's Nest Southern	210,555	42,523	12,394	
Cumberland Ry. and Coal Co.	341,013	18,333		
Detroit River Tunnel				
Dominion Atlantic	266,261	85,398	5,170	
Eastern British Columbia	118,957	2,743		
Elgin and Havelock	10,323	2,061		
Esquimalt and Nanaimo	374,737	60,348		
Essex Terminal	62,036	114,357		
Fredericton and Grand Lake Coal and Ry. Co.				
Grand Trunk	9,062,258	2,914,508	8,050,639	
G.T.R. (Canada Atlantic)	1,022,256	834,811	60,506	
Grand Trunk Pacific	1,611,757	150,004	31,483	
Halifax and South Western	223,813	42,609	800	
Hereford	127,357	132,893	7,953	
Intercolonial	3,477,640	1,604,844		
International Ry. of N. B.	83,524	5,340		
Inverness Ry. and Coal Co.	273,285	15,185		

Irondale, Bancroft and Ottawa	24,835	6,243	
Kent Northern	2,806	4,884	
Kettle Valley	2,296	1,748	23,728
Klondyke Mines	42,786		
London and Port Stanley	26,128	23,091	588,650
Lotbiniere and Megantic	39,459	2,350	152
Maine Central (Princeton branch)			183,443
Manitoba Great Northern	36,167	14,047	34,791
Maritime Coal, Ry. and Power Co.	204,007	10,561	
Massissippi Valley	129,176	320,596	77,719
Midland Ry. of Manitoba	5,176	4,838	173,097
Moncton and Buctouche	19,726	2,490	
Montreal and Atlantic	104,492	767,640	331,434
Montreal and Province Line	26,537	73,409	8,532
Montreal and Vermont Jct.	16,720	307,282	110,482
Morrissey, Fernie and Michel	806,000	27,086	150
Napierville Jct.	16,733	80,220	327,233
National Transcontinental	36,807	26,166	
Nelson and Fort Sheppard	16,042	416	9,881
New Brunswick and P.E.I.	42,390	10,963	
New Brunswick Coal and Ry. Co.	52,927	5,580	
New Westminster Southern	25,261	26,031	
Northern New Brunswick and Seaboard	69,574	1,669	
North Shore	1,550		
Ottawa and New York	85,519	104,312	207,064
Pere Marquette Rd.	63,992	191,050	1,885,281
Prince Edward Island	110,082	6,344	
Quebec and Lake St. John	334,685	208,340	
Quebec Central	896,238	189,967	
Quebec, Montreal and Southern	117,998	535,087	32,305
Quebec Oriental	20,603	47,434	
Quebec Ry., Light and Power Co.	217,821	7,224	
Red Mountain	1,046	20	30,019
Roberval and Saguenay	38,651	16,381	
Rutland and Noyan	1,651	208,065	13,140
Salisbury and Albert	32,466	7,640	
Schomberg and Aurora	6,029	9,323	
Steadfast, Shefford and Chambly	22,137	326,966	112,446
St. Clair Tunnel			
St. Lawrence and Adirondack	37,891	195,618	712,535
St. Martins	7,567	3,710	
Sydney and Louisburg	4,756,769	138,800	
Temiscouata	187,613	26,068	
Timiskaming and N. Ontario	519,394	162,762	77,796
Thousand Islands	15,088	23,701	
Toronto, Hamilton and Buffalo	278,378	1,913,907	
Vancouver, Victoria and Eastern	977,170	13,724	324,927
Victoria and Sidney	12,341	16,296	
Victoria Terminal Ry. and Ferry Co.	6,761	20,150	
Wabash Rd. in Canada	32,022	17,141	1,753,323
Wellington Colliery Co.	307,214	4,948	
York and Carleton	8,618	1,586	
	57,873,657	19,904,087	23,553,833

Orders by the Board of Railway Commissioners for Canada.

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

The dates given of orders, immediately following the numbers, are those on which the orders were drawn.

24441. Nov. 16.—Authorizing C.P.R. to use bridge 3.5. Outlook Subdivision, Sask.

24442. Nov. 16.—Authorizing C.P.R. and St. John Ry. to operate trains and cars over crossing on Main St., St. John, N.B., without first stopping; speed not to exceed 10 miles an hour.

24443. Nov. 16.—Approving Edmonton, Dunvegan & British Columbia Ry. location from mileage 0 to 25.51, through tps. 78 and 75, r. 5 and 6, w.6.m., Alta.

24444. Nov. 17.—Ordering G.T.R. to build special drain for subway under its tracks at Ste. Anne de Bellevue, Que., from subway northerly along Pacific St. into river; 20% to be paid out of railway grade crossing fund; remainder, 15% each by Ste. Anne de Bellevue and Senneville, Que., and 35% each by G.T.R. and C.P.R.

24445. Nov. 13.—Relieving G.T.R. from providing further protection at crossing of Carling Ave., Ottawa.

24446. Nov. 15.—Authorizing Edmonton, Dunvegan & British Columbia Ry. to build its Grande Prairie Branch across 22 highways, mileage 0 to 25.51.

24447. Nov. 15.—Authorizing C.P.R. to build its Phippen ballast pit spur across road allowance along east boundary n.e. ¼ Sec. 13-40-21, First Ave., and road allowance on south boundary of s.e. ¼ Sec. 13-40-21, w.3.m., Sask.

24448. Nov. 17.—Relieving Vancouver, Victoria & Eastern Ry. and Navigation Co. (G.N.R.) from lighting main line switches from sunset to sunrise, on its lines between Port Kells and Hazlemere, not including Port Kells, and between Guichenon and Huntingdon, B.C., both included, March 1 to Oct. 14, inclusive; providing lamp equipment be not removed from controlling stations or section foreman's headquarters; present schedule of trains to remain in effect; no extra trains to be run over said portion of line from sunset to sunrise.

24449. Nov. 17.—Authorizing Alberta Public Works Department to build highway crossing over C.P.R. in n.w. ¼ 4-52-24, w.4.m.

24450. Nov. 17.—Authorizing G.T.R. to rebuild bridge 61, at mileage 171, District 31, Ottawa Division, across C.P.R. siding; applicant's

siding and roadway near Arnprior, Ont.; fence to be erected between C.P.R. tracks and roadway, and rescinding order 17475, Sept. 11, 1912.

24451. Nov. 17.—Authorizing Canadian Northern Ry. to divert road allowance between Sec. 6, Tp. 22, and Secs. 31 and 32-21-15, w.p.m., Man., and to cross highways at right angles.

24452. Nov. 17.—Authorizing Alberta Public Works Department to build highway over Grand Trunk Pacific Ry. in s.e. ¼ 4-42-21, w.4.m., cost of construction and maintenance to be paid by G.T.P.R., and rescinding order 13218, Mar. 14, 1911, in so far as it authorizes crossing of road allowance east of Sec. 4.

24453. Nov. 16.—Ordering C.P.R. to partition off portion box car, now used as station building at Vidora, Sask., for waiting room of about 8 by 18 ft. and to supply same with seats for accommodation of passengers, leaving other portion for agent's office and perishable goods and express; also to fit up dismantled box car body, so that freight may be housed properly; to build steps to approach to waiting room and platform; level platform off with cinders; build cinder walk across right of way to main street of village; work to be completed by Dec. 1, station agent not to be removed without Board first being notified, giving reasons and statement of earnings.

24454. Nov. 17.—Relieving Canadian Northern Ry. from providing further protection at crossing of highway about 1½ miles from Shawinigan Falls, Que.

24455. Nov. 18.—Authorizing Saskatchewan Board Highway Commissioners to build extension to Dufferin St. across C.P.R. in Ked-dleston, Sask.; original road allowance to be closed.

24456. Nov. 18.—Approving Bell Telephone Co.'s agreements with Yarmouth Rural Telephone Co., Nov. 9; and with Tay Tp., Ont., Nov. 5, and Bolton Telephone Co., Nov. 4.

24459. Nov. 20.—Amending order 23392, Mar. 4, re release of responsibility on beer, etc., shipments west of Lake Superior.

24460. Nov. 19.—Ordering Canadian Northern Ry. to regrade north approach to bridge on public road between Sec. 9 and 10-6-23, w.p.m., to conform with Board's regulations, work to be done in spring, as soon as frost is sufficiently out of ground to permit; when bridge is renewed, it is to be placed on a line with road allowance and widened to 20 ft.

24461. Nov. 19.—Approving proposed change in location of G.T.R. siding for Frost Wire Fence Co., Hamilton, Ont.

24462. Nov. 19.—Ordering G.T.R. to sell tickets for Canadian Northern Ry. at ticket office operated by G.T.R. and C.P.R. jointly on train floor in Union Station, Toronto, and to exchange Canadian Northern tickets for orders, the Canadian Northern to pay one third of the cost of operating the ticket office, including salaries and actual disbursements, but no rental charges.

24463. Nov. 19.—Authorizing Canadian Northern Ry. to cross road allowance between Secs. 8 and 17-22-29, and cross and divert highway between Secs. 17 and 18-22-29, w.4.m., Alta., after which it may close road between Secs. 17 and 18 with its right of way fences; and rescinding order 17308, Aug. 26, 1912, in so far as it authorizes crossing and diversion.

24464. Nov. 22.—Authorizing Canadian Northern Ry. to build three tracks across Coteau St., Moose Jaw, Sask., and carry highway across track overhead; and rescinding order 20259, Sept. 4, 1913.

24465. Nov. 22.—Authorizing C.P.R. to open for traffic diversion tunnel at mileage 40.4, Boundary Subdivision, B.C.

24466. Nov. 22.—Amending order 24414, Nov. 8, re connection between Regina Municipal Ry. and C.P.R. at Arcola Ave., Regina, Sask.

24467. Nov. 22.—Authorizing C.P.R. to build spur for German, Clancey & Grindley, Ltd., Calgary, Alta.

24468. Nov. 22.—Authorizing Grand Trunk Pacific Ry. to build farm crossing over its tracks in s.e. ¼ Sec. 17-36-5, w.3.m., Sask.; cost and maintenance to be paid by Saskatchewan City Golf Club.

24469. Nov. 23.—Authorizing Toronto, Hamilton & Buffalo Ry. to build spur for Dominion Steel Foundry Co., Hamilton, Ont., and authorizing clearances.

24470. Nov. 19.—Authorizing Canadian Northern Ry. to carry traffic, temporarily, pending completion of ballasting, over its line from Yorkton, Sask., to end of track, 16 miles, speed of trains limited to 15 miles an hour.

24471. Nov. 23.—Approving turnout of Edmonton, Dunvegan and British Columbia Ry. Grande Prairie Branch at point shown on plan, Nov. 15, filed with the Board.

24472. Nov. 23.—Authorizing Canadian Northern Ry. to build siding extension across public road between Lot 11, Con. B, and Lot 11, Con. A, Mara Tp., Ont.

24473. Nov. 23.—Authorizing Canadian Northern Ontario Ry. to open for traffic its line from Rideau Jct. to Pembroke.

24474. Nov. 23.—Extending to Dec. 31 time within which Toronto Suburban Ry. may cross C.P.R. temporarily, for construction purposes only, near Guelph, Ont., between 6.30 a.m. and 6.30 p.m.

24475. Nov. 19.—Authorizing Canadian Northern Ry. to cross highway between Sec. 1, Tp. 21, R. 29, and Sec. 36-20-29; cross and divert highway between Sec. 1-21-29, and Sec. 6-21-28, w.4.m. Alta.; and rescinding order 17764, Oct. 16, 1912, in so far as it authorizes crossing and diversion.

24476. Nov. 22.—Approving Bell Telephone Co. agreement with Goodwood Rural Telephone Co., Nov. 11.

24477. Nov. 25.—Relieving Vancouver, Victoria & Eastern Ry. and Navigation Co. (G.N.R.) from erecting fences, gates and cattle guards on its Coalmont-Otter line, B.C., between mileage 215.37 and 237.25.

24478. Nov. 25.—Authorizing G.T.R. to build two spurs for Gull River Lumber Co., near Cobocok Station, Ont.

24479. Nov. 26.—Authorizing C.P.R. to build siding for W. Rennie & Co., Chatham, Ont.

24480. Nov. 26.—Authorizing Courtenay Electric Light, Heat & Power Co. to erect wires across Esquimalt & Nanaimo Ry. at Lake Trail Road, near Courtenay, B.C.

24481, 24482. Nov. 25.—Relieving Kettle Valley Ry. from maintaining fences, gates and cattle guards along portions of its right of way, between Midway and Merritt; mileage 6.97 to 18.85, Penticton to Princeton; and mileage 2.95 to 133.41, Midway to Penticton, B.C.

24483. Nov. 23.—Authorizing C.P.R. to build spur for Morin, Gareau & Beaudoin at mileage 15.1, St. Lin Subdivision.

24484. Nov. 25.—Approving clearances of umbrella roof to be built at C.P.R. North Toronto station.

24485. Nov. 25.—Substituting plan of Oct. 29, showing bridge over C.P.R. at road between Secs. 29 and 30-16-11, w.3 m., Sask., for plan B-14-38, referred to in order 24424.

24486. Nov. 24.—Relieving Grand Trunk Pacific Ry. from maintaining fences, gates and cattle guards from mileage 164 to 467, Prince Rupert East, B.C.

24487. Nov. 24.—Approving Bell Telephone Co. agreement with New Glasgow Telephone Co., Nov. 16, 1915; and rescinding order 8238, Oct. 5, 1909.

24488. Nov. 24.—Authorizing C.P.R. to charge \$1.75 a car for additional service of switching between dock and land team tracks and private sidings at Kelowna, B.C., and ordering it to file amendment to its tariff C.R.C. no. W-2027 accordingly.

24489. Nov. 27.—Rescinding order 24313, Oct. 16, and ordering that Dominion Atlantic Ry. tariffs, C.R.C. 454 and 455, become effective Dec. 10.

24490. Nov. 27.—Ordering that the Junior Judge of Carleton County be appointed sole arbitrator to determine value of land taken by Canadian Northern Ontario Ry. from H. Ray, and damage, if any, according to Railway Act, to Henry Ray's remaining property, due to construction and operation of railway thereon, with suitable farm crossing underneath tracks; each party to pay his own costs of arbitration and half costs of arbitrator.

24491-24493. Nov. 27.—Extending, to July 1916, time for approval of tolls of Grand Trunk Pacific Telegraph Co., C.P.R. Telegraphs and White Pass and Yukon Ry. Telegraphs.

24494. Nov. 25.—Authorizing City of Hull, Que., to build highway over C.P.R. at Montclair Ave., trees to be removed so that there shall be a clear view of approaching trains in either direction from any point on highway within 100 ft., and to any point on railway within half a mile, of crossing. Crossing authorized under order 5110, July 29, 1908, to be closed.

24495. Nov. 30.—Relieving Canadian Northern Alberta Ry. from speed limitation of 25 miles an hour from St. Albert to Peace River Jct., Alta. 25½ miles.

24496. Nov. 29.—Authorizing C.P.R. to build highway diversion in s.e. ¼ Sec. 25-17-3, and s.w. ¼ 30-17-2, w. 3 m.; and to build main track at mileage 35.34, Swift Current Subdivision, and one other track, at grade across same, also to close portions of road allowance within its right of way.

24497. Nov. 29.—Approving plans and specifications of Orford Tp., Ont., of Gosnell drain under Michigan Central and Pere Marquette Rds.

24498. Nov. 29.—Authorizing Canadian Northern Ry. to build across highways between Secs. 3-4, and Secs. 4-5-35-7, w. 2 m., Sask.

24499. Nov. 29.—Extending, to Jan. 1, 1916, time within which gates be installed by G.T.R. at Barton St., Barton Tp., Ont.

24500. Nov. 29.—Relieving Grand Trunk Pacific Branch Lines Co. from maintaining switch lights on certain branch lines, as long as present schedule continues, between sunset and sunrise; lamp equipment to be kept available at controlling station or sectionmen's headquarters.

24501. Nov. 29.—Authorizing G.T.R. to build new station at Mimico, Ont., to be completed by Dec. 31, and rescinding order 24114, Aug. 24.

24502. Nov. 30.—Extending, for 30 days from date, time within which London and Port Stan-

ley Ry. shall install bell at Warren St., first crossing north of Port Stanley, Ont.

24503. Nov. 30.—Authorizing Hamilton St. Ry. to operate over crossing of Toronto, Hamilton and Buffalo Ry., used for serving Grasel Chemical Co., and National Steel Car Co., at its crossing of Burlington (Gilkinson) St., pending installation of half interlocking plant.

24504. Nov. 30.—Ordering C.P.R. to remove gates and to erect standard crossing signboards, and otherwise make crossing of Second St. at Golden, B.C., conform to standard regulations.

24505. Nov. 30.—Authorizing Town of Sandwich, Ont., to build Wright Place across Essex Terminal Ry.; crossing at Chippawa St. to be closed.

24506. Nov. 30.—Authorizing Canadian Northern Ontario Ry. to build spur for Hocken Lumber Co., mileage 170.7, Lot 6, Con. 9, Burpee Tp.

24507, 24508. Nov. 29.—Approving Bell Telephone Co. agreements with Ernestown Rural Telephone Co. and Ste. Sabine Rural Telephone Co., Nov. 18.

24509. Dec. 2.—Substituting Board of Grain Commissioners of Canada's plan B, showing branch line to connect Grand Trunk Pacific Ry. with elevator at Moose Jaw, Sask., for plan approved under order 24080.

24510. Nov. 30.—Extending, to July 1, 1916, time for approval of Great North Western Telegraph Co.'s tolls.

24511. Dec. 1.—Authorizing Canadian Northern Ry. to build highway crossing over its tracks at St. Joseph St., La Tuque, Que., in lieu of two adjacent crossings to be closed, cost and maintenance to be paid by La Tuque.

24512. Dec. 1.—Authorizing Canadian Northern Saskatchewan Ry. to cross and divert road between Sec. 35-25 and Sec. 2-26-1, w. 2 m., diversion to be graded.

24513. Nov. 30.—Authorizing R. H. Johnson, Omenee, Ont., to lay drain across G.T.R. property and tracks.

24514. Nov. 22.—Relieving Ottawa and New York Ry. from providing further protection at Landry's Crossing, near milepost 29, near Cambridge station, Ont.

24515. Dec. 3.—Ordering that gates at crossing of 7th Line at Oakville, Ont., be operated by watchmen between 7 p.m. and 7 a.m., daily; wages to be paid, one third each, by Oakville, G.T.R., and Trafalgar Tp.

24516. Dec. 3.—Ordering G.T.R. to install certain lights at Lorne Park station, Ont.

24517. Dec. 1.—Authorizing C.P.R. to build spur for Dominion Cartridge Co. at mileage 1.9 on Staynerville Branch.

24518. Dec. 1.—Authorizing C.P.R. to build two sidings for British Pacific Engineering and Construction Co. in British Columbia.

24519. Dec. 1.—Authorizing C.P.R. to build extension to siding for F. Davis, at mileage 14.5, St. Gabriel Subdivision.

24520. Dec. 3.—Authorizing Esquimalt and Nanaimo Ry. to build highway over its tracks near Coombs station, B.C.; cost and maintenance to be paid by British Columbia Government.

24521, 24522. Dec. 3.—Relieving C.P.R. from providing further protection at first crossing east of Osago station, and at crossing ½ mile east of Sinaluta station, Sask.

24523. Dec. 3.—Authorizing C.P.R. to build siding for R. G. Dryden, West Toronto, Ont.

24524. Dec. 3.—Authorizing C.P.R. to build extension to siding for Rocsand Co. at Erin, Ont.

24525. Dec. 3.—Ordering Canadian Northern Ontario Ry. to build farm crossing for Wm. McCoy, Richmond, Ont.

24526. Dec. 1.—Extending, to Jan. 6, 1916, time within which C.P.R. shall install gates, in the meantime crossing of Symington Ave., Toronto, to be protected by day and night watchmen, wages to be paid, half each, by C.P.R. and City of Toronto; and reserving question of C.P.R. indemnifying city against damages during said extension.

24527. Dec. 3.—Authorizing G.T.R. to rebuild bridge carrying road over main line at mileage 326.14 from Montreal, near Scarborough Jct., Ont.

24528. Dec. 4.—Relieving C.P.R. from providing further protection at highway at mileage 21.4, Sharbot Lake, Oso Tp., Ont.

24529. Dec. 4.—Amending order 24327, Oct. 18, re Canadian Northern Ontario Ry. crossing of Front St., Trenton.

24530. Dec. 4.—Authorizing C.P.R. to divert road allowance at mileage 62.4, Swift Current Subdivision.

24531. Dec. 4.—Ordering that rebuilding by C.P.R. of crossing on its Reston-Wolseley Branch, between Secs. 4 and 9-11-33, w. 1 m., conform to standard regulations and be completed by May 1, 1916.

24532. Oct. 13.—Extending, for one month from date, time within which independent telephone companies may apply for leave to appeal to Supreme Court of Canada in respect of any question of law which, in opinion of the Board, may arise in connection with general order 149, Sept. 14.

24533. Dec. 9.—Authorizing independent telephone companies to appeal to Supreme Court of Canada upon certain questions of law.

24534 to 24540. Dec. 4.—Approving Bell Telephone Co. agreements with Ste. Cecile de Whittton La Compagnie de Telephone Ste. Cecile Telephone Co., Nov. 5; Wroxeter Rural Telephone Co., Nov. 8; Norfolk County Telephone Co., No. 9; Aldborough Farmers' Telephone Association, Nov. 16; Hawthorne Hill Rural Telephone Co., Oct. 19; Con Telephone Co., Nov. 23; and Prescott Rural Telephone Co., Nov. 9.

24541. Dec. 9.—Dismissing application of D. D. Campbell, Claims Agent, Winnipeg, on behalf of H. H. Blackburn, for adjustment of freight charges on 18 cars of ties from Bannock, Sask., to Pas, Man.

24542. Dec. 9.—Amending order 23190, Jan. 20, authorizing Nelson and Fort Sheppard Ry. (G.N.R.) to discontinue stopping its trains on flag at Benson and Ross spur, B.C., and authorizing it to stop there on flag.

24543. Dec. 11.—Ordering that 10 days prior notice of any change in a railway company's passenger train service, as provided by circular 139, be dispensed with in application of Great Northern Ry. to change time of leaving of train no. 385 out of Rossland, from 10 to 9 a.m.

24544. Dec. 9.—Authorizing Canadian Northern Ry. to build highway over the Northern Pacific and Manitoba Ry. Hope Farm spur along southerly limit of Dominion Government road allowance lying to north of Lot 191, St. Agathe Parish, Montcalm municipality; cost and maintenance to be paid by Montcalm municipality, Man.

24545. Dec. 9.—Authorizing Canadian Northern Ry. to build highway over its line along westerly limit of Lot 78, St. Norbert Parish, Fort Garry municipality; cost and maintenance to be paid by Ft. Garry municipality; work to be completed by June 1, 1916.

24546. Dec. 7.—Authorizing Bell Telephone Co. to make certain charges in case telephone installations for clergymen and religious institutions.

24547. Dec. 9.—Extending, to Feb. 1, 1916, time within which Esquimalt and Nanaimo Ry. shall install bell at Comox Road, Nanaimo, as required by order 24158, Sept. 8.

24548. Dec. 9.—Relieving Campbellford, Lake Ontario and Western Ry. (C.P.R.) and Canadian Northern Ontario Ry. from maintaining night signalmen to operate interlocking plant at crossings at mileage 1.05 and 0.55 of spur, on east side of Trent River, Trenton, Ont.; home signals and derails be set clear for, and key of tower left with C.N.O.R.

24549. Dec. 10.—Amending order 24211, Sept. 27, re Canadian Northern Ry. crossing of May St., Port Arthur, Ont.

24550. Dec. 13.—Deferring until further order the effective date of item on page four of C.P.R. Supplement 59, to C.R.C. no. W-1806, providing for minimum of 35,000 lbs. on fir, spruce, hemlock and common cedar lumber, and articles taking lumber rates, in cars under 36 ft. long.

24551. Dec. 9.—Authorizing C.P.R. to build siding for French Government Remount Depot at mileage 156.9, Quebec Subdivision, crossing Bell's Road at grade.

Elevator Track Laying Dispute at Fort William.

Winnipeg press dispatch, Dec. 21: "Canadian Pacific Ry. officials are incensed at the action taken by the Canadian Government Railways officers at Fort William on Dec. 20. The Superintendent of the Canadian Government Railways proceeded with a gang of men to lay a track across private property to a terminal elevator on the C.P.R. tracks, in the face, officials claim, of the repeated decisions of the Board of Railway Commissioners that such action would not be tolerated on the part of any railway company. The C.P.R. had the Government Railways officers arrested, and secured an injunction restraining them from further procedure. The C.P.R. people contend that storage in terminal elevators on its tracks, apart from the Government elevators, should be reserved for farmers loading grain at interior points on its lines. The C.P.R. also contends that the Canadian Government Railways has enough grain in sight to fill the Grand Trunk Pacific elevator at Fort William, and arbitrarily decided to avail itself of storage located on C.P.R. tracks, which would have the effect of preventing shippers on the C.P.R. loading for Fort William for lack of storage. C.P.R. officials state they will fight the matter to a finish."

Railway Development, Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta and Great Waterways Ry.—Track laying is reported to be in progress since Nov. 20. Work was started at mileage 135, about 27 miles north of Lac La Biche. The whole of the grading on the line is reported to have been completed with the exception of some cuts at Fort McMurray, work on which is in progress. (Dec., 1915, pg. 469.)

Canadian Pacific Ry.—The superstructure of the new station which the company is building in North Toronto for joint occupation with the Canadian Northern Ry., is rapidly taking shape. The Lyall Construction Co. has the contract. A full description of the building, with perspective and ground floor plans, was given in Canadian Railway and Marine World, Aug., 1915, pg. 292.

We are officially advised that track has been laid easterly from Foremost, Alberta, to Pakowki, 22.3 miles, on the Weyburn-Lethbridge branch.

The Calgary and Edmonton Ry. Co. is applying to the Dominion Parliament for an extension of time for building the following lines:—From its Macleod branch in tp. 19, 20 or 21, westerly to the south branch of Sheep Creek, range 4, west 5th meridian, with a branch to the north branch of Sheep Creek in ranges 2, 3 or 4 west 5th meridian, and a second branch to Trap Creek, range 6 west 5th meridian.

The junction between the east and west headings of the tunnel at Rogers Pass, was made Dec. 19, in the main tunnel. The boring of the pioneer tunnel was completed some time ago.

A contract for the reroofing of the freight shed on pier A, Vancouver, at an estimated cost of \$10,000, is expected to be let at an early date, according to a press report.

The Dominion Parliament is being asked to extend the time for the building of the following lines: From the Pheasant Hills branch in tps. 36 or 4, range 19 or 20 west 3rd meridian, northerly and westerly to Battle River, on to a junction with the Calgary and Edmonton Ry.'s Lacombe extension in tp. 36, 37 or 38, range 11, 12 or 13 west 4th meridian, 180 miles; from tp. 6, 7, 8 or 9, range 30 west 2nd meridian, westerly to a junction with the Crownsnest Pass line, 350 miles, or to a junction with the Alberta Ry. and Irrigation Co.'s line at Sterling, Alberta; from Sedgewick, on the Hardisty subdivision, southerly, to tp. 39 or 40, range 11, 12 or 13 west 4th meridian, Alberta; from Irricana easterly and south easterly to tp. 20 or 21, range 11 or 12 west 4th meridian, Alberta; from Killam, northwesterly to Strathcona, Alberta. (Dec., 1915, pg. 469.)

Central Canada Ry.—We are officially advised that track laying was completed to mileage 43, from McLennan, the junction with the Edmonton, Dunvegan and British Columbia Ry., on Nov. 26, and would be completed to Heart River, mileage 48, a few days thereafter. Track laying was then to cease, pending the erection of the bridge across Heart River, which it was expected would occupy a couple of months. A later press report stated that work on the erection of the bridge was started early in December, but we were officially advised Dec. 13 that the Board of Railway Commissioners had not agreed to the plans. (Dec., 1915, pg. 469.)

Dominion Government Ry. to Hudson Bay.—Grading is reported to be fully completed from Manitou Rapids, mileage 242 from Pas, Man., to which point a weekly train service is in operation, for a further distance of 50 miles to Kettle Rapids, Nelson River. The steel work for the superstructure of this bridge will, it is reported, be taken in overland during the winter, and assembled ready

for erection as soon as the Manitou Rapids bridge is completed.

Since the above was put in type we are officially advised that work on the line is practically closed down for the winter, with the exception of the erection of the steel superstructure for the bridge across the Nelson River at Manitou Rapids. All the material has been delivered and the Canadian Bridge Co., which has the contract, is proceeding with the erection. (Dec., 1915, pg. 469.)

Edmonton, Dunvegan and British Columbia Ry.—We are officially advised that the contract for the substructure of the bridge across Big Smoky River, mileage 297.3, from Edmonton, Alberta, has been let to McPherson and Quigley, Edmonton. This consists of eight pedestals and two abutments of reinforced concrete. The contract for the steel superstructure has been let to the Dominion Bridge Co. This consists of the following spans: One 88 ft. 5 in. deck plate girder; 5 rivetted deck truss spans of 128 ft. each; 1 through truss span of 125 ft.; one 128 ft. rivetted deck truss span, and one 88 ft. 5 in. deck plate girder, a total length of 1,059 ft. 10 in. The bridge is approached from Edmonton by a 7 degree curve, terminating about 500 ft. from the first abutment. The base of the deck plate girder spans is 13 ft. 1 in.; the deck truss spans 7 ft. 2 in.; and the through span over the main channel, 16 ft. 7 in., above extreme high water level. The erection of the bridge is being proceeded with, and it is expected to have it completed early in the spring.

A press report states that tracklaying is being proceeded with on the west side of the Smoky River towards the Spirit River.

Grading on the Grande Prairie branch is reported completed with the exception of a couple of small cuts of about 500 yards long at mileage 24. (Dec., 1915, pg. 469.)

Grand Trunk Ry.—We are officially advised that the new freight shed at St. Catharines, Ont., is practically completed, and the team tracks in connection with it entirely so. (Dec., 1915, pg. 469.)

We are officially advised that the steel and brick freight house, nearing completion at St. Catharines, Ont., is 300 x 40 ft. There is a machinery platform at one end 50 x 40 ft.; and 2 additional team tracks have been installed with a capacity of 20 cars each. The freight office is inside the shed.

Grand Trunk Pacific Ry.—We were officially advised recently that the company expected to lay the track on its spur line to connect with the Dominion Government elevator at Moose Jaw by Dec. 31, 1915.

Great Northern Ry. Lines in Canada.—A bridge has been erected at a reported cost of \$60,000 on the Vancouver, Victoria and Eastern Ry. branch to the Granby smelter.

Preparatory work on the site of the new station at False Creek, Vancouver, was started Nov. 25, when test piles were driven at various spots. (Dec., 1915, pg. 469.)

Greater Winnipeg Water District.—The Department of Public Works' sanction is being asked to the plans under which the Greater Winnipeg Water District water supply works are being constructed. The works already completed include a railway of 95 miles from St. Boniface to Shoal Lake, a branch of the Lake of the Woods. (Dec., 1915, pg. 470.)

Intercolonial Ry.—We are officially advised that grading, track laying and ballasting has been completed on the branch line from near Dartmouth, N.S., to the Musquodoboit Valley, except one span of a bridge

which was expected to be done by Dec. 31. It is expected that construction will be started at an early date on the station houses and water tanks. W. A. Hendry, Dartmouth, N.S., is Engineer in Charge.

We are advised that about a year ago the Canadian Government Railways' engineering department made a survey for a line from Sydney via the shore of the Bras d'Or Lakes to St. Peters, N.S., the terminus of the Cape Breton Ry. Further surveys are reported to have been made in 1915. They are for the purpose of securing a better line than the existing one between the Strait of Canso and the Sydneys. (Dec., 1915, pg. 470.)

Kettle Valley Lines.—The Dominion Parliament is being asked to extend the time for the building of the following lines:—From near Otter Summit to the Aspen Grove mineral district, not exceeding 30 miles; from a point 50 miles from the north fork of the Kettle River to Fire Valley, northwesterly through the valley to Vernon, and on to a junction with the Nicola, Kamloops and Similkameen Ry., near Quilchena; from the junction of the east and west fork of the north fork of the Little River, on the last mentioned line, northwesterly to Franklin camp, and on to Killarney; from Hedley, on the line authorized to be built between Midway and Hedley northerly along Twenty Mile Creek for 20 miles. (Dec., 1915, pg. 475.)

We are officially advised that there are now less than 2 miles of track to be laid on the Coquihalla section. When this is completed the company will have a continuous track from Midway, the present terminus of the C.P.R. Crownsnest line, to a connection with the C.P.R. transcontinental line, about 2 miles west of Hope station, in all about 300 miles. This is entirely new construction, as also is the branch from Brodie to Merritt, 23 miles, giving connection with the C.P.R. branch from Spences Bridge to Merritt.

Minneapolis, St. Paul and Sault Ste. Marie Ry.—Track was laid during 1915 on a branch line in North Dakota, from Van Hook to Sanish.

Moncton and Buctouche Ry.—We are officially advised that the company has in prospect a project for the extension of the line from Buctouche to Loggieville, N.B., 59 miles. Some surveys for this line have been made. E. G. Evans, Moncton, N.B., is General Manager.

Naas and Skeena Rivers Ry.—The British Columbia Legislature is being asked to extend the time for the building of this projected railway from Nasoga Gulf or Naas Bay on Portland Inlet, to the headwaters of the Skeena River. The provisional directors named in the act of incorporation which was passed in 1911, are:—G. H. Barnard, H. B. Robertson, Victoria; R. Campbell-Johnston, Vancouver; L. Benoit, Winnipeg; J. G. Scott, J. T. Ross, L. P. Pelletier, P. A. Choquette, G. LeMorne, Hon. N. Garneau (since deceased), A. E. Doucet, A. Gauvreau, O. E. Gauvreau, A. Hardy, J. G. Dube, C. E. Taschereau, W. Doheny, G. Proteau, Quebec, and B. Newgass, London, Eng. (Dec., 1911, pg. 1,139.)

Newfoundland Ry. and Train Ferry Syndicate.—The Newfoundland Legislature last session passed an act providing that in computing the time for the commencement and completion of the works authorized by sec. 4 of the act of 1914, and the lines limited by sections 12, 16, 17 and 19 of the same act, with regard to importation of supplies, plant, exclusive franchise and determination of rights respectively, the period between Aug. 4, 1914, and the date of the

issue of a proclamation that a state of war no longer exists between Great Britain and the countries with which hostilities are at present pending, shall not be counted or taken into consideration.

The original act provided that the syndicate, whose representative is H. C. Thompson, should have power to construct a railway across the isthmus of Avalton from Rantem or some other suitable point on Trimby Bay to Little Southern Harbor on Placentia Bay, and to operate a train ferry therefrom to Louisburg, N.S.; to construct a railway from Humbermouth, Bay of Islands, to South West Arm, Green Bay, with a branch to White Bay, and to operate a train ferry to Gaspé, Que. The act set out that this latter railway had been approximately located, and provided for the granting of a right of way 200 ft. wide for the same from unoccupied crown lands, a block of land five square miles in extent, with a sea frontage of one mile, if available, at each of the proposed terminal points, such lands not to be granted until the completion of the railway line or lines. The first line to be commenced within three years (sec. 4), and to be completed within four years from the date of the passing of the act; the second line to be commenced within five years from the completion of the first, and to be completed within three years from the date of its commencement. All construction plant and equipment necessary for the construction and establishment of the railways, train ferries, and train ferry slips is to be admitted free of duty, except in so far as they are to replace original stock. For 20 years (sec. 12) from the date of passing of the act the syndicate can import, free of duty, the plant necessary for the original construction of cold storage and other purposes in order to develop traffic for its line. The syndicate, by sec. 16, is to furnish plans for its projected lines within two years, and by sec. 17, the Government agrees not to grant franchises to any other company or companies for lines within these areas. The syndicate may assign its rights to any company necessary for the carrying out of the plans.

The effect of the act passed last session is to substitute for the date of the passing of the act of 1914, the date of the proclamation of the ending of the present war, as the initial date for the commencement of the franchise. (May, 1914, pg. 214.)

