

Canadian Railway and Marine World

May, 1917.

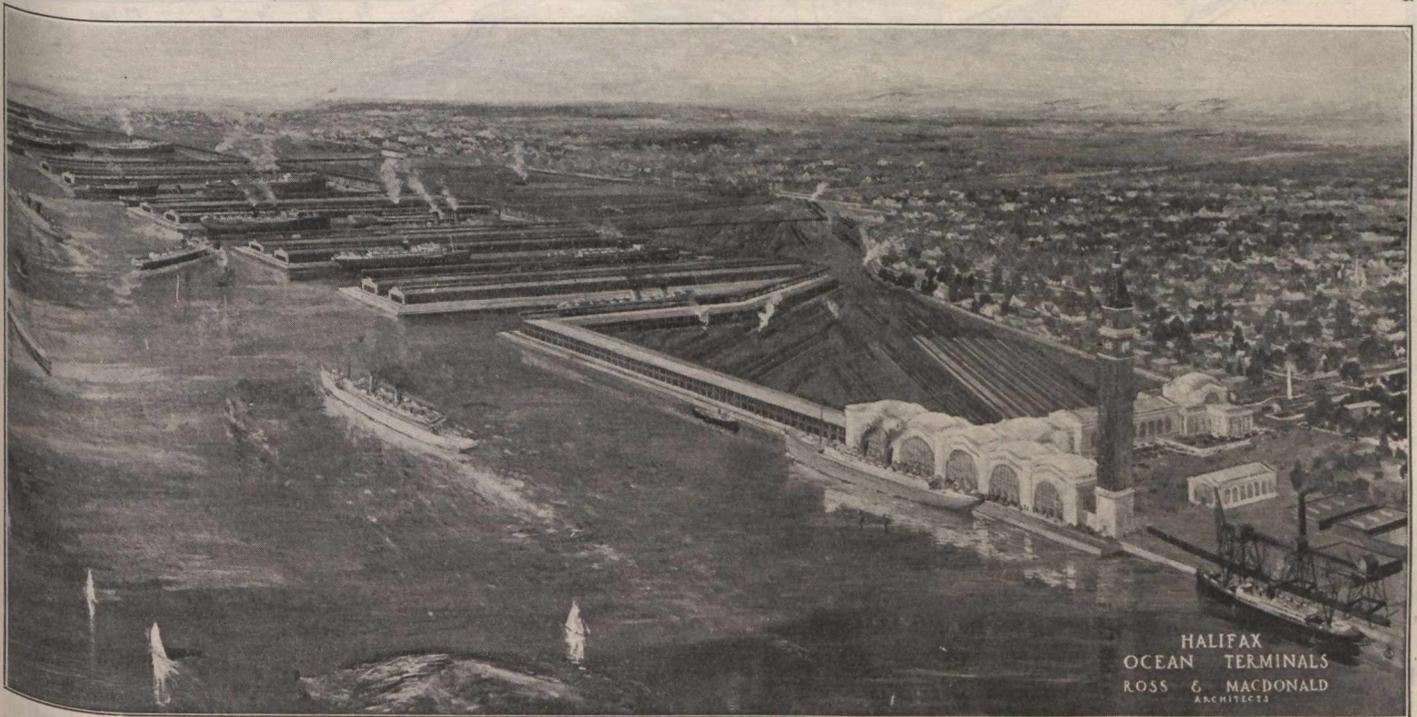
Halifax Ocean Terminals and Connecting Railway.

By A. C. Brown, A.M.Can.Soc.C.E.

Halifax, which was founded in 1749, and is and has been since its foundation the chief city of Nova Scotia, is situated on one of the finest harbors in the world, and is the nearest equipped terminal port to Europe open all the year round, being over 250 miles nearer to Liverpool than any other terminal either in Canada or the United States. With such a splendid geographical situation it should be the main eastern gateway of Canada. The average course of steamers from Liverpool to New York brings them within about 19½ miles of Halifax, so with adequate terminal facilities and first class

1½ miles wide, except at the Narrows, where it joins Bedford Basin, where it is ¼ of a mile wide. Bedford Basin is 4 miles long and 2 miles wide. The entrance to the harbor is straight and the water deep, while inside there is enough room for the largest ships to manoeuvre with the greatest ease. There is a freedom from currents and severe storms, and the range of the tide is only 2½ ft. at ordinary spring tides. The harbor, too, is well protected, there being only one open entrance with the Atlantic Ocean. The configuration of the shore at the entrance effectually breaks up Atlan-

Pier 7, a bulkhead wharf 500 ft. long; Pier 8, 120 ft. wide with berths 650 and 740 ft. long; Pier 9, bulkhead 700 ft. long. At deep water: Pier 2, 240 x 700 ft.; Pier 3, 160 x 600 ft.; Pier 4, 95 x 540 ft.; Pier 5, 35 x 400 ft. With the exception of Pier 2, which is of reinforced concrete and is thoroughly modern in every respect, all the piers are of timber pile construction, and are generally in poor condition. In addition to this accommodation there are about 10 privately owned wharves from 200 to 600 ft. long, all being built of timber, with the exception of the Furness wharf, which is being



Complete Scheme for Halifax Ocean Terminals, looking from the Harbor.

rail connections, in the event of steamships making Halifax a port of call, passengers could be in Chicago by the time the ships arrived at New York. In addition to European trade, Halifax is well situated for trade with the West Indies, the ports of the United States, and, with the perfecting of the Panama Canal, for trade with the west coast ports of Canada. In addition to being splendidly situated as a terminal port and a port of call, Halifax has an almost ideal situation should a section of the harbor be at any time reserved as a "free port," that is, a port where ships could come and discharge cargoes free of duty and take up either cargoes left by other ships, or cargoes from the interior. So long as merchandise did not pass beyond the free port area no customs duties would be charged, the only charges being those for wharfage and warehouse space.

Halifax harbor consists of two parts, the outer harbor and Bedford Basin. The outer harbor is 7 miles long and about

tic swells, so that no very large waves can enter the harbor.

In addition, however, to the fundamental need of accessibility and accommodation, special requirements of good terminal facilities, quays, sheds and railway approaches and yards are necessary before a harbor can be used. It is indispensable to the conditions of modern trade that there should be the least possible delay in the reception and dispatch of vessels, and everything must be done to procure continuity of operation, and for this reason the location, construction and equipment of quays within the harbor is of the utmost importance. The old railway wharves and yards at Richmond and the deep water terminals, are situated on a narrow and restricted foreshore, with inadequate railway connections and with no possibility of any great extensions on economic lines. The existing railway terminals provide the following accommodation: At Richmond: Pier 6, 80 ft. wide with berths 280 and 400 ft. long;

built of reinforced concrete.

In June, 1912, surveys, both land and hydrographical, were commenced, and a thorough investigation with test borings, soundings, wind and current observation made with the object of obtaining a suitable site for a system of terminals which should comply with the standard required by the Dominion Government, which may be briefly summed up as follows: 1. The location should be the best the harbor could provide. 2. The work should be first class and permanent. 3. As soon as possible accommodation for 9 modern steamships. 4. A possibility of future extensions. 5. All accommodation to be designed with due regard for possible increase in the size of vessels and the increase in trade. After a very careful engineering and economic study of the whole situation had been made, the Minister of Railways and Canals was able, in Nov., 1912, to make public the proposed scheme of terminals.

The ocean terminals are situated on the

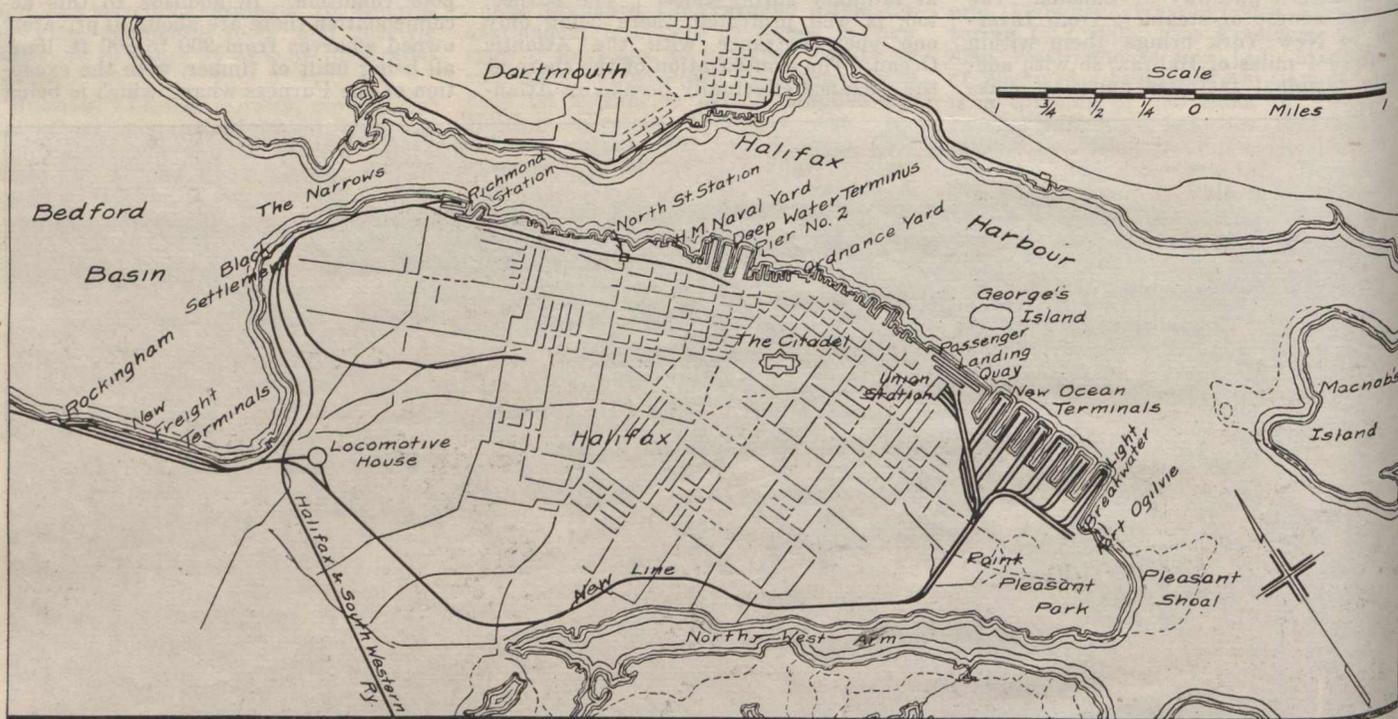
Halifax side of the harbor and extend southward from the Nova Scotia Tramways & Power Co.'s property for about $1\frac{1}{4}$ miles to Reid Rock. The terminals consist of a passenger landing quay 2,006 ft. long, 5 piers 1,250 ft. long by an average width of 350 ft., and a breakwater about 1,600 ft. long, on the north side of which will be constructed later 2 steamship berths. On the north side of the first basin are two berths, 500 and 700 ft. long. With the exception of these 2 berths, which will have 30 and 35 ft. at l.w.o.s.t, 45 feet. at l.w.o.s.t will be provided at all the berths. The whole system will be equipped with modern sheds, freight handling appliances, grain elevators, ample tracks and all requirements pertaining to modern terminals.

Connecting Railways.—In order to provide railway connections with the new terminals an extension of the Intercolonial Ry. was necessary. Many locations for this extension were studied, and finally, after careful consideration, it was

compensated 0.04% per degree of curvature, and the sharpest curve will be 4 degrees with standard spirals.

The yard at Point Pleasant will have the following capacity: Freight storage and classification, 840 cars; elevator tracks, 200 cars; passenger car cleaning and storage, 296 cars; train shed, 119 cars. At Fairview is a new freight receiving, classifying and departure yard, with a capacity of about 1,600 cars, to accommodate all inward and outward bound freight. A large union passenger station will be erected on the site of what was H.M. lumber yard, near South and Hollis Sts., convenient alike to both the business and residential centres of the city. In general, the passenger station will be a T-shaped granite structure, the building on the bulkhead passenger landing quay forming the head of the T. The portion known as the city station will face on a plaza located between South and Tobin Sts. In the bulkhead passenger landing quay building, connected with

very troublesome to drill and shoot, and several types of drills were used, including both electric and steam, which drilled holes from $2\frac{1}{4}$ in. diameter upward to $5\frac{1}{2}$ in. The well drills, drilling a hole $5\frac{1}{2}$ in. diameter, gave the most satisfactory results in the main cutting, as owing to the shattered and seamy condition of the rock and the presence of layers of sand and gravel, it was in most cases necessary to case the holes for a considerable depth. South of Quinpool Road to the terminal yard most of the drilling was done with well drills. Where the cut was deeper than 30 ft. it was drilled and shot for its full width in two lifts, and where it was less than 30 ft. deep it was drilled and shot in one lift. The holes were placed usually about 9 ft. apart in rows 6 ft. apart, staggered and drilling to 6 ft. below subgrade and loaded without springing. The drilling in the terminal yard was mostly side hill work and was done mainly with electric drills, drilling a hole $2\frac{1}{4}$ in. in diameter. The holes



Site of Halifax Ocean Terminals and Union Passenger Station, with Double Track Railway from Main Line at Rockingham.

decided to construct a line diverging from the Intercolonial Ry. at Fairview. Great care has been taken in the location and design of the bridges, for grade separation of railway and highway traffic, to preserve, as far as possible, not only the beauties and amenities of the Northwest Arm, which from a tourist point of view is the city's greatest asset, but also of the suburban district through which the railway passes. From the crossing over Chebucto Road the railway follows the east side of the Northwest Arm to Maplewood, and from thence passes easterly in a deep cutting to the site of the terminals. Grade crossings are eliminated, the railway crossing over the highways at Fairview Road by steel girder spans with concrete abutments and over Chebucto Road by steel girder spans encased in concrete, the remaining highways and streets being carried over the railway on ornamental reinforced concrete arches. The railway is about 5 miles long and is to be double tracked throughout, with 4 tracks at Bower Road and branching out into the yard with 16 tracks at Tower Road. The maximum grade for eastbound traffic is to be 6/10%

the station proper, accommodation will be provided for all classes of passengers. The main trunk sewer, known as freshwater sewer, which heretofore has discharged within a few hundred feet of Pleasant St., detracting somewhat from the desirability of the old Esplanade district, will be diverted and will discharge at the head of pier A, over 1,400 ft. from the street. When the terminals are completed over 115 acres of land will have been reclaimed from the area to form the piers and quay spaces.

Railway Construction.—The work of constructing the new railway was commenced toward the end of July, 1913, at Fairview, and a month later at the harbor end. A thoroughly up to date equipment, consisting in all of two 100-ton, two 60-ton, and one 70-ton steam shovels, complete, and a 20-ton steam locomotive crane, was gradually brought on to the work, which was prosecuted with great energy. The cuttings, which are long and deep, as much as 60 ft. in parts, consisted mostly of rock, a shale, very seamy and stratified, with an occasional trace of iron stone and trap rock. Owing to its shattered formation the rock proved

were drilled in 8 ft. squares and sprung. This was the most satisfactory piece of work as regards drilling and shooting on the whole cutting. The shooting of the rock in the Fairview end of the cutting presented many difficulties, the rock being very faulty, containing pockets of rotten, disintegrated rock, mud, clay, gravel and sand, as well as water. The cut was drilled and shot no less than three times before it could be completely excavated. The first time holes were drilled with well drills at 9 ft. centres in rows 16 ft. apart. It was intended to spring these, but most of them caved in and were lost; as many as possible, however, were shot and a shallow cut taken. The second time the holes were drilled 10 ft. apart in rows 8 ft. apart to 6 ft. below subgrade and shot without springing, but this was not entirely successful. The third time the holes were drilled 10 ft. apart in rows $5\frac{1}{2}$ ft. apart, staggered, and to 6 ft. below subgrade without springing. Even this did not break the bottom of the cut properly, and the further use of piston drills was necessary for that purpose. A low freezing explosive was used on account of the presence

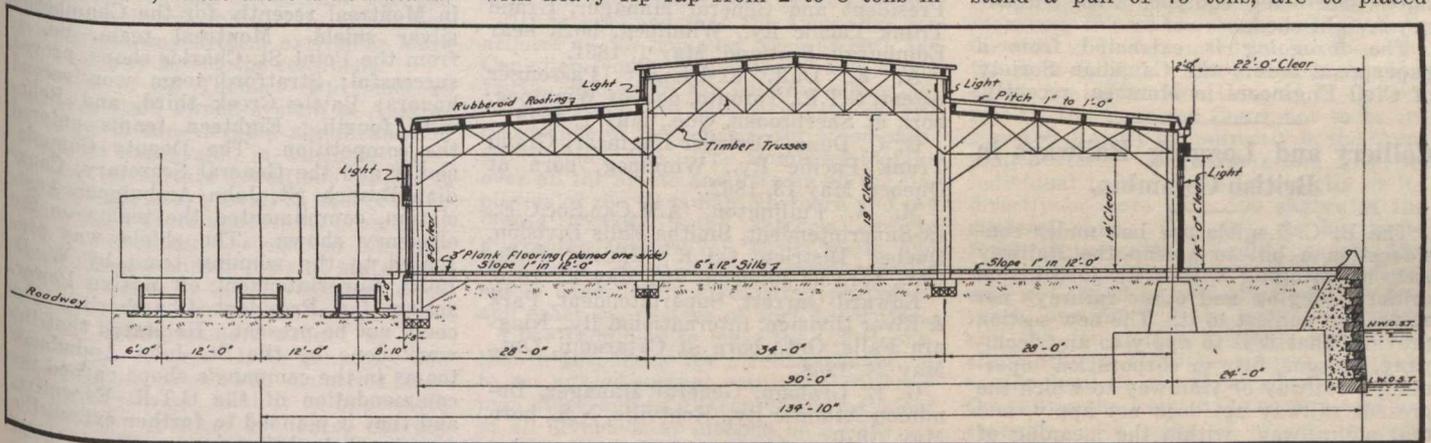
of very cold water in many of the drill holes. Most of the shooting was done in blasts of from 3 to 8 tons of 60% forsite (low freezing), calculated on a basis of from 1½ to 2 lb. of explosive to the cubic yard of material blasted, according to the nature of the rock. It was very clearly demonstrated in the extremely shattered rock encountered that the electrically driven drills were much superior to the steam driven. Owing to the impossibility of keeping the steam at an even pressure, the time of the stroke of the drill constantly altered, and if it was working slowly when it passed from a hard into a seam of disintegrated rock it jammed. With the electric drills, however, as the strokes were steady, very little of this trouble was encountered. It is worthy of record that although most of the blasting done was in close proximity to houses and streets, very little damage was caused, and there were no serious accidents either to the general public or to the workmen employed.

The material from the railway cutting was used to reclaim the freight yard on Bedford Basin, where there is now stand-

The breakwater, which is now completed, is 1,600 ft. long and 30 ft. wide at the top, and is of the mound type. It is situated at the extreme south end of the terminals. Three hundred ft. inside the end of it is a huge rock which extends to within 7 ft. of l.w.o.s.t., and immediately to the south of it is Point Pleasant Shoal, the end of which is marked by a buoy. The end of the breakwater is inside the line of the fairway so that it does not interfere with navigation. Point Pleasant is very shallow and affords a great protection to the terminals by breaking up much of the Atlantic swell. The waves which come round the end of the shoal and heretofore broke on the shore between it and the northern limit of the terminals are caught by the new breakwater. Observation has shown that since the completion of the breakwater a swell entering the harbor passes up the fairway parallel to the bulkhead passenger landing quay and past the ends of the piers. The breakwater consists of a rock dump, the centre core being run of cut material and the sides and end faced with heavy rip rap from 2 to 8 tons in

tively, making over 1¼ miles of quay wall. Forty-five feet of water at l.w.o.s.t. is being provided at the ocean berths except those on the north quay of basin 1, where the water is 35 and 30 ft. at l.w.o.s.t. The contract also includes the dredging of basins 1 and 2 and for and in front of the bulkhead passenger landing quay, the provision of from 1,000,000 to 1,500,000 cu. yd. of filling to make up the quay spaces and to fill pier A, reinforced concrete pile freight shed foundations and the construction of a new sewer outfall for the south end of the city.

The quay walls are constructed of cellular reinforced concrete blocks, faced with cut granite masonry from 1 ft. below low water to quay level and finished with a cut granite coping 3 ft. wide, no concrete is therefore exposed to the action of frost between high and low water, a most important feature in Halifax harbor where concrete between high and low water shows a great deterioration due to frost action. Mooring hooks or bollards, designed to correspond and fit in with the granite coping, and to safely withstand a pull of 75 tons, are to be placed



Cross Section of Timber Freight Sheds, Halifax Ocean Terminals.

ing room for 1,600 cars, and also for filling in quay spaces at the terminals and for the construction of the breakwater at the south end of the piers. Approximately 2,000,000 cubic yards of material was used to reclaim the freight yard on Bedford Basin at Fairview was constructed with 16 cu. yd. standard gauge side dump cars by the usual side dump methods, and faced with heavy rip rap placed by means of a 20-ton locomotive crane.

Bridges.—In connection with the railway running in from Fairview to the terminals, 16 bridges are called for. Of these 14 are highway bridges, arch type, constructed entirely of reinforced concrete. The one carrying the Halifax Ocean Terminals Ry. over the streets at Fairview is to be built of plate girders in a single span, and will have a concrete deck only. The other carrying the railway over Chebucto Road is to be built of plate girders in 3 spans, that is, 2 side-walk spans and the roadway span. This bridge will be entirely cased in concrete. The single spans for highway bridges vary from 60 to 144 ft. At Young Ave., the double span arch is to be approximately 225 ft. between main abutments. All abutments and wing walls are built on solid rock and are of mass concrete. Work was commenced on these bridges in the latter part of June, 1916, and the work completed during the year was as follows: 10 bridge sites excavated complete; 6 bridge main abutments and wing walls complete; 2 reinforced concrete arches complete and backfilled.

weight. The top is roughly paved with heavy rock. The shore end of the breakwater was dumped by 16 cu. yd. standard gauge side dump cars from a temporary wooden trestle for a length of about 300 ft., and from that point from a steel span 40 ft. long, supported at its inner end by the breakwater itself and at its outer end by a scow, 34 ft. wide and 90 ft. long, subdivided by bulkheads and provided with a steam hoisting engine for moving the span, and a centrifugal pump for adjusting the scow by means of water ballast to suit all stages of the tide. The scow also carried a tail track for 3 empty cars, so that 4 cars could be dumped with one switching. The rip rap with which the sides are faced was placed by a 20-ton locomotive crane. The breakwater has been of great assistance in protecting the dock contractors' floating plant in basins 1 and 2, and the work of constructing it has been carried on without serious delay and without loss or damage to the contractors' plant since June, 1914, during which time Halifax harbor experienced average weather conditions.

Docks.—In Jan., 1913, the contract was let for the first and perhaps most important unit of the docks. This contract includes the construction of the bulkhead passenger landing quay 2,006 ft. long, north quay basin no. 1, 700 and 500 ft. long, and pier A, 1,250 ft. long, 320 ft. wide at the head and 360 ft. wide at the bulkhead, the north return wall 225 ft. long, and the bulkhead walls of basins nos. 1 and 2, 95 and 320 ft. long respec-

along the face of the quays at intervals of 88 ft., and closer where necessary. In order to balance the pull on the mooring hooks the walls at these points are to be anchored back to concrete blocks by 2¾ in. diameter steel anchor ties. Granite boat stairs and landings are to be provided at the pier heads, the heads of basins and at both ends of the landing quay. Wrought iron ladders are spaced at about every 264 ft. along the faces of the quays.

Temporary freight sheds have been erected at two berths on the north side of basin 1. One shed is 90 x 396 ft., and will eventually be extended to 506 ft., while the other shed is 90 x 440 ft. Both sheds are of timber construction with 22 ft. bays and 4 rows of 12 x 12 columns, the bays being spanned by 28 ft. trusses, and the centre bay by a 34 ft. monitor truss. The 2 in. shiplap roofing is carried on 6 x 12 purlins, 6 ft. centre to centre, and is covered by 2 ply roofing paper. The 3 in. flooring is carried on 6 x 12 mud sills, 4½ ft. centre to centre. Continuous sliding doors are provided front and rear, the front or basin side giving a clear opening 14 ft. high, and the rear doors 8 ft. high. Four continuous rows of windows 10 x 12 in. glass, 2 lights high, give ample light by day, and one 200 watt and two 100 watt lamps per bay are sufficient at night. Offices and lavatories for customs, railway and overseas officers are located in the west end of the first shed, while the longshoremen's toilet and gear room are in the west end of the other shed. Three tracks at the rear of

each shed will accommodate 36 cars at one shed and 42 cars at the other. The sheds are set back 24 ft. from cope line. Each shed when full will hold about 3,000 tons of miscellaneous freight.

The works are now well advanced, and although the first block was only set on the north quay on basin no. 1 on Sept. 27, 1915, the following work has since been done on the quay walls: 900 lin. ft. of wall on north quay basin no. 1, and 700 lin. ft. on north quay, pier A, have been completed to the top of the granite work, while in addition 200 ft. on north quay basin no. 1; 836 ft. south quay, pier A; 300 ft. north quay, pier A; 660 ft. on passenger landing quay, and 95 ft. of wall on west quay basin no. 1 have been completed to the top of the blockwork. This makes a total of 3,761 ft. of wall built to above high water, and from 52 to 60 ft. high in 15 months, or an average of over 270 lin. ft. of wall per month. All this block setting was done with one block setting crane, although there are now two on the works. Three berths on basin no. 1 are in use, the two on the north side being equipped with temporary freight sheds.

The foregoing is extracted from a paper read before the Canadian Society of Civil Engineers in Montreal recently.

Colliery and Logging Railways in British Columbia.

The B. C. Legislature has under consideration a bill to amend the Railway Act, by bringing within its jurisdiction colliery, logging and other railways not at present subject to it. The new section provides that it is to apply to any "company, persons, firm or corporation" operating a railway or tramway to which the present railway act does not apply, and that a "railway" within the meaning of the section is the undertaking of any company which is declared to be a railway by the Minister's certificate. The Minister may declare what provisions of the Railway Act are to apply to such railways, and no such railway can be operated without the Minister's consent, and then only upon conditions imposed by the Lieutenant Governor in Council.

It was explained on the second reading of the bill, Mar. 15, that it is the Government's desire to look after the construction and operation of short colliery railways, logging railways, and all other railways or tramways at present in operation, under private ownership.

St. John River Hydro Electric Co.—The New Brunswick Legislature has been asked to revive and amend the company's charter, which was granted in 1913, and to extend the time for the construction of the various works authorized. The company was empowered to develop a water power on the St. John River, between the entering in of the Shogomoc and the Pokiok Rivers, and to transmit the electric power. The dam to be built across the river is to be provided with a lock sufficient to permit of navigation being carried in. In return for the privilege the company is to pay a rental of \$4,000 a year and 25c a year per constant horse power sold for 20 years from the first delivery of power, when the rate is to be revised. The company's office is to be at Fredericton, the provisional directors named being: M. E. Agar, W. A. Clousie, R. M. McCarty, St. John, N.B.; F. J. Boyer, Victoria Corner, N.B.; R. B. Harrison, Fredericton, N.B., and H. Guernsey, London, Eng.

Birthdays of Transportation Men in May.

Many happy returns of the day to:

Jas. Bain, General Superintendent, Halifax & South Western Ry., Bridgewater, N.S., born at Pictou, N.S., May 24, 1860.

W. R. Baker, C.V.O., ex-Secretary, C.P.R., Montreal, born at York, Eng., May 25, 1852.

B. A. Bourgeois, Assistant to Comptroller and Treasurer, Canadian Government Railways, Moncton, N.B., born there May 24, 1869.

G. S. Cantlie, ex-General Superintendent of Car Service, C.P.R., Montreal, now in military service with Canadian Overseas Forces, born at Montreal, May 2, 1867.

B. T. Chappell, Superintendent, Pacific Division, Canadian Northern Ry., Vancouver, B.C., born at Charlottetown, P.E.I., May 1, 1878.

N. R. DesBrisay, District Passenger Agent, C.P.R., St. John, N.B., born at Minneapolis, Minn., May 18, 1888.

M. Donaldson, M.Can.Soc.C.E., Vice President and General Manager, Grand Trunk Pacific Ry., Winnipeg, born near Edinburgh, Scotland, May 1, 1851.

A. E. Duff, ex-District Passenger Agent, G.T.R., Toronto, now of Winnipeg, born at Sherbrooke, Que., May 1, 1872.

G. C. Dunn, Division Engineer, Grand Trunk Pacific Ry., Winnipeg, born at Quebec, May 13, 1862.

M. A. Fullington, A.M.Can.Soc.C.E., ex-Superintendent, Smiths Falls Division, Quebec District, C.P.R., Smiths Falls, Ont., born at Johnson, Vt., May 12, 1880.

Edward Garrett, Superintendent, Park & River Division, International Ry., Niagara Falls, Ont., born at Catarqui, Ont., May 24, 1868.

G. E. Graham, General Manager, Dominion Atlantic Ry., Kentville, N.S., born May, 1870.

G. H. Hedge, General Master Mechanic, Western Lines, Canadian Northern Ry., Winnipeg, born at Neath, Wales, May 26, 1865.

W. T. Huggan, Divisional Accountant and District Passenger Agent, Prince Edward Island Ry., Charlottetown, P.E.I., born at Halifax, N.S., May 24, 1851.

J. Irwin, Superintendent, Toronto District, Ontario Division, Canadian Northern Ry., Trenton, born at Clinton, Ont., May 28, 1866.

S. McElroy, Trainmaster, Canadian Northern Ry., Rainy River, Ont., born at Lindsay, Ont., May 1, 1875.

W. Marshall, Assistant Manager of Telegraphs, C.P.R., Winnipeg, born at Garden Island, Ont., May 18, 1859.

J. N. Murphy, Trainmaster, C.P.R., Brandon, Man., born at Mooretown, Ont., May 10, 1879.

W. J. Rooney, Divisional Superintendent of Telegraphs, Alberta and British Columbia Lines, Grand Trunk Pacific Ry., Edmonton, Alta., born at Toronto, May 22, 1882.

A. C. Shaw, Passenger Department, C.P.R., Montreal, born at Detroit, Mich., May 12, 1865.

W. H. Snell, General Passenger Agent, C.P.R., Montreal, born at Palmyra, Neb., May 23, 1872.

C. T. Stanger, District Freight Agent, C.P.R., Saskatoon, Sask., born in Rutland, Eng., May 11, 1887.

W. Stapleton, District Passenger Agent, Canadian Northern Ry., Saskatoon, Sask., born at Bristol, Eng., May 20, 1884.

E. Tiffin, General Western Agent, Canadian Government Railways, Toronto, born at Hamilton, Ont., May 5, 1849.

J. H. Walsh, General Manager, Quebec Central Ry., Sherbrooke, Que., born at Quebec, May 12, 1860.

H. K. Wicksteed, B.A.Sc., M. Can.Soc.C.E., Chief Engineer of Surveys, Mackenzie, Mann & Co., Ltd., Toronto, born at Quebec, May 25, 1855.

C. L. Wilson, Assistant General Manager, Toronto & York Radial Ry., Toronto, and Vice President, Canadian Electric Railway Association, born at Boston, Mass., May 23, 1871.

A. O. Wolff, Resident Engineer, Chapleau Division, Algoma District, C.P.R., Chapleau, Ont., born at Copenhagen, Denmark, May 14, 1887.

James Yeo, ex-Roadmaster, Intercolonial Ry., Riviere du Loup, Que., born at Bideford, Devonshire, Eng., May 1, 1830.

First Aid Competition on the G.T.R.

First aid teams from the principal terminals on the G.T.R. met in competition in Montreal recently for the Chamberlin silver shield. Montreal team, no. 1, from the Point St. Charles shops, proved successful; Stratford team won second honors; Battle Creek third, and Belleville fourth. Eighteen teams entered the competition. The Deputy Commissioner and the General Secretary, Canadian Branch, St. John Ambulance Association, complimented the teams on the efficiency shown. The shield was presented to the winning team by W. D. Robb, Superintendent of Motive Power, acting for President Chamberlin, who could not be present. He stated that the work done by the St. John Ambulance teams in the company's shops earned the commendation of the G.T.R. Executive, and that it planned to further extend the movement to bring in men working on trains.

The Grain Growers' Grain Co., with a separately incorporated export department in New York, will, according to a New York report, consolidate early in the autumn of this year, with the Alberta Farmers' Elevator Co., the latter company's assets being transferred to the former, and the capital stock increased to \$3,000,000. This will, says the report, bring under one management, 250 country elevators in Manitoba and Alberta, the company also operating under lease, two of the C.P.R. terminal elevators and warehouses at the head of the lakes. It is also stated that the Saskatchewan Co-operative Elevator Co., controlling 230 elevators, will also be absorbed.

The Quebec Passenger & Elevator Co. has been incorporated under the Quebec Companies Act, with a capital of \$50,000, and office at Quebec, to convey passengers, freight, baggage, luggage and merchandise by means of elevators, hoisting machines, vehicles, motor cars or other motive power, and for that purpose to do all that is necessary, provided that nothing shall confer on the company the power to build, own or operate any line of railway. The provisional directors are: Jas. M. McCarthy, C. E. Taschereau, J. F. Cantin, F. S. Lee and Nap. A. Giguere, Quebec.

Calabogie Power Development.—The Renfrew, Ont., Town Council has passed a bylaw confirming an agreement with M. J. O'Brien, railway contractor, etc., for a franchise for power development at Calabogie.

A Solution of the Canadian Railway Problem.

By Sir Thomas Tait

Sir Thos. Tait, at one time in the C.P.R. service, in which he was Manager of Transportation in 1903, when he resigned to become Chairman of the Victorian Railways Commission at Melbourne, Australia, a position he occupied for seven years, and who since his return to Canada, in 1911, has been President of the Fredericton and Grand Lake Ry. & Coal Co., which built a railway in New Brunswick that has been leased to the C.P.R., and which operates a colliery on the line, has issued a booklet under the title given above. In starting he says "The Dominion of Canada owns or controls and operates a railway system, the main lines of which extend from Sydney, Halifax, and St. John, on the Atlantic seaboard, to Quebec and Montreal, and from Quebec to Fort William and Winnipeg, and there is, therefore, today in Canada the administration by the state of about 4,000 miles of railway and competition between company railways and a state owned and operated railway system extending more than half way across the continent."

In view of Sir Thomas' experience as head of a state owned system in Australia, there is considerable significance in his second paragraph, in which he says: "In view of certain conditions which, it is to be regretted, prevail in this country and in which there appears no promise of early improvement, the efficient administration along business lines of state railways in Canada by the Government, even by means of a so-called 'independent' board of commissioners cannot be confidently anticipated. It is generally the experience in democratic countries having state railways, that it is impossible to eliminate political influence, exerted if for no other reason than to promote and advance the interests of the political party in power, and, undoubtedly in such countries as the United States and Canada, where political partisanship runs so strong, and political patronage has so long been the custom, prudent and efficient management of railways by the state would be found sooner or later to be impracticable owing to political interference and influence."

Sir Thomas continues: "Competition between state owned and operated railways and company railways is inequitable and unfair to the private investor in the latter. Money for construction and equipment can, generally speaking, be borrowed or obtained by the state on considerably better terms than by companies and, therefore, state railways are not expected or required to earn as large a return on their cost as investors in company railways, especially shareholders, look for and should receive. If everything else therefore be equal—an important and improbable proviso—the rates and fares on state railways do not require to be as high as on company railways. Due to the exercise of political influence, rates and fares on state railways are liable to be reduced, and indeed as a rule are reduced, and train services and other facilities are provided beyond what the traffic and other conditions warrant, and these unjust lower rates and fares, and these unjustified facilities, must be conceded by competing company railways if they are to retain their fair share of the traffic."

"In view of the possibility, if not the probability, of the Dominion being compelled to take over the Canadian Northern system and the Grand Trunk Railway

from Winnipeg to Prince Rupert, with its branch lines, the question arises whether in such event the difficulties and disadvantages of state administration, on the one hand, and the injustice of state competition with private enterprise, on the other hand—both of which will be greatly aggravated and increased should the present state railway system be extended from Winnipeg to the Pacific Coast and throughout our western provinces—might not be avoided. The following is an outline of a scheme whereby both the advantages which may be derived from the ownership of railways by the state and the good results which should accompany efficient administration by a company may be obtained and to these should be added the great advantages, including a very large saving in operating expenses, which would result from all the more important railways of Canada being managed and operated as one great system.

"It is assumed that the Dominion can acquire all the common stock of both the Canadian Northern and the Grand Trunk Pacific companies for possibly a nominal consideration, or, having regard to the magnitude of the scheme, for a comparatively small sum. The Dominion to take over all the assets and assume all the liabilities of the Canadian Northern and the Grand Trunk Pacific systems and to guarantee interest on their bonds and debenture stock—supplemental to and not in cancellation of existing provincial and other guarantees of such securities.

"The Dominion to lease the C.P.R. system in perpetuity for a rental equivalent to an agreed annual return on its common stock and to guarantee the payment of all dividends or interest on all the securities of that system which are senior to its common stock, and to assume all the liabilities of that company, including all its guarantees on the securities of other railway companies, and the payment of all rentals for which the C.P.R. is responsible. The Dominion to take over all the assets of the C.P.R. Co., except those which are not closely connected with the operation of its railways and connections, which assets would be transferred to a separate company for the benefit of C.P.R. shareholders. These excluded assets would include: All lands, except those specified as "Surplus lands" in Schedule B of the company's annual report; interests in town sites; timber and mining rights; collieries and timber mills, improved farms and live stock; natural gas and petroleum rights; investments in Consolidated Mining and Smelting Co. and in West Kootenay Power and Light Co.; investments in coal and other mines; balance at credit of special income account; proceeds of land sales; deposits and loans; cash on hand and in banks, etc. in excess of current liabilities.

"The Dominion to lease the Grand Trunk system in perpetuity, for a yearly rental equivalent to certain rates of dividends per annum on its preference and common stocks to be agreed upon, and to guarantee the payment of all dividends or interest on all the securities of that system which are senior to its preference and common stock, and to assume all the liabilities of that company, including all its guarantees on the securities of other railway companies and the payment of all rentals for which the Grand Trunk Co. may be responsible. The Dominion to take over all the assets of the G.T.R.

"The five systems, viz., the existing government system, the Canadian Northern, the Grand Trunk Pacific and the Canadian Pacific and Grand Trunk systems to be administered for and on behalf of the Dominion, under an agreement with the Dominion, by a company to be known as the "Canadian Railways Co.," to be incorporated and constituted, as follows:

"The company to be incorporated as above to have a capital of, say, \$10,000,000 and a board of directors of nine members; 51% of the capital to be subscribed and paid for and to be held by the Dominion, and the balance, 49%, to be subscribed and paid for and to be held exclusively by citizens of Canada. The Dominion to guarantee 5% per annum dividend on the Company's stock. Four of the nine directors to be appointed by the Governor General in Council, four by the citizen shareholders of the company, representing 49% of the stock, and the ninth director to be appointed by the Supreme Court of Canada. The directors appointed by the Governor General in Council and by the Supreme Court not to be interested directly or indirectly in the Company's stock. No corporation, firm, or individual to be interested directly or indirectly in more than 100 shares of the citizens' stock. No stock to be transferred without the board's consent. The directors appointed by the Governor General in Council to hold office, one for five years, one for 6 years, one for 7 years and the fourth for 8 years, and to be eligible for re-election—subject, however, to dismissal by the Governor General in Council in the event of misconduct or incapacity, with right of appeal in such case to the Supreme Court of Canada. These four directors to be the most capable railway administrators obtainable—one of them with experience in operating, one in traffic, one in finance and accounting, and the fourth in legal work. The directors appointed by the citizen shareholders to be elected annually. The director appointed by the Supreme Court to hold office for 10 years and to be eligible for reappointment, subject, however, to dismissal by the Governor General in Council in the event of misconduct or incapacity, with right of appeal in such case to the Supreme Court. Vacancies due to death or resignation to be filled by the Governor General in Council, in the case of a director originally appointed by him, in the case of a director appointed by the citizen shareholders by the other three similarly appointed directors until the next annual meeting of the company and by the Supreme Court in the case of the director appointed by it. The chairman and vice chairman of the company to be appointed by the Governor General in Council from among the four directors similarly appointed and to hold office for eight and seven years, respectively. The chairman to be the chief executive officer of the company. The vice-chairman to assist the chairman and to represent him in his absence. The salaries of the members of the board of directors appointed by the Governor General in Council to be sufficient to secure the best men for the positions and the salaries of the other directors to be such as to make it worth the while of able and reliable men to become members of the board. The board to control and direct the company's policy and to have complete control of the ap-

pointment work of the company's officers and employes. In any year in which the net revenue of the whole system is sufficient to pay all the rentals and other charges payable by the Dominion in respect of the whole system, including interest at an agreed rate on the amount invested in the existing Government system and the interest payable on additional capital expenditure, the chairman and vice-chairman and other members of the board shall receive a bonus equivalent to an agreed percentage of their respective annual salaries and the citizen shareholders an agreed increase in their dividend, and in the event of the net revenue exceeding the said fixed charges in any year by a percentage to be fixed, the said members of the board shall receive an additional bonus equivalent to an agreed percentage of their respective salaries, and the citizen shareholders shall receive an agreed additional increase in their dividend for that year. Maximum salaries for the respective directors and a maximum dividend for the shareholders to be fixed.

"The Dominion to finance the whole system including the provision of the funds for new railways, for all additions and improvements to existing lines and for rolling stock and other equipment chargeable to capital account, as may be stated to be required by the board. In the event of a difference of opinion between the board and the Minister of Railways (representing the Dominion) in respect of any of such capital account requirement, the question to be submitted to the authority referred to in the next clause for investigation and report—the decision of such authority to be final.

The construction of a new railway not to be undertaken nor any commitment to it given until an investigation and report in regard to it have been made and the report laid on the table of the House of Commons by a competent authority—independent of politics—say, a board of three members thoroughly well qualified for the purpose.

Rates and fares and other charges for transportation and other services not to be increased without the approval of the Dominion Board of Railway Commissioners.

Except as specified in the next clause rates and fares and other charges not to be reduced without the consent of the board until a substantial reserve guarantee fund has been provided out of net revenue (in excess of the fixed charges, bonuses to directors and extra dividends to shareholders) and the net revenue has been sufficient in three successive years to pay all such fixed charges, bonuses to directors and extra dividends to shareholders, and then only to the extent which, based on the average traffic of the said three years, shall represent a reduction in the net revenue equal to the net revenue in excess of the said fixed charges, bonuses and extra dividends.

The Dominion may by order in council declare a matter (such as a reduction in transportation or other charges for services rendered or the construction of a new railway) to be one of general policy, and direct the board to give effect to such policy, but in the event of the board not concurring in whole or in part in such direction, the Dominion shall reimburse annually to the whole system 75% of the yearly increase in expenditure or of the decrease in revenue of the whole system occasioned by the carrying out of such direction in excess of such increase or decrease as would have been occasioned by the carrying out of such direction

to the extent only to which the board concurred in it.

"The company's accounts and books to be continuously audited by an auditor to

be appointed by the Governor General in Council, who shall certify to the balance sheet, profit and loss account and other annual statements of the company."

The Canadian Pacific Railway's Honor Roll No. 19.

Adams, Percy Miller	Clerk	Lambton	Wounded
Allan, William E	Waiter	Fort William	Died of wounds
Andrews, Harry	Clerk	B.C. Lake Steamers	Killed in action
Baikie, David	Laborer	Fort William	Wounded
Baird, John Pollock	Stenographer	Saskatoon	Wounded
Barton, George	Clerk	Glen Yard	Wounded
Bell, William	Conductor	Victoria	Shell shock
Bigney, Charles W. S.	Deckhand	British Columbia Dist.	Wounded
Blight, Gerald	Concrete inspector	Calgary	Wounded
Bonsfield, Frederick P.	Cook	Winnipeg	Killed in action
Bottaro, Peter	Porter	Calgary	Wounded
Bovet, Frederick	Trainman	Winnipeg	Wounded
Brooksbank, Jack	Deckhand	Moose Jaw	Wounded
Buck, Frederick M.	Wiper	Woodstock	Wounded
Burleigh, Howard M.	Assistant agent	Calgary	Shell shock
Burrell, William A.	Clerk	McAdam	Wounded
Campbell, Thomas	Brakeman	Ibsen	Wounded
Causton, James W.	Operator	Ogden Shops	Wounded
Clark, George	Trainman	Sutherland	Wounded
Cockerill, John	Locomotive fireman	Strathmore	Died of wounds
Cole, John	Wiper	British Columbia Dist.	Wounded
Cook, Leonard H.	Laborer	Smiths Falls	Wounded
Cooper, William	Locomotive fireman	Winnipeg	Wounded
Corrigan, Albert	Red-cap porter	Revelstoke	Wounded
Crabbe, James	Ass't baggagemaster	Montreal	Wounded
Crone, John	Laborer	Fort William	Wounded
Dagnall, George	Checker	Sedgewick	Wounded
Daley, Barry	Deckhand	Winnipeg	Wounded
Darby, Frank Leslie	Laborer	Port Arthur	Wounded
Dazley, Herbert C.	Elevator operator	Moose Jaw	Wounded
Dewar, Patrick S.	Steam fitter's helper	B.C. Lake Steamers	Killed in action
Drake, Robert Ludlow	Commissary Agent	Brooks	Wounded
Edward, Alexander	Locomotive man	Vancouver	Wounded
Evans, George Oscar	Baggage porter	Calgary	Killed in action
Evans, Gilbert Ansdell	Carpenter	British Columbia Dist.	Killed in action
Evans, William	Waiter	B.C. Lake Steamers	Wounded
Faulkner, William	Waiter	East Calgary	Killed in action
Gardner, Alfred Henry	Clerk	Lauder	Wounded
George, Ernest Frederick	Clerk	Kenora	Died whilst prisoner of war
Gillies, John Nimmo	Brakeman	Moose Jaw	Believed killed
Gleeson, Stanley	Clerk	Toronto	Wounded
Govier, James Charles	Sectionman	Manitoba District	Died of wounds
Green, Sidney	Stripper	Brandon	Killed in action
Haggan, Homer	Laborer	Coquitlam	Wounded
Hall, George	Draughtsman	Fort William	Wounded
Handyside, Richard	Watchman	Ottawa	Wounded
Harding, William S.	Clerk	Winnipeg	Wounded
Hartshorn, Robert	Section foreman	Medicine Hat	Wounded
Hearn, Arthur F.	Car cleaner	Moose Jaw	Killed in action
Henderson, William A.	Wiper	Fort William	Wounded
Hewitt, Henry	Boilermaker	Calgary	Wounded and missing
Holmes, Alfred Travis	Agent	Red Deer	Wounded
Howlett, Horace B.	Checker	Fort William	Killed in action
Hutson, Thomas L.	Apprentice	Calgary	Wounded
Ince, Lester Edgar	Sleeping car porter	Montreal	Shell shock
Jaycock, William G.	Locomotive fireman	Lethbridge	Gassed
Jones, David E.	Apprentice	Angus	Wounded
Ker, Edward Dickson	Clerk	Vancouver	Wounded
Lapworth, George T.	Locomotive fireman	Kenora	Wounded
Larbalestier, Bernard	Clerk	Calgary	Died of wounds
Law, Robert	Apprentice	Ogden Shops	Wounded
Leitch, Joseph a	Locomotive fireman	Calgary	Wounded
Lloyd, Stanley	Messenger	Winnipeg	Wounded
McCarthy, Sidney	Wiper	Arcole	Shell shock
McDougall, David L.	Brakeman	Medicine Hat	Wounded
McIntosh, Norman	Locomotive fireman	Sutherland	Died of wounds
McLean, Dugald	Waiter	Calgary	Wounded
Malcolm, John Croll	Fitter's helper	Cranbrook	Killed in action
Martin, John Byron	Lineman	Revelstoke	Wounded
Melbourne, Arthur	Helper	Moose Jaw	Wounded
Moore, Charles	Heater man	Angus	Killed in action
Moor, Roland T. H.	Stenographer	Saskatoon	Died of wounds
Mountain, Arthur J.	Brakeman	Calgary	Believed killed
Murary, John	Bell Boy	Victoria	Wounded
Odam, Ernest	Stationary fireman	Kenora	Wounded
Phillips, Percy W.	Miner	Calgary	Wounded
Preston, Samuel	Laborer	Parkland	Wounded
Riches, Frank	Locomotive fireman	Minnedosa	Wounded
Roberts, John	Locomotive fireman	East Calgary	Wounded
Roerick, Raoul G.	Cook	Calgary	Wounded
Rushworth, George	Car repairer	Winnipeg	Died of wounds
Sanger, Herbert G.	Furnace helper	Angus	Wounded
Seright, James	Boilerwasher	Calgary	Wounded
Short, William W.	Clerk	Edmonton	Killed in action
Sinclair, William	Locomotive fireman	Minnedosa	Killed in action
Sissons, Franklin T. M.	Cashier	Edmonton	Wounded and prisoner
Sparks, Ernest	Locomotive man	Minnedosa	Killed in action
Spencer, Willard M.	Trainman	Moose Jaw	Died of wounds
Stevenson, David	Clerk	Winnipeg	Wounded
Stone, Edward Wilfred	Apprentice	Ogden Shops	Died of wounds
Taggart, William J.	Conductor	Brandon	Wounded
Tarrant, Samuel	Fitter's helper	Lambton	Killed in action
Tout, Walter	Checker	Moose Jaw	Wounded
Unwin, Henry Wallace	Conductor	Chapleau	Killed in action
Walls, Nixon	Blacksmith's helper	Ogden Shops	Wounded
Walton, Joel	Clerk	Montreal	Shell shock
Watson, Leon A.	Lineman	Nelson	Wounded
White, Frederick S.	Hostler	Assiniboia	Wounded
White, John Robert G.	Liveller	Brooks	Shell shock
Williams, George G.	Clerk	Regina	Wounded
Williamson, Nelson S.	Apprentice	Winnipeg	Wounded and prisoner
Willoughby, William	Teamster	Calgary	Killed in action
Wood, George	Storeman	Glen Yard	Wounded
Young, Percy R.	Cab boy	Moose Jaw	Wounded

Increases in Lake and Rail Rates from Eastern Canada to Fort William, Etc. Sustained by Board of Railway Commissioners.

The Assistant Chief Railway Commissioner, D'Arcy Scott, gave the following judgment, Mar. 29:

The Montreal Board of Trade has brought to the board's attention the tariffs filed by the railway companies increasing the lake and rail rates on sugar to Fort William and other lake points, effective April 2. The G.T.R., the C.P.R., and the Canadian Northern Ry. were called upon to justify the proposed increases at the sittings of the board at Ottawa on Mar. 20. At the hearing, in addition to the railway companies mentioned, the Montreal Board of Trade, the Toronto Board of Trade and the Canadian Manufacturers' Association were represented. After the question of increased rates on sugar had been gone into at the hearing it appeared that a number of other commodity rates, as well as the class rates, which had also been increased, were in the same position as the sugar rates. Therefore, whatever justification there might be for increasing sugar rates would apply to the other rates covered by the same tariffs.

In dealing with the tariffs I will refer only to those of the C.P.R. The other railways have filed tariffs practically similar to the C.P.R. ones. The C.P.R. tariff containing the increases is Supplement 6 to C.R.C. no. E. 3136, issued Feb. 26, 1917, effective April 2, 1917. An examination of the different lake and rail rates that have from time to time been effective since the board's establishment will be of interest in connection with this matter. The following statement gives the lake and rail commodity and class rates to Port Arthur and Fort William, shown in all tariffs filed by the C.P.R. from 1904 to and including the tariff under consideration, the increases in which the company now seeks to justify:

To Port Arthur and Fort William. Lake and Rail.		Rate per 100 lbs.
Aug. 1-04—Sup. 1-E 220—Spikes, bolts and nuts for railway construction—		
From Montreal	17½c	
From Toronto	15c	
June 20-10—Sup. 26. E-1107—		
From Montreal	17½c	
From Welland, Toronto, London, Swansea, Hamilton	15c	
Apr. 2-17—Sup. 6, E.3136—Same as iron and steel.		
From all points	22c	
Aug. 1-04—Iron and steel articles—		
From Montreal and West	20c	
Apr. 27-05—Sup. 2, E.220	25c	
May 1-09—Sup. 19, E.1107	22c	
May 22-16—E.3136	19½c	
Apr. 2-17—Sup. 6, E.3136	22c	
May 15-07—E-838—Plasterers' hair.		
From Berlin, Ont.	20c	
Apr. 2-17—Sup. 6, E.3136—(Old 5th Class, 25c) cancelled, 5th class to apply	30c	
May 2-05—Sup. 3, E.220—Salt, c.l.		
From Windsor, Wingham, Goderich	8 1/3c	
Apr. 2-17—Sup. E.3136	11 2/3c	
June 12-05—Sup. 5, E.220—Binder Twine.		
From Montreal and West	23½c	
June 25-06—Sup. 3, E.635	19c	
June 12-07—Sup. 3, E.838	20c	
May 5-08—Sup. 1, E.1107	15½c	
Apr. 2-17—Sup. 6, E.3136	17½c	
May 22-16—E.3136—Cement c.l.		
From Dumfries, Durham, Hanover, St. Marys	10½c	
From Hull, Montreal	14c	
From Belleville	13c	
Apr. 2-17—Sup. 6, E.3136—		
From all points	15c	
May 22-16—E.3136—Brick linings, stove.		
From St. Johns, P.Q.	c.l. l.c.l.	
Apr. 2-17—Sup. 6, E.3136—Cancelled.	28c	43c
Class rates to apply	39c	59c
Oct. 14-16—Sup. 3, E.3136—Stable fittings.		
From Guelph, Fergus	25c	
Apr. 2-17—Sup. 6, E.3136	27c	

May 22-16—E.3136—Earthenware, stone-ware, l.c.l.		
Apr. 2—Sup. 6, E.3136—		
From Montreal, Belleville, Port Hope	38c	45c
From Toronto, Hamilton, London	31c	38c
May 1-09—Sup. 19, E.1107—Sugar, c.l.		
From Montreal	25c	
Apr. 2-17—Sup. 6, E.3136—		
From Montreal	35c	

Classes.										
May 16-04—E.220—										
Toronto and West—										
1	2	3	4	5	6	7	8	9	10	
50	44	38	31	25	25	20	20	20	20	20
Montreal and West—										
60	53	45	38	30	30	24	24	24	24	24
Apr. 2—Sup. 6, E.3136—										
Toronto and West—										
1	2	3	4	5	6	7	8	9	10	
60	53	45	38	30	28	21	21	21	21	21
Montreal and West—										
70	61	53	45	35	35	24	24	24	24	24

While the earliest date given is the first record of the rate in tariffs filed with this board, I am told by the Board's Chief Traffic Officer, who had an intimate knowledge of lake and rail rates long before the establishment of the board, that many of these class rates are much older than the earliest tariffs on record with the board would indicate. These rates are from stations in Eastern Canada to Lake Huron and Bay ports by rail, thence by boat to Fort William and Port Arthur or other lake ports. The point of transshipment from rail to lake boats for the head of Lake Superior for the C.P.R. is Port McNicoll, on Georgian Bay, and for the G.T.R., Point Edward, at the south end of Lake Huron. The rail haul, from Montreal for instance, is in direct competition with the all water movement via the St. Lawrence River and Great Lakes.

The justification of the proposed increases submitted by the railway companies was that the rates sought to be increased were exceptionally low rates, put in to meet water competition, which the companies had the right to cancel or increase at any time they decided to disregard the water competition, and that conditions had so changed that the railway companies did not desire any longer to meet water competition. This position is quite tenable, and the principle involved has been recognized by the board in a number of cases. (See judgment of Commissioner McLean in Blind River Board of Trade v. G.T.R., C.P.R., Northern Navigation and Dominion Transportation Companies, 15 Canadian Railway Cases, pg. 146).

The board has no jurisdiction over the rates charged on the division of lake and rail rates demanded by the different steamship companies operating boats on the St. Lawrence or the Great Lakes, other than the rates on the steamers operated by the C.P.R. I understand the steamship companies desire to charge higher rates during the coming season than they have been charging in the past. The extraordinary demand for ocean tonnage, due to the war, has caused Canada Steamship Lines, the corporation which operates the largest number of boats on the lakes, to remove its largest and best lake boats and put them into ocean service. Doubtless, other lake boat owners have done the same thing. The result is a scarcity of tonnage on the lakes. With increased water rates and a scarcity of lake tonnage, it is only natural that the railway companies should decide that the present was an opportune time to cancel their old water compelled rates.

It should be borne in mind that at the time the increase in rates was allowed

by the board in the Eastern Rates Case the lake and rail rates now under consideration were not increased. The rail portion of the proposed rates does not appear to be excessive, when compared with the local rail rates between the same points. The steamship divisions of the proposed rates are, I understand, to be the same percentages as have been in effect for a number of years. They appear in the judgment in the Blind River Case already referred to.

Local Rates to Point Edward.		
	Per 100 lbs.	
	1st Class	5th Class
From Montreal	60c	30c
From Toronto	38c	19c

Railway Portion to Point Edward of Proposed Lake and Rail.		
	Per 100 lbs.	
	1st Class	5th Class
From Montreal	42c	21c
From Toronto	25½c	12¾c

The Montreal and Toronto rates in the new tariffs are blanket rates, and, therefore, a comparison of the rail portion of these rates with the local class rates from points covered by the Montreal or Toronto lake and rail rates, but much nearer to the point of transshipment to the boats than either Montreal or Toronto, as the case may be, would not appear as favorable to the new rates as the example given above.

Nevertheless, Montreal and Toronto, being the two largest shipping points, the comparison given above is a fair one. The new lake and rail rates will so far as is known be the following number of cents over the maximum all water rates for the season of 1917 in the classes mentioned:

5c per 100 lb.—1st class.
4c per 100 lb.—2nd class.
4c per 100 lb.—3rd class.
3c per 100 lb.—4th class.
2c per 100 lb.—5th to 10th class inclusive.

And the proposed rates will be under the present all rail rates to Fort William 45c per 100 lb. 1st class, and 12c per 100 lb. 5th class from Toronto; and 35c 1st class and 7c 5th class from Montreal.

It should be understood that the only rates the board has had under consideration in this matter are the local lake and rail rates to Fort William and other lake ports and are to be found in tariffs becoming effective on April 2, 1917. As already indicated, the railway companies may in their discretion meet water competition if they see fit to do so and may also determine the extent to which they shall meet it, and, therefore, the board cannot interfere with the tariffs filed.

Northern Colonization Ry.—The act passed at the Quebec Legislature's last session respecting the land grant made to this company, provided for the ratification of letters patent dated July 31, 1916, granting lands to the company to replace the 96,000 acres granted by letters patent dated Sept. 30, 1910, and recorded to the government July 28, 1916, for reasons set out in an order in council dated June 22, 1916. The reason for the re-ceding of the lands as set out in the documents, which are given as a schedule to the act, is the flooding of them by the damming of the St. Maurice River under the Running Water Commission's direction.

Rapid Transit Railways.—E. V. Pannell, electrical engineer, read a paper on rapid transit railways some features of construction and cost, before the American Institute of Electrical Engineers, Toronto Section, Apr. 20.

Maximum Length of Trains on Canadian Railways.

Canadian Railway and Marine World for April contained a summary of a judgment given by Commissioner S. J. McLean of the Board of Railway Commissioners, on Mar. 24, on an application for an order to define the maximum length of trains to be hauled on Canadian railways. Following is the full text of the judgment:

The matter of the regulation of the length of freight trains was set down for hearing by the board of its own motion. At the hearing, certain points were set forth by the representatives of the or-

ganizations of railway employees as constituting the essence of their complaint. A written submission was subsequently made by the railways, and a written reply thereto was made by the representatives of the organizations of railway employees. Investigations have been made by the board's operating department of the practical working of long freight trains and the various factors involved.

other one thing more important in transportation than the movement of freight. The fundamental importance of getting the most efficient movement out of the rolling stock is patent to all. Its importance is especially apparent to those who in their daily work recognize the duty of ensuring such a freight movement as will enable that proper prosecution of the industries peculiarly relating to the war, and of the other and ordinary industries whose proper maintenance is essential to the prosecution and financing of the war. Under the existing conditions, the board is not justified in directing a revision of the length of freight trains.

Snow Ploughs for Canadian Government Railways.

The accompanying illustrations show one of the 20 steel snow ploughs which were added to the Canadian Government Railways' equipment during the past winter. They have the following general dimensions:

Length, over all	32 ft. 1 9-16 in.
Width, over top sills	8 ft. 9 1/8 in.
Height, rail to top of eaves angle	11 ft. 3 in.
Height, rail to top of cupola	about 14 ft. 10 in.
Width, over wings extended	16 ft.
Extreme width, cupola	8 ft. 9 in.
Extreme length, cupola	4 ft. 11 1/8 in.
Truck centre	18 ft.
Wheel base, leader truck	4 ft. 2 in.
Wheel base, rear truck	5 ft. 3 in.



Snow Plough, Transcontinental Division, Canadian Government Railways.

The matter was taken up by the board at a time when the country was subject to war conditions; and the continuance of the war has every day emphasized the burden the war puts on Canadian transportation facilities and the necessity of obtaining the very highest possible efficiency from them. The condition which the country went through since last year and which, unfortunately, it is still in,

Weight, approximately 60,700 lbs.
 Draft gear Tandem springs
 Couplers 5 x 7 shank, 8 1/2 in. end
 Air brakes Westinghouse, K.D. 812
 Trucks (front end) 30-ton truck
 Wheels Cast steel, 28 in. diam.
 Journal boxes Tender type
 Trucks (rear end) 30-ton standard
 Wheels M.C.B. 33 in.
 Axles M.C.B. standard
 Brake shoes Steel back
 Springs M.C.B. class
 Brake beams M.C.B.

These ploughs are practically duplicates of some built some little time ago for the Intercolonial Ry., except that the large draw bar castings on the front of the plough have been extended so as to facilitate the coupling of ploughs nose to nose. The ploughs previously built did not have this feature. In addition to this modification, the side wings were redesigned, and have curved plates, instead

The Napierville Junction Ry. Co. has been admitted to the Eastern Canadian Passenger Association's membership.

of the straight plates previously used, in order that the ploughs will clear themselves more readily from the snow. The new ploughs also have an ice cutter applied to the front truck. These cutters are operated by air cylinders which remove the ice at the inside of the rails. The front operating device was changed, and instead of being lowered and raised by air, it is raised by means of levers and springs. The ploughs were built by the Canadian Car & Foundry Co.

Application for Authority to Raise Freight and Passenger Rates.

Canadian railways are applying to the Board of Railway Commissioners for a general increase in freight and passenger rates. Permission is asked to make brief supplements to existing tariffs, authoriz-

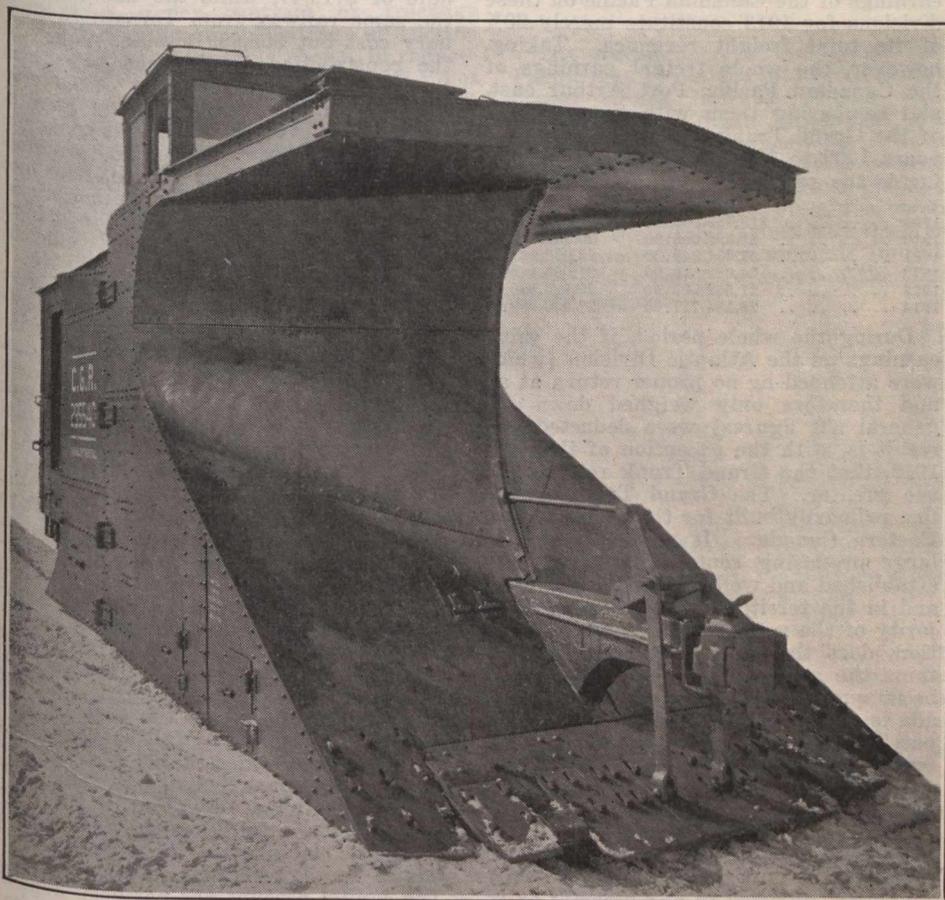
inefficiency of transportation facilities, and while at present, owing to scarcity in skilled labor and other causes due to the war, it may not be possible to maintain the transportation service in a condition of highest efficiency, it is an imperative duty on the part of everyone to see that the service is adequately sustained.

"The applicants claim that under the present revenues and rates applicable to their enterprises it is impossible to adequately sustain their service, to make needed betterments, or to meet the enormous decrease in net operating income attributable to the very substantial increased cost of fuel coal, materials, supplies, equipment of all kinds and wages, entering into the maintenance and operation of their railways. Since the rates of the railway companies are absolutely fixed under the Railway Act, the applicants are powerless to increase their revenues, to

publication of flat percentage advances to existing tariffs by supplementary tariffs filed with the board, and that such supplementary tariffs should be published and made effective at the earliest possible moment. Even should these advances be authorized, the increased revenues which the applicants will receive therefrom will not be sufficient to meet the additional outlay which they will be called upon to make in the purchase of the amount of one article—coal—used yearly by the applicants in Canada."

The railways are submitting with their application details of the great increases in railway operating expenses due to the rise in the price of fuel coal and other commodities, increased duties, war taxes and labor payments. Fuel coal alone will cost Canadian railways several million dollars more this year than in 1916. The consumption of coal by the Canadian roads is approximately 25,000 tons a day, or more than 9,000,000 tons a year. For this coal the railways will have to pay, during the next twelve months, a much higher price than at any time in their history. The railway coal contracts with the mines run from April to April, and new agreements just entered into call for an increase in price of about 100%. In addition to the high purchase price, the Canadian railways have to pay a customs duty of 55c a ton on locomotive fuel entering Canada, and a 7½% surtax as part of the War Revenue Act of 1915. With the doubling up in the price of coal, this surtax will automatically increase and prove a heavy additional burden. The railways also use millions of dollars worth of other products, the prices of which are steadily mounting. The price of locomotives has increased 90%, freight and passenger cars 50%, and rails \$10 a ton. Since the beginning of the war the railway pay rolls have shown marked advances. There has been a general increase in the wage scale and large expenditures on additional labor have been necessary to maintain efficiency, with many thousands of skilled employes enlisting and others engaging in commercial pursuits, where opportunities are considered larger and more profitable, as a result of the great activity and prosperous conditions in the business world.

Evidence will be presented to the Board of Railway Commissioners to prove beyond doubt that the railways cannot meet the pressure on their revenues resulting from these greater costs. Canadian railway officials state that a reasonable increase in freight rates would not in any way burden the community, but would in reality prove a national economy, in that it will assist the nation's business demands, and which would not otherwise be possible. The railways take the ground that they are the only concerns in the industrial world that are at present selling their product at the old rates, and at the same time paying more for everything they buy than they ever did before. The new and unexampled conditions, particularly in regard to the price of fuel, now existing make the wiping out of the favorable revenue showings made last year a certainty, if increased rates are not promptly granted, and a refusal of such an increase would, the railway executives state, cripple the railways. United States railways will place new tariffs in effect from June 1 next, by the Interstate Commerce Commission's authority, given recently. The conditions of railway operation on both sides of the international boundary line are similar, except that the Canadian lines must meet the heavy duty on fuel and other supplies used.



Snow Plough, Transcontinental Division, Canadian Government Railways.

ing an advance of 15% on all class and commodity freight rates, except on coal, and also on all passenger fares. A specific increase of 15c a ton on both bituminous and anthracite coal is requested, such advances to become effective upon less than 30 days notice. The grounds upon which this application are made are set forth as follows:

"Nothing is more essential to the welfare of Canada, whether considered in its own interests or as a part of the Empire, than that the railways operating within its borders should be in a position to respond immediately and effectively to the fullest demands made upon them, either by the general commerce of the country or in connection with the defence of the realm. Every industry, whether engaged in war preparation or in the manufacture of commercial commodities, and every individual in Canada, is affected either directly or indirectly by the efficiency or

equalize or even to approach the equalization of this increased cost in fuel coal and other commodities, and they are faced with a probable deficit in net operating income unless immediate relief is granted. Substantial increases in both freight and passenger rates are therefore imperatively necessary, and the emergency requires that the relief granted should be made in the most expeditious manner and with the least possible delay.

"If advances in rates be proposed and filed with the board, in compliance with its present rules governing the publication of tariffs, a long delay must necessarily ensue before such tariff publication can be prepared and made effective, and for these reasons it is deemed expedient that any advance permitted should be made by virtue of the War Measures Act and that the board upon the passage of any order in council as may be recommended by the board should permit the

The Cost of Railways in Eastern Canada and their Earnings.

By Sir Henry L. Drayton, K.C., Chief Railway Commissioner of Canada.

The following is taken from the judgment in the Eastern Rates Case, given by Sir Henry L. Drayton a short time ago and the decisions arrived at which were given in Canadian Railway and Marine World at the time:—

Speaking generally, there are three lines of railway, subject to the Board of Railways Commissioners' jurisdiction, operating in Eastern Canada. Of course, there are a good many other railways operating, but their activities are not of such an extent as to render them necessary to be considered in the large in this case. The Canadian Northern System has only emerged from the construction state, and its figures need not be considered. Its position is shortly stated by the company to be that they need every cent of revenue that they can obtain. There is little reason to doubt that the Canadian Northern is operating in Eastern Canada at a loss. There remains to be considered the figures of the Canadian Pacific and Grand Trunk Railway Companies.

Some shippers have claimed that, with the Canadian Pacific still making a proper and sufficient return, no increase in rates can be justified. As it occurs to me, the mere fact that the Canadian Pacific, as a result in part, as it may be, of its steamship operations, pays a good return to its shareholders, raises no argument one way or the other as to the reasonableness of freight rates in a given territory in which that company operates. The reasonableness of the return earned by the company on freight carried in Eastern Canada does not depend one way or another on profits and losses resulting from operations elsewhere. This company's divisions in Eastern Canada are the Atlantic, Eastern, Ontario and Lake Superior. These divisions, of course, include a territory a good deal larger than the territory served by the Grand Trunk in its Canadian operations.

The Atlantic Division includes all the lines between St. John in the east and Megantic, Que.—a territory in which the Grand Trunk has no tracks, while the Lake Superior Division extends to Port Arthur, 628 miles west of North Bay, the Grand Trunk's most northwesterly point. The Ontario Division carries the Canadian Pacific as far west as Windsor on the south and Chalk River on the north. There is but little local business on the Lake Superior Division, that portion of the system having been applicably termed a bridge between Eastern and Western Canada. The district carries, however, a considerable tonnage, with gross traffic returns in 1913 of \$10,141,496, dropping in 1914 to \$8,130,475. In the same two years the gross earnings on the Atlantic Division amounted to \$2,336,002 and \$2,297,485, respectively. Speaking generally, the Atlantic Division is operated at a loss, the operating ratio running from 98.7 in 1909 to 110.3 in 1912. This ratio, of course, just simply means the expenses incident to earning \$1 of revenue, with the result that in the first instance the company netted over and above its operating expenses 1.3 c. and in the next instance was out of pocket 10.3 c. for each dollar that it took in. In so far as the Atlantic Division is concerned, if the Canadian Pacific's figures were to be accepted throughout, a prima facie case is made

out for very radical advances in all rates. The districts most fairly comparable to the Grand Trunk System are the Eastern and Ontario Divisions. The gross freight earnings of the Canadian Pacific in these districts are considerably lower than those of the Grand Trunk, the Grand Trunk's gross freight revenue in Canada for 1909 being \$18,755,809, while the Canadian Pacific's gross earnings in Eastern and Ontario Divisions were \$11,325,562; and for 1913, \$27,552,505 as against \$17,448,481. Stated in other words the Canadian Pacific's gross earnings in these divisions are but little over three-fifths of those of the Grand Trunk. The freight earnings of the Canadian Pacific on these divisions for 1913 constitute merely 20% of its total freight revenues. Taking, however, the whole freight earnings of the Canadian Pacific, Port Arthur east, and comparing them with the earnings of the Grand Trunk in Canada from the years 1909 to 1914 inclusive, the following is the result:—

Year	G.T.R.	C.P.R.
1909	\$18,755,809.00	\$17,865,780.00
1910	21,399,003.00	20,861,825.00
1911	22,091,749.00	23,092,931.00
1912	24,082,910.00	27,905,169.00
1913	27,552,505.00	29,925,980.00
1914	26,134,717.00	27,079,389.00

During the whole period, if the gross earnings on the Atlantic Division (which were attended by no proper return at all and therefore only weighed down the general net figures) were deducted, the result is, with the exception of the year 1912, that the Grand Trunk returns are the greater. The Grand Trunk was a line primarily built for the necessities of Eastern Canada. It runs into all the large producing centres; it has a well established and well worked up business; and in the territory where the vast majority of the rates in review are in question, does the largest business and obtains the greatest earnings. There can be no question, in so far as Eastern Canada is concerned, that any injustice could possibly be done the shipper in accepting for primary consideration the actual results of the Grand Trunk's earnings as a basis of rates.

Mr. Walsh, of the Canadian Manufacturers Association, as well as others, who appeared in opposition to the railway's proposals, objected to any attempt at realignment of rates based upon the capital cost of that line as carried on the company's books, and as returned by the Government. The return to the Government shows capital charges consisting of common and preferred stock and bonds, amounting to no less than \$131,395 per mile of line. The objection is, of course, perfectly well taken. It would be impracticable to attempt in the first instance to put in effect any such rate basis and expect traffic to move under it.

The Grand Trunk is, as railways go, an old system. Many mistakes were of necessity made at its inception, and much reconstruction has taken place; and it would appear that no system, or at least no sufficient system, of depreciation has been followed to insure a fair physical representation on the books, and that while much money from time to time has undoubtedly been expended and properly expended, a proportion which cannot now very well be determined should not in any sense have been treated as new capital, but as a replacement of former values.

The line was, of course constructed through a well settled part of the country, and in districts where the purchasable right of way today would undoubtedly be expensive.

Probably, however, one of the most expensive sections of railway built in the whole of Eastern Canada is the Canadian Pacific cut-off line from Glen Tay to Agincourt, the right of way in this instance being purchased only recently and at a high and disproportionate cost to rights of way in other rural sections. The construction, however, of this line, expensive as it was, amounted to only \$13,174,658, with a resultant cost per mile of \$71,547, while the line built by the same railway from Toronto to Sudbury cost but \$56,689 a mile. Much of the construction in this case was also through a well settled part of Ontario where high farm values would govern. It must, however, be noted that construction in both these includes no terminals at either end, and, of course, does not include any allowance for rolling stock. Both lines, however, are built to a high standard and are considered efficient avenues of transportation.

The Government statistics of 1915 give the cost figures for the recently completed National Transcontinental and the Intercolonial. The Intercolonial's cost amounts to \$75,066 a mile. This cost, however, appears to include equipment and terminals. The cost of the National Transcontinental is shown at \$76,632 a mile, and does not include equipment.

Objection can well be raised by the Grand Trunk that it is entirely unfair to compare the cost of a right of way, much of which runs through farms well cultivated and with a heavy acreage value, with the cost of a right of way in Northern Ontario and in an undeveloped district. No such criticism, however, can be raised at all as against the Canadian Pacific's cut-off. The only criticism that could be offered as to the cost of that line being an eminently fair basis of value to the railways, lies in the fact that no terminal costs are included therein. Unfortunately, an examination of the company's books establishes the fact that it is impossible to arrive at what sum the Grand Trunk terminals have cost them. The capital account has not been kept in such a way as to distinguish such capital items.

During the inquiry, among other information which the company was required to furnish the Board, it was asked at what sum its trackage stood on the company's books. The answer given was that the capital account at Dec. 21, 1914, as shown in the annual report as account 4, amounted to £85,481,785, 2s. 5d., and that no separation had been made between the road and the equipment. It was also asked as to the value placed on its terminals, which are of course expensive, in Montreal, Toronto, and Hamilton; and the system in which the company's books were kept in this regard. The answer was that no separate records were kept. A valuation was made by the company showing the value of Montreal terminals for freight service, together with a proper proportion which should be charged for facilities common both to the freight and passenger service, which amounted to \$23,036,910, while at Toronto a like valuation amounted to

\$8,785,203; and the company also returned the cost of the equipment in service June 30, 1914, at \$54,897,037.62.

Perhaps the most recent estimate as to the cost of railway construction is that made by the Hydro-Electric Power Commission of Ontario, a cost which ran at approximately \$100,000 a mile of line, the estimated value being put at \$13,374-155 for a line 138 miles in length between Toronto and London. This cost, however, includes terminals and equipment. The Grand Trunk's returned cost of \$131,395 cannot, therefore, be sustained by the standard of any other line either built or projected.

In so far as returns in rates are concerned, it is, of course, necessary to consider not only the mileage owned by the company and represented by its capital stock and which the Government statistics return (table 3) as 3,326.67 miles of main line, but also the lines leased or operated under contract or trackage rights, making a total mileage of 3,560.00 miles. The same table shows, in connection with the Grand Trunk, 731.38 miles of second track operated. The evidence also shows the company as having 1,339.42 miles of sidings and yard tracks. Accepting, however, for the purpose of comparison, the revenue mileage as being 3,560.60 miles, the net earnings per mile of line of the Grand Trunk available for capital purposes are as follows—(the exact mileages varying slightly from year to year, but for the purposes of comparison the mileages of 1915 is adopted):—

Year.	Total Net Earnings.	Net Earnings Per Mile of Line.
1909	\$8,805,589.78	\$2,473.06
1910	9,175,376.88	2,576.92
1911	9,869,051.64	2,771.73
1912	10,914,365.20	3,065.31
1913	12,572,932.12	3,531.12
1914	10,892,131.33	3,059.35
1915	8,822,136.06	2,477.71

Not only Mr. Walsh, but others in opposition to the application, made the further objection that the Grand Trunk capital account included not only railways constructed in Canada, but also railways constructed in the United States, either owned or leased by the parent company, and large deductions of course were from time to time made; and that, so far as Canadian rates are concerned, they should be considered on their own basis apart from the losses of the part of the system in the United States. The further objection was made that the same capital covered advances to or investments in the Grand Trunk Pacific; and it became necessary for the Board to make an investigation into the company's books, having particular regard to this last question. The Grand Trunk has in fact a large investment in the Pacific line; an investment which freight rates in Eastern Canada should not be called upon to support. It is necessary to consider the period from 1906 to accurately ascertain how the matter stands on this issue. An examination discloses the fact that these advances have not been made out of earnings, but from capital account. Since 1906, the Grand Trunk has added no less than \$99,567,908 to that account. The subjoined statement shows the particulars of the issues. So far as the column containing entries of expenditures on capital account of the company proper is concerned, it is not necessary, for the purposes of the present inquiry to examine such expenditures in detail, and to pass upon the issue as to whether or not some items should not be so included. It will be noted that, with the exception of the years 1909 and 1914, the issue on capital account each year left a balance

available for other purposes, after all Grand Trunk expenditures proper were made, more than sufficient to provide for Grand Trunk Pacific expenditures. In the years 1909 and 1914 advances were not made by the Grand Trunk to the Pacific, but, on the other hand, balances owing by the Pacific to the Grand Trunk were reduced, as indicated by the asterisks:—

	Guaranteed Stock Sold.	Debenture Stock Sold.
1906	\$5,489,600	\$1,037,768
1907	2,818,350	2,298,770
1908	5,370,771	730,000
1909		1,216,666
1910	3,406,666	4,868,473
1911	6,329,314	8,030,000
1912	1,825,000	16,305,766
1913	1,384,301	4,389,188
1914		7,300,609
1915		
Total	\$26,624,002	\$46,177,240

The transactions of the Grand Trunk Pacific may be divided into three heads:—Grand Trunk Railway proper, Grand Trunk Pacific Branch Lines, and Grand Trunk Pacific Development Co. The following statement covers the same period as that covered by the above statement of capital account and gives the balance between the Grand Trunk and these different companies, the amounts indicated by asterisks being in favour of the Grand Trunk Pacific:—

Balance at December 31.	Grand Trunk Pacific Branch Lines.	Grand Trunk Pacific Railway.	Grand Trunk Pacific Development Company.
1906	\$ 56,637	\$ 3,210,539	\$ 378,204
1907	64,301	3,521,706	163,749
1908		10,821,495	
1909	*44,427	3,207,777	
1910	1,305,145	5,710,818	
1911	3,320,121	5,982,537	
1912	4,850,655	8,795,889	3,464,222
1913	6,038,460	6,228,239	6,130,114
1914	11,588,574	*4,337,190	9,035,722
1915	13,045,556	3,575,483	11,073,960

The result is that \$43,684,720 of capital was available for purposes other than those of the Grand Trunk Co. of Canada proper, and that out of this sum there was advanced to the Grand Trunk Pacific undertaking, and remained there as of date Dec. 31, 1915, balances as follows:—

By the Grand Trunk Pacific	\$ 3,575,483.00
By the Grand Trunk Pacific Branch Lines	13,045,556.00
By the Grand Trunk Pacific Development Company	11,073,960.00
Total	\$27,694,999.00

The Board can, of course, give no consideration in the present case to these outside investments as having any bearing on the question of what freight rates ought to be. Under the caption of securities the company's books have the following items showing transactions from 1882 to 1914, exclusive of Grand Trunk Pacific items:—

Securities.	Cost.
Wellington, Grey and Bruce bonds	\$ 1,388,610.87
Chicago and Grand Trunk Junction bonds	4,464,684.36
Chicago and Grand Trunk Junction indebtedness	1,559,031.80
Grand Trunk Junction bonds	3,139,394.21
St. Clair Tunnel bonds	2,982,041.88
Michigan Air Line bonds	1,592,027.80
Midland sectional and consolidated bonds	3,122,337.72
Midland Railway bonds act, 1890	22,416.40
G. T. and Georgian Bay and Lake Erie bonds	535,907.60
D. G. H. and M. Railway bonds	414,461.88
D. G. H. and M. indebtedness	735,226.21
Peterborough and Chemung Ry. bonds	67,958.13
Montreal and Lake Champlain Ry. bonds	371,117.40

Northern and Pacific Ry. bonds	2,444,088.67
Lake Simcoe, etc., bonds and shares	87,580.53
North Simcoe Ry. bonds	324,300.07
Detroit Line bonds	1,046,820.00
Detroit and Port Huron bonds	6,326.67
Brantford, Norfolk and Port Burwell bonds	123,126.67
Detroit Line shares	138,575.90
C. and G. T. Junction shares	24,518.27
Detroit and Port Huron shares	347,966.67
D. G. H. and M. equipment bonds	12,195.87
" consolidated bonds	22,216.34
" Mowatt mortgage	139,050.40

	Notes Sold.	Total.	Expended on Capital.	Balance available for other purposes.
1906		\$6,527,368	\$ 583,284	\$5,944,084
1907		5,117,120	3,526,585	1,590,535
1908		6,100,771	1,645,256	4,455,515
1909		1,216,666	2,754,866	*1,538,200
1910		8,275,139	2,545,773	5,729,366
1911		14,359,314	6,582,065	7,797,249
1912		18,130,766	13,074,451	5,056,315
1913	9,733,333	15,506,822	14,998,586	508,236
1914		7,300,609	7,312,594	*11,985
1915	17,033,333	17,033,333	2,879,728	14,153,605
Total	26,766,666	99,567,908	55,883,188	43,684,720

Grand Trunk Western first mortgage bonds	7,568,934.69
Ottawa Terminal Ry. bonds	3,000,000.00
Lachine, Jacques Cartier and Maisonneuve Ry. note	1,035,661.52
North Western Grand Trunk bonds	5,572.33
Montreal and Southern Counties note	443,954.75
	\$37,366,606.11
Less—G. T. W. second mortgage bonds retired	631,975.90
Total	\$36,734,631.11

Of these expenditures it may be said that approximately \$18,000,000 represent investments made for purposes other than transportation in Eastern Canada, making with the Grand Trunk Pacific different investments a total of \$45,694,999.

On the question raised as to deficits on the Grand Trunk lines in the United States, Mr. Tilley argued that the Chicago connection was a statutory obligation imposed upon the railway company. His submission in this issue is as follows: "And in addition to that it must be borne in mind that the connection with Chicago by the Grand Trunk was a statutory obligation imposed upon the railway company. In 1879, the Grand Trunk was authorized to transfer to the Government of Canada the line between Hadlow and Riviere-du-Loup, 24.50 miles for \$1,500,000. An agreement was entered into dated July 17, 1879, between the Government and Grand Trunk, by which this line was sold to the Government for that sum, and it was provided that the payment of the purchase money should only be made to cover expenditure for such purposes in connection with the Grand Trunk Railway as the Government should consider conducive to the public advantage, and that interest at 6% per annum should be allowed on any purchase money remaining unpaid. Then sec. 5 of the statute provided: That amongst the purposes which the Government considered will promote the interests of the Dominion is the extension, either by the building or purchase of an independent line, or by such other arrangements of a permanent character with other companies as will secure free access to and from Chicago, in the State of Illinois, for the through traffic of the Company. And the Minister of Railways and Canals may, by authority of the Governor in Council, make advances to the Company from the sum agreed to be paid for the said line at such times and in such amounts as in his opinion may be necessary to enable the Company to complete the arrangements contemplated in this section.' Thereafter in the years 1879 and 1880, steps were apparently taken by the Grand Trunk to acquire the various lines be-

tween Port Huron and Chicago, the various companies being consolidated under the name of The Chicago and Grand Trunk Railway Company. In 1900, this company defaulted in the principal of its first mortgage bonds, and being sold under foreclosure proceedings was finally acquired by the company which had been formed under the name of The Grand Trunk Western Railway Company. All the stock of this company is held by the Grand Trunk Railway Company of Canada."

Chapter 8 of the statutes of 1880 merely confirms the agreement Mr. Tilley refers to. Paragraph 5 of the agreement contains the only reference to this Chicago connection. The effect of the agreement is that the Government recognizes the propriety of the Grand Trunk applying its funds for either building or purchasing railways in the United States for the purposes of this connection. Any question which might arise as to the power of the company to make such investment as far as Canadian authority is concerned is set at rest by the Government's action, confirmed as it is by Parliament. The matter, however, is not carried further. Obligations to construct or purchase, statutory or otherwise, there are none. Certainly the result of the legislation and the agreement is not to render the Canadian shipper subject to the burden of making good losses in United States territory, or to justify higher rates in Canada than those which should obtain had the company's operations been confined to Canada.

Mr. Tilley further argued that the lines, although accompanied with loss, having regard to that portion of the through rates earned in the United States, were, nevertheless, of great value to the Company, and that the earnings on American freight, which otherwise would not have been carried by the Grand Trunk, more than offset the loss in United States territory.

A statement was made by Mr. Dalrymple, Vice President of the Grand Trunk, that these earnings would exceed \$4,000,000. This statement was but an estimate, and no details have been filed, although requested, the company stating that an exact statement cannot at the present time be obtained. In the report of the company's directors for the half year ended June 30, 1895, a division, however, was made. That statement shows that in the corresponding half year of 1894, 1,210,077 tons of through American freight were carried by the company, constituting a percentage of 31% of its total tonnage for that period, and that in 1895, 1,113,343 tons of American freight were carried, constituting 28% of the total freight business. The report of the half year ended Dec. 31, 1895, gives the American tonnage for the six months ended Dec., 1894, as 1,250,250; and for the same period in 1895 as 1,277,570, with percentages to the total freight business of 30% and 28% respectively. Subsequent reports do not contain similar information. In the report of the directors of 1894, paragraph 28 reads:—"But the value of the Chicago and Grand Trunk Ry. to the Grand Trunk System must not be measured by the results of 1894. During the decade from 1885 to 1894 the Grand Trunk proportion of traffic interchanged with the Chicago and Grand Trunk was \$29,749,732. This is the true measure of the advantages which are derived by the parent system from that line. In some of those years the Chicago and Grand Trunk provided a handsome surplus in addition to meeting

all interest charges; in other years there were deficits in meeting such charges; but, deducting the former from the latter, and including the abnormal deficit under traffic agreements of 1894, the Grand Trunk Co. has only paid altogether less than 3½%—which may be looked upon in the shape of a rebate—upon the traffic interchanged as above during the past decade, which traffic would otherwise have been in great measure lost to the system."

Mr. Tilley further pointed out that in presenting the report of 1914, the Chairman of the Board stated:—"It must be remembered with regard to our lines in the United States, that although during the past year they show unsatisfactory results, they nevertheless even then brought considerable benefit to the parent line. The Grand Trunk proper is situated in such a position that feeders from the outside are absolutely necessary, that disappointing as the results are for the moment on both the feeders and the parent line, the Grand Trunk proper would have been in a worse position but for the very feeders."

There is no doubt that the Grand Trunk does receive a large tonnage from these American connections. The Government statistics down to 1912 do not distinguish between tonnage received from connecting roads and other carriers, so as to distinguish the traffic received from United States roads as against traffic received from Canadian connections. This distinction is made in the statistics for 1913 and is continued. The statistics for the Grand Trunk are as follows:—

Year.	Originating on Road.		Received from other Roads in Canada.		Received from U.S. Roads.		Total Freight Tonnage.
	Tons.	%	Tons.	%	Tons.	%	
1913	9,065,232	42.1	2,823,204	13.4	9,153,370	44.5	21,041,806
1914	9,062,258	45.2	2,914,508	14.3	8,050,689	41.5	20,027,455
1915	8,090,873	43.6	2,232,641	12.1	8,172,509	44.39	18,496,023

The Grand Trunk statistics for 1915 include the operations of the former Canada Atlantic Ry. that were reported separately prior to 1915, although the road had been purchased by the Grand Trunk and became part of its Ontario system in 1905.

With the above figures may be contrasted those of the Canadian Pacific, which are as follows:—

Year.	Originating on road.		Received from other roads in Canada.		Receiver from U. S. roads.		Total Freight Tonnage.
	Tons.	%	Tons.	%	Tons.	%	
1913	21,044,667	71.7	6,458,718	21.7	1,968,429	6.6	29,471,814
1914	20,296,434	73.005	5,690,385	20.495	1,814,398	6.5	27,801,217
1915	15,179,618	70.6	4,909,355	22.9	1,401,623	6.5	21,490,596

It is at once apparent that with the greater total tonnage that the Canadian Pacific has, operating as it does to common gateways on the American frontier with the Grand Trunk, it receives, speaking in general terms, less than one-quarter of the American business the Grand Trunk enjoys. The Government statistics but confirm the conclusion contained in the company's reports. The manifest qualification must, however, be made and the fact emphasized that while the Grand Trunk proper does benefit by the business it obtains from its American subsidiary lines, that these lines in turn benefit from the connection with the parent company. The whole tonnage carried does not originate in Chicago or on the Chicago and other western connections, although the greater movement does originate in the territory thus served.

The directors' reports of June and December, 1915, for the first and latter half of the years 1894 and 1895, divided this

American tonnage as follows:—

	East Bound	West Bound
No. of tons, June, 1894	898,885	311,192
Per cent of total, June, 1894	36	22
No. of tons, June, 1895	803,581	309,762
Per cent of total, June, 1895	32	22
No. of tons, Dec., 1894	890,511	359,739
Per cent of total, Dec., 1894	32	25
No. of tons, Dec., 1895	873,904	398,666
Per cent of total, Dec., 1895	31	24

It is, of course, in the interests of the shipping public that the railways serving them should be in such a position as to make the necessary additions to facilities which from time to time are of necessity required, and to provide adequate and proper rolling stock. The Grand Trunk receipts for 1914 and 1915 are of such a character that economical financing is rendered extremely difficult, if not impossible. It is undoubtedly true that earnings for these years cannot, as has already been pointed out, be regarded as characteristic, but the economies forced on the company, if continued, must result in inferior accommodation and service. Appropriations of all kinds have been cut.

The car question is one in which those opposed to the present application are largely and vitally interested. The year 1913 was good, with much tonnage; but, on Dec. 31 of that year, there were but 2,416 freight cars waiting for and undergoing shop and light repairs; while on Dec. 31, 1914, with the lighter business and movements of that year, the number of freight cars requiring like repairs had grown to 3,326; and, on Dec. 31, 1915, the number had increased to 4,092. A railway's register of box cars always includes a certain number of freight cars which either are being scrapped and replaced

ped and replaced by other cars. In order to maintain the present total of 43,805 freight cars owned by the Grand Trunk in a proper and serviceable condition, no less than 1,249 new freight cars have to be obtained at a returned cost of \$2,238,000.

Track also has to be renewed. In 1913, the renewals amounted to 177 miles; in 1914, 327 miles and in 1915 the work was cut to 67 miles. The average normal

by other cars, or which should be scrapped annual renewal for a mileage of main track of 4,311 miles is estimated to amount to 431 miles. In view of the company's past operations, this annual average may be unduly high, but beyond all question the economies of last year will have to be taken up in the future. It may be also noted that the expenditure for 1915 and the estimate for 1916 for renewal work on bridges and culverts is \$21,135 less than the yearly average for the years 1906 to 1915 inclusive. Other economies have been enforced in connection with locomotives, building, and the like, on which it is not necessary to dwell. Beyond all question, however, they cannot continue indefinitely without great loss and inconvenience to the shipping and travelling public. The railway's balances available for distribution from 1909 to 1915 have already been set out. They run from \$2,473.06 per mile of line, in 1909, to \$3,531.12 in 1913, dropping in

1915 to \$2,477.71.

If the costs of the National Transcontinental were applied to the Grand Trunk mileage, adding a conservative estimate of \$10,000 a mile for equipment, a value of \$86,632 a mile is arrived at; 6% on its capital to provide 4% for interest charges and 2% to enable necessary financing and expenditures to be made, would call for net earnings per mile of line of \$5,197.92.

In the same way, adopting as the standard the expensive line of the Canadian Pacific from Glen Tay to Agincourt, adding again \$10,000 for equipment, the net earnings per mile of line should be \$4,892.82. If the line from Toronto to Sudbury be taken as a basis, net earnings per mile of \$4,001.34 are required; while on the basis of the Intercolonial, the net results should be \$4,503.96. Irre-

spective entirely of the Grand Trunk's terminal expenses, which do not apply at any rate in nearly so marked a degree in the other lines now compared with it, it will be observed that the Grand Trunk's best earnings fall considerably short of the earnings required on any of the other standards. While present earnings are increasing, they are still considerably short of the result obtained in 1913.

Orders by Board of Railway Commissioners for Canada.

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

25963. Mar. 24.—Authorizing Canadian Northern Ry. to build across 13 highways in Tps. 18, 19 and 20, R. 7, e.p.m., Man.

25964. Mar. 26.—Authorizing C.P.R. to build joint spur for J. H. Lamarche and l'Institution des Sourde Muets, Lot 642, Montreal, subject to Royal Trust Co.'s consent as to removal of same.

25965. Mar. 24.—Authorizing Canadian Northern Ry. to build across and divert 6 road allowances in Tps. 19 and 20, R. 7, e.p.m., Man.

25966. Mar. 26.—Approving plan showing standard ballast dock for timber trestles, to be used on Canadian Northern Ry., Eastern Lines.

25967. Mar. 27.—Rescinding order 24481, Nov. 25, 1915, in so far as it exempts Kettle Valley Ry. from erecting and maintaining fences, gates and cattle guards between mileage 35.3 and 44, midway to Penticton, B.C., K.V.R. being required to erect fences along said portion by May 1.

25968. Mar. 26.—Approving agreement between Bell Telephone Co. and Evergreen Telephone Co., Renfrew Co., Ont., Mar. 14.

25969. Mar. 13.—Ordering Canadian Northern Ry. to appoint watchman at crossing of Main St., Vegreville, Alta., between 8 a.m. and 7 p.m. daily; wages to be paid by municipality, and relieving C.N.R. from speed limit of 10 miles an hour at crossing.

25970. Mar. 30.—Authorizing C.P.R. to build 8 tracks, one of which crosses Northwest Road at grade, one crossover, and to rearrange west leg of Y on Northwest Road for British Cordite Co., McDougall Tp., Ont.

25971. Mar. 28.—Authorizing Canadian Northern Ontario Ry. to build spur for Marsh & Henthorn, Belleville, Ont., and approving clearances.

25972. Mar. 28.—Dismissing application of Town of Napanee, Ont., for order directing Canadian Northern Ontario Ry. to build subway at Belleville Road crossing.

25973. Mar. 27.—Approving Canadian Northern Ry. Standard Passenger Tariff, C.R.C. no. W-1422, showing rate of 4c mile on branch lines in British Columbia.

25974. Mar. 29.—Authorizing Nelson & Fort Sheppard Ry. to discontinue stopping trains at Porto Rico, B.C., to mileage 23.8, and to substitute stop at mileage 22.6.

25975. Mar. 29.—Establishing free collection and delivery limits and additional toll zone of express companies in Toronto.

25976. Mar. 30.—Approving agreement between Bell Telephone Co. and Eastern Townships Telephone Co., in Richmond, Compton, Stanstead, Shefford, Drummond and Arthabaska counties, Que., Mar. 1.

25977. Mar. 30.—Authorizing C.P.R. to make highway diversions at grade across track along eastern boundary of right of way in n.w. and s.w. ¼ Secs. 36-9-1, w.3m., in lieu of road allowance on westerly boundary.

25978. April 2.—Approving plan and specifications of Henry Robertson award drain, so-called, under G.T.R. in Matilda Tp., Ont.

25979. April 2.—Authorizing G.T.R. to use bridges 15, 18 and 24, District 2, authorized to be built by order 24664.

25980. Mar. 30.—Ordering Canadian Northern Ry., C.P.R., and G.T.R., to provide interchange tracks on Pinnacle St., Belleville, Ont. This order is given fully on another page.

25981. Mar. 16.—Relieving Grand Trunk Pacific Ry. from providing further protection at highway between Secs. 29 and 30-44-6, w.4m., near Wainwright, Alta.

25982. April 2.—Authorizing Department of the Interior to make highway over C.P.R. at west end of yard at Banff, Alta., and about 700 ft. west of station.

25983. April 2.—Authorizing Essex Terminal Ry., Windsor, Essex & Lake Shore Rapid Ry. and C.P.R. to operate over crossing in Sandwich West Tp., Ont., without first stopping.

25984. Mar. 31.—Relieving Grand Trunk Pacific Ry. from maintaining fences, gates and cattle guards immediately east of Wolf Creek station, Alta.

25985. Mar. 31.—Approving plan showing general layout of Canadian Northern Ry. structure

crossing Moose Jaw Creek (3rd crossing), and Manitoba St., Moose Jaw, Sask., dated Nov. 10, 1916, detail plans to be filed for approval.

25986. Mar. 31.—Authorizing C.P.R. to build spur across Hunter St. at grade and crossover connections with present spur for Quaker Oats Co., Peterborough, Ont.

25987. April 2.—Extending to June time within which Canadian Northern Ry. shall complete station at Norway Bay, Que.

25988. Mar. 31.—Ordering Canadian Northern Ry. to file within 30 days for Board's approval plans showing necessary alterations to Pointe Aux Trembles station.

25989. April 4.—Approving, in pursuance of powers conferred upon Board by sec. 26 of Exchequer Court Act, the sale of the Joliette & Lake Manuan Colonization Ry. and its rolling stock, equipment and other accessories.

25990. April 3.—Ordering Montreal & Southern Counties Ry. to stop train 131 from Marieville, on flag, at East Greenfield Park, and to keep record of stops made there for three months, to enable Board to determine whether service should be continued.

25991. April 5.—Authorizing Canadian Northern Ry. to build spur for Canadian Cooperage Mfg. Co., South Crosby Tp., Ont.

25992. April 4.—Ordering Grand Trunk Pacific Ry. to pay half cost of land acquired from C.P.R. Natural Resources Department for transfer track between G.T.P.R. and C.P.R. at Frobisher, Sask.

25993. April 3.—Approving plan showing proposed arrangement of signals at Canadian Northern Ontario Ry. crossing of Rideau Canal, Smiths Falls, Ont.

25994. April 4.—Authorizing Grand Trunk Pacific Branch Lines Co. to build spur for Munson-Oliphant Collieries, Ltd., in n.w. ¼ Sec. 28-48-21, w.5m., Alta.

25995. April 5.—Authorizing C.P.R. to build 4 spurs, for William Davies Co., Ltd., near Don Station, Toronto.

25996. April 3.—Amending order 25946, Mar. 20, 1917, re Canadian Northern Quebec Ry. spurs for Imperial Oil Co. in Pointe aux Trembles Parish, Que.

25997. April 7.—Approving plan of La Bute Award Drain, to be built under C.P.R. in Camden Tp., Ont.

25998. April 10.—Authorizing Grand Trunk Pacific Branch Lines Co. to build spur for Buckeye Machine Co. in s.e. ¼ Sec. 14-24-29, w.4m., Alta.

25999. April 10.—Amending order 25829, Jan. 26, re G.T.R. crossing at Grimsby Beach station, Ont.

26000. April 10.—Approving Public Works Departments amended plan, dated Jan. 31, showing bridge to be built across St. Charles River at Quebec; and rescinding order 26290, Sept. 19, 1916.

26001 to 26004. April 10.—Approving locations of C.P.R. stations at Vidora, Stalwart, Consul and Traynor, Sask., all in accordance with C.P.R. standard A2 station plan.

26005. April 3.—Authorizing Canadian Northern Ry. to build spur for Riordan Pulp & Paper Co., Hawkesbury, Ont.

26006, 26007. April 10.—Approving Bell Telephone Co. agreements with Fort Coulonge Rural Telephone Co., Pontiac county, Que., Mar. 30, and Sandwich South Tp., Ont., Dec. 22, 1916.

26008. April 12.—Re Canadian Northern Ry. lake and rail rates applying from points east of Toronto, via Toronto and lake lines to Port Arthur and thence to western points. This order is given fully on another page.

26009. April 14.—Approving Halifax & South Western Ry. bylaw 7 re passenger and freight tariffs and tolls and rescinding order 22696, Oct. 6, 1914, approving bylaw 6.

26010. April 14.—Approving agreement between Bell Telephone Co. and Lyndhurst Rural Telephone Co., Leeds County, Ont., Mar. 29.

26011. April 13.—Approving Canadian Northern Ry. bylaw, April 9, re tariffs of freight tolls on all freight carried on any part of its system, cepting to and from points west of Port Arthur or Westfort, Ont.

26012. April 14.—Authorizing C.P.R. to build at grade a passing siding across road allowance between Lots 22 and 23, Con. 3, Scarboro Tp., Ont.

26013. April 14.—Approving revision in location of C.P.R. spurs for Canadian Aeroplanes, Ltd., Toronto Ont.

26014. April 11.—Approving plans showing locomotive house to be built by Vancouver, Victoria & Eastern Ry. & Navigation Co. (G.N.R.)

at Vancouver.

26015. April 13.—Authorizing C.P.R. to prosecute C. C. Curtis, Lacombe, Alta., for alleged fraudulent underbilling of certain shipments of freight.

26016. April 16.—Authorizing G.T.R. to build service track at grade across Kipling Ave., New Toronto, Ont.

26017. April 18.—Approving plan of abutments and superstructure for Canadian Northern Ry. undercrossing of farm lane, Lot 8, Con. 3, York Tp., Ont.; C.N.R. to provide hard gravel road through subway within the right of way limits, grade not to be greater than 1 in 10.

26018. April 17.—Authorizing North American Collieries, Ltd. (Pembina Colliery) to build 3 entries under Canadian Northern Ry. right of way in Sec. 30-53-7, w.5m., Alta.

26019. April 16.—Ordering C.P.R. to erect Standard Class A-2 station building at Whitla, Alta; to be completed by Sept. 1, 1918.

26020. April 16.—Authorizing G.T.R. to build additional or passing track on and across Pine and John Sts., Dunnville, Ont.

26021. April 16.—Dismissing G.T.R. application for approval of location and detail plans of combination freight and passenger station to be built at Nelles Corners, Ont., and authorizing it to build additional track across public road between Lot 52, Con. 1, north of Talbot Road, Cayuga Tp., and Lot 2, Con. 9, Rainham Tp., Ont.

26022. April 17.—Authorizing G.T.R. to build siding for Dominion Abrasive Wheel Co., Mimico, Ont.

26023. April 17.—Authorizing C.P.R. to build spur at grade across Main St., Glen Morris, Ont.

26024. April 16.—Adding City of Brantford, Ont., as joint applicant and ordering that all proceedings and orders made apply to and be binding on Lake Erie & Northern Ry. as if it had been originally named as joint applicant in proceedings with Brantford Parks Board, defined in Public Parks Act (Ontario) as The Board of Park Management.

26025. April 18.—Ordering Canadian Northern Ry. to build standard third class station at Sibbald, Alta., by Sept. 1.

26026. April 18.—Rescinding order 25211, July 17, 1916, suspending increased rates on ores and concentrates, published in C.P.R. C.R.R. no. W-2168, effective Aug. 1, 1916, from points in British Columbia.

26027-26028. April 16.—Authorizing Canadian Northern Ry. to build across highways between Lots 34 and 35 and Lots 32 and 33, Con. C, Scarboro Tp., Ont.

26029-26030. April 16.—Approving Bell Telephone Co. agreements with Bromley Telephone Association, April 2, and Wolfstown Telephone Association, Aug. 25, 1915, both operating in Renfrew County, Ont.

26031. April 17.—Ordering G.T.R. to build subway about 300 ft. east of crossing of Lynn Road, Elizabethtown Tp., approaches and road diversions to be built by township and Leeds and Grenville counties and said counties as they shall agree, if they cannot agree, matter to be determined by board; 20% of cost to be paid out of railway grade and crossing fund, balance of total cost, 15% by counties, 15% by applicant, and 50% by G.T.R.

26032. April 17.—Approving agreement between Bell Telephone Co. and Madawaska Telephone Association, Renfrew county, Ont., Mar. 29.

26033. April 19.—Extending to July 1 time within which Kettle Valley Ry. shall erect fences between mileage 35.3 and 44, Midway to Penticton, B.C.

26034. April 16.—Dismissing complaints of C.P.R. and Spanish River Pulp & Paper Mills, Ltd., against cancellation of interswitching rate of \$1.50 a car at Espanola, published in Algoma Eastern Ry tariff C.R.C. 73; and authorizing Algoma Eastern Ry. to charge interswitching rate of 1c per 100 lb., shown in Tariff, C.R.C. 169, from effective date of said tariff, Feb. 15.

General order 185. Mar. 30.—Re classification of veneer. This order is given fully on another page.

General order 186. April 4.—Dismissing complaint of Dominion Millers Association and Toronto Board of Trade re carload minimum weights on grain and grain products. This order is given fully on another page.

General order 187. April 12.—Re rail and water rates between Eastern and Western Canada. This order is given fully on another page.

Canadian Pacific Railway Construction, Betterments, Etc.

New Brunswick District.—The C.P.R., as lessee of the New Brunswick Coal & Ry. Co., is applying to the Minister of Railways for approval of site and plans for the reconstruction of a bridge across the Washdemoak River, in Johnston Parish, N.B.

Ontario District.—The C.P.R. applied to the Board of Railway Commissioners, April 13, for approval of its plans for a revision of its North Toronto Branch, including the building of a second main line track across the G.T.R.—the old Toronto Belt Line Ry.—the construction of a second main line track at grade across Todmorden Road, in York Tp., and McLennan and Summerhill Aves., in Toronto. The City of Toronto opposes the plans on the ground that there should be one bridge at Summerhill Ave., instead of separate structures for each track, and that there should be a subway at the west end of the bridge. The Civic Guild advocated as an alternative plan the providing of subways and a general traffic bridge across the ravine. The matter will be looked into by the Board's Chief Engineer prior to any decision being reached.

Manitoba District.—The work to be done at Brandon during this year is estimated to cost approximately \$50,000. It includes the laying of an asphalt block pavement in front of the station, replacing the present wooden pavement; the building of a coal dock about double the size of the present one; the building of a sanding plant for locomotives; the installation of a washing out system for locomotives in the locomotive house, and the installation of an interlocking plant in the yards.

Saskatchewan District.—Tenders are under consideration for the erection of a building at Regina, Sask., for the Dominion Express Co.

Alberta District.—Work on track maintenance on the lines in the vicinity of Lethbridge has been started. A new shovel has been set at work at the ballast pit at Elcan.

Tenders are under consideration by the C.P.R. Department of Natural Resources for irrigation canal enlargements through Sections 12, 13, 24 and 25 in Tp. 7, Range 21, west of the 4th Meridian, Alta. The work is located about five miles west of Wilson station and about ten miles south of Lethbridge, and involves the excavation of approximately 150,000 cu. ft. of earth work.

We are officially advised that at places where the gradient was very irregular over the slide of Turtle Mountain, at Frank, the company is making improvements, the work being done by steam shovels loading rip rap. The work being done at present is not in the nature of grade reduction.

British Columbia District.—In addition to the betterments to be carried out during this year, mentioned in our April issue, it is reported that the following works will also be done: Concrete portals and concrete tunnels on two tunnels on the double track between Revelstoke and Taft; bank protection on the Kootenay Central Ry., between Golden and Colvalli; a steel bridge across the St. Marys River, on the Kinderley Subdivision; and bank protection and bridge improvement in the Kicking Horse Canyon.

A press report states that a contract has been let for the removal of the old immigration detention shed and the erec-

tion of a new ramp or sloping structure to connect with pier A on the Vancouver water front. The new approach will, it is said, lead from Burrard St., and will be similar to that leading from Granville St.

to pier D. Pier A is to be extended sufficiently to permit the erection of additional storage capacity to that formerly available in the old immigration shed. The estimated cost of the work is \$70,000.

The Canadian Pacific Railway's Honor Roll No. 20.

Ainslie, Oliver	Blacksmith's helper	Revelstoke	Wounded
Armstrong, George	Apprentice	Regina	Wounded
Bain, Thomas	Porter	Fort William	Wounded
Baldwin, Arthur Ernest	Operator	Nokomis	Wounded
Beaton, John	Bridgeman	British Columbia Dist.	Wounded
Blades, Roland	Clerk	Winnipeg	Died of wounds
Buakeley, Harry	Checker	Vancouver	Killed in action
Bowden, William Henry	Ashpitman	Lambton	Wounded
Brown, Harry Allen	Stover	Saskatoon	Died of wounds
Bryant, William Edward	Locomotive fireman	North Bay	Killed in action
Buck, Marry	Laborer	Winnipeg	Died of wounds
Buttimer, Richard L.	Clerk	Toronto	Wounded
Campbell, Andrew	Wiper	Bay Shore	Wounded
Chudleigh, Starks	Locomotive fireman	Calgary	Presumed Dead
Cockrem, Ernest Dadds	Locomotiveman	Souris	Wounded
Collingwood, Angus S.	Cashier	Moose Jaw	Killed in action
Cooper, Arthur	Constable	Kenora	Killed in action
Coventry, William V.	Engineer	Edmonton	Died of wounds
Currie, Frederick M.	Assistant foreman	Transcona	Killed in action
Dougall, Ralph	Car repairer	Bankhead	Wounded and missing
Douse, Edwin T.	Clerk	West Toronto	Wounded
Edgar, John Paisley	Biller	Winnipeg	Wounded
Evans, Harold C.	Waiter	Calgary	Killed in action
Eve, Frederick J.	Brakeman	Fort William	Wounded
Fairbairn, Robert	Storeman	Calgary	Wounded
Freeman, Charles H. H.	Wiper	Moose Jaw	Wounded
Gardner, Harry	Draftsman	Montreal	Shell shock
Gillis, Lawrence A.	Locomotive man	Kaslo	Wounded
Goodday, Reginald L. H.	Car repairer	Calgary	Wounded
Graham, Henry E.	Cleaner	Calgary	Killed in action
Guest, Harry	Porter	McAdam	Killed in action
Hadfield, James	Boilermaker	Sutherland	Wounded
Hamilton, John		Fort William	Killed in action
Harris, Albert	Sleeping car conductor	Revelstoke	Wounded
Hawley, Ernest Alfred	Teamster	Montreal	Wounded
Hebinton, David	Car Carder	Calgary	Wounded
Herdman, Londoun A.	Stationery fireman	Ogden	Killed in action
Hicks, Stephen C.	Brakeman	Ignace	Killed in action
Hoon, Norman Fred.	Extra Gang foreman	Souris	Wounded
Horner, Thomas	Clerk	British Columbia Dist.	Wounded
Howe, George Frederick	Helper	Saskatoon	Wounded
Hume, James	Wiper	Calgary	Wounded
Hutton, Thomas	Trucker	Kenora	Wounded
James, Eber	Chef	Ogden	Wounded
Jones, William Samuel	Sectionman	Moose Jaw	Killed in action
Kissack, George	Waiter	Springstein	Wounded
Larkin, Frank William	Yardman	Toronto	Shell shock
Latimer, Archie	Clerk	Moose Jaw	Wounded
Lilburn, Harry Kent	Steward	Calgary	Died of wounds
Little, Charles Henry	Locomotive fireman	Brit. Col. Coast Service	Died of wounds
McAlister, James	Section foreman	Moose Jaw	Wounded
McCaffrey, James	Locomotive fireman	Tyndall	Wounded
McCurdy, Martin Everest	Car Tracer	Sutherland	Wounded
McGill, James	Conductor	Winnipeg	Wounded
McKay, Alexander Hugh	Watchman	Minnedosa	Wounded
McNaughton, Donald	Trainman	Shepard	Died of wounds
McTomney, John	Wiper	British Columbia Dist.	Killed in action
Mazines, Joseph	Boilermaker	West Calgary	Wounded
Malcolm, Daniel	Locomotive man	Ogden Shops	Wounded
Manners, William	Clerk	Moose Jaw	Wounded
Matheson, John Kennedy	Inspector	Calgary	Wounded
Meats, George Henry	Painter	Angus	Died of wounds
Mines, Albert Henry	Gripper	Ogden Shops	Wounded
Moodie, J. S.	Mate	Lethbridge	Wounded
Morrison, Donald John	Yardman	Brit. Col. Lake Steamers	Killed in action
Mulcahy, Alfred	Checker	Glen Yard	Killed in action
Nightingale, John Graham	Locomotive fireman	Calgary	Killed in action
O'Brien, Alexander R.	Watchman	Regina	Wounded
Peterson, George	Clerk	Banff	Killed in action
Potter, John Keith	Carpenter	Victoria	Wounded
Rimmer, Alfred	Teamster	Angus	Wounded
Ritchie, James	Lineman	Calgary	Wounded
Robertson, William	Porter	Cranbrook	Killed in action
Rashbrook, Sidney A.	Cleaner	Calgary	Wounded
Sale, Victor	Wiper	Toronto	Wounded
Sampson, Lewis F.	Wiper	Kenora	Killed in action
Sharples, James	Coalman	Pegina	Wounded
Shortland, Frederick	Laborer	Fort William	Wounded
Simpson, Edward	Clerk	Strathcona	Wounded
Simmons, Arthur H.		Regina	Wounded
Sinclair, Andrew G.	Clerk	Govan	Wounded
Sinclair, William	Locomotive fireman	Winnipeg	Wounded
Skirten, William A.	Storeman	Ogden	Wounded
Sleep, William Henry	Locomotive fireman	Fort William	Wounded
Smeaton, George Robert	Waiter	Moose Jaw	Wounded
Smith, John	Brakeman	Winnipeg	Wounded
Solloway, Alfred Leo	Yard foreman	Winnipeg	Wounded and prisoner
Souter, Alexander	Clerk	Vancouver	Wounded
Spencer, Samuel	Red-Cap Porter	Winnipeg	Died of wounds
Stamper, William	Car repairer	Regina	Gassed
Stevens, Leonard	Constable	Moose Jaw	Wounded
Stevenson, Alexander	Waiter	Calgary	Killed in action
Stinson, Frank	Fitter	Lethbridge	Presumed dead
Tanton, William H.	Locomotive man	London	Wounded
Tomkins, Charles B.	Carpenter	West Toronto	Wounded
Tout, George	Wiper	Red Deer	Wounded
Smith, Alexander	Laborer	Moose Jaw	Wounded
Watson, William Pantou	Conductor	Minnedosa	Wounded
West Robert	Locomotive fireman	Moose Jaw	Wounded
Westington, William C.	Trimmer	Schreiber	Wounded
Whitehouse, Walter	Helper	East Calgary	Wounded
Willis, Hugh Lea	Porter	Calgary	Died of wounds
Wilson, Harry Cameron	Yardman	Fort William	Shell shock
Wishart, James	Clerk	Angus	Wounded
Worth, Harold	Stenographer	Toronto	Wounded

Mainly About Railway People Throughout Canada.

Ignatius Roth, Terminal Agent, C.P.R. Montreal, died there recently, after a short illness.

Holman D. Waldron, General Passenger Agent, Maine Central Rd., died Apr. 9, aged 60.

E. W. Beatty, K.C., Vice President and General Counsel, C.P.R., has been elected a director of the Royal Trust Co.

G. M. Bosworth, Vice President, C.P.R., returned to Montreal, April 4, after a short trip to Hot Springs, Va.

J. G. Scott, formerly General Manager, Quebec & Lake St. John Ry., has been re-elected President, Quebec Board of Trade.

G. McL. Brown, European Manager, C.P.R., London, Eng., was installed as Master of the Royal Kew Lodge of Freemasons recently.

G. A. Bell, heretofore Financial Comptroller, Railways & Canals Department, Ottawa, has also been appointed Assistant to the Minister.

A. M. Nanton, director, C.P.R., and Vice President, Winnipeg Electric Ry., has been elected a director of the Guarantee Co. of North America.

Grant Hall, Vice President and General Manager Western Lines C. P. R., returned to Winnipeg, April 15, after a trip of inspection over the company's lines.

C. A. Dunham, Signal Engineer, Great Northern Ry., and formerly Signal Engineer, G.T.R., Montreal, has been elected President, Railway Signal Association.

H. D. Waldron, General Passenger Agent, Maine Central Rd., died at Portland, Me., April 9, aged 60. He entered the company's service in 1877 as a telegraph operator.

William Bain, who died at Dixie, Ont., Apr. 21, aged 74, was for a number of years Soliciting Freight Agent, C. P. R., Toronto. He retired on superannuation a few years ago.

George Bury, Vice President, C.P.R., who has lived at 278 Stanley Street since removing to Montreal, has leased 512 Sherbrooke St. West, from the late T. J. Drummond's estate.

D. M. McIntyre, K.C., Chairman, Ontario Railway & Municipal Board, Toronto, has been elected a member of the council of Queen's University, Kingston, Ont., to serve for 6 years.

E. C. P. Cushing, Secretary to the President, C.P.R., was presented with a travelling bag and a purse of money, April 18, by a number of a company's officials, on his approaching marriage.

W. H. Curle, K.C., who was appointed General Solicitor, C.P.R., recently was entertained to dinner at the Manitoba Club, Winnipeg, by a number of friends, on leaving there for Montreal.

The Hon. W. E. Foster, M.L.A., who became Premier of New Brunswick recently, is President of the St. Martins Ry., which runs between Hampton, on the Intercolonial Ry., and St. Martins, 30 miles.

Lord Shaughnessy, says a London, Eng., press cable, won the gratitude of many wounded soldiers when he bought up the pit of the New Treatre for their benefit on the day of the St. Patrick's matinee for the Munster Comforts Fund.

D. B. Hanna, Third Vice President, Canadian Northern Ry., has removed to 37 Cluny Ave., Toronto, which he has bought from the estate of the late James

Bicknell, K.C., who lived there up to the time of his death.

J. D. Cameron, who died at Toronto, April 8, aged 77, was formerly a railway contractor on various lines in eastern Canada, having been concerned with various contracts on the Intercolonial Ry. and the Quebec & Lake St. John Ry.

J. E. Quick, General Baggage Agent, G.T.R., Toronto, was re-elected Secretary Treasurer of the American Association of General Baggage Agents, at its recent convention at Los Angeles, Cal.

E. B. Skeels, Resident Engineer, C.P.R., Lethbridge, Alta., from Aug., 1914, has resigned to enter an engineering and contracting business in Chicago, Ill. Prior to his appointment at Lethbridge, he was, from April, 1914, Resident Engineer, C.P.R., at Calgary, Alta.

Mrs. G. McL. Brown, wife of the European Manager, C.P.R., London, Eng., addressed meetings at St. John, N.B., Mar. 31, on the aims and work of the Canadian War Contingents Association and of the activities of the women in England.

T. A. S. Hay, M.Can.Soc.C.E., who died at Peterborough, Ont., Mar. 28, aged 68, was for many years Chief Engineer, Midland Ry., now part of the G.T.R., and was subsequently engaged in engineering on the construction of the Trent Canal, under the Department of Railways and Canals.

Elisha Lee, Assistant General Manager, Pennsylvania Rd., and better known as spokesman for the railways in the controversies with the railway brotherhoods, has been promoted to be General Manager, succeeding S. C. Long, deceased. Elisha Lee is a brother of Frank Lee, Principal Assistant Engineer, C.P.R., Winnipeg.

J. B. Harvey, C.E., who died at Ottawa, Ont., Mar. 31, aged 60, was engaged some years ago as a civil engineer on the construction of railways for the Reid Newfoundland Co., in Newfoundland, and later was in Dominion Government service on National Transcontinental Ry. construction, latterly he has been in the Militia Department's service.

C. R. Richards, Professor of Mechanical Engineering and head of the department since 1911, has been appointed Dean of the College of Engineering and Director of the Engineering Experiment Station of the University of Illinois to succeed W. F. M. Goss, who has resigned to become President of the Railway Car Manufacturer's Association of New York.

A. C. Harris, who has been Superintendent, Welland Ship Canal Construction Ry., has, in consequence of work on the canal construction being stopped until after the war, taken another position. He has been appointed by the Hydro Electric Power Commission of Ontario, as Railway Superintendent, in connection with the power canal from Queenston to Chippawa, it being the intention to have a construction railway built there.

W. Sayville, formerly Chief Clerk, B. C. Electric Ry., who has been appointed Comptroller, with office at Vancouver, entered the company's service in 1911. Prior to going to British Columbia, he had been in transportation service in England as chief assistant to the Secretary, Aire & Calder Navigation Co., which owns the port of Goole, and he was also in the underground electric railway service in London.

J. A. Jamieson, M.Can.Soc.C.E., who acted as consulting engineer during the construction of the Montreal Harbor Commissioners' elevators, was injured in a street car accident in Westmount early in April. Towards the end of the month he was reported to be improving rapidly.

R. G. Ward, chief clerk, G.T.R. station ticket office, Detroit, Mich., died there after a short illness, Mar. 29, within five days of completing 30 years of service with the company. He had served from April, 1887, successively as relieving agent, cashier, and ticket clerk, before being appointed to his last position.

Edward Percy Flintoft, whose appointment as Assistant General Solicitor, C.P.R., Montreal, was announced in our last issue, was born at Sarnia, Ont., Oct. 17, 1879, and entered C.P.R. service, Nov. 1, 1908, since when he has been, to Jan. 1, 1912, Assistant to Solicitor; Jan. 1, 1912, to July 1, 1913, Assistant Solicitor; July 1, 1913, to April 1, 1917, Solicitor, all at Montreal.

Hon. F. L. Beique, who has been elected a director of the C.P.R. Co., succeeding the late Hon. Robert Mackay, was born at St. Mathias, Que., May 20, 1845, and was admitted as an advocate in 1868, and created a Q.C. in 1885. He has practised in Montreal for many years, where he was a batonnier of the bar in 1891 and 1893. He has been concerned in several cases of note before the Judicial Committee of the Imperial Privy Council, and was a counsel for the Dominion in the Behring Sea arbitration. He has been a member of the Senate since Feb. 8, 1902.

Sir Sam Fay, General Manager, Great Central Ry. of England, has been appointed to the control of military and munition train movements in that country, in connection with the Department of Military Railways, of which Sir Eric Geddes is the Director-General, and Sir Guy Granet, Deputy Director-General. The change will secure complete co-ordination of the railway military transport work at home and at the front. E. A. Prosser, General Manager, Rhymney Ry., has been appointed Deputy Director of Military Train Movements at the War Office, under Sir Sam Fay.

John Robert Clarke Macredie, M.Can.Soc.C.E., whose appointment as Resident Engineer, C.P.R., Moose Jaw, Sask., was announced in our last issue, was born at St. John, N.B., June 13, 1880, and graduated from the University of New Brunswick in 1901 with the degree of B.Sc. During the summers from 1898 to 1900, he was engaged in minor positions on surveys in New Brunswick, and was, from 1901 to 1902, Resident Engineer of the mines and railway, Albert Ry. and Mfg. Co., Hillsboro, N.B.; 1902 to 1904, transit man, Maintenance of Way Department, C.P.R.; 1904 to 1909, Resident Engineer on construction, C.P.R.; 1909 to 1915, Assistant Engineer on construction, C.P.R.; 1915 to Feb., 1917, Resident Engineer on the east end of Connaught Tunnel, C.P.R.

Hugh Edwards Weyman, who has been appointed Master Mechanic, Levis County Ry., Levis, Que., was born at Guildford, Eng., Aug. 27, 1883. From Sept. 1899 to Sept. 1901, he was a student in mechanical engineering at the Great Central Ry. locomotive works, Manchester, Eng., and from Sept. 1901 to May 1906, was a student, and foreman, insulation department, British Westinghouse Co., Manchester, Eng.; May 1906 to Apr. 1908, foreman,

winding shops, Siemens Dyno Co., London, Eng.; Apr. 1908 to June 1910, Construction Engineer, Gardner Engine Co., Manchester, Eng.; June 1910 to Nov. 1914, General Foreman of electrical shops Canadian Allis Chalmers Ltd., Montreal; Jan. 1915 to Mar. 1916, Power House Engineer, St. Lawrence Bridge Co., at the Quebec Bridge site.

Henry A. Everett, of Cleveland, Ohio, who died at Pasadena, Cal., April 11, aged 60, was, for a number of years interested in electric railways both in Canada and the U.S. He was Managing Director Montreal St. Ry. from 1892 to 1894, and as such he supervised the changing of the Montreal St. Ry. from horse traction to electric traction. He was for some time Vice President and General Manager of the Toronto St. Ry., and was a member of the Kiely-Everett syndicate which secured the franchise from the city for the operation of the street railway, under which the company works at present. The syndicate later sold to the present company, and Mr. Everett was selected by the city to supervise the change of the system from horse to electric traction. He was President, London St. Ry. Co. for several years, retiring at the end of 1914, and was also at different times President, Cleveland Railways Co., and Toledo Railways and Light Co.

H. J. Humphrey, who has been appointed Superintendent, Brownville Division, New Brunswick District, C.P.R., Brownville Jet., Me., was born at Berry's Mills, N.B., Jan. 26, 1879, and entered railway service in June, 1896, since when he has been, to Aug., 1897, telegraph operator at various points, Intercolonial Ry.; Aug., 1897, to Aug., 1901, telegraph operator, Boston & Maine Rd.; Aug., 1901, to April, 1902, telegraph operator, Intercolonial Ry.; May 9, 1902, to Sept. 6, 1903, telegraph operator, C.P.R., Calgary, Alta.; Sept. 6, 1903, to June 1, 1907, dispatcher, C.P.R., Calgary, Alta.; June 1, 1907, to Nov. 1, 1909, dispatcher, C.P.R., Medicine Hat, Alta.; Nov. 1, 1909, to April 10, 1911, dispatcher, C.P.R., Calgary, Alta.; April 10, 1911, to July 1, 1912, Chief Dispatcher, C.P.R., Macleod, Alta.; July 1, 1912, to Jan. 8, 1915, Car Service and Fuel Agent, Saskatchewan Division, C.P.R., Moose Jaw; Jan. 8, 1915, to Jan. 1, 1916, Superintendent of Car Service, Western Lines, C.P.R., Winnipeg; Jan. 1 to Nov. 6, 1916, Superintendent of Car Service, Eastern Lines, C.P.R., Montreal; Nov. 6, 1916, to Feb., 1917, Superintendent, Farnham Division, Quebec District, C.P.R., Farnham; Feb. to April 2, 1917, Superintendent, Laurentian Division, Quebec District, C.P.R., Montreal.

Canadian Vessel Tonnage.—An Ottawa press dispatch states that there was a slight reduction in the tonnage of vessels on the Canadian register for the first two months of 1917. The figures at the end of February were: Steam vessels, 794,314 tons; sailing vessels, 475,693; against 799,183 tons for steam vessels, and 476,983 tons for sailing vessels, at Dec. 31, 1916. During January, vessels aggregating 11,743 tons were transferred from the British to Canadian register, and there was 900 tons of new construction. In February, there was 1,164 tons of new construction; 1,464 tons of transfers from British to Canadian register, and 758 tons of transfers from foreign to Canadian register; 14 sailing vessels of 1,271 tons were struck off the register during January, and 4,440 tons of shipping was sold in the U.S.; 5,285 tons was lost through wrecks and 2,212 tons condemned.

Mobilization of Canadian Pacific Railway Securities for War Purposes.

The President, Lord Shaughnessy, has issued the following circular to the shareholders: "With the assent of your company the British Treasury included among the securities which were being borrowed in Great Britain, the various outstanding obligations of your company, and these obligations have already been used, to some extent, for the purpose of pledge in New York as security for the obligations of the United Kingdom of Great Britain and Ireland. It became evident, however, that the obligations of your company, being to a large extent issued in a currency foreign to the American market, could be more advantageously utilized if put in a form familiar to American investors. The need of the British Treasury for securities to obtain dollars has been imperative to carry on the war, and your company has felt it not only a duty to be of assistance in this situation, but also a privilege, in view of the present position of your company having been in a large part due to the investment of British capital ever since its formation. No company in the British Empire stands in higher credit among American investors than the C.P.R. Co., and His Majesty's Government had the assurance that your company's obligations, if offered in a form suitable to the American market, could be readily sold in the United States in large amounts and at favorable price.

"Acting under an understanding with your company which you will be asked to ratify at the forthcoming special meeting, the Lords Commissioners of His Majesty's Treasury have decided to take over or acquire, under their general powers in that behalf, or under regulations made pursuant to the Defence of the Realm (Consolidation Act of 1914) and amending enactments, from all persons ordinarily resident in the United Kingdom, their outstanding holdings of Canadian Pacific 4% consolidated debenture stock, Atlantic and North West 1st mortgage 5% bonds, Algoma Branch 1st mortgage 5% bonds, Ontario and Quebec 5% debenture stock, which the Imperial Government proposed to lodge with your company in exchange for such an amount of 20-30 year 5% collateral trust bonds of the company in dollar form as will equal, at par, the value, on a 5% basis, of the securities received from the Treasury, calculating the pounds sterling at the rate of £21 to \$100. If all of the above four issues should be acquired and deposited, your company would issue \$198,979,580 of bonds, payable as to principal and interest in gold in dollars in New York or Montreal at the option of the holder, with a fixed maturity of 30 years, but redeemable at par at the option of your company on and after the expiration of 20 years. It is also to be provided that the bonds may be redeemed, if requested by the government, at 105 and interest, at any time within the first five years of their life. The pledged collateral will be lodged at the specific prices of 80 for the C.P.R. 4% debenture stock and at par for the above mentioned 5% securities.

"Under the proposed arrangement the annual fixed charges of your company will remain as they are at present, interest on the collateral trust bonds being covered by interest on the securities deposited as collateral, and, although your company is taking liability for repay-

ment on a specified date, that liability is covered by an undertaking of the Imperial Government to provide the funds required for redemption of the bonds in whole or in part during the first five years, or after 20 years, or at maturity, as may be determined. Included in the 4% Consolidated Debenture Stock that the Imperial Government proposes to acquire and deposit is the amount of \$40,000,000 issued by your company recently, and loaned to the British Treasury, which the Imperial Government will purchase at 80% of its face value, the proceeds of the sale, viz., \$32,000,000, to be loaned to the Imperial Treasury for 5 years at an annual interest rate of 5¼%, payable semi-annually. Steps have been taken to secure the requisite authority from the Dominion Parliament. The details of the transaction will be fully set out in the formal agreement with the Imperial Government which will be submitted for your consideration and approval at the special general meeting called for the purpose."

It was announced from New York, Apr. 17, that with the object of keeping the market as clear of new offerings as possible for the reception of the forthcoming sale of U. S. Government bonds, J. P. Morgan and Co. and associates had cancelled the arrangements for handling the C.P.R. bonds, as on account of certain delays, it appeared likely that the latter could not be dealt with far enough ahead of the Government financing to prevent some interference. Arrangements had been made for offering the C.P.R. bonds at 97, and success was assured. It is expected that the matter will be taken up again when the Government financing has been completed.

Timiskaming and Northern Ontario Railway Report.

The Timiskaming and Northern Ontario Ry.'s report for the year ended Oct. 31, 1916, has just been issued by the commission which operates it, and an electric line—the Nipissing Central Ry.—for the Province of Ontario. Following are extracts:

Assets	
Cost of road	\$18,129,015.07
Cost of equipment	2,507,791.71
Nipissing Central Ry.	483,123.31
Empire lumber plant, Latchford	6,625.07
Working assets	750,567.52
Deferred debit items	17,561.99
	<hr/>
	\$21,957,684.67
Liabilities	
Provincial loan account	\$21,183,687.59
Working liabilities	533,418.33
Deferred credit items	226,275.14
Balance profit and loss	14,303.61
	<hr/>
	\$21,957,684.67
Earnings and Expenses	
Revenue from transportation	\$2,044,808.99
Revenue other than transportation	93,312.96
	<hr/>
Total operating revenue	\$2,138,121.95
Maintenance of way and structures	\$349,024.48
Maintenance of equipment	248,702.04
Traffic expenses	22,465.69
Transportation expenses	842,058.75
Miscellaneous operations	42,562.89
General expenses	91,317.74
Credits	1,954.13
	<hr/>
Total operating expenses	1,594,177.46
	<hr/>
Net operating revenue	\$543,944.49
Ore royalties	49,877.62
Rent from joint facilities	18,620.45
Rent from lease of road	13,347.04
Interest	1,736.36
Miscellaneous income	1,029.78
	<hr/>
Total income	\$628,555.74
Deductions from income	99,850.28
	<hr/>
Total earnings	\$528,705.46

Compared with the year ended Oct. 31, 1915, the total operating revenue increases

ed \$578,718.62; total operating expenses increased \$237,127.59, and net operating revenue increased \$349,591.03. Income from ore royalties increased \$4,805.19; rent from lease of road decreased \$3,254.33. Interest is a new item, and miscellaneous income decreased \$1,828.20. The deductions from income increased \$51,492.10, and the total earnings increased \$318,166.83. From the profit and loss account which was increased from \$415,664.24 to \$1,028,273.85, there was paid to the Treasurer of Ontario, \$1,000,000. Uncollectable accounts of \$10,000 were cancelled and \$3,021.36 was written off for retired road and equipment, leaving a balance of \$14,303.61.

Traffic Statistics	
Revenue passengers	485,759
Passengers carried one mile	26,972,091
Passengers carried one mile per one mile or road	82,107
Average distance carried (miles)	55.53
Average amount received	\$1.29
Average receipts per passenger per mile	2.32 cts.
Passenger service train revenue per train mile	\$1.33
Revenue freight carried (tons)	922,618
Tons carried one mile	173,842,519
Carried one mile per mile of road	529,201
Average distance of haul of one ton (miles)	188.42
Average revenue per ton	\$1.44
Average amount received per ton per mile of road	0.77 cts.
Freight revenue per train mile	\$2.18
Freight originating on the line (tons)	410,582
Received from Canadian lines (tons)	479,973
Received from U.S. lines (tons)	32,063
Total (tons)	922,618
Mileage of revenue passenger trains	475,833
Mileage of revenue mixed trains	60,430
Mileage of revenue freight trains	549,094
Total revenue train mileage	1,085,357

George Bury's Return to Canada.

George Bury, Vice President, Canadian Pacific Railway, arrived in St. John, N.B., April 25, and proceeded to Montreal, which he had left on Jan. 23 for England, whence he accompanied Lord Milner to Russia, on a special mission. He was in Petrograd during the revolution, and remained there for some time afterwards at the Russian Government's request. He returned to London, April 5, and presented a report to the British Government, for which he was warmly thanked by Premier Lloyd George.

In an interview in London, with a Montreal Star reporter, he is quoted as saying: "I am too old to fight, but I thought I could do my bit at assisting at a solution of Russian transportation problems." In another interview at St. John, he is reported as saying: "In Russia I travelled from a point where I saw reindeer caravans to a point where I saw caravans of camels, that is, from Lapland to the Caucasus. There is no doubt whatever that after the war Russia will have to build several hundred thousand miles of railways. Russia made the mistake of patterning her railways after those of Europe rather than America.

Grain Inspection at Western Points.

The following figures compiled by the Department of Trade and Commerce, show the number of cars of grain inspected on railways at Winnipeg and other points on the Western Division, for March, and for seven months ended Mar. 31, compared with those inspected for seven months ended Mar. 31, 1916.

	7 months to		7 months to	
	Mar. 1917	Mar. 1917	Mar. 1917	Mar. 1916
C.P.R.	6,871	82,727	125,854	
C.P.R., Calgary	864	5,518	4,885	
C.N.R.	4,754	44,236	65,807	
G.N.R., Duluth	1,322	2,726	4,197	
G.T.P.R.	892	15,715	31,691	
Total	14,703	150,922	232,434	

Increased Loading of Freight Cars on Canadian Pacific Railway.

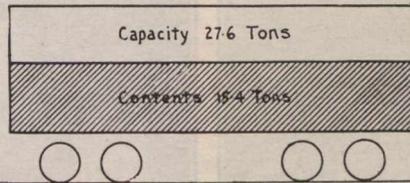
The management of the C.P.R. Eastern Lines has taken steps to bring before the public the necessity for increasing the average loads of cars, so as to increase the efficiency of the rolling stock. A bulletin which has been issued gives the following facts:—

The railways statistics for 1907 and 1915 contain the following figures:

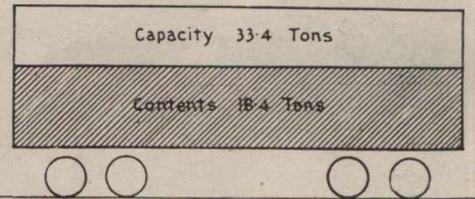
	1907.	1915.	Increase.
Total tons freight carried 1 mile	11,687,711,830	17,661,309,723	51.1%
Aggregate capacity of freight cars in tons	2,908,903	6,731,265	131.4%
Total freight cars	105,540	201,690	91.1%

The accompanying diagrams show that while the car capacity increased 5.8 tons, the contents increased only 3 tons, and that 48% of the additional capacity provided was not used. The public is asked to co-operate with the railways in an endeavor to remedy the existing car shortage. It can be done by utilizing to better advantage the present available rolling stock. Increasing the average car load to 23.4 tons, or 5 tons more than during 1915, would be equivalent to the placing of 54,800 additional cars in service. Light, bulky commodities, of which there are many, should be loaded to the full cubic

THE 1907 AVERAGE CAR



THE 1915 AVERAGE CAR



capacity of cars. Heavier freight should be loaded to the maximum carrying capacity authorized.

Alfred Price, Assistant General Manager, Eastern Lines, C.P.R., has favored us with the following particulars in regard to the loading of 80,000 lb. cars with wheat up to 94,000 lb. "Axles used for cars of this capacity are 5 1/2 in. in diameter, and according to the M. C. B. rules, such cars may be loaded to 10% in excess of their marked capacity, that is 88,000 lb. The opinion of experts is that the axles can safely carry 132,000 lb. including the tare, and as the tare of C.P.R. cars of this capacity is 38,000 lb. the difference, 94,000, can be safely carried. We accordingly have been loading such cars from and to points on our own line with 94,000 lb. of wheat and other commodities, the weight of which can be accurately determined. Between May 1 and Dec. 31, 1916, we loaded from our Port McNicoll, Ont., elevator, in 80,000 lb. cars, 17,769,391 bush. of wheat for export via Montreal and via St. John, N.B. Up to some time in November this wheat was taken to Montreal, 358.8 miles, and from then until the end of the year, to West St. John, 836.6 miles. In moving this wheat 11,366 cars were actually used, so that the average load carried was 93,803 lb. or 1,563 bush.; 94,000 lb. equals 1,566 bush., so that the cars were loaded up to within three bushels of the authorized limit. Under these instructions the company saved the use of 750 cars, and the haulage of dead tare to the extent of approximately 9,253,502 ton miles. There was not a single accident due to the cars carrying excess tonnage, although the total loaded car mileage was approximately 4,757,075."

Express Collection and Delivery Limits in Toronto.

In Canadian Railway and Marine World for April, a short summary was given of the Board of Railway Commissioners' judgment in an application by the City of Toronto for an extension of the express collection and delivery limits. As the judgment contains several points which are of interest to other cities similarly placed, a more extended summary is considered advisable. The judgment was given by D'Arcy Scott, Assistant Chief Commissioner, and subsequently order 25975 was passed, dated Mar. 29, as follows:

1. Until further order the tolls of express companies subject to the Board's jurisdiction for the carriage of express freight shall include collection or delivery by the companies, or their agents, in all thoroughfares in that portion of the city bounded continuously as follows, and including both sides of thoroughfares named as boundaries: By Keele St. from Humber Bay, Bloor St., Runnymede Rd., St. Clair Ave., Russell Hill Road, Lonsdale Road, Oriole Road, Gormley Ave., Lawton Ave., Glen Ave.; thence following the present eastern boundary and the C.P.R. and Belt Line Ry. to Danforth Ave. (Bloor St. bridge); Danforth Ave.,

Jones Ave., Gerrard St., Greenwood Ave., Queen St. and Morley Ave. to Ashbridge's Bay, and then along the Keating channel to the harbor; the water front from the Keating channel to Keele St. to be the southern boundary. Also in Weston Road from St. Clair Ave. to and including the Willys-Overland automobile works, Greenwood Ave. from Gerrard St. to the G.T.R., and Queen St. from Morley Ave. to Beech Ave.

2. Collection and delivery shall be made by the companies, or their agents, in all thoroughfares reasonably passable for express wagons outside of the aforesaid free area for any distance not exceeding half mile from the nearest free collection and delivery point, in any direction except southerly, at the following tolls for the said additional cartage service: For any one consignment of the aggregate weight of not more than 100 lb. from one shipper to one consignee, 15c; for each additional 100 lb., or fraction thereof, in the same consignment, 10c; provided that any consignee desiring to call at the express office for all his express freight, or to have it delivered by an independent carter of his own selection, shall so notify the express company in writing, and thereafter and until written withdrawal of such notice the express company shall not deliver to such consignee through its own cartage service.

3. This order shall become effective May 1, 1917, thereupon rescinding order 16468, May 6, 1912.

The express companies doing business in Toronto voluntarily established free delivery of parcels many years before the formation of the Board of Railway Commissioners. The original city limits have been extended from time to time, and al-

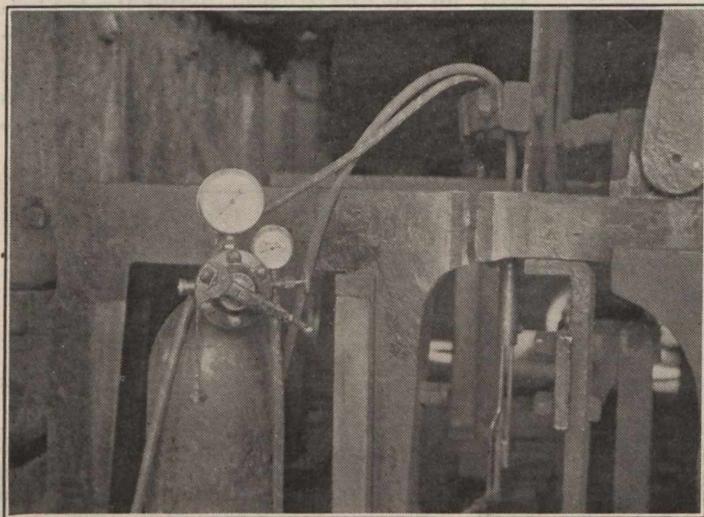
so the limits of the free delivery area, the latter being made to satisfy the exigencies of the moment, and not based on any principle which might be a guide to some permanent method to be provided for future expansion. The first order relating to express delivery limits in Toronto was issued May 6, 1912, and many important changes have taken place since then. The present limits do not follow the municipal boundaries, are not based on any principle of mileage from a central distributing office, nor are they arranged on density of population. Certain sections at present without such service are being unjustly discriminated against. If a delivery service had never existed and one was now being established, it would be a simple matter to arrange a central zone with boundary lines in all places of equal distance from the distributing centre, and with wider zones beyond the free zone with a toll based on mileage and the weight and bulk of parcels. Municipal boundaries may be taken as suitable limits in villages, towns and small cities, but in a city of the size of

of 15c for parcels not over 100 lbs., and 10c additional for each 100 lbs. or fraction thereof, for parcels in one consignment. This is a new practice being established, and as the toll area is somewhat of an experiment, the companies must keep an account of the number of consignments they deliver or collect on which toll is charged, the amounts collected, and the cost of the service, and a report giving such information must be made to the Board after operation for one year, so that the provisions now established may be reconsidered and revised if the Board thinks necessary. Companies should keep a list of persons outside the free area who do not wish the companies to deliver parcels. Anyone desiring to be on that list must notify the companies, and if the companies are not so notified they would have the right to exercise all the powers they have under the Railway Act for collecting tolls for such service. The toll, and this provision for notifying the companies will appear in the tariffs and will become part of the contract between the shipper and the

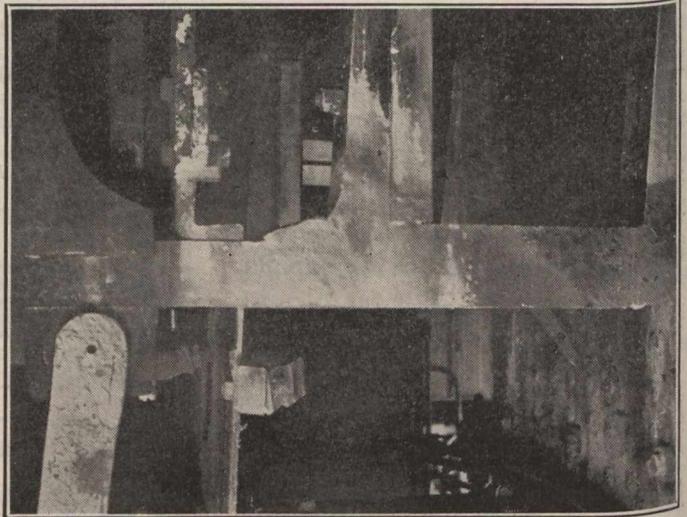
Welding a Locomotive Frame at the Grand Trunk Shops.

The locomotive frame shown in the accompanying illustration was handled in the G.T.R. shops at Point St. Charles, Montreal. It was first cut out by a cutting torch and then cleaned up with an air hammer and chisel. It was then preheated by an oil lamp to a good welding heat. Two men, using Swedish iron as a filler, then proceeded to weld it—one man inside the frame and the other man outside. The cost was as follows:

Labor.		Material.	
1 man cutting out and chipping,			
1 hr.	\$0.40		
2 men welding, 3 hrs. @ 40c each	2.40		
Blacksmith, 1 heat:			
Oxygen and gas: 60 ft. oxygen,			
10 ft. gas .....	...	\$1.12	
Oxygen, 250 ft. @ \$1.75 per 100			4.37
ft. ....			.32
Swedish iron: 4 lbs. @ 8c		\$2.80	\$5.81
			2.80
Total			\$8.61



Locomotive Frame Before Welding.



Locomotive Frame After Welding.

Toronto, and the boundaries are from time to time enlarged, they alone cannot be taken as suitable limits for express service. There must be limits which an express company should not be expected to go in giving either a free or a toll delivery service. There should be a central zone in Toronto in which a free pick up and delivery service should be given, and additional areas in which similar service should be given for a toll based on mileage from the free zone, and the weight and bulk of the parcels dealt with. Because of established business interests based on free delivery service as given in the past, it would not now be fair to have a free zone based on mileage only, and the free zone will have to be rectangular in shape. It will consist of all the territory which now has a free service with the addition of sections south of St. Clair Ave., known as Wychwood and Bracondale, and both sides of all streets. It is much fairer to those living just outside the free zone that they get a service for a reasonable toll, than that they get no service, and the boundaries are the fairest that can, under the circumstances, be selected. The service outside the free area could be varied from time to time, but at present it should be within half a mile of the nearest free zone limit, except the southern limit, that is, there should be no delivery beyond the water front. The charge will be based on a minimum

companies. The service indicated will be subject to the usual condition that it need only be given on thoroughfares which are in a reasonably passable state for express wagons.

Canadian Freight Association Committees.

The following committees were elected at the annual meeting, April 11:

Advisory: G. H. Shaw, C. E. Dewey, H. E. Macdonell and J. H. Meglemry.

Executive: G. C. Martin, H. E. Macdonell, H. C. Martin and G. Tombs.

Classification: M. H. Brown, J. Edward, L. Macdonald, H. E. Macdonell, R. E. Perry, J. Orr, A. O. Secord, E. N. Todd, G. Tombs and F. J. Watson.

Freight Inspection: W. B. Bamford, M. H. Brown, G. H. Clark, G. T. Pettigrew, W. S. Elliott, R. W. Long, G. C. Martin, P. Mooney, R. J. S. Weatherston and R. W. Youngs.

Vegetable Growing on Railway Right of Way.—The C.P.R. employes on the Souris, Man., Division, have formed an organization to grow vegetables on unused portions of the company's right of way on the division. Seed will be purchased wholesale and distributed, and prizes will be offered for competition among the different sections.

National Cash Register Co. Changes its Advertising Policy.

After spending millions of dollars in both direct-by-mail and publication advertising, the National Cash Register Co. has decided to discontinue its gigantic direct-by-mail advertising department and to concentrate the bulk of its future advertising in the trade press and other papers. In making the announcement the National Cash Register Co. says: "In order to do this it has abandoned direct-by-mail advertising of its machines to \$1,600,000 probable purchasers in the United States and Canada, and has sold its mailing equipment, in favor of open advertising in the trade press, financial papers, magazines and newspapers, solely because the latter has brought better results and secured more sales than the former."

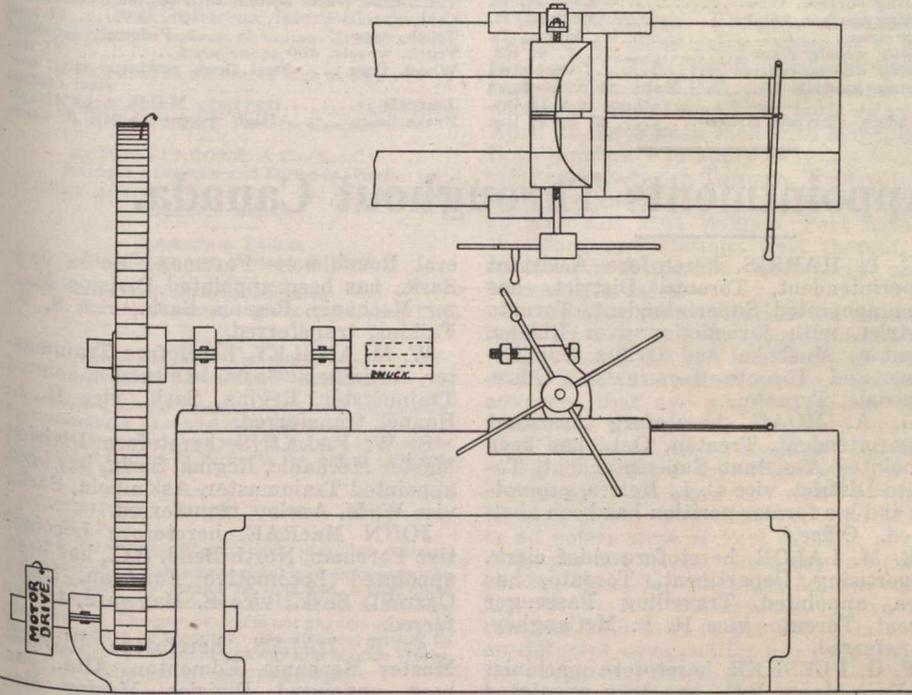
New Publications Received.

Canada in Flanders, vol. 2, by Lord Beaverbrook. Cloth; 5 x 7½ inches; 258 pages; with maps. Toronto, Hodder & Stoughton. 35c, postage 7c extra.

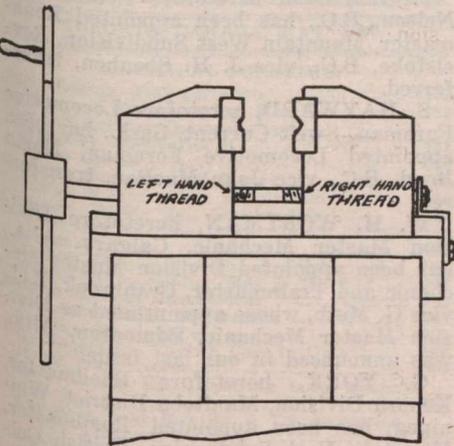
Pacific Ports.—Cloth; 5 x 7½ in.; 400 pages. Seattle, Wash., The Terminal Publishing Co. \$3 net.

Nut Reclaiming Machine in C. P. R. Shops.

At the C.P.R. shops at Ogden, Alta., it is the practice to remove all the nuts from the old bolts, thereby reclaiming at



Nut Reclaiming Machine, Ogden Shops, C.P.R.



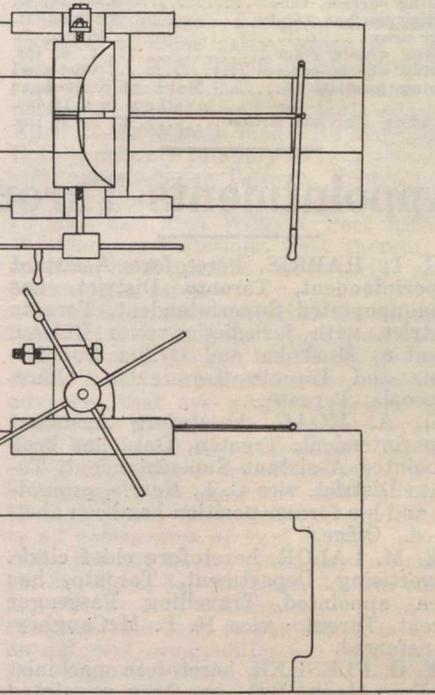
Nut Reclaiming Machine, C.P.R.

least 25,000 lb. a month. The accompanying plans show the machine especially got up for this purpose, which, though simple, has proved very effective. We are indebted for this information to A. T. Shortt, Superintendent of Ogden shops.

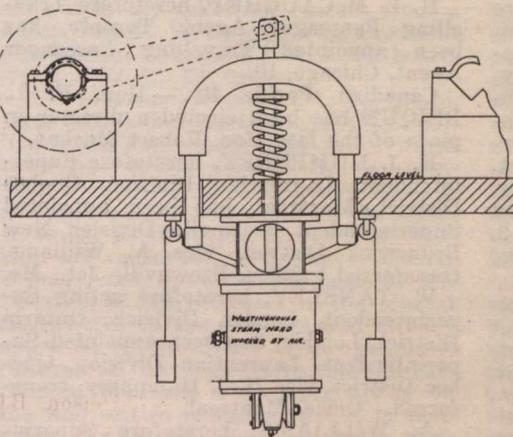
Toronto, Hamilton & Buffalo Ry. Bonds. A press report states that the Ohio Supreme Court has refused to allow the New York Central Rd. to join with the Michigan Central, Canada Southern and Canadian Pacific Railways in jointly and severally guaranteeing the payment of principal and interest on \$2,000,000 of bonds of the Toronto, Hamilton & Buffalo Ry. and has ordered the Utilities Commission to modify its order. P. and C. Venner of New York, minority stockholders of the New York Central, appealed from the Utilities Commission's decision and their contention was upheld in part. The court held that the New York Central could guarantee bonds of its own companies, but not of other companies.

Piston Rod Remover in C.P.R. Shops.

The accompanying plans show a piston rod remover used at the C.P.R. shops, Ogden, Alta. It is operated by steam head and steam cylinder of 11 in. West-



inghouse air pump, with compressed air. The piston head is clamped down, and between the piston rod and the eccentric arm there is a plug which takes up all slack, therefore with strokes of the pump down, a pressure of 100 tons is exerted on the end of the rod. The view of the



Piston Rod Remover, Ogden Shops, C.P.R.

machine with the fork end and the stand for holding the piston, shows the method of removing the piston rod nut. The opposite side of the latter sketch shows the method of applying the nut. We are indebted for this information to A. T. Shortt, Superintendent of Ogden shops.

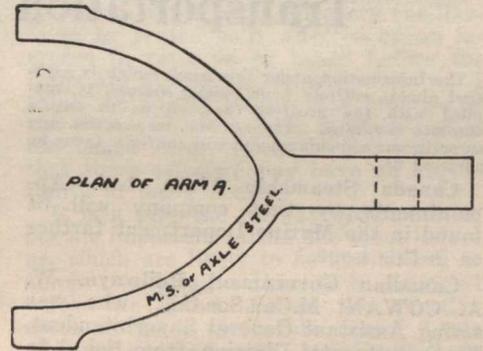
Morrissey, Fernie and Michel Ry.—The 16th annual meeting of shareholders was held at Toronto, Apr. 13. The balance carried forward from 1915 operations, together with the profits for 1916, have been set aside for depreciation. The directors were re-elected for the current year, as follows:—E. Rogers, E. C. Whitney, H. B. McGiverin, C. A. Thompson and W. H. Robinson.

Railway Rolling Stock Notes.

The C.P.R. has received 149 automobile furniture cars and 32 freight refrigerator cars from its Angus shops, Montreal.

The Timiskaming & Northern Ontario Ry. is in the market for 100 box cars, prices being asked for alternative types, and for 10 gondola cars of 80,000 lb. capacity.

The C.P.R. has ordered 10 vans, 31 steel under frame flat cars, 40 tons capacity, 159 steel underframe box cars, 40 tons capacity; 4 freight refrigerator cars, 1 steel snow plough and 1 automobile

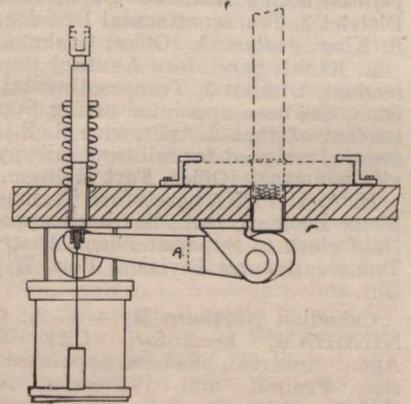


Arm A, Piston Rod Remover, C.P.R.

furniture car, from its Angus shops, Montreal.

Canadian Government Railways, in addition to the locomotives already mentioned, have ordered 30 Mikado locomotives weighing 288,000 lbs., with cylinders 27 by 30 ins.; 10 Pacific type locomotives weighing 248,000 lbs. with cylinders 23½ by 28 ins., and 10 Santa Fe type locomotives weighing 320,000 lbs., with cylinders 26 by 32 ins., from the American Locomotive Co.

With reference to the report that the Dominion Government had purchased a



number of locomotives which had been used by Welland Ship Canal contractors, for shipment to France, we are advised that no locomotives have been so purchased. Some negotiations are in progress for acquiring some of the locomotives so used, but at the time of writing no definite arrangements have been made.

Some details were given in our April issue, regarding the 3,000 cars of 1,200 poods (approximately 43,200 lbs.) capacity, which the Russian Government has ordered from the Eastern Car Co. Of these cars, 2,400 will be built with air brakes, but without platformes and hand brakes, and 600 will have platformes, hand brakes and air brakes. The axles will

Canadian Railway AND Marine World

ESTABLISHED 1898.

Devoted to Steam and Electric Railway, Marine, Express, and Telegraph, also Railway and Canal Contractors' Interests.
Official Organ of various Canadian Transportation Associations.

Published on the first of each month.

ACTON BURROWS, LIMITED - Proprietors,
70 Bond Street, Toronto, Canada.

ACTON BURROWS, A. Can. Soc. C. E.
Managing Director and Editor-in Chief.

AUBREY ACTON BURROWS - Secretary and
Business Manager.

Associate Editors

JOHN KEIR AND DONALD F. KEIR

United States Business Representative,
A. FENTON WALKER, 143 Liberty St., New York

Member of
Canadian Press Association Inc.,
Associated Business Papers Inc.

Authorized by the Postmaster General for Canada,
for transmission as second class matter.
Entered as second class matter, July 25, 1913, at the
Postoffice at Buffalo, N.Y., under the Act of Congress
of March 3, 1879.

SUBSCRIPTION PRICE, including postage any-
where, \$2 a year.

SINGLE COPIES, 20 cents each, including postage.

The best and safest way to remit is by express money
order. Where one cannot be obtained, a post office
money order, or bank draft, payable at par in Toronto,
may be sent. Cheques or drafts not payable at par in
Toronto cannot be accepted. Remittances should be
made payable to Canadian Railway and Marine World.

NOTICE TO ADVERTISERS.

ADVERTISING RATES furnished on application.
ADVERTISING COPY must reach the publishers by
the 10th of the month preceding the date of publication.

TORONTO, CANADA, MAY, 1917.

PRINCIPAL CONTENTS.

Appointments, Transportation	188
Birthdays of Transportation Men	172
Board of Railway Commissioners,—	
Orders by, Summaries of	181
Traffic Orders	196
Canadian Government Railways, Snow Ploughs	176
Canadian Northern Ry., Construction	195
Canadian Pacific Ry., Construction	182
Honor Roll	174, 182
Report	190
Canadian Railway Problem, A Solution of	173
Canadian Transportation Men in the War	192
Electric Railway Department	197 to 203
Edmonton Radial Ry. Deficits	201
Finance, Meetings, etc.	202
Headlights for Electric Cars in Ontario	199
Jitney Traffic Notes	200
Lewis County Ry., Repairing Long Broom Sweepers	201
London & Lake Erie Ry. & Transportation Co.'s Financial Position	200
London St. Ry. Employees' Wages	198
Montreal Tramways Co., New Cars	202
Electric Locomotives	199
Nipissing Central Ry. Report	202
Projects, Construction, etc.	203
Toronto Suburban Ry., Guelph Line Opened Winnipeg Electric Ry. Protests against Jit- ney Traffic	198
Freight and Passenger Rates, Application to Raise	177
Freight and Passenger Traffic Notes	194
Freight Rates, East and West	189
Grain in Stores at Terminal Elevators	182
Halifax Ocean Terminals and Connecting Rail- way	169
Lake and Rail Rates Increased	175
Mainly About Railway People	183
Marine Department	204 to 212
Canada Steamship Lines' Appointments ..	210
Dominion Government Vessels for Ocean Service	207
C.P.R. New Ocean Steamships	210
Coast, Lake and River Steamship Officers ..	207
Dominion Government Purchases Lake Ves- sels	210
Montreal Transportation Co.'s s.s. West- mount	204
Shipbuilding in Canada for British Govern- ment	206
Shipping Letter from Head of the Lakes ..	191
Pacific Great Eastern Ry. Affairs Investigated ..	193
Railway Development	187
Railways Rolling Stock Notes	187
Railways in Eastern Canada, Cost and Earn- ings of	178
Timiskaming & Northern Ontario Ry.— Betterments	195
Report	184

Increased Freight Rates from Eastern to Western Points Suspended.

D'Arcy Scott, Assistant Chief Railway Commissioner, gave the following judgment, April 7:

The Canadian Freight Association Tariff 2 of class rates, which is C.R.C. no 1 and C.F.A. Tariff 3, of commodity rates which is C.R.C. no. 2, issued respectively Mar. 19 and 20, both effective April 23, have been filed with the Board. Both tariffs are to apply to rail, lake, and rail traffic between Toronto, Montreal, St. John, Halifax and other points in Eastern Canada, and Fort William, Port Arthur, Westport, and stations west thereof, as specified in the tariffs. Both tariffs show increases in rates.

In framing the new tariffs the railways have not increased the proportion of the rate covering the rail haul from the head of the lakes to destination, therefore, the advances that are proposed in the new tariffs are the same to all points west of Fort William. As an example, the proposed class rates to Winnipeg and to Vancouver both show the same advance in each class. The class rates advances to all points west of Fort William are in cents per 100 lb. 1st class, 6c; 2nd class, 3c; 3rd class, 3c; 4th class, 3c; 5th class, 2c; 6th to 10th classes, 1c. Advances ranging from 1c to 6c per 100 lb. in rates on different commodities are proposed in the commodity tariff.

Protests against these increases have been received by the Board from a number of boards of trade of western cities and the Manufacturers Association's Prairie Provinces Branch, and we are asked to suspend the tariffs until the railway companies have justified the proposed increase and the organizations which are protesting have an opportunity of being heard. The railway companies' answer to the request for suspension is set out in the following extract from a letter from E. W. Beatty, Vice President and General Counsel, C.P.R., to the board, dated April 5. He says:

"As previously explained to the board, these tariffs include the local Fort William class and commodity rates, which were filed by the various railway companies with the board, effective April 2, and approved after hearing by the board. In so far as the rates beyond Fort William are concerned, no change whatever is made, and, therefore, the basis of justification of the increases in the present case is exactly the same as that already approved by the board in the judgment referred to. In other words, the rail carriers in this case are simply acting on the well settled principle that it is competent for them to disregard water competition, either altogether, or to such extent as they may see fit, and in view of the number of times that this principle has already been upheld by the board, it is submitted that the board would not be justified in suspending the tariffs."

The board had before it at a sitting at Ottawa on Mar. 20 the new rail and lake tariffs of the railway companies showing an increase in local rates to Fort William, effective April 2. These tariffs were not approved, as suggested by Mr. Beatty; but the board, after hearing those interested, decided that it should not interfere with the tariffs, and the new rates were allowed to become effective. The reasons for the board coming to that conclusion are set out in my memorandum of Mar. 29. The board's action in the local rail and lake rates case should

not be taken by the railway companies as a justification for the increase in rail lake and rail rates to western points. There may be principles applicable to the proposed western rates, or circumstances and conditions to be considered, which had no application to the local rates to Fort William. We should not prejudge the case. We must wait till the parties interested have been heard. This board has always followed the practice of allowing an opportunity for every one likely to be prejudicially affected by an increase in rates to be heard before the rates are allowed to become effective. I think we should follow that practice in this case, and suspend the tariffs till after the board hold sittings in the west, so that those affected may have an opportunity of being heard.

It is a pity the railway companies do not file important tariffs like those before us, which are likely to be questioned, in ample time to allow them to be discussed before the board before the effective dates named in the tariffs. Tariff 2 was received on Mar. 19th, and Tariff 3 on Mar. 23, by the board's traffic department. Sittings of the board were held at Regina on Mar. 15, and at Winnipeg on Mar. 16. We might have heard complaints at those, and other western points if the board and the public had only had notice of the railway companies' intentions. If the railway companies are inconvenienced by the suspension of these tariffs, it is entirely due to their own tardiness. It has been brought to our attention that copies of these tariffs were not sent to the boards of trade in the west, and that some of those affected first learned of the proposed increase from the newspapers. The board has taken up with the Canadian Freight Association the question of prompt notice of tariffs, like those before us, being given to organizations of shippers, or consignees, which are specially concerned with freight rates. Some arrangement will be made whereby these organizations will receive due notification in such cases in the future. We were told at the Ottawa sitting on Mar. 20 by a representative of one of the railway companies, that the railway companies contemplated filing tariffs shortly, increasing all rail rates from eastern to western points. If this is the intention, it would be well for the railway companies to file these all rail tariffs without delay, so that if any objections are to be made to them the parties objecting can be heard at the western sittings which it will be necessary for the board to hold to consider the tariffs now before us. An order should now go suspending C.F.A. Tariffs C.R.C. 1 and 2.

Northern New Brunswick & Seaboard Ry.—A subscriber has asked for information about this line. It extends from Nepisiquit Jct., on the Intercolonial Ry., 3.4 miles east of Bathurst, N.B., to Bathurst Mines, 16.9 miles, and was built to convey iron ore from the mines to the seaboard, but it is not now in operation. A gasoline car was operated last year for passenger service, but this was discontinued during the winter and has not been resumed. The officials are Edgar McDougall, Montreal, President; Andrew Whyte, Jr., Montreal, Secretary Treasurer; and W. F. C. Parsons, Middleton, N.S., General Manager.

Canadian Pacific Railway Company's Six Months Report.

Following is the directors report for the half year ended Dec. 31, 1916:

The accounts show the following results:

Gross earnings	\$76,717,965.36
working expenses	45,843,199.50
Net earnings	\$30,874,765.86
Deduct fixed charges	5,132,551.09
Surplus	\$25,742,214.77
Contribution to pension fund	200,000.00
	\$25,542,214.77
Deduct net earnings of Pacific coast steamships, commercial telegraph, and news department, transferred to special income account	1,144,071.44
	\$24,398,143.33
Froh this there has been charged a quarterly dividend on ordinary stock of 1 3/4 % , pain Jan. 2, 1917	\$4,550,000.00
	\$19,848,143.33

From this there has been declared the half-yearly dividend on preference stock of 2%, payable Mar. 31, 1917	\$1,613,638.42
And a second quarterly dividend on ordinary stock of 1 3/4 % , payable Mar. 31, 1917	4,550,000.00
	6,163,638.42

Leaving net surplus for the six months	\$13,684,504.91
--------------------------------------------------	-----------------

In addition to the above dividends on ordinary stock, 1 1/2 % was paid from special income.

Details of Special Income for Six Month.

Balance at June 30, 1916	\$10,357,099.09
Less dividend paid Sept. 30, 1916	1,950,000.00
	\$8,407,099.09
Intrest on proceeds land sales	191,783.02
Interest on deposits and loans	898,068.07
Interest from Minneapolis, St. Paul & S. S. Marie Ry. bonds	79,860.00
Interest from Mineral Range Ry. bonds	25,080.00
Interest from Berlin, Waterloo, Wellesley & Lake Huron Ry. bonds	8,520.00
Interest from St. John Bridge & Extension Co. bonds	3,125.00
Interest from Esquimalt & Nanaimo Ry. bonds	96,640.00
Interest from Dominion Atlantic Ry. extension debenture stock	28,470.00
Interest from Dominion Atlantic Ry. 2nd debenture stock	18,493.34
Interest from Hull Electric Ry.	20,000.00
Dividend on Dominion Express Co. stock	100,000.00
Dividend on St. John Bridge & Railway Extension Co. stock	35,000.00
Dividend on Minneapolis, St. Paul & S. S. Marie Ry. common stock	445,322.50
Dividend on Minneapolis, St. Paul & S. S. Marie Ry. preferred stock	222,633.00
Dividends on West Kootenay Power & Light Co. preferred stock	1,925.00
Dividends on Consolidated Mining & Smelting Co. stock	178,243.75
Dividend on Berlin, Waterloo, Wellesley & Lake Huron Ry. stock	6,250.00
Dividends on Toronto, Hamilton & Buffalo Ry. stock	27,553.50
Earnings from ocean steamships and hotels	2,546,249.48
Revenue from company's interest in coal mine properties	182,362.75
Extraneous mail earnings	79,042.85
Net earnings of Pacific Coast steamships, commercial telegraph, news department	1,144,071.44
Received for space rented in office buildings	40,158.67
	\$14,822,451.54
Less: Payment to shareholders in dividend, Jan. 2, 1917	1,950,000.00
	\$12,872,451.54
From this a dividend has been declared, payable Mar. 31, 1917	1,950,000.00

The working expenses for the six months were 59.75% of the gross earnings, and the net earnings 40.25% compared with 55.43 and 44.57% respectively, in 1915.

Under the Interstate Commerce Commission regulations railway companies in the United States are now required to make their fiscal year correspond with the calendar year, and it is understood

that at the present session of the Dominion Parliament similar legislation will be passed with reference to railway companies in Canada. In order to conform to this requirement, which has the merit of facilitating the comparison of the cost of operations and other statistics, your directors recommend that Dec. 31 in each year be made the end of the company's fiscal year instead of June 30, as heretofore, and with this change in view your directors have adopted a by-law, which you will be asked to approve, changing the date of the annual general meeting of shareholders from the first Wednesday in October to the first Wednesday in May. The financial reports and accounts now submitted for your consideration cover the six months ended Dec. 31, 1916, and, therefore, the next annual report and statements to be placed before you a year hence will embrace the operations of the calendar year 1917.

You will also be asked to give your sanction to amendments to bylaws 47 and 49, providing for the issue of the company's 4% consolidated debenture stock and 4% preference stock, in dollar currency denominations as well as in sterling money of Great Britain. With the assent of your company the British Treasury included, among the securities which were being borrowed in Great Britain, the various outstanding obligations of your company, and these obligations have already been used, to some extent, for the purpose of pledge in New York, as security for the obligations of the United Kingdom of Great Britain and Ireland. It became evident, however, that the obligations of your company, being to a large extent issued in a currency foreign to the American market, could be more advantageously utilized if put in a form familiar to American investors. The need of the British Treasury for securities to obtain dollars has been imperative to carry on the war, and your company has felt it not only a duty to be of assistance in this situation, but also a privilege, in view of the present position of your company having been in a large part due to the investment of British capital ever since its formation. No company in the British Empire stands in higher credit among American investors than the C. P. R. Co., and his Majesty's Government had the assurance that your company's obligations, if offered in a form suitable to the American market, could be readily sold in the United States in large amounts and at a favorable price. Acting under an understanding with your company, the Yords Commissioners of His Majesty's Treasury have decided to take over or acquire, under their general powers in that behalf, or under regulations made pursuant to the Defence of the Realm Consolidation Act of 1914 and amending enactments, from all persons ordinarily resident in the United Kingdom, their outstanding holdings of Canadian Pacific 4% consolidated debenture stock, Atlantic and North West 1st Mortgage 5% bonds, Algoma Branch 1st mortgage 5% bonds, and Ontario and Quebec 5% debenture stock, which the Imperial Government proposes to lodge with your company in exchange for such an amount of 20-30 year 5% collateral trust bonds of the C.P.R. Co. in dollar form as will equal, at par, the value, on a 5% basis, of the securities received from the Treasury calculating the pounds sterling at the rate of £21 to \$100. If all of the above four issues should be acquired and de-

posited, your company would issue \$198,979,580 of bonds, payable as to principal and interest in gold in dollars in New York or Montreal at the option of the holder, with a fixed maturity of 30 years, but redeemable at par at the option of your company on and after the expiration of 20 years. It is also provided that the bonds may be redeemed, if requested by the Government, at 105 and interest, at any time within the first five years of their life. The pledged collateral will be lodged at the specific prices of 80 for the Canadian Pacific 4% debenture stock and at par for the above mentioned 5% securities. Under the proposed arrangement the annual fixed charges of your company will remain as they are at present, interest on the collateral trust bonds being covered by interest on the securities deposited as collateral, and, although your company is taking liability for repayment on a specified date, that liability is covered by an undertaking of the Imperial Government to provide the funds required for redemption of the bonds in whole or in part during the first five years, or after 20 years or at maturity, as may be determined. Included in the 4% consolidated debenture stock that the Imperial Government proposes to acquire and deposit is the \$40,000,000 recently issued by your company and loaned to the British Treasury, which the Imperial Government will purchase at 83% of its face value, the proceeds of the sale, viz., \$32,000,000, to be loaned to the Imperial Treasury for five years at an annual interest rate of 5 1/4 %, payable semi-annually. The company was not empowered by existing legislation to issue securities of the character described, and, therefore, application has been made to the Dominion Parliament for the requisite statutory authority. As no interest is injuriously affected, and your company is amply safeguarded, your directors commend to your favorable consideration and approval the formal agreement between the Imperial Government and your company which will be submitted to you at the special general meeting, and ask you to authorize and approve the creation and issuance of collateral trust bonds, pursuant to the terms of the agreement, and approve the form of trust deed to be given to secure the holders of such bonds as may be issued, and to do whatever else may be necessary to carry the provisions of the agreement into effect.

The sales of agricultural land during the half year were 328,574 acres for \$5,295,345, an average of \$16.12 an acre. Included in this area were 8,852 acres of irrigated land which brought \$49.78 an acre, so that the average price of the balance was \$15.18 an acre.

Acting upon the authority received from you in 1914, your directors have purchased practically all of the stock of the Spokane International Ry. Co., at a cost of about \$2,500,000, the former owners having liquidated all of the floating liabilities, so that the property is free from indebtedness excepting the outstanding bonds.

An ocean steamship of 9,400 tons carrying capacity, and a speed of 13 knots, now under construction at Newcastle-on-Tyne, has been purchased at a cost of £240,000 for delivery in July or August. This will make the tonnage of your ocean fleet practically the same as it was before the outbreak of war, but to provide for future requirements and to secure the advantage of the earliest construction

that circumstances will permit, an arrangement has been made under an agreement with John Brown & Co., the Fairfield Shipping and Engineering Co., and Harland & Wolff, Ltd., for the building, on a cost and percentage basis, of two steamships 605 ft. long between perpendiculars with a speed of 20 knots an hour, and two steamships 546 ft. long between perpendiculars with a speed of 16 knots an hour.

Connaught tunnel, at the summit of the Selkirk Mountains, has been completed and is now in successful operation. Your directors are satisfied that increased safety and economy in the operation of that portion of your railway will more expenditure involved in the work. The estimated value of 15 miles of railway abandoned by reason of the construction of the tunnel, viz., \$1,665,000, has been charged against revenue, thus reducing the capital account by that amount.

The yield of the harvest last autumn and the general business of the country, substantially exceeded anticipations, and the result is reflected in your gross and

net income during the half year.

Anticipating your approval, capital expenditure has been authorized in the current year to the amount of \$4,178,775. Of this, additional wharf accommodation and other facilities at Vancouver will absorb \$841,000; shops, stations and other buildings, \$397,000; transfer tracks, crossing sidings and enlargement of yards, \$792,000; craft for coastal service, \$134,000; telegraph lines, \$82,000; and the balance is required for a variety of additions and improvements over the whole system.

Your directors regret to announce the death in December last of their esteemed colleague and friend, Hon. Robert Mackay, who had been a member of the Board since 1903. Hon. F. L. Beique, K.C., senator, of Montreal, has been elected a director to fill the vacancy in the board. The undermentioned directors will retire from office at the approaching annual meeting. They are eligible for re-election: E. W. Beatty, K.C., Hon. F. L. Beique, K.C., Jas. Dunsmuir, C. R. Hosmer.

\$115,000 which had been used for campaign purposes, but he declined to say to whom the money went, and on persisting in refusing the matter was reported to the legislature, which on April 18, summoned him to the bar of the House. He there reaffirmed his decision not to answer further question on the matter, and was committed to the custody of the Sergeant-at-arms, during the pleasure of the house. On April 20, R. J. Cromie, of the P. G. E. Ry office, told the committee that all J. W. Stewart's private check books, etc., relating to a fund of \$763,000 had disappeared from the company's offices. Other witnesses who were to have been examined were not present, and the committee is considering what to do in the matter. E. P. Davis, K.C., on behalf of the Foley, Welch and Stewart interests, said that his clients were prepared to hand over all their holdings in the P. G. E. Ry. and the subsidiary companies, and were also prepared, if the government wished, to undertake completion of the line under Government management. They would be willing to do this if the government would release the company and its members from their obligation and personal covenant to complete the line.

Mr. Hanes, the North Vancouver member of the committee, gave notice that he would move a resolution which will probably form the basis of the recommendations of the committee to the legislature. He proposes that the government take immediate steps to cancel the 24,950,000 shares of capital stock in the company, that the government cancel the contract with the company for the construction of the line; that suits be entered against the Pacific Great Eastern Ry. and Foley, Welch & Stewart for the return of the guarantees alleged to have been overpaid; that the P. G. E. Ry. be sued for directors' profits and subscriptions; that P. Welch be sued for excess payments made under wrongful classification; that legislation be enacted to take over the construction and ownership of the railway as a government line; and that tenders be advertised for its completion. The possibility of criminal prosecutions in connection with the matter will, it is said, be taken up by the committee later.

United States Railway Organization for the War.

Representatives of the American Railway Association, including the presidents of the leading roads in the United States, met in New York, April 12, at the call of the Council of National Defence and named a board of five to direct the operation of U. S. railways throughout the war. The members of the board are Fairfax Harrison, of the Southern Ry., chairman; Howard Elliott, of the New York, New Haven and Hartford; Samuel Rea, of the Pennsylvania; Hale Holden, of the Chicago, Burlington & Quincy; and Julius Kruttschnitt, of the Southern Pacific. Daniel Willard, of the Baltimore & Ohio, who is also chairman of the Defense Council's Advisory Commission, will be an ex-officio member of the board. The interstate Commerce Commission will be asked to name another member.

Mr. Harrison announces that the general committee will be divided into six departments, each to correspond with one of the military departments of the army. The six subcommittees will include 28 railway executives, whose work will be supervised by the central executive committee of five.

Investigation Into Pacific Great Eastern Railway Affairs.

A special committee appointed by the British Columbia Legislature to make an investigation into all matters connected with the financing of the Pacific Great Eastern Ry. commenced its sittings Mar. 15, when J. W. de B. Ferris, of Vancouver, was appointed chairman. The taking of evidence was begun Mar. 20, and the sittings have been continued regularly. On Mar. 27 the first report of 478 pages of evidence was submitted, which the Legislature ordered to be printed.

In brief, the story of the company is that on Feb. 10, 1912, an agreement was entered into between the then British Columbia Government and the international contracting firm of Foley, Welch and Stewart to build a railway from Vancouver to a junction with the Grand Trunk Pacific Ry at Prince George, the railway bonds to be guaranteed by the province. The Pacific Great Eastern Ry. Co. was incorporated by the B. C. Legislature, T. Foley, St. Paul, Minn; P. Welch, Spokane, Wash., J. W. Stewart, D'Arcy Tate, D. McLeod, and V. W. Smith, Vancouver, being incorporators. Foley, Welch and Stewart subsequently sold their contract with the government to the P. G. E. Ry. Co. for \$1 and the company entered into a general contract with P. Welch, to build the line on a cost plus 15% basis, the constructor having certain privileges as to keeping stores, hauling and transporting freight, etc. Smith and McLeod retired from the directorate, their places being taken by F. Wilson and E. White, and P. Welch also retired before the contract was let to him. The original capital of \$25,000,000, of which 100 shares were subscribed for and on which \$40,000 was paid up in cash, was divided as follows: 31,865 shares each to Foley, Welch, Stewart and D'Arcy Tate; 20 shares each to White and Wilson to qualify them as directors; 102,500 pledged to a bank, and 20,000 pledged to the B.C. Government as part security for the \$6,000,000 loan of 1916. The capital of the company was subsequently raised to \$40,000,000 by an order in council, and at the 1914 session of the legislature the guarantee of the company's bonds, which had

originally been at the rate of \$35,000 a unit, was increased by an additional \$7,000 a mile, for 480 miles. In the same year authority was given to the government to enter into an agreement with the company to build a line from Prince George to Peace River, 330 miles, on a guarantee of bonds for \$35,000 a mile. In 1916 the government agreed to lend the company \$6,000,000 to enable it to complete the line to Prince George.

Engineers, auditors, and others gave evidence as to general facts about the company, the specifications used in connection with the construction, the quantity of materials used, and the quantities paid for, the alleged over charging, etc. It was not until April 13, however, that the evidence began to develop somewhat sensational tendencies. On that day D'Arcy Tate, Vice President and General Counsel, stated that he had received \$500,000 in cash for his services in connection with negotiation with the Grand Trunk Pacific Ry., and the government, out of which he was to take care of the campaign funds so far as the government party was concerned. Mr. Tate is reported to have added: "We all know that these contributions are customary. I have made contributions to campaign funds for the past 15 years." Mr. Tate was asked by the Committee to give details of how he had expended this money, but he declined to do so on the ground that it was a payment to him by Stewart out of his own private funds, and had nothing to do with the funds of the P.G.E. Ry. The committee having considered the matter, decided to ask the legislature for authority to compel Mr. Tate to answer any questions that might be put to him upon the subject. This resolution was passed by the Legislature April 16, and when the committee resumed its sittings, April 17, it was stated that Mr. Tate declined to appear further before the committee and had gone to Seattle, Wash. It was also stated that P. Welch had left Vancouver, to Spokane, Wash. On resuming the hearing of evidence R. S. Thomas, Secretary of the Company, stated that he knew of three cheques amounting to

Canadian Transportation Men, Engineers, Etc. in the War.

Inland Water Transport.—It is said that over 80% of the Royal Engineers' inland water transport section, the new Imperial unit authorized to be recruited in Canada, is made up of men from British Columbia.

Signal Flags for French Railways.—The Moncton, N.B., General Patriotic League are engaged in making flags, similar to those in use on the Canadian Government Railways, for use on military railways in France, which are under the charge of Canadians. It reported that 100 dozen of these flags had been completed by April 20.

Arrivals in England.—It was officially announced, April 8, that the following troops had arrived safely from Canada: The 256th Overseas Railway Construction Battalion, under command of Lt. Col. W. A. McConnell, and which is composed largely of civil engineers, surveyors, contractors and railway construction men; No. 2 Construction Battalion, under command of Lt. Col. Donald Sutherland, railway contractor, and an Inland Water Transport section.

Timiskaming and Northern Ontario Ry.—Ninety-one employes of the railway had joined the Canadian Expeditionary Forces to Oct. 31, 1916, representing 10% of those engaged in the service. The commission gave a bonus to those enlisting, the amount paid out to Oct. 31, being \$11,598.66. The commission has voted \$10,000, and the employes have subscribed \$12,064.52 to the Canadian Patriotic Fund. The employes have also contributed \$10,245.36 for Red Cross purposes.

PERSONAL NOTES.

W. M. Armstrong, Locomotive Foreman, Canadian Northern Ry., Port Mann, B.C., has enlisted for active military service.

Malcolm MacLeod, son of M. H. MacLeod, General Manager and Chief Engineer, Canadian Northern Ry., Winnipeg, has joined the Royal Flying Corps, at Camp Borden, Ont.

Major G. A. E. Bury, son of George Bury, Vice President, C.P.R., has been gazetted in England as Deputy Assistant and Quartermaster General, Canadian Expeditionary Force.

Major B. M. Humble, general list, has been gazetted in England as Lieutenant Colonel, while employed as officer in charge of headquarters for Canadian railway troops.

Acting Lt. Col. B. R. Hepburn, M.P., formerly President, Lake Ontario & Bay of Quinte Steamship Co., Picton, Ont., has been gazetted in England as Colonel while employed as Deputy Director of Timber Operations.

G. McL. Brown, European Manager, C.P.R., London, Eng., has, according to a press cable, been appointed to the staff, as a lieutenant colonel and will go to France to superintend wharves and docks for the British army.

Lt. Col. G. C. Royce, General Manager, Toronto Suburban Ry., commanding the 255th Overseas Battalion, Queen's Own Rifles, Toronto, has been appointed to command the Queen's Own Battalion of the Canadian Defence Force, which is being raised for home service.

Capt. W. S. MacTier, of the Canadian Infantry, son of A. D. MacTier, General Manager, Eastern Lines, C.P.R., Montreal, has been wounded a second time. He was first wounded in the foot by shrap-

nel in May, 1915. His casualty is a compound fracture of the thigh.

Honorary Colonel W. I. Gear, Vice President, the Robert Reford Co., Ltd., shipping agents, etc., Montreal, has taken charge of recruiting for a battalion of the 1st Canadian Regiment, Grenadier Guards, which is to be raised in the Montreal district as part of the Canadian Defence Force.

J. W. Stewart's Work.—London, Eng., cablegram, April 8: In an article in the Weekly Dispatch dealing with transport questions in Mesopotamia, General Sir O'Moore Creagh incidentally says that the sending out to France of that wonderful Canadian hustler, Lt. Col. Stewart, was a splendid stroke.

Major Ian M. R. Sinclair, of the Canadian Infantry, son of Angus Sinclair, railway contractor, Toronto, was reported April 7 to have been slightly wounded in action. This is the fourth time his name has appeared in the casualty lists. He was wounded in the battle at the Orchard in May, 1915, and again in May 1916, and subsequently was reported as suffering from shell shock.

Col. Sir John Norton Griffiths, K.C.B., D.S.O., of the Norton Griffiths Construction Co., which formerly held the contract for harbor improvement work at St. John, N.B., has been decorated with the Star of Rumania, with the rank of commander, with swords, by the King of Rumania, in recognition of his services to the army in connection with the destruction of borings in the Rumanian oil fields.

A press cable from England, referring to the opening, by Princess Victoria, of a recreation hut in the Canadian Forest-

ry Camp at Windsor, which was built by the Forestry Corps in seven days, mentions Lt. Col. Penhorwood as being present. He was formerly Manager of New Ontario Dock Co. and agent, G.T.R. at Sault Ste. Marie, Ont., and was given command of the 51st Regiment, Sault Ste. Marie Rifles, which he raised.

Reuben S. Richardson, Superintendent, District 3, Transcontinental Division, Canadian Government Railways, Fort William, Ont., has resigned to go overseas, as Lieutenant in No. 2 Section, Skilled Railway Employes. He was born at Napanee, Ont., Apr. 9, 1865 and entered transportation service in 1878, since when, in 1884, he filled various positions from messenger to freight clerk, operator, ticket clerk, switchman and baggage master, Canadian Express Co. and G. T. R., at various points; 1884 to 1887, brakeman, conductor, station agent and Soliciting Freight and Passenger Agent, Bay of Quinte Ry., at various points; 1897 to 1901, brakeman, conductor and Terminal Yardmaster, Canada Atlantic Ry., Ottawa; 1901 to 1907, General Yardmaster and acting Trainmaster, C.P.R., Smiths Falls and North Bay, Ont.; 1907 to 1911, Assistant Superintendent, Canadian Northern Ry., Montreal, Quebec and Ottawa; 1911 to 1913, Superintendent of Operating and Construction, MacDonnell and O'Brien, contractors on the National Transcontinental Ry., La Tuque, Que., 1913 to May 1915, General Yardmaster of Terminals and Assistant Superintendent, Intercolonial Ry., Halifax, N.S., Moncton and St. John, N.B., and from May 1915 to Mar. 27, 1917, Superintendent, District 3, Transcontinental Division, Canadian Government Railways, Fort William, Ont.

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

Week ending April 13, 1917.	Wheat.	Oats.	Barley.	Flax.	Totals.
Fort William—	bushels.	bushels.	bushels.	bushels.	bushels.
C.P.R.	4,746,401	2,066,815	247,471	.....	7,060,687
Consolidated Elevator Co.	1,083,769	220,348	75,491	168,736	1,548,344
Empire Elevator Co.	918,733	309,342	36,639	233,746	1,498,460
Ogilvie Flour Mills Co.	1,095,013	192,325	38,699	.....	1,326,037
Western Terminal Elevator Co.	1,001,631	193,908	32,867	551,215	1,779,621
G. T. Pacific	3,257,323	2,193,355	141,216	83,985	5,675,879
Grain Growers' Grain Co.	606,920	98,205	.....	.....	1,998,976
Fort William Elevator Co.	882,915	445,003	25,729	60,930	1,414,577
Eastern Terminal Elevator Co.	1,100,712	510,589	46,392	.....	1,657,693
Thunder Bay Elevator Co.	740,170	241,561	49,054	62,743	1,093,528
Port Arthur—					
Port Arthur Elevator Co.	4,682,680	2,500,913	416,509	161,813	7,761,916
D. Horn & Co.	311,493	114,709	28,620	151,700	606,522
Dominion Government Elevator	1,944,344	544,349	81,487	149,401	2,769,581
Grain afloat	89,245	101,331	.....	.....	190,576
Total terminal elevators	23,198,280	10,241,468	1,318,379	1,624,270	36,382,397
Saskatoon Dom. Govt. Elevator	1,676,797	666,213	31,664	157,367	2,532,041
Moose Jaw Dom. Govt. Elevator	2,152,093	747,381	24,083	102,318	3,025,875
Calgary Dom. Govt. Elevator	862,783	1,236,548	114,976	12,206	2,226,513
Vancouver Dom. Govt. Elevator	1,100	58,650	.....	.....	59,750
Total interior terminal elevators	4,692,773	2,708,792	170,723	271,891	7,844,177
Depot Harbor . . . . .	.....	56,715	.....	.....	56,715
Midland—					
Aberdeen Elevator Co. ....	.....	50,535	.....	.....	50,535
Midland Elevator Co.	5,961	.....	.....	.....	5,961
Tiffin, G.T.P.	17,935	192,616	.....	.....	210,551
Port McNicoll	316,571	190,979	25,830	.....	533,380
Collingwood . . . . .	.....	65,405	.....	.....	65,405
Goderich	129,614	57,587	.....	.....	187,201
Western Canada Flour Mills Co.	34,780	11,967	.....	.....	46,747
Kingston—					
Montreal Transportation Co. ....	.....	144,992	.....	.....	144,992
Commercial Elevator Co.	9,353	34,663	.....	.....	44,016
Port Colborne	15,184	279,403	.....	.....	294,587
Montreal—					
Harbor Commissioners no. 1	61,340	193,413	24,525	.....	279,278
Harbor Commissioners no. 2	365,482	387,874	66,308	.....	819,664
Montreal Warehousing Co.	8,200	434,264	83,819	.....	526,283
Quebec Harbor Commissioners	4,168	152,888	1,247	.....	158,303
West St. John, N.B.	188,344	22,166	25,155	.....	235,665
Halifax, N.S.	410	.....	.....	.....	410
Total public elevators	1,157,342	2,275,467	226,884	.....	3,659,693
Total quantity in store	29,048,395	15,225,727	1,715,986	1,896,161	47,886,269

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

Alberta & Great Waterways Ry.—Track laying was reported to have been completed to beyond the 264th mile post April 4, and was expected to have reached the hill overlooking McMurray at mileage 280 by April 30. While the grading on the 10 miles into McMurray has been completed, there have been some land slides during the winter which will have to be cleaned up before the rails can be laid.

The line starts from the Edmonton, Dunvegan & British Columbia Ry. at Carbondale Jct., 143 miles from Edmonton, and runs northerly and easterly via Lac la Biche to McMurray, 290 miles. The Egg Lake Branch is projected easterly from Dewar, 101.4 miles from Carbondale Jct. This branch will probably, if certain projects are carried through to the extent outlined by the several charters in which the J. D. McArthur interests are concerned, form part of the Central Ry. of Canada, which has now secured charters in Alberta, Saskatchewan and Manitoba.

The A. & G.W.R. is being operated by the contractor at present. From the hill overlooking McMurray freight is carried on barges on the Clearwater River to McMurray. (April, pg. 135.)

Athabasca Valley Ry.—The route laid out for the projected railway is from Busley, on the Edmonton, Dunvegan & British Columbia Ry., 44.7 miles from Edmonton, northwesterly to Fort Assiniboine, 50 miles. This line would open up a well settled district. The Alberta Government is said to have promised to give a subsidy towards construction this session if at all possible. This line is also to be included in the J. D. McArthur system. (Feb., pg. 50.)

Brule Lake Ry.—The Alberta Legislature has granted an extension of time for three years for the building of this projected railway from Brule Lake, mileage 994 on the Grand Trunk Pacific Ry., southeasterly through sections 26 and 24, Tp. 49, Range 27, thence northeasterly through sections 19, 20 and 29, Tp. 49, Range 26, both west of the 5th Meridian.

Central Canada Ry.—This is the title of the original company chartered in Alberta, which has already started building as a branch of the Edmonton, Dunvegan & British Columbia Ry. The piece of line already built extends from McLennan to Peace River, 48.5 miles. A bridge, estimated to cost over \$1,000,000, is under construction at this point in order to carry the line northerly and westerly. The substructure will consist of three deep water piers, which are now practically completed; there will be three other river piers, with a shore pier on either bank and trestle approaches. The total length of the bridge will be 1,736 ft., the superstructure consisting of six 200 ft. deck trusses, and a 200 ft. through truss span over the navigable channel, giving a clearance of 60 ft. above high water. It is expected that the bridge will be completed in the autumn. (April, pg. 135.)

Central Canada Ry. and Power Co.—The railway proposed to be built by this company will start at East Selkirk, Man., and will extend to the Red Lake mining camp, crossing the Winnipeg River midway between Lac du Bounet and Fort Alexander. The company's act authorizes the building of a line from St. Boniface to the Winnipeg River, thence northerly and westerly to the western bound-

ary of the Province. The present proposition is to build a sufficient mileage to give connection to the Rice Lake mining areas, which are being opened up, leaving the St. Boniface—Selkirk section to be taken up later. A press report states that surveys are being made.

The extension from Rice Lake to the western boundary of the province has to be considered in connection with the Central Canada Saskatchewan Ry., and the Central Canada Ry. in Alberta, all J. D. McArthur companies. Taken together these three lines would give a continuous route from St. Boniface to and beyond the Peace River, when linked up. (April, pg. 135.)

Chippawa-Queenston Power Development Construction Ry.—A construction railway is to be built in connection with the power canal which the Hydro Electric Commission of Ontario is about to construct between Chippawa and Queenston, Ont. The work will be under the control of H. G. Acres, Hydraulic Engineer, Hydro Electric Power Commission of Ontario. A. E. Harris, heretofore Superintendent Welland Ship Canal Construction Ry., has been appointed Superintendent.

Crowsnest and Tent Mountain Ry. Co. has been incorporated by the Alberta Legislature to build a railway from the C. P. R. west of Macleod, Alta., southerly to sec. B. tp. 7, range 6, west of the 5th meridian near Tent Mountain, about six miles. (April, pg. 135.)

Dolly Varden Mines Ry. Co.—The British Columbia Legislature has authorized this company to build a line to be operated by steam, electricity or any other motive power, of either standard or 3 ft. gauge, from the Wolfe group of mineral claims, reported 18 miles up the Kitzault River, along a public highway, to lot 3635, at Alice Arm, with branch lines not to exceed in any one case 10 miles. The act contains various provisions prohibiting the public right of way on the highway, and a pack trail, and authorizes the sale of the railway or any part, subject only to the approval of the Minister of Railways. Provision has been made for the government taking over the line in certain eventualities.

Esquimalt and Nanaimo Ry.—We are officially advised that nothing definite has yet been settled as to when the betterment on the line for which appropriations have been made, will be put in hand. (April, pg. 135.)

Essex Terminal Ry.—We are officially advised that the company has had surveys made for a line from Ojibway, the present terminus, to Amherstburg, Ont., but whether or not any construction will be undertaken this year is at present uncertain. This line, if built, will be, like the rest of the company's lines, operated by steam, there being no foundation for the press reports that the company is proposing to build an electric railway from Essex to Amherstburg. (Feb. pg. 50.)

Fort Frances and English River Ry.—The Dominion Parliament is being asked to incorporate a company with this title to build a railway from Fort Frances northwesterly and along the easterly side of the Lake of the Woods to Kenora, there crossing the C.P.R., and on northerly, crossing the National Transcontinental Ry., to English River. McCracken, Henderson, Greene and Herridge, Ottawa, are solicitors for applicants.

Grand Trunk Pacific Ry.—The Dominion Parliament is being asked to extend the time for the building of the following lines in addition to those mentioned in a previous application made by the G.T.P. Branch Lines Co.: From tp. 12, range 16 or 16 west of the 1st Meridian to Brandon, thence to Regina, with a line from Brandon to the southern boundary of Manitoba near Turtle Mountain; from between 111 and 113 degrees of longitude to Calgary, Alta., thence to the southern boundary of Alberta near Coutts; from near Regina westerly to Moose Jaw, 45 miles. (April, pg. 135.)

Grand Trunk Ry.—At a sitting of the Board of Railway Commissioners at Hamilton, Ont., April 12, an agreement was reached respecting the construction of a subway under the G.T.R. at St. Pauls Ave., Brantford, at an estimated cost of \$50,000 for a full sized subway, or \$14,000 for one for foot passengers only. In the event of a full sized subway being ordered the city will be able to extend its street railway into the Terrace Hill district. St. Pauls Ave. was closed up at the railway under an arrangement made in 1905. The company raised no objections to a subway being constructed but objected to being called upon to contribute towards its cost. The commission deferred judgment on the class of subway to be provided and the apportionment of costs between the city and the railway. (April, pg. 136.)

Great Northern Ry.—The main work of construction of the station building on the False Creek flats, Vancouver, B.C., has been completed, and good progress is being made on the completion of the interior. It is expected that the building will be ready for occupation by the G. N. Ry., and the Northern Pacific Ry. staffs by June 1. Work on the freight sheds is rapidly approaching completion, and the erection of the other terminal facilities will be put in hand at once. (April, pg. 136.)

Grenville, Harrington and Northern Ry.—The route of this projected railway as specified in the act incorporating the company, passed at the Quebec Legislature's last session, is from Grenville, northerly to Labelle, in Labelle County, with such branches not exceeding 25 miles in length as the directors may deem expedient. The provisional directors are, G. Dansereau, Grenville, Que.; J. Y. Kendall, J. A. Jacob, S. E. Melkman, Montreal; L. L. Legault, Lachute, Que. (Feb. pg. 51.)

Intercolonial Ry.—Owing to the pressure a steel bridge near St. Germaine, Que., collapsed, Mar. 28. It is being reconstructed.

Tenders are under consideration for building of a reinforced retaining wall at the north-east corner of Main St. subway, Moncton, N.B. (Mar., pg. 101.)

Maine Central Rd.—We have been officially advised that the company's application to the Maine Legislature for authority to build a line from the present main line at Bancroft to a possible connection with the Canadian Government Railways' system near Meductie, was refused. The project for the building of this piece of line is at present therefore in a very indefinite stage, and what may be the outcome it is impossible to forecast.

Michigan Central Rd.—The Ontario Legislature has confirmed an agreement made between Essex County Council and

the company respecting the use of a spur line to convey sand and gravel under the Highways Improvement Act; and to permit the council to enter into similar agreements with other railways under the same act. (April, pg. 136.)

The Northern Pacific Ry. is about to erect a freight house on its wharf on the Fraser River, opposite the city market, near the intersection of Front and 6th St., New Westminster, B.C. The building will be reached by a new spur track, starting from opposite 6th St. The top of the present wharf will be cut down about 2 ft. for a considerable area and new timbers will be put in to carry the foundation members of the new structure. The building will be a one story lumber structure, 50 x 200 ft., the exterior walls of which will be covered with corrugated iron, and the roof with pitch and gravel. The rolling doors will be of corrugated steel. A space 20 ft. deep, the whole width of the building, 50 ft., will be partitioned off at one end, for an office. This space will be ceiled throughout with fir ceiling, and will be lighted by 10 windows. One half of the area will be reserved for the public offices and the other for the inside staff. Two lavatories will be provided, one for office staff and the other for freight house employees. The building will be lighted by electricity and heated by stoves. The estimated cost is \$11,500. (Mar., pg. 101.)

Pacific Great Eastern Ry.—At the British Columbia Legislature's 1916 session, provision was made for the raising of \$10,000,000 on Provincial security, and the loan of \$6,000,000 out of these funds to the Company. Since then there has been a general election with a change of government. The new government proposes to change the manner in which the aid to be given by this loan will reach the company. (April, pg. 136.)

Pas, Man.—In connection with the proposed development of some extensive copper deposits north of Pas, a press report states that 98 miles of railway are to be built. Hayden, Stone and Co., Boston, Mass., are said to be interested.

Prince Edward Island Ry.—In reply to questions at a meeting of the Charlottetown Board of Trade, April 3, the Minister of Railways is reported to have said that cars for the P.E.I. Ry. should be built in the shops at Charlottetown, but that cars for mainland lines could not be built there until the gauge of the railway was altered to standard. This work would be undertaken at the earliest possible date. It is reported that the car ferry service between Port Borden, P.E.I., and Cape Tormentine, N.B., will be inaugurated early in May. (April, pg. 136.)

St. John and Quebec Ry.—We are officially advised that some surveys have been made with the object of securing a connection with the Maine Central Rd. at or near Bancroft, Me. The starting point of the branch line would probably be Meductie, a station on the St. J. and Q. Ry., mileage 50.4 from Fredericton, N.B. The project is not yet sufficiently advanced to be regarded as finally decided upon. (See also Maine Central Rd.) (April, pg. 136.)

We are officially advised that a subsidy agreement has been entered into upon the regular statutory conditions between the Dominion Government and the St. John and Quebec Ry. for the construction of the following lines: From Andover to Centreville, 26 miles; from Centreville to Gagetown, 120 miles, and from Gagetown to the C.P.R. at Westfield, 45 miles. The Centreville-Gagetown line is complete

and is being operated by the Canadian Government Railways as an Intercolonial Ry. branch; the Gagetown-Westfield section is under construction, and a contract has just been let for building the Andover-Centreville section.

The St. Maurice Lumber Co. has been incorporated by the Quebec Legislature with office at Three Rivers, and power, among other things, to build and operate a railway. The company has power to take over the property contracts and rights of the St. Maurice Lumber Co. which has its head office in New York. It is also authorized to build a dam or dams on the St. Maurice River, in the vicinity of Des Forges rapids, on the Bastican River near Notre Dame des Anges; and on the Pentecost River, near Pentecost Village, to develop the same, and distribute electric power therefrom within the limits of Champlain and St. Maurice. Three Rivers, Portneuf and Saguenay Counties; to construct wharves and docks within the same area, and to operate steam and other vessels on any navigable water therein; and to build railways or tramways to connect the company's mills and industrial establishments with the C.P.R., the Canadian Northern Ry., or any other railway passing through the counties named. (April, pg. 106.)

Saskatchewan and Hudson Bay Ry.—It has been explained that this is the Saskatchewan provincial section of a railway projected from the southern boundary of Alberta, adjoining the State of Washington, to run through Alberta and Saskatchewan. The company has a Dominion charter to build the entire line, and provincial charters for the several sections. The S. and H. B. Ry. was given incorporation to fix the point of entry into Saskatchewan, which is to be at a different point than that contemplated when the Dominion act was obtained. It is reported that the farmers settled in a considerable stretch of country through which the line is projected have entered into an agreement to provide \$4,000 a mile toward the cost of construction. (April, pg. 166.)

Springfield, N.S.—A press report states that the Davison Lumber Co., Bridgewater, N.S., propose to build 12 miles of railway in connection with the development of certain timber limits at Springfield, N.S.

Toronto, Hamilton and Buffalo Ry.—The Hamilton Board of Works has approved of the building of an industrial spur by the company to the National Abrasive Co.'s premises at the corner of Biggar Av. and Lottridge St., Hamilton, Ont. (Feb., pg. 51.)

Dominion Railway Act Revision. The special committee appointed by the House of Commons to revise and consolidate the Railway Act, met in Ottawa, April 12, under the chairmanship of J. E. Armstrong. The work of consolidation was started about three years ago by S. Price, K.C., acting as special counsel for the Department of Railways, and was completed by Strachan Johnston, K.C. The revised bill contains 456 sections and clauses.

Timiskaming & Northern Ontario Railwaymen's Patriotic Association.—In addition to subscriptions by the commissioners and the office staff, the staff all being members of the 50,000 Club, Toronto, the employees, to Jan. 1, have subscribed \$16,721.71 to the Red Cross; \$23,169.55 to the Canadian Patriotic Fund, and \$10,754.21 to enlisted employees direct.

Freight and Passenger Traffic Notes.

The C.P.R. is said to be arranging to put a daylight passenger train on its Crowsnest Pass line to run between Lethbridge and Cranbrook.

W. A. Cunningham, Division Freight and Passenger Agent, Halifax and Southwestern Ry. has been authorized by the Board of Railway Commissioners to prepare and issue freight and passenger tariffs of every description for the railway and any vessels it may control or operate.

Jas. Orr, General Freight Agent, Canadian Northern Ry., has been authorized by the Board of Railway Commissioners to prepare and issue tariffs in respect of the tolls upon freight traffic of every description to be charged by the company, for all freight traffic that may be carried upon its railway, or any part of its system, excepting to and from points west of Port Arthur or Westfort, Ont.

There will be some increase in the number of passenger trains on the Canadian Pacific, the Grand Trunk Ry., the Canadian Northern Ry., and the Intercolonial Railway, with the usual May change of schedules, although the number of trains in operation prior to November last, when the big cut was made, will not be restored. It is expected that the number of passenger trains will be restored to the usual summer schedule by June or July.

It was announced, April 16, that the G.T.R. had placed an embargo on all carload freight for export via Montreal, except freight consigned to the Imperial Government, and also in cases where specific steamship space has been secured, and acceptance authorized by the General Foreign Freight Agent at Montreal, or the Assistant Foreign Freight Agent at Toronto. The C.P.R. has modified its embargo against freight traffic in Montreal terminals, except Cote St. Paul.

The C.P.R. has arranged to run an inter-hotel train, daily, in each direction, between Calgary and Glacier, during the tourist season, from about June 30 to Sept. 8, leaving Calgary at 7.20 a.m. and arriving at Glacier at 6 p.m. Eastbound, Glacier will be left at 8 a.m. and Calgary reached at 8.45 p.m. The equipment will be baggage car, first class car, three parlor cars and an open top observation car; this car being open on both sides and without a roof. The train will be hauled by an oil-burning locomotive. A stop of one hour will be made at Field for luncheon.

The Edmonton, Dunvegan and British Columbia Ry. is operating from Edmonton to Spirit River, 367 miles, of which 357 miles is over its own tracks. The company operates for the first 10 miles over the Grand Trunk Pacific Ry. under an agreement, pending the laying out of its own terminals in Edmonton. It has built one branch, viz., from Spirit River to Grand Prairie, 49.8 miles, making a total of 406.8 miles in operation. Under the title of the Central Canada Ry, there have been built by the J. A. McArthur interests, 48.5 miles of railway from McLennan to Peace River, on which the company is operating a train service, thus making 455.3 of line actually being operated as independent railways. The third interested is the Alberta and Great Waterways Ry., which has a present total length of 290.2 miles from Carbondale Jct., 14.7 miles from Edmonton, to McMurray. The contractors are operating a train service over a section of this line.

Canadian Northern Railway Construction, Betterments, Etc.

Canadian Northern Quebec Ry.—Plans for the erection of a new railway station at Pointe aux Trembles were submitted to Montreal City Council, April 10.

Canadian Northern Ontario Ry.—The Minister of Lands informed the Legislature, April 4, that the company had not complied with the provisions of sec. 7 of its land grant act by executing and delivering an agreement in respect of the land grant as provided in sec. 22 of 4th Edward 7, chap. 18.

Application was made to the Board of Railway Commissioners recently for approval of revised location plans of the line through Scarboro and York Tps. to facilitate entrance to North Toronto station. Two questions were reserved for consideration by the Board's Chief Engineer, viz.: the width of a subway at Dawes Road and the crossing of Don Mills Road. The question involved in the latter matter is whether there should be one or two level crossings. At present there is one crossing by the C.P.R., while if the proposed plans were approved the C.N.R. would also have a crossing. Township representatives thought the junction with the joint line could be made in such a way that there would be only one crossing, while it pointed out for the company that the plans as submitted obviated a 1% gradient, which would seriously interfere with operation, as the maximum gradient on the line to Ottawa and Montreal is only .05%. There is a difference in height of 17 ft. between the C.P.R. and the C.N.R., and the C.P.R. objects to pay for a 6,000 ft. cut to meet the C.N.R. level. The Board's Chief engineers will inspect the plan and report.

Canadian Northern Ry.—The installation of the machinery in the new machine shop at Edmonton, Sask., is reported to have been completed.

Work is reported to have been resumed on the bridge across Sturgeon River, on the Oliver-St. Paul de Metis line in Alberta, and it was expected that the bridge would be completed by April 30. The rails laid on the line from Oliver to Sturgeon River are said to be of light weight, and will be replaced with heavier steel as soon as possible. Grading is practically completed to St. Paul de Metis.

Canadian Northern Pacific Ry.—Application has been made to the Board of Railway Commissioners by the City of Prince George, B.C., to order the construction of a transfer switch to give connection between the Grand Trunk Pacific Ry. and the Canadian Northern Pacific Ry. at Rainbow, mileage 282 from Edmonton, Alta. The estimated cost of the work is \$200,000, and the C.N.R. suggests that the cost be apportioned equally between the two companies. The commissioners directed the immediate deposit of plans for the work and will probably shortly issue an order.

The company's proposal for its station in New Westminster was to locate it on Columbia St. west of 10th St. It is reported that this site is regarded as being too far west for general convenience, and that it would be necessary to cross five tracks to get in or out of it. The Mayor had a meeting with Grant Hall, Vice President and General Manager, Western Lines, C.P.R., April 6, as a result of which a proposition for the building of a union station is to be submitted to the company.

The company is reported to have let a contract to the Fraser River Pile Driving Co. to build a bulkhead out to the harbor line on its waterfront property at New Westminster, B.C. The area to be enclosed will, it is said, be about 20 acres, part of which will be used for railway yards and part for industrial sites.

Rapid progress is reported to have been made with the laying out the company's terminals at False Creek, Vancouver. The 2,500 piles necessary to carry the foundations of the station have all been driven, over which a wooden platform, 35,000 sq. ft. in area, is being laid to support the concrete floor. Concrete is already being poured on this area. The work is being done by day and night gangs.

Vancouver Island Lines.—A press report states that the ferry slip at Patricia Bay, Vancouver Island, was put into use April 6, when several car loads of steel rails were unloaded from the mainland. The slip is 108 ft. long, and is built in three parts, the shore end resting on shoes, and two central hinges supported by screw mechanism, which can be mechanically operated to any desired elevation. The outer end of the apron is operated at present by hand power, but as soon as the mechanism arrives it will be operated by electric power to be supplied by the B. C. Electric Ry. This transfer apron is said to be larger than any of those in operation on the coast at present. It can be adjusted so as to permit of light angles of intersection at extremes of tide level. The slip is completed so that a berth 308 ft. long is afforded for the steam transfer ferries or any barges which may be used. Creosoted piling has been used entirely below high water mark, where it is anticipated the teredo would attack the structure if the timber were not protected.

The viaduct at Burnside Ave., at the Victoria end of the line from Patricia Bay is completed with the exception of the back filling, which was expected to be finished by April 30.

At Selkirk Water, Victoria, the large pier for carrying the rolling lift bridge is well under way. The caisson's cutting edge has been sunk 17 ft. in the material at the bottom of the harbor and the caisson has been excavated to the desired depth and piling for the foundations of the pier has been driven. These piles have been driven 75 and 80 ft. for the foundation of the concrete pier. The bottom of the concrete will be 24 ft. below low water mark, so that no future excavation of the channel will expose the pile foundations to the depredations of the teredo. The south pier at the rest end of the lift bridge is now being proceeded with.

It is expected to have about 10 miles of track laid on the Victoria-Port Alberni line early in May, rails for that mileage having been delivered. (April, pg. 143.)

Transport of Canadian Troops Through the United States.—The Dominion Government has issued the following memorandum: "The United States Government has given permission for the passage of Canadian troops on the C.P.R. through the State of Maine and on the Canadian Northern Ry. through the State of Minnesota, between Canadian points in both cases."

Timiskaming and Northern Ontario Railway Betterments, Etc.

The Ontario Legislature passed a resolution April 5, directing that all expenditure for the construction of the T. and N. O. R. and works be chargeable upon the consolidated revenue fund, and that the Lieut. Governor in Council may advance to the T. and N. O. R. Commission such monies as may be required for construction purposes. It subsequently voted \$626,593.17 for betterments and for the provision of additional facilities along the line. Of this \$143,393.17 was voted for general construction work, and the remainder for the following purposes:

Extension of Kirkland Lake branch, \$125,000; freight car repair shed at North Bay, \$8,000; sidings, etc., at Swastika, \$20,000; passenger station and freight shed at Monteith, \$12,000; station and freight shed at Kelso, \$1,000; additional sidings at Porquis Jct., \$20,000; additional sidings at Iroquois Falls, \$6,000; extension at South Porcupine, \$2,000; additional sidings, \$10,000; ice house, \$3,000, baggage and express building at Cochrane, \$8,000; new sidings, \$15,000; shelter stations, \$1,200; replacing timber bridges with steel and concrete structures, \$100,000; fencing right of way, \$13,000; additional road crossings, \$4,000; additional weight of rails and fastenings, \$15,000; improvements to station grounds, \$3,000; freight shed and office additions, \$5,000; new mechanical coaling plant, \$27,000; rearrangement of track in connection with coaling plant, \$8,000, and addition to machine shop with tools, \$15,000 at North Bay; on account of reduction of curvature with change of line \$60,000. We are officially advised that the plans for the works provided for by these votes are being prepared. None of the work covered by them has yet been undertaken.

In connection with the votes for revision of main line, S. B. Clement, Chief Engineer and Superintendent of Maintenance, in his report to the commissioners for the year ended Oct. 31, 1916, says: "Surveys for revision of main line were made at several points during the year. In some places these were entirely new surveys, while in others former revision surveys were improved. Of the various lines surveyed, three were chosen for construction during the year; mileage 54 to 55, mileage 63 to 66.5, and at mileage 81, but only the grading on the first of these was completed. The revision between mileage 54 and 55 is 3,920 ft. long. It reduces the distance approximately 30 ft., grades no change, curves reduced 3, maximum curve reduced from 6° 42' to 3° 30', and curvature 76° 9'. The diversion, mileage, 63 to 66.5, is 3.4 miles long and will reduce the distance 866 ft. North bound gradients from 1% to 0.4% and southbound from 1% to level, number of curves 6, and maximum curvature from 7° to 3° and the total curvature by 309° 15'. The diversion at mileage 81 is 1,300 ft. long, and reduces the distance 50 ft., curvature 58° and the maximum curve from 6° to 2°. As this work was not completed in 1916, it would appear likely that it will be proceeded with during this year out of the votes made. This work is part of the general plan for the revision of the entire line between North Bay and Liskeard, in order to make the standard uniform throughout the whole distance to Cochrane.

The Lethbridge, Alta, Board of Trade is asking the Canadian Pacific Ry. to open a down town ticket office.

Traffic Orders by the Board of Railway Commissioners.

Canadian Northern Passenger Tariff.

25973. Mar. 27. Approving application of Canadian Northern Ry., under sec. 331 of the Railway Act, for approval of its Standard Passenger Tariff, C. R. C. no. W-1422, showing a rate of 4c a mile on branch lines in British Columbia.

Interchange Tracks at Belleville.

25980. Mar. 30. The application of City of Belleville for an order directing the Canadian Pacific and Grand Trunk Railways to establish interswitching facilities between their respective railways in Belleville. It is ordered that the said railways be required to provide interchange tracks on Pinnacle St., in Belleville, as shown on the plan filed by the C. P. R., that company to construct the tracks at its own expense; and the work to be completed by May 1. That no cars be allowed to stand on either of the interchange tracks on the highway; and that the travelled portion of the highway from 10 ft. south of the most southerly track to 10 ft. north of the most northerly track of the interchange tracks on Pinnacle St., be maintained by the C. P. R. Company in good condition for teaming across the tracks. That where traffic is between Belleville and a shipping point or destination common to the said railway companies, or any two of them, where interswitching facilities are provided, the company upon whose line, including private sidings tributary thereto, the traffic is loaded, be entitled to the line haul and the privilege of effecting the required delivery on the line of the other company by means of interswitching at destination; provided that the said company can afford facilities and privileges equal to those of the competing carrier at no greater charge.

Transfer Track at Frobisher, Sask.

25992. April 4. Re application of C. P. R. for an order directing the Grand Trunk Pacific Ry to pay a portion of the cost of the land acquired from the C.P.R. Natural Resources Department for the construction of a transfer track between the Canadian Pacific and Grand Trunk Pacific Railways at Frobisher, Sask., required to be constructed under order 22244, July 21, 1914. Upon hearing the application at Winnipeg, June 12, 1916, and reading the written submissions filed on behalf of the companies, and applying the principle laid down by the board in the case of the G.T.R. against the C.P.R. (Junction Cut, Hamilton), B.R.C. Ruling, Vol. 5, 294, that lands not only not put to an immediate railway use, but as the board finds will not reasonably and probably be required for such purposes by the senior company, should be dealt with as the lands of a private individual. It is ordered that the Grand Trunk Pacific Ry. be required to pay one-half the cost of the land acquired from the C.P.R. Natural Resources Department for the construction of the transfer track between the said railways and Frobisher.

Canadian Northern Lake and Rail Rates.

26008. April 12. The complaint of J. P. H. Stevenson, Toronto, against the refusal of the Canadian Northern Ry. to apply from Toronto the lake and rail rates published in its tariff C.R.C. no. E-771 from points east of Toronto. It is ordered that the lake and rail rates published in the said tariff applying from points on the C. N. R. east of Toronto, via Toronto and lake lines to Fort Arthur and thence via C. N. R. to western points,

cannot be exceeded from Toronto, via the said lake and rail route to the same destinations. And it is ordered that the C. N. R. publish and file forthwith a tariff showing such rates from Toronto, via the said lake and rail route, to points on its railway west of Port Arthur, Ont.

C.P.R. Ores and Concentrates Rates.

26026. April 18. Re complaint of British Columbia Mining Association against increased rates on ores and concentrates published in C.P.R. Tariff C.R.C. no. W-2168, to take effect Aug. 1, 1916, from points of shipment in British Columbia; and order 25211, July 27, 1916, suspending the said increased rates until further order. Upon the report and recommendation of the Board's Chief Traffic Officer, no objections having been filed by the complaint, it is ordered that order 25211 be rescinded.

Interswitching Charges at Espanola.

26034. April 16. Re complaints of C. P. R. and Spanish River Pulp and Paper Mills against cancellation of interswitching rate of \$1.50 a car at Espanola, published in Algoma Eastern Ry. Tariff, C. R. C. no. 73. It is ordered that the complaints be dismissed; and the Algoma Eastern Ry. is hereby granted leave to charge the interswitching rate of 1c per 100 lb shown in its tariff C.R.C. 169, from effective date of said tariff, viz., Feb. 15, 1917.

Joint Commodity Rates on Hay and Straw.

26035. April 17. Re complaint of Montreal Board of Trade against proposed cancellation by the Canadian Pacific and Grand Trunk Railways of joint commodity rates on hay and straw, car loads, from stations in Ontario and Quebec to points in the Eastern United States. It is ordered that Supplement 1 to G. T. R. Tariff C.R.C. no. E-3304 and Supplement 2 to C. P. R. Tariff C.R.C. no. E-2931, issued to become effective May 1, be suspended.

C.P.R. Rates on Veneer Lumber.

General Order 185. Mar. 30. Re complaint of Guelph Patent Cask Co., of Scotstown, Que., against rates charged on thin or veneer lumber, it is ordered that the classification of veneer, as it appears in item 2 at pg. 133 of Canadian Freight Classification 16, be amended, by a supplement to the classification, by restricting the 5th class rating to veneer not exceeding 1/16 in. in thickness, and adding the 7th class rating for thickness exceeding 1/16 in. and not exceeding 1/8 in., carloads in each case.

C. P. R. Minimum Weights on Grain.

General order 186. April 4. The complaints of Dominion Millers' Association and Toronto Board of Trade against increased carload minimum weights on grain and grain products for domestic consumption published by the railway companies to take effect April 2, 1917, in the following schedules, viz.: C.P.R.—Supplement 35 to C.R.C. no. E. 1196; supplement 47 to C.R.C. no. E.2480; supplement 41 to C.R.C. no. E. 2715; supplement 8 to C.R.C. no. E.2907; supplement 7 to C.R.C. no. E. 3120. G. T. R.—Supplement 25 to C.R.C. no. E. 1087; supplement 42 to C.R.C. no. E. 2566; supplement 5 to C.R.C. no. E. 3041; supplement 7 to C.R.C. no. E. 3289, together with similar schedules published and filed by other railway companies. It is ordered (1) That, excepting flour, the complaints against the minimum weights be dismissed.

(2) That the proposed minimum weight of 50,000 lb. a car for flour when loaded in cars of the capacity of 60,000 lb. or 70,000 lb. be disallowed. (3) That the complaints against the minimum weights for flour when loaded in cars of the capacity of 80,000 lb. or 100,000 lb. be dismissed. (4) That the railway companies be permitted to increase the minimum weight for flour to 45,000 lb. a car, when loaded in cars of the capacity of 60,000 or 70,000 lb. That the minimum weight authorized by clause 4 hereof, also the minimum weights for flour in cars of greater capacity and for other grain products, be not made effective before April 30, 1917. That should the railway company, for its own convenience, furnish a larger capacity car, in lieu of a car of 60,000 or 70,000 lb. capacity required by the shipper, the minimum weight shall be that for the car so required, provided that the weight actually loaded does not exceed the maximum load for the type of car so required.

Rail and Water Rates Suspended.

General order 187. April 12. Re complaints of the boards of trade of Vancouver, Edmonton, and Winnipeg, the Saskatchewan Branch of the Retail Merchants Association of Canada, the Montreal Board of Trade and the Canadian Manufacturers Association, against the proposed increase in the rail and water rates between Eastern and Western Canada. It is ordered that the through rail and water class rates applying between Eastern and Western Canada, and the through rail and water commodity rates from Eastern to Western Canada, via Port Arthur, Fort William, or Westfort; also the rail and water commodity rates from Eastern Canada to Port Arthur, Fort William or Westfort, for furtherance, named in Tariffs C.R.C. 1 and 2, published by G. C. Ransom, agent, to become effective April 23, be suspended, pending a hearing by the board. And it is further ordered that the through rail and water class rates, applying between Eastern and Western Canada, and the through rail and water commodity rates from Eastern to Western Canada, via Port Arthur, Fort William or Westfort; also the rail and water commodity rates to Port Arthur, Fort William or Westfort, Ont., for furtherance, in effect immediately prior to the close of navigation in 1916, be restored and continued in effect until further order.

New York Central Rd. Cutoff.—A reduction of two to five days on freight shipments between New York, New England, and the west, together with relief of freight congestion at various points and provision for growth of commerce for many years, is the promised result of the N.Y.C.R.'s Castleton cutoff. After ten years of planning the road has reached the point of readiness for construction. The new cutoff, 20 miles long, will double the N.Y.C.R.'s freight capacity and nearly double the passenger capacity. The bridge to be thrown across the Hudson two miles south of Castleton, N.Y., which will cost \$5,000,000, must be completed by 1920. The whole project involves the expenditure of \$20,000,000.

Section Men's Wages.—The Michigan Central Rd. has increased the wages of section men on its Canadian division from \$1.90 and \$1.95 to \$2.10 and \$2.25 a day, the larger amount being for men in cities and large towns.

Electric Railway Department

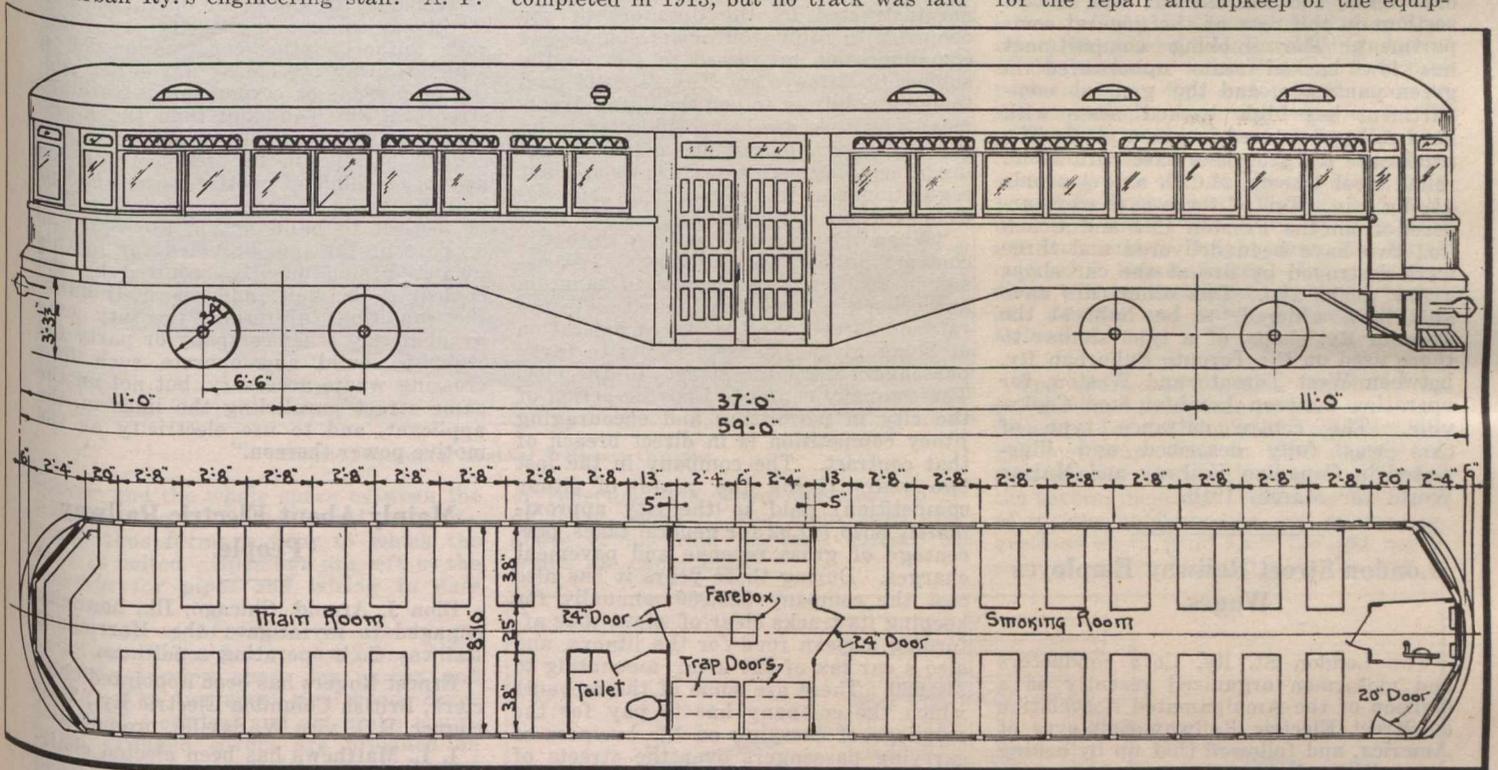
The Toronto Suburban Railway's Line to Guelph Opened.

The official inspection of the extension of the Toronto Suburban Ry. from Lambton to Guelph, by the Ontario Railway and Municipal Board, took place April 12. A car was run through from Lambton on the previous day and the official party joined it at Guelph. The car left Guelph about 10 a.m., April 12, and arrived at Lambton about 2 p.m. The party included A. B. Ingram, Deputy Chairman, and H. W. Middlemist, Chief Engineer, Ontario Railway and Municipal Board. Lt. Col. G. C. Royce, General Manager, H. T. Hazen, M. Can. Soc. C. E., Chief Engineer, E. T. Wilkie and T. Malm of the Toronto Suburban Ry.'s engineering staff. A. F.

and paralleling the C.P.R. to Cooksville station, where it crosses Dundas St., and turns northwesterly, proceeding in almost a straight line to Meadowvale, crossing the Credit River and passing under the C.P.R. near Churchville, thence proceeding through Huttonville and Norval to Georgetown. From the latter place the line parallels the G.T.R. to Acton and runs through Eden Mills nearly direct to Guelph. Surveys for the extension were completed to Georgetown, 25.5 miles, in 1911, and through to Guelph and Berlin in the following year. Construction was started in July, 1912, and grading was completed in 1913, but no track was laid

tain waiting, baggage and express rooms and dispatching offices, providing railway station facilities.

The Lambton car barn, which was fully described and illustrated in Canadian Railway and Marine World for May, 1916, consists of inspection, repair, machine, paint, and blacksmith shops, boiler room, coal store and men's lavatory, in addition to the administrative offices, the whole occupying a space 184¼ x 128 ft. The repair shop has three tracks and the inspection shop four tracks, each to accommodate two cars. The machine shop is equipped with all the necessary tools for the repair and upkeep of the equip-



Centre Entrance Interurban Car, Toronto Suburban Railway.

Stewart, M. Can. Soc. C. E., Chief Engineer, Eastern Lines, Canadian Northern Ry., and Ewen Mackenzie, General Contractor for the line.

A temporary service was commenced over the line, April 14, two cars being operated, each making a round trip daily, except Sunday. It is expected that a complete service will be put on during May, but the company has to a certain extent been handicapped owing to a fire which destroyed a number of cars intended for this service, at the Preston Car and Coach Co.'s works, a few weeks ago.

This extension, which is 48.29 miles long, starts from Lambton, the end of the original line, and running through Lambton Park, crosses the Humber River by a trestle and girder bridge, a little south of the C.P.R., and following the Toronto Niagara Power Co.'s right of way for a short distance, it swerves to the south in order to curve under the C.P.R. tracks at the crossing of Mimico Creek. The location is then practically parallel with Dundas St., partly south and partly north through Summerville and Dixie, turning south again a little west of Dixie station,

until 1914, when 41.50 miles were laid westerly from Islington, the remaining mileage westerly to Guelph and easterly from Islington to Lambton being laid in 1915. The line is, for the most part laid on private right of way, and is of standard gauge, single track with turnouts, and the rail used is 60 lb.

The overhead equipment work is of the catenary suspension type, and power is received from the Toronto Niagara Power Co.'s line at 25,000 volts, a.c. 3 phase, 25 cycle and stepped down and passed through 500 k.w. rotary converters which deliver it to the line at 1,500 volts d.c. There are three substations on the line, one each at Islington, Georgetown and Guelph, the last mentioned being at the corner of Dundas and Bay Sts. The Georgetown station has 1,000 k.w. capacity, in two 500 k.w. units, while each of the other two have a single 500 k.w. unit, with provision for the addition of a similar unit in the future. The three stations are brick and concrete construction. The Islington station is provided with living accommodation for the operator and the Georgetown and Guelph stations con-

tain waiting, baggage and express rooms and dispatching offices, providing railway station facilities. The buildings are heated by a low pressure vacuum steam heating system for about 4,500 sq. ft. of radiation.

The cars, probably the first of this type to be operated on suburban service in Canada, with the possible exception of some on the British Columbia Electric Ry., are of the centre entrance type. The principal dimensions are:

Length over buffers	59 ft.
Length over ends	58 ft.
Width over steel sheathing	8 ft. 10 in.
Width overall	9 ft.
Height from top of rail to underside of side sill at bolster	3 ft. 2½ in.
Height from rail to top of first step-tread	1 ft. 4¼ in.
Height of step risers	10½ in.

The car is divided into two sections, the forward compartment being for smokers and the rear compartment for general use, including lavatory accommodation. They are provided for through ser-

vice and are arranged for single end service only. The design of the steel framing presents a striking feature in the omission of continuous centre sills between the buffers. Although this is a novelty in interurban service, it conforms to the most modern practice in the design of side girder steel cars where light weight is imperative and single end operation desired. The interior finish is cherry, with smooth flat surfaces as far as possible; headlining throughout is of three ply poplar veneer, all body sash are of the raising type and single storm sash are to be fitted for the side windows. The centre window in the front vestibule is in two parts, the upper part made to drop with provision for holding it at different heights. The two corner windows in each end are made to drop and are not provided with cross bars. Five automatic ventilators are provided in each compartment and a globe ventilator in the lavatory. Each car is equipped with 31 walk-over seats, and one circular seat in two sections in the rear of the general compartment. The smoking compartment has low backed seats upholstered in green pantasote, and the general compartment has high backed seats with head roll upholstered in green plush. The trucks are 6½ ft. wheel base with 34 in. rolled steel wheels, M.C.B. axle journals 4¼ by 8 in. Ten of these cars were ordered from the Preston Car and Coach Co., two have been delivered and three were destroyed by fire at the car shops a few weeks ago. Two other cars have also been ordered, to be built at the Toronto Ry. shops, of a type similar to those used on the Toronto Suburban Ry. between West Toronto and Weston, for operation between Lambton and Cooksville. The centre entrance type of cars was fully described and illustrated in Canadian Railway and Marine World for March, 1916.

London Street Railway Employes Wages.

The London St. Ry. Co.'s conductors and motormen organized recently as a division of the Amalgamated Association of Street Electric Railway Employes of America, and followed that up by asking recognition of the union, and for a very large increase in wages, viz.: for from 30c to 35c an hour, according to term of service, against from 21c to 26c, which they were then getting. After negotiations between a committee of the employes, regardless of whether they were members of the union or not, and the company's officials, an all round increase of 2c an hour was agreed on from April 1, 1917, to May 1, 1918, and from year to year thereafter unless changes by mutual consent. Following is a comparison of the old and new scale:

	Old Scale.	New Scale.
While on spare list	21c	23c
Remainder of first year in service	23c	25c
Second year	24c	26c
Third year	25c	27c
After third year	26c	28c

Conductors or motormen working snow ploughs or sweepers, or training new men, to be paid 2c an hour extra when so engaged.

The following are some of the principal provisions in the agreement. The company will not object to any of its employes joining the Amalgamated Association, etc. The company will meet any committee of its employes at any time, whether they are the properly accredited

officers of the association or not, such committees to consist exclusively of the company's employes. Conductors or motormen who may be suspended, or discharged, shall have the right to have their cases taken up by a committee or employes. Seniority in the service shall be given, so that conductors and motormen may select their runs. The company will pay half cost of uniforms, the same to be obtained from the Superintendent. The company will take immediate steps to provide lavatory accommodation on the respective lines. Each conductor to be supplied with \$15 change.

Winnipeg Electric Railway Protests Against Jitney Competition.

Wilfrid Phillips, General Manager, Winnipeg Electric Ry., has written Winnipeg's City Clerk recently as follows: "I am instructed by the directors of the company to draw your attention to our communication addressed to you on the subject of 'Jitneys' on May 21, 1915, and to again point out to you the unfair treatment which we are being subjected to by the city council permitting and encouraging jitneys to operate practically without regulation and in unrestricted competition with our company.

"When the company entered into the contract authorized by bylaw 543 it assumed very onerous burdens of taxation and otherwise, and was limited as to the rate of fares collected, in consideration of being given exclusive rights to carry passengers upon the streets of the city. The company contends that the action of the city in permitting and encouraging jitney competition is in direct breach of that contract. The company in the last two years (being the years of jitney competition) paid to the city approximately \$545,747.92 for general taxes, percentage of gross revenue and pavement charges. During these years it has also cost the company \$20,000 annually for keeping its tracks clear of snow, thus affording a clean road for the jitneys, and also a car tax of \$20 a car, amounting to \$12,920. These are some of the amounts which the company has to pay for the privilege of carrying on the business of carrying passengers over the streets of Winnipeg at fixed fares, and on the other hand the jitneys are allowed free and unlimited competition upon payment of the sum of \$20 a year per car. The company is at a loss to understand why the council objected to the legislation proposed by the Province of Manitoba to bring the jitneys under the operation of the Public Utilities Commission. They are a public utility in the ordinary sense of the word, just as much as the street railway, and the intention of that act was that all public utilities should be under the jurisdiction of the commission. In view of all that has taken place the company has concluded, and it is justified in concluding, that the city is encouraging the jitney competition and seeks to financially embarrass this company.

"I am, therefore, instructed by the directors to notify the city that as this unfair competition is being encouraged by the city the company must take a firm stand to enforce its rights. Unless the council takes immediate steps to carry out its part of the contract, the company will be obliged to consider refusing to pay any further sums as percentages of gross revenue, as taxes on its cars, or as pavement charges, and in any event will insist that the city reimburse the com-

pany the amount lost through jitney competition during the period this competition has been permitted by the city. This loss amounts to at least \$1,000,000.

"The company has always provided for the citizens of Winnipeg a first class, efficient street railway system, and one that ranks high with other systems on this continent. The direct result of permitting the jitney competition to continue will be to so financially embarrass the company that it will not be able to keep its system efficient and up to date, and will not be able, due to inability to procure additional capital, to make extensions to the system generally, and will not be able to provide the citizens of Winnipeg with efficient and up to date transportation which it has always heretofore done."

The city bylaw granting the company its franchise contains the following clause: "The city will not during the currency of this agreement grant any permit or franchise to any other operation of a street car system in the city or in any way authorize the construction of a street railway system by any other person or persons or corporation. No other street railway company than the applicants shall be granted hereinafter by the council permission to use electricity or any other kind of motive power except animal, but in case the applicants refuse or neglect to build or operate any line or part of the line provided for in this bylaw or subsequently required by the council to be built and operated under the conditions aforesaid, the city may grant to any other company or party the right to build and operate such line, crossing where necessary, but not on the same street paralleling the lines of the applicant, and to use electricity as the motive power thereon."

Mainly About Electric Railway People.

Bion J. Arnold, Chicago, Ill., has been engaged to investigate the Harrisburg Railway Co.'s operating conditions.

Ernest Rogers has been appointed chief clerk, British Columbia Electric Ry., Vancouver, B.C., vice W. Saville, promoted.

I. L. Matthews has been elected chairman of the Public Utilities Commission, Port Arthur, Ont., vice A. E. Wideman, resigned.

F. C. McMath, President, Canadian Bridge Co., Walkerville, Ont., has been appointed a member of the Detroit, Mich., appointed a member of the Detroit, Mich., St. Ry. Commission.

W. Saville heretofore chief clerk, has been appointed Comptroller, British Columbia Electric Ry., Vancouver, B.C., vice H. W. Dyson resigned. He has been in the company's service since May, 1911, and prior to that, was in transportation service in England for several years.

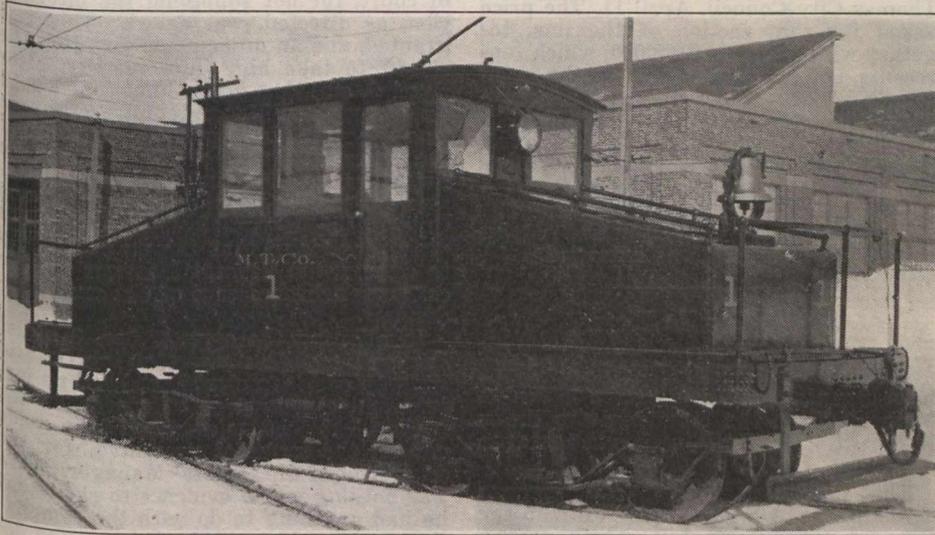
B. Greenway, Engineer Maintenance of Way, Regina Municipal Ry., has resigned. He is reported to have been appointed Superintendent of Grand Forks St. Ry., Grand Forks, N.D. Prior to going to Regina, Mr. Greenway was Superintendent of the Brandon, Man., Municipal Ry.

H. W. Dyson has resigned as Comptroller, British Columbia Electric Ry., Vancouver, B.C., to become General Manager, Yorkshire and Canadian Trust, Ltd. He entered the company's service in 1910 as Assistant Comptroller, and succeeded G. Kidd as Comptroller on the latter's promotion to General Manager.

Electric Locomotives, Montreal Tramways Co.

The Montreal Tramways Co. is adding to its equipment two electric locomotives, one of which, built at its Youville shops, has been placed in service and the other is being built in the same shops. The main constructional features are as follows:

The underframe, side and end sills are of heavy 12 in. channel, with built up plate bolsters, and a through centre sill of 2½ ft. x 6 in. I-beams. The I beams project through the end sill, and are boxed in to provide a pocket for the coupler head. The framing members are tied to-



Electric Locomotive, Montreal Tramways Company

gether, and the whole space between the sills is filled with reinforced concrete, which thus forms a floor to which the body is bolted. Openings are left in the concrete for pipes and wiring to pass through.

The cab is of reinforced wood construction, with a floor raised 2 in. off the concrete, leaving space for wiring and piping. The two sheet steel hoods cover details of electrical and air brake equipment. Hinged covers are provided on these hoods for inspection of equipment and ventilation of the rheostats. Small covers are also provided for filling the sand boxes, which are placed directly over the bolsters and are provided with air sand valves, for distribution to the wheels. Provision is made for the sand outlet to follow the wheels around curves.

The trucks are the company's standard freight car type, with 6½ ft. wheel base. The electrical equipment consists of 4 Westinghouse 112-B motors, with 2 K-14 controllers, fitted with a line switch. A commutating switch is arranged so that two running speeds can be obtained. This makes the operation of the locomotive very flexible, as it secures the advantage of large draw bar pull, with low power consumption, at low speed, for shunting, and a fairly high speed for main line operation. The air brakes are standard Westinghouse type A.M.M., designed for train operation.

One of these locomotives has been placed on the lines in the east end of Montreal, where quite a large traffic from the harbor and the Canadian Northern Ry. to various manufacturing plants is being handled. The other will be placed on the north end lines, to handle cars from the C.P.R. to suburban points.

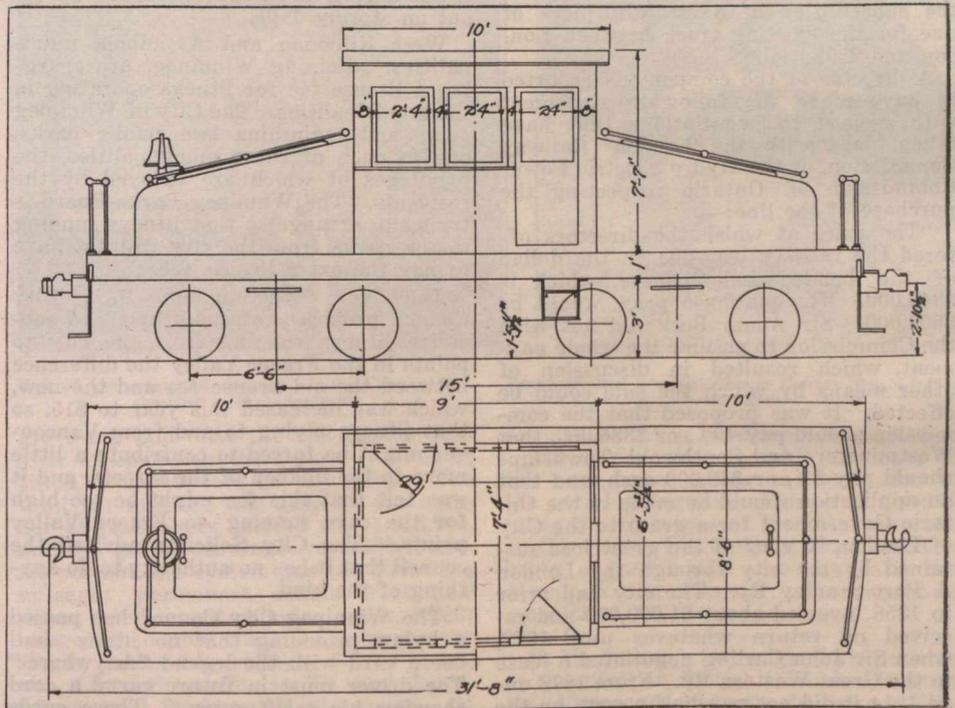
Headlights for Ontario Electric Railway Cars.

A bill introduced at the Ontario Legislature's recent session by G. H. Gooderham, M.L.A. for South Toronto, was slightly amended and passed as follows:

1. The Ontario Railway Act is amended by adding the following as section 107a:

107a.—(1) It shall be unlawful to use on a car of a street railway or of a railway operated by electricity on the highway any lighted device of over 4 candle power equipped with a reflector unless the same shall be so designed, deflected or arranged that no portion of the beam

of reflected light when measured 75 ft. or more ahead of the lamp shall rise above 42 in. from the level surface on which the car stands.



Electric Locomotive, Showing Dimensions, Montreal Tramways Company.

(2) For every contravention of subsection 1 the person offending shall incur a penalty of not less than \$10 or more than \$100 recoverable under The Ontario Summary Convictions Act.

(3) Subsections 1 and 2 shall not come into force until a day to be named by the Lieutenant Governor by his proclamation.

Interurban Motors Limited.

Canadian Railway and Marine World for April gave some information about the formation of a company with the above title, to carry passengers and freight in connection with the London & Lake Erie Ry. & Transportation Co.'s electric railway, which runs from London to St. Thomas, in fact, to provide feeders for that line. Interurban Motors, Ltd., has its headquarters at St. Thomas, Ont., and an authorized capital of \$100,000, the officers being: President, W. H. Moody, St. Thomas; Vice President, W. H. Finch, Aylmer; Secretary-Treasurer, W. H. Jolly, St. Thomas; Mechanical Director, J. T. Webster, St. Thomas; and Managing Director, W. N. Warburton, London, the latter being also General Manager, Secretary-Treasurer and Purchasing Agent of the London & Lake Erie Ry. & Transportation Co. Reo motor cars, made at Lansing, Mich., each with capacity for 26 passengers besides the motorman and conductor, have been bought. The first service, which will be started about May 1, will be between St. Thomas and Aylmer, and will be carried on by 2 passenger cars and 2 freight cars, the latter each of 3 tons capacity. Later on services will be established between Union and Sparta, and between Lambeth and Delaware.

The special commission appointed by the Quebec Legislature to draw up a new franchise for the Montreal Tramways Co. has met from time to time during the past month. Delegations have attended the several meetings presenting the views of various public bodies, and giving suggestions as to what they thought necessary to relieve congestion in the way of

new lines, etc. The commissioners left Montreal Mar. 27, on a trip to Detroit, Cleveland and other cities in the United States to study the electric railway situation there, returning to Montreal April 5.

The London and Lake Erie Ry. and Transportation Co's Financial Position, Etc.

This railway which was built by the South Western Traction Co., extends from London to Port Stanley, Ont., by a slightly circuitous route of 28 miles, passing on its way through a section of St. Thomas, where connection is made with the municipal electric railway there. The railway showed a loss of \$832 for the year ended June 30, 1915. Since the re-opening of the London and Port Stanley Ry. as an electric line, the company's revenue is said to have declined considerably, one of the company's officials being reported to have said that the L. and L. E. Ry. and T. Co. was being put out of business by the L. and P. S. Ry. competition.

P. Pocock, Vice Chairman of the London Ry. Commission, is reported to have said: "If we can buy the L. and L. E. Ry. and T. Co. for the price which we have offered for it, I think its purchase would be a sound business proposition. If the road goes out of business it would be a serious loss to the city, as it taps a rich district from which much business comes to the city. He added that he did not think any attempt would be made to use the L. & L. E. R. & T. Co.'s line as a substitute for double tracking the L. & P. S. R. It would be run rather, he stated, as a separate branch out of London, and that he believed that the L. & L. E. R. & T. Co.'s line holds great possibilities in the extension of the hydro radial scheme.

A report states that the difference between the price asked by the company and that offered by the London Railway Commission is about \$42,000; the company offering to sell at 35c on the dollar and the Commission offering to pay 30c. It is stated that in the event of the commission purchasing the line the engineers recommend the taking up of the line between St. Thomas and Port Stanley, and the substitution of a straight piece of line for the existing track between London and Talbotville.

A director of the company is reported to have made the following statement with respect to negotiations that have taken place with the London Railway Commission, or the Hydro Electric Power Commission of Ontario respecting the purchase of the line:—

"The price at which the directors offered the railway was 60c on the dollar of the bonded indebtedness, which is \$840,000. The purchase price would be \$504,000. Sir Adam Beck did not wish the Commission to assume the whole payment, which resulted in discussion of other means by which the sale could be effected. It was proposed that the commission should pay 40%, or \$336,000, that Westminster and Southwold Townships should pay 5%, or \$42,000 each, and that an application should be made to the Ontario Government for a grant to the City of London, in view of the great loss sustained by the city through the London & Port Stanley Ry. The city had prior to 1856 invested about \$1,000,000 and received no return whatever until 1872, when Sir John Carling negotiated a lease to the Great Western Ry. From 1872 until 1914 it did not pay half a cent. on the dollar. The debt carried by the city then represented over \$2,000,000. In 1914 it was electrified at an expense exceeding another \$1,000,000. The City of London has borne the whole load and Western Ontario has derived the benefit. When built it was a colonization road running

south to the lake. London should have received recognition for this expenditure when the municipal loan fund was distributed in 1873, but did not. It was agreed that if such an application was successful the London & Lake Erie should be paid a further 10% making in all 60c on the dollar, or \$504,000. Less than that has not been discussed by the directors in Toronto, who hold the majority of the bonds. Sir Adam Beck made an offer of 35% being 5% less than the commission's share would be if the price on 60% was distributed between it and the townships and the Ontario Government as suggested."

A proposition for the sale of the St. Thomas—Port Stanley section of the line, about 8 miles, was laid before the St. Thomas City Council, April 11. The price asked for that section of the line, together with 4 cars is \$168,000, which represents 60% on one third of the company's bonded indebtedness. It is suggested that the operation of this 8 miles of railway in conjunction with the city's own electric railway, which showed a deficit of \$7,327 for the year ended June 30, 1915, would pay expenses. The matter was taken into consideration and a joint meeting to discuss it was arranged.

Jitney Traffic Notes.

Residents of West Kildonan, Man., have organized a jitney service to run on Main St. from the Winnipeg city limits to the Kildonan Park, with a return fare of 5c.

The discussion during the passage through the Alberta Legislature of the City of Edmonton's bill, which among other things gives power to regulate jitney traffic, it was stated that it was necessary for the financial security of the municipal electric railway that the city should be able to control the traffic; and that the jitneys take the cream off the traffic during fine weather and did not go out on stormy days.

West Kildonan and Assiniboia municipalities, adjoining Winnipeg, are charging a license fee for jitneys operating in the municipalities. The City of Winnipeg owns and maintains two public parks, one in each of these municipalities, the privileges of which are enjoyed by the residents. The Winnipeg Parks Board is trying to arrange so that jitneys running to the parks from the city will not have to pay the extra license fee.

The New Westminster, B.C., City Council proposed to pass a bylaw to subsidize jitneys running from the city to points in the Fraser Valley the difference between the old license fee and the new, which was increased this year to \$15, so that jitneys plying to and from Vancouver might be forced to contribute a little more to the upkeep of the streets, and it was felt that this fee might be too high for the cars running to Fraser Valley points. The City Solicitor advised the council that it has no authority to do anything of the kind.

The Winnipeg City Council has passed a bylaw providing that no jitney shall use a card with the legend "Anywhere." The driver must in future carry a card showing his tariff rates. These cards must also show the name and address of the owner and the provincial license number. In case of a dispute the driver must give one of these cards to the passenger objecting. The driver must also inform his fare in advance what his charges will be when the run is off his regular route.

Fares on regular routes are 5c between 6 a.m. and 12 midnight, and 10c between midnight and 6 a.m.

Alleged Contempt of Court by the Toronto Railway's General Manager.

Under a judgment obtained on Jan. 15, 1903, the Toronto Ry. is required to supply the City of Toronto with a statement of values of its property, and the city claims that this has not been done according to the judgment. Action was taken some time ago, by the city, and the committal of R. J. Fleming, General Manager of the company to jail for contempt of court, for not supplying the information, as directed, was asked. This was granted, and an order made directing the sheriff to take him into custody, after April 6, and that he be imprisoned until he had purged his contempt. The case was taken to the Appellate Division of the Supreme Court of Ontario, on the grounds that the court had no jurisdiction, the matter being purely one for the Ontario Railway and Municipal Board to decide, and also that it was not proper to commit the General Manager for the company's disobedience of the court's order.

In allowing the appeal, Apr. 3, Chief Justice Meredith stated that the Ontario Railway and Municipal Board had no jurisdiction, exclusive or otherwise, in the matter, but that no case had been made out on the material presented, for the committal of the General Manager. There was nothing in the evidence to show that he had anything to do with the compilation or furnishing of the information desired, except the mere statement that he was General Manager of the company, but, if it were shown that the disobedience of a court's order by a corporation was an act of its manager, then, no doubt, a committal order might properly be made. The Chief Justice expressed surprise that the city had not taken the simple course of moving against the company by way of asking for sequestration, or a fine, and allowed the appeal, without prejudice to the city's right to renew its application upon further material.

On April 10, the city again moved to have R. J. Fleming, General Manager, Toronto Ry., committed to the common jail for the County of York because the company neglected and refused to comply with an order made on Jan. 14, 1903, by Mr. Justice Ferguson, whereby he ordered the company to furnish the city with the statement referred to in the agreement between the city and the company, showing what details, if any, as might be settled by the senior judge of York County, or in the alternative for an order that a writ of sequestration might issue directed to certain commissioners to be named, to sequester the property and effects of the company for contempt of Mr. Justice Ferguson, or in the alternative for an order that the company may be fined, or such other order as the court may deem meet.

The British Columbia Electric Ry. has renamed its station, Eburne, on its Lulu Island line, Marpole, after R. Marpole, General Executive Assistant, C.P.R., Vancouver.

London and Port Stanley Ry. employees met in London, Ont., April 5 to perfect their organization in connection with the Amalgamated Association of Street and Electric Railway Employes of America.

Rebuilding Long Broom Sweepers.

The Levis County Ry. has rebuilt two of its long broom sweepers recently. They are 14 years old and have seen probably the most severe service of any in existence, in some years being in continuous service for 6 weeks at a time without a day's break. The weather conditions in Levis are about the worst to contend with on the American continent. The summer, although short, is often exceedingly hot, and the winter long, with severe frosts and an average of 110 to 120 in. of snow. The district served by the company is fairly open, one-third on



Rear end of rotary snow plough, Levis County Ry. showing cutting blades and fan paddles, which run at 1,200

tions was approximately \$250 each car.

The whole of the work was carried out under the direction of H. E. Weyman, Master Mechanic, and by order of A. K. MacCarthy, Manager.

The Edmonton Radial Railway Deficits, Etc.

The Edmonton Radial Ry., which is owned by the City of Edmonton, Alta., was opened for traffic Nov. 9, 1908, with a two car service along Jasper St. and Norwood Boulevard, there being then 2 miles of double track and 4 miles of sin-

sweepers. During 1916 the car mileage was 2,031,490; number of passengers carried 10,564,799; and gross receipts \$520,255.40. In order to meet operating charges and capital charges, which amounted to \$146,970.19, the city's general funds were called upon to provide something over \$120,000. The total deficiency, which has had to be met by the tax payers to the end of 1916 is \$700,000. The total debenture debt for the railway at the end of 1916 was \$3,074,856.20, against which there is a balance at the credit of the sinking fund of \$366,698.82. The interest charges are \$146,970.69, and the fixed charges for repayment of principal are \$86,140.65.

These facts and figures have been brought out in the course of the controversy now going on in the city as to the prospects of the railway. It is pointed out that the cost of operation was reduced during 1916 from 21.5c a car mile to 18.4c, and it is claimed that with continued economical management, and an increased population, the expenses will ultimately be met. Others claim that there has been unfairly charged against the railway, the cost of paving the 4 ft. strip between tracks, and for some time the railway was charged with the entire cost of maintaining this strip. This has now been reduced to 25% of the cost. Power costs over \$100,000 a year, on the present basis.

J. H. Moir, Superintendent, estimates that with an additional 5,000 passengers a day the railway would be self-sustaining. In referring to the question of one-man cars, he says: The era of their general adoption on street railways is not far distant. However, he sees difficulties ahead of the scheme when applied to the Edmonton system, where the basis of traffic is the rush-hour long haul period to the outlying residential points. On some of the lines railway tracks must be crossed, and extra precautions would

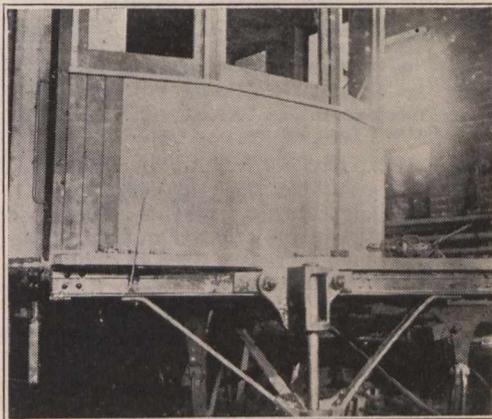


300 h.p. rotary snow plough, Levis County Ry., operating in 9 ft. of snow

high ground and two-thirds on low ground, along the south shore of the St. Lawrence River, and all too well situated for snow and storms.

These sweepers had both their exposed ends rotted and broken away, also the ends of the side sills, the end sills and two end crossings, as well as the front body posts, otherwise the main bodies of the cars were in fairly good condition. The reconstruction was so arranged that the main body of the car would be untouched, including the part of the side sills and the crossings which were good, also bearing in mind future depreciation of these parts, so that they can be replaced with steel, when it becomes necessary, with little expense.

All the rotten or damaged parts were removed (some fell out) and a new steel underframe was constructed, so that it could be slid under the body and bolted to it. This steel underframe has side sills of 6 x 6 x 5/8 in. angle, end sills and all crossings of 5 in. I beams. Two 4 in. I beams were inserted between the end sill and crossing, and a 4 in. channel was placed between them to carry the draw bar arrangement. The wheel frame was rivetted. The total weight of the broom gear, draw bars and side wings was thus placed on the steel frame. The frame was then slid under the car body, which was lowered on to it and bolted. Steel angle body corner posts were then erected and riveted and the old remaining side sills, crossings, etc., were braced and connected by 6 in. angle plates. The rest of the car was finished off with the necessary wood. The cost of these altera-



End of reconstructed sweeper, Levis County Ry., showing steel underframe



Reconstructed sweeper, Levis County Ry., after a snow storm

gle track laid. At the end of the first year of operation there were 8 miles of track, with 10 cars in operation. The total car mileage was 253,740, the number of passengers carried was 1,812,746, and the gross earnings were \$80,461.56. At present the system has the following mileage: permanent double track, 34.9 miles; permanent single track, 0.280; temporary double track, 7.6; temporary single track, 9.5; sidings, 0.211; spurs, etc., 1.0; and terminals, Y's and loops, 0.3—a total trackage of 53.9 miles. Of this 29.3 miles were built during 1913, as were also the elaborate car barns at Cromdale, where 60 cars can be accommodated. The rolling stock consists of 79 p.a.y.e. passenger cars, 7 work and street sprinkling cars, and 2 street

have to be taken by means of watchmen. Furthermore, the scramble for cars in the rush hours, owing to the exodus to the outlying portions of the city, already taxes the resources of the two-man cars. In the event of half the present schedule being operated with one-man cars, the saving in wages would not amount to more than \$27,000.

H. W. Dyson, who resigned his position as Comptroller, British Columbia Electric Ry., Vancouver, recently, to become General Manager, Yorkshire & Canadian Trust Co., Ltd., there, went to Vancouver from England in 1910, as assistant to George Kidd, then Comptroller, now General Manager. Mr. Dyson was appointed Comptroller in 1914.

Additional Cars for Montreal Tramways Company.

As stated in Canadian Railway and Marine World for April, the Montreal Tramways Co. has ordered 100 cars to be built in the United States to be operated in pairs, the first car in each pair to be equipped with four motors, and the trailer car to be equipped with two motors. The value of the new equipment is placed at \$1,250,000, and delivery is expected to commence in June. Following are the chief details:

Weight, total	Motor, 43,800 lb.
	Trailer, 36,740 lb.
Capacity	Motor, 42
	Trailer, 45
Bolster centres	Motor, 21 ft.
	Trailer, 21 ft.
Length over bumpers	Motor, 45 ft. 3 in.
	Trailer, 44 ft. 3 in.
Length over vestibule	Motor, 44 ft. 3 in.
	Trailer, 43 ft. 3 in.
Width over all	8 ft. 5 in.
Rail to trolley base	11 ft. 4½ in.
Body	Steel with wood posts.
Interior trim	Cherry.
Headlining	Agasote.
Roof	Arch.
Air brakes	Westinghouse.
Fare boxes	Coleman stationary.
Heaters	Consolidated car.
Lighting arresters	Westinghouse.
Motors	Westinghouse 533-T-4, motor cars, 4; trailers, 2; outside hung.
Control	Westinghouse P.K. multiple.
Couplers	Tomlinson.
Designation signs	Keystone.
Seating upholstery	Rattan.
Trolley retrievers	Keystone.
Trucks, type	76 E.
Wheels	Standard cast iron, 30 in.

The cars will also be equipped with fenders, hand brakes, sanders, heat regulators, etc., and the door signal will be interlocked with the control circuit. The lighting will be by 94 watt lamps with reflectors and automatic compensating device for burned out lamps.

In a recent interview, J. E. Hutcheson, General Manager, stated that the coupling up of single car units into two-car trains is the most effective way to relieve traffic congestion. The factors controlling the transportation of passengers by cars are: speed between stops, number of stops, interference of vehicular and pedestrian traffic, delays at street intersections, time for loading, spacing between car units. The greatest time saving is effected by the use of two-car trains, in the last three mentioned factors. There is no more delay at intersections, two cars can be loaded as quickly as one, and the free headway is doubled, enabling every motorman to move more quickly between stops. The total power of motors per train is 330 h.p., but 600 h.p. can safely be developed for short periods, and 400 h.p. is necessary to operate on the heavier cross town grades. The air brakes are so designed as to provide a high degree of safety, and so that they can be applied to all the wheels of both cars by either conductor or motorman. In case of the accidental separation of the cars, the brakes are automatically applied. The Westinghouse type P.K. control has the advantage of removing from car platforms all heavy current carrying parts, eliminating controller burnouts and circuit breaker flashes, and giving increased space on the platform by the use of a small master controller, and incidentally reducing the weight of the platforms, less car wiring, greater ease for the motorman properly to manipulate the small master controller, thereby avoiding abuse of the motors, greater ease of application of automatic emergency features on master controllers, etc. The control is especially adapted to meet the requirements of service in congested districts. The doors are interlocked with

the power system, so that the car cannot be started until all doors are closed. All automatic features on the cars are operated from storage batteries so that their normal operation continues if the power is off, or the trolley leaves the wire. The electric heaters are controlled by a thermostat, and an automatic switch is installed to maintain an even heating in the cars.

In addition to the 25 double equipments of type 533 40 h.p. motors equipped with the P.K. control, required for the fore-mentioned cars, the company has ordered 25 P.K. control equipments for use with some motors supplied previously by the Canadian Westinghouse Co.

Nipissing Central Railway Annual Report.

Following are extracts from the annual report of this railway for the year ended Oct. 31, 1916, issued by the Timiskaming and Northern Ontario Ry. Commission, which operates it for the Ontario Government.

Assets.	
Cost of road	\$306,338.12
Cost of equipment	74,290.98
Townsite property, North Cobalt	242,700.20
Working assets	45,383.53
Deferred debit items	2,064.13
Value of franchise	141,383.32
	\$812,160.28
Liabilities.	
Capital stock	\$530,000.00
Advance from T. & N.O.R.	247,639.50
Working liabilities	33,101.35
Deferred credit	4.30
Profit and loss balance	1,415.13
	\$812,160.28
Transportation revenue	\$109,937.34
Non-transportation revenue	1,460.61

Total operating revenue	\$110,397.95
Maintenance of way and structures	\$11,248.74
Maintenance of equipment	4,998.11
Power	18,556.07
Conducting transportation	28,821.55
Traffic	531.40
General and miscellaneous	10,578.76
Total operating expenses	74,734.63
Net operating expenses	\$35,663.32
Other income	499.95
Total income	\$36,163.27
Deductions from income	13,965.82
Net	\$22,197.45

Compared with the year ended Oct. 31, 1915, transportation revenue increased \$3,478.85; and the other than transportation revenue increased \$208.48, while the expenditures increased \$183.17, giving a net increased revenue from operation of \$3,504.16. The "other income" increased \$281.95, making a total increased income of \$3,786.11. The deductions from income, which represent rental paid for leased line, increased \$6,710.84. The "net result" shows \$27.19 less than the previous year. Out of profit and loss \$20,000 was paid to the T. and N. O. Ry. Commission.

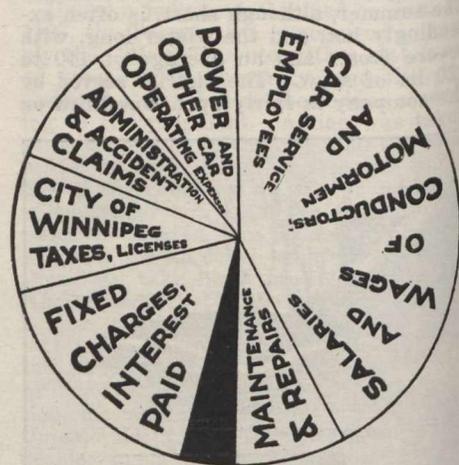
Traffic Statistics.	
Passenger car hours	26,785
Passenger car miles	274,241
Total passengers carried	1,439,896
Average daily receipts	\$297.64
Average receipts per car hour—passenger	\$3.55
Average receipts per car mile—passenger, cents	0.347
Earnings per passenger, cents	0.06½

The Board of Railway Commissioners, on April 17, heard complaints of residents of Chambly and St. Hubert and other points complaining of the fares charged and the service given on the Montreal & Southern Counties Ry. The commission will make an investigation into the company's equipment and facilities for handling traffic before making any order.

How Car Fares are Distributed in Winnipeg.

The accompanying diagram was used by the Winnipeg Electric Ry. recently, in one of a series of advertisements which it has been running in Winnipeg papers, with the following reading matter appended:

"Take a look at the circle! It tells an



interesting story, for it represents 4c, or one white car ticket—the average amount paid by Winnipeggers for a car ride. And, further, it tells graphically and truthfully just how we spend that 4c, in order that the people of Winnipeg may be served. The darkened portion is the amount of that 4c which the company earns as profit on its service."

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry. and allied companies:

			8 mths. to	8 mths. to
	Feb. 1917	Feb. 1916	Feb. 28, '17	Feb. 29, '17
Gross	\$581,555	\$572,935	\$4,647,475	\$4,405,030
Expenses	479,875	476,413	3,875,610	3,839,642
Net	101,680	96,522	771,865	565,388

Toronto Ry., Toronto & York Radial Ry. and allied companies:

			2 mths. to	2 mths. to
	Feb. 1917	Feb. 1916	Feb. 28, '17	Feb. 29, '16
Gross	\$932,567	\$846,256	\$1,935,036	\$1,752,606
Expenses	491,351	459,539	1,023,019	931,832
Net	441,216	386,717	912,017	820,774

Toronto Ry.:				
	1917	City percentage	1916	City percentage
Jan	\$510,053	\$76,508	\$473,784	\$68,847
Feb	473,184	70,976	470,704	70,614
Mar	531,080	105,875	518,555	97,237
	\$1,514,317	\$253,359	\$1,463,043	\$236,698

Winnipeg Electric Ry.:

			2 mths. to	2 mths. to
	Feb. 1917	Feb. 1916	Feb. 28, '17	Feb. 29, '16
Gross	\$280,717	\$293,250	\$600,662	\$590,810
Expenses	202,207	185,000	433,630	374,085
Net	78,510	108,250	167,032	216,725

The New Brunswick Power Co., owning the St. John Ry, informed the St. John, N.B., City Council, April 11, that it could not supply 8 workmen's tickets for 25c as requested by the council but that it was considering the propriety of abolishing the sale of 6 tickets for 25c in favor of a straight 5c fare, and of doing away with certain transfer points.

Windsor, Essex & Lake Shore Rapid Ry. Fire.—A fire in the Kingsville, Ont., car barn, on April 25, badly damaged an electric locomotive and three passenger cars, among other things.

Electric Railway Projects, Construction, Betterments, Etc.

Brantford Municipal Ry.—The Brantford, Ont., City Council's estimates committee expect that \$18,314 will be received during the year from the Brantford Municipal Ry.'s operations.

British Columbia Electric Ry.—We are officially advised that the company is not undertaking the construction of any new street car lines at present. It was reported that a mile of new track on the North Burquitlam road, in Burnaby municipality was to be built this year. (Jan., pg. 30.)

Edmonton Radial Ry.—The Mayor of Edmonton, Alta., is reported to have stated recently that the municipal railway's operation in 1916 showed a deficit of \$119,607.35, against \$105,750.73 in 1915.

Lacombe and Blindman Valley Electric Ry.—The Alberta Legislature has authorized the Government to increase its guarantee of the company's bonds from \$7,000 to \$14,000 a mile. The guarantee is for 39.1 miles, and the time for the completion of the work is extended until Dec. 31 next. The grading is practically completed for 35 miles, in the direction of Rimbey, Alta. The additional guarantee is to be held for the completion and equipment of the railway. (April, pg. 155.)

London and Port Stanley Ry.—It is reported that certain property has been acquired for the railway's purposes in St. Thomas, Ont., with a view to the erection of a building, for offices, and station purposes at the north-east corner of Talbot St. (April, pg. 155.)

Moncton Tramways, Electricity and Gas Co.—Negotiations have been resumed between the company and the Moncton, N.B., City Council. As well as with the residents of Sunny Brae and Lewisville, respecting extensions of the company's electric railway. A. B. Coryell, is Superintendent. (Mar., pg. 113.)

The Montreal Tramways Co. is reported to have arranged for re-financing \$7,000,000 of notes which become due April 1. The plan is said to involve the issue of new 6% two year notes for \$3,350,000, the balance being paid in cash. The issue price of the new notes is reported to have been 98.

Peterborough Radial Ry.—The Ontario Legislature has authorized the Peterborough, Ont., City Council to permit its utilities commission to operate the Peterborough Radial Ry. in the event of its being taken over by the city; to issue debentures to pay for the same without first securing the ratepayers' assent and providing that the utilities commission's powers in respect of the railway shall be defined in bylaws to be passed by the council. (April pg. 155.)

Port Arthur Civic Ry.—We are officially advised that the city's public utilities commission is resurfacing about 2,000 ft. of track on Cumberland St. from Arthur to Bay Sts., Port Arthur, Ont. M. M. Inglis, Manager. (Dec. 1916, pg. 502.)

Shawnigan Water and Power Co.—The Quebec Legislature last session granted the company power to extend its operations in several directions, but inserted the following section: "Notwithstanding anything in the present act contained the company shall not have the power of constructing, acquiring or operating tramways in the districts of Three Rivers and Quebec, the Island of Montreal, or on

the south shore of the St. Lawrence, or of conducting electricity within the counties of Charlevoix, Levis and Ottawa."

St. John Ry.—The New Brunswick Power Co., owning the St. John Ry., asked the St. John City Council, April 11, for two years extension of time for laying new pavement on Union St., West St. John. This is a work proposed to be done by the council and if it is undertaken the track section will have to be raised. Commissioner Fisher said he did not favor the postponement. The matter will come up for consideration again.

St. Thomas Ry.—A press report states that the City Council proposes to extend its line on Queen and Centre Streets, St. Thomas, Ont.

Saskatoon Municipal Ry.—Extensions are reported to be proposed, together with the purchase of some extra equipment. It is said that \$19,640 has been voted by the city council for this purpose. (Dec., 1916, pg. 502.)

Toronto, Barrie and Orillia Ry.—The Ontario Legislature has refused to grant the company's application for an amendment to its act of incorporation, which would have the effect of extending the time within which it was to be built. The company was originally incorporated in 1910 as the Monarch Ry. Co., the title being changed in 1913. It had power to build a railway from Toronto via Barrie to Orillia. A franchise was obtained for a line in Barrie from the town council and surveys were made for an extension of this line to connect with the C.P.R. at Utopia. No construction has been done. (April, pg. 155.)

Toronto Suburban Ry.—The Ontario Legislature's Committee reported at the recent session that the preamble of the company's bill asking for an extension of time for the building of a number of lines had not been proved and it was ordered that the fees paid, less charges, be remitted. The effect of this is that the authority which the company had to build additional lines has been done away with, and that its lines will consist of those within the City of Toronto, which can be acquired on the expiration of the franchise; the line to Weston and Woodbridge and the newly completed line from Lambton to Guelph. (Feb. pg. 73.)

Transcona Electric Ry.—The bill introduced in the Manitoba Legislature for the incorporation of a company with this title, on coming up for a second reading, met with considerable opposition. The debate was adjourned and was not resumed before the close of the session.

One-Man Cars in Alberta.—An amendment to the Alberta Statute law introduced in the Legislature, April 4, proposed to enact, that in the operation of every street railway or electric railway within the limits of any municipality in the province, every car in its operation shall have a conductor and a motorman. The Lethbridge City Council appeared in opposition, and urged that such legislation would mean an increased charge to the public to maintain the present services. In Lethbridge, it would be necessary to employ at least 10 additional men to comply with the proposed regulation. The amendment, which was asked for in the interests of the labor party, was withdrawn on the Attorney-General's motion.

Electric Railway Notes.

The Ontario Railway and Municipal Board has approved the Gueiph Radial Ry.'s standard freight tariff, which became effective April 15.

The British Columbia Electric Ry. employes in Vancouver make a regular monthly contribution from their pay for patriotic purposes. For March it was \$4,800.

The Hamilton St. Ry. according to a press report, proposes to put on cars on certain routes between fixed hours which will run through from point to point, without intermediate stops, in order to relieve traffic on congested lines at busy hours.

London, Eng., street cars and omnibuses are said to have about 2,500 women conductors, nearly half of whom were formerly in domestic service. About a fourth were formerly shop clerks or office workers. One hundred and fifty new women conductors are being employed weekly.

The Independent Labor Party of Hamilton, Ont., passed a resolution April 13, appointing a committee to look into matters relating to the Hamilton, Grimsby, and Beamsville Electric Ry., with a view to asking the city to take it over at one of the periods when it has an option to do so.

The Calgary, Alta., City Council, passed a resolution April 17, declining to endorse a recommendation of the city commissioners that the local union of street railway men be recognized, and directing the commissioners to negotiate an agreement with all the employes of the Municipal Ry. irrespective of any union. The employes of the railway outside the union number, it was stated, 112, being a slight majority of the total number, and they belong to the Calgary Municipal Street Ry. Association.

The Manitoba Legislature has passed an act respecting the examining and licensing of electrical contractors and journeymen electricians. Subsec. 4 of sec. 3 provides that the act does not apply to such work on street railway cars or locomotives or on railway cars or locomotives which are the property of municipal departments or of public service corporations, and where such work is installed by employes under the direction of officers of such municipal departments or public service corporations.

The London Railway Commission has been advised that there is no power under the present laws to assess it for municipal taxation. The railway operates in the cities of London and St. Thomas, the village of Port Stanley and some rural municipalities. As a steam railway provision was made for its taxation, but there is said to be no mention in the act for collecting a business tax on electric railways. Further than this it is claimed that as a municipally owned railway it is exempt from all other municipal taxation.

The Galena Signal Oil Co., Franklin, Pa., announces that G. A. Barnes has been appointed Manager, and F. R. Stakelum, Assistant Manager, of its electric railway department, with offices at Franklin.

Electrolysis.—A paper on a street railway negative return system for the mitigation of electrolysis, by L. A. Herdt and E. G. Burr, was read before the Canadian Society of Civil Engineers, in Montreal, April 19.

Marine Department

Launching of Montreal Transportation Co's Steamship Westmount.

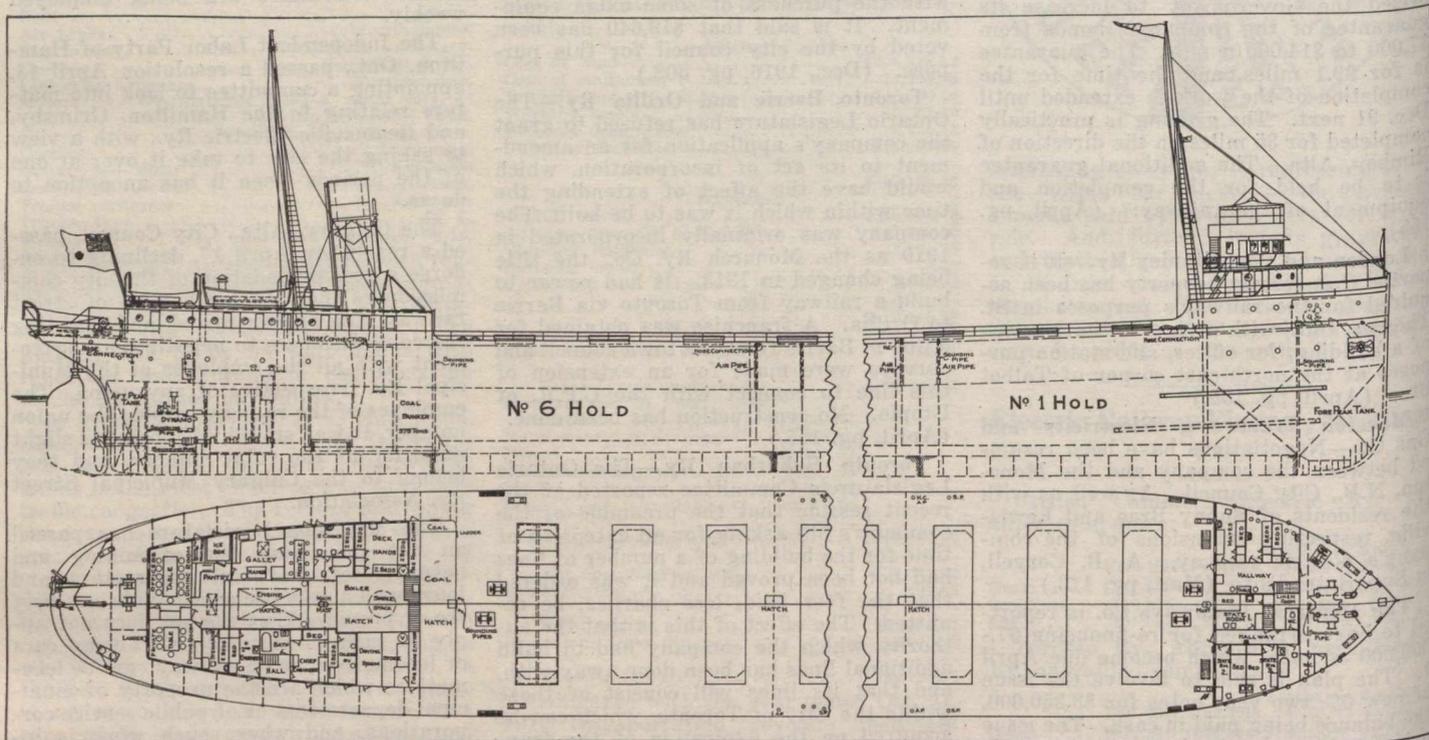
The Montreal Transportation Company's bulk freight steamship, Westmount, was launched at the Collingwood Shipbuilding Co.'s yards, Collingwood, Ont., April 5. Among those on the platform, which had been erected in front of the vessel's bow, were: L. L. Henderson, President, Montreal Transportation Co.; Mrs. Henderson, who christened the vessel; Capt. H. M. McMaster, Marine Superintendent, M. T. Co., Kingston; J. S. Bonar, Tug Superintendent, M. T. Co.; Montreal; E. A. Turner, agent, M. T. Co., Kingston; Capt. S. Hill, appointed master of the vessel; H. B. Smith, President, J. S. Leitch, General Manager, and S. H. Lindsay, Secretary, Collingwood Shipbuilding Co., Mrs. Lindsay, M. McD.

operations being accomplished by the shore plant. There are 16 cargo hatchways, each 38 ft. wide, and 9 ft. long. They are spaced 24 ft. apart, centre to centre, to suit the standard spacing of the loading and unloading devices on shore. Between the hatchways strong arch girders, or web frames, extend right round the sections. By the adoption of these girders, stanchions are dispensed with, and the holds left unobstructed, a necessary feature where coal and ore cargoes are unloaded by clam shell buckets, as is the case on the Great Lakes. For the same reason there are no deckhouses, spars or other obstructions for the length of the cargo holds.

The ordinary transverse bottom and

for water ballast. The remaining bulkheads are a cross bunker screen bulkhead, a screen bulkhead between the engines and boilers, and a watertight after peak bulkhead. The upper deck stringer and plating between the hatch and ship's sides are supported by longitudinal channel girders instead of transverse beams. This arrangement is a new feature in a vessel framed on the transverse system, and has the advantage of introducing additional longitudinal strength at a very desirable part.

A short forecabin is fitted above the upper deck right forward. On the port side, under the forecabin deck, are cabins for the first and second officers, the quartermasters, and watchmen. In a corres-



Montreal Transportation Co's s.s. Westmount

Duff, Manager, Great Lakes Steamship Service, C.P.R., and Acton Burrows, Managing Director Canadian Railway and Marine World. After the launching, which was most successfully performed, the invited guests were entertained at luncheon by the Collingwood Shipbuilding Co.

The Westmount, one of the largest vessels ever built in Canada, is of the large single deck type, which has been evolved to meet the conditions prevailing on the Great Lakes in regard to the transportation of bulk cargoes of coal, ore, and grain. Her leading particulars are: Length over all, 550 ft. 8 in.; length on b. f., 537 ft.; breadth moulded, 58 ft.; depth moulded 31 ft.; load deadweight, 11,000 tons; load draught to suit canals, 19 ft. 6 in.

The vessel, in common with others of her class, embodies a number of features introduced to facilitate loading and unloading operations, the short season for navigation on the lakes making quick dispatch in port a matter of the utmost importance. No loading or discharging appliances are provided on board, these

side frames are of channel sections and are spaced 3 ft. apart. The double bottom, which is 5 ft. deep, extends for the full length between the peak bulkheads. Side tanks of the same width extend on each side up to the level of the main deck stringer, and thus form a double skin to a height well above the deep load line. The side tanks provide large additional capacity for water ballast, and their inner plating transforms the hold into a compartment of hopper form section, eminently suitable for mechanical unloading operations. The tank top plating, which carries the cargo's weight is supported by the centre girder and by 4 continuous longitudinal girders on each side of the centre line. Intercostal deep floor plates are fitted in the transverse direction at every second frame, i.e., 6 ft. apart, there being a deep floor at each arch girder and one between.

There are two complete collision bulkheads forward, the space between these forming a deep tank. The cargo hold is divided by screen bulkheads into 6 compartments, and the double bottom by 4 watertight divisions into 5 compartments

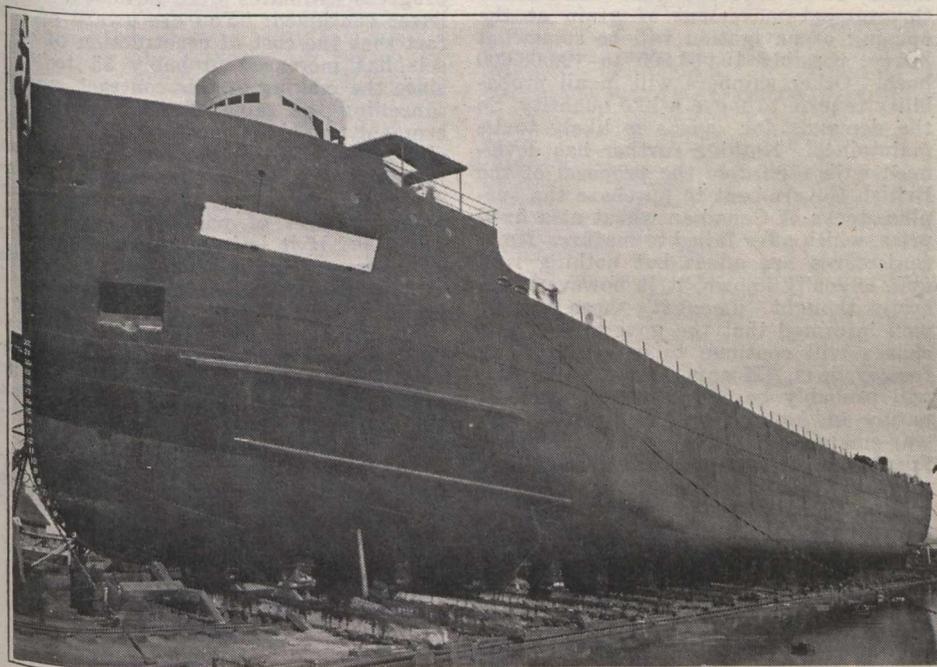
ponding position on the starboard side, are the owners' staterooms. On the forecabin deck above is a large steel deckhouse, containing an observation room and captain's quarters. The top of this house forms the navigating bridge, upon which stands the wheelhouse. The accommodations provided at the after end of the ship are arranged in a large steel house, surrounding the engine and boiler casing, and comprise the engineers' quarters galley, dining rooms for the owner, officers, and crew respectively, and berths for various members of the crew. The firemen's accommodations are on the main deck, at the starboard side, just abaft the engine room casing.

A powerful steam windlass, of quick-warping direct grip type, is located on the upper deck forward under the forecabin. The cables are 2 1/4 in. in diameter, each being attached to a stockless anchor of 8,000 lb. weight. The anchors are stowed in pockets, so that they may not foul lock gates or other obstacles when the vessel is navigating narrow waterways.

The main and emergency steam steer-

ing engines are right aft, on the main deck. Both gears consist of a 9 x 9 in. steam engine which actuates the rudder directly through a toothed quadrant connected to the rudder stock. This gear is controlled by wires led from the steering wheel in the pilot house, or that on top of the same. The emergency gear is always under steam, and can be put into operation in a few seconds, by a crank on the bridge steering standard, which at the same time throws out of action the main gear.

The 6 deck winches, 4 of them 8 x 10 in. single drum mooring winches, are placed two at each end of the row of hatchways. The drums of the mooring winches are arranged in the athwartship direction, fairleaders of special design being provided at the ship's side to lead the mooring ropes. Another 8 x 10 in. single



Montreal Transportation Co.'s s.s. Westmount prior to launching.

drum winch is located in the windlass room forward, and an 8 x 10 in. winch, with 2 drums, is on the upper deck aft. One drum of the after winch is intended to take the 3½ in. mooring hawsers, while the other takes the 4½ in. wire hawser, which is attached to the stern anchor of 4,000 lb. weight. The latter, which is also of the stockless type, is stowed on an inclined platform, so that it can be instantly lowered in case of emergency.

The boat outfit consists of two 22 ft. metallic lifeboats, and one 18 ft. gasoline launch, for use in harbor, capable of attaining a speed of 8 miles an hour. All the boats are placed aft at the level of the deckhouse top, and are attached to sliding davits and equipped with releasing hooks.

The vessel has 2 steel pole masts, one forward and one aft, for signalling purposes, and to carry the running lights. Awnings are fitted over the forecastle deck, and the pilot house, and at the sides of the after deck house. Draught gauges are provided at each end of the ship, so that the draught forward and aft may be read in disturbed water or at night.

The ship is lighted throughout by about 200 electric lights. Two electric generators, each having a capacity of about 10 kilowatts, are situated on a flat at the after end of the main engine room. An electric indicator is placed in the pilot

house, to show whether all the running lights are in order.

The propelling machinery, which has also been built by the Collingwood Shipbuilding Co., is at the after end of the vessel. Steam is generated by 3 single ended cylindrical boilers of Scotch marine type, each having a diameter of 13 ft. and a length of 11 ft. The boilers are designed for a working pressure of 185 lb. per sq. in. and are provided with forced draught. From the boilers the steam passes to a single set of triple expansion reciprocating engines, having cylinders 24, 40 and 66 in. in diameter respectively, by 42 in. stroke. The engines are capable of developing about 2,400 i.h.p., which will drive the ship at a speed of about 13 miles an hour in loaded and 15 miles an hour in light condition. The auxiliary machinery includes 1 centrifu-

Outturns of Grain Cargoes on the Great Lakes.

In connection with the Board of Grain Commissioners' regulations regarding outturns of grain from vessels in Canada, the Dominion Marine Association had an interview with the Board at Montreal, April 12, when a satisfactory arrangement was made. Some of the receiving houses objected to the old regulations, more particularly to those dealing with outturns of grain other than wheat. A compromise settlement was made on the basis of a contribution of 15 lb. on all grains other than flax, instead of a quarter of a bushel as hitherto, and this was accepted by all parties. This leaves the arrangement for wheat as before, but substantially raises the contribution for other grains.

A conference was also had with the Buffalo Grain Clearance Corporation, at Buffalo, N.Y., April 11, representatives being present from the Lake Carriers' Association, as well as from the Dominion Marine Association. It was unanimously resolved that the corporation be continued and that it should carry on the service hitherto furnished to vessels. The following outline of the plan for continuing the service was proposed:

1. The contribution of the vessels shall be on the basis of ½ bush. per 1,000 bush. from and to all ports.

2. In order to provide funds for operating and for the purposes mentioned in clause 4, the vessels shall respectively pay \$200 on first arrival with grain cargo, subject to this contract. (Majority opinion seems to be that this item should be a fixed amount, but may be on a sliding scale, based on capacity of vessels or other conditions.)

3. The 12c and 24c of the former contract may be increased to 15c and 30c.

4. Such contribution on first arrival shall be evidenced by receipt showing terms on which contribution is made, substantially that such contributions are to be repaid as soon as practicable after close of season, subject to the deduction of such amount from each contribution as may be necessary to give the corporation a sum, including its surplus earnings, sufficient to repay the voluntary contributions already received this year from carriers; to pay the deficit of 1916, excluding capital; and to pay back to the corporation a quarter of its exhausted capital.

5. This agreement is for one year only and any surplus earnings over refunds and total deficits shall be credited pro rata to the subscribers of 1917, and new arrangements made for 1918.

These terms were unanimously approved by the Dominion Marine Association representatives, at Montreal, April 12, and were ratified at Buffalo, April 16.

Admiralty Dry Docks for Canada.—A London, Eng., press cable of April 20, says: "Hon. Robt. Rogers, Canadian Minister of Public Works, has taken up the question of building Admiralty drydocks at Esquimalt and Halifax with Sir Edward Carson, First Lord, and Bonar Law, Chancellor of the Exchequer, and is seemingly hopeful that something will result. Canada is entitled to this consideration, says Mr. Rogers, not only owing to the part she has played in the present war, but because of the efforts of the Canadian Government to encourage shipbuilding in Canada. There should be no reason why British ships when in Canadian waters should go to United States ports for repairs."

gal and 2 duplex ballast pumps, 1 sanitary pump and deck pump, 1 duplex main feed pump, and 1 duplex auxiliary feed and fire pump. The air, circulating, and bilge pumps are directly driven from the main engines. In addition to the steam pumps, hand bilge and fire pumps are provided both forward and aft.

Proposed Channel in St. Clair River.—The International Joint Waterways Commission has under consideration an application, endorsed by U.S. War Office engineers, for the right to make a channel about 400 ft. wide, and of proper depth, along the water front at Port Huron, Mich., and to build a compensating dam under water a little below this point in the St. Clair River, so as to maintain the levels of Lakes Huron and Michigan. The proposed works are considered to be beneficial to the navigation of a difficult part of the river, and the principal matter for consideration is the probable effect on the water levels above and below. Expressions of opinion by the organizations concerned are being sought.

Vessels Registered.—The lists of vessels registered, which were until recently published in each issue of Canadian Railway and Marine World, are not now available, their issue having been suspended in consequence of the war.

Shipping Letters from the Head of the Great Lakes.

F. & W. Jones, lake transportation brokers, etc., Fort William, Ont., wrote on April 14 as follows:

Ice conditions are still somewhat severe at the Canadian head of the lakes. In Thunder Bay ice is thicker than has been known during the past 10 years. Where tests have been made it is reported as 48 to 50 inches. The icebreaker James Whalen went into service on April 10 and has done good preliminary work. A passage has been cut past the Welcome Islands which will be kept open from now on thus allowing the ready movement of ice floes, as the ice breaks up and moves out. Ice in the Kaministikwia and Mission Rivers is unchanged at from 3 to 4 ft. thick and quite solid. Ice breakers, however, are ready to open up passages as soon as conditions are favorable or vessel requirements demand. Advices here agree that it will be early in May before navigation at those ports can be considered open, probably May 1 to May 5. There are only four Canadian and one U. S. vessels wintering here, all of small tonnage capacity. These are all practically to clear at a few days notice.

Coal.—Stocks, both bituminous and anthracite, at all docks are greatly depleted, this is more particularly so with regard to commercial coal. At one time it was a serious question whether stocks would hold out. Dealers, however, have been conserving their stocks during the greater part of the winter, sharing out deliveries to retailers proportionately, in a manner to best secure an equal division of the supplies on hand from time to time. This has undoubtedly worked out well in effect and while shortage of coal has been experienced at some western points no serious complaints have developed. No great rush of coal cargoes is expected at the immediate opening of navigation. Usually at this time docks are in possession of advice of their early prospects, but up to date no advices have come to hand and enquiries do not show that any very substantial contracts have been placed for commercial coal for early arrival. There is certainly nothing indicative of any great movement for the opening. It will, however, be necessary to bring in a large quantity of coal, both bituminous and anthracite, during the whole season of navigation to replenish depleted stocks and provide for next winter's demand.

Grain.—The all rail winter movement of grain has been disappointing, approximately only 13,000,000 bush. of all grains have gone forward since the close of navigation on Dec. 12, up to the time of writing. The normal capacity for railway movement of winter grain is from 20,000,000 to 30,000,000 bush. There should therefore have been nearly double the amount moved than has been moved. Demand for grain has been good throughout, notwithstanding the high prices ruling from time to time, but shippers have been seriously hampered by the continual car shortage and embargoes by the railways. These embargoes have been largely due to congestion at the seaboard. Had it been possible to move grain freely from ocean points to Europe, conditions would in a measure have righted themselves and car shortage would not have been so evident. There has also been a very heavy movement of munitions and war supplies eastbound, which in itself would account for the absorbing of a great number of cars. The actual figures of winter movement are as fol-

lows: Wheat, 6,360,080 bush.; oats, 5,712,728 bush.; barley, 1,624,662 bush.; flax, 333,484 bush.; mixed grain, 575,658 bush.; total, 12,944,612 bush.

Elevator stocks at Fort William and Port Arthur at date of writing are as follows: Wheat, 23,109,035 bush.; oats, 10,140,137 bush.; barley, 1,318,379 bush.; flax, 1,624,270 bush.; total, 36,191,821 bush. There is estimated to be still in farmers' hands and in storage west of Fort William and Port Arthur some 50,000,000 bush. of wheat and possibly 20,000,000 bush. of other grains to come forward. This would make a total of approximately 100,000,000 bush. of all grain in sight at date, available for lake movement. It is expected that the British Government movement of grain at the opening of navigation will be somewhat heavy, possibly 10,000,000 to 12,000,000 bush. Other shippers will in all probability require to move a like quantity. So the demand for space is likely to be maintained. Nothing further has developed with regard to the proposal of the British Government to purchase the surplus stocks of Canadian wheat at a fixed price, which offer failed to mature. Many conjectures are afloat but nothing reliable is really known, it is however generally thought amongst those usually well informed that the government purchases will continue to be made along former lines. If any change is made it will probably be of a somewhat drastic nature and based upon lines demanded by war emergencies, but the trade feels confident that every consideration will be given to trade interests.

Ore.—The movement of iron and copper ore from these districts has been moderately but surely developing and activity has been much in evidence at the—several mining centres. Steady shipments of copper ore have gone west throughout the winter with most satisfactory results. The movement of iron pyrites by lake last season was approximately 70,000 tons. This season it will probably be twice that amount. The mining situation in Thunder Bay district has acquired considerable impetus, a large number of fresh claims have been registered during the past few months and many of the old claims are getting ready for re-operation, the minerals mostly in evidence being iron pyrites, copper, silver and gold.

The shipbuilding industry at these ports is showing great activity in common with all other shipyards. The Port Arthur Shipbuilding Co. is running at full pressure and arrangements are under way whereby the capacity will shortly be doubled and at its increased output there are in sight sufficient orders to keep it fully occupied for several years.

Radio Time Signals at the Panama Canal.—The U.S. Navy Department has installed at the Darien radio station a time transmitting clock arranged to send time signals by radio. It is adjusted daily to Washington observatory time by radio signal, with a maximum error of five-tenths of a second, but ordinarily not exceeding one-tenth. The signal begins at 12.55 p.m., 75th meridian time and continues for 5 minutes. The wave length used is 4,000 metres and is so sent that any ship with ordinary commercial receiving apparatus capable of tuning as high as 4,000 metres should be able to receive it.

The Sale of the Icebreaker J. D. Hazen to Russia.

The Auditor General's report, in dealing with expenditures for the year ended Mar. 31, 1916, criticizes expenditures on the icebreaker J. D. Hazen, which was built by Canadian Vickers, Ltd., Montreal, and eventually sold to the Russian Government. It is stated that the contract was entered into between the Dominion Government and Canadian Vickers, Ltd., in Mar., 1914, the price being \$998,583. On Aug. 25, 1916, the Auditor General wrote the Deputy Minister of Marine, calling attention to the fact that the Marine Department proposed to release the contractors, in order to enable them to sell the vessel to the Russian Government. At that date payments on progress estimates were \$349,504. The letter continued: "You are aware of the fact that the cost of construction of vessels has increased probably 35 to 40% since the making of this contract, and in cancelling the same the Dominion Government would be parting with a valuable asset, and I do not see how you can justify the placing in the hands of Canadian Vickers, Ltd., an opportunity to make a profit of possibly \$300,000 or \$400,000. If it is intended as a friendly act to one of the allies to give them the benefit of such an excellent contract, I would suggest that the constructing company be not released, but that the contract be assigned to the Russian Government, unless it is ascertained that the price to be paid by them to Canadian Vickers, Ltd., is not in excess of the contract with the Dominion Government."

The Auditor General also asked for information as to the terms and conditions of the sale, but had received no reply when the report was written.

United States Shipbuilding Programme.

It is announced that the U. S. Government has authorized the immediate construction of a large number of steamships for trans-Atlantic service. The whole matter is in charge of the U.S. Shipping Board, which is taking up the task of organizing the necessary material and labor and distributing the work to the best advantage. The reports state that it is planned to build, if necessary, 3,000 wooden steamships of approximately 3,000 tons each, the first 1,000 to be completed and in service within 18 months. These vessels are to be engineered for a speed of about 10 knots an hour. It is the intention to standardize construction, as far as possible, to expedite construction, and when they are ready for operation, the board will either sell, charter or operate them, as may be desirable. Work is reported to have been commenced at several yards. Each vessel will be equipped with anti-submarine guns and wireless telegraph.

The U. S. Navy Department received tenders during April for 34 submarines. Congress has authorized the construction of 38, and 10 have already been ordered at Portsmouth, N.H. The Electric Boat Co. submitted an offer to build 18 vessels in from 16 to 26 months at \$1,524,000 for those built on the Atlantic coast, and \$1,592,000 for those built on the Pacific coast, or as an alternative to build on a cost plus 15% profit basis. Other offers named prices of \$1,288,000 and \$1,299,000 and most of them were accompanied by the alternative cost and percentage basis.

Coast, Lake and River Steamship Officers for 1917.

The following appointments, made by navigation companies, engaged in Canadian navigation, for their various steamships and tugs, have been reported to Canadian Railway and Marine World, in addition to those given in the April issue. The first column shows the names of the vessels, the second those of the captains, and the third, those of the chief engineers.

BUTLER FREIGHTING AND TOWING CO., VICTORIA, B.C.		
Grainer	D. F. Butler	H. Soper
CANADIAN GOVERNMENT RAILWAYS, MONCTON, N.B.		
Leonard	Jas. Couette	E. R. Roy
Northumberland	A. Cameron	C. Cuming
Prince Edward Island	J. J. Murchison	L. R. Unsworth
Scotia No. 2	L. R. Maguire	W. Anderson B. Scott
C. P. R. BRITISH COLUMBIA LAKE AND RIVER SERVICE, NELSON, B.C.		
Bonnington	A. Forslund	J. Fyfe
Hosmer	M. McKinnon	P. H. Pearse
Kokanee	W. H. Wright	J. G. Cameron
Moyie	A. J. McDonald	W. Edwards
Naramata	J. B. Weeks	W. Jacobs
Nasookin	W. Seaman	T. F. McKechnie
Sandon	M. P. Reid	D. McLeod
Sicamous	G. Robertson	D. Stephens
Slocan	W. Kirby	D. H. Biggam
Valhalla	Jas. Ferguson	T. C. I'Anson
COAST STEAMSHIP CO., VANCOUVER, B.C.		
Celtic	John Finlay	H. Buxton
Clansman	C. Anderson	H. Nissen
Coaster	M. F. MacDonald	D. MacDonald
GLOUCESTER NAVIGATION CO., CARAQUET, N.B.		
Beaver	F. Hache	E. Haveland
GASPE AND BAIF DES CHALEURS STEAMSHIP CO., QUEBEC, QUE.		
Gaspesian	J. Vezina	N. Protomastro
GRAND MANAN STEAMSHIP CO., GRAND MANAN, N.B.		
Grand Manan	J. A. Ingersoll	J. F. McGray
GREAT LAKES DREDGING CO., PORT ARTHUR, ONT.		
Curlew	H. Friday	K. Kennedy
E. C. Whalen	J. Friday	C. Saunders
J. D. Morrison	A. McDonald	N. Taylor
Salvor	H. Gehl	B. Debenardi
W. HANNA AND CO., PORT CARLING, ONT.		
Mink	W. H. McCulley	J. S. Barry
Newminko	J. J. McCulley	J. S. Barry
KEENAN TOWING CO., OWEN SOUND, ONT.		
Keenan	J. H. Rutherford	W. Owens
MIDLAND TRANSPORTATION CO., MIDLAND ONT.		
C. W. Chamberlain	W. Staker	G. Kerr
Lucknow	A. Cuff	H. Schmidt
MIRAMICHI STEAM NAVIGATION CO., CHATHAM, N.B.		
Alexandra	Jas. Nowlan	Jas. Walls
Miramichi	J. P. Bullick	N. Smith
Sybella	H. Copp	A. McIntyre
MONTREAL TRANSPORTATION CO., MONTREAL		
Advance	J. V. Norris	M. J. Sherman
Bartlet	A. Ferguson	F. Moyle
D. G. Thompson	A. Lepine	R. Hepburn
Emerson	W. Murphy	J. G. Lamoureu
F. H. Bronson	L. Mallen	J. Tuttle
Glenmount	Jas. Reoch	J. B. Lappin
Glide	N. Desgrosseillier	G. W. Clark
India	A. Lepine Jr.	F. Brian
M. P. Hall	T. Lepine	H. Paus
Mary	W. J. McKenna	P. J. McKenna
Simla	C. E. Coons	D. S. Simons
Westmount	S. Hill	F. Norris
Windsor	John Doyle	A. Dunn
NORTHERN NAVIGATION CO., SARNIA, ONT.		
Hamonic	A. L. Campbell	John Smith
Huronic	A. M. Wright	J. McLeod
Noronc	R. D. Foote	S. Brisbin
Waubic	John Dube	U. Brisbin
NORTH VANCOUVER FERRY CO., NORTH VANCOUVER, B.C.		
North Vancouver No. 1	W. Fatke	I. N. Kendall
North Vancouver No. 2	R. R. Spicer	D. Becker
North Vancouver No. 3	J. W. Spracklin	I. Butler
PLUNKETT NAVIGATION CO., COBOURG, ONT.		
Jas. W. Follette	H. Redfern	John McPaul
PORT COLBORNE TUG CO., PORT COLBORNE, ONT.		
J. V. O'Brien	D. McGarth	.....
Meteor	Jonh McGarth	.....
PORT HURON AND SARNIA FERRY CO., PORT HURON, MICH.		
Grace Dormer	P. G. Powrie	J. Kinirie
Hiawatha	E. M. Thomas	H. Myers
James Beard	G. Waugh	G. Miller
Omar D. Conger	W. S. Major	R. Cameron
PRESCOTT AND OGDENSBURY FERRY CO., PRESCOTT, ONT.		
Miss Vandenburg	S. Delaney	W. Jento
A. Black	.....	.....
ROSS NAVIGATION CO., PAS, MAN.		
Minasin	A. Deacon	T. Paquette
Nipawin	H. H. Ross	J. Shannon
Sam Brisbin	H. L. Weber	H. Carefoot
SAULT SHIPPING CO. LTD., SAULT STE. MARIE, ONT.		
Valcartier	J. A. Brown	J. G. MacHattie
ROYAL MAIL STEAM PACKET CO., HALIFAX, N.S.		
Carajuet	W. H. Lainson	W. Hobson

Chaleur	T. A. Hill	P. Tubbs
Chaudiere	F. G. L. Willen, R.N.R.	R. L. Bennee
Chignecto	C. Adam, R.N.R.	W. J. Mitchell
STEAMER PREMIER, E. STUBBS, MANAGER, SAULT STE. MARIE, ONT.		
Premier	W. Hyland	J. Howson
TERMINAL STEAM NAVIGATION CO., VANCOUVER, B.C.		
Ballena	J. A. Cates	A. Pirie
Bowena	F. W. Gilbert	Jas. Adams
Britannia	J. W. Cates	C. McFarlane
CITY OF THREE RIVERS, QUE.		
Le Progres	W. W. Lewis	A. Frenette
UNION STEAMSHIP CO. OF BRITISH COLUMBIA, VANCOUVER, B.C.		
Camosun	J. A. Browne	A. Beattie
Cassiar	G. Whalen	P. J. V. Farina
Cheakamus	G. Gaisford	N. Tweedie
Chelohsin	J. F. Edwards	G. H. Foster
Comox	R. Wilson	A. T. Roy
Coquitlam	N. Gray	J. Maitland
Cowichan	C. Moody	L. P. Thomas
Venture	J. E. Noel	C. Arthur
UNITED STATES AND DOMINION TRANSPORTATION CO., CHICAGO, ILL.		
America	E. C. Smith	F. McMillan
Easton	G. Eye	.....
VALLEY STEAMSHIP CO. LTD., ANNAPOLIS ROYAL, N.S.		
Granville	C. W. Collins	J. McCollough
WALKERVILLE AND DETROIT FERRY CO., WALKERVILLE, ONT.		
Ariel	W. H. Corr	H. Andersn
Essex	J. E. Rathbun	P. McLaren
WEST VANCOUVER FERRY CO., VANCOUVER, B.C.		
Doncella	D. Smith	R. Pine
Sonrisa	J. Watson	J. G. Gale
West Vancouver No. 5	.....	W. E. Thompson
WESTERIAN TRANSPORTATION CO. LTD., OTTAWA, ONT.		
Westerian	A. Lefebvre	J. Lavallie
WINDSOR AND PELEE ISLAND STEAMSHIP CO., PELEE ISLAND, ONT.		
Pelee	J. N. Sheats	J. R. Ferguson

Saskatchewan River Navigation.

A considerable amount of freight is expected to be moved this year on the Saskatchewan River to Pas, Man. The Ross Navigation Co., Ltd., has contracted to carry 3,000 tons of copper ore for the Mandy Mining Co., from Sturgeon River to Pas. Specially constructed barges are being built for handling the ore. Teams have been engaged all winter hauling the ore from the mine to Sturgeon River, where it is to be loaded on to the barges, and the 3,000 tons are all ready piled up there, awaiting the opening of navigation.

The Ross Navigation Co. is also building a stern wheel steamboat 85 ft. long, which will be ready for the opening of navigation. It will handle package freight and passenger traffic, from Pas to the various ports of call on the Saskatchewan River and adjoining lakes. It is the company's intention to establish a freight and passenger service between Pas and the farming settlements along the Saskatchewan River, 200 miles west of Pas. That district has been settled up and farmed for the past 10 years, but owing to the great distance from the railways the progress that should have been made has been retarded.

Possible Requisition of Steamships.—

There was a general report during April, to the effect that the British Government had decided to requisition all British vessels, freight and otherwise, and that this would affect about 25 vessels from Canada now engaged in ocean service. It was stated that should the British Government actually decide on this course, the Canadian Government would follow and requisition all vessels on the Great Lakes, utilizing such of them in ocean service, as were fit for the purpose, at a fixed rate. As stated in our last issue, the British Government announced some time ago, that no Canadian vessels would be requisitioned, except through or by the Canadian Government.

Encouragement of Shipbuilding in Nova Scotia.

The Premier of Nova Scotia introduced a bill into the Legislature recently providing for the encouragement of shipbuilding in the province. The bill provides for a shipbuilding commission of five members and a secretary to investigate the facilities for shipbuilding in the province and for the manufacture of articles incidental thereto, and to make suggestions for the adoption of rules and regulations to facilitate the development of such industry. The commission is to be empowered to engage technical assistance, and to make arrangements with other similar commissions or departments in Canada, to work together, and it may be created a corporate body under the name of the Nova Scotia Shipbuilding Commission, with all the powers of a corporation. If so formed, it will have power to build, purchase and own vessels, or acquire shares in same, and to operate vessels of all kinds, to establish shipbuilding plants, to purchase existing undertakings for shipbuilding purposes, and to promote and finance companies for such purposes. Power will also be given the commission to issue bonds and other securities, and for the purpose of establishing the commission, the government will be authorized to raise \$2,000,000 by the issue of debentures or consolidated stock of the province, for the expenses of the commission, and for subsidies granted to any company engaged in the building, equipment or operation of ships.

Dominion Government Vessels for Ocean Service.

Canadian Railway and Marine World for April stated that the Dominion Government had ordered from Wallace Shipyards, Ltd., North Vancouver, B.C., a wooden sailing vessel, with auxiliary power, for service between Pacific and Atlantic coast ports, via the Panama Canal. We are officially advised that this vessel will be similar, in every respect, to those now being built in the same yards for Canada West Coast Navigation Co., and that an order for a second one of the same type will be placed by the Government very shortly.

The vessel will be of the five masted schooner type, without top sails, and of the following dimensions: length over all 255 ft., length of keel 225 ft., depth moulded 21 ft. 4 in., breadth, extreme, 44 ft. The gross tonnage will be about 1,500 tons, and the dead weight capacity about 2,500 tons, with a lumber carrying capacity of 1,500,000 ft. b.m. The latest and best practice of builders of U.S. schooners designed for the lumber trade will be followed, and it will be of heavy construction. It will be provided with 2 large hatches, and 4 cargo winches of the latest type for the rapid handling of cargo. The power equipment will include two 160 h.p. Bolinder semi-Diesel engines, driving twin screws.

The Ville Marie Navigation Co., Ltd., has been incorporated under the Quebec Companies Act, with \$45,000 capital, and office at Ville Marie, Que., to carry on a general navigation business on inland waters in the county of Pontiac, and to own and operate steam and other vessels. The incorporators are: R. Filteau, P. Ethier, A. Jolicoeur, A. Renaud, Ville Marie; A. A. Cote, St. Brune des Guigues; W. Chenier, E. de la Chevrotiere, and A. E. Guay, Ville Marie.

Atlantic and Pacific Ocean Marine.

The Cunard Steamship Co. is reported to be arranging to place orders in the U.S., for the building of 114 passenger steamships, ranging from 8,000 to 17,000 tons, at an estimated cost of \$120,000,000.

A. B. Mackay, Hamilton, is stated to be planning the construction of a wooden vessel for ocean service at a cost of about \$200,000. He was responsible for the recent construction of the schooner Letitia T. Mackay at Meteghan, N.S., which is now in ocean service.

It is stated that the British Government has requisitioned 50% of the space on the C.P.R. steamships Empress of Russia, Empress of Asia, Empress of Japan and Monteaegle. It is said that this action does not affect outward traffic. We are officially advised that the company has received no notification to this effect.

The Osaki Shosen Kaisha of Japan has two 10,000 ton steamships approaching completion at Nagasaki. It is stated that they are to be named Victoria Maru and Vancouver Maru, and placed in service between Japan and Pacific ports on this side, by October or November. They will be equipped for a speed of 12 to 14 knots an hour, and will have accommodation for 12 cabin and about 200 steerage passengers.

A new York press dispatch states that what is said to be the first British steamship to be launched in the U.S. went down the ways at Staten Island, April 7, and was named War Captain. She is owned by the Cunard Steamship Co., and is of the following dimensions: length 274 ft., beam 42 ft., depth 24 ft.; tonnage 3,500 gross, 2,200 register. She is to be used for freight and is expected to be in operation during June.

The s.s. Trans Os Montes arrived at New York, April 2, from England, under charter to the Quebec Steamship Co., a subsidiary of Canada Steamship Lines, Ltd., for service between New York and Bermuda. She was formerly the Norddeutscher Lloyd s.s. Buelow, and along with other enemy steamships, took shelter from the British in Portuguese ports on the outbreak of war. On Portugal joining the "entente allies," she seized all enemy vessels in her ports, and subsequently handed them over to Great Britain for operation. The British Government then arranged with Furness Withy and Co. for their charter and management.

Maritime Provinces and Newfoundland.

Pugsley's Shipping, Ltd., Eatonville, N.S. and Artisan Shipping Co., Ltd., Lunenburg, N.S., have been removed from the register of companies in Nova Scotia for non-compliance with the Companies Act requirements.

The Canada Atlantic and Plant Steamship Co. is reported to have sold its s.s. Halifax to New York parties. The sale of the s.s. Evangeline has already been reported, so that at present the company appears to be without vessels, and it is not known whether it will resume its service between Halifax and Boston or not.

In connection with the St. John harbor improvement works, W. Murdock, City Engineer, St. John, N.B., in his annual report, suggests that a new dock site be selected at Rodney slip, and extend 2,000 ft., reaching the upper end of Navy Island. It is claimed that this site is

well in from storms and entirely free from ice and strong currents, and would give 3,800 lin. ft. of wharf frontage, with 35 ft. depth of water.

It is reported that tenders will be called for shortly, for the extension of the Negrotown Point breakwater to Part-ridge Island, N.B., and for the building of a sea wall to the eastward of the island. It is stated that work on this will be commenced as soon as the contracts are awarded, and the whole completed as soon as possible. The plans and specifications have already been completed. It is also stated that plans and specifications are under way for a new start on the dry dock and other improvements at Courtenay Bay, St. John.

The International Shipbuilding Corporation, Ltd., incorporated recently with \$2,000,000 capital and office at Montreal, is reported to have purchased a sawmill, planing mill and foundry at Newcastle, N.B., and it is stated that it will commence the building of wooden vessels there about June. It is also stated that the company is having surveys made in Newfoundland for ore, and that it is the intention to establish a steel industry at Newcastle in connection with the shipbuilding industry, so that eventually steel vessels will be built there as well as wooden ones.

As throughout Canada, shipbuilding in Newfoundland is proceeding as rapidly as possible, in order to make good the losses entailed by the unrestricted submarine warfare practised by the enemy, and to meet the extra demands being made on shipping in general, on account of the war. Naturally the vessels under construction are sailers, in the construction of which Newfoundland was one of the pioneers. Six vessels are under construction on the southwest coast, in addition to a number of small schooners under 40 tons. These are mainly for the transportation of fish, in which Newfoundland had a large trade with Mediterranean ports prior to the war, and in which she has suffered severe losses.

Province of Quebec Marine.

The schooner Montmorency opened the navigation season in the St. Lawrence, April 3, when she arrived at Levis, from Tadousac. Some ice was encountered but the voyage was made without difficulty.

The icebreaking work of the Dominion Government steamers in the St. Lawrence River, was interfered with during April, owing to a strike of firemen on board the s.s. Lady Grey for higher wages. The work was continued by the s.s. Montcalm.

The Lachine Canal was emptied April 7, and filled again on the following day, the customary inspection of the locks being postponed. Owing to the exceptionally high level of the river, it was not possible to drain the canal completely, and high water was expected to continue for several days, and to hold the canal empty for so long would have caused considerable inconvenience to manufacturers dependent on it for power.

Vincent A. White Navigation Co. Ltd. has been incorporated under the Dominion Companies Act, with \$32,000 capital and office at Sussex, N.B. to own and operate steam and other vessels and other marine property and conduct a general navigation business. Meredith A. White Navigation Co. Ltd., has also been

Ontario and the Great Lakes.

The Port Arthur Shipbuilding Co. is reported to have increased the wages of all its employes by 10%.

The Welland Canal was opened to navigation April 18, the s.s. Natironce was the first vessel to pass through.

The Goderich Dry Dock and Shipbuilding Co., according to a press report, proposes building a ship repair plant at Goderich.

Canada Steamship Lines, Ltd., on representations from the City of Hamilton, has offered to run its s.s. Syracuse from Hamilton on a weekly trip through to the Saguenay, without change, during the coming season.

The Imperial Oil Co. is suing Canada Steamship Lines, Ltd., for \$100,000 for damage sustained by the s.s. Imperial, when, it is alleged through negligence, the s.s. Midland Prince collided with it last year.

The s.s. H. N. Jex, owned and operated by J. F. Sowards, Kingston, was the first vessel to enter Kingston harbor this season, coming in from Oswego, N.Y., with coal. Capt. M. Shaw was presented with the customary hat by the harbor master.

The first vessel to arrive in Toronto harbor, this year, from an outside point, was Canada Steamship Lines' s.s. Macassa, from Hamilton, on Mar. 30. Capt. Jas. Henderson was presented with the customary silk hat by the harbor master.

It is announced that the U.S., in providing for the lighting of the Fighting Island channel in the Detroit River, is making a number of changes in the aids to navigation. Permanent lights and buoys are being placed, so as to permit of the channel being used for its entire length as a straight channel without the necessity for range line courses as hitherto.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above mean sea level, for March, as follows: Superior 602.33, Michigan and Huron 580.46, St. Clair, 574.79, Erie 571.53, Ontario 245.17. Compared with the average March levels for the past ten years, Superior was 0.76 ft. above; Michigan and Huron 0.55 ft. above; Erie 0.26 ft. below, and Ontario 0.68 ft. below.

It is reported from Detroit, Mich., that the U.S. War Department, which controls the operation of the canal system, has issued a notice that as a protective measure during the war, no power boat, yacht or other pleasure vessel will be permitted to pass through the St. Clair Flats Canal, all such vessels being restricted to the use of the old channel, which will be lighted and buoyed for their service.

The Department of Naval Service has announced that radiotelegraph regulation 104 has been amended by providing that the subsections relative to the disconnection of aerials in vessels lying in Canadian harbors will not, until further notice, apply to Canadian or British vessels in Canadian harbors on the Great Lakes. Such vessels must, however, strictly observe the other provisions of the regulations.

The Hackett Wrecking and Towing Co., Amherstburg, is reported to have sold its steel steam tug F. B. Hackett to New York parties. The vessel is registered in the U.S., and negotiations for its sale to Canadian parties were broken off, as the necessary permission to sell could not be obtained. The cost of the vessel is given as \$40,000 when she was built in 1908, and the price now paid for her is said to be \$75,000.

The s.s. Mahoning, owned by the Anchor Line, Buffalo, N.Y., is reported to have been sold to Boland & Cornelius, of Buffalo, and it is reported that she is to be cut down to Welland Canal size and operated between Lake Erie ports and Montreal in the coal trade, a trade for which \$3 tonnage is being bid. The Mahoning was built at Wyandotte, Mich., in 1892, and is 274 by 40 by 23 ft. It is also reported that the same company's steamships Codorus and Tioga are also being negotiated for.

The Northern Navigation Co.'s s.s. Germanic was destroyed by fire at her wharf at Collingwood, Mar. 30. She was built at Collingwood, Ont., in 1899 of oak, with diagonal strapping on the frames, steel arches, etc., and she was equipped with a steeple compound engine, with 2-17-2-28 cylinders, 21 in. stroke, supplied with steam by a firebox boiler 10 ft. 1½ in. by 12½ ft., at 100 lbs. Her dimensions were, length 184 ft., breadth 32 ft., depth 12 ft. 1 in., tonnage 1014 gross, 676 register.

The s.s. Stadacona, which was reported torpedoed by the enemy off the French coast, April 19, was stated, in the information supplied to the majority of Canadian papers, to be owned by Canada Steamship Lines, Ltd. This, of course, is incorrect, as the company's s.s. Stadacona is at present on the Great Lakes, being included in the list of vessels which the company will operate there this year, and published in Canadian Railway and Marine World for April. Capt. G. H. Page is master, and W. W. Norcross is chief engineer.

The U.S. District Court of the New York Western District, in Admiralty, has ordered the sale of the s.s. Rochester, owned by the Richelieu & Ontario Navigation Co. of the United States, in satisfaction of claims of approximately \$500,000 by a number of members of a convention party from Rhode Island, who alleged that they had suffered serious illness from the effects of drinking impure water whilst on a trip in 1913. The sale was advertised to take place April 17, but was postponed to May 1. The Rochester was for a time operated in lake traffic between U.S. and Canadian ports, and since the end of 1915 has been laid up at Sarnia. It is understood that she is under charter to the Northern Navigation Co., and it is stated that that company will in all probability purchase her. She was built at Wyandotte, Mich., in 1910, her dimensions being: length 246 ft., breadth 42 ft., depth 15½ ft.; tonnage, 1,603 gross, 867 register.

Reports on the ice conditions in the Great Lakes, on April 10, indicated that there was less ice this year at that date, than at the same time in 1916, although it was somewhat heavier in Lake Superior and at the Straits. Ice still continued over the extreme western portion of Lake Superior, with open water off Apostle Islands, and icefields were also in existence from Keeweenaw Point to Whitefish Point. The ice in St. Marys River was decreasing steadily and the fields had practically disappeared along the east shore of Lake Michigan. The s.s. Algoma passed through the ice from Ignace to Detour, April 8, and arrived at Sault Ste. Marie, April 17. The ice fields on the west shore of Lake Huron had disappeared, and those on the east shore were broken up and moving with the winds. In Lake Erie the fields on the east had broken up and were moving, while the ice remained at Buffalo, and westerly. The fields had practically dis-

appeared from Lake Ontario, with slight exceptions in the extreme east, and the harbors were open.

Manitoba, Saskatchewan and Alberta.

We are officially advised that the Peace River Tramway and Navigation Co. has decided, in view of general conditions, not to take any definite action towards providing further transportation facilities beyond its present field of operations on the Peace River, Alta., during the pre-

British Columbia and Pacific Coast.

The C.P.R. s.s. Kokanee, operating on the lakes and rivers, is under repair, her place being taken by the s.s. Kuskanook. The s.s. Minto is replacing the s.s. Bonnington at present.

C. J. Rogers, Purchasing Agent, White Pass & Yukon Route, is credited with the statement that the two vessels which are being built for the company's Atlin service, details of which have been given in a previous issue, will be ready for service by June 1.

A small steamboat is reported under construction at the Vandyke Shipyard,



Auxiliary Ship Mabel Brown

Built at North Vancouver, B.C. for Canada West Coast Navigation Co., Ltd., and chartered for a voyage to Australia with 1,534,000 ft. of lumber.

sent year. The company will operate its s.s. D. A. Thomas and its launch Lady Mackworth on the Peace River from Hudson's Hope, B.C., the head of navigation on this river, and for 570 miles to Vermilion Chutes, downstream.

The Winnipeg Board of Control had before it recently the Harbor Commission's request for a grant of \$960 for work in the harbor, a request having also been sent to the St. Boniface Council for \$240 for similar work. It was decided that the board should have the commission's annual report before making the grant. The Dominion Government has appropriated \$200,000 for the work in the harbor, and of this \$50,000 has been spent in the erection of a dock at the foot of River St. Two other docks are to be built in the near future.

Vancouver, for the International Petroleum Co., of Talara, Peru. The dimensions are: length 85 ft., beam 18½ ft., depth 6 ft. It is stated that she will be completed by Aug. 1, and sail for Peru about Aug. 15.

The two car floats which the C.P.R. is having built at Chemainus, by C. Hoard, Victoria, are for operation between Vancouver and Vancouver Island, James Island, Howe Sound and other outlying ports beyond the reach of actual railway connection. They will be 150 x 46 ft., and 12 deep, with capacity for 9 cars each.

An order in council has been passed limiting the speed of any vessel entering or leaving Prince Rupert harbor, to 8 knots an hour between Point Charles and the Canadian Fish and Cold Storage Co.'s

plant, and to 4 knots an hour when passing another vessel with a scow or scows alongside. The penalty for infringement of these regulations is \$50 for each offence.

At a meeting of the West Vancouver council at the end of March, it was decided not to discontinue the ferry service for the present, but to give as good a service as possible during the summer. However, should conditions not improve and the receipts not prove more satisfactory, other arrangements may have to be made by the autumn.

The C.P.R. steam tug Nitinat has been chartered by the British Columbia Salvage Co. for salvage work on the Kosmos Line s.s. Seostris, wrecked off Ocos, Guatemala. The company lost the steam tug Pilot there recently while engaged in this work. The Nitinat is being equipped with wireless telegraphy, etc., and as soon as she is ready will leave for the south.

The trial trip of the auxiliary schooner Mabel Brown, the first of a number of similar vessels under construction at Vancouver and Victoria for Canada West Coast Navigation Co., took place at the end of March, and it was announced that everything was satisfactory. She was later docked at North Vancouver for her final touching up, after which she left for Chemainus for her cargo.

The Grand Trunk Pacific Coast Steamship Co. is reported to have purchased the schooner rigged vessel Tillamook, which is equipped with auxiliary power, in the U.S., for service between Prince Rupert, B.C., and Ketchikan, Alaska. It is stated that the vessel is practically a new one, of about 800 tons, arranged chiefly for freight traffic, but with a limited accommodation for passengers. It was expected that she would be in service by the end of April.

The British Columbia Supreme Court decided, April 3, at Victoria, that the s.s. Leona, which capsized and sank near Active Pass in Oct., 1916, was lost in the perils of the sea, and it therefore allowed the claim of the Vancouver Portland Cement Co. for \$60,000 with interest, against the Maritime Insurance Co., for loss of the cargo. For the defence it was urged that the vessel was overloaded and therefore unseaworthy, and notice was given of an appeal.

The Canada Atlantic Transit Co. and the Panama Canal Act.—Under the provisions of the Panama Canal Act, railway companies operating in the U.S. are compelled to sever any connection they may have with steamship companies, unless under authority of the Interstate Commerce Commission, which is granted under certain conditions. One of the railways to come under this regulation is the Grand Trunk Western Ry., the western end of the G.T.R., and this company was ordered to sever the connection with the Canada Atlantic Transit Co., a G.T.R. subsidiary. On a rehearing of the case recently, the Interstate Commerce Commission granted the company authority to continue its interest in the Canada Atlantic Transit Co., and found that the C.A.T. Co.'s existing service by water is being operated in the interest of the public and is of advantage to the convenience and commerce of the people, and that an extension of the time for the operation of such service will neither exclude, prevent nor reduce competition on the route by water. The company is required to file its tariffs in accordance with the provisions of the act to regulate commerce as amended by the Panama Canal Act.

Canada Steamship Lines' Appointments.

In accordance with the revised organization for conducting the company's business, the following appointments have been made effective from April 23:

L. A. W. DOHERTY, heretofore Freight Traffic Manager, has been appointed General Traffic Manager, with jurisdiction over freight and passenger traffic. Office, Montreal.

JOHN F. PIERCE, heretofore Assistant Passenger Traffic Manager, has been appointed Assistant Traffic Manager, in charge of freight and passenger traffic, Kingston, Ont., and east, including all passenger traffic originating in the U.S. Office, Montreal.

PERCY GRANT, heretofore Division Freight Agent, Hamilton, Ont., has been appointed Assistant Traffic Manager, in charge of freight and passenger traffic, west of Kingston, Ont. Office, Toronto.

JOHN V. FOY, heretofore Assistant General Passenger Agent, Toronto, has been appointed General Passenger and Freight Agent. Office, Toronto.

J. W. CANVIN, heretofore General Agent, Passenger Department, New York, has been appointed General Agent, New York.

JOS. M. SHEA, heretofore New England Passenger Agent, Boston, Mass., has been appointed General Agent, Boston, Mass.

W. F. CLONEY, heretofore General Agent, Passenger Department, Rochester, N.Y., has been appointed General Agent, Rochester, N.Y.

H. W. CRAWFORD, heretofore District Passenger Agent, Chicago, Ill., has been appointed General Agent, Cleveland, Ohio.

A. C. SHERIDAN, heretofore District Passenger Agent, Buffalo, N.Y., has been appointed General Agent, Buffalo, N.Y.

GEO. S. MEAGHER, heretofore Agent, G.T.R., Clayton, N.Y., has been appointed General Agent, Clayton, N.Y.

C. LEIDICH, heretofore Agent at Detroit, Mich., has been appointed District Passenger Agent, Detroit, Mich.

Vancouver Dry Docks, Ltd.—An announcement of the incorporation of this company was made in a recent issue. It is reported that Charles Meek, who is chiefly interested in the company, has made arrangements for the erection of a plant in Vancouver, to consist of a double section floating dry dock capable of handling vessels up to 18,000 tons displacement, sufficient to accommodate the largest vessels at present on the coast. It is expected that the dock will be in operation within a year, and that it will be worked in connection with an extensive shipbuilding plant. We were officially advised from Ottawa, April 20, that no subsidy agreement had been entered into between the government, represented by the Public Works Department, and Vancouver Dry Docks, Ltd.

Smuggling of Intoxicants at Lake and River Ports.—The Dominion Government has sent instructions to all customs collectors at lake and river ports along the boundary between Canada and the U.S., and at seaports, that they take rigid precautions to stop smuggling of intoxicants on vessels arriving from foreign ports. Complaints have been made that parcels are being brought into Canada without passing through the customs. Collectors are to take drastic action against persons offending, and masters are to be notified that their vessels are liable to detention if used illegally.

The Dominion Government Purchases Lake Steamships.

The Dominion Government has bought the s.s. J. A. McKee, from the Algoma Central Steamship Line, Ltd., Sault Ste. Marie, Ont., and the s.s. Thomas J. Drummond, from the Great Lakes Transportation Co., Midland, Ont., for operation under the Department of Railways and Canals, for carrying coal from Sydney, N.S., to St. Lawrence ports for the Government, or for general cargo purposes as the need may arise.

The s.s. J. A. McKee was built at Wallsend on Tyne, Eng., in 1908, for the Western Steamship Co., Toronto, and is of steel construction with steel tank top, three water tight and two non water tight compartments, steel boiler house, hatches 24 ft. centres, and is equipped with triple expansion engines with cylinders 20½, 33 and 54 dia. by 36 in. stroke, 70 i.h.p., supplied with steam by two Scotch boilers 13½ ft. dia. by 10½ ft. long, at 180 lbs. Her dimensions are, length 248 ft., breadth 43 ft. 1 in., depth 25 ft. 10 in.; tonnage, 2,158 gross, 1,374 register.

The s.s. Thomas J. Drummond was built at Dumbarton, Scotland, in 1910, for the Algoma Central Steamship Line, Ltd., and is of steel construction on the channel system, steel tank top, three water tight and two non water tight compartments, steel boiler house hatches spaced 24 ft. centres, and equipped with triple expansion engines with cylinders 20½, 33 and 54 in. dia., by 36 in. stroke, 1,200 i.h.p., and supplied with steam by two Scotch boilers 14 ft. dia. by 10½ ft. long at 190 lbs. Her dimensions are, length 247¾ ft., breadth 43 ft. 8 in., depth 26 ft.; tonnage, 2,201 gross, 1,664 register.

New Steamships for C.P.R. Ocean Service.

The C.P.R. has bought for £240,000 an ocean steamship of 9,400 tons carrying capacity, and with a speed of 13 knots an hour, at present under construction at Newcastle upon Tyne, Eng., for delivery in July or August. This will make the tonnage of the C.P.R. ocean fleet about the same as it was at the outbreak of the war. In order to provide for future requirements, and to secure advantage of the earliest construction that circumstances will permit, an arrangement has been made with John Brown & Co., Ltd., The Fairfield Shipbuilding & Engineering Co., Ltd., and Harland & Wolff, Ltd., for building, on a cost and percentage basis, two steamships, 605 ft. long between perpendiculars, with a speed of 20 knots an hour, and two steamships, 546 ft. long between perpendiculars, with a speed of 16 knots an hour.

The C.P.R. discontinued its service to the Gulf Islands, Mar. 31, and the s.s. Otter, which was utilized on that route has been docked at Victoria for overhaul and repairs. The mail contract which the C.P.R. held for the Gulf Islands route expired Feb. 1, and the company notified the authorities that it was the intention to withdraw the service. After some representations by local deputations, the company agreed to continue the service until Mar. 31, when it was finally withdrawn. The Government has made arrangements for the handling of mails, but early in April, no arrangement had been made for a passenger and freight service.

Shipbuilding in Canada for the British Government.

Canadian Railway and Marine World for April contained information in reference to arrangements made by Jas. P. Esplen, representing the British Shipping Controller, for the Imperial Munitions Board at Ottawa to secure all cargo steamships that may be available in Canada for delivery by May 31, 1918, and which are now completed, or under construction, or which it may be possible to build before that time. It was also stated that five vessels had been arranged for from British Columbia builders, that probably about the same number would be secured from builders in Nova Scotia, Quebec and Ontario, and that further orders would doubtless be placed. We are now in a position to state that the Imperial Munitions Board has arranged to have built for the British Government, at various plants between Montreal and Victoria, B.C., 26 steel steamships, ranging from 2,900 to 8,800 tons capacity, and with a total tonnage of 130,000. It is not probable that any more orders will be placed for steel steamships, at least for some time to come, on account of the impossibility of securing any further supply of steel plates for several months hence.

The Imperial Munitions Board will also place orders, as soon as possible, for as many wooden steamships, ranging from 3,000 to 3,500 tons capacity, as can be built in Canada. Standard designs and specifications for them have been under discussion between the Imperial Munitions Board, a representative of the British Shipping Controller, and shipbuilding companies, and are about completed. Most of these wooden steamships will necessarily be built on the Pacific coast, on account of its advantages in regard to the supply of the timber required, but some will probably also be built on the Atlantic coast. In connection with this, the Minister of Finance has arranged to advance \$10,000,000 to the British Government, as a loan, which will be used in paying for the wooden steamships.

It is stated that R. P. Butchart, of Victoria, will have charge of the business organization of the wooden shipbuilding for the Imperial Munitions Board.

The Imperial Munitions Board at Ottawa is closely co-operating with the United States Shipping Board in regard to the building of wooden steamships and it is said that standardized types of vessels have been agreed upon and that there will be a common schedule of prices and contracts.

As stated in Canadian Railway and Marine World for April, the Dominion Government, between Sept. 19 and Nov. 15, authorized the exportation to Norway, on completion, of 18 cargo steamships, to be built at New Glasgow, N.S., Montreal, Toronto, Port Arthur, Ont., and Vancouver, B.C., and for the exportation to the United States of two others to be built at Toronto. Arrangements are now being made to acquire nearly, if not all these, for the British Government.

The 100 steam wooden drifters, for which orders have been placed by the Naval Service Department, to be built at plants between Montreal and Port Arthur, as mentioned in our last issue, will be 84 ft. long, and will have engines of about 250 h.p.

A Port Arthur press dispatch of Aug. 20 says: "Jas. Whalen, President of the Port Arthur Shipbuilding Co., has returned from the east and announced contracts secured for work totalling more than

\$5,000,000. The capacity of the local plant is being doubled, and even at that work now in hand will keep it busy until well on into 1918.

Mainly About Marine People.

John Eadie has been appointed General Manager, Wallace Shipyards, Ltd., North Vancouver, B.C.



L. A. W. Doherty
General Traffic Manager, Canada Steamship
Lines Limited



J. F. Pierce
Assistant Traffic Manager, Canada Steamship
Lines Limited

George J. Plunkett, Vice President, Plunkett Navigation Co., Cobourg, Ont., died there, Mar. 29, aged 69.

Hon. J. D. Hazen, Minister of Marine, was the guest of Admiral Sir John and

Lady Jellicoe, in London, Eng., towards the end of March.

H. S. Carmichael, Passenger and Freight Manager, Canadian Pacific Ocean Services Ltd., London, Eng., arrived in Canada, April 13, on a business trip.

W. G. Ross, Chairman, Montreal Harbor Commissioners, attended an executive committee meeting of the American Association of Port Authorities, in New York, April 4.

Capt. Robert Aikin, heretofore master of the G.T.R. and Wabash Ry. car ferry Detroit, has been appointed Superintendent of Ferries, G.T.R.-Wabash Ry., vice Capt. W. F. McGregor, who has retired on a pension. Office, Windsor, Ont.

L. A. W. Doherty, who has been appointed General Traffic Manager, Canada Steamship Lines, Ltd., Montreal, was born at Toronto, April 10, 1878, and entered transportation service in July, 1896, since when he has been, to 1887, clerk to Assistant Freight Traffic Manager, C.P.R., Toronto; 1897 to 1906, chief clerk to General Freight Agent, C.P.R., Toronto; 1907 to 1908, chief clerk to Assistant Freight Traffic Manager, C.P.R., Toronto; 1908 to 1910, Assistant Manager, Inland Navigation Co., Hamilton, Ont.; 1911 to Feb. 27, 1913, Traffic Manager, Inland Lines, Ltd., Hamilton, Ont.; Feb. 27, 1913 to Jan. 1914, Freight Traffic Manager, Richelieu and Ontario Navigation Co., Toronto; Jan. 1914 to Apr. 23, 1917, Freight Traffic Manager, Canada Steamship Lines Ltd., Toronto.

Denis Murphy, President, Ottawa Transportation Co., who died in Ottawa, Mar. 12, left an estate valued at \$1,945,233.69. His widow receives the Ottawa residence and an income of \$20,000 a year for life. His son, Col. G. P. Murphy, and his daughter receive \$400,000 each, and a similar amount is divided among the three daughters of his deceased daughter, Mrs. G. R. Warwick, Toronto. C. E. Russell, General Manager and Secretary-Treasurer, Ottawa Transportation Co., receives \$1,000. There are a number of legacies to other relatives, friends and servants. Among his principal holdings were: Ottawa Traction Co., 3,120 shares, \$249,600; Shawinigan Water and Power Co., 3,773 shares, \$452,760; C.P.R., 1,013 shares, \$156,002; Ottawa Transportation Co., 422 shares, \$33,760; Ottawa Car Mfg. Co., 168 shares, \$23,520.

John Franklin Pierce, who has been appointed Assistant Traffic Manager, Canada Steamship Lines, Ltd., Montreal, was born at Chatham, Ont., on Sept. 6, 1877, and entered transportation service, Oct. 14, 1896, since when he has been, to Oct. 1904, clerk, Richelieu and Ontario Navigation Co., Montreal; Oct. 1904 to Oct. 1910, chief clerk, same company, Montreal; 1910 to 1912, Travelling Passenger Agent, same company, Boston, Mass.; 1912 to 1913, District Passenger Agent, same company, Boston, Mass.; 1913 to Dec. 1, 1914, Assistant General Passenger Agent, and General Baggage Agent, Canada Steamship Lines, Ltd., Montreal; Dec. 1, 1914 to April 1916, General Passenger Agent and General Baggage Agent, same company, Montreal; April 1916 to April 23, 1917, Assistant Passenger Traffic Manager, same company, Montreal.

Leonard Fisheries Ltd. has been incorporated under the Dominion Companies Act, with \$1,000,000 capital and office at Montreal, to carry on a general fishing and packing business, and in connection therewith to own and operate steam and other vessels, wharves, docks, etc.

Wooden Shipbuilding in Nova Scotia.

B. L. Tucker, lumber merchant, Parrsboro, N.S., is reported to have said in Montreal recently:—"There are now from 38 to 40 wooden ships on the stocks in Nova Scotia and we are well along to a big revival of the old busy, prosperous days. They are tern schooners of a carrying capacity of from 700 to 900 tons and are being turned out with the greatest dispatch. We have just launched a fine ship at Parrsboro and there is another on the stocks so recently vacated. There are five other vessels being built within a few miles of Parrsboro. The opposite shore of the Basin of Minas also is dotted with ship yards. Yards which four years ago were deserted and looked as if they would remain to be pointed out to the tourist as mementos of a past activity, have been born again at Meteghan, Weymouth and other parts along the Bay of Fundy. And the same is true of the Atlantic coast, Liverpool, Mahone and so on.

"While the builders are making big profits and have orders for all the ships they can build, the owners of these wooden ships have found them regular gold mines. Freight rates went sky rocketing and in two to three trips across to the United Kingdom the ships paid for themselves. On account of the submarine menace a number of the schooners have been held in Great Britain by the Admiralty—but that is one of the fortunes of these stirring times.

"Coupled with the rebirth of the old ship yards, has been the rejuvenation of the masters of wooden ships. All over the province were to be found aged sea captains who could spin wonderful sea yarns of the days when Nova Scotian ships were as familiar a sight in Rio, Shanghai, the Canaries, and Antwerp as they were in Halifax. Now the good old days have returned. With the building of schooners has come the demand for captains. Skilled sea captains cannot be developed in a day and many an old sea dog who had sighed over the passing of the 'good old days' has found himself again on the prancing deck of a saucy 'Sally Sue.' Nova Scotia is coming into her own again."

Standardized Ships for Great Britain.

Sir Leo Chiozza Money, Parliamentary Secretary to the British Shipping Controller, is credited with the statement that all ships now under construction in the United Kingdom or abroad are for the particular interests of the nation. He is also reported to have said: "The programme of shipbuilding construction laid down by the Government is a very big thing. It will be carried out as well by the estimative scheme as by standardization. What we want at present is what we commonly call tramp steamships, but something more than the ordinary vessel of that class. The question of speed is very important. It must be laid down that the new vessels must exceed in swiftness the underwater speed of the submarine. This is because underneath the surface the submarine cannot use her guns. There is a good deal to be said on this ground alone in favor of the policy of building the new type of standard ship."

On the same subject a correspondent of the British press writes: "From conversations I have had with leading shipbuilders I find that they are not altogether satisfied with the public idea about

the standard cargo ships which are being built as the swiftest way of meeting the dearth of shipping caused by the German submarine. I find that there is a very strong feeling among shipbuilders that, before constructing the new standard type, material should be provided for the completion of ships already in the stocks. The fact is that there are a number of ships in various stages still awaiting their steel plates. Some of these ships are standing as they were at the beginning of the war. Regarding the standard ships which are being laid down, not only in the yards accustomed to cargo boat construction, but in all the big yards, there are two varieties, but there is not much difference in type. The speed will be somewhat faster than the present carriers of that size. They will be the property of the state under the management of the Shipping Controller. They are being paid for on a new system, with a definite sum for on-cost charges and profit, to which will be added the cost of labor and material. The design was arranged by a conference of shipbuilders with the Controller, and one shipbuilder on the Clyde and one on the Tyne each drew the standard design for these localities."

U.S. Water Supply Regulations on Great Lakes Vessels.—The text of the regulation affecting water supply on vessels trading in interstate commerce on the Great Lakes was given in full in our last issue, and comment was made to the effect that the regulation was not thought to include Canadian vessels, as they are precluded from engaging in interstate traffic in the U.S. It has, however, been learned that the U.S. Health Department has indicated definitely that the new regulation will apply to Canadian vessels entering U.S. ports, as well as to U.S. vessels. The Dominion Marine Department has taken the matter up, and after having had a number of vessels examined, has come to the conclusion that it would be impossible to make the required alterations in time for the opening of navigation. Negotiations are pending with the U.S. Government, with a view to arranging for a suspension of the regulation as regards Canadian vessels, until arrangements can be made for the required alterations to be made at reasonable expense.

The Ocean and Inland Transportation Co., Ltd., Montreal, the incorporation of which was announced in our last issue, has been organized. The President of the company is C. I. deSola, Montreal, who has for many years represented Swan, Hunter and Wigham Richardson, Ltd., shipbuilders, of Newcastle, Eng., and is also Consul for Belgium. The company will undertake chiefly the chartering and buying and selling of steamships, and other work connected with the management and insurance of vessels.

CANADIAN PACIFIC RAILWAY CO.

Notice to Shareholders.

The date of the Annual General Meeting of the Shareholders of the Company having been changed by Bylaw from the first Wednesday in October to the first Wednesday in May in order to conform to the practice now generally adopted in the United States under regulations of the Interstate Commerce Commission of making the fiscal year of railway companies correspond with the calendar year

and which it is expected will be made applicable to Canadian railways by amendment to the Railway Act of Canada, the THIRTY-SIXTH ANNUAL GENERAL MEETING of the Shareholders for the election of Directors to take the places of retiring Directors and for the transaction of business generally, will be held on the second day of May next at the principal office of the Company at Montreal at twelve o'clock noon. A statement of the Company's financial position and the results of its operations during the half-year ended December 31st, 1916, will be submitted for the approval of the Shareholders.

Special Meeting.

The Meeting will be made Special for the purpose of considering and, if advisable, of authorizing the issue, upon the necessary statutory authority being obtained, of Collateral Trust Bonds of the Company for the purpose of acquiring securities of the Company and of Companies whose lines are leased to or operated under working arrangements with the Company, which are proposed to be compulsorily purchased by the Government of the United Kingdom of Great Britain and Ireland under regulations issued pursuant to the provisions of the Defence of the Realm (Consolidation) Act, 1914, and amending enactments, and if such issue is authorized, to sanction and approve the Agreement between the Government and the Company and to authorize and approve a form of Trust Deed to be given to secure the payment of such Collateral Trust Bonds, the whole as more particularly set out in a circular to be issued to the Shareholders prior to the date of the Meeting.

The Common Stock Transfer Books will be closed in Montreal, New York, and London at 3 p.m. on Tuesday, the tenth day of April. The Preference Stock Books will be closed in London at the same time.

All books will be re-opened on Thursday, the third day of May.

By order of the Board,

ERNEST ALEXANDER, Secretary.
Montreal, 29th March, 1917.

Are You in the Market for Trolley Catchers, Retrievers, Bases or Head Lights

We manufacture Knutson No. 5 Trolley Retriever, Knutson No. 2 Trolley Retriever, The Ideal Trolley Catcher, The Simplex Trolley Base, The Peerless No. 10 Roller-bearing Trolley Base, The Peerless Check Valve, The Peerless Junior Head Light, The Perfect Head Light, The Hollis Safety Fender, No. 3 Detachable Fender.

Trolley Supply Co.
CANTON, OHIO