

C-204-2-5  
c.3

# Canadian Railway AND Marine World

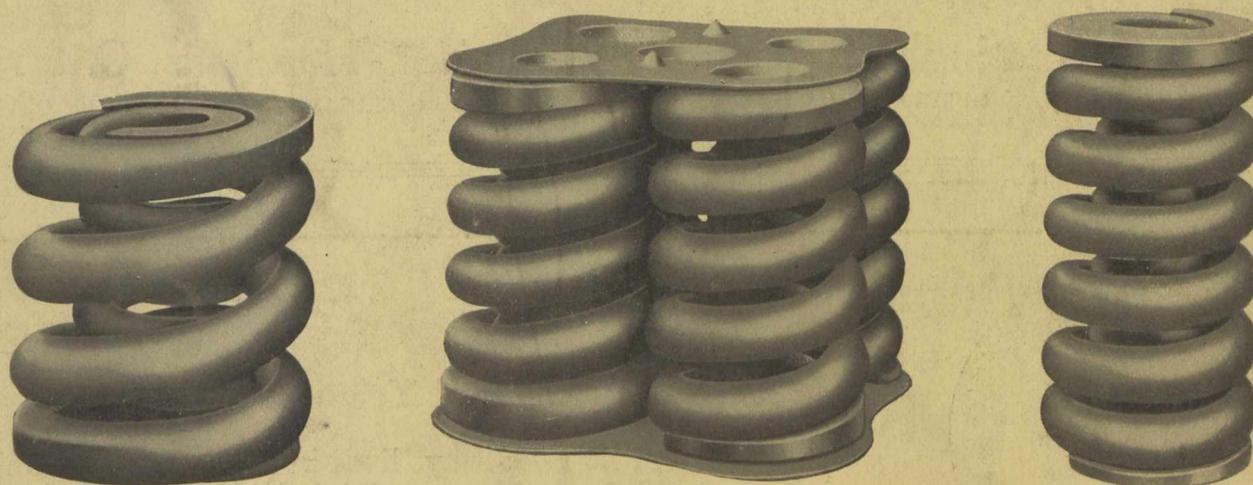
ESTABLISHED 1898.

Number 209

TORONTO, CANADA, JULY, 1915

Subscription Rates, Page 265

## Railway Springs



### Russian Government Car Springs

Draft, Truck, and Buffer Springs manufactured by us for the Eastern Car Company Ltd., New Glasgow, N.S. for use under the 2,000 box cars ordered by the Russian Government.

We manufacture every variety of spring.

*WRITE FOR ORDER FORMS TO*

## **B. J. Coghlin Company, Limited**

Office and Works, MONTREAL

Ontario Street East

Darling and Davidson Sts.

# Westinghouse Induction Motors

Drive Every Kind of Machine Successfully

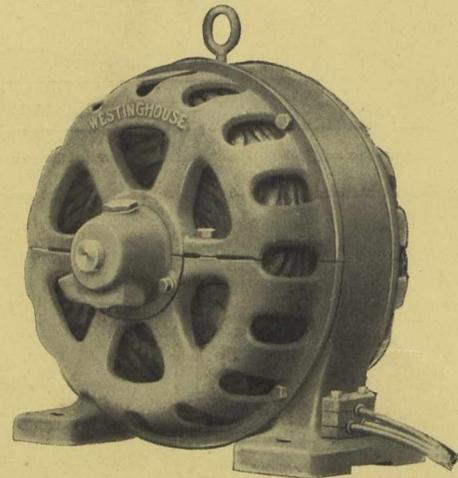
They are popular with the power user because:

He finds his power bills low.

His motor attendance and maintenance expense is almost nothing.

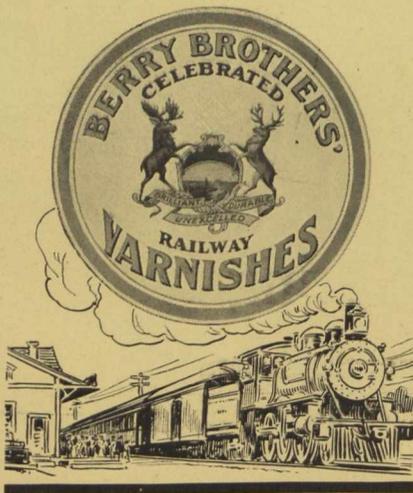
His machines are always ready to operate whenever wanted.

Many Westinghouse Induction Motors have been in continuous service for years and are still as good as ever.



**Canadian Westinghouse Company, Limited, Hamilton, Ontario**

TORONTO MONTREAL OTTAWA HALIFAX FT. WILLIAM WINNIPEG CALGARY EDMONTON VANCOUVER  
 Traders Bank Bldg. 52 Victoria Square Ahearn & Soper, Ltd. Telephone Bldg. Telfer Bldg. 158 Portage Ave. E. Grain Exchange Bldg. Dominion Bldg. Bank of Ottawa Bldg.



## Berry Brothers' Varnishes

Are the Result of Years of Experience

The man who has always lived in one small community talks only of those things pertaining to that community; is not the type of man the government would select to be admiral of a fleet or general in the army, or minister to some foreign court. The man who has been everywhere and seen life in its innumerable phases is as broad as his experience.

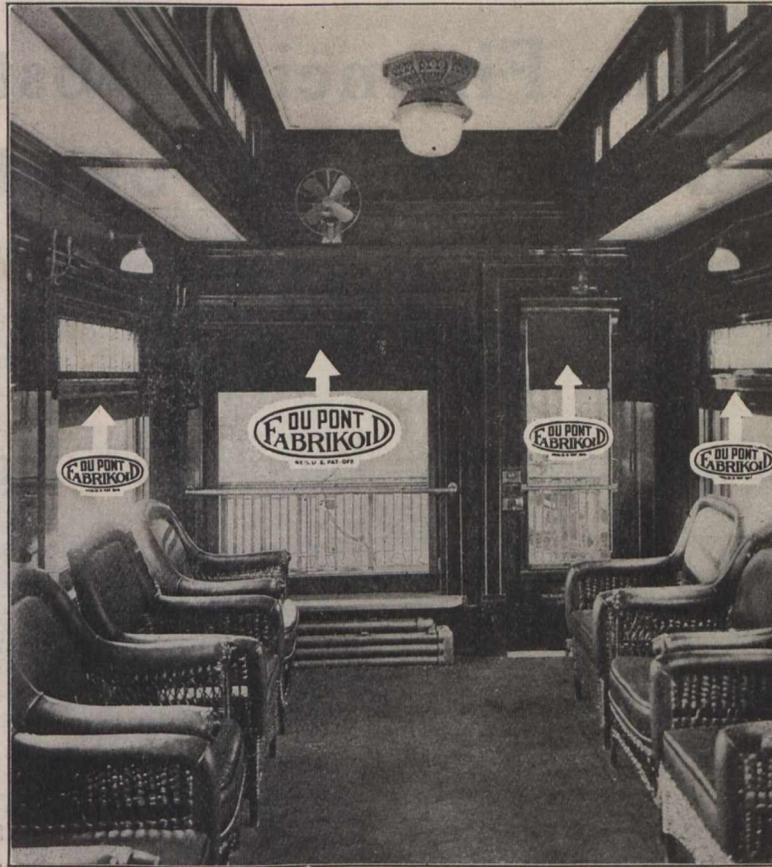
All the experience of those who make, sell and use varnishes have been embodied in the progress of BERRY BROTHERS' VARNISHES. These varnishes are the result of world-wide and time-tested experience, and therefore meet needs better.

*Let us send you some interesting literature on varnish problems*

**BERRY BROTHERS**  
 (INCORPORATED)  
 World's Largest Varnish Makers

WALKERVILLE

ONTARIO



## Why Cars "De Luxe" Are Fitted With Fabrikoid Curtains

Fabrikoid harmonizes with every detail of cars "De Luxe." It is as pliable as the softest leather; but it never splits. It looks like the richest curtain material on the market; yet it never creases, cracks or scales. In short

**F DU PONT FABRIKOID**

REG. U. S. PAT. OFF.

measures up to every requirement for car curtains. Besides, DU PONT FABRIKOID can be cleaned with soap and water; it is weather and water-proof; cuts your car curtain costs and is exceptionally low in first cost. Investigate—better still, write for samples and convince yourself.

# DuPont Fabrikoid Company

WILMINGTON, DELAWARE

Factories at Newburgh, N. Y. and Toronto, Canada

WENDELL & MacDUFFIE CO.

R. R. Department Representatives

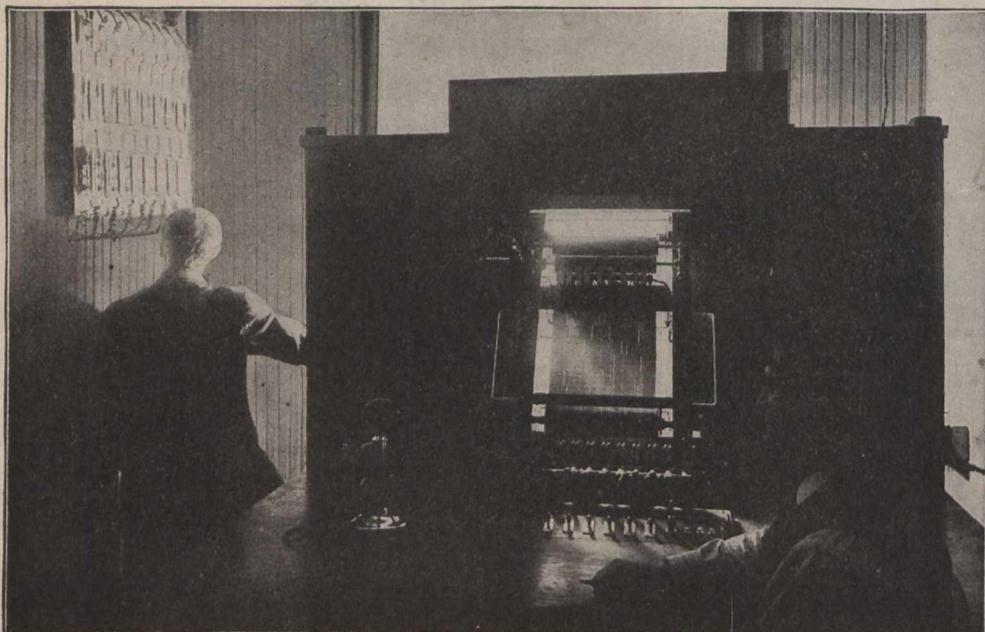
60 Broadway, New York, N. Y.

# Meeting One Financial Obstacle to Adequate Signal Protection

There is little doubt that there would be a tremendously greater amount of mileage protected by automatic block if first cost were the only difficulty to be encountered. The great difficulty, however, in the