Ontario Niagara Connecting Bridge Co.—The Dominion Parliament is being asked to incorporate a company with this title, to construct a railway and general traffic bridge with approaches and terminal facilities, over the Niagara River, at some point between the intersection of the northerly boundary of Welland County with the Niagara River, and the intersection of a line running east and west parallel to such boundary line, and distant 6,000 ft. southerly therefrom. A. Fraser, Niagara Falls, Ont., solicitor for applicants.

Pacific Great Eastern Ry.—Tracklaying was reported, Dec. 14, to have reached to within half a mile of Clinton, B.C., about 47 miles northeasterly from Lillooet, to which point track was laid in 1914. Construction is reported as being practically completed on the two bridges on the Squamish side of Clinton. (Oct., 1915, pg. 392.)

Peace River Tramway and Navigation Co.—The Dominion Parliament is being asked to extend the time for the building of the projected tramways, at Peace River Chutes, and Slave River Falls, Alta. (Sept., pg. 346.)

Quebec Central Ry.—In 1906 the Quebec Legislature passed an act, in the preamble of which it was stated that owing to the spring inundations and floods in the Chandlere Valley, the portion of its line from

Beauce Jct. and Beauceville could not be operated satisfactorily, and the enacting sections gave the company power to build and operate the Quebec Chandlere Extension, "by diverting and rebuilding that portion of the present line from Beauce Jct. to Beauceville," and thence on to a junction with the Temiscouata Ry., 175 miles. In accordance with this act the Beauce Jct.-Beauceville Branch was abandoned, and a new line built, the connecting point with the main line being now known as Valley Jct. Up to the end of 1914, track had been laid on this line to St. Camille, 61 miles from Valley Jct., and during 1915 track was laid for a further distance of 14 miles to English Lake. Application is now being made to the Quebec Legislature for an extension of time for the completion of the line to Cabano. The next section to be built, we are officially advised, will be that from English Lake to Droune Tp., L'Islet County, 25 miles. J. H. Walsh, Sherbrooke, Que., is General Manager. (Sept., 1914, pg. 419.)

Quebec, Montreal and Southern Ry.—The Dominion Parliament is being asked for an extension of time for the construction of the projected extension of the Q., M. and S.R. from Noyan Jct. to the International Boundary, and for the completion of any line which the old South Shore Ry. was authorized to construct.

Reid Newfoundland Ry.—Of the branch line construction authorized by the act of 1912, there are still uncompleted:—Baie de Verde Branch from Carbonear to Grates Cove, 45 miles; Fortune Bay Branch, from Goobies to Terranceville, 60 miles, and Bonne Bay Branch, from Deer Lake to Bonne Bay, 45 miles. Track has been laid on the first of these three branches, and a temporary train service is being operated, but the snow fences, sidings and station platforms are not completed. On the Fortune Bay Branch track has been laid for 43 miles, but no construction was done during 1915. Some grading has been done on the Bonne Bay Branch, but nothing was done during 1915. (Sept., 1915, pg. 341.)

St. John and Quebec Ry.—Tenders for the construction and equipment (without rolling stock) of the uncompleted portions of this railway were received by I. R. Todd, President, Dec. 30. The tenderers were asked to submit a price per mile for a complete line of railway, ready for operation, in accordance with plans, profiles and specifications preferred and approved by the New Brunswick Government which is financing construction, and by the Dominion Government which will operate the line under lease. The sections for the building of which tenders were asked are:—Gageville to St. John, N.B., 52.00 miles, and Centreville to Andover, N.B., 25.5 miles. (Oct., 1915, pg. 396.)

Toronto Terminals Ry. Co.—Considerable work has been done on the foundations for the new union station on Front St., Toronto, by the Lyall Construction Co. The rock to which the foundations are being carried is 6 ft. below water level. About 200 caissons have been prepared and sunk into position, and the greater part of the concrete filling has been put in place. It is expected that the basement section of the building will have been finished by Mar. 1, and that actual erection of the superstructure will be started in the spring.

Reduction of Scotch Railway Service.—A London, Eng., press dispatch, Dec. 23, stated that, as an effect of the war, there has been a drastic curtailment in passenger service on all railways in Scotland. From Jan. 1, it is stated, practically all passenger traffic will be suspended after 9 p.m., owing to depleted staffs and to shortage of locomotives.

Traffic Orders by the Board of Railway Commissioners.

Switching Cars at Kelowna, B.C.

24480. Nov. 24. Re complaint of Kelowna Board of Trade against the charge of \$2.50 a car made by C.P.R. for switching cars between the car barge and land team tracks, or private sidings, at Kelowna, B.C., it is ordered that the C.P.R. be authorized to make a charge of \$1.75 a car for the additional service of switching cars between the dock and land team tracks and private sidings at Kelowna, and to publish and file an amendment to its Tariff C.R.C. no. W-2027 accordingly.

Apple and Potato Rates to Halifax.

24489. Nov. 27. Re complaint of United Fruit Growers, the Nova Scotia Fruit Growers, and the King's County Board of Trade against the advanced rates on apples and potatoes to Halifax for export; and order 24313, Oct. 16, 1915, suspending the said rates as published in the Dominion Atlantic Ry. tariffs, C.P.R. 454 and C.R.C. 455. Upon hearing the complaint at Kentville, N.S., Oct. 22, 1915, the complainants, the railway company, fruit growers, and apple dealers being represented at the hearing, and upon the report of the Chief Traffic Officer of the Board, it is ordered that the said order 24313 be rescinded; and that the said tariffs may become effective on Dec. 10, 1915.

Suit Over Rogers Pass Tunnel Construction.

The Vancouver Province says:—"The damage claim which McIlwee & Sons, tunnel borers, of Denver, Col., have brought against Foley Bros., Welch & Stewart over the boring of the tunnel at Rogers Pass in the Selkirks, has been increased from \$527,000, which it was at the original trial, to \$642,000. The enlargement in the amount claimed, which was consented to by Mr. Justice Macdonald, is said to be the result of observations on the character of the rock encountered in the big bore. McIlwee & Sons claim that if they had been allowed to complete their contract they would have made larger profits than they at first anticipated owing to the easy nature of the rock encountered. As profits on the pioneer bore the plaintiffs at first claimed at the rate of \$7.63 a foot. This is increased to \$11.44 a foot. Their estimated profits on the centre heading they had placed at \$7.44 a foot; this is increased to \$10.08 a foot. In addition they claim the full amount of the \$250,000 bonus promised for rapid construction.

"At the original trial Mr. Justice Clement found in favor of the defendants for under \$40,000, holding that it was the duty of McIlwee & Sons to return and resume the contract after the defendants had agreed to allow them to resume, six weeks after having cancelled their contract. The Court of Appeal took the contrary view of the law, and held that McIlwee & Sons was not obliged to resume, and sent the case back to the Supreme Court again to assess damages on the basis of the whole contract. This action is being appealed to the Privy Council by Foley Bros., Welch & Stewart.

"In the case preparing for the Supreme Court the defendants have abandoned their original plea that they were justified in cancelling the contract, and are now working entirely on pleas for the mitigation of damages. The plaintiffs amended claim for damages is \$642,000 for loss of profits."

The Northern Pacific Ry. has been sued by the Royal Trust Co., for \$1,200 for two months rent of officers in the Dominion Building, Vancouver.

Canadian Northern Railway Construction, Betterments. Etc.

Canadian Northern Quebec Ry.—We are officially advised that the company is building a line from Arundel to St. Remi, Que., 11 miles, with its own forces and that track has been laid on the first two miles, from Arundel to Rouge River.

Canadian Northern Ontario Ry.—A track at mileage 249.75 from Todmorden, to facilitate the transfer of cars between the C.N.O.R. and the G.T.R. at Ottawa was built some time ago, but has not been used, until the issue of an order by the Board of Railway Commissioners, recently, the G.T.R. having seriously objected.

The Dominion Parliament is being asked to confirm an agreement between the company and the Canadian Pacific Ry. respecting the operation of joint tracks and terminals in Toronto. This agreement covers the building and use of the tracks across the northern part of Toronto, and the new union station in course of construction on Yonge St. (north). The tracks which are joint tracks, and those which are C.N.O.R. or C.P.R., are specifically defined, and the conditions upon which they are to be used by both companies are fully set out, as also are the terms. An agreement for this purpose was before Parliament for ratification last year, but was withdrawn.

The Dominion Parliament is being asked to extend the time for the construction of the following lines: From Toronto via Hamilton and London to Windsor, with a branch to St. Thomas and Sarnia; from near the head of Long Lake northwesterly to a junction with the Transcontinental Ry. east of Lake Nipigon.

The Dominion Parliament is also being asked to approve an agreement between the company, and the Canadian Northern Ry., on the one hand and the Canadian Pacific Ry. on the other, respecting the use of joint tracks at Port Arthur. Among the lines affected by this agreement are the two miles of the C.P.R., which are being operated over and connecting the Canadian Northern eastern terminal with the westerly end of Canadian Northern Ontario. The switch connecting the C.N.R. with the C.P.R. was reported installed Dec. 4.

Toronto, Niagara and Western Ry.—The Dominion Parliament is being asked to extend the time for the building of the following lines: From Toronto to Hamilton; from Hamilton to the International Boundary near Grand Island, or Niagara Falls, Ont., and, with the consent of the proper authorities, to a point in New York State, with branch lines from St. Catharines to Welland; and from Hamilton, via Brantford, Woodstock, London and Chatham, to Windsor.

Canadian Northern Ry.—In a recent interview at Port Arthur, Ont., M. H. MacLeod, General Manager and Chief Engineer, is reported to have said that from time to time improvements would be made on the roadbed, as the necessities of traffic demanded. The attention of the officers of the line would have, he is said to have added, to be given very shortly to the necessity for building second track between Port Arthur and Winnipeg.

The Dominion Parliament is being asked to extend the time for the building of the projected line from near Grosse Isle on the company's Oak Point branch, northerly and westerly to Grand Rapids, with a branch to Sturgeon Bay, Man.

We are officially advised that the company has under construction the following lines in Saskatchewan: An extension of the Elrose branch from its present terminus at Eston, westerly for 35 miles; an extension

of the line now terminating at Preeceville, Sask., for 25 miles westerly.

We are officially advised that track has been laid on 43 miles of the extension of the line southeasterly from Camrose, the grading on which has been completed to the Battle River, 60 miles from Camrose, Alberta. A press report says that track-laying work will be completed to the Battle River before the work is stopped. We are also advised that grading is in progress for a further distance of 23 miles. The line is projected southeasterly to a junction with the Saskatoon-Calgary line near Sibbald, and is being built under the Canadian Northern Western Ry.'s charter. Under this charter there is also being built a line from Oliver to St. Paul de Melis. R. H. Douglas, engineer, Alberta Department of Railways, is reported to have said recently that 80 miles had been practically completed on the Oliver-St. Paul de Metis branch, and that it was expected to complete the grading on a further eight miles by Dec. 1. This would take the grading to between ranges 13 and 14.

The line to Peace River branches off from the transcontinental line at Onoway and is in operation to San Guido on the Pembina River, 65 miles from Edmonton. A second lift of ballast was given during the past season. The bridge across the Pembina River is completed and some track is reported to have been laid from the bridge towards the MacLeod River, the grading to which point is completed.

The other line in Alberta upon which work is in progress is from Calgary to Pincher Creek, 141 miles.

The contractors engaged on the several lines are: Northern Construction Co., Winnipeg and Western Construction Co., W. J. Cowan, and D. F. McArthur, all having headquarters in Winnipeg.

Canadian Northern Pacific Ry.—A press report states that an arrangement has been reached between the company and the authorities interested in the Vancouver area respecting the manner of carrying the company's tracks across the harbor. The method of crossing will, it is said, be by a bridge.

A writ was issued, Dec. 2, at the instance of Champion and French, against the C.N.P. Ry., and the Vancouver City Council, asking for a declaration that the plaintiffs were entitled to the unrestricted use of the foreshore adjoining lots 33 to 36, block 23 on False creek, and for an injunction restraining the company from building a seawall, the contract for which has been let. The plaintiffs own a wharf on the creek, which it is claimed was erected without the permission of the Dominion Government, and that therefore they have no riparian rights. The railway company and the city, however, have a crown grant, and the sea wall is being built under an agreement between the company and the city. The Vancouver Harbor Board passed a resolution on Dec. 3 requiring Champion and White to remove their vessels and scows from the area in question, and authorized the Harbor Master to remove them after a specific date, if they had not then been removed. The case came to a hearing Dec. 9, when Justice Morrison dissolved the injunction. He decided that the building of the sea wall is for the public benefit, but the plaintiffs may be entitled to recover damages.

The Lulu Island branch is located from the westerly approach to the New Westminster bridge, to Steveston, 15.35 miles. It is built from mileage 5.42 to Steveston.

We are officially advised that the uncompleted portion will be proceeded with and completed at an early date. Track connection between the mainland and Lulu Island will be made by an opening span bridge over the north arm of the Fraser River.

Vancouver Island Lines.—We are officially advised that rails for the Victoria-Patricia Bay line, 15.22 miles, will be laid, and the line completed at an early date.

As to the docking facilities to be provided for the car ferry traffic with the mainland, we are informed that all details are not yet settled, but it is expected that wharfage accommodation will be provided both at Patricia Bay and at Woodward, Lulu Island, during next summer. (Dec., 1915, pg. 474.)

Freight and Passenger Traffic Notes.

The C.P.R. proposes to improve its service to Owen Sound, Ont., by running the Hanover-Saugeen Junction train through to that port.

Edmonton, Dunvegan and British Columbia Ry. trains are being operated by telephone, the dispatching office being at Edmonton, Alta.

The Canadian Northern Ry. Peace River Branch bi-weekly service from Onoway to Bangordo, Alberta, is, it is reported, to be made a daily service.

The Dominion Government Railway to Hudson Bay is operating a weekly train service from Pas, Man., to the Manitou Rapids, Nelson River, 242 miles.

The extension of the Canadian Northern Ry.'s Saskatoon-Elrose branch, from Elrose to Eston, Sask., 35 miles, is said to have been given a bi-weekly service.

The C.P.R. train service between Lardo and Gerrard, B.C., and the steam boat service on Trout Lake was discontinued, Nov. 30. It is reported that the rolling stock is to be removed and the service abandoned indefinitely.

The Canadian Government Railways management is said to be arranging for the through haulage of wheat from Winnipeg, Man., to Moncton, N.B., by the National Transcontinental Ry., and then on to St. John, N.B., by the Intercolonial Ry.

The G.T.R. has inaugurated a new sleeping car service between Sherbrooke and Montreal, each night, including Sundays. The cars are ready for occupancy at 10 p.m., and the train leaves Sherbrooke at 3.15 a.m., arriving at Montreal at 7.25 a.m.

The Canadian Northern Ry.'s liability to pay a business tax on offices in Winnipeg has been questioned. The company claims it is exempt under an agreement made when it took over the old Red River Ry. The question is before Judge Macdonald as referee.

The Canadian Northern Ry. has opened a downtown ticket office on Hastings St., Vancouver, B.C., adjoining the Great Northern Ry. office. A temporary ticket office has been opened at 172 Hastings St. West. Freight matters will be attended to at a temporary office in the Metropolitan Building.

The Intercolonial Ry. freight office in Quebec City was transferred from the terminal at the foot of Jarvis St., to the C.P.R. Palais station, on Dec. 1. When the new union station now under construction is completed the entire freight business of the Canadian Government Railways will, it is said, be concentrated there.

A steel truss bridge over the Spokane River at Spokane, Wash., collapsed on Dec. 18 under two passing electric cars. Seven persons were killed and 10 injured.

Mainly About Railway People Throughout Canada.

Sir Thomas and Lady Tait celebrated the 25th anniversary of their wedding at Montreal, Dec. 10.

C. C. Goodrich, President, Twin City Rapid Transit Co., died at Minneapolis, Minn., Dec. 21.

F. J. Moss, Emigration Agent, Canadian Northern Ry., London, England, has joined Canadian Pay and Record Office staff, temporarily.

Hugh Fleming, who has been appointed a captain in the Army Service Corps, is a son of the late Sir Sandford Fleming, a director of the C.P.R.

Mrs. A. H. Dunlap, who died in Toronto, Dec. 14, aged 86, was the mother in law of Hon. Frank Cochrane, M.P., Minister of Railways and Canals.

H. G. Elliott, formerly General Passenger Agent, Grand Trunk Ry., has been elected an honorary member of the American Association of Passenger Traffic Officers.

James Dunsmuir, director, C.P.R., has promised to contribute \$1,000 a month, during the continuation of the war, to the Patriotic Aid Society in British Columbia.

Countess Jacques de Lesseps, daughter of Sir William Mackenzie, President, Canadian Northern Ry., is giving her services as a nurse in one of the military hospitals in Paris, France.

T. W. Connette, Assistant Superintendent of Transportation, Buffalo Division, International Ry., Buffalo, N.Y., has been appointed Superintendent of Transportation of the division.

R. H. Crew, General Yardmaster, G.T.R., Mimico, Ont., died suddenly, following an attack of apoplexy, Dec. 7, aged 55. At the time of the seizure he was inspecting the company's East Toronto yards.

T. H. White, M.Can.Soc.C.E., Chief Engineer, Canadian Northern Pacific Ry., Vancouver, B.C., has been elected Chairman of the Canadian Society of Civil Engineers' recently organized British Columbia division.

Wm. L. Crawford, who was for many years associated with the late H. M. Flagler in the development of Florida, and was for many years General Manager of the Florida East Coast Ry., died in Garwood, N.J., Nov. 13, aged 74.

Wm. Downie, formerly General Superintendent, Atlantic Division, Canadian Pacific Ry., St. John, N.B., who was operated on in Toronto, Nov. 1, for gall stones, was able to leave the hospital on Dec. 16 and to return to his home at Whitby, Ont.

G. Goodwin, who died at Ottawa, Nov. 29, aged 72, was, before he retired from active life, a general builder and contractor, and was at various times connected with the construction of railways, canals, locks and other transportation facilities.

Mrs. Goodfellow, wife of John Goodfellow, Superintendent, Esquimalt and Nanaimo Ry., Victoria, B.C., died there, Dec. 5, after a year's illness. She was a native of Dalhousie, N.B., and resided in Vancouver for a short while before removing to Victoria in 1905.

Mrs. Johnson, widow of the late Lacey R. Johnson, General Welfare Agent, Canadian Pacific Ry., Montreal, is taking an active part in providing Christmas cheer for the wives and families of men of the Montreal Heavy Artillery Brigade who are on active service.

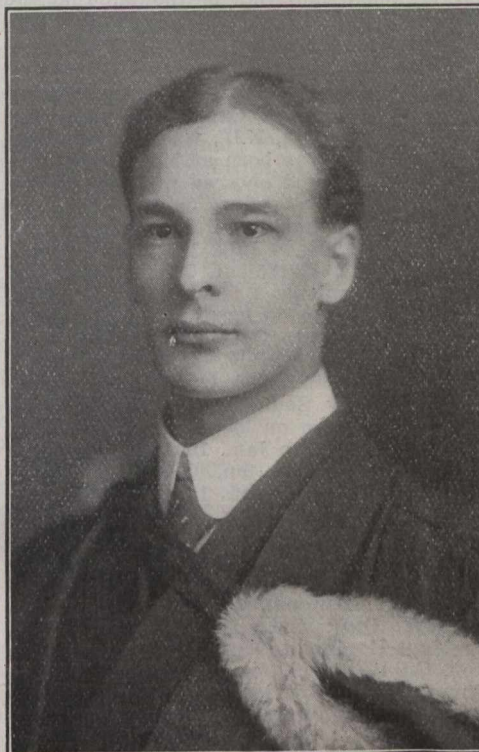
Mrs. Alfred T. Shaughnessy, of Montreal, has left for England with her children to join Capt. Shaughnessy, son of Sir Thos. G. Shaughnessy, and who is in the 60th Bat-

alion. One of Sir Thomas' sons in law, Lieut. R. M. Redmond, is with the same battalion.

Paul F. Sise, Vice President, Northern Electric Co., Ltd., Montreal, is on service with the 148th Battalion, Canadian Overseas Expeditionary Forces, with the rank of captain and adjutant. The battalion's present headquarters are the old High School building on Peel St., Montreal.

D. A. MacDonald, who died at Regina, Sask., Dec. 11, aged 58, was engaged on construction work on the C.P.R., when the line to the west was being built. He gave up this work in 1882, when the line had reached Moose Jaw, and returned to Regina, where he settled.

T. E. Doyle, who died recently at Kenora, Ont., worked on the construction of the C.P.R. in its early days, between Fort Wil-



Gordon St. G. Sproule,
Engineer of Tests, Canadian Pacific Railway.

liam and the Rockies, and was section foreman at Kenora, Ont., for 15 years, and Roadmaster, Banff, Alta., for some time before retiring from active service.

L. C. Ord, Assistant Works Manager of Car Shops, C.P.R., Montreal, having been appointed a Lieutenant on No. 1 Overseas Battery of Siege Artillery, Canadian Expeditionary Force, has been granted extended leave of absence. He sailed from Halifax, N.S., for Europe, Nov. 22.

W. H. Williams, Vice President, Delaware & Hudson Co., has been elected Chairman of the Board of Directors and Chairman of the Executive Committee of the newly reorganized Wabash Co. He will continue his work as Vice President of the Delaware & Hudson.

Lieut. H. F. H. Hertzog, Jr. M.Can.Soc.C.E., of the Royal Canadian Engineers, who is on active service in Europe, and who has been promoted to the rank of Captain, is a son of A. L. Hertberg, M.Can.Soc.C.E., Division Engineer, C.P.R., Toronto, and was formerly with the Trussed Concrete Steel Co. of Canada, Walkerville, Ont.

Hon. Frank Cochrane, Minister of Railways and Canals, left Ottawa, Dec. 30, for England to see his two sons before they go to the front in France. He will probably visit the front before returning, and is expected back in Ottawa about the end of January.

Thos. R. Burpee, who was secretary to the late Sir Sandford Fleming, when the latter was Chief Engineer of the Intercolonial Ry. and of the Canadian Pacific Ry. prior to the latter road passing into the hands of the present company, and who was subsequently Deputy Dominion Lands Commissioner at Winnipeg for some years, died in Ottawa, Dec. 1.

Edward FitzGerald, Assistant General Purchasing Agent, Canadian Pacific Ry., who has been acting, since May, 1915, as Purchasing Agent for the British War Office, has removed with his staff from 114 Windsor St. Station, Montreal, to Ottawa, where he is also acting in connection with the Imperial Munitions Board.

The Hon. Angus McDonnell, who has been living in Vancouver, B.C., for several years, during part of which time he was a partner in the railway contracting firm of Grant Smith and McDonnell, has left for his family's seat, Glenarns Castle, County Antrim, Ireland. Lord Dunluce, his eldest brother, was killed recently in France, and Mr. McDonnell intends to join the army.

W. P. Hinton, Traffic Manager, Grand Trunk Pacific Ry., and Western Traffic Manager, Canadian Government Railways, was the guest of the Winnipeg Transportation Club, Nov. 30, on his return to Winnipeg, to take up his new appointments. From Apr., 1909, to Oct., 1914, he resided in Winnipeg, where he occupied the positions of General Passenger Agent and Assistant Passenger Traffic Manager, G.T.P.R., consecutively.

Sir Thomas Tait, President, Fredericton and Grand Lake Coal & Ry. Co., is President of the Citizens Recruiting Association (English speaking section), which has its headquarters in Montreal, and of which Sir Thos. G. Shaughnessy is Honorary President. He is taking a very active part in the work, which covers the 4th divisional area, that is the western part of the Province of Quebec.

Edward James Worth, who has been appointed Car Service Agent, Atlantic Division, C.P.R., St. John, N.B., was born at Toronto, July 29, 1887, and entered C.P.R. service, Apr. 5, 1905, since when he has been, to June, 1907, operator at various points on the Ontario Division; June, 1907, to Mar., 1908, operator, Moose Jaw, Sask.; Mar. to July, 1908, operator at various points on the Ontario Division; July, 1908, to Apr., 1914, dispatcher, London, Ont.; Apr., 1914, to Jan., 1915, Train and Station Inspector, Toronto; Jan. to Dec. 1, 1915, dispatcher, London, Ont.

A. J. Gayfer, whose appointment as Division Engineer, Canadian Northern Ry., Hornepayne, Ont., was announced in a recent issue, was formerly on Mackenzie, Mann and Co.'s engineering staff, and from 1898 to 1899, was engaged on surveys between Fort Frances, Ont., and Winnipeg; 1899 to 1902, office assistant to Division Engineer of Construction for the same territory. From 1902 to 1911 on construction work, Grand Trunk Pacific Ry., and returned to Mackenzie, Mann and Co.'s staff, working on the Canadian Northern main line east of Port Arthur until 1912, when he was appointed Division Engineer on construction, Port Arthur District, which position he held until his present appointment.

Thomas James Hennessey, formerly Division Master Mechanic, Michigan Central Rd., Bay City, Mich., died Dec. 4. He was born at London, Ont., Jan. 1, 1845, and entered M. C.R. service in October, 1872, since when he was, to Apr., 1874, locomotive foreman; Apr., 1874, to Sept. 1, 1889, locomotive driver; Sept. 1, 1889, to May 20, 1893, Travelling Engineer; May 20, 1893, to May 1, 1896, Division Master Mechanic, Detroit, Mich.; May 1, 1896, to Jan. 1, 1902, Division Master Mechanic, Jackson, Mich.; Jan. 1, 1902, to Feb. 1, 1915, Division Master Mechanic, Bay City, Mich. On account of reaching the age limit, he retired from active service Feb. 1, 1915.

Kenneth deSola Joseph, whose appointment as Assistant Trainmaster, District 1, Atlantic Division, C.P.R., Brownville Jct., Me., was announced in our last issue, was born at Quebec, Que., Oct. 6, 1892, and entered C.P.R. service, May 6, 1910, since when he has been, to Aug. 31, 1912, chainman, Marquette, Man.; May 1, 1913, to Nov. 15, 1915, transportation student, Eastern Lines, C.P.R., and following the special course of training in connection with the engineering course at McGill University, except for the period from Nov. 1, 1913, to Apr. 1, 1914, when he was telegraph operator, Lake Superior Division, C.P.R.

W. P. Wilgar, B.A.Sc., M.Can.Soc.C.E., who was on the National Transcontinental Ry.'s engineering staff from 1905 to 1914 as locating engineer, Division Engineer and Assistant District Engineer respectively, and who was appointed in Sept., 1914, as Professor of Civil Engineering, Queens University, Kingston, Ont., is now performing military service. On Mar. 15, 1915, he was appointed Captain in the Canadian Engineers, and on Sept. 11, 1915, was appointed temporary Major while commanding the 5th Field Company, Canadian Engineers, at Kingston. He is now Officer Commanding Instruction, Canadian Engineers Training Depot, Ottawa.

Albert Charles Harris, Superintendent, Welland Ship Canal Construction Ry., whose article describing the line appears on another page of this issue, was born at Stratford, Ont., Jan. 23, 1888. He entered railway service May 17, 1905, since when he has been consecutively, to Oct. 18, 1903, machinist, Grand Trunk Ry. shops, Stratford; Oct. 19, 1903, to July 10, 1909, assistant agent, G.T.R., Drumbo, Ont.; July 10, 1909, to Aug. 1910, telegraph operator, G.T.R., Ridgeway, Ont.; Aug., 1910, to July 18, 1912, operator and ticket agent, G.T.R., Goderich, Ont.; July 18, 1912, to April 21, 1914, operator and relieving dispatcher, G.T.R., Stratford; May 4, 1914, to date, Superintendent, Welland Ship Canal Construction Ry., Homer, Ont.

Henry Eugene Haanel, who was appointed Trainmaster, District 1, Saskatchewan Division, Regina, recently, was born at Cobourg, Ont., Nov. 2, 1880, and entered transportation service, April, 1901, since when he has been, to July, 1901, stenographer, Canadian Northern Express and Telegraph Cos., Winnipeg; July, 1901, to Sept., 1903, chief clerk, same companies, Winnipeg; Sept., 1903, to Aug., 1904, chief clerk in yard office, Canadian Northern Ry., Winnipeg; Aug., 1904, to Apr., 1905, West Yard Agent, C.N.R., Winnipeg; Apr., 1905, to May, 1906, chief clerk, District 2, C.N.R., Winnipeg; May, 1906, to Jan., 1907, chief clerk, Winnipeg Terminals, C.P.R., Winnipeg; Jan. to June, 1907, chief clerk, District 4, C.P.R., Brandon, Man.; June to Sept., 1907, chief clerk, Car Service Department, Western Lines, C.P.R., Winnipeg; Sept., 1907, to Dec., 1910, chief clerk to General Superintendent, Central Division, C.P.R., Winnipeg; Dec., 1910, to Dec., 1912, Trainmaster, District 3, Manitoba Division, Brandon;

Dec., 1912, to Feb., 1913, acting Superintendent, District 3, Manitoba Division, Brandon; Feb., 1913, to the date of his present appointment, Trainmaster, District 1, Manitoba Division, Kenora, Ont.

F. L. Wanklyn, General Executive Assistant, C.P.R., was plaintiff in a recent action against O. Asselin, Montreal, claiming \$15,000 damages for slander while he was a member of the Montreal Board of Control. The action was taken on an article in L'Action, condemning the conditions in the Board of Control as being corrupt and rotten, and naming Mr. Wanklyn as largely responsible. In delivering judgment Justice Greenshields said that citizens sensible of their reputations and jealous of their fellow citizens' regard, will not enter into a public office, feeling that through no fault of theirs, when they issue forth, their reputation will be but a thing of shreds and patches. In awarding nominal damages of \$150, with costs, based on a \$15,000 case, he stated that the plaintiff did not seek a money condemnation, and it must not be thought that the amount awarded was the judge's appreciation in dollars and cents of the value of a public man's reputation.

Harry Thornton Ruhl, whose appointment as Division Engineer, Canadian Government Railways, Moncton, N.B., was announced in our last issue, was born at Mifflinburg, Pa., Sept. 29, 1882, and entered railway service, Sept. 1902, since when he has been, to June, 1904, rodman, C.P.R., Nominigue, Que.; June, 1904, to July, 1905, transit man, Construction Department, C.P.R., Residency 3, Toronto-Sudbury Branch; July to Aug., 1905, transit man on location, C.P.R., Ingersoll, Ont.; Aug. to Oct., 1905, transit man, bridge surveys, C.P.R., Coldwater, Ont.; Oct., 1905, to Jan., 1906, transit man, bridge surveys, Parry Sound, Ont.; Jan. to May, 1906, transit man on location, Parry Sound, Ont.; May, 1906, to Jan., 1908, Resident Engineer on Construction, C.P.R., Point au Baril, Ont.; Jan. to Oct., 1908, Resident Engineer on Construction, C.P.R., Muskoka, Ont.; Oct., 1908, to Nov., 1909, transit man, Maintenance of Way, C.P.R., North Bay, Ont.; Nov., 1909, to Oct., 1911, Resident Engineer, Maintenance of Way, District 1, Sudbury, Ont.; Oct., 1911, to Sept., 1913, Resident Engineer, District 1, Eastern Division, C.P.R., Farnham, Que.; Sept., 1913, to Nov. 20, 1915, Resident Engineer, Maintenance of Way, Intercolonial Ry., New Glasgow, N.S.

W. H. Grant, Manager of Construction, Mackenzie, Mann and Co., Toronto, whose additional appointment as Tie and Timber Agent, Eastern Lines, Canadian Northern Ry., was announced in our last issue, was born at Acton, Ont., Dec. 8, 1858. He commenced railway construction with D. D. Mann in 1882, and with the exception of eight years spent in Winnipeg, Calgary and British Columbia, he has since been continuously engaged in railway work, first with D. D. Mann, and later with Mackenzie, Mann and Co. During this time he acted as accountant, Superintendent, and Manager of Construction, and was with Mr. Mann on his contracts on the C.P.R. main line on the prairies and in the British Columbia mountains, and built 75 miles of the Manitoba and Northwestern Ry. main line and the Russell and Rapid City branches. He laid the track on the 40 miles of the old Winnipeg and Hudson Bay Ry., and had charge of one section of Mackenzie and Mann's contracts on the C.P.R. short line through Maine. During the construction of the Ontario and Rainy River Ry. he was Superintendent of the grading and bridging from Port Arthur to Fort Frances, and after completion of that line, in 1902, he was sent to Nova Scotia, where he built 247 miles of a line which is now comprised in the Halifax

and South Western Ry. He was appointed Manager of Construction, Mackenzie, Mann and Co.'s lines east of Port Arthur, in 1907, and altogether, has had charge of 680 miles of that company's system.

Gordon St. George Sproule, who has been appointed Engineer of Tests, C.P.R., Montreal, as mentioned in Canadian Railway and Marine World for December, and whose portrait appears in this issue, was born there, April 23, 1885, and is a son of the late Wm. J. Sproule, Ma.E., for many years Chief Assistant Engineer, Montreal Harbor Commissioners. He was educated at St. Lambert Academy, Montreal Business College, and Montreal High School, with periods of employment with Canadian Fairbanks Co., Milton L. Hersey, analyst, and H. C. Stone, architect. Matriculated in applied science, McGill University, 1903. Spent vacation of 1904 as junior under the late Cecil B. Smith, Resident Engineer, Canadian Niagara Power Co.; vacation 1905 and term 1905-06 under Mr. Smith, first in his consulting offices, then as Secretary of Hydro-Electric Power Commission of Ontario, of which he was Chief Engineer. Vacation 1907 on conducted trip through mines and smelters of Southern British Columbia, and on practical work in Hall Mines Lead Smelter, Nelson, B.C. Graduated 1908 as B.Sc. in mining engineering, with honors in design and machinery. Granted Milton Hersey research fellowship in metallurgical engineering. Obtained M.Sc. in 1909 and Governor-General's medal for research work. 1909-10 continued research work at McGill and demonstrated in physics and metallography. Entered C.P.R. employ, June, 1910, as Assistant Wheel Inspector, becoming in succession Wheel Inspector and Assistant Engineer of Tests, till E. B. Tilt's resignation in May, 1915, since when has been Engineer of Tests. In Jan., 1912, he married Miss Helen L. Freeze, B.A., of St. John, N.B., and has two sons. Is fond of rifle and pistol shooting, photography, handicrafts, swimming, etc.

Toronto, Hamilton and Buffalo Ry. asks power to make agreements.—Application is being made to the Dominion Parliament to authorize the company to make with the Canada Southern Ry., the Michigan Central Rd., the New York Central Rd., the Canadian Pacific Ry., or any of them, any of the agreements authorized to be made between railway companies by Sec. 364 of the Railway Act, for 50 years. This section provides for the making of any agreement for the interchange of traffic, and for the division and apportionment of tolls, for the running of trains over each other's tracks, for the management and working of railways, and to provide for the appointment of joint committees, provided such agreements are not inconsistent with the special acts of the companies party to it, that they have received the consent of the shareholders, and are sanctioned by the Board of Railway Commissioners.

The Terminal Commission of Massachusetts visited Montreal, Dec. 9, the members being entertained to dinner there, after inspecting the railway terminals and port facilities. The chief object of the visit was to study general conditions with a view to improving freight handling conditions at Boston. Among those who spoke at the dinner were: W. G. Ross, Chairman, Montreal Harbor Commissioners; G. M. Bosworth, Vice President (Traffic), C.P.R. and Chairman Canadian Pacific Ocean Services, Ltd.; J. E. Dalrymple, Vice President (Traffic), G.T.R. and Grand Trunk Pacific Ry., and L. C. Fritch, Assistant to President, and General Manager, Eastern Lines, Canadian Northern Ry.

Steam Railway Track Laid in 1915.

The preliminary table of new track laid in 1915 by railways throughout Canada, made up from official replies to our annual circular, and from estimates made from information otherwise obtained, is given below. The total mileage is considerably below what it has been for the previous 10 years or more, but it is higher than was anticipated a year ago would have been the case. Tracklaying was done on 14 lines during the year, 44 miles being in Eastern Canada, 58 miles in Manitoba, and the balance in Saskatchewan, Alberta and British Columbia.

The mileage on the railways marked with an asterisk (*) has been estimated, and is subject to revision.

	Miles.	Miles.
Alberta and Great Waterways Ry.:		
Mileage 135 to 175, Alberta.....	.....	40.00
Canadian Northern Ontario Ry.:		
Between Ottawa and Pembroke	1.55	
Between Pembroke and Capreol	7.41	
Canadian Northern Ry.:		8.96
Grand Manas to Victoria Beach	14.07	
Canora to Sturgis, Sask.....	21.44	
Bienfait to Estevan, Sask.....	8.91	
Elrose to Eston, Sask.....	34.81	
Wroxton to Willowbrook, Sask.,		
Canadian Northern Sask. Ry..	41.01	
Camrose, south easterly, Cana-		
dian Northern Western Ry....	43.00	
Canadian Pacific Ry.:		163.24
Coronation, Sask., west	0.75	
Foremost to Pakowki, Alta....	22.30	
Central Canada Ry.:		23.05
McLennan to Heart River, Alta.		46.00
Edmonton, Dunvegan, and B.C.		
Ry.:		
Mileage 243 to 325		82.00
Essex Terminal Ry.:		
Sandwich to Ojibway, Ont.....		2.00
Halifax and Southwestern Ry.:		
Jordan Falls Station to Jordan		
Falls N.S.		1.29
Hudson Bay Ry. (Dominion Gov-		
ernment):		
Mileage 197.4 to 241.24		43.84
Intercolonial Ry.:		
Connection with Transcontinent-		
al Ry. at Moncton, N.B.	0.85	
Dartmouth branch, Elderbank		
to Upper Musquodoboit, N.S.	17.00	
*Kettle Valley Lines:		17.85
Between Midway and Merritt,		
B.C.	31.00	
Coquihella Rives section	33.00	
*Pacific Great Eastern Ry.:		64.00
Mileage 120 to Clinton		46.00
Quebec Central Ry.:		
From 5 miles east St. Camille to		
English Lake		14.00
St. John and Quebec Ry.:		
From Fredericton, N.B., south....		1.24
Total		547.47

Outside Canada, the only mileage of new track laid by any of the subsidiaries of Canadian lines, was 8.91 miles by the Minneapolis, St. Paul and Sault Ste. Marie Ry., from Van Hook to Sanish, N.D.

No return has been received from the Canadian Northern Pacific Ry., and we are therefore unaware what track it laid.

Fire in G.T.R. shops.—A fire started in the tube department of the G.T.R. shops at Point St. Charles, Montreal, at noon, Dec. 10, and caused considerable damage to the tube, blacksmith and erecting shops before it was checked. The cause has not been ascertained.

Shell Making at Transcona Shops.—In connection with the press reports stating that the National Transcontinental Ry. shops at Transcona, Man., had been leased to a private company for shell making, we are advised that the Grand Trunk Pacific Ry. had a shell contract, which it was carrying out at the Transcona shops before they were taken over by the Government in connection with the National Transcontinental Ry. The G.T.P.R. was given permission to continue the shellmaking, but has since transferred its contract to the Transcona Shell Co. The Canadian Government Railways supplies light, heat and power on a percentage basis.

Railway Rolling Stock Notes.

The Canadian Northern Ry. has received 7 steel underframe tourist cars from Crossen Car Co.

The Canadian Pacific Ry. will probably change the lighting of some 130 passenger cars to electricity.

The French Government is reported to have ordered 2,000 freight cars from the Canadian Car and Foundry Co.

Canadian Government Railways has received 105 steel flat cars from Nova Scotia Car Works, and 1 consolidation locomotive from Canadian Allis-Chalmers, Ltd.

The Nigerian Ry., West Africa, has ordered through the Crown Agents for the Colonies 100 ten ton end tipping coal wagons from Canadian Car & Foundry Co.

The Canadian Pacific Ry.'s passenger car shops, at Angus, Montreal, are running at full capacity putting passenger equipment in condition to meet the increased business.

The Canadian Northern Ry., during November, received 2 dining cars and 11 sleeping cars from Canadian Car and Foundry Co., and 7 tourist cars from Crossen Car Co.

The Grand Trunk is having 1,500 steel freight cars repaired. The American Car and Foundry Co., Detroit, Mich., is doing the work on 300 cars, with the option of doing the other 1,200.

The Canadian Locomotive Co. has shipped 3 locomotives to the Russian Government. General details of these locomotives were given in a previous issue and a full description appears in this issue.

The Canadian Pacific management is considering the addition of some passenger locomotives. Details of type and number are not yet available, but the order may amount to about 50. Whether they will be built at the company's Angus shops, or ordered outside, has not been announced. Since the foregoing was put in type, a Kingston, Ont., press dispatch states that the C.P.R. has ordered 25 locomotives from the Canadian Locomotive Co.

The Canadian Government Railways, according to an unconfirmed Ottawa press dispatch of Dec. 27, has given "a large order" for locomotives for use principally, if not altogether, on the National Transcontinental Ry. It is also said that the Canadian Government Railways has leased from 30 to 40 Grand Trunk Pacific Ry. locomotives for use on the National Transcontinental. Since the foregoing was put in type, we have been officially advised that 25 locomotives have been ordered from the Canadian Locomotive Co.

The Canadian Pacific is going to build at its Angus shops, Montreal, 1,000 freight cars on replacement account. The details are not yet available, but there will probably be 800 standard box cars and 200 automobile cars. Two hundred freight refrigerator cars and 50 passenger refrigerator cars are also to be built, and there will also be some miscellaneous cars, probably 76 stock, 18 coal, 6 ore and 3 furniture. Some passenger equipment is also being considered, and will probably include the following cars: 12 mail, 1 mail and express, 4 baggage, 1 dining.

The Imperial Oil Co., Ltd., Sarnia, Ont., has ordered 100 tank car underframes and trucks, 80,000 lbs. capacity, and tank trimmings, from National Steel Car Co., and has also ordered 100 from Canadian Car and Foundry Co. The underframes will be composed of heavy 12 in. ship channels with top and bottom cover plates. At the bolsters will be half saddles which will form the side bearing, and at the same time support the tank. The trucks will be of the

Tank mountings will consist of the usual appliances on a steel tank car, comprising running board brackets, tank bands, hand rail piping and fittings, side steps, grab handles, etc. The frames will be equipped with Westinghouse air brakes and friction draft gear. The tanks will be supplied and placed in position by the Imperial Oil Co. at Sarnia.

Progress of Rogers Pass Tunnel Construction. Canadian Pacific Railway.

The following table, for which we are indebted to J. G. Sullivan, M.Can.Soc.C.E., Chief Engineer, C.P.R., Winnipeg, shows the progress made from Oct. 28 to Dec. 2, also the total progress to Dec. 2:

	Progress.	Total.
EAST END.		
Main heading	1,429 ft.	11,858 ft.
Main tunnel	806 ft.	8,053 ft.
WEST END.		
Main heading	783 ft.	11,912 ft.
Main tunnel	840 ft.	6,950 ft.

A Glacier, B.C., press dispatch of Dec. 13 says the borings from the east and west ends met at 11.30 that day, giving a continuous passage through the mountain.

Quebec and Saguenay Ry.'s Future.—Ottawa press despatch Dec. 14.—A number of petitions have been received by the Government from the communities served by the Quebec and Saguenay Ry., an uncompleted line running from the city of Quebec to Murray Bay, to have the road taken over by the Dominion Government. The suggestion is made that with this railway the Government could establish a winter port on the St. Lawrence, either at Murray Bay or beyond. The road has been constructed for from 90 to 100 miles, and is one of the group of enterprises associated with the Quebec Railway, Light, Heat and Power Co. It handles a large tourist as well as a local passenger and freight traffic between Quebec and points in Montmorency and Charlevoix Counties. Government engineers have examined the railway and have reported, and during the past summer a personal inspection of the property was made by the Minister of Railways. No decision has been reached regarding the proposed transfer.

First Aid Work on Grand Trunk Ry.—E. J. Chamberlin, President, has presented a silver shield for annual competition amongst first aid teams on the G.T.R. Elimination contests have been held recently at Montreal, Toronto, Stratford and Battle Creek, in which men representing the various terminals and shops on the line competed. The judge was an expert in first aid work, chosen by the St. John Ambulance Association, and the team receiving the greatest number of marks at each examining point competed in the final competition for the shield. The tests were of a complete character, including handling of the apparently drowned, treatment of wounds, bleeding and poisoning, temporary management of fractures, dislocations, sprains, etc., and methods of transporting injured persons. Women's teams were examined in home nursing instead of stretcher work.

International Engineering Congress.—The proceedings of this Congress, held at San Francisco Sept. 20-25, 1915, will be printed in eleven volumes. Members are entitled to receive the index volume and any other single volume according to choice, and extra volumes can be secured by members at special rates. Persons wishing to become members can still do so by remitting \$5 to W. A. Cattell, Secretary-Treasurer, Foxcroft Building, San Francisco, Cal., but prompt action will be necessary as the membership list will close at a very early date.

The New York, New Haven and Hartford Road and the Grand Trunk Railway.

In the trial of the New Haven and Hartford Rd. directors, proceeding before the Federal Court in New York, C. S. Mellen, formerly President, in the course of his evidence, stated, Dec. 2, that the company spent probably \$120,000 to block the G.T.R.'s proposed extensions into southern New England. The G.T.R. proposed to build a line from a junction with the New London Northern, operated by the Central Vermont Ry., a G.T.R. subsidiary, at Palmer, Mass., to Providence, R.I. An agreement was reached in 1910, with the late C. M. Hays, then President, G.T.R., that if the New London Northern was sold to the N.Y., N.H. & H.R., the latter would transfer the control of the New York, Ontario and Western to the G.T.R. Immediately after that, the G.T.R. announced that it would build from Palmer to Providence, but because it was proposed to use the New Haven facilities in Providence and to eliminate grade crossings, entailing heavy expense on the New Haven, the proposal was opposed in the Rhode Island Legislature. For the collection and dissemination of information tending to show that the G.T.R. was violating obligations to the Dominion Government in building that extension, a further \$50,000 was spent. An additional \$60,000 was spent in opposing another G.T.R. project, viz., the building of a line from White River Jct. to Boston, Mass., and steps were at once taken to extend the Sullivan County Rd., a Boston and Maine subsidiary, to parallel the Central Vermont Ry. After C. M. Hays' death an agreement was arrived at with E. J. Chamberlin, his successor, whereby presumably the G.T.R. was to stop work on the Providence extension in return for trackage rights over the New Haven. Mr. Mellen considered that the Providence extension would never have been profitable, and that it was not designed for legitimate competition, but as a threat. In 1908 the New Haven entered into an agreement with the C.P.R. whereby all the New Haven territory was opened to that company through Newport, Vt., and the Boston and Maine, and he was ready to give the G.T.R. the same advantage, but much more was wanted. In concluding his statement, he said: "The route from New York to Boston by the New Haven, from Boston to Portland by the Boston and Maine, from Portland to Bangor by the Maine Central, and from Bangor to St. John, N.B., by the C.P.R., is the most important military base line in the country. It is a most useful thing to the country at large to have it nearly all under one control."

Pere Marquette Rd. to Be Sold.—Detroit, Mich., press dispatch, Dec. 20: "Judge Tuttle, in United States District Court today, fixed April 5, 1916, as the date for the sale of the P.M.R. to satisfy creditors. The road has been in receivers' hands since 1912. At a previous hearing in July, 1915, Judge Tuttle fixed the upset price at \$14,000,000, subject to the underlying bonds and interests, which it was said would bring the price to approximately \$42,000,000."

Increased Freight Rates to Southwestern United States Points.—The Interstate Commerce Commission decided at Washington, D.C., recently that the proposed increased rates on grain from points on the Great Northern Ry. in Minnesota and South Dakota to points on the Kansas City Southern Ry. in Kansas, Missouri, and Oklahoma and points on the Union Pacific Rd. in Kansas, found are justified, and the order of suspension was vacated.

Track Section Prize Competition on the Canadian Pacific Railway Eastern Lines.

The third annual track section prize competition on the Eastern Lines of the Canadian Pacific Railway has been concluded and 69 prizes have been awarded. The conditions governing the awarding of the prizes were the same this year as in the past, general efficiency being the keynote of a foreman's work. The condition, throughout the season of the ditches, drainage, surface, line, gauge, spiking, bolting, rail wear as controlled by the section forces, switches, sidings, right of way, station grounds, track signs, cattle guards and fences, was given careful consideration. The amount of work done was checked against the hours of labor, both regular and extra, and a standard of merit arrived at, the physical characteristics of the section, grades, alignment, nature of roadbeds, climate, etc., being taken into consideration.

Some idea of the care exercised in judging a foreman's work can be formed by following the work in connection with the selection of a prize section. Toward the end of the season, on each of the 43 roadmasters' territories, a section is picked out as the most deserving in point of work done during the season with the material and labor available. These are carefully inspected by the superintendent and resident engineer who select the best one on each district for inspection by the general superintendent and division engineer. All districts of a division are covered by these two officers, and the section selected which they consider eligible for the General Manager's prize. The judging for the General Manager's prize is done personally by the

General Manager, the Engineer, Maintenance of Way, the Assistant Engineer, Maintenance of Way, and division officers.

The winners of the principal prizes for 1915 are as follows:—General Manager's prize: Foreman F. Patrilli, Dorion, Ont., section 16, Nipigon Subdivision, Lake Superior Division. General Superintendent's prizes: Atlantic Division, Foreman M. Phillips, Rooth, N.B., section 10, St. John Subdivision; Eastern Division, Foreman A. McArthur, Apple Hill, Ont., section 13, Smith's Falls Subdivision. Ontario Division, Foreman W. R. Bradley, Bothwell, Ont., section 9, Windsor Subdivision. Lake Superior Division, Foreman A. Melaire, Heron Bay, Ont., section 11, Schreiber Subdivision.

Western United States Freight Rates Increased.—Washington, D.C., Dec. 23: "Further increases in freight rates were granted the railways in western territory by the Interstate Commerce Commission. Under this decision, which is the third during the past six months granting increases to the western carriers, the railways will be allowed to increase their charges on agricultural implements 2c. per 100 lbs. and on canned goods 1c. per 100 lbs. They were also given permission to increase their rates on boots and shoes. Increases were allowed on dried fruits in portions of the territory, as well as on shipments of flue lining. The carriers were denied permission to increase rates on eggs and on cider and vinegar."

The Great North Western Telegraph Co. has opened offices at Dumblane and Eston, Sask., Carrot, Evansburg and Onoway, Alta., and has closed its offices at Charlesbourg and Reid's Station, Que., Alfred Centre Beaumaris and Odessa, Ont., and Algar, Man.

The Canadian Pacific Railway's Roll of Honor.

C. H. Buell, Staff Registrar and Secretary, Pension Department, C.P.R., has issued list 7, which is prefixed as follows:—"Several thousand officers and employes of this company enlisted for active military duty with the Canadian Expeditionary Forces, and the majority of them are now in Europe, bravely battling for Canada and the Empire. As particulars of army reservists are not available, these lists of those who have given up their lives for their country, or been wounded in action, are necessarily incomplete, and do not therefore indicate fully the extent to which the Company's officers and employes have participated in the great struggle."

Atton, Richard W.	Checker	Winnipeg	Killed in action
Beach, James W.	Storeman	Winnipeg	Died of wounds
Bennett, W. H. D.	Clerk	Sartin	Wounded
Carr, Percival	Tapeman	Calgary	Wounded
Coombe, Philip	Fitter's helper	North Bay	Wounded
Cowling, W. S.	Loco. fireman	Vancouver	Killed in action
Cummings, Daniel	Brakeman	Cranbrook	Wounded
Dingle, Percy	Stenographer	Regina	Killed in action
Edwards, Wm. J.	Operator	Moosomin	Wounded
Gabbe, A. E. G.	Wiper	Swift Current	Killed in action
Grant, Leonard A.	Messenger	Vancouver	Died of wounds
Gravestock, J. W.	Stenographer	Moose Jaw	Wounded
Jarman, Jas. S.	Machinist	McAdam	Wounded
Logan, Byron G.	Wiper	Moose Jaw	Died of wounds
McKay, James	Checker	Fort William	Gas poisoning
March, William	Loco. fireman	Medicine Hat	Suffering from shock
Moore, James A.	Pumper	Verner	Wounded
Morrison, Wm. C.	Constable	Montreal	Wounded
Paterson, B. M.	Draughtsman	Montreal	Died of wounds
Pavey, Walter G.	Watchman	Shuswap	Wounded
Perodeau, E. D.	Labourer	Calgary	Suffering from shock
Preston, Roy	Fitter	Calgary	Wounded
Richardson, Richard	Porter	Moose Jaw	Wounded
Smylie, Robert	Watchman	Bassano	Wounded
Stage, Joseph B.	Boilermaker	Outlook	Wounded
Stickland, Stanley	Machinist	Angus	Wounded
Taylor, Russell W.	Clerk	Winnipeg	Wounded
Thomson, John	Truck repairer	Vancouver	Killed in action
Townsend, Gordon J.	Constable	Fort William	Wounded
Ward, Walter A.	Clerk	Montreal	Killed in action
Woodward, Frederick	Car repairer	Cranbrook	Wounded
Woonton, Geo. S.	Truck fitter	McAdam	Killed

Winter Grain Rate on National Transcontinental Railway to Atlantic Ports.

Ottawa press dispatch, Dec. 24: "A winter grain rate practically as low as the summer rate by water has been declared by the Minister of Railways for the National Transcontinental Ry. The new rate strikes a new low level for the winter movement of wheat between the head of the lakes and tide water. The change will be 6c a bushel between Armstrong, on the National Transcontinental, and Montreal and Quebec. Armstrong is the competitive point corresponding most closely with the rate points of other lines. An important feature of the new arrangement is that Halifax is to have absolutely equal opportunity with other Atlantic ports so far as the wheat traffic is concerned, and will no longer be handicapped by an adverse differential rate. The National Transcontinental, it is expected, will handle 100 cars of grain a day. It is believed that the new low rate will have to be met by competing private roads. Special arrangements are being made by the Railways Department to store the grain which will be carried east over the Transcontinental and the Intercolonial."

"A statement announcing the new rate was issued today as follows: 'On account of the very large amount of grain still in farmers' hands and in country elevators in Western Canada and the terminal elevators at Fort William and Port Arthur taxed to their capacity with what is already stored and in transit, the Canadian Government Railways are completing arrangements, as an emergency measure, in order to enable shipments to continue freely throughout the winter, to move this grain over the Transcontinental Ry. to elevators at Montreal and Quebec on through all rail rates, which will be based approximately on the all water cost from Fort William to Montreal during the summer season, in other words, using the Transcontinental as the all water carrier during the winter. There will be about 5,000,000 bush. elevator capacity for the reception of this grain at Montreal and Quebec, and in order to increase available space many times over arrangements have been made to reshipe as required to winter ports on the Atlantic seaboard. Halifax is also made a common point with other Atlantic seaports. Formerly, a higher rate prevailed to Halifax, but now that the Government Railways control the entire route from shipping points to Halifax they are able to announce a reduction, making Halifax basis of export rates the same as to other Atlantic winter ports.'"

A Quebec Quarry Spur Line Suit.—The right to use a spur line connecting a quarry with the C.P.R. at St. Francis de Sales, Que., was involved in the case of Bellefleur against Labelle, decided in a court at Montreal, Dec. 10. The quarry was originally owned by the defendant, and he still owns part of the land over which the spur line runs. The quarry was sold with the right of using the spur line. The judge held that defendant could not prevent the plaintiff using the line, and awarded \$1,197 for accrued damages.

The Dominion Government and Grain Shipments.—An Ottawa press dispatch, Dec. 20, states that the Dominion Trade and Commerce Department has arranged with James Carruthers & Co., Grain Shippers, to take over the transporting overseas the grain which the Government commandeered recently between the elevators and the seaboard.

Shell Making at National Transcontinental Railway Shops.

We are officially advised that previous to the Dominion Government taking over the National Transcontinental Ry. east of Winnipeg, including the Transcona shops, the Grand Trunk Pacific Ry. had arranged with the Shell Committee at Ottawa for the manufacture of high explosive shells and received contracts to produce 72,000 eighteen pounder shells. The company, previous to the acquisition of the shops by the Government, fitted out a small section of the Transcona shops with a complete outfit of machinery, tools, etc., to manufacture about 200 shells a day. The machinery and appliances were nearly all the property of the G.T.P.R. Not having experience in shell manufacture, naturally it took time to organize a force to enable the company to turn out the complement of shells it considered the shop fitted up was capable of producing 20 hours a day. When the Government took over the actual operation of the shops on July 1, 1915, the company, of course, had no further control over the manufacture of the shells and the conditions under which it would have had to carry out the work would not have been satisfactory to the company. It was then decided to complete the contracts in the G.T.R. shops in the east, but permission to do this was refused, and the plant was sold out to the Transcona Shell Co. Nov. 3, 1915.

Railway Construction in Mexico Contemplated.—The early construction of a large mileage of railways in Mexico is contemplated by the Carranza government, according to statements given out by R. E. Musquiz, inspector of that country's consulates in the United States. The most important construction planned is a 500-mile line from Nuevo Laredo to Piedras Negras, along the Rio Grande, and thence to a connection with the Matamoros-Monterey Division of the national railways. A 450-mile road from Monclova to the city of Chihuahua, which will traverse a region said to be rich in coal deposits and valuable minerals, is also proposed. Construction will, it is said, be resumed very soon on the Tampico to the city of Mexico cut off, which was being built when the revolutionary troubles commenced.

Safety Appliances Equipment for U. S. Railways.—The Interstate Commerce Commission decided at Washington, D.C., recently, that the time within which common carriers shall make their freight cars conform to the standards of equipment described by the Commission in order of Mar. 31, 1911, be further extended for one year from July 1, 1916. J. Coleman, Superintendent Car Department, and J. Powell, Chief Draughtsman, Motive Power Department, represented the Grand Trunk at the hearing; W. H. Flynn, Superintendent Motive Power, representing the Michigan Central.

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

	Aeres.
Calgary and Edmonton Ry.	322.30
Canadian Northern Ry.	236.27
Canadian Northern Western Ry.	289.35
Canadian Northern Pacific Ry.	134.80
Canadian Pacific Ry. ....	.68
Edmonton, Dunvegan and British Columbia Ry.	13.29
Grand Trunk Pacific Ry.	63.80
Grand Trunk Pacific Branch Lines Co.	6.34
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	3,675.00
Total	4,741.83

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, for Western Lines, compared with those of 1914-15, from July 1, 1915:

	Gross Earnings	Expenses	Net Earnings	Increase or Decrease
July	\$1,206,100	\$921,000	\$285,100	x\$145,400
Aug.	1,192,800	954,000	238,800	x5,900
Sept.	2,014,600	1,358,000	661,600	1,900
	\$4,413,600	\$3,227,000	\$1,186,600	x\$79,300
Decr.	\$ 658,300	\$ 579,000	\$ 79,300	.....

Mileage in operation at Sept. 30, 1915, 4,965, against 4,670 at Sept. 30, 1914.

Commencing with October, the figures show the earnings of the entire system, both eastern and western lines.

	Gross Earnings	Expenses	Net Earnings	Increase
Oct.	\$3,673,500	\$2,421,500	\$1,252,000	\$ 537,800
	\$3,678,500	\$2,421,500	\$1,257,000	\$ 537,800
Incr.	\$1,100,200	\$ 562,400	\$ 537,800	.....

Approximate earnings for November, \$3,535,200, against \$2,228,000 for Nov., 1914, and for three weeks ended Dec. 21, \$2,423,700, against \$1,345,300 for same period 1914.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those of 1914-15, from July 1, 1915:

	Gross Earnings	Expenses	Net Earnings	Increase or Decrease
July	\$7,895,375.47	\$5,094,972.85	\$2,800,402.62	x\$978,042.71
Aug.	8,801,451.52	5,359,176.80	3,442,274.72	79,157.02
Sept.	1,273,165.45	5,527,864.81	4,475,300.64	\$78,252.25
Oct.	13,433,206.88	6,863,780.29	6,579,426.59	3,258,105.79

	\$40,413,206.88	\$22,845,754.25	\$17,567,452.63	\$2,737,472.35
Incr.	.....	.....	\$2,747,235	.....
Dec.	\$23,597.38	\$3,761,069.73	.....	.....

Approximate earnings for Nov., 1915, \$13,114,000, against \$7,823,000, and for two weeks ended Dec. 14, \$6,101,000, against \$3,473,000 for same period 1914.

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings for the G.T.R. (including the Canada Atlantic Ry.), the G.T.W.R. and the D.G.H. & M.R. for October, compared with those for October, 1914:

Grand Trunk Railway.		1915.	1914.
Earnings		\$3,591,305	\$3,509,350
Expenses		2,527,500	2,533,100
Net earnings		\$1,063,805	\$ 976,250
Grand Trunk Western Railway.		1915.	1914.
Earnings		\$ 781,944	\$ 639,900
Expenses		562,392	602,000
Net earnings		\$ 219,552	\$ 39,900
Detroit, Grand Haven and Milwaukee Ry.		1915.	1914.
Earnings		\$ 293,442	\$ 255,100
Expenses		212,887	224,800
Net earnings		\$ 80,555	\$ 30,300

Approximate earnings for Nov., 1915, \$4,190,871, against \$3,770,406 for Nov., 1914, and for two weeks ended Dec. 14, \$2,035,759, against \$1,736,014 for same period 1914.

TRAFFIC RECEIPTS OF THE SYSTEM.

Aggregate from Jan. 1 to Nov. 30:—

	1915	1914	Incr.	Decr.
G.T.R.	\$36,085,580	\$38,496,571	.....	\$2,410,991
G.T.W.R.	6,085,046	6,575,654	\$509,392	.....
D.G.H.&M.R.	2,581,860	2,348,095	233,765	.....
Totals	\$45,752,486	\$47,420,320	.....	\$1,667,834

Grand Trunk Pacific Railway Earnings.

The approximate earnings of the Prairie Section, 916 miles, for November, 1915, were \$848,168, against \$401,458 for Nov., 1914. The aggregate earnings for five months ended Nov. 30, were \$2,706,726, against \$2,069,000 for same period 1914.

The Grand Trunk Ry. employees at Toronto have appointed a committee of ten to look after the families of former fellow employees now engaged on active service. W. H. Farrell, Terminal Superintendent, is chairman.

Handling of Milling in Transit Grain at Moose Jaw, Saskatoon and Calgary.

Sir Henry L. Drayton, Chief Commissioner, Board of Railway Commissioners, has given the following judgment, concurred in by Commissioner McLean:—

An application has been made by the R. B. McLean Grain Co., Ltd., of Saskatoon, Sask., asking, in effect, that the milling in transit privilege be extended to the government elevator at Saskatoon, Sask. In principle, the application also covers the government elevators at Calgary and Moose Jaw. The present milling in transit, of course, only allows for the one stop off, and the applicants were anxious that an additional stop off be given, which would enable farmers and grain dealers to have their grain treated and weighed at the government elevator and then proceed in the easterly movement at the through rate plus the usual stop over charge, instead of moving at the local rate, the effect of which would be, of course, to practically prevent the additional stop off. The case was heard at the recent sittings in Saskatoon, Calgary and Regina, so that the facts might be developed, although the Board had already held that such a privilege is one which it has no jurisdiction to order, the Board's jurisdiction as to privilege being confined to questions of discrimination. At the conclusion of the last hearing the Board requested the railways to take up the question with a view of providing a remedy, and W. B. Lanigan, Assistant Freight Traffic Manager, C.P.R., has now written stating that the Railways have arrived at the following, which they believe to be the only practical solution:

"Grain stored in transit in Dominion Government interior elevators at Calgary, Moose Jaw, and Saskatoon, and forwarded under transit regulations, will be granted an additional stop off at any intermediate milling point for grinding only, in the direct line of transit to Winnipeg or Fort William, or points east thereof. An equivalent tonnage of the product thereof, when forwarded within a period of six months after receipt, may be waybilled at the balance of the through rate from such interior elevator point to destination after deducting the rate paid from the government elevator point to the milling point, plus 1c. per 100 lbs. for the additional stop off."

I do not know that the solution requires any confirmation by the Board. It will, however, enable the business to obtain the two stop overs desired. The arrangement appears fair and equitable, and should be approved.

Steel Rail Orders Placed.

The Canadian Pacific will, during next year, lay 30,000 tons of new 85-lb. steel rails at various points over the system. Of these, 5,000 tons were rolled some little time ago by the Algoma Steel Corporation, at Sault Ste. Marie, Mich., and are now being delivered. In addition to this, the same mills have an order for 25,000 tons, to be delivered 5,000 tons a month during May, June, July, August and September.

The Grand Trunk has ordered 20,000 tons of 90 and 100-lb. A. C. A. type, A section from the Algoma Steel Corporation, to be delivered 5,000 tons a month during June, July, September and October.

Western Canada Railway Club.—At the monthly meeting at Winnipeg, Dec. 14, W. C. Blake, chief clerk to General Auditor, Canadian Northern Ry., read a paper on the audit department in relationship to railway organization.

Eastern Live Stock Case Decided by Interstate Commerce Commission.

The Interstate Commerce Commission gave a decision at Washington, D.C., Dec. 2, of which the following is the official summary:

Proposed increased rates for transportation of live stock, except horses and mules, in Central Freight Association territory, found justified to the extent found reasonable in this report.

Certain proposed increased carload minima applicable to live stock when transported between points in Central Freight Association territory, found justified; others not justified.

Proposed increased rates for transportation of cattle from points in Central Freight Association territory to points in trunk line and New England Freight Association territories, found justified.

Proposed increased rates for transportation of hogs and of sheep or goats in single deck and double deck cars from points in Central Freight Association territory to points in trunk line and New England Freight Association territories, found justified.

Certain proposed increased carload minima applicable to live stock when transported from points in Central Freight Association territory to points in trunk line and New England Freight Association territories, found justified; others not justified.

Increased rates for transportation of packing house products, packed, and packing house products, loose, from points in Central Freight Association territory to points in trunk line and New England Freight Association territories, which would exceed the classification rates on these commodities, found not justified.

Proposed increased rates for transportation of fresh meat from points in Central Freight Association territory to points in trunk line and New England Freight Association territories, found justified.

Proposed increased carload minima applicable to fresh meat and packing house products, loose, when transported from points in Central Freight Association territory to points in trunk line and New England Freight Association territories, found justified.

Proposed increased rates for transportation of live stock between points in trunk line territory east of the western termini of the trunk lines, found not justified.

Proposed increased rates for transportation of packing house products between points in trunk line territory east of the western termini of the trunk lines, found not justified.

Proposed increased carload minima applicable to live stock and packing house products, when transported between points in trunk line territory east of the western termini of the trunk lines, found not justified.

Sleeping Car Conveniences.—The Canadian Northern Ry. some time ago provided its sleeping cars with combination clothes hangers. The Pullman sleeping cars operating on the Grand Trunk have been similarly equipped.

The Board of Railway Commissioners and the Quebec Public Utilities Commission sat jointly at Montreal, Dec. 20, to consider the Montreal Electric Commission's application for approval of its plans for the construction of underground conduits in Montreal, sections 6 and 7. Previous applications were made to the Board of Railway Commissioners alone, but this joint sitting was arranged to do away with any possibility of an appeal on the ground of jurisdiction.

Increase in Passenger Fares in Western United States Territory.

The Interstate Commerce Commission, after consideration of proposed increases in passenger fares in western territory, gave a decision, Dec. 7, of which the following is the official abstract:

In the states of Illinois; Wisconsin; Michigan, upper peninsula; Minnesota; Iowa; Nebraska; Missouri, north of the Missouri River; and in Kansas on and north of the main line of the Union Pacific Rd. from Kansas City to the Colorado state line, proposed increased fares not justified, but a basis for interstate fares of 2.4c. a mile is justified.

In the state of Missouri south of the Missouri River, and in the state of Kansas south of the main line of the Union Pacific Rd., proposed increased fares not justified, but a basis for interstate fares of 2.6c. a mile is justified.

Proposed increased fares from points in territory in which these fares are authorized to points on the main lines of these respondent carriers in California, Utah, Nevada, Colorado, Wyoming, Arizona, New Mexico, Arkansas, Oklahoma, and Texas are not justified in those instances where such proposed increases result in higher fares than would be obtained by using for the construction of such fares the bases herein authorized in the states of Michigan, Illinois, Wisconsin, Kansas, Minnesota, Iowa, Nebraska, and Missouri, and a basis of 2½c. a mile in the states of North and South Dakota, and a basis of 3c. a mile in the states south and west thereof.

Proposed increase charges for mileage tickets in territory north of the Missouri River in Missouri and on and north of the main line of the Union Pacific Rd. in Kansas to 2¼c. a mile, and in territory south of the Missouri River in Missouri and the main line of the Union Pacific Rd. in Kansas to 2½c. a mile are justified.

Proposed increased fares from points in Michigan, upper peninsula; Illinois; Iowa; Minnesota; Wisconsin; Nebraska; Missouri; and Kansas, to points in states east thereof, which result from the construction of such fares by the use of the bases herein found reasonable and the use of the lawfully published and filed fares in eastern territory are justified.

Theft from the G.T.R. at Toronto.—W. A. Mason, a G.T.R. ticket agent, who pleaded not guilty recently to a charge of theft of \$1,500 from the G.T.R., in connection with cash received on the sale of tickets, withdrew his plea at Toronto, Dec. 17, and pleaded guilty. His counsel asked for an adjournment of the case to enable restitution to be made. Sentence was postponed until the end of the court sittings, and in the meantime he was allowed liberty on \$3,000 bail.

Hastings St. Viaduct, Vancouver.—The building of this viaduct was ordered by the Board of Railway Commissioners on the Vancouver City Council's application, the Great Northern Ry. being ordered to pay 50% of the cost. The railway company owns certain properties in the vicinity, and not only claims to be exempt from being taxed to meet the city's portion of the cost of the viaduct, but has put in a claim for compensation for alleged damages to its property by the building of the viaduct.

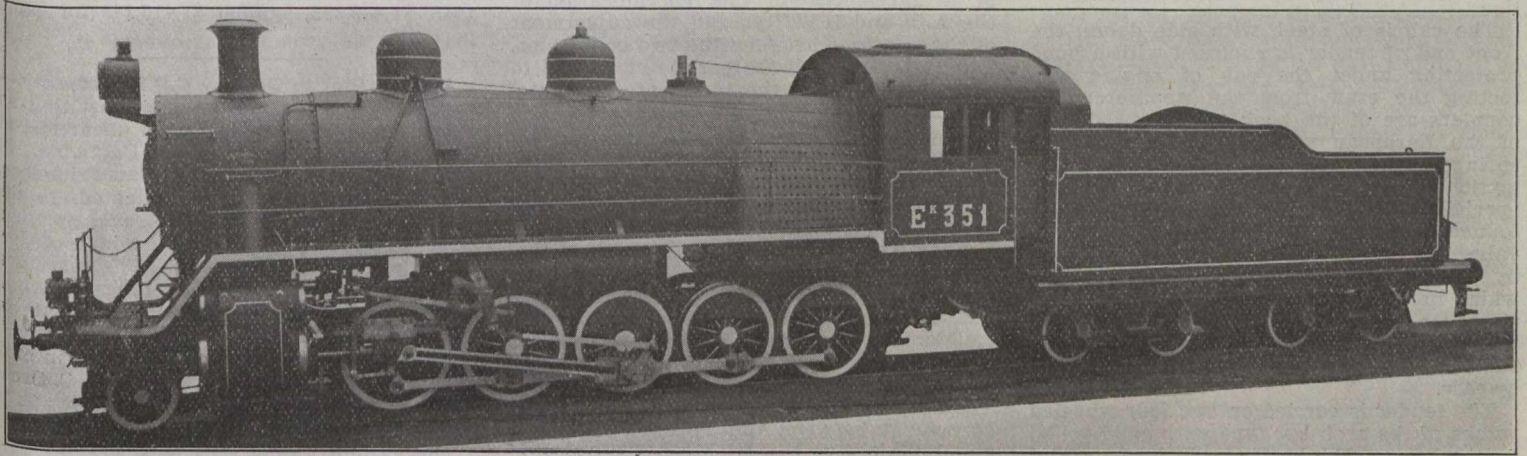
C.P.R. Land Sales.—During November, 2,193 acres in Alberta were disposed of through the Edmonton office. The land was taken up by 14 persons, the majority of whom came from British Columbia and Montana.

Canadian Built Locomotives for Russian Imperial Railways.

The Russian Imperial Railways are having 50 decapod type locomotives built by the Canadian Locomotive Co. at Kingston, Ont., the first lot of which have already been shipped. These locomotives are of interest, not only because of their design, which is a combination of Russian and American practice, but because of their being the first locomotives exported from Canada. The prin-

Boiler	Straight
Working pressure	180 lbs. per sq. in.
Outside diameter of first ring	70 in.
Firebox, length and width	108 1/2 in. by 86 in.
Tubes, number and outside diameter	195-2 in.
Flues, number and outside diameter	28-5 3/8 in.
Tube and flues, length	17 ft.
Heating surface, tubes and flues	2,393 sq. ft.
Heating surface, firebox (including arch tubes)	208 sq. ft.
Heating surface, total	2,601 sq. ft.
Superheater heating surface	563 sq. ft.

ready built by American locomotive builders. The fuel used is a low grade of soft coal and is burned on a rocking four sections grate with two dump bars. The firebox is of the wide type extending out and over the driving wheels, and is also equipped with a security brick arch supported on water tubes. The boiler is of the straight type, with a mud ring made up with cast steel ends, and forged steel sides welded together. An auxiliary safety valve dome is provided, which carries 2 safety valves



Decapod Locomotive for Russian Imperial Railways.

Principal dimensions of the locomotives and tenders are as follows:

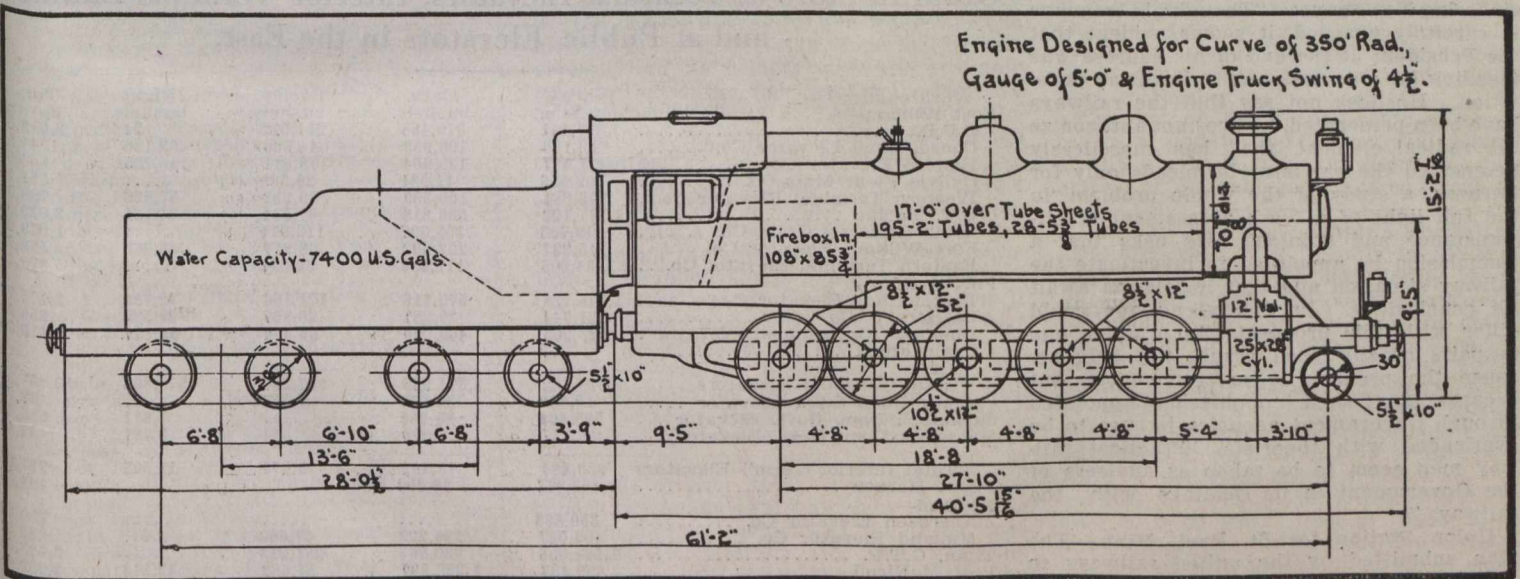
Gauge	5 ft.
Service	Freight
Fuel	Soft coal
Tractive effort	51,500 lbs.
Weight in working order	192,000 lbs.
Weight on drivers	172,000 lbs.
Weight on leading trucks	20,000 lbs.
Weight on locomotive and tender in working order	132,000 lbs.
Wheel base, driving	18 ft. 8 ins.
Wheel base, total	27 ft. 10 ins.
Wheel base, locomotive and tender	60 ft. 1 in.

Equivalent heating surface*	3,446 sq. ft.
Grate area	64.5 sq. ft.
Tender tank	Water bottom
Tender frame	Channel
Tender wheels, diameter	36 in.
Tender journals, diameter and length	5 1/2 in. by 10 in.
Tender water capacity	7,400 gal.
Tender coal capacity	8 metric tons
*Equivalent heating surface equals total evaporative heating surface plus 1.5 times the super-heating surface.	

The locomotives are designed for operation on a 5 ft. track, and which is largely

and the whistle. This dome is also used as an inspection dome. A third safety valve is applied to the cover of the main steam dome.

The firebox is of copper, as also are the staybolts used in the water legs. The front end of the firebox is supported by 3 rows of expansion stays, the nut on the upper end of the radial stay is seated in a die forged stirrup, which is screwed into the roof-sheet.



Details of Decapod Locomotive for Russian Imperial Railways.

Ratio, weight on drivers, divided by tractive effort	3.34
Ratio, total weight, divided by tractive effort	3.73
Ratio, tractive effort x diam. drivers, divided by equivalent heating surface	7.80
Ratio, equivalent heating surface, divided by grate area	53.4
Cylinders	Simple
Diameter and stroke	25 in. by 28 in.
Valves	Piston
Diameter	12 in.
Wheels, driving, diameter over tires	52 in.
Wheels, driving journals, main, diameter and length	10 1/2 in. by 12 in.
Wheels, driving journals, others, diameter and length	8 1/2 in. by 12 in.

used as the standard gauge by the Russian railways. The axle loads are limited to 35,000 lbs. per axle, but engines are of considerable capacity, having a tractive effort of 51,500 lbs. (at 85% boiler pressure), they are designed to haul 1,000 metric tons up a grade 0.8% at a speed of about 10 miles an hour. Special material and equipment have been used to a great extent in these locomotives, and the construction is in accordance with the best American practice, many of the details are interchangeable with the locomotives of the same type and size al-

The locomotives are equipped with Schmidt superheater and outside steam pipes; superheaters have 28 elements with a superheater surface of 563 sq. ft. Forty nine are equipped with the Rushton power screw reverse gear, and the Casey-Cavin screw reverse gear is to be applied to the remaining one, both gears being operated by air.

The machinery, frames and cylinders are designed after American practice. The pistons are solid rolled steel with three cast iron packing rings sprung in, and are sup-

ported by an extension on the piston rod with a guide attached to the front cylinder head. The cylinder heads are of cast steel, single bar guides of I section being used. The main driving wheels have plain tires, while all the others are flanged, and the wheel base is such that the locomotive will traverse a curve of 350 ft. radius.

The locomotives are fitted with a wide running board of steel plate, diamond tread, having a handrail around the edges and continuing around the front deck plate in accordance with the Russian railway practice.

The cab is of steel, with side doors, the front end of tender is enclosed with a hood projecting under the cab of engine protecting the crew from the weather. The couplers are of the hook and screwed type of the European practice, as are also the spring buffers. Russian-Westinghouse automatic air brakes are used, along with the special design of the American Brake Co.'s foundation brake. A plug type of by-pass valve is fitted to the cylinder and operated by a cam attached to the throttle lever, which in turn opens a globe valve allowing steam to pass to a small cylinder closing the by-pass. When steam is shut off a tension spring operates the opening of the by-pass.

The tender is carried on two four wheeled trucks of the arch bar type with solid rolled steel wheels. The bearing and boxes are of the M.C.B. type, tender frame is of steel construction, made up of heavy 10 and 12 in. channels, with built up pressed steel bolsters.

After the locomotives have been erected and tested by running on a specially prepared track by the builders, the locomotives and tenders are dismantled, crated and packed for shipment to Vladivostock, Russia.

The United States Government and the Railways.—Commenting on President Wilson's recent message to Congress, the Engineering News says:—"Though his language is carefully guarded, it seems evident that the President at the end of his address was pleading for a cessation of antirailway legislation. He does not say that the railways have been persecuted, he does not antagonize the radical element that has mercilessly persecuted the carriers; he pleads only for fairness, a study of the whole problem 'in the full light of a fresh assessment of circumstance and opinion.' He asks that a commission be appointed to investigate the railway situation and that legislation await its conclusions. In theory, no one could differ with this proposal. In practice one despairs of any good result, not only because the problem is so tremendous, but because any such commission appointed through Government agencies is sure to be overloaded with theorists. Practical railway men seem to be taboo as advisers of the Government in its dealings with the railways."

Union Station for St. Paul, Minn.—The plan submitted by the united railways to the city and Federal Government has been withdrawn in its entirety, following the rejection of the harbor details of the scheme by the Chief of Engineers, U.S.A. The plans were drawn under an act of Congress providing for the bettering of river navigation and river transportation facilities at St. Paul, the harbor line and river being moved a maximum of 400 ft. for 6,000 lin. ft. The U.S. engineers declined to approve the plans on grounds which to the railway companies seemed fundamental, and new plans will be drawn which will not require the approval of the Federal Government. This will mean the selection of a new site and the purchase of grounds.

Railway Finance, Meetings, Etc.

The Algoma Central and Hudson Bay Ry. Co. and the receivers—T. J. Kennedy and V. Harcourt—are applying to the Dominion Parliament for the confirmation of the sale of certain lands for terminal purposes at Sault Ste Marie and Michipicoten Harbor, Ont., to the Algoma Central Terminals; for the confirmation of the lease of terminal properties by the A.C. Terminals to the A. C. and H.B. Ry., and for the confirmation of an agreement for the reorganization of the A.C. and H.B. Ry., and the adjustment of the relations between the two companies, and authorizing all the parties interested to give full effect to the terms of the agreement.

Canada Southern Ry.—A meeting of shareholders was called for Dec. 30, to consider an agreement for the sale to the C.S. R. of all the property, buildings and rights of the London and South Eastern Ry. in London, Ont., considering an agreement between the London Railway Commission and the Michigan Central Rd. as lessees of the C.S. Ry., for hauling by the L.R.C. of the freight traffic of the M.C.R., over the L. & S.E.R. tracks and terminals in London and the L. and P.S. Ry. tracks between St. Thomas and London; and to consider an agreement between the Toronto, Hamilton and Buffalo Ry., the Michigan Central Rd., the Canada Southern Ry., the New York Central Rd., and the Canadian Pacific Ry., in relation to the proposed issue of Toronto, Hamilton and Buffalo Ry. consolidated first mortgage bonds.

Canadian Pacific Ry.—The Dominion Parliament is being asked to amend and extend the company's powers in respect of the issuance of preferred shares now or hereafter issued by the conversion thereof into denominations of Canadian currency.

Essex Terminal Ry.—The officers for the current year are:—F. C. McMath, President; Wm. Woollatt, Vice President and General Manager; J. H. Coburn, Secretary and Solicitor; C. F. Doherty, Treasurer; F. B. Thompson, Auditor.

Ottawa and New York Ry.—St. Lawrence and Adirondack Ry.—Duplicate originals of the leases of these two railways, dated Sept. 27, 1915, were deposited with the Secretary of State for Canada, Dec. 11.

White Pass and Yukon Route.—Gross earnings for ten months ended Oct. 31, 1915, \$1,449,383, against \$1,415,149 for same period 1914.

Alleged Plot to Destroy C.P.R. Property.—It is reported from the Pacific Coast that an organized conspiracy has been unearthed in San Francisco and British Columbia, in which the German Consul at San Francisco, and other Germans are implicated, to destroy certain munition plants, and portions of the C.P.R. It is stated that a man of German birth, at present stated to be serving a two years imprisonment at Calgary, Alta., for forgery, was used by C.P.R. officials to gain evidence, and this man in an affidavit, credited F. W. Peters, General Superintendent, British Columbia Division, W. C. Orchard and — Tweedale, of the C.P.R., with assisting in the discovery.

The Lehigh Valley Rd's New Freight Terminal at Buffalo, N.Y., which was formally opened Dec. 15 consists of a team track yard and 2 buildings—a 2 story office building, 111 x 60 ft., and a fireproof shed, 700 x 60 ft. The office building contains two storage rooms, one for damaged shipments and the other for perishable freight. Of the 700 ft. length of the shed, 600 ft. is taken up by floor space. There are three sections which have fireproof walls, with doors protected by automatic fireproof steel curtains.

Grain in Store at Terminal Elevators, Interior Terminal Elevators and at Public Elevators in the East.

Week ending Dec. 10, 1915.	Wheat, bushels.	Oats, bushels.	Barley, bushels.	Flax, bushels.	Totals, bushels.
Port William—					
C.P.R.	1,227,541	570,488	214,012	24	2,012,065
Consolidated Elevator Co.	650,160	199,953	44,560	53,180	947,853
Empire Elevator Co.	471,487	139,964	78,411	116,205	806,067
Ogilvie Flour Mills Co.	509,556	41,981	29,569	.....	581,106
Western Terminal Elevator Co.	576,681	100,399	29,222	87,626	793,928
G.T. Pacific	1,371,122	536,218	67,534	64,181	2,039,055
Grain Growers' Grain Co.	659,703	305,397	113,974	.....	1,079,074
Port William Elevator Co.	215,237	222,602	38,977	45,966	522,782
Eastern Terminal Elevator Co.	234,005	111,536	32,894	.....	378,435
Port Arthur—					
Port Arthur Elevator Co.	1,346,721	575,116	171,166	82,794	2,175,797
D. Horn & Co.	121,744	39,281	20,867	74,599	256,491
Dominion Government Elevator ..	528,905	469,000	66,084	51,317	1,115,306
Grain afloat .....	.....	.....	.....	.....	.....
Total Terminal Elevators	7,912,862	3,311,935	907,290	575,892	12,707,959
Calgary Dom. Govt. Elevator	19,853	40,637	1,731	.....	62,221
Saskatoon Dom. Govt. Elevator ...	580,304	25,265	.....	7,811	613,380
Moosajaw Dom. Govt. Elevator ...	33,327	7,990	344	3,781	45,442
Total Interior Term'l Elevators	633,484	73,892	2,075	11,592	721,043
Depot Harbor	456,866	38,000	.....	.....	494,866
Midland—					
Aberdeen Elevator Co.	350,868	.....	.....	.....	350,868
Midland Elevator Co.	409,027	226,229	47,660	.....	682,916
Tiffin, G.T.P.	1,181,006	930,863	281,213	.....	2,393,082
Port McNicoll	2,699,483	1,228,507	57,682	13,813	3,999,485
Collingwood	41	.....	.....	*947	988
Goderich	764,222	107,000	.....	.....	871,222
Kingston—					
Montreal Transportation Co. ....	.....	147,682	.....	.....	147,682
Commercial Elevator Co. ....	.....	.....	.....	.....	.....
Port Colborne	900,490	563,969	.....	8,920	1,473,379
Prescott .....	.....	.....	.....	.....	.....
Montreal—					
Harbor Commissioners No. 1	740,083	.....	.....	.....	740,083
Harbor Commissioners No. 2	315,647	751,074	17,965	.....	1,084,686
Montreal Warehousing Co.	1,155	1,411,157	.....	.....	1,412,312
Quebec Harbor Commissioners	3,509	4,923	.....	.....	8,432
West St. John, N.B.	149,260	291,319	16,647	.....	457,226
Halifax, N.S. ....	.....	.....	.....	.....	.....
Total Public Elevators	7,971,657	5,700,723	421,167	22,733	14,117,227
Total Quantity in Store	16,518,003	9,086,550	1,330,512	610,217	27,546,222
*Corn.					

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The Unmistakable Return of Canada's Business Prosperity.

One of the most reliable barometers of general business conditions is undoubtedly railway earnings, which clearly indicate the state of trade. In the latter half of 1914, consequent on an unsatisfactory crop in the prairie provinces, and on the dislocation caused by war, Canadian railway receipts fell off at an alarming rate, and for the year ended June 30, 1915, Canadian Pacific net earnings were \$8,851,300 less than in the previous 12 months. Other lines also showed similarly heavy decreases. But shortly after the commencement of the C.P.R.'s current fiscal year the tide turned. For the first month, July 1915, there was a decrease from July 1914 of \$978,042.71 in net earnings, but in August there was an increase of \$79,157.02, in September of \$378,252.25, in October of \$3,258,105.79, and in November of \$3,710,340.86. For the four months ended Oct. 31 the increase in net earnings over the corresponding period was \$2,737,472.35. Indisputable evidence of the remarkable manner in which the management grappled with the situation, created by falling revenues in the latter part of last year and the early part of this year, is shown by the way in which working expenses have been cut down. While for the first four months of this fiscal year gross earnings decreased \$23,597.38, working expenses decreased no less than \$2,761,069.73, thus giving an increase of \$2,737,472.35 in net profits. For the five months ended Nov. 30, the increase in net profits was \$6,447,813.21, working expenses having been decreased \$1,177,485.97 during that period. December will also show up well, the approximate traffic earnings from Dec. 1 to 7 having increased \$1,280,000, from Dec. 7 to 14 \$1,348,000, and from Dec. 14 to 21, \$1,341,000.

The Canadian Northern earnings cannot be dealt with as fully, as on Oct. 1 it started to give out its figures for the whole system, instead of west of Lake Superior as previously, and no comparisons are available prior to that date. For October the increase in net earnings was \$537,800, and for November \$618,400, a total of \$1,156,200 for the two months.

The Grand Trunk and the Grand Trunk Pacific are also showing satisfactory increases, details of which appear on another page among the statements of railway earnings. The Intercolonial figures are not given out until the end of the fiscal year, but it is said that its earnings for the past four months have broken all records.

October was a remarkable month, the gross earnings of the three principal railways, Canadian Pacific, Canadian Northern, and Grand Trunk, being \$21,654,191, against \$16,134,717 in Oct. 1914, an increase of \$5,519,474 or over 34%. There is only one month in Canada's railway history when the combined gross earnings of the three lines exceeded Oct. 1915, viz., Oct. 1913, when the stringent conditions in the west made the farmers market early and the month's gross earnings were \$22,090,000.

While much of the increase in railway earnings, particularly those of the C.P.R. and Canadian Northern, is attributable largely to the magnificent grain crop in the prairie provinces, a good deal of it comes from the general improvement in business throughout the country.

The official estimate of Canada's 1915 wheat crop is 336,258,000 bushels, of which there will be an exportable surplus of nearly 230,000,000.

Two of Canada's highest agricultural authorities, after careful study of the field crops for Canada for 1915, estimated their

value in excess of 1914 at \$250,000,000.

The exports from Canada during Nov. 1915 were about \$92,000,000, or nearly double those of Nov. 1914. The exports for the eight months ended Nov. 30, 1915 were \$863,000,000, against \$766,000,000 for the corresponding period of the previous fiscal year.

Canada's bank clearings for Nov. 1915, \$891,284,701, not only exceeded those of any other November on record, but were the largest ever reported for any month. They were 13% over Oct. 1915, 38% over Nov. 1914, and 5% over Nov. 1913.

The Canadian banks' October statements show an increase of deposits of \$41,000,000 over Sept. 1915 and of \$85,000,000 over Sept. 1914.

Canada's revenue for eight months to Nov. 30, 1915, was \$104,750,000 against \$90,400,000 for the corresponding period of the previous fiscal year.

The facts given above are full of significance, and present unmistakable evidence of a tremendous revival in business conditions throughout the Dominion generally.

Canadian Ambulance Train for Overseas Service?

A cablegram from the Montreal Star's London, Eng., correspondent, Dec. 14, said: Arrangements are practically completed for the Canadian ambulance train built in Canada for service on the western front by a large railway corporation, which, it is reported, will practically donate specially built cars, and several patriotic associations in the Dominion will fit it out complete even to the tail lamps. It has been suggested to me also that a Canadian built engine, specially built to the different gauge of the French lines, be sent over. An all Canadian train, which is the idea of Lady Brooke, will make the Dominion represented in every department of army medical work in France.

Enquiry of the three leading Canadian railways, and of the Railways Department at Ottawa, have failed to elicit any confirmation of the cablegram quoted above.

The late Sir Wm. Whyte's portrait, life size, presented by his family to the Winnipeg School Board, was unveiled at the William Whyte School, one of the new schools in Winnipeg, on Dec. 23, by A. M. Nanton, one of the C.P.R. directors, and Vice President, Winnipeg Electric Ry., who was one of his closest friends. A large number of representative citizens were present, including members of the school board, C.P.R. officials and representatives of the various railway employes' brotherhoods.

Thos. L. Wilson, of Ottawa, Ont., who died in New York, Dec. 21, aged 55, was chiefly known by his patented processes in connection with the manufacture of carbide, and the use of acetylene gas, particularly of marine buoy lighting.

The Dominion Ex. Co. was charged at Moncton, N.B., Dec. 14, with a first offence in violation of the Canada Temperance Act, in carrying intoxicating liquors into prohibition territory. The magistrate, in dismissing the case, said that there was no intention on the part of the company to violate the law. In referring to the "personal use" clause of the act, he said that there would be trouble over shipments so long as that clause remained. He would make no order for the disposition of the liquor seized, as he believed that it was illegally in court, having been seized without a search warrant.

Transportation Appointments Throughout Canada.

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

Canadian Government Railways.—F. W. ROBERTSON has been appointed District Passenger Agent, Halifax, N.S., vice D. M. Condon, assigned to other duties in the head office, Moncton, N.B.

(See also Intercolonial Ry., and National Transcontinental Ry.)

Canadian Northern Ry.—JAMES W. JOHNSON, heretofore Assistant Electrician, Western Lines, Winnipeg, has been appointed Electrician, Eastern Lines. Office, Toronto.

The organization of the Mechanical Department, Ontario Division, is now as follows:—

J. H. McALPINE, heretofore District Master Mechanic, Parry Sound, Ont., has been appointed Master Mechanic. Office, Toronto.

W. C. MOORE, heretofore District Master Mechanic, Trenton, Ont., has been appointed Assistant Master Mechanic. Office, Toronto.

R. A. MILLER, heretofore General Foreman, Trenton, Ont., has been appointed Locomotive Foreman, there.

W. H. LONG, Car Foreman, Trenton, Ont. S. L. TRACEY has been appointed Locomotive Foreman, Toronto.

W. F. MILLER, heretofore Car Foreman, Parry Sound, Ont., has been appointed Car Foreman, Toronto.

J. H. THOMPSON has been appointed Locomotive Foreman, Ottawa, Ont.

T. REDMOND has been appointed Car Foreman, Ottawa, Ont.

A. A. TAGGART, Locomotive Foreman, Brockville, Ont.

J. WEBB has been appointed Locomotive Foreman, Bancroft, Ont.

O. C. GRANT has been appointed Locomotive Foreman, Parry Sound, Ont.

A. FOURNIER has been appointed Locomotive Foreman, Sudbury, Ont.

A. MALLINSON, heretofore machinist, Ogden Shops, C.P.R., Calgary, Alta., has been appointed Locomotive Foreman, Capreol, Ont.

C. T. DOCTOR has been appointed Locomotive Foreman, Foleyette, Ont.

J. H. WILSON has been appointed Locomotive Foreman, Hornepayne, Ont.

G. CANFIELD has been appointed Locomotive Foreman, Jellicoe, Ont.

The Master Mechanic reports to the General Superintendent in respect to transportation matters and to the Superintendent Rolling Stock in respect to shop operations, maintenance of equipment, etc.

A. H. MANSFIELD, heretofore Chief Dispatcher, C.P.R., Brandon, Man., has been appointed Chief Dispatcher, District 1, Central Division, C.N.R., vice T. J. Brown, whose appointment as Superintendent, District 2, Western Division, Saskatoon, Sask., was announced in our last issue. Office, Port Arthur, Ont.

G. A. NORTH, heretofore Passenger Agent, Brandon, Man., has been appointed Travelling Passenger Agent, Winnipeg, vice J. F. McGuire, transferred.

E. H. DREW has been appointed Inspector of Sleeping and Dining Cars, Winnipeg.

C. N. JONES, heretofore Inspector in charge of linen room, Sleeping, Dining and Parlor Cars and News Service, Winnipeg, has been appointed Assistant Storekeeper, main storeroom, same department, Winnipeg.

A. PATRICK has been appointed Inspector

in charge of linen room, Sleeping, Dining and Parlor Car and News Department, vice C. N. Jones, transferred. Office, Winnipeg.

D. MAIN has been appointed Assistant Car Foreman, Winnipeg, vice A. Grey, transferred.

A. TAYLOR has been appointed Night Locomotive Foreman, Winnipeg, vice J. Black, transferred.

J. DUNCANSON has been appointed Assistant Locomotive Foreman, Winnipeg, vice A. Mays, Shop Foreman, transferred.

R. M. MILLIKEN, heretofore City Freight Agent, Winnipeg, Man., has been appointed District Freight Agent, Brandon, Man., vice R. B. McIntosh.

E. C. DICKERSON, heretofore in Union Station ticket office, Regina, Sask., has been appointed Passenger Agent, Brandon, Man., vice G. A. North, promoted.

J. HERRING has been appointed Car Foreman, North Battleford, Sask., vice A. H. Sweetman, transferred.

J. BLACK, heretofore Assistant Locomotive Foreman, Kamsack, Sask., has been appointed Locomotive Foreman there, vice S. Vincent, transferred.

A. MAYS, heretofore Shop Foreman, Winnipeg, has been appointed Locomotive Foreman, Edmonton, Alta., vice W. M. Armstrong, transferred.

G. H. CULLINGFORD has been appointed Sleeping and Dining Car Agent, Edmonton, Alta.

M. A. CARDELL, heretofore in the Construction Department, has been appointed Locomotive Foreman, Tollerton, Alta.

G. CLARK, heretofore coach carpenter, Winnipeg, has been appointed Car Foreman, Tollerton, Alta.

D. R. CAMPBELL, whose appointment as General Superintendent, Pacific Division, was announced in our last issue, has been appointed Assistant General Manager, Pacific Division, Lines West of Tollerton, Alta. Office, Vancouver, B.C.

T. YOUNG, heretofore in the Construction Department, has been appointed Locomotive Foreman, Lucerne, B.C.

A. GREY, heretofore Assistant Car Foreman, Winnipeg, has been appointed Car Foreman, Lucerne, B.C.

H. N. LUKES, heretofore Assistant Air Brake Inspector, has been appointed Locomotive Foreman, Blue River, B.C.

S. VINCENT, heretofore Locomotive Foreman, Kamsack, Sask., has been appointed Locomotive Foreman, Kamloops, B.C.

A. H. SWEETMAN, heretofore Car Foreman, North Battleford, Sask., has been appointed Car Foreman, Kamloops, B.C.

S. HICKS, heretofore Locomotive Foreman, Portage la Prairie, Man., has been appointed Locomotive Foreman, Boston Bar, B.C.

W. M. ARMSTRONG, heretofore Locomotive Foreman, Edmonton, Alta., has been appointed Locomotive Foreman, Port Mann, B.C.

J. F. McGAIRE, heretofore Travelling Passenger Agent, Winnipeg, has been appointed Travelling Passenger Agent, Vancouver, B.C.

E. E. McLEOD, heretofore in Passenger Department, Winnipeg, has been appointed City Passenger Agent, Vancouver, B.C.

S. C. SYKES has been appointed Sleeping and Dining Car Agent, Vancouver, B.C.

Canadian Pacific Ocean Services, Ltd.—The following organization covering the operation of the C.P.R. steamships and those of the Allan Line Steamship Co., is effective from Jan. 1:—

G. M. BOSWORTH, Vice President (Traf-

fic), C.P.R., Montreal, Chairman.

H. MAITLAND KERSEY, heretofore Manager in Chief, Ocean Services, C.P.R., Managing Director. Office, 8, Waterloo Place, London, S.W., Eng.

J. A. MARTIN, heretofore Agent, Allan Line Steamship Co., Glasgow, Scotland; Assistant Manager. Office, London, Eng.

Capt. J. T. WALSH, R.N.R., heretofore Chief Marine Superintendent for Canada, C.P.R., Montreal, Assistant Manager. Office, Montreal.

Capt. J. V. FORSTER, R.N.R., heretofore Chief Marine Superintendent, C.P.R., Liverpool, Eng., General Superintendent. Office, Liverpool, Eng.

H. S. CARMICHAEL, heretofore General Passenger Agent, Atlantic Steamships, C.P.R., London, Eng., Passenger and Freight Manager, in charge of all passenger and freight matters. Office, London, Eng.

W. G. ANNABLE, General Passenger Agent, Atlantic Steamships, C.P.R., Montreal, has been appointed General Passenger Agent, Atlantic Service, Canadian Pacific Ocean Services, Ltd. Office, Montreal.

C. E. BENJAMIN, General Passenger Agent, Pacific Steamships, C.P.R., Montreal, has been appointed General Passenger Agent, Pacific Service, Canadian Pacific Ocean Services, Ltd. Office, Montreal.

Canadian Pacific Ry.—E. J. WORTH has been appointed Car Service Agent, Atlantic Division, vice A. E. Prince transferred. Office, St. John, N.B.

T. C. CHOWN has been appointed acting Assistant Works Manager, Car Department, Angus Shops, Montreal, during absence of L. C. Ord on active service overseas.

H. J. HUMPHREY, heretofore Superintendent Car Service, Western Lines, Winnipeg, has been appointed acting Superintendent Car Service, Eastern Lines, vice W. Tansley transferred. Office, Montreal.

W. TANSLEY, heretofore acting Superintendent of Car Service, Montreal, has been appointed Assistant Superintendent, Montreal Terminals, vice W. Coulter transferred.

W. COULTER, heretofore Assistant Superintendent, Montreal Terminals, has been appointed Assistant Superintendent, District 5, Eastern Division, vice C. W. Lott. Office, Smiths Falls, Ont.

C. W. LOTT, heretofore Assistant Superintendent, District 5, Eastern Division, Smiths Falls, Ont., has been appointed Chief Dispatcher, Districts 1, 2, 3 and 4, Ontario Division, vice J. W. Wansborough. Office, Toronto.

G. T. ROOKE, heretofore Inspector of Dispatching Offices, has been appointed Car Service Agent, Ontario Division, vice C. Hudson transferred. Office, Toronto.

C. HUDSON, heretofore Car Service Agent, Ontario Division, Toronto, has it is said been appointed Chief Clerk to General Superintendent, Ontario Division, vice A. U. BAIN, transferred.

A. U. BAIN, heretofore Chief Clerk to General Superintendent, Ontario Division, Toronto, has it is said been appointed Assistant Car Service Agent there.

T. HAMBLY has been appointed acting Road Foreman of Locomotives, District 1, Lake Superior Division. Headquarters, Sudbury, Ont.

D. McINTYRE, heretofore Roadmaster, District 3, Manitoba Division, Brandon, has been appointed Roadmaster, Fort William Terminals, Fort William, Ont., vice J. P. Gray.

J. McCREA has been appointed acting Roadmaster, District 3, Manitoba Division, with jurisdiction over Rapid City, Miniota, and

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Lenore Subdivisions and Brandon Yard, vice D. McIntyre transferred. Office, Brandon, Man.

R. R. JELLY, heretofore Chief Dispatcher, District 4, Manitoba Division, Souris, has been appointed Chief Dispatcher, District 3, Manitoba Division, vice A. H. Mansfield resigned to enter Canadian Northern service. Office, Brandon.

R. F. CHAPMAN, heretofore Chief Dispatcher, District 1, Saskatchewan Division, Regina, has been appointed Chief Dispatcher, District 4, Manitoba Division, vice R. R. Jelly. Office, Souris, Man.

G. A. WALTON, heretofore General Agent, Passenger Department, Chicago, Ill., is reported to have been appointed General Passenger Agent, Western Lines, Winnipeg, vice A. C. Shaw, transferred to Montreal.

E. D. COTTERELL has been appointed acting Superintendent of Car Service, Western Lines, vice H. J. Humphrey transferred to Eastern Lines. Office, Winnipeg.

E. HUMPHRYS, heretofore Fuel Agent, has been appointed Storekeeper, Manitoba Division, and the duties of Fuel Agent are incorporated with those of the latter position. Office, Winnipeg.

G. HILLIER, heretofore dispatcher, Regina, Sask., has been appointed Chief Dispatcher, District 1, Saskatchewan Division, vice R. F. Chapman transferred. Office, Regina.

E. PANSER, heretofore Roadmaster, Swift Current, Sask., has been appointed Roadmaster, Assiniboia Subdivision, Assiniboia, Sask., vice J. Quinlan, resigned.

J. M. MacARTHUR, heretofore Terminal Trainmaster, Calgary, Alta., has been appointed acting Superintendent, District 2, Alberta Division, vice F. Walker. Office, Lethbridge.

C. A. LITTLE, heretofore Locomotive and Car Foreman, Red Deer, Alta., has been appointed Locomotive Foreman, Lethbridge, Alta., vice D. G. McDonald transferred.

J. H. BAKER, heretofore Roadmaster, Medicine Hat, Alta., has been appointed Roadmaster, Crowsnest Subdivision, Lethbridge, Alta.

C. BOARDMAN, heretofore Foreman in shell section, Winnipeg Shops, has been appointed Locomotive Foreman, Red Deer, Alta., vice C. A. Little transferred.

S. T. BROWN, heretofore Roadmaster, Bassano Subdivision, Bassano, Alta., has been appointed Roadmaster, Empress, Alta., vice A. C. Ades transferred, and the Bassano Subdivision has been placed under the jurisdiction of P. J. M. Woslyng, Roadmaster at Bassano.

A. C. ADES, heretofore Roadmaster, Empress, Alta., has been appointed Roadmaster, Medicine Hat, Alta., vice J. H. Baker transferred.

D. G. MacDONALD, heretofore Locomotive Foreman, Lethbridge, Alta., has been appointed Locomotive Foreman, Cranbrook, B. C., vice G. H. Nowell transferred.

G. H. NOWELL, heretofore Locomotive Foreman, Cranbrook, B.C., has been appointed District Master Mechanic, Nelson, B.C. This latter position was abolished about a year ago, but owing to the general improvement in traffic and business conditions, it has been re-established.

H. G. BARBER, heretofore Assistant Engineer, Rogers Pass Tunnel construction, reporting to Division Engineer, Winnipeg, has been appointed Resident Engineer, Nelson, B.C., vice H. B. Walkem, transferred.

L. FISHER, heretofore District Master Mechanic, Cranbrook, B.C., has been appointed District Master Mechanic, Revelstoke, B.C., vice G. Moth, transferred.

G. MOTH, heretofore District Master Mechanic, Revelstoke, B.C., has been appointed District Master Mechanic, Cranbrook, B.C., vice L. Fisher, transferred.

H. B. WALKEM, heretofore Resident Engineer, Nelson, B.C., has been appointed Assistant Engineer, and attached to the Division Engineer's office, Vancouver, B.C.

T. J. WALL, heretofore General Agent, Passenger Department, Minneapolis, Minn., is reported to have been appointed General Agent, Passenger Department, Chicago, Ill., vice G. A. Walton.

H. G. DRING, heretofore Assistant General Passenger Agent, London, Eng., has been appointed General Passenger Agent for Great Britain and Europe, succeeding H. S. Carmichael, who has entered the service of Canadian Pacific Ocean Services, Ltd. Office, 62 Charing Cross, London, Eng.

Eastern British Columbia Ry.—J. M. BOYES, heretofore Locomotive Foreman, C.P.R., Cranbrook, B.C., is reported to have been appointed Locomotive Foreman, E.B.C.R. at Corbin, B.C.

Edmonton, Dunvegan and British Columbia Ry.—N. F. JUDAH, heretofore in Comptroller's office, C.P.R., Montreal, has been appointed Accountant, E.D. & B.C.R. Office, Edmonton, Alta.

Grand Trunk Ry.—The following station agents have been appointed:—Millbrook, Ont., P. Stinson; Seagrave, Ont., A. J. Dance; Madawaska, Ont., F. D. O'Connor; Pottersburg, Ont., outside, J. M. Duncan.

G. W. CAYE, heretofore Assistant to Vice President and General Manager, Grand Trunk Pacific Ry., Winnipeg, has been appointed General Purchasing Agent, G.T.R., vice J. H. Guess, resigned. Office, Montreal.

Grand Trunk Pacific Ry.—The following station agents have been appointed:—Central Butte, Sask., A. Jackson; Gilroy, Sask., W. G. Stimpson.

National Transcontinental Ry.—J. R. CASIDY has been appointed acting Roadmaster, Parent, Que., to O'Brien, Ont., vice M. Casey, resigned. Office, Parent, Que.

G. E. DECKER has been appointed Car Foreman, in charge of all work and wrecking, at Graham, Ont., and Graham District, vice A. Posnett, assigned to other duties.

(See also Canadian Government Railways.)

Intercolonial Ry.—A. H. JONES, heretofore draughtsman, Chief Engineer's office, Moncton, N.B., has been appointed Resident Engineer, New Glasgow, N.S., vice H. T. Ruhl, whose appointment as Division Engineer, Canadian Government Railways, Moncton, N.B., was announced in our last issue.

Pere Marquette Ry.—R. C. VANDERCOOK has been appointed Manager of the Public Relations Department, for the Receivers. Office, Detroit, Mich.

Wabash Ry.—J. L. MINNIS, heretofore General Solicitor, has been appointed Vice President and General Solicitor. Office, St. Louis, Mo.

W. C. MAXWELL, heretofore General Traffic Manager, has been appointed Vice President in charge of traffic. Office, St. Louis, Mo.

C. H. STINSON, heretofore General Freight Agent, has been appointed Freight Traffic Manager. Office, St. Louis, Mo.

H. E. WATTS, heretofore Assistant General Freight Agent, has been appointed General Freight Agent, vice C. H. Stinson promoted. Office, St. Louis, Mo.

W. A. HOPKINS has been appointed Assistant General Freight Agent, vice H. E. Watts promoted. He has charge of the Industrial Department, live stock traffic and such other duties as may be assigned to him. Office, St. Louis, Mo.

T. J. JONES, heretofore Superintendent, Moberly Division, Moberly, Mo., has been ap-

pointed Superintendent of Transportation in charge of the Transportation Department, including train, yard and station service, car service, accounting, etc., vice H. Eicke. Office, St. Louis, Mo.

The Audit Department has been organized as follows: T. J. TOBIN, Auditor; R. E. BERGER, Assistant Auditor; S. J. PARKS, Auditor Freight Accounts; P. E. PURCELL, Auditor Disbursements; J. H. RUEGER, Auditor Passenger Accounts. Office, St. Louis, Mo.

Grand Trunk Pacific Railway Improvements in 1915.

We are officially advised that the following betterments were carried out on the main line during 1915: Nineteen miles of right of way fencing; final lift of rock ballast between mileage 1559 and 1577; ice houses erected at Rivers, Wainwright, Edson, Endako, Pacific, Prince Rupert (temporary); station shelter at Welby; stockyards at Waldron, Young, Bradwell, Clavet, Vera, Winter, Artland; loading platforms at Watrous, Zinscord; passenger and freight shelter at Ribstone; well at Hinton; dam and water supply at Jasper; temporary water supply at Fraser Lake; water supply system, including 7,200 ft. of pipeline at Smithers; fuel oil stations at Jasper, McBride, Prince George, Endako, Smithers, Pacific; stations at Kidd, Aleza Lake, Otway, Miworth, Chilako, Bednesti, Isle Pierre, Wedgewood, Stuart, Hulatt, Trinkut, Vanderhoof, Eugen, McCall, Martin Lake, Savory, Priestly, Sheaton, Tintagel, Decker Lake, Rose Lake, Forestdale; steel tank at Lindup; 100,000 gallon steel tanks at Prince George, Endako, Smithers; 50,000 gallon steel tanks at Bednesti, Stuart, Martin Lake, Ferow, Walcott, Moricetown, Tintagel, Rose Lake; pump house at Giscome; section houses and bunk houses at Vanderhoof, Quick; locomotive houses at Endako, Smithers, Pacific; yard tracks at Endako, Smithers, Pacific; freight spur at Fort Fraser; loading rack for oil pipes, oil dock, track scales, oil service tank and 6 miles of yard track at Prince Rupert.

On the branch lines the following works were done: Prince Albert Branch:—Loading platform at Anrum; completion of steel work on South Saskatchewan River bridge; station at Demremy; siding and loading platform at St. Louis. Melville-Regina branch:—Pump house at North Regina. Regina-Boundary branch:—Pump house at Holmadge. Moose Jaw Northwest branch:—Station at Lake Valley. Biggar-Calgary branch:—Loading platform at Adine. Alberta Coal branch:—Temporary tanks at Diss and Mudge. Mountain Park Coal branch:—Pump house and tank at mileage 14. We are indebted to H. A. Woods, Assistant Chief Engineer, for the foregoing information.

Intercolonial Ry. Hospital Train.—Reference has been made in the daily press to a special hospital train in operation by the Intercolonial Ry. We are officially advised that no special rolling stock has been provided for this purpose. The first train left St. John, N.B., Nov. 29, consisting of 1 combined baggage and colonist car, 3 tourist cars, 1 standard dining car, and 5 sleeping cars. The military officer in charge of the returning soldiers reported that all the cars were most comfortable and well equipped, and gave excellent service. Every possible attention was paid by the Canadian Government Railways officials to make the men comfortable.

Electric Railway Department

Report on Radial Railway Entrances and Rapid Transit for the City of Toronto.

The Toronto City Council on Feb. 22, 1915, appointed the Commissioner of Works, R. C. Harris; the Chief Engineer, Toronto Harbor Commissioners, E. L. Cousins, B.A. Sc., A.M.Can.Soc.C.E., and the Chief Engineer of the Hydro Electric Power Commission of Ontario, F. A. Gaby, to prepare a comprehensive plan for a proper rapid transit system with radial entrances. The three officials above named met on Feb. 26, 1915, and having secured Mr. Cousins' consent to act as Engineer in Charge, obtained the Harbor Commissioners' permission to permit him to supervise the work in addition to his other duties. The result is embodied in a report which was submitted to the City Board of Control on Dec. 6 as follows:

General Conditions Underlying Study.—The future growth and development of the city will be largely dependent upon the provision of adequate transportation facilities, properly located. The extension of these facilities should, and usually does, precede the population, but in Toronto of late years the conditions have been reversed. Any policy which results in such reversal will fail to develop the resources of the city to the fullest extent. The growth of Toronto beyond the limits of the areas served by car lines has been remarkable. There are at present approximately 85,200 people residing without the city limits of 1891, and 31,400 of an interurban population, outside, but adjacent to, the present city limits, totalling 116,600 people, the equivalent of almost a quarter of the entire population of the city. Future expansion may be directed, and largely controlled, by the establishment of a broad, definite transportation policy, providing for the control of all electric railway lines, radial and local, operating within the city limits.

Existing Conditions.—The present situation in Toronto is briefly as follows: The Toronto Ry. Co. holds the franchise, expiring in 1921, for exclusive surface railway rights (subject to certain exceptions) on the streets of the city as of 1891. The railway company, many years since, objected that under its charter, it was not required to extend its lines beyond the city limits of 1891, and was upheld by decision of the Imperial Privy Council. During the period intervening between that and the present the city continued to increase in population and area, until now, as hereinbefore stated, there are approximately 85,200 people living without the limits of 1891, and within the limits of 1914. In addition there are some 31,400 persons residing adjacent to, but outside the city limits, and within the limits of approximately an eight mile radius from the corner of King and Yonge Sts. The municipality in 1911, and succeeding years, constructed civic car lines in outlying districts, along Gerrard St., Danforth Ave., St. Clair Ave., and Bloor St., west from Dundas St. At present there are 18.28 miles of single track civic line in operation, with a graduated fare, the maximum being 2c. The revenue derived pays operating expenses. There are still districts without the limits of 1891 lacking adequate means of transportation. This condition can only be relieved by the construction of additional civic lines, always keeping in mind the necessity for ultimate unification of the lines so built, with the present street railway system upon its acquisition by the city in 1921. This is the

only economical and reasonable form of quick relief to be given these districts.

Radial Railway Entrance.—We have carefully studied the question of radial railway entrance, assuming the following bases: 1. The acquisition by the city of the Toronto Ry. on the termination of the franchise in 1921. 2. The construction of the waterfront viaduct by the Grand Trunk and Canadian Pacific Railways. The main principle governing our studies has been the creation of a comprehensive plan for entrance and terminal facilities for all radial railways, of the present and future, and to provide those facilities on such a scale as to embrace probable requirements for the next 25 years, i.e., to provide forthwith lands for ultimate requirements as to terminals and rights of way of the various main trunk lines, but developing and constructing on the unit principle as conditions



E. L. Cousins, B.A.Sc., A.M.Can.Soc.C.E.,
Chief Engineer, Toronto Harbor Commission.

necessitate and finance permits. In investigation of possible radial entrances, we have surveyed and contoured in detail approximately 150 miles of line, radiating from the centre of the city, in northerly, westerly and northwesterly, easterly and northeasterly directions. These activities have not been confined to the area lying within the city limits. While on the presentation plans we indicate areas to be served by these trunk radial railway lines, we desire to emphasize that, while detailed alternative locations have been made in every case, we have refrained from indicating exact locations, in order to prevent real estate exploitation at the expense of the citizens generally, and this project in particular. Fortunately, we were able, both on the east and west, from the waterfront north, to locate several lines, all of which would afford satisfactory alignment and gradients. While in the estimates liberal allowance has been made for the cost of right of way, we are of opinion, that if prudently handled, especially in the outlying districts, such right of way may be

secured at little expense, by reason of the fact that large real estate owners will, in all probability, dedicate same, because the benefit accruing to their properties from modern transportation facilities, will handsomely repay them for any land so contributed. If real estate owners hold their lands at prohibitive prices, then, under the scheme presented, it will be easy to adopt other locations, which will equally well serve the requirements. This phase of the problem involved detailed study of the following, viz.: Present and future radial railway situation and probable volume of business. The physical location of the trunk line entrances within the city limits, adequate for present and future requirements. The location, size and character of terminal, having always in mind the fact that it should be located, if possible, on the axis of maximum movement. Provision for future expansion both as to trackage for trunk line entrances and terminal facilities. Provision for proper interchange of traffic with steam railway lines. The coordination of rail and water transportation. The possibility of locating the trunk line entrances, so as to permit of their use for serving suburban districts adjacent to the city. The economics of the whole question.

Rapid Transit System.—The object of the study has been, in the main, to secure by survey and research all useful data pertaining to the economic and physical conditions of the problem. We have attempted by a combination of practical and theoretical analysis, to estimate the probable future growth, distribution, and density of population, for the city and surrounding territory, i.e., as applied to residence, light and heavy industries, wholesale, warehouse and general business. To obtain these results, we have made a comparative study of the past growth of the city, and contrasted such with like data from other cities of similar size, and some that now have several times our present population. It is well known that, generally speaking, the growth of most cities, having relatively similar characteristics, follows well defined lines, which, graphically plotted, are of considerable use in projecting probable future population. The density of population is controllable, requiring only adequate transportation facilities, properly placed, together with such legislation as will prevent improper housing.

Rapid transit is not necessary in any city until such time as the congestion, due to vehicular, pedestrian and surface railway traffic on the streets, in the central section, has reached or is rapidly approaching the point of saturation, and then only after every other effort has been exhausted to improve existing surface transportation facilities. If this proves futile, then and then only, should serious consideration be given rapid transit. This term is generally misapplied. To many, it portends the elimination of all overcrowding conditions, and the final solution of transportation problems. As a matter of fact, there is as marked overcrowding on rapid transit lines as one encounters on the majority of surface railways at the rush hour periods. It means, in effect, the accomplishment of maximum distance in minimum time, and the amelioration of surface congestion. To provide such, the following methods are usually employed: Underground subway or tunnel construction. Elevated track structures. Combination of

both elevated and subway systems. Complete grade separation by elevation or depression. Suburban steam railway service. Its adoption is usually indicated by the population of the city and its environs, the physical and economic features of the situation, and the riding habit of the people. Rapid transit service, in the true sense of the term, has never been provided in cities of less than 1,000,000 population, mainly for the reason that the initial cost is so excessive that the average riding habit is insufficient at a 5c. fare to produce the revenue necessary to recoup the investor.

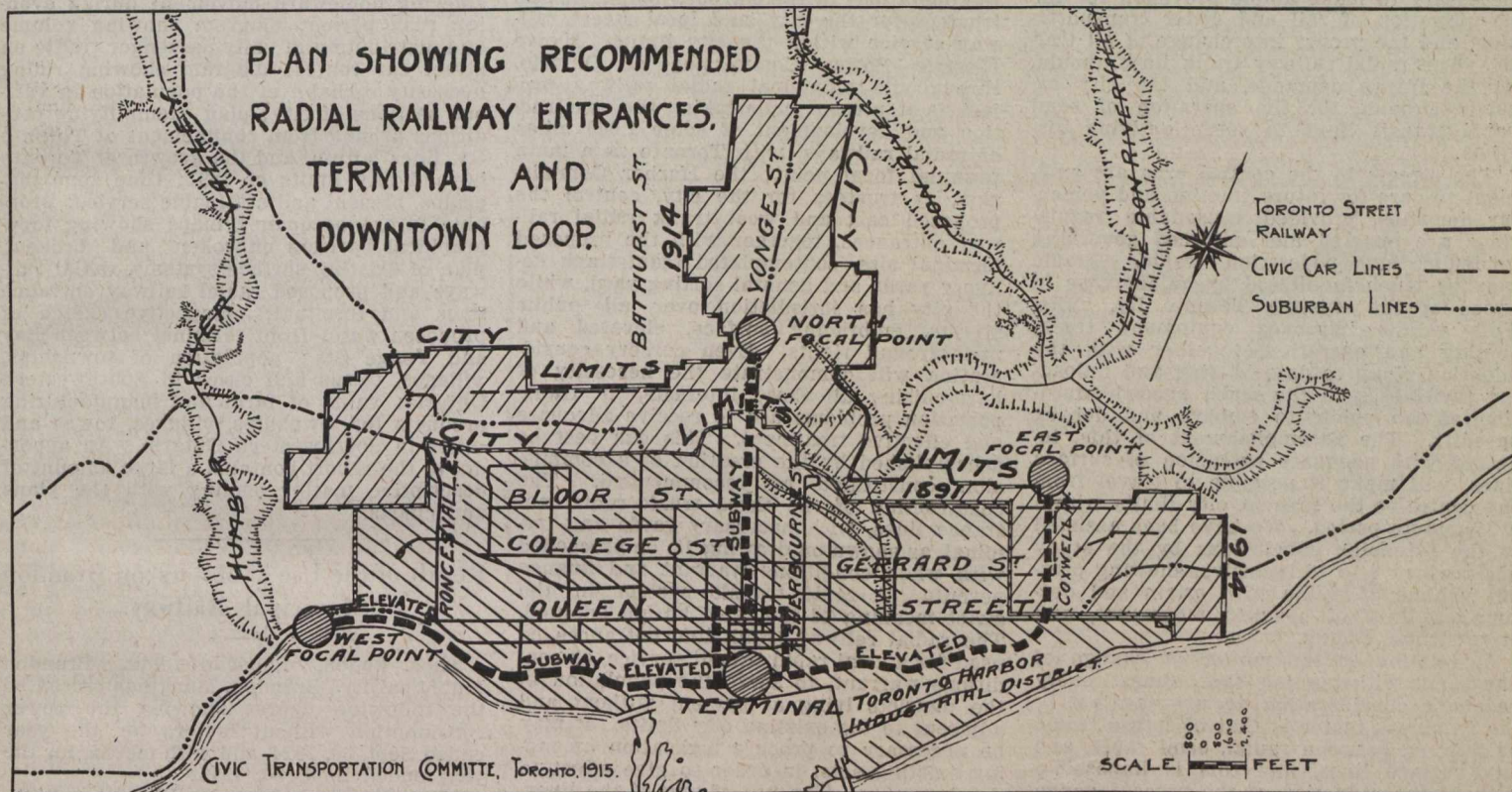
Toronto is not in a position to construct a rapid transit system in the strict sense of the term, but may, when conditions demand, institute a semi rapid transit service, by using the radial railway entrance lines. We have developed the radial entrance plan so as to permit of such joint use. By so doing, adequate and rapid service may be furnished that portion of the population living outside of what we have termed the 35 minute zone. We assume that persons who can

of present city streets. Is the present street railway system being operated at maximum capacity? The economics of the whole situation.

The problem resolves itself into three main phases, viz.: Can the immediate future transportation demands be best met by: The extension and more efficient operation of the existing street railway system? A separate rapid transit service without attempt to improve the present system? A combination of rapid transit and surface feeder system, i.e., surface feeders in the areas beyond the limits of 1891, and rapid transit by means of subways within the limits of 1891? Out of the foregoing arise the following: Are the streets in the central area capable of handling future traction and vehicular demands, or will other rights of way be required to relieve them? Analysis of the present speed schedules. Possible improvement in time travel, either by more efficient operation, better routing, improved track and equipment, or a combination of all. Present volume of traffic,

Toronto Ry., if provided with improved equipment, and operated at higher service efficiency, can be made to adequately serve the city within the limits of 1891. As traffic officers become more efficient in direction, and citizens better appreciate the functions of such officials, the movement of rail, vehicular and pedestrian traffic will be greatly facilitated, with consequent saving of time and added safety to all. If a sufficient number of cars of modern type were provided, thereby minimizing overcrowding, and the public educated to embark and debark with reasonable speed, it would result in more rapid operation of the railway system, and the facilitation of other classes of traffic. There is comparatively little congestion in Toronto streets. This may be further minimized by regulation of standing vehicles on, and diversion of slow moving, heavily laden traffic from main heavily trafficked thoroughfares in the central area.

That the following railways entering the outlying portions of Toronto viz.: The Toronto & York Radial Ry., embracing the



travel from the central area to their abode, or vice versa, in 35 minutes, do not require more rapid transport. We shall show in this report that, within the limits of the city as at present constituted, adequate extension of the existing street railway lines, coupled with improved rolling stock and efficient operation, would bring the extreme outlying portions of Toronto within the 35 minute zone, wherein the necessity for other than surface transportation, as aforesaid, is not indicated. The study of this section involved detailed consideration of the following, viz.: Existing street railway situation and preparation of time zone maps. Do existing conditions warrant rapid transit service? Distribution of present population, general business and industries. Past growth of the city as applied to population, heavy and light manufacturing, wholesale and general business distribution. Probable future growth of the city as applied to the preceding sentence with resultant distribution. Past and existing topographical and other barriers to proper growth and distribution. Capacity and use

with origin and destination. Counts of passenger traffic to determine lines of heaviest movement, and points between which the public require other than direct movement to or from the central area. Street traffic counts to ascertain the degree of congestion in the portion of main thoroughfares lying within the central area. Determination of increased volume of future passenger business, and the possibility of handling same by larger car units. Consideration of advisability of changing gauge of present system from 4 ft. 10 7/8 ins. to standard gauge of 4 ft. 8 1/2 ins.

Conclusions.—After detailed consideration of the various factors entering into and affecting the problem as hereinbefore recited, we have concluded that: Additional civic car lines laid between now and 1921 without the limits of 1891, but within the limits of 1915, will, after acquisition of the Toronto Ry. by the city, in 1921, adequately serve all sections within the present city limits; the maximum time necessary to reach extreme destination being 35 minutes. The existing surface system of the

Metropolitan, running north on Yonge St., and the Kingston Road line from the Woodbine; the Port Credit line from Sunnyside; the Toronto Suburban to Lambton, Weston and Woodbridge, from Keele and Dundas Sts., cannot be considered rapid transit interurban lines, as in all cases they operate mainly on the highway at low speeds. The people of Toronto and the province have not had the advantages of modern rapid interurban service, such as is operated in many parts of the United States. When the hydro radial railways project becomes an accomplished fact, the system of which the section operating between London and Port Stanley is a happy augury, the entire population of the province will derive therefrom tangible benefits, which result to a community from a modern, high speed, properly equipped and efficiently operated system.

That the most feasible entrances from the east and west lie along the waterfront route. The entrance from the north may be readily effected by subway construction. The foregoing conclusions were arrived at

after careful reconnaissance of the possible routes of entrance for radial railways, in the city and its environs, and detailed survey of one hundred and fifty miles of line.

From the view point of economy of operation and utility, it is essential that the terminal be located on the axis of maximum movement. Having regard for the past suggestions for an uptown terminal, we thoroughly investigated this possibility, with the result, that aside from operating considerations, the additional cost of \$8,000,000, embracing a four track subway from the waterfront to College St., and the erection of a terminal at the latter point, proved it unfeasible. The foregoing indicates the necessity for location on waterfront route. The same consideration applies also to the location of yards on the waterfront property, in view of its natural advantages.

It is prudent to make present provision for future expansion, covering trackage for trunk line entrances and terminal facilities, therefore the necessary sites should now be provided for ultimate development. It is necessary to make ample provision for the co-ordination of rail and water transportation, and the proper interchange of all traffic. The radial railway trunk lines should, as the future demands, and the city extends, provide for the operation of semi rapid transit lines to serve outlying districts.

The streets in the central area are sufficient to care for future traction and vehicular demands, provided reasonable regulations are enacted and enforced governing vehicular and pedestrian traffic. Traffic may be much facilitated by an increase in speed of the existing Toronto Ry. units. This entails improved equipment, track, routing and operation, together with the adoption of up to date loading and unloading facilities, and the much needed education of the public to embark and disembark speedily. The accomplishment of this, together with adequate extension of surface lines, will make it possible to travel from the centre to the present city limits within a 35 minute period. We have been assisted to the foregoing conclusions by the study of drawings 8 to 15 inclusive, showing present volume of traffic with origin and destination, lines of heaviest movement, and street traffic counts.

In relation to the matter of change of gauge, notwithstanding that almost every economic consideration declares against it, the dominant factor is that of future traffic unification, between radial, semi rapid, and city surface lines, and this is impossible without the reduction of the present gauge from 4 ft. 10 $\frac{7}{8}$ ins. to 4 ft. 8 $\frac{1}{2}$ ins.

As hereinbefore indicated, there is no justification whatever for the construction in Toronto of a rapid transit system in the strict sense of the term.

Recommendations.—We beg to respectfully recommend that: The city acquire the Toronto Ry. at the expiration of the franchise in 1921, and thereafter operate same as a municipal railway. The city should at once make a definite declaration of policy in this regard. If the decision be to municipalize the service, preparatory steps should immediately be taken, in order that upon the date of franchise expiry the city may enter into occupation and operation without overholding tenure complications. A transportation commission should be at once appointed, consisting of representatives from the city, the Toronto Harbor Commission and the Hydro Electric Power Commission of Ontario, so constituted as to afford the city majority representation. This commission should be vested with all necessary power to plan, control and direct all transportation and terminal facilities of every kind whatsoever (exclusive of exist-

ing steam railways), including present or projected municipal lines within the corporate limits of the municipality, and to prepare and arrange for the acquisition and operation of the Toronto Ry. Company as a municipal utility upon expiry of the franchise rights of said company; the powers of this commission to be sufficiently inclusive to embrace all railway transportation facilities as aforesaid, and to be implemented from time to time, in order to accomplish the full intent of this recommendation. The Harbor Board and the Hydro Electric Power Commission of Ontario should be represented upon this commission in extension of the policy of council already expressed in the appointment of the board charged with the duty of making this report, and for the same reasons which guided that body in the constitution of such board, viz.: That the future transportation facilities within Toronto should be co-ordinated with regard to the services, rights and holdings of the bodies aforementioned, with particular reference to radial entrance and railways, the operations of the Harbor Commission as trustees for the city, and local street railway service within the city limits. Hydro Electric Power Commission of Ontario, through its municipal radial railway project, is at present undertaking the construction and development of some 1,000 miles of radial railways, with Toronto as a main terminal focal point; the Harbor Commission, as trustees for the city, control the proposed east and west trunk radial railway entrances, together with the proposed terminal site, contemplated team track delivery yards and general sorting yard, while the city has jurisdiction over all public streets, embracing surface, elevated and underground rights. Even cursory consideration will demonstrate the necessity of harmonizing all these interests, if transportation problems are to receive adequate and effective treatment. This can best be accomplished by the creation of a commission constituted as recommended. The construction of the three trunk radial entrance lines, with necessary yards and terminal, as shown on drawing 18, be proceeded with when conditions warrant and finance permits. A rapid transit system in the strict meaning of the term be not adopted. The radial railway trunk line entrances be used for a semi rapid transit service, as conditions warrant, to serve the population in the districts lying at present without and adjacent to the existing city limits. It may be necessary to procure legislation amending existing acts, in order to give effect to the foregoing. The use of any of the lines, yards, terminals, and anything whatsoever, in any way relating or appertaining thereto, by any other railway, than those of the Hydro-Electric Railway Union and the city, shall not at any time be permitted, until such railway shall have obtained the consent of the Hydro-Electric Power Commission of Ontario thereto. We do not make suggestion as to finance and reimbursement, feeling that this does not lie within our jurisdiction, but is for each to take up with his respective principals.

Estimate of cost radial railway entrances, terminal and yards.

West line, from terminal to west focal point, 5.2 miles	\$ 4,076,000
East line, from terminal to east focal point, 4.7 miles	3,120,000
North line, Queen St. to north focal point, 3.2 miles	7,696,000
East and west yards and freight facilities	1,365,000
Terminal station, and car house	2,560,000
	<hr/>
	\$18,817,000

The foregoing estimates cover land acquisition and permanent construction, exclusive of value of lands vested in Harbor Commission and city, and property rentals for ter-

minal and yards. These estimated costs provide for ultimate construction, with the exception of the additional two tracks for four track construction. The work to be undertaken in units as conditions warrant and finance permits.

Plans and Charts.—Accompanying the report are a number of elaborate colored plans and charts as follows:—Annexation map showing dates at which various districts were annexed to the city; franchise map; plan showing built up area of Toronto at different periods; topographical barriers affecting same; population dot maps at various periods from 1879 to 1914; isometric projection showing density of population per acre per block within present city limits; classified occupancy in built up area in and surrounding city; past growth of central business area; street traffic map showing volume of vehicular and street railway movement in central section; analysis of passenger movement, during morning rush hour period, showing requirements for car service in various sections of city; diagram showing homeward movement during evening rush period; diagram showing volume and distribution of daily passenger traffic on street car routes; diagram showing riding necessity or habit of the population in various sections of city; plan exemplifying conditions arising from confinement of Toronto Ry. lines within, and the growth of Toronto beyond city limits of 1891; time zone diagrams, present and attainable service; probable future occupancy maps showing topographical barriers unbroken and broken; plan of existing surface systems, radial railways and proposed radial railway entrance lines and terminal; perspective sketch of proposed water front terminal between Bay and Yonge Sts.; population of townships, villages, towns and cities in Southwestern Ontario; value of farm and manufacturing products for townships, villages, towns and cities in Southwestern Ontario. An appendix to the report contains a large amount of descriptive matter dealing with the plans and charts.

Result of the Use of Meters on Brandon Municipal Railway.

Thos. Boden, Superintendent, Brandon Municipal Ry., Brandon, Man., has presented the following figures showing the power consumption without meters for the year ended Sept. 30, 1914, and with meters for the year ended Sept. 30, 1915:

	Without Meters.	With Meters.
Power consumed in k.w.h..	607,996	491,900
Car miles	268,244	278,044
Average k.w.h. per car mile	2,266	1,769
Cost of power per year....	\$12,159.82	\$9,838

The cost of meters was \$200; installation \$10; repairs, nothing. Power costs 2c per k.w.h. The above figures include all losses.

American Electric Railway Association Committees. The following officials of Canadian electric railways have consented to serve on the committees mentioned: Taxation matters, G. Kidd, General Manager, British Columbia Electric Ry.; P. Dube, Secretary-Treasurer, Montreal Tramways Co.; J. W. Crosby, Manager, Halifax Electric Tramway Co.; Wilford Phillips, Manager, Winnipeg Electric Ry.; R. J. Fleming, General Manager, Toronto Ry. Transportation, P. Dube, Wilford Phillips, H. G. Matthews, General Manager, Quebec Ry., Light and Power Co.; E. L. Milliken, Local Manager, Cape Breton Electric Co. Buildings and Structures (Engineering Association), H. G. Salisbury, Architect and Structural Engineer, Toronto Ry.

The Hydro-Electric Power Commission of Ontario's Proposed Electric Railway from Toronto to London.

Some details respecting the electric railway, which the Hydro Electric Power Commission of Ontario proposes to build between Toronto and London, on behalf of the municipalities concerned, have already appeared in Canadian Railway and Marine World. Draft bylaws have been prepared for submission to the vote of the ratepayers in the different municipalities, showing that the estimated cost of the completed line, including equipment, is \$13,734,155. The amount which is estimated to be required for the maintenance of the railway, apart from operating expenses, is \$214,583 a year. The operating revenue is estimated at \$1,692,175 a year, and operation and maintenance at \$817,025. The annual amount required for interest for the first 10 years after the issue of bonds would be \$686,708, and for the next 40 years the amount required for sinking fund charges and retirement would be \$137,342, and for interest, \$686,708.

Under agreements which it is proposed the municipalities shall enter into with the Commission, the latter is to build, equip and operate the railway according to an agreed route, and to issue bonds covering the cost, and it retains power to regulate fares and tolls to be charged for all classes of service. The municipalities agree to issue debentures for the proportions of the total amount of construction assigned by the Commission, maturing at 50 years, the period for which the agreements are to run, and these debentures will be held by the Commission as security, and as guarantees for the Commission's bonds, issued from time to time, and they may be disposed of in such proportions and at such times as the Commission may determine. The municipalities are debarred from making any agreement with, or bonusing any other railway or transportation company, and are to furnish free right of way over any municipal property at the Commission's request. In the event of the revenue derived from the operation of the railway being insufficient in any year to meet the operating expenses, including power, the cost of administration and the annual charges for interest and sinking fund on bonds, and for the renewal of any works, any such deficit shall be paid to the Commission on demand by each municipality in proportions to be adjusted by the Commission, and on the failure of any municipality to pay such proportion of deficit, the Commission may dispose of debentures held as security. If any municipality should fail to perform its obligations, the service to that municipality may be discontinued without notice, but the municipality shall not be relieved from the effects of its default. In any differences between the municipalities concerned, the Commission shall hear representations, and its decision shall be final.

The general route, as settled by the Commission's engineers, but which is subject to slight changes, is as follows:

Toronto Terminal-Humber River Section.—From the passenger terminal to be located near the foot of Yonge St., westerly to Sunnyside, using Toronto Harbor Commission's property and private right of way wherever possible, thence to the Humber River, paralleling the G.T.R.

Humber River-Port Credit Section.—From the westerly limits of Toronto at the Humber River, westerly parallel to the G.T.R., crossing the Credit River between the Lake Shore Road and the G.T.R.

Port Credit-Milton Section.—From Port

Credit, crossing the G.T.R. about a mile west of the village, to a point north of Sheridan post office and thence direct to Milton.

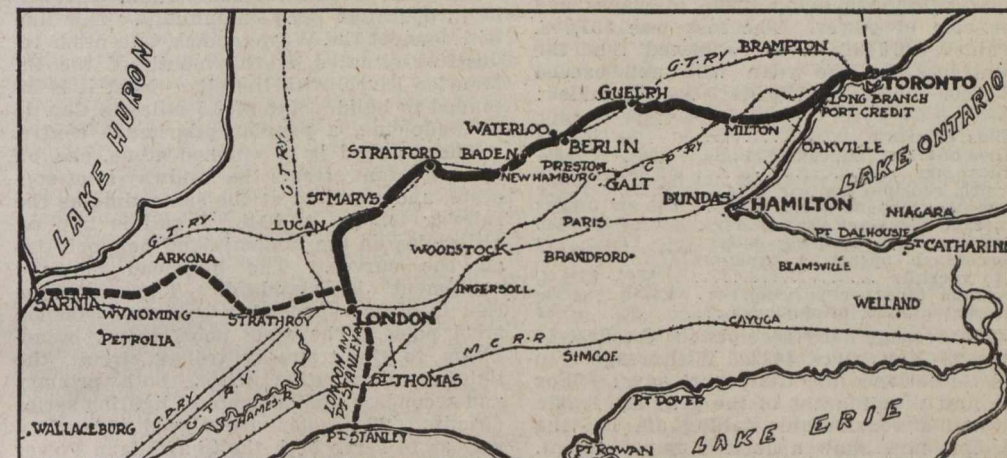
Milton-Guelph Section.—Crossing the C.P.R. west of its station at Milton, to Esquesing Tp., Nassagaweya Tp., Puslinch Tp., and thence in the general direction of the Eramosa River, to Guelph.

Guelph-Berlin Section.—From Guelph westerly to Berlin, entering the latter city on the northeast, running north of the G.T.R. between the two cities.

Berlin-Stratford Section.—From Berlin, paralleling the G.T.R. to Baden, and thence south of the G.T.R. to a point east of Stratford, crossing the G.T.R. and entering the city.

Stratford-St. Marys Section.—From Stratford westerly, paralleling the G.T.R. to a point north of St. Marys.

St. Marys-London Section.—Southwesterly through St. Marys and thence westerly, crossing the C.P.R. at grade, and the Thames River, and thence paralleling the G.T.R. to near Granton, thence southerly through Bid-



Route of Proposed Electric Railway from Toronto to London.

dulph Tp. to the northern boundary of London Tp., thence southeasterly from Con. 14 to Con. 10, and thence southerly through Cons. 9 to 4, and following the Thames River through Cons. 3 to 1, to a point between the Sarnia Road and Thames River, a short distance west of Warnclyffe Road, outside the northwest boundary of the City of London, thence southeasterly over private property and city streets, crossing the Thames River to Bathurst St., and easterly along Bathurst St. to the London and Port Stanley Ry., which at present terminates on Bathurst St., just east of Richmond St.

As previously mentioned, the total amount of debentures to be issued is \$13,734,155, and the Commission has apportioned the following amounts to the various municipalities:

Township	Amount
of London	\$630,389
" " Trafalgar	578,921
" " Waterloo	521,903
" " Blanshard	402,909
" " Wilmot	479,065
" " Downie	418,735
" " South Easthope	316,262
" " Toronto	345,355
" " Nassagaweya	343,147
" " Guelph	361,025
" " Etobicoke	401,335
" " North Easthope	248,585
" " Biddulph	142,166
" " Esquesing	91,922
" " Puslinch	70,300
" " Eramosa	42,180
" " Nelson	31,130
" " Ellice	33,100
" " East Zorra	39,000

City of Toronto	4,240,196
" " London	1,109,303
" " Berlin	774,040
" " Guelph	734,862
" " Stratford	651,735
Town of Waterloo	193,900
" " St. Mary's	153,940
" " Milton	65,000
Village of Mimico	111,200
" " New Toronto	82,250
" " Port Credit	54,050
" " New Hamburg	66,250

Total amount of bonds to be issued. \$13,734,155

The majority of these municipalities have agreed to submit bylaws to the vote, early in the year, some in January, and others later. At the time of writing, the following have decided not to submit such votes: South Easthope, \$316,262; Ellice, \$33,100, and Puslinch, \$70,300.

With regard to the Toronto end of the projected line, some misapprehension seems to have existed in connection with the operation of the line on city streets, and also as to the free right of way through municipal property. Sir Adam Beck, on Dec. 7, explained these points to the Board of Control, at a private meeting, after which, he

is reported to have stated that the bylaw would be submitted in its present state, but that legislation would be introduced later to make it clear that the city's rights on its streets would not be jeopardized. The right of way matter referred to easements through public parks and other lands, he stated, and not to the purchase of land.

At Berlin, some discussion has taken place regarding the route through the city, and it was decided, Nov. 29, that the main passenger line should pass through by way of Victoria and Wilmot Sts., and the question as to whether the line should pass through New Germany, Bloomingdale and Bridgeport, or through Breslau, was left to the Commission's discretion. It was also recommended that a spare line for freight traffic should be built through the northerly section of the city, between Berlin and Waterloo. The tentative apportionment for Berlin is \$774,000, but it was stated that if the Commission's recommendations for the rerouting had been accepted, the city's share would have been \$970,000, but owing to the changes since agreed upon, the amount would have to be reapportioned.

It will be noticed on reference to the accompanying map that the location of the proposed line between Toronto and Port Credit is practically the same as that of the Toronto and York Radial Ry., operating between these points. In discussing this and other similar matters in Toronto, Dec.

8, Sir Adam Beck is reported to have stated that the Mackenzie and Mann interests had offered to sell the Metropolitan section of the Toronto and York Radial Ry. to the city, and that those interests and the Commission have discussed an agreement whereby the Commission may possibly purchase their interests in the province. While nothing has been definitely settled, he stated that arrangements have reached the point where both parties have practically agreed on a price. The Toronto Board of Control passed a resolution, Dec. 15, to the effect that the Commission be requested to negotiate for the purchase of the Metropolitan Division of the Toronto & York Radial Ry., under the provisions of the Hydro Electric Railway Act.

Saskatoon Municipal Railway Finances.

The report of the City Commissioner of Saskatoon, Sask., on the city finances for 1915, contains the following information respecting the operation of the municipal electric railway: During the first 10 months the revenue showed a considerable falling off as compared with the same period of 1914. The total number of passengers carried was 2,099,360, against 2,083,408; the operating expenses, excluding fixed charges, were \$85,938, against \$105,229.02, the principal reductions being made in wages and the cost of power. The loss was \$31,748, against \$26,743. It is estimated that the total loss for the year will not exceed \$33,000. The following statistics are added:

	1914.	1915.
Miles of track	14	14
Miles of track reduced to single	16½	16½
Miles run	579,583	590,876
Traffic receipts per car mile ..	22.27c	17.72c
Operating expenses	19.27	15.53
Average miles per car per day ..	150	165
Average cars operating daily ..	14	12
Percentage operating expenses to receipts	86%	87½%
Average fare per passenger ..	4.518c	4.93c
Average number of employes ...	90	84

The average daily receipts for the first 14 days of Nov. were \$442. With respect to the Sutherland line the report says: "For the first nine months of the year the traffic showed a considerable falling off, but the receipts now show a decided improvement. For the first 10 months of the year the total operating expenses on this line were \$6,782.39 and the receipts \$6,056.32, a loss of \$726.07."

The Jitney Situation in Canada.

The number of jitneys operating in Toronto shows a considerable diminution, and it may be said that with the exception of certain of the more crowded thoroughfares, they have ceased to be a factor in city traffic. We are advised that there were recently 21 or 22 cars operating in competition with the Toronto and York Radial Ry.'s Metropolitan Division, and a somewhat larger number operating on Yonge St., in competition with the Toronto Ry. This does not mean that there are 50 or more jitneys operating on Yonge St., but that slightly over 20 of those operating extend their routes so as to come in competition with the suburban electric railway service. The Lake Shore road and the West Toronto-Weston jitney services appear to have been abandoned.

The only other part of Canada in which there appears to be any activity in the jitney business is on the Pacific Coast. The jitney operators in New Westminster are applying to a British Columbia court to have the by-law prepared by the City Council recently, quashed. The action is being taken by the Big Five Jitney Co., which alleges, among

other things, that it is being discriminated against in favor of the Blue Funnel Motor Co.'s cars, a new company running cars between New Westminster and Vancouver started operating Dec. 5, cutting the fare from 25c to 20c. Only five cars were put in service on Dec. 5, but C. Gowan, who is managing the new line, is reported to have said that 20 will be put in operation, on a 5 minute schedule, and with a return fare of 25c. It is reported locally that the British Columbia Electric Ry. is interested in the new venture. The South Vancouver municipal council took up the question of the regulation of jitney traffic, Nov. 30. A jitney service was started Dec. 7, from the Hollyburn landing place of the Fourteenth St. ferry to Dunderave.

Three Rivers Traction Company's New Line Opened.

The electric railway which has been built in Three Rivers, Que., recently has about 3 miles of track and forms a belt line, starting at the C.P.R. station, passing through the residential district, thence along the river front, and returning to the station, via the main business thoroughfares. An extension to the Wayagamack Pulp and Paper Co.'s plant is nearing completion, and will be in operation early in January. This line will connect the Wayagamack, and other industries situated at the mouth of the St. Maurice River, with the city. Next it is intended to build a line of 2.5 miles to Cap de la Madeleine, a popular pilgrimage centre.

The roadbed is of crushed stone, and on the important streets the roadway is of concrete, and was laid at the same time as the railway track. A 60-lb. T rail is laid on cedar ties on the tangents and hemlock ties on the curves. The overhead material equipment is standard. The construction is of the span wire type supported on steel poles. The steel poles carry, in addition to the tramway trolley circuit, the lighting distribution wires, both primary and secondary, and also street lighting series circuits. The poles are placed in such a way as to serve both the Shawinigan Power Co. and its subsidiary, the Three Rivers Traction Co.'s needs wherever possible. Some of the steel poles are perhaps somewhat unusual, being 55 ft. high at points where they carry wires over running road bridges. The trolley wire is grooved 3.0 B. & S. wire. The size is larger than actually required, and as there are no feeders on the system it is larger than usual, but this was installed because of the fact that no feeders were provided.

Power is obtained from the North Shore Power Co. from its central station. To take care of this load it installed two 250-k.w. 600 volt d.c. motor generator sets. The power is generated at Shawinigan and taken into Three Rivers at 50,000 volts over 4 transmission lines, and transformed down to 2,200 volts.

The car barn is of steel, brick and galvanized iron construction, and provides for 7 cars. The repair shop, of brick, is incorporated in the same building, and will accommodate two cars. It is provided with a single track constructed over an inspection pit. The shop is equipped with the usual small tools; power and lighting being furnished at 110 and 220 volts. It is electrically heated. There are also the Superintendent's office, store room and carmen's room.

The 6 single end, single truck, one man, rear fill cars, and the single truck combination sweeper and tower car, with which the line is equipped, were fully described and

illustrated in Canadian Railway and Marine World for December.

The city belt line was formally opened Dec. 11, the first car being run nominally Under the direction of Hon. J. A. Tessier, M.L.A., Mayor of Three Rivers, and Minister of Roads for Quebec. At a subsequent reception to the company's officials at the city hall, the Vice President, Julian C. Smith, spoke on the company's behalf, and Hon. Jacques Bureau, M.P., and W. Y. Soper, of Ottawa, also spoke. Among the company's officials present were Howard Murray, W. S. Hart, and G. C. Hiam, of Montreal.

The Lake Erie and Northern and the Grand Valley Railways.

A bylaw is to be voted upon by the ratepayers of Brantford, Ont., Jan. 3, to ratify the sale of the section of the Grand Valley Ry., from Paris to Galt, 13.07 miles, for \$30,000. We are officially advised that the agreement to sell was passed by the railway committee, which comprises a majority of the city council. The property to be sold consists of the right of way and tracks for the mileage named, the city council to have the right to lift the tracks, etc., from the Blue Lake branch. This agreement was ratified by the city council, Nov. 30, with the condition that the bylaw be ratified by the ratepayers. The council also decided to allow the Lake Erie & Northern to repair the track from the diamond to the south of Galt, where the L.E. and N.R. tracks cross, about 3,500 ft., which will enable that company to operate the line as soon as it is ready to do so. The company is electrifying the line between Brantford and Galt, and will also electrify the line from Brantford to Port Dover, 31.4 miles, the track laying on which has just been completed. This work is being done as part of the consideration involved.

The Grand Valley Ry. was part of the property acquired by the city, on the winding up of the G.V.R. Co. The city retains the lines within Brantford, and the section of the G.V.R. from Brantford to Paris, 7.68 miles. The Paris-Galt section is in a bad state of repair, and it was estimated that it would cost \$43,000, with a further outlay in the immediate future of \$30,000 for new steel rails, to put it in a position to meet the competition of the L.E. and N.R. This section of the line is being operated by three passenger cars and one freight car, entrance being obtained into Galt over the Galt, Preston and Hespeler St. Ry. tracks. The revenue for the six months ended June 30 was \$6,675, and the operating expenses were \$8,230. After making provision for interest, sinking fund and depreciation, the total deficit for the six months was \$2,674. The value of the section, as estimated by J. C. Royce, consulting engineer, is, exclusive of right of way, \$21,000.

In connection with the operation of the line, it is understood that connection will be made with the Galt, Preston and Hespeler St. Ry. (which is also leased to the C.P.R.) at Galt, and that an agreement for the issue of through tickets has been made with the Brantford and Hamilton Ry. It is further said that the company has entered into an agreement with the Brantford and Hamilton Ry. for the erection of a union terminal at the foot of Lorne Bridge, Brantford.

The Montreal Tramways Co. informed the city council Dec. 7 that a through service, without transfer, from the city to Cote St. Paul, would be run during the winter, but would be discontinued as soon as navigation was reopened on the Lachine Canal.

Jitney Regulations in Toronto.

The bylaw regulating jitney operation in Toronto was enacted as an amendment to bylaw 69 relating to owners of cabs and other vehicles used for the conveyance of passengers and the drivers thereof.

The latter bylaw is amended by adding at the end of sec. 14 the following words:—

"Where the application is for a license to operate an automobile for the conveyance of passengers (commonly called a jitney), it shall state the number of passengers it is intended to carry, and the number of passengers shall be mentioned in the license, and shall in no case exceed seven, exclusive of the driver, and it shall be subject to inspection at any time by the Chief Constable or any person appointed by him to perform such duty, and shall at all times be kept in a condition satisfactory to the Chief Constable."

Bylaw 69 is also amended by inserting after sec. 14 the following sections:

"14a. An applicant for a license to operate an automobile for the conveyance of passengers (commonly called a jitney), shall take out a policy of insurance in a company satisfactory to the City Treasurer against accidents to the amount of \$1,000, and deposit the same with the City Treasurer with an assignment to the Corporation of the City of Toronto in trust, and shall during the currency of his license keep such insurance in force and shall deposit therewith and undertaking in writing to do all things necessary to recover compensation from the company in the event of any accident arising from the operation of any such vehicle, and also to permit the city to do so. Such policy of insurance shall be held by the city as a guarantee that all just claims against the licensee will be paid and the city may settle all such claims up to the said amount out of any money paid under any such policy. The city shall not be responsible for any accident or damage to persons or property arising from the operation of any such vehicle."

"14b. No licensee shall carry in any vehicle licensed under the foregoing section a greater number of passengers than such vehicle is intended or allowed to seat."

"14c. No person shall be allowed to stand on the running board or step of any such vehicle while the same is in operation."

"14d. No driver of any such vehicle shall smoke while driving any passenger or passengers."

The London and Port Stanley Railway and Michigan Central Rd. Traffic.

Under old conditions, the Michigan Central Rd. obtained an entrance into London, Ont., by an arrangement with the Pere Marquette Rd., the lessee of the London and Port Stanley Ry., and utilized for terminals an area of land leased from the London and South Eastern Ry. With the expiry of the L. and P. S. R. lease a new arrangement had to be made. Under the new agreement, the L. and P. S. R., according to a press report, agrees to run two freight trains a day, the charge to the M.C.R. being at the rate of \$3, \$4 or \$5 a car, according to the number of cars per train, the minimum charge to the M.C.R. being \$25,000 a year. The whole of the M.C.R. passenger business between St. Thomas and London, will be handled by the L. and P.S.R. The agreement is to run for 30 years, and provides that only electric traction will be used in the M.C.R. yard in London. The electrification of the spur connecting with the M.C.R., and of the tracks in the M.C.R. yards is being proceeded w

Calgary Municipal Railway Department Organization.

The Calgary, Alberta, City Council, passed a bylaw Nov. 22, appointing Commissioner A. G. Graves, Supervisor of the Street Railway Department, to hold office as long as he continues in the official capacity of Commissioner, or unless it is sooner repealed by the Council. The bylaw creates a department of the city to be known as the Street Railway Department, to be in charge of one of the city's commissioners, which shall have the administration, control and management of the city's street railway. The City Council will appoint a superintendent who shall be in direct charge and have the care and management of the property, business and affairs of the department, including the operation of the railway, subject to the supervision of the commissioner. The Superintendent is authorized to engage all officers, agents and employes required to operate the railway, and conduct the business of the department, at such rates of pay as are approved by the commissioner. The Superintendent shall submit all rules and regulations for the internal management of the department for approval to the commissioner; shall discipline or dismiss employes for breaches of the regulations, subject to the employes right to appeal to the grievance committee appointed under the existing agreement with the employes, and to the further right of appeal to the Board of Commissioners, or after the expiry of the agreement to the commissioner at the head of the department. Notices and bulletins to the employes shall be approved by the commissioner, before being issued. Subject to the approval of the commissioner the superintendent may enter into agreements with the employes defining the terms and conditions of their employment, provided that all schedules of wages shall be approved by the council before they are finally adopted. The commissioner is given power to carry out the council's orders affecting the department; shall approve all proposed rules and regulations for the internal management of the department, and is to report on all questions of policy to the Board of Commissioners, which shall be finally decided by the city council. All expenditures on capital account are to be settled by the city council; the construction of new lines or the alteration of existing lines have to be approved by the council, and questions involving the working up of any deficit or the disposal of a surplus shall be decided by the council.

Montreal Tramways Co. manufacturing ammunition.—The Montreal Tramways Co.'s shops have been at work for some months making a number of parts of shells for the Russian Government. The company has received recently a contract for machining and assembling eight inch howitzer shells to the value of over \$1,000,000, and it is expected that further orders will follow. The machinery necessary to turn out the number of shells mentioned within 12 months has been ordered at a cost of some \$150,000 and will be installed at the company's Youville shops.

Parcel Distribution by Street Railways.—Several cities in England, where street railways are municipally controlled, have adopted a system of parcel distribution, which adds considerably to the receipts. A report states that the receipts for the past year in Lancaster from this source were \$67,500, with a net profit of \$18,000, and an average distribution of 24,000 parcels weekly. Some horse drawn vehicles are used, but it is expected that storage battery trucks will be installed shortly.

London and Port Stanley Railway Car Barn.

The plans for the car barn at London, Ont., provide for a building approximately 220 x 88½ ft., of which the section being erected will be 145 x 88½ ft. The main part of this erection will consist of a car barn, having a frontage at the northern end of approximately 54 ft.; a length of 145 ft., and a height of 24 ft. There will be 4 sets of tracks running the entire length of the building, with the necessary pit under each set of tracks. On the west side of the car barn proper, and at the north end, will be a two story building under which will be a basement approximately 36 x 30 ft., the main entrance to which will be on the west side. The hallway, 8 ft. wide, in which will be a stairway to the second floor, will give access to an office on either side, and to the men's room and lavatory in the rear. The second floor will be divided by lath and plaster partitions into 4 rooms, with a lavatory. South of the office section and on the west side of the building, will be the transformer room, 24 x 20 ft., and further south a store room of approximately the same size. The remainder of the space will be given over to workshop purposes. The southern wall of the building will be a temporary one made of galvanized iron sheeting. The foundation work, the pits, and the main floor will be of reinforced concrete. The roof will be supported by 7 columns on the north and south ends, with 4 columns at the east and west ends connected by steel girders. The barn will be lighted by two windows in each bay of the east and west elevations, by 6 windows at the temporary south end, and by a series of lights in the monitor extending the length of the barn over the westerly bay. The inside height of the monitor from the main floor will be 28¼ ft.

Vandalism on Electric Railways.—Mention was made in Canadian Railway and Marine World for December of various acts of vandalism in suburban stations and shelters on the British Columbia Electric Ry. Similar acts are committed in practically all shelters erected at points in the suburbs and country served by electric railways throughout the Dominion. It is difficult to catch the perpetrators, but by some systematic effort by the companies and their patrons, something might be done to minimize and eventually wipe out the nuisance. The International Ry. is offering a reward of \$25 for the apprehension of persons cutting seats on its cars.

The Detroit United Ry. matters, which have for some time occupied prominent attention, pending the decision of the Detroit taxpayers as to the municipalization of the city lines, have, since the defeat of the proposals, dropped to their normal position in local affairs. The Board of Street Railway Commissioners closed its office in Detroit, Dec. 1, and accepted the secretary's resignation, but announced that for the next eight months at least, they would continue to act, but would be governed more or less by the requests of the City Council.

South East Calgary Electric Ry.—An order for the liquidation of this company was made by the Master in Chambers at Calgary, Alta., Nov. 19, under which the Trusts and Guarantee Co. (Calgary office) was appointed liquidator. Creditors were asked to send in details of their claims up to Dec. 27, and Jan. 4 was fixed as the date upon which the Master in Chambers would receive the liquidator's report.

The Toronto Ry., after considerable experimenting, has decided to equip all its cars with 24-watt Tungsten lamps. About 24,000 are being installed.

Electric Railway Projects, Construction, Betterments, Etc.

British Columbia Electric Ry.—The differences between the company's engineer and the city's engineer as to the safety for electric railway traffic of the temporary trestle at the fire damaged Connaught Bridge, Vancouver, have been practically settled. Some additional parts of the damaged steel work are being removed and additional braces are being put in. (Dec., 1915, pg. 482.)

Edmonton Radial Ry.—The City Commissioners have recommended the extension of the radial railway tracks along Brandon Ave., so as to make connection with the Edmonton Interurban Ry. tracks, at an estimated cost of \$3,000. The matter is still under consideration. (Oct., 1915, pg. 404.)

Chatham, Wallaceburg and Lake Erie Ry.—We are officially advised that the company has under consideration the construction of over 200 ft. of siding. W. Norris is General Superintendent, Chatham, Ont.

Hamilton Radial Ry.—The work of straightening the tracks in the neighborhood of the Inlet, at Hamilton, Ont., which has been in progress for some months, is reported completed. The new piece of construction cuts out some curvature and shortens the route somewhat.

Lacombe and Blindman Valley Electric Ry.—We are officially advised that the Alberta Government guaranteed the company's bonds for \$7,000 a mile for building 39.1 miles of line. The bonds were left in the hands of the Province, and the proceeds of the entire issue were subsequently placed to the credit of the Provincial Treasurer, who has paid out a considerable sum to the company as construction progressed. No work has been done on the line this year. (Dec., 1915, pg. 482.)

London and Lake Erie Ry. and Transportation Co.—We are officially advised that there is no foundation for the recent press report that the company is arranging for an extension of its line from Lambeth to Delaware, Ont. (Aug., 1915, pg. 318.)

London and Port Stanley Ry.—We are officially advised that there is under construction an extension from Richmond St. to Ridout St., London, Ont., about a mile. The car repair barns under construction, a description of which appears on another page, are expected to be completed by Feb. 1.

The bylaw for \$100,000, which London ratepayers will vote on Jan. 1, is to provide money to lay industrial spurs; to electrify the portion of the Michigan Central lines in London and St. Thomas, over which the Commission has control, and for other purposes. J. J. Callahan, London, Ont., is Manager of Transportation. (Nov., 1915, pg. 441.)

Moncton Tramways, Electricity and Gas Co.—We are officially advised that the company will probably undertake the construction of about a mile of new city and suburban track, connecting the existing lines with the suburb of Sunny Brae. It is expected that 60 lb. T rail will be used on the extension. A. B. Coryell is Superintendent Tramways and Electricity and Purchasing Agent, Moncton, N.B. (Dec., 1915, pg. 482.)

Montreal and Southern Counties Ry.—The extension of the line from St. Cesaire, mileage 31-23 to Abbottsford, mileage 37-88, was opened for traffic Dec. 15. The remaining section into Granby, mileage 46-63, will be opened for traffic Jan. 15. This will give the company a through line from Montreal to Granby of 46.63 miles. (Dec., 1915, pg. 482.)

Niagara, St. Catharines and Toronto Ry.—A press report states that the company pro-

poses to erect a new steel bridge on its line in Stamford Tp. during this year.

The Dominion Parliament is to be asked, at its next session, to extend the time within which the company may build the following lines: From Port Colborne to Fort Erie, and Niagara Falls; from Niagara Falls to Niagara, and from Niagara to St. Catharines; from Welland to Brantford; an extension of the St. Catharines and Niagara Central Ry. to the Niagara River at Fort Erie, and an extension to Toronto, passing through or near Hamilton. (July, 1915, pg. 277.)

Sarnia St. Ry.—We are officially advised that the following extensions of line in Sarnia, Ont., are projected: St. Clair St. to Clifford St., and from Clifford St. to River Road, 2,500 ft. Nothing has been settled as to when these extension will be built. G. E. Wadland, Sarnia, Ont., is Manager. (July, 1915, pg. 277.)

Schomberg and Aurora Ry.—We are officially advised that the electrification of this line has been completed, and it was expected to start operating it by electric power Jan. 1. The line runs from near Bond Lake, Ont., and the Toronto and York Radial Ry.'s Metropolitan division, to Schomberg, 14.40 miles, and has hitherto been operated by steam locomotives.

Toronto Civic Ry.—We are officially advised that there is under construction a double track line on Lansdowne Ave., from St. Clair Ave. to the C.P.R. tracks, 0.634 mile.

The question of the provision of car repair shops is under consideration, and a report respecting the same is being prepared by Works Commissioner Harris. The site of the proposed shops is on the extension of the St. Clair Ave. line to Avoca Ave. (Nov., 1915, pg. 441.)

Toronto Suburban Ry.—H. T. Hazen, Chief Engineer, is reported to have stated that the Toronto-Berlin line will be opened from Lambton to Georgetown by Feb. 1, and on to Guelph by Mar. 1, making a total extension from Lambton of 45 miles. Track is laid between Lambton and Guelph, and a large portion of the overhead work is completed. An hourly service will, it is said, be given between Toronto and Georgetown, and a two hourly service between Georgetown and Guelph. Cars will, it is reported, start from north of the C.P.R. tracks on Bathurst St., Toronto, and run along the T.S.R.'s existing line, via. Davenport Road, Keele St. and Dundas St., to Lambton Park, where the new line starts. The points touched by the new line are, Lambton Mills, Islington, Summerville, Dixie, Cooksville, Meadowvale, Churchville, Huttonville, Norval, Georgetown, Limehouse, Acton, Blue Springs, Eden Mills and Guelph. The main car barn at Lambton is well advanced towards completion. There will be power transformer stations at Islington, Georgetown and Guelph. (Nov., 1915, pg. 441.)

The Windsor, Essex and Lake Shore Rapid Ry., we are officially advised, may do some paving on its lines during this year. A. Eastman is Vice President and General Manager, Kingsville, Ont. (Sept., 1915, pg. 359.)

Winnipeg Electric Ry.—We are officially advised that during 1915 the company laid 2.10 miles of new track upon various extensions in Winnipeg. (Nov., 1915, pg. 440.)

The Grand Trunk Pacific Telegraph Co. intends, as soon as financial conditions warrant, to erect additional wires throughout its system.

Regina Municipal Railway Operations.

Following are the figures for November, 1915, against those for November, 1914:

	1915.	1914.
Revenue	\$15,982.62	\$14,561.57
Operating expenses	14,659.93	15,406.23
Operating surplus	1,322.69	.....
Operating deficit .....	.....	844.66
Capital charges	8,466.61	7,476.54
Total deficit	7,143.92	8,321.20
Passengers carried	349,370	316,365
Expenses per car mile with- out power	14.53c.	15.10c.
Expenses per car mile with power	19.59c.	19.57c.
Power per k.w.h.	2.02c.	2.00c.
Power per k.w.h. per car mile	5.04c.	4.50c.
Platform wages per car hour	73.14c.	78.77c.
Expenses, percentage of earnings without capital charges	91.72%	.....
Expenses, percentage of earnings with capital charges	144.70%	.....

Electric Railway Track Laid in 1915.

Below is a preliminary table showing track laid on electric railways in Canada during 1915. It is not published as a complete one, owing to the fact that some of the companies have not replied to the circular sent, but it is believed to be approximately correct. The * mark indicates that the figures given are estimated: Miles.

Brantford Municipal Ry.:	
Extensions in city	1.25
* Lake Erie and Northern Ry.:	
Brantford to Waterford, and from Wat- erford to Port Dover	20.40
London and Port Stanley Ry.:	
London to Port Stanley	23.60
Montreal and Southern Counties Ry.:	
St. Cesaire to Granby, Que.	15.67
Montreal Tramways Co.:	
Four extensions	1.18
Peterborough Radial Ry.:	
Park St. to Monaghan Road	0.38
Three Rivers Traction Co.:	
Lines in Three Rivers, Que.	4.00
Toronto Civic Ry.:	
On Bloor St.	0.75
Toronto Suburban Ry.:	
From Lambton, mileage 1.82, to Mimico Creek, mileage 3.61	1.79
From the Speed River, mileage 45.11, to Guelph, mileage 48.29 ..	3.18
	4.97
Winnipeg Electric Ry.:	
Extensions in city	2.10
Total	74.30

The London & Port Stanley Ry., which was formerly a steam road, is included above, as it was reconstructed and electrified during the year.

The Lake Erie & Northern Ry. was originally supposed to be a steam road. The first section from Galt to Brantford, and a section from Waterford to Simcoe, together 30 miles, were laid with steel in 1913, and were included in our report on steam railway track laid in that year; the additional mileage between Brantford and Waterford, and Simcoe and Port Dover, is included in the above electric table, as the road is to be operated by electricity.

The Three Rivers Traction Co. is another new enterprise.

Accident on Montreal & Southern Counties Ry.—Following is the official report of an accident on Dec. 18:—"Car 102, leaving St. Lambert at 7.37 a.m., collided with car 103, which left Montreal at 7.20 a.m. Cars met between spans 19 and 20, Victoria Bridge, in dense fog. Car 103 was delayed on Mill St. 6 minutes, and car 102 left Front St., St. Lambert, at 7.43. Accident happened on account of misunderstanding of orders by crew of car 102." One motorman had two legs broken, and the other motorman had two legs broken. Several passengers were injured.

Answers to Questions on Electric Railway Topics.

Questions addressed to the American Electric Railway Association's Question Box, have elicited replies from Canadian electric railway officials, as follows:—

Overloading of Motors.—Electric car with four 95 h.p. motors has three pairs of 32 in. wheels and one pair 34 in. wheels. Is the motor on the 34 in. wheels overloaded?

W. R. MacRae, Master Mechanic, Toronto Ry.—In my opinion the motor attached to the 34 in. wheels is overloaded.

Life of Steel Underframes.—We are operating a lot of 36 ton cars built with 5 in. steel under frames. They have been in operation nine years and we find that the steel work is corroding badly. (a) What method has been adopted to protect the steel under frames of cars from corrosion? (b) What has the life of these frames proved to be?

M. Power, Master Car Builder, Toronto Ry.—(a) The only method I know of is to have the exposed parts properly protected by a suitable iron paint. Before applying same, the steel should be cleansed by a sand blast. When this cannot be obtained, a wire brush can be used to advantage. (b) I know of no set life of a steel car. From the experience of those using them, it appears to be little longer than wood. In order to have steel construction stand, it requires more care than wood.

Life of Car Axles.—What mileage should 1 1/4 in. heat treated non-keyseated car axles average under double truck four-motor car of approximately 43,000 lbs. weight?

W. R. MacRae, Master Mechanic, Toronto Ry.—At least 250,000 miles.

Car Wheel Guarantee.—What material is purchased under a contract guaranteeing cost per 1,000 car miles?

W. R. MacRae, Master Mechanic, Toronto Ry.—Car wheels.

Lighting of Suburban Stations.—We have installed at a great many of our suburban stations electric lamps fed from the trolley and feed wires. It is a problem to keep these lights in repair, have them lighted when they should be and turned off when they are not needed. We would like very much to get the experience of other companies. (a) Does good service demand that railway companies install fixed lights at suburban stations where there are no agents to care for them? (b) If so, what is the best way to protect and operate them?

C. L. Wilson, Assistant Manager, Toronto and York Radial Ry., Toronto.—Regarding the practice of installing lights at way stations, I may say that this is done only at points where we have a ticket agent or an employe acting in the capacity of an agent or watchman, and it is not customary for us to make this practice general at waiting points.

Automobiles for Employes.—Should utility companies furnish automobiles exclusively to the individual employe, or should there be a garage where cars are subject to assignment?

F. G. Clark, Chief Engineer, Toronto Ry.—The furnishing of automobiles depends largely upon local conditions and the type of organization. Our practice is as follows: Certain officials have cars and drivers furnished for their exclusive use. These cars are kept in the company's garage, and if there happens to be an emergency requirement, the superintendent of garage calls upon the officials to find if the cars may be used for a specific purpose and for a given length of time. Certain other cars are designated for the use of certain officials and are the cars usually used by these men, be-

ing driven by them and to a certain extent are under their care. These cars may be used by the garage superintendent for certain emergencies without the permission of the men who ordinarily use the cars, but for ordinary service are not to be taken out of the garage except by permission of the men to whom they are assigned. Certain other cars are for general use and are assigned upon requisition and are charged for with or without a driver, as would be the case with any livery or public garage.

Competition on Contracts.—How many proposals are necessary on a contract to get full benefit of competition?

F. G. Clark, Chief Engineer, Toronto Ry.—The number of proposals necessary to get the benefit of competition depends upon the nature of the contract, the apparatus and material being purchased, the standing of the companies competing for the contract, etc. In some cases, competition is unnecessary to get proper results; in other cases, two proposals are sufficient, and in certain others, a considerable number of proposals may be desirable. Suitable knowledge of the requirements of the case and common sense appear to be what are necessary in this connection.

Electric Railway Finance, Meetings, Etc.

Brantford Municipal Ry.—The Brantford City Council is applying to the Dominion Parliament for authority to carry on the Grand Valley Ry. under the name of the Brantford Municipal Ry., with all the powers of the G.V.R., and the power to sell any portion of the same absolutely or conditionally, subject to the Board of Railway Commissioners' approval.

British Columbia Electric Ry., and allied companies:

	Oct. 1915	Oct. 1914	July 1 to Oct. 31, 1915	July 1 to Oct. 31, 1914
Gross earnings	\$538,826	\$661,000	\$2,073,697	\$2,679,351
Expenses	480,051	511,877	1,928,530	2,060,681
Net earnings	58,775	149,123	145,167	618,670

The percentage due to the City of Vancouver for November was \$3,323.14, against \$6,145.51 for Nov., 1914. The number of passengers carried on the city and suburban lines for November was 2,269,542, against 2,611,978 in Nov., 1914.

Cape Breton Electric Co.

	Oct. 1915	Oct. 1914	July 1 to Oct. 31, 1915	July 1 to Oct. 31, 1914
Gross earnings	\$54,152.20	\$30,751.49	\$132,336.88	\$122,733.15
Expenses	16,891.18	18,524.03	70,900.79	73,491.06
Net earnings	17,261.02	12,227.46	61,436.09	49,242.09

Edmonton Radial Ry.—The Mayor of Edmonton, Alta., at the annual public meeting for the discussion of civic affairs, Dec. 1, made a statement as to the city's finances, in the course of which he said: "In the street railway department a decided improvement has taken place, resulting in a very large decrease of the deficits. The total operating expenses and capital charges for the 10 months were \$547,263, a saving over 1914 of \$186,521. The deficit showed a reduction of \$63,506 for 1915, as compared with the corresponding period of last year. Since August the department had been making a decided better showing, and it was clear that under proper handling and normal conditions the system would pay its own way."

Guelph Radial Ry.—Guelph, Ont., press dispatch, Dec. 15: "The Radial Railway Board has paid the City Treasurer more than \$10,000, the surplus over operating expenses from the street railway for 1915. This figures out at 6% on the amount the city has invested in the railway. A few shares were taken over recently from pri-

vate holders, and from these the amount may be made even larger. This is an increase of more than \$2,000 over the amount that the railway earned for the city in 1914."

London and Port Stanley Ry. Earnings.—An estimate of net earnings for six months ended Dec. 31, 1915, states that they will amount to \$10,277.64. During July and August, 65,739 and 89,529 passengers were carried respectively.

London St. Ry.

	Nov. 1915	Nov. 1914	Jan. 1 to Nov. 30, 1915	Jan. 1 to Nov. 30, 1914
Gross earnings	\$31,843.90	\$29,057.59	\$362,199.36	\$334,537.06
Expenses	22,085.48	21,089.50	250,755.85	243,416.06
Net earnings	9,758.42	7,968.09	111,443.51	99,148.96

Toronto Ry.—The receipts from Jan. 1, and the percentages paid to the city, for 1915, compared with those for 1914, are as follows:

	1915		1914	
	Receipts	City percentage	Receipts	City percentage
January.....	\$471,226	\$70,486	\$501,844	\$75,257
February....	440,314	66,047	461,274	72,058
March.....	488,468	93,141	510,751	102,150
April.....	467,702	93,540	501,435	100,287
May.....	468,954	93,791	534,466	106,893
June.....	450,582	90,116	525,534	105,107
July.....	449,108	89,822	515,883	103,177
August.....	447,969	89,594	507,912	101,582
September...	489,573	39,166	525,265	42,021
October.....	461,083	36,935	487,689	39,274
November...	472,759	46,301	465,055	46,503
	\$5,108,338	\$808,939	\$5,537,088	\$894,390

Toronto Ry., Toronto and York Radial Ry., and allied companies.

	Oct. 1915	Oct. 1914	Jan. 1 to Oct. 31, 1915	Jan. 1 to Oct. 31, 1914
Gross earnings	\$792,001	\$849,636	\$7,942,606	\$8,471,743
Expenses	358,957	426,536	3,993,999	4,338,990
Net earnings	433,044	423,100	3,948,607	4,132,753

Winnipeg Electric Ry.

	Oct. 1915	Oct. 1914	Jan. 1 to Oct. 31, 1915	Jan. 1 to Oct. 31, 1914
Gross earnings	\$286,146	\$330,582	\$2,739,585	\$3,402,502
Expenses	181,176	197,465	1,848,025	1,979,095
Net earnings	104,970	133,097	951,570	1,423,407

Winnipeg, Selkirk, and Lake Winnipeg Ry. Bonds.—The Dominion Securities Corporation, Toronto, has issued a circular from which the following is reproduced:—

In 1905 we marketed \$400,000 1st mortgage bonds of the Winnipeg, Selkirk & Lake Winnipeg Ry. Co., the price then representing approximately a 4.70% basis for 5% bonds, due July 1, 1933. The company completed recently and put into operation 17 1/2 miles of additional road, making a total mileage of approximately 40 miles. In order to repay advances made by the Winnipeg Electric Ry. Co. (which owns the entire capital stock of the Winnipeg, Selkirk & Lake Winnipeg Ry. Co.), and to provide for redemption of the above mentioned mortgage bonds, \$1,400,000 of 5% general mortgage and refunding bonds have been issued, dated July 1, 1915, and maturing July 1, 1925—these bonds having been guaranteed both as to principal and interest by the parent company. We have already arranged for the redemption of the greater portion of the first mortgage issue—over \$300,000—practically all holders of these bonds having taken the new bonds in exchange. After reserving sufficient new bonds to retire the present small outstanding portion of the first mortgage issue, we offer the now unsold balance of approximately \$700,000. The bonds are offered at 92.56, and interest will therefore yield 6%.

Passenger Shelter at Sunnyside, Toronto.

—The question of providing a shelter at the junction of the Toronto Ry. and the Toronto and York Radial Ry. at Sunnyside, came before the Ontario Railway and Municipal Board, Dec. 1, and it was arranged that a heated car will be provided temporarily, the cost to be borne equally by the railways and the city. The portion of the Toronto and York Radial Ry. concerned, formerly the Toronto and Mimico Ry., was nominally acquired by the city on the expiration of the franchise some time ago, but no money has passed, and it is being operated by the T. & Y.R.R., at the city's request.

Mainly About Electric Railway People.

W. H. Maxwell has been appointed Roadmaster, Montreal & Southern Counties Ry, Office, St. Lambert, Que.

H. B. Fleshman, Maintenance of Way and Structures Engineer, Montreal & Southern Counties Ry., St. Lambert, Que., has resigned.

G. J. Meyer, heretofore Electrical Engineer, Montreal & Southern Counties Ry., has been appointed Chief Engineer. Office, St. Lambert, Que.

N. H. Brown, Superintendent of Transportation, Buffalo Division, International Ry., Buffalo, N.Y., has been appointed General Manager of Transportation.

Duncan MacDonald, ex General Manager, Montreal Tramways Co., and now one of the Montreal city controllers, will, it is said, be a candidate for the mayoralty this year.

J. H. McNeil, who had charge of the construction of the Three Rivers Traction Co.'s line in Three Rivers, Que., has been appointed acting Superintendent in charge of operation.

Mrs. Rothery, of Weston, Ont., is suing the Canada Accident and Guarantee Co. for \$15,000, alleged to be due under a policy on her late husband, J. E. Rothery, formerly Manager, Toronto Eastern Ry.

W. G. Murrin, General and Mechanical Superintendent British Columbia Electric Ry., has been appointed Chairman of a sub-committee of the Vancouver Returned Soldiers' Welcome Committee.

G. D. Archibald has been appointed Superintendent, Saskatoon Municipal Ry., Saskatoon, Sask. For some time past the duties of Superintendent of the municipal railway have been carried out by E. Hanson, City Electrician.

Mrs. J. C. Grace, wife of the Secretary-Treasurer, Toronto Ry. Co., died suddenly at Toronto, Nov. 30, from cerebral hemorrhage. She was a sister of the late Jas. Ross, of Montreal, and an aunt of J. K. L. Ross, one of the C.P.R. directors.

Lt. Col. G. D. Fearman, Chief Accountant, Dominion Power and Transmission Co. of Hamilton, Ont., has been appointed to the command of the 120th Battalion, but still retains his position with the company. His assistant, G. N. Kendall, is discharging the duties of Accountant.

Major Geo. C. Royce, General Manager, Toronto Suburban Railway, who has been in command of the Depot Battalion at Toronto Armouries, has been appointed commandant of the camp for interned alien enemies at Kapuskasing, Ont., on the National Transcontinental Ry., with the rank of Lieutenant Colonel.

James D. Fraser, Director and Secretary-Treasurer, Ottawa Electric Ry., and President, Canadian Street Railway Association, who has recovered recently from a severe attack of la grippe, was to leave Ottawa, Dec. 30, with Thos. Ahearn, President, Ottawa Electric Ry., for a short trip to Havana and other southern points.

A. C. Johnston, who has succeeded J. E. Richards as Accountant, Chatham, Wallaceburg & Lake Erie Ry., Chatham, Ont., commenced railway work with the Canadian Northern Ry. in Dec., 1896, leaving in 1904 to enter the Lackawanna Steel Co.'s service at Buffalo, N.Y., where he remained for several years, returning to the Canadian Northern in June, 1912.

Col. H. H. McLean, K.C., M.P. for Queensbury, N.B., and President, St. John Ry. Co., who commanded a cavalry brigade at Valcartier during last summer, has been ap-

pointed a special recruiting officer for the Maritime Provinces, and will assist in raising battalions there. Later on he will probably be sent to the front in command of a brigade.

Edward L. Cousins, A.M.Can.Soc.C.E., one of the engineers entrusted with the preparation of a report on a proposed rapid transit system for Toronto, which appears, with his portrait, elsewhere in this issue, was born at Toronto, June 11, 1883, and was educated at the public schools there, St. Andrew's College, and Toronto University, graduating B.A.Sc. in 1907. From 1902 to 1907 he was assistant engineer, Resident Engineer's office, G.T.R., Toronto; 1907 to 1910, Engineer in Charge Middle Southern Division, G.T.R., Toronto; 1910 to 1912, Assistant City Engineer, Department of Railways, Bridges and Docks, City of Toronto. In 1912 he was appointed Chief Engineer, Toronto Harbor Commissioners, which position he still holds.

Manfred Freeman was elected Public Utilities Commissioner for Lethbridge, Alta., Dec. 13, by a majority of 36 over Arthur Reid, who held the office for the last term. Three candidates went to the poll, with the result that Reid received 410 votes, Freeman 319, and McKenzie 246, but as the retiring Commissioner did not receive 51% of the votes polled, a counting of the second choice ballots was necessary, the name of the third candidate being eliminated. The second choice ballots gave Freeman 152 votes and Reid 25, giving Freeman a total of 471 and Reid 435. Mr. Freeman is a native of Hamilton, Ont., and has lived in Lethbridge since 1890. He was at different times Chief Engineer, Manager, and Secretary of the Lethbridge Waterworks and Electric Light Co., during its existence as a private company. As Public Utilities Commissioner he has charge of the Lethbridge Municipal Ry.

Electric Railway Notes.

Moose Jaw Electric Ry., Moose Jaw, Sask., has ordered a rotary circulating water pump in the United States.

The Sarnia St. Ry. may be in the market for about 5,000 ft. of 60-lb. rails early in the spring. G. E. Wadland, Sarnia, Ont., is Manager.

The Windsor, Essex and Lake Shore Rapid Ry. has become a party to the Eastern Canadian Passenger Association's certificate plan regulations.

The British Columbia Electric Ry. issued an order, effective Dec. 15, reducing the service on the Lulu Island and Burnaby Lake lines from one car an hour to one car every two hours.

The British Columbia Electric Ry. received entries up to Dec. 15, in a competition for a design emblematic of supplying transportation, light, power and heat. Prizes of \$50 and \$25 were offered.

The Manitoba Court of Appeal started on Dec. 15 hearing the Winnipeg Electric Ry.'s appeal against Judge Metcalfe's decision that the company must pay for clearing snow from the tracks when ordered to do so by the City Engineer.

The British Columbia Electric Ry.'s office staff's annual dinner was held in Vancouver, Dec. 4, G. Kidd, General Manager, being present. The speeches were chiefly of a complimentary character, but special reference was made of the fact that 144 of the company's employes are in the Canadian Overseas Expeditionary Forces.

A cablegram from London, Eng., Dec. 20, to the city attorney of Montreal, stated that the application of D. Robertson, Purchasing Agent, Montreal Tramways Co., for permission to appeal to the Imperial Privy Council to have the franchise of the Canadian Auto-bus Co. declared illegal had been refused. The action has been before the courts for some two years.

The Sandwich, Windsor and Amherstburg Ry. has received two single truck city cars from the Preston Car and Coach Co. They are mounted on 21-E trucks, and are single end, p.a.y.e. type, with longitudinal seats upholstered in pantasote, folding steps, mutually operating doors under the control of the conductor and motor man, and equipped with sign boxes and forced circulation heaters.

The only decision rendered to date in the various suits arising out of the Montreal tramways franchise matter is one brought by J. A. Thibeau to have Controller McDonald unseated. The decision was rendered by Justice Lafontaine, Dec. 2, the petition being dismissed with costs. The other actions are still before the courts. Ex Controller Hebert, who was the central figure of the disputes, has made an assignment to his creditors, and is reported to be seriously ill.

An Alberta court on Dec. 7 granted an injunction restraining the Edmonton City Council from entering into an agreement with the Edmonton Power Co., granting a franchise for the supply of power in the city. The agreement was endorsed by the ratepayers, but the third reading of the bylaw was defeated in the City Council Nov. 24, by the casting vote of the Mayor, and referred back for further consideration. The case came up for hearing Dec. 10, and was concluded on the following day, when Judge Hyndman decided that the bylaw could be passed by the council, and accordingly dissolved the interim injunction. The bylaw, he said, did not confer a franchise, but was simply an agreement to go to the Legislature, asking it to sanction the granting of a franchise, the terms of which had been arranged.

One-Man Cars in Calgary.—The Calgary Municipal Ry. has placed some one-man cars in operation running from the city centre to outside points, as an accommodation where large cars with two men would not pay. Five of the one-man cars are being operated largely on inside and stub lines satisfactorily, and it is proposed to operate more of them at rush hours on long hauls where only one trip will be made. These cars are single truck p.a.y.e., 6 ft., rear vestibule type, and have been converted by closing up the rear end and making it into a smoking room seating 10 passengers, and by adding one additional seat in the body, where 28 passengers are seated, the total capacity being 38 passengers. The front bulk head door has been removed, and also the window, which is used as a wicket, the fare box being inside this window. We are indebted to T. H. McCauley, Superintendent, for these particulars.

Toronto Ry. and Overcrowding.—Information was received in Toronto, Dec. 21, that the Imperial Privy Council had granted the Toronto Ry. Co. leave to appeal against the Ontario Appeal Court's decision confirming the conviction for maintaining a nuisance in permitting overcrowding of cars.

Dominion Power and Transmission Co.—W. C. Hawkins, Managing Director, is reported to have stated that the Hydro Electric Power Commission of Ontario is not negotiating for the company's electric railways and power plants.

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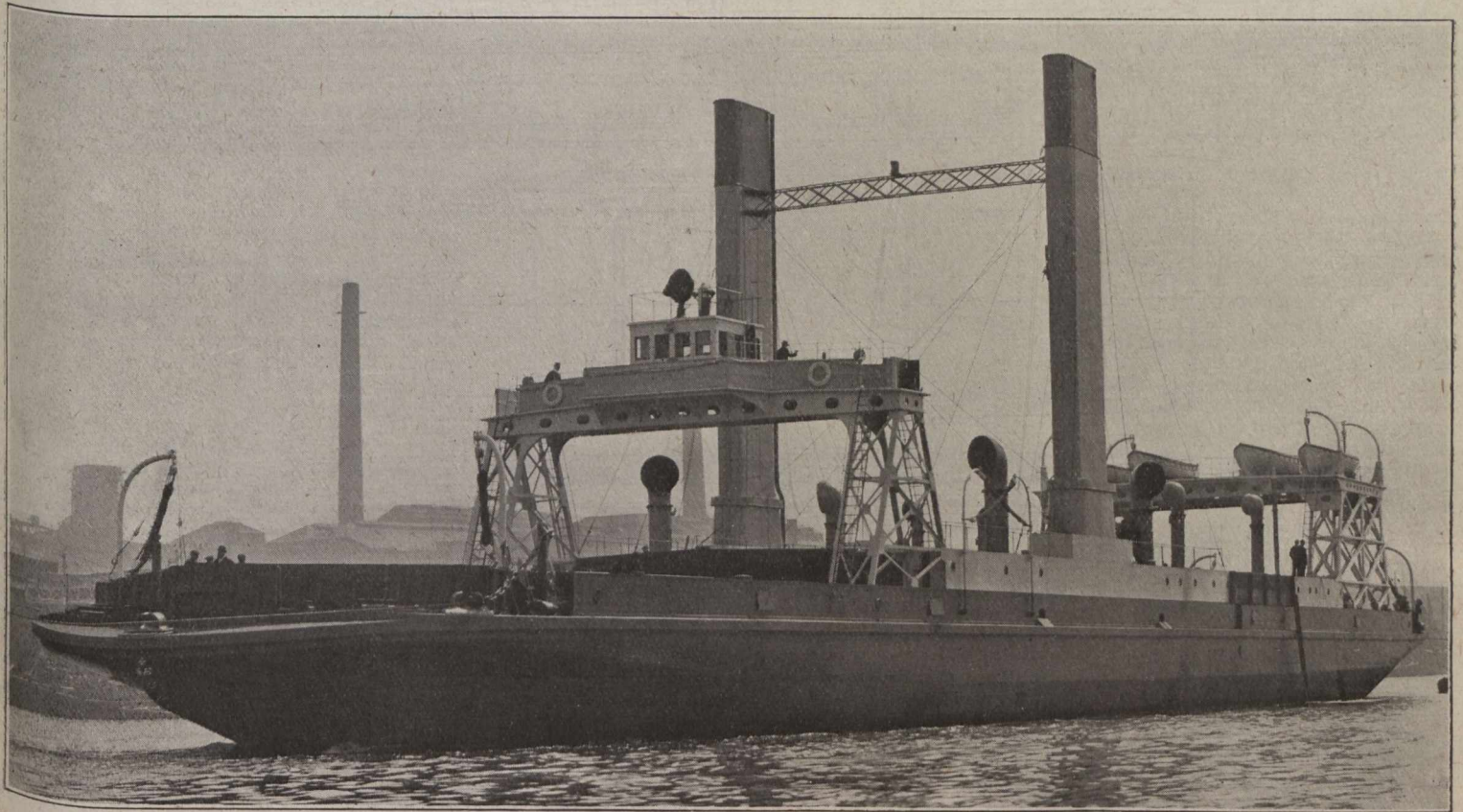
Intercolonial Railway's Car Ferry Steamship, Scotia 2.

A very complete advance description of this vessel was published in Canadian Railway and Marine World for Nov., 1913. The route which she is to serve is the trying one which traverses the Strait of Canso, between the mainland of Nova Scotia and Cape Breton Island. There is considerable ice-flow along this route in winter and, therefore, the Scotia 2 has been constructed to break up the ice, in order to keep the passage open for railway service. The vessel, which has several interesting features, left the Tyne Aug. 31 last, under the command of Capt. Manning, and, in spite of heavy weather on the voyage, arrived at Port Mul-

duced in order to break up the ice in front arrangement aft is for a single screw propeller with the ordinary rudder. The hull is specially strengthened at the water line, fore and aft, and water ballast tanks are arranged at the forward and after ends. These can quickly be filled in order to increase where necessary the downward thrust for the breaking up of the ice.

To facilitate navigation, a superstructure has been built. This gives a clear headway for the railway cars traversing the track on the deck, and affords a good outlook for navigation purposes. The pilot house on the navigation bridge contains the steam steer-

of one large mess room, four rooms for the officers and engineers, one for the steward, two separate rooms for the day and night captains, and two for the chief engineers. The crew's quarters include a mess room, one room for 6 seamen, and one for 8 firemen. A complete installation of electric light is fitted throughout the vessel. The generating machinery consists of two direct coupled plants, each capable of giving an output of 25 kw. at 80 volts, when running at a speed of 350 revolutions a minute. A searchlight of 20 in. diameter and 16,000 candle power, is fitted on top of the pilot house, with the necessary controlling



Bow View, Car Ferry Steamship, Scotia 2.

grave, N.S., Sept. 15, proving the structural strength of the hull and the fact that vessels of this character can safely cross the Atlantic. The principal dimensions are:—

Length over all	300 ft. 0 ins.
Length between perpendiculars ...	286 ft. 6 ins.
Breadth, extreme, over fenders ...	50 ft. 0 ins.
Depth, moulded	20 ft. 0 ins.
Draught of water	14 ft. 2 ins.
Displacement at 14 ft. 2 in. draught	3665 tons

The vessel is of the single deck type; and increased strength has been introduced in the framing of the deck in order to support the weight of heavy locomotives on the centre track. The vessel conforms to the conditions of Lloyd's highest classification and also with British Board of Trade requirements. The main deck has three lines of track laid to standard 4 ft. 8½ in. gauge, and the cars will be shipped and discharged over the forward end only. The four bunkers with which the vessel is fitted are so arranged that they can be loaded from cars on the railway track on deck. The fore part of the vessel is of the ram form, intro-

duced in order to break up the ice in front arrangement aft is for a single screw propeller with the ordinary rudder. The hull is specially strengthened at the water line, fore and aft, and water ballast tanks are arranged at the forward and after ends. These can quickly be filled in order to increase where necessary the downward thrust for the breaking up of the ice. To facilitate navigation, a superstructure has been built. This gives a clear headway for the railway cars traversing the track on the deck, and affords a good outlook for navigation purposes. The pilot house on the navigation bridge contains the steam steer-

of the forward propeller. The structural ing gear control standard and the steering compass, with speaking tubes and telegraphs from the house to the engine room and its steering gear, which is fitted immediately forward of the rudder. The gear is of the combined hand and steam type. In addition there are warping steam capstans placed at each end of the vessel for working anchors, cables, and mooring ropes. The capstan heads are placed on deck, with the engines below the deck. There are also four pairs of mooring bits with the necessary pipes. Aft there is a superstructure corresponding to that for the pilot house, but utilized for carrying four lifeboats. On each side of the upper deck are the funnel casings and also the deck houses, providing the necessary sanitary accommodation, etc., for the officers, crew, and passengers. The mess room and living accommodation for the officers and engineers is under the deck aft, and for the crew below the deck forward. The former accommodation consists

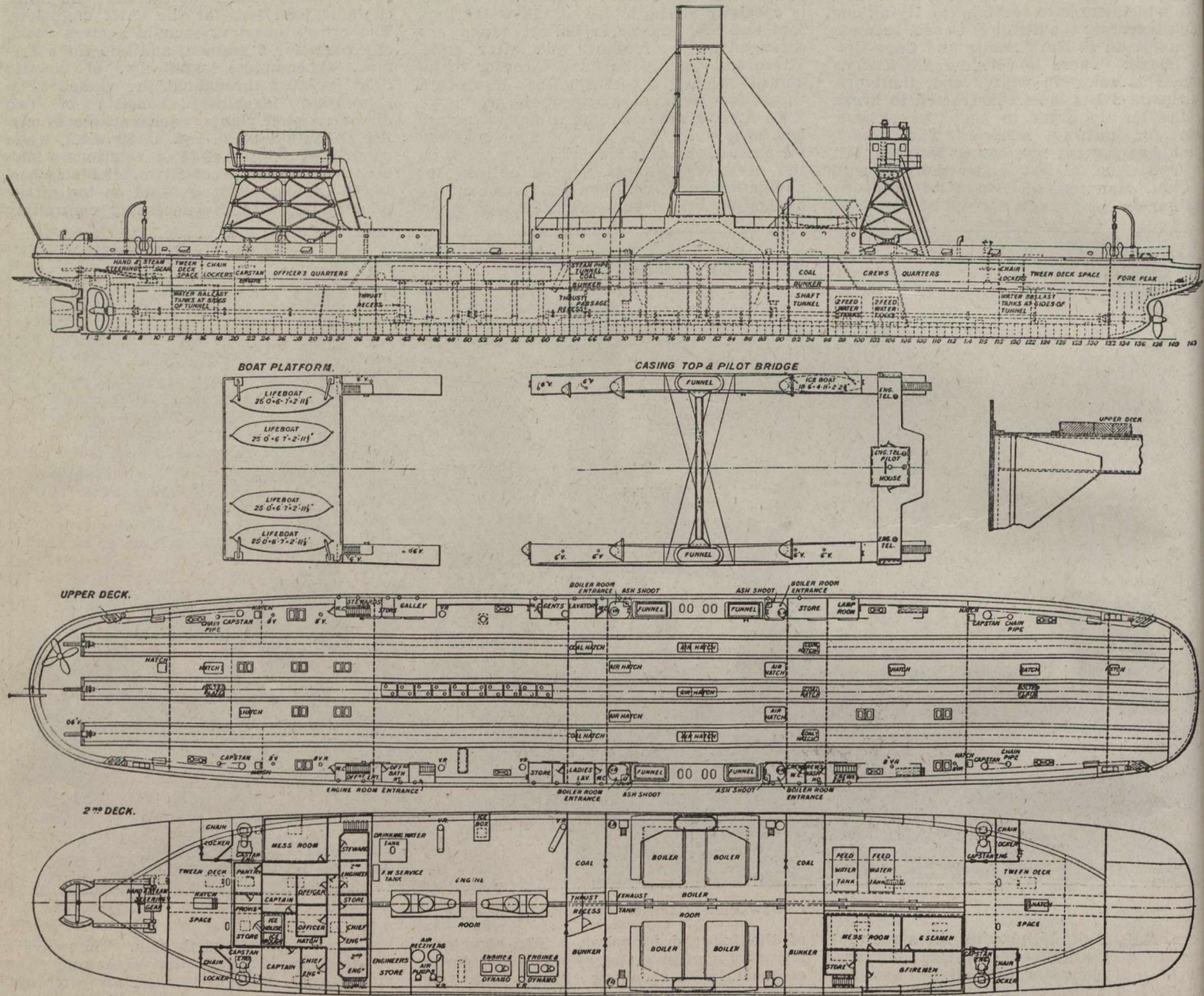
gear and connections therein. There are 8 electric fans fitted in the stokehold and engine room ventilators. An air compressing plant, consisting of two Westinghouse air pumps, with receivers, is placed in the engine room. Connections are led to each end of the vessel for providing power for pneumatic tools used for effecting repairs to the hull or machinery.

The propelling machinery is fitted amidships and consists of two sets of engines on the fore and aft line, the forward engines being arranged to work the bow propeller, and the after engines the stern propeller. A suitable coupling was fitted so that the two engines may work either together or independently. The engine room ventilators are placed in the wings, in order to afford the maximum of deck space for the accommodation of the railway trains. The boilers are also arranged in the wings of the ship, enabling the uptake to be easily and suitably connected to funnels at the side of the ship. There are 4 single ended boilers.

which are each 15 1/4 ft. in diameter by 10 3/8 ft. long, constructed for a working pressure of 160 lbs. per sq. in. under natural draught. More than adequate tube surface is provided, as a considerable amount of heating is required for ship's purposes, and special connections are led from the boilers to various parts of the ship. Each boiler has an independent connection with the main steam pipe, so that any one boiler may be put out of action. The coal bunkers are ar-

ly 21, 34 and 54 ins. in diameter, with a stroke of 30 ins. The crank shafts are of the built up type, 10 1/4 ins. in diameter, each shaft being in 3 interchangeable pieces. The thrust shafts are of forged ingot steel, 10 1/4 ins. in diameter. The thrust blocks are of cast steel of special design, to withstand shock; the line shafting is also forged ingot steel, 10 ins. in diameter, and the propeller shafts are of forged ingot steel, 12 ins. in diameter. Each propeller has 4 blades, and

the general service pumps and other auxiliaries. The whole of the auxiliaries connected with the propelling machinery are placed on the port wing, the starboard wing being reserved for the electric generating set, air pumps, and air receivers, for ship service, and for engineer's stores. The machinery was designed to indicate 3,000 horse power, and on trial this was easily attained. The foregoing description is reproduced from Shipping Illustrated. The car ferry



Longitudinal Section and Deck Plans, Car Ferry Steamship, Scotia 2.

ranged at the forward and after ends of the boiler rooms, and these are filled from hatches from the upper, or train, deck. The main engines have been designed and constructed in accordance with experience for this type of vessel, and special consideration has been given to provide against the shocks due to sudden stoppages of the propellers when working against ice. The engines are of the single screw, triple expansion, inverted direct acting surface condensing type, each working on three cranks. Normally they will be coupled up to work together the bow and stern propellers, but there is a short portable length of shafting between the two engines, by the withdrawal of which they can be operate independently. The cylinders in each engine are respective-

ly made of nickel steel, extra thick, for working amongst ice. There is one condenser common to the two engines. It is placed on the port side centrally, being carried on the columns of the two high pressure cylinders. The method of support simplifies greatly the exhaust pipe arrangement from each of the low pressure cylinders. The air pumps are separate, and are 18 x 10 x 15 ins. Two sets of independently driven 12 1/2 in. centrifugal pumps are fitted; one of them is sufficient for the maximum duty, the other serving as a standby. The feed pumps are located at the forward end of the main engine room on the port side. These are 7 x 9 1/2 x 24 ins. stroke. Alongside are placed the fire and bilge pumps, which are 7 1/2 x 7 1/2 x 6 ins. stroke, while in the wings are

has been built by Sir W. G. Armstrong & Co., Walker Shipyard, Newcastle-upon-Tyne, Eng.

A view of the cross section of this vessel is given on the next page.

Canada Steamship Lines, Ltd., according to press dispatches, during the past season effected a saving in operating charges of approximately \$420,000, to the end of September, and it is stated that when the accounts for the complete season are made up, the saving will be over \$440,000. This saving, it is said, is more than sufficient to provide the full interest on the debenture stock and a portion of the preference dividend.

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The Canadian Atlantic Ocean Mail Port.

As announced in Canadian Railway and Marine World for December, the schedule of Atlantic sailings for the C.P.R. mail steamships for the winter shows St. John, N.B., as the Canadian port. In previous years a call was made at Halifax, N.S., where mails were landed, after which the vessels proceeded to St. John. The decision to make St. John the sole port this winter has aroused considerable opposition in Halifax, and immediately the official announcement was made the matter was taken up by the Halifax Board of Trade, and the Dominion Premier was appealed to with the view of getting Halifax reinstated as a port of call. The Premier promised to interview the President of the C.P.R., and as a result received the following letter from Sir Thos. Shaughnessy explaining the company's attitude:—

"I wish that it were possible to comply with your request to have our passenger ships call at Halifax on the inward and outward trips this winter, but as I said to you personally, I am convinced that it cannot be done in the interest of the country. The war has brought upon us a condition of things with reference to our Atlantic steamship service, that could not have been foreseen, and that it will be difficult for us to satisfactorily meet, even with our greatest efforts. As you know, a great many of our ships have been taken by the Admiralty, and we have found it impossible to charter a sufficient number to replace them. In these circumstances, we must either utilize such steamships as are available to the utmost, or we must permit a substantial percentage of our Canadian exports to be diverted from our Canadian ports. Apart from all other considerations, the Halifax call would involve a delay to our passenger ships of from two to three days on each round voyage, with a like reduction in their freight carrying efficiency. Our endeavor must be this winter to avoid unnecessary detention of a single hour, so as to secure the fullest advantage of their carrying capacity. By running direct to and from St. John, in these exceptional circumstances to which I have referred, no precedent is being established. When normal conditions return, the Halifax mail service and the terms upon which it is to be conducted, will be open for consideration."

This letter was discussed at a public meeting at Halifax, together with a letter from Sir Robt. Borden, wherein he stated that under the circumstances the Government will take into immediate consideration the forwarding of mails by the Admiralty transports sailing to and from Halifax during the winter."

As a result of the discussion a telegram was sent to the Premier, stating that both communications were considered unsatisfactory, and alleging that the contention that vessels would lose three days on each round trip cannot be borne out by facts. In backing up this statement, it is stated that the vessels work on a 35 day schedule for the round trip, and that it can be done in 34 days, including the call at Halifax. This is explained as follows:—Liverpool to Halifax, 10 days; stop at Halifax, 1 day; Halifax to St. John, 1 day; stop at St. John, 5 days; St. John to Halifax, 1 day; stop at Halifax, 1 day; Halifax to Liverpool, 10 days; stop at Liverpool, 5 days; total, 34 days.

The Premier subsequently replied to the Board of Trade stating that no subsidy arrangements had been made with the C.P.R. for the winter, and that the company can, of course, control the destination of its vessels, but that the Government controls the disposition of subsidy, an equal portion of

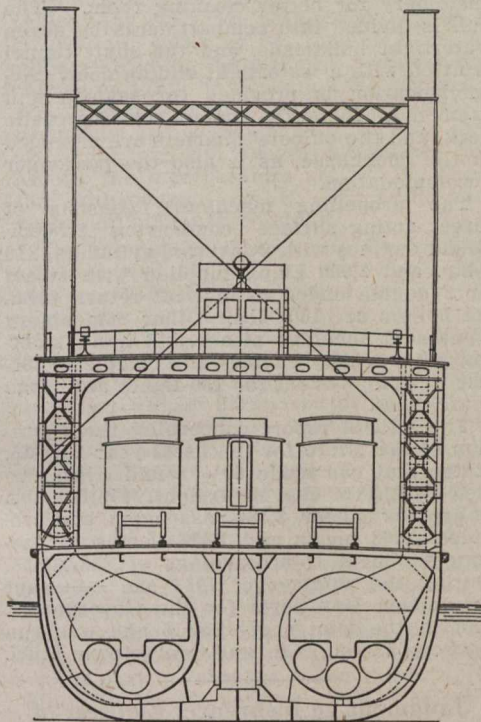
which will be allocated to the direct transmission of mails to and from Halifax by the best vessels that can be procured.

A further meeting was called at Halifax to discuss the whole situation, and a resolution was passed protesting against the elimination of Halifax from the mail route, and calling upon the Government to compel mail steamships to call there.

On Dec. 3, a deputation waited on the Premier, Minister of Trade and Commerce, Minister of Railways and Canals, and the Postmaster General, to press the Halifax protest, and was given to understand that the matter will be taken up again with the C.P.R., and that the Government will do everything possible to get the company to continue the Halifax call.

The Loss of the s.s. Constance.

An investigation into the cause of the loss of the s.s. Constance, which foundered in the Gulf of Georgia, Oct. 2, 1915, was held at Vancouver, B.C., recently, by Capt. J. D. Macpherson, Wreck Commissioner for



Cross Section, Car Ferry Steamship, Scotia 2.

British Columbia, assisted by Commander C. Unwin, R.N.R., and Capt. R. C. Proctor, as nautical assessors. Following is the judgment:—The evidence was in most instances of a most contradictory and evasive nature, that of the master, Harry Smith, being particularly so. The court is unanimous in its opinion that the loss was solely due to the Constance being, under her master's direction, improperly loaded to such an extent that she was unable to cope with the heavy weather met with when she got into the Gulf of Georgia. It is also of the opinion that the master showed little judgment and less prudence in not seeking shelter under the existing conditions, before it was too late, more especially as not only had he 6 extra persons on board, which he somewhat ingeniously described as stowaways, but he had also a gasoline launch in tow, with 7 persons on board, making a total of 13 persons, in addition to his own crew, whose lives and personal belongings were under his charge. The court therefore considers the master solely to blame for the loss of the Constance, and suspends his certificate of competency as master, no. 3299,

for 3 months, from Oct. 2, 1915, to Jan. 2, 1916. The court considers that it has shown a considerable amount of leniency to the master in suspending his certificate for this period only, but it has taken into consideration the fact that he has lately been fined \$100 in the Vancouver police court for carrying the 6 persons before mentioned on board the Constance, when she was not licensed to carry passengers, thus contravening sec. 671, chap. 113, part 7 Canada Shipping Act. Had this fine not been imposed the court would have suspended his certificate for a considerably longer period, not only for the reasons already mentioned, coupled with the evasive and unsatisfactory manner in which he gave his evidence, but also as a warning and a deterrent to all interested in the shipping business on this coast, that the laws as laid down in the Canada Shipping Act cannot be violated with impunity.

Decision as to Use of Family Tickets.

The right of a ferry company to determine the extent of use of a family ticket was upheld by Chancellor Boyd in Toronto recently, on a motion by the Village of Fort Erie to have the Fort Erie and Buffalo Ferry Co. act upon a decision of the trial judge, who, on the asking of the village, compelled the ferry company to revert to an old custom. Under regulations the company was bound to provide residents with family tickets, but when the company found that the public were abusing the privilege by permitting others than members of a family to make use of the tickets, they imposed certain restrictions. The village took action and got a verdict against the company. Chancellor Boyd agreed that the whole question rested upon the interpretation of the word "family," and he decided that "family" in the sense intended by the ferry company meant parents and children of parents living in one home. Servants, he decided, were barred from use of a family ticket, and he found for the ferry company, which has the right to name those who should use such tickets.

Wreck Commissioners' Investigations in 1914.—During 1914, 26 formal, 10 preliminary and 1 departmental investigations into causes of wrecks and marine casualties were held. As results of these, 3 masters' certificates were suspended for one month, 2 for three months, 1 for six months and 1 for a year; 1 master was fined and 9 reprimanded or censured. Two mates' certificates were suspended for three months, 1 mate was cautioned and 1 exonerated; 2 second mates' certificates were suspended for three months, 1 cautioned and 1 exonerated; 3 pilots' certificates were suspended for three months, and 1 was cancelled. Regarding four wrecks, no blame was attributed. The total casualties were to 257 vessels of 212,842.85 tons, and the loss of \$5,211,700 and 1,114 lives.

The Interstate Commerce Commission and Lake Traffic.—In connection with the recent cases dealt with by the Interstate Commerce Commission under the Panama Canal Act, whereby railway companies operating in the United States have been compelled to cease ownership of lake lines, the commission on Nov. 30 dismissed applications on behalf of seven of the companies concerned, for a rehearing involving permission to continue such operation, and making the order to discontinue, effective Dec. 15. The railway companies affected are Pennsylvania Rd., Northern Central Ry., New York Central Rd., Erie Rd., Grand Trunk Ry., Lehigh Valley Rd., and Delaware, Lackawanna and Western Rd.

Hudson Bay Navigation and the Port of Quebec.

J. G. Scott, ex-General Manager, Quebec and Lake St. John Ry., has written to the Quebec Chronicle, defining his attitude on the matter of the navigation of Hudson Bay, on the completion of the Dominion Government's railway from Pas, Man., to Port Nelson, and of the harbor at the latter place. He says:

"At the Board of Trade's general meeting yesterday, Mr. Nesbitt drew attention to the fact that the railway to Port Nelson is to be finished next year, that the terminals at Port Nelson are to be pushed to completion, and that it is said to be the intention of the Government to put on a line of steamships, specially built to contend with the ice, so as to carry the western grain through Hudson Straits to Europe, and that, therefore, we, in Quebec, should insist upon our port being properly equipped with docks and elevators, so as to be ready to handle our share of the business coming over the National Transcontinental Ry. As your reporter does not seem to have fully understood what I said in reply, will you allow me to repeat, namely, that I thought that as the Government had built the railway in response to the pressure of public opinion in the west, it is only reasonable that they should give the project every opportunity to prove its usefulness or otherwise. I pointed out that it would seem to be in the interests of Quebec that the Government should build those ice breaking steamships because, even if the experience of navigating Hudson Straits for two or three months in the year should be successful, the steamships would then be available all the rest of the year for the St. Lawrence route, because any steamships able to cope with the ice in Hudson Straits in September and October would have no trouble in coming up the St. Lawrence to Quebec, all through the winter.

"The great difficulty that Canadian ports have to contend with is the high rate of marine insurance. It is true that the rate from Quebec, Halifax and St. John is 10% cheaper than from Montreal. Nevertheless, it is still so high that steamships charge much higher rates for freight from Canadian than from United States ports. The consequence is that half the grain from our western provinces went by the U. S. route last year, and more than half is going this year. The improvements of the lower St. Lawrence are helping to reduce the insurance rates. The new deep channel, now nearly completed, east of the Island of Orleans, will help still further. If the Government will guarantee the marine underwriters in making our St. Lawrence rates the same as New York all the year round, and will show their confidence in the route by putting on the steamships now spoken of, the battle will be won, and Canadian ports will handle all the Canadian grain that is intended for export instead of seeing the humiliating spectacle of 63,000,000 bush. of it diverted to Buffalo, as was done last year. But, as Mr. Nesbitt says, we must have docks and elevators to handle the traffic, or we won't get it."

German Vessel Tonnage.—At the annual meeting of one of the British steamship companies recently, it was announced that of the 5,459,296 tons of German shipping existing at the commencement of the war, 230,000 tons have been captured by the British Navy; 38,000 tons by other allies; 117,000 tons have been sunk, and 397,000 tons interned in various British ports. The remainder, with the exception of a few small traders in the Baltic Sea, are detained in German harbors, or interned in neutral ports.

Dominion Government s.s. Minto for Icebreaking Service in Russia.

The Dominion Government s.s. Minto has followed the s.s. Earl Grey, in service in the White Sea in keeping the port of Archangel open for navigation throughout the winter. The Minto was specially designed for ice service between Prince Edward Island and the mainland, and was built at Dundee, Scotland, in 1899. She is of steel and classed 100 A1 at Lloyd's. Her dimensions are, length between perpendiculars 225 ft., breadth moulded 32.7 ft., depth moulded 21 ft.; tonnage 1,090 gross, 496 register. For her special ice service she was constructed with extra heavy scantlings for the keel, stern, stern frame, keelson and stringer plates, these being about 50% heavier than required by Lloyd's, and similar strengthening was provided at other points where experience had shown that it was required. There is a cellular double bottom from the forward bulkhead in the fore hold under the boilers and engines to the after bulkhead of the engine room, all made 6 ins. deeper than customary for better cleaning room. The hull is divided into compartments by seven watertight bulkheads, and the shaft tunnel is fitted with a watertight sliding door. Accommodation is provided for seamen and firemen in 20 berths under the fore-castle deck, and the officers' quarters are arranged in the deckhouse, as is also the passenger accommodation.

The propelling machinery consists of direct acting surface condensing tri-compound engines with 3 inverted cylinders, 216 n.h.p. and 2,900 i.h.p., supplied with steam by 2 double ended cylindrical return tubular boilers at 160 lbs. Other machinery equipment includes steam and hand steering gear, donkey engines and complete electric lighting system for 150 lights and large searchlight.

The official report concerning the operation of the Minto for the fiscal year 1914-15, states that she made 60½ round trips, carried 14,526,314 lbs. of freight, 476,410 lbs. of express matter, 3,186 passengers, and provided 2,963 meals and 1,118 berths to passengers; with total earnings of \$18,049.33. During the summer of 1914 she was sent to Hudson Bay ports for the Government, and in the winter of 1914-15 she was run between Pictou, N.S., and Georgetown, P.E.I.

Judgment re Insurance, Empress of Britain-Helvetia Collision.

Judgment was given recently in the Court of Appeal, London, Eng., on a matter affecting insurance in connection with the collision between the C.P.R. s.s. Empress of Britain and the British Chilean Steamship Co.'s s.s. Helvetia, under charter to the Dominion Coal Co., in the St. Lawrence River in 1912. The appeal was on behalf of the Helvetia's owner against judgment in a case where the Thames and Mersey Insurance Co. claimed to have been subrogated to the owners, in respect of the sum recovered from the C.P.R. as a result of the action for damages suffered by the collision.

The Helvetia was insured for £45,000, and was chartered by the Dominion Coal Co. for seven years, from 1911 to 1917 inclusive. As a result of the collision the Helvetia was sunk, and the insurance company paid for a total loss. The responsibility for the collision was divided between the two vessels concerned, the Empress of Britain being condemned to pay five-twelfths of the loss. Under the collision clause of the policy the insurance company was called upon to pay £19,560. In the enquiry to ascertain the amount payable by the Empress

of Britain, in the first instance, the Registrar's report, when he fixed £65,000, was based on the value of the vessel at Nov. 15, 1912, which was not the date of the collision, but the end of the first season of the charter. He took the loss of charter up to the same date and assessed it at £2,000. An appeal resulting from this decision, it was decided that the value of the vessel should have been taken as at Nov., 1917, the date of the expiry of the charter, but it was subsequently agreed as between the respective owners, that the lump sum of £67,000 be fixed without dividing the amount as between vessel and charter. The five-twelfths for which the Empress of Britain was liable, and which has been paid, is approximately £26,900, and the insurance company claims to have been subrogated to the position of the owner of the Helvetia in respect of that sum, and to recover it. The defence of the owners against that claim is that as by the decree of the Admiralty Division they were entitled to recover five-twelfths of their loss, the amount to which the insurance company was subrogated is five-twelfths of £45,000. The lower court had decided in favor of the insurance company on that point, hence the recent appeal. On this main point, the court decided that the insurance company is entitled to recover from the owners all sums which they received in respect of the vessel, up to £45,000, the amount of the policy.

Order re British Vessels Trading Between Foreign Ports.

A British order in council has been issued directing that from and after Dec. 1, 1915, no British steamship registered in the United Kingdom, exceeding 500 tons gross tonnage, shall carry any cargo from any foreign port to any other foreign port, whether or not such vessel while carrying such cargo calls at any intermediate port within the British Empire, unless the owner or charterer of such steamship has been granted exemption by license. The expression "foreign port" covers any port outside the British Empire.

A committee, appointed by the President of the British Board of Trade, has been formed to carry this order into effect, with power to grant exemption licenses in favor of owners and charterers, which may be general in reference to classes of ships on their voyages, or special.

The Sick and Distressed Seamen Fund for the financial year ended Mar. 31, 1915, showed receipts \$72,602.43, and expenditures \$65,397.85. The number of seamen treated was 3,030, and the number of hospital treatment days was 22,140. Under the provisions of the Canada Shipping Act, dues of 1½c. a ton, are levied on the registered tonnage of all vessels entering any port in Quebec, Nova Scotia, New Brunswick, Prince Edward Island and British Columbia. Vessels of 100 tons and less pay once a year, and those of over 100 tons three times a year. No dues are collected from Ontario, as the act does not apply to that province. The number of vessels paying dues was 3,148, and the number of men employed on them was 65,221.

Removal of Navigation Obstructions.—The Marine Department, during the past fiscal year, expended \$8,528.94, on the removal of obstructions and dangers to navigation in various parts of the Dominion. The chief expenditures were, \$4,900 for removing the s.s. City of London wreck near Amherstburg, Ont.; \$1,450 for removing the wreck of the Charles Crawford in Lake St. Clair, and \$1,273.81 for removing the Rhoda wreck near Lachine, Que.

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Atlantic and Pacific Ocean Marine.

The British s.s. Carleton, bound from New York to Queenstown, Ireland, with sugar, put into Halifax, Dec. 6, with fire in no. 2 hold.

The White Star-Dominion Line's winter sailings are weekly from Portland, Me., to Liverpool, with the steamships Auchendale, Ardgorm, Irishman, Michigan and Norseman, and from Portland to Avonmouth with the s.s. Englishman.

The British s.s. Oakfield, which was reported to be drifting in a disabled condition about 600 miles southeast of Cape Race, Nfld., was taken into a British port, Dec. 3, in tow by the s.s. Lady Ninien, having lost her propeller blades.

The British s.s. Queen Margaret, owned by the Dunlop Steamship Co., was brought into St. John's, Nfld., Dec. 6, having suffered some damage in striking ground near Cape Race, Dec. 3, in a fog, while bound from London, Eng., to Boston, Mass.

The American International Corporation, organized in New York recently, has purchased the remaining seven steamships of the Pacific Mail Steamship Co. W. R. Grace and Co., shipping agents on the Pacific coast, are interested in the matter.

Robert Reford & Co. have chartered the United States s.s. Morris Adler for trans-Atlantic service. On sailing from Montreal early in December, she changed her name to Tip Top, and passed under the British flag, after which she proceeded to New York, to load grain for Europe.

The Norwegian s.s. Tellus, which was reported stranded at Nemuro, near Yokohama, Japan, when bound from Comox, B.C., to Vladivostock, Russia, is owned by W. Wilhelmson, Tonsberg, Norway. She was built in 1911, is 7,395 tons, and insured on a value of £70,000. She was at one time under charter to the Nova Scotia Steel and Coal Co.

The British Canadian Steamship Co., Ltd., has been incorporated under the Dominion Companies Act, with \$10,000,000 authorized capital and office at Montreal, to carry on a general steamship owning and operating business. The incorporators are all connected with Meredith, Macpherson, Hague, Holden, Shaughnessy and Heward, Solicitors, Montreal.

In answer to a question in the British House of Commons recently, the percentage of tonnage of various steamship companies which have been requisitioned for war purposes was given, the C.P.R. having 46.5%

requisitioned up to Jan. 1, 1915, and on Oct. 1, 1915, 41.3% of its total tonnage. Of these percentages, 41.3% and 30%, respectively, were requisitioned by the Indian Government.

The C.P.R. s.s. Empress of Japan has resumed her regular sailings across the Pacific Ocean. During her period of requisition by the Indian Government, she was engaged in patrol work chiefly, on the Pacific and elsewhere, and carried eight 4.7 in. guns. She was on duty at Cocos Island after the German s.s. Emden was destroyed, and also took part in some fighting at Bab-el-Mandeb, near the entrance to the Red Sea.

Canada Steamship Lines, Ltd., announces it has completed arrangements for the chartering of the Canada Atlantic and Plant Line Steamship Co.'s s.s. Evangeline, for operation during the winter, from New York to Bermuda, in conjunction with the s.s. Bermudian. It is stated that the intention is to give a service of two trips a week between the points named. The Evangeline has for some time been operated between Halifax and Boston.

William Thomson & Co., Ltd., has been incorporated under the New Brunswick Companies Act, with an authorized capital of \$25,000, and office at St. John, N.B., to acquire as a going concern the business now carried on there by William Thomson & Co., and to carry on the general business of steamship and vessel agents, tugboat owners, managers and agents, stevedores, etc. Among the incorporators are, P. W. Thomson, shipowner, and D. W. Ledingham, steamship manager, St. John.

The steamships Ocamo and Oruro, formerly operated by Pickford and Black, Ltd., between Halifax, St. John and the West Indies, have been sold to United States parties, with whom, it is reported, C. W. Morse, at one time connected with the Eastern Steamship Co., is associated. It is stated that they will be drydocked at Halifax, and then placed in service between New York and Archangel, Russia. The Ocamo was built at Glasgow, Scotland, in 1877, and is 300 ft. long, the Oruro, was also built in Glasgow, in 1878, and is 301 ft. long, with a tonnage of 1,919 gross.

The Allan Line winter passenger sailings between St. John, N.B., and Liverpool, are being undertaken by the steamships Corsican, Pretorian and Scandinavian, three sailings being made each month by each vessel, except during February, when the Pretorian will not be in service. The steamships Sicilian and Corinthian run from St. John to London, via Havre, and the s.s. Carthag-

inian will run from Portland, Me., to Glasgow, monthly, except January. Freight service is given by the steamships Pomeranian and Sardinian, between Portland and Glasgow, and vessels are being chartered for a freight service between Boston and Glasgow.

The Great Northern Steamship Co.'s s.s. Minnesota, formerly operated across the Pacific Ocean, and which, it was announced recently, was taken to England to be sold, is now stated to have been sold to a company with headquarters in London, Eng., for \$2,000,000. She was built in 1904, and was the largest passenger vessel running on the Pacific. Her dimensions were,—length 630 ft., beam 73½ ft., depth from keel to saloon deck amidships 56 ft., from keel to upper navigation bridge 88 ft. 4 ins.; displacement 37,500 tons. She has accommodation for 318 cabin, and 1,500 third class passengers, with a crew of 250.

Maritime Provinces and Newfoundland.

During the St. Lawrence navigation season of 1915, the Dominion Coal Co. shipped 1,600,000 tons of coal to Montreal, about 300,000 tons less than in 1914. The main reason for the reduction is that Government transports bunkered at Sydney this year instead of Montreal.

The s.s. Beatrice, owned by John and James Yorston, Pictou, N.S., is reported to have been sold to the Nova Scotia Steel and Coal Co., New Glasgow, N.S. She was built at Stockton-on-Tees, England, in 1889, and is screw driven by engine of 99 n.h.p. Her dimensions are,—length 208 ft., breadth 29.1 ft., depth 13.4 ft.; tonnage, 712 gross, 353 register.

The whaling steamer Nascopie, owned by Job Bros., St. John's, Nfld., is reported to have been chartered by the Russian Government for service between Archangel, Russia and Naples, Italy. The steamships Adventure and Bellaventure, negotiations for the sale of which were mentioned in our last issue, are also reported to have been acquired by the Russian Government.

The s.s. Senlac, bound from Charlottetown, P.E.I., to St. John's, Nfld., was reported from Sydney, N.S., Dec. 14, to have been destroyed by fire, together with part of her cargo. The crew and part of the cargo were saved. She was built at St. John, N.B., in 1904, and was screw driven by engine of 66 n.h.p., and her dimensions were: length 182 ft., breadth 33 ft., depth 16.1 ft.; tonnage, 1,011 gross, 615 register.

List of Steam Vessels Registered in Canada During November, 1915.

Table with columns: No., Name, Port of Registry, Where and When Built, Length, Breadth, Depth, Gross Tons, Reg. Tons, Engines, Etc., Owner and Managing Owner. Includes vessels like Henry F. Jelly, J. C. Stewart, J. W. Ward, etc.

List of Sailing Vessels and Barges Registered in Canada During November, 1915.

Table with columns: No., Name, Port of Registry, Rig, Where and When Built, Length, Breadth, Depth, Reg. Tons, Owner or Managing Owner. Includes vessels like Ed. McWilliams, G. of G. No. 2, Lucille M. Smith, etc.

Province of Quebec Marine.

The figures for the recently closed season of St. Lawrence navigation show that 41,352,876 bush. of grain passed through the Lachine Canal, against 67,343,952 in 1914. The number of vessels using the canal was 590, against 615, but their combined tonnage was 249,050, an increase in tonnage of 19,795 tons.

The s.s. Lady of Gaspé was sold at public auction at Quebec recently, to J. C. Pectau, for \$10,200. She was owned by the Gaspé Steamship Co., Quebec, and ran ashore, Oct. 13, near the site of the Quebec Bridge. She was floated and taken to Pointe a Carcy wharf, Quebec, where, owing to defects in her pumping machinery, she again sank, and was abandoned. She was refloated by the Quebec Harbor Commissioners.

Ontario and the Great Lakes.

The traffic handled at Port McNicoll, during the past season, was, freight westbound, 53,783 tons; flour eastbound, 108,624 tons; grain eastbound, 22,760,479 bush.

The underwriters extended insurance on hulls and cargoes to Dec. 12. Sailings which took place after midnight on that date were entirely at owners' risk.

Two steam tugs, C. M. Bowman and Maud L., were destroyed by fire at Owen Sound, Dec. 12. They were together at anchor, and the fire arose on board the former while the flues were being cleaned.

Canada Steamship Lines s.s. W. Grant Morden cleared from Port Arthur, Dec. 10, with a cargo of 760,000 bush. of oats for Port McNicoll, which is said to be the largest single grain cargo ever shipped from any port.

Between Sept. 1 and Dec. 11, 166,346,965 bush. of grain were shipped from Port Arthur and Fort William. This is the highest amount shipped in a similar period, the nearest approach being in 1913, when 128,000,000 were shipped.

The C.P.R. lake steamships Alberta, Assiniboia, Athabasca, Keewatin and Manitoba have been laid up for the winter at Owen Sound, where it is stated extensive repairs will be undertaken, contracts for which have been let in the locality.

Canada Steamship Lines, Ltd., which press reports credit with having arranged a contract with the United States Steel Corporation for transportation of ore, has, we are officially advised, made no such arrangements with that corporation. It will, however, carry U.S. ore from private parties.

The United States Lake Survey reports the levels of the Great Lakes in feet above tidewater, for November, as follows:—Superior, 602.89; Michigan and Huron, 579.52; Erie, 571.46; Ontario, 244.94. As compared with the average November levels for the past ten years, Superior was 0.42 ft. above; Michigan and Huron, 0.77 ft. below; Erie, \$35 ft. below, and Ontario, 0.69 ft. below.

Goderich, Ont., press dispatch, Dec. 24:—The steamboat Mariska, which stranded in the centre of the channel while entering Harbor Beach in a northwesterly gale on her last trip down, completed temporary repairs here today after unloading her grain cargo, and left again for Collingwood, accompanied by the Reid Wrecking Co.'s tug, Fischer, and on arrival there will enter dry-dock for a thorough examination and repairs.

An examination of the entrance to Key Harbor, Lake Huron, where the s.s. W. D. Rees struck a rock recently, shows that a rock was found close to the black spar buoy no. 15, which was found to be northward of its proper location. The rock had a

least depth of 17½ ft. of water over it, at the present stage of water, or 1½ ft. less than the datum of the chart. The spar buoy has been moved to its charted position immediately south of the danger.

The lake underwriters have sold the wreck of the s.s. W. C. Moreland, which was wrecked on the Sawtooth Reef, in Lake Superior, in 1910, to R. M. Wolvin, Winnipeg, for \$55,650. The salvaging work was carried out by the Reid Wrecking Co., Sarnia, Ont., who will receive 65% of the net proceeds of the sale. We are advised that no decision has been arrived at by the present owner as to what will be done with the vessel, it having been bought as a speculation.

The Northern Navigation Co.'s s.s. Majestic was destroyed by fire, while lying at the old elevator dock at Point Edward, Dec. 15. The fire commenced in the hold and soon got beyond control. It was then decided to take the burning vessel to Sarnia Bay alongside some old wrecks, where no harm could be done, and while being towed, the lines parted and she drifted alongside the same company's s.s. Saronic, which caught fire. The loss on the Majestic is placed at \$100,000, with \$90,000 insurance, and on the Saronic at \$20,000. The s.s. Majestic was built at Collingwood in 1895, and was screw driven by engine of 123 n.h.p. Her dimensions were: Length, 209 ft.; breadth, 35 ft.; depth, 12.6 ft.; tonnage, 1,578 gross, 1,073 register. Repairs to the Saronic will be carried on at Sarnia during the winter, but the Majestic is a total loss.

British Columbia and Pacific Coast.

The Chilean ship Carelmapu was wrecked and lost off the west coast of Vancouver Island, during a storm towards the end of November, and 17 of the crew, with 1 passenger, were drowned, 4 of the crew and 1 passenger being saved.

The C.P.R. s.s. Princess Maquinna, which was repaired and overhauled at Esquimalt recently, has replaced the s.s. Princess May on the Granby route, the latter taking the place of the s.s. Princess Sophia, which will likely be laid up for the winter.

The Dominion Government grain elevator at Vancouver is expected to be completed and ready for business about the middle of January. Construction work was reported early in December to be in its final

stages. There will be capacity for 1,500,000 bush.

The Grand Trunk Pacific Coast Steamship Co.'s winter schedule, which was put into effect, Dec. 20, between Seattle, Victoria, Vancouver and Prince Rupert, is undertaken by the steamships Prince George and Prince John. The Prince Rupert has been laid up.

The s.s. Curacoa, which was wrecked at Warm Chuck, Alaska, June 21, 1913, salvaged in Aug., 1914, and after being repaired, tied up at Vancouver, pending a sale, has been sold by the Vancouver Dredging and Salvage Co., to the Pacific Coast Steamship Co., her owners before the wreck.

At a meeting of the West Vancouver Council ferry board recently, W. C. Thompson was appointed Manager, West Vancouver Ferry Co., vice T. Campbell, whose attitude and statements regarding the conduct of the business by the ferry board were considered detrimental to the interests of the service.

The Canadian Northern car ferry, which is being built at Levis, Que., will probably run between Port Mann, on the south side of the Fraser River above New Westminster, down the Fraser River and across the Strait of Georgia to Patricia Bay, Vancouver Island, instead of from Steveston, at the mouth of the Fraser River, as previously stated. Steveston is said not to be suitable from a harbor standpoint.

The School of Navigation at Queen's University, Kingston, Ont., started its third session Dec. 14 for a three months course, which is open without charge to all seamen desiring instruction in navigation and seamanship, and especially prepares for certificates as tug boat captain, minor mate, minor master, inland mate, inland master, coasting mate and coasting master. The chief instructor is Capt. H. H. McMaster, Assistant Superintendent, Montreal Transportation Co. The course includes five lectures on electrical and magnetic effects in the earth and atmosphere, including storms and weather predictions, by A. L. Clark, Ph.D., Professor of Physics, and also five lectures on practical astronomy by D. Buchanan, Ph.D., Associate Professor of Mathematics. The examinations for the different certificates will be conducted in Kingston by Capt. H. W. King, Dominion Supervisor of Marine Examinations.

Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during November.

ARTICLES	CANADIAN CANAL	U. S. CANAL	TOTAL
Copper..... Eastbound	Short tons 984	32,999	33,983
Grain..... " "	Bushels 8,006,592	12,331,768	20,338,360
Building stone..... " "	Short tons		
Flour..... " "	Barrels 444,610	947,250	1,391,860
Iron ore..... " "	Short tons 790,842	3,704,125	4,494,967
Pig iron..... " "	" "	" "	" "
Lumber..... " "	M. ft. b.m. 4,905	30,538	35,443
Wheat..... " "	Bushels 17,257,077	57,131,610	74,388,687
General merchandise..... " "	Short tons 8,052	32,864	40,916
Passengers..... " "	Number 119	21	140
Coal, hard..... Westbound	Short tons 19,500	214,208	233,708
Coal, soft..... " "	" 35,490	1,307,758	1,343,248
Flour..... " "	Barrels		
Grain..... " "	Bushels		
Manufactured iron..... " "	Short tons 2,732	16,415	19,147
Iron ore..... " "	" "	" "	" "
Salt..... " "	Barrels 5,096	62,914	68,010
General merchandise..... " "	Short tons 50,892	93,154	144,046
Passengers..... " "	Number 57	7	64
Summary.			
Vessel passages.....	Number 576	1,880	2,456
Registered tonnage.....	Net 1,344,470	5,721,516	7,065,986
Freight—Eastbound.....	Short tons 1,522,487	5,895,580	7,418,067
—Westbound.....	" 100,382	1,640,972	1,750,354
Total freight.....	" 1,631,879	7,536,552	9,168,431

Mainly About Marine People.

Phillip Dorman, formerly Lloyd's Agent at Buenos Ayres, Brazil, died at Toronto, Dec. 14, age 73.

Capt. A. V. Tremaine, who has been seriously wounded in action in Europe, is a son of A. DeB. Tremaine, Superintendent of Agencies, Marine Department, Ottawa.

J. L. Nelson, Superintendent of dredging for British Columbia, under the Dominion Public Works Department, since March, 1913, was reported, Dec. 10, to have resigned.

F. W. Lewis, of Furness Withy and Co., has been appointed one of the members of the Ship Licensing Committee, appointed by the British Government to license vessels to engage in trading between foreign neutral ports.

Capt. J. H. Brown, of the Donaldson Line s.s. *Marina*, was presented recently with a gold watch and chain, on behalf of the President of the United States, for rescuing the shipwrecked crew of the U.S. schooner *Fuller Palmer* in the Bay of Fundy.

J. S. Byrom, Superintendent, Great Lakes Steamship Service, C.P.R., was entertained to dinner by the Owen Sound Board of Trade, on the occasion of the wintering of the company's vessels at Owen Sound for overhaul and repairs, after an absence of four years.

Capt. A. A. Johnson, of Toronto, formerly chief officer of the Toronto Ferry Co., and latterly first officer on the British s.s. *Calgary*, was killed on board his vessel, Dec. 15, during a stormy voyage from Bathurst, N.B., to New York, when a deck load of lumber went overboard.

Capt. W. McGregor, formerly commanding one of the G.T.R. car ferries operating between Windsor and Detroit, has had his left leg amputated, owing to having been run over by a switching locomotive in the Windsor yards, Dec. 6. He is over 70 years old, and was connected with the car ferries for about 40 years.

Capt. H. W. LaRush was buried at Mount Pleasant cemetery, Toronto, Dec. 6, when W. E. Burke, Assistant General Manager, and the entire local staff of Canada Steamship Lines, Ltd., attended. Capt. LaRush was in charge of the company's tug *Frank C. Barnes*, which left Port Dalhousie, Nov. 1, and foundered with her crew of six during a storm during the first few days of November. Only two bodies, one of which is unidentified, have been recovered.

J. T. Walsh, heretofore Marine Department, C.P.R., Montreal, who has been appointed Assistant Manager, Canadian Pacific Ocean Services, Montreal, is said in a press dispatch to have had service under the *Elder-Dempster Co.* in West Africa, where, in addition to his other duties, he raised and commanded a volunteer force during the native revolt of 1898, receiving the West African medal. He was a member of the Legislative Council there in 1900, and was mentioned in dispatches by Col. Willcocks for embarkation services during the Ashantee war.

Capt. W. Murchison, one of the oldest lake captains running out of Toronto, died there, Nov. 26, aged 65. His first marine experience was as a deck hand on the *Rossie Castle*, sailing between Toronto and Hamilton, about 1875. He was at a later date captain of the vessels *Steinhoff* and *Victoria*, sailing between Toronto and Victoria Harbor. He subsequently purchased the sidewheel steamboat *Niagara*, and was later in the service of the *Doty Ferry Co.*, which was taken over by the Toronto Ferry Co., and acted as master of the ferry *Island Queen*. He retired from active service a few years ago, and engaged in fruit farming.

Charles Tupper Knowlton, whose appointment as Superintendent of Ferries, Canadian Government Railways, Moncton, N.B., was announced in our last issue, was born at Advocate Harbor, N.S., Aug. 26, 1849, and commenced a seafaring life in July, 1868, since when he has to 1887, occupied all positions from sailor to captain in square rigged vessels sailing between various United States and Canadian ports to South America, West Indies, Great Britain and the European continent, and from 1887 to the date of his present appointment, he has commanded six different cruisers of the Fisheries Protection Service, at various points on the Atlantic coast.

Batiscan-Bengore Head Collision.—The actions between the owners of these two vessels for damages sustained in a collision in the St. Lawrence, Aug. 1, were heard by the Admiralty Court, in Montreal, Dec. 7, when it was held that the s.s. *Batiscan* was to blame for the collision, as the captain had disobeyed the international rules of the road, whereas the captain of the s.s. *Bengore Head* was shown to have complied with the rule. It was ordered that the damage to the *Bengore Head* be assessed by the Registrar, and the action by the *Batiscan* was dismissed with costs. The *Ulster Steamship Co.*, owning the s.s. *Bengore Head*, sued the *Sydney, Cape Breton and Montreal Steamship Co.*, owning the s.s. *Batiscan*, for \$150,000, and there was a counter action for \$50,000. In connection with this casualty, strong representations are being made to the British Government, which has the power to revise the sentence on the captain of the s.s. *Batiscan*, to have the case reconsidered. The Dominion Wreck Commissioner, in placing the blame on the captain and the pilot, suspended the former's certificate for two years, allowing a mate's certificate to be granted at the end of the first 12 months, and fined the pilot \$300.

The Loss of the Tug *Edward Long* at Ottawa.—A formal enquiry into the sinking of the steam tug *Edward Long*, while moored at the Rideau Canal locks at Ottawa, Nov. 12, was held at Montreal, recently, at the request of the owner, Capt. Long, who claimed that the loss was caused by the Public Works Department's tug *Blanche*. Capt. L. A. Demers, Dominion Wreck Commissioner, in giving judgment, found that the *Blanche* came into contact with the *Edward Long* and forced her against the corner of the pontoon, causing a parting of the seams, resulting in an inlet of water, which led to the eventual sinking of the vessel. He states that had there been some one on the *Edward Long*, who could have examined the damage, the vessel might have been beached and saved, but no attempt seems to have been made, either to save, or salvage the tug, and therefore finds that the *Blanche* was primarily the cause of the damage, and that Capt. Long, of the tug *Edward Long*, is equally to blame. As the master of the *Blanche* holds no certificate, he cannot be dealt with by the court. The decision was concurred in by Capt. F. Nash and C. Lapierre, nautical assessors.

Montreal Harbor Traffic.—At a dinner to the Massachusetts Terminal Commission at Montreal, Dec. 9, W. G. Ross, Chairman, Montreal Harbor Commissioners, stated that while in 1907 the port's business amounted to 1,000 cars a week, more than that number are now handled daily. The tonnage has increased since 1908 by 110%, compared with Boston's increase of 16%, while in 1914, Montreal's exports and imports exceeded those of Boston, which once held the lead, by \$13,000,000. During 1914, Montreal shipped five times as much grain as Boston.

Lake Freight Steamships Sold for Ocean Service.

The lake freight steamships, *G. R. Crowe*, owned by the St. Lawrence and Chicago Steam Navigation Co., Toronto, the *Algonquin*, owned by the Port Colborne and St. Lawrence Navigation Co., a subsidiary of the Maple Leaf Milling Co., Toronto, and the *Seguin*, owned by the Parry Sound Transportation Co., Toronto, have been sold to A. B. Mackay, Hamilton, Ont. It is stated that the former vessel will be converted into an oil tank vessel for service to the Gulf of Mexico, and that the latter vessel will be overhauled and prepared for trans-Atlantic operation.

The s.s. *G. R. Crowe* was built at Dundee, Scotland, in 1907, and lengthened 72 ft. at Collingwood, Ont., in 1910. She is of steel, with steel tank top, three watertight and two non-watertight bulkheads, steel boiler house, and is equipped with triple expansion engines with cylinders 18, 29½, and 48 ins. diam., by 36 ins. stroke, 1,079 i.h.p. at 81 r.p.m., and supplied with steam by two Scotch boilers 13¼ by 10½ ft. at 180 lbs. pressure. Her dimensions are: length 324 ft., breadth 43¼ ft., depth 26 ft.; tonnage, 2,939 gross, 2,346 register.

The s.s. *Algonquin* was built at Glasgow, Scotland, in 1888, for the Canadian North West Steamship Co., Port Arthur, Ont., Thomas Marks & Son, Managing Owners, and was purchased some years later by the St. Lawrence and Chicago Steam Navigation Co., and in 1912 was sold to the Port Colborne and St. Lawrence Navigation Co. She is of steel and is equipped with triple expansion engines with cylinders 21, 33, and 54 ins. diam., by 36 ins. stroke, 1,000 i.h.p. at 70 r.p.m., and supplied with steam by two Scotch boilers under forced draught, 13 by 9 ft., at 160 lbs. pressure. Her dimensions are: length 245 ft., breadth 40 ft. 1 in., depth 20½ ft.; tonnage, 1,806 gross, 1,172 register.

The s.s. *Seguin* was built at Owen Sound, Ont., by Polson Iron Works, Ltd., Toronto, in 1890, and is of steel, with well deck, two watertight bulkheads, wooden sheathing on steel bottom, with hatches at 24 ft. centres. She is equipped with triple expansion engines with cylinders 17, 28, and 46 ins. diam., by 30 ins. stroke, 550 i.h.p. at 86 r.p.m., supplied with steam by two Scotch boilers 10¼ by 10 ft. at 160 lbs. pressure. Her dimensions are: length 207 ft., breadth 34 ft. 2 ins., depth 13 ft.; tonnage, 1,141 gross, 771 register.

A contract is reported to have been awarded for the alterations to the s.s. *G. R. Crowe*, which it is stated will be carried out at Midland, Ont. As the vessel is too long to pass through the Welland Canal, the alterations required are considerable.

The Dominion Government and Wheat in Elevators.—The action of the Dominion Government in commandeering all the nos. 1, 2 and 3 northern wheat in store at elevators at Port Arthur and Fort William, Ont., and points east, at the end of November, caused a little uneasiness among vessel owners on the Great Lakes, as the unexpected action toward the close of the season would, it was feared, cause an earlier closing of navigation than was otherwise anticipated. Arrangements were subsequently made with the Government whereby certain of the commandeered grain was released in order that contracts might be fulfilled, and any possible inconveniences which might arise were eliminated.

The Panama Canal, through which traffic has been suspended for some time owing to land slides, was reopened, Dec. 19, for vessels of 20 ft. draught, the obstructions in the Gaillard cut having been removed.

Dominion Government Icebreaking Steamship for the St. Lawrence.

We are officially advised that the icebreaking steamship for St. Lawrence River service will probably be launched at Montreal about the reopening of navigation, and that it is expected to have it ready for service about the end of September. An extension of time for the construction of this vessel, the contract for which was awarded to Canadian Vickers, Ltd., Montreal, prior to the war, has been granted by the Dominion Government. The contractors some time ago advised the Dominion Government that their yards had been requisitioned by the British Government, thus necessitating the suspension of the work, which was well in hand. It is announced that they have shown to the Government's satisfaction, that, at the time of the application for the extension, they were unable to proceed with the building. This vessel will be built under Lloyd's special survey, and in accordance with the Dominion Steamboat Inspection Act, to class 100 A1 at Lloyd's. The hull will be divided by transverse and longitudinal watertight bulkheads, and the propelling machinery will consist of two sets of triple expansion surface condensing engines with working parts 60 to 35% in excess of Lloyd's requirements, supplied with steam by two double ended, and four single ended Scotch boilers, at 180 lbs. pressure. Her dimensions will be,—length over all 292 ft., length between perpendiculars 275 ft., extreme breadth 57½ ft., depth 32 ft., draught 19 ft. A full description of her was given in Canadian Railway and Marine World for June, 1915.

Hamburg-American Line Officials Convicted.—The trial of a number of officials of the Hamburg-American Line concluded at New York, Dec. 3, when Karl Buenz, Managing Director; G. Katter, General Superintendent; A. Hachmeister, General Purchasing Agent, and J. Poppinghaus, a former Germany navy officer, were found guilty on each of two indictments for conspiracy to deceive and defraud the United States Government. The evidence showed that the law had been violated by those charged, in sending coal and other supplies to German cruisers in the South Atlantic in the early stages of the war. Sentence was deferred pending the hearing of a motion to set aside the verdict and arrest judgment, and in the meantime, each of the prisoners is out on bail of \$5,000. The maximum penalty on each indictment is two years imprisonment and \$10,000 fine.

Plot to Destroy the Welland Canal.—The United States Government is proceeding against a number of German subjects and United States citizens of German birth or origin for conspiring to commit an act of war, with the United States as a base, against a friendly country, the Dominion of Canada. It is stated that the parties have been under observation for some time, and that it was intended to blow up certain locks on the Welland Canal, to prevent shipments of grain passing through from the Great Lakes. Paul Koenig, Chief of Police, Hamburg-American Steamship Co., New York, who is spoken of as being very intimate with the German Ambassador and other German officials at Washington, D.C., appears to have been the chief organizer of the conspiracy.

Close of St. Lawrence Navigation Season.—The s.s. Port Dalhousie, owned by Forwards Limited, Kingston, Ont., in sailing from Montreal, Dec. 8, created a record for the closing of the St. Lawrence season. She was bound for England, calling at Pictou, N.S.

Results of Canada Steamship Lines, Limited, for 1915.

Montreal press dispatch, Dec. 14:—"At the monthly meeting of directors of Canada Steamship Lines, Ltd., today, J. W. Norcross, Managing Director, stated that business during the past three months had been very satisfactory, and he had great confidence in the outcome of the entire season's business. While he would not commit himself as to the amount of net earnings, he gave the impression that some of the optimistic prophecies made recently on the "street" were not far short of the mark. He expressed himself as being pleased with the outlook for winter business of the ocean vessels, stating that the Bermuda passenger trade had been in excess of the corresponding period last year, and to cope with the increased tonnage offering the company had chartered another passenger steamship, the Evangeline, to be used solely on that route. The West Indies freight tonnage was also heavier than could be handled by the company's ocean fleet, and it had been necessary to send one of the lake steamships, the Canadian, to the Atlantic coast to help carry the tonnage. Freight, both north and south bound, was congested. Mr. Norcross would not confirm rumors that very large economies in operation had been effected but admitted that expenses had been reduced considerably."

Prize Court Cases at Halifax.—A sitting of the Prize Court was held at Halifax, N.S., Dec. 1, to deal with the steamships *Hamborn* and *Hocking*, seized recently as lawful prizes. It is claimed that though operating under the United States flag, they are owned by the enemy. Notice of requisition under an order of the Prize Court, has been served, pending final condemnation. On Dec. 6, on the application by cable of the British Secretary of State for the Colonies, the case was transferred to England to be dealt with. In the case of the s.s. *Hamborn*, an appeal to the Imperial Privy Council has been allowed.

Dredging Disputes in British Columbia.—Press reports state that a number of contractors' accounts have been held up, on account of over classification in dredging. The amounts involved are stated to reach \$150,000. Complaints are also made regarding alleged padding of accounts for dredging in Victoria harbor. These matters came out in the course of a case in court at Victoria recently to determine the ownership of certain documents. The documents were ordered impounded for three months, pending further investigation.

Toronto Harbor Contracts.—The Minister of Public Works is reported to have announced, Dec. 9, that all matters in dispute in connection with defective work on certain subcontracts of the Toronto Harbor improvement works had been settled, and that the Canadian Stewart Co., the general contractors, had undertaken to make good the defective construction, without cost to the Government and to proceed with all possible speed.

The British Government and the Mercantile Marine.—In the British House of Commons, Dec. 23, the First Lord of the Admiralty announced that the Government was considering the advisability of taking over the mercantile marine service. The demand for vessels is far outrunning the supply, and this is contributing to the rising prices of the necessities of life.

Government Aid to Shipbuilding in British Columbia is occupying the attention of the recently reorganized provincial government, according to the new Premier.

Shipbuilding Conditions and Prospects in Canada.

The Toronto Globe having published an article representing the outlook for shipbuilding in Canada as being very poor, the Collingwood Shipbuilding Co., Collingwood, Ont., wrote that paper recently as follows:—"United States papers have for some weeks past been dealing largely with the new orders booked by U.S. shipbuilders on the Great Lakes and coast shipyards. Canadians therefore, interested in the shipbuilding business would naturally, on reading your article, assume that there was very little work for them in their own trades in this country and make their way across the border. Dealing with our own business we were never busier, and we have been using your columns to let our wants for skilled and unskilled mechanics be made known. We have also advertised in perhaps some 20 or 30 local newspapers for help of all kinds. We are building three oil tank steamers for the Imperial Oil Company, and a 550 ft. bulk freighter for the Montreal Transportation Co., and recently had to refuse an order for a large steamship, not being able to make quick enough delivery. In addition, we have had inquiries for tonnage from Great Britain, United States, and Australia, which will surely indicate to you that the demand for ships is very great indeed. Apart from new tonnage, we are now assured of a full supply of winter repairs. From the above you will see that the information given in your article is not applicable to Canadian shipbuilding in general, and we believe that you should give equal publicity to the other side of the story in order to rectify the harm you may possibly have done in discouraging shipyard help from remaining in Canada."

New Brunswick-Prince Edward Island Winter Steamship Service.—On Dec. 22 we were officially advised as follows: "The Charlottetown Steam Navigation Co.'s vessels are still running between Point de Chene and Summerside and between Pictou and Charlottetown. When weather conditions necessitate their withdrawal the Marine Department will place the s.s. Stanley in service between Cape Tormentine and Summerside, and the new car ferry steamship Prince Edward Island between Pictou and Charlottetown. The Stanley will remain on the Cape Tormentine-Summerside service as long as the Prince Edward Island can make one round trip each day between Pictou and Charlottetown, or until ice conditions prevent landing either at Cape Tormentine or Summerside. When ice conditions get such that the Prince Edward Island cannot make one round trip a day between Pictou and Charlottetown, the Stanley will be put on and the two boats will run alternate days. When ice conditions in Charlottetown harbor prevent landing at Charlottetown the Prince Edward Island and the Stanley will run between Pictou and Georgetown."

Settlement of Claims in the Titanic Loss.—It was announced in New York, Dec. 20, that the claims against the Oceanic Steam Navigation Co., in respect of the loss of the s.s. Titanic, were to be settled on a basis of \$664,000, which is to be divided pro rata amongst claimants.

A press report states that the British Government has requisitioned all the refrigerating space in British steamships registered in the United Kingdom, for the transportation of frozen meat.

Twenty seven car loads of halibut were forwarded from Prince Rupert, B.C., by Canadian Express during one month recently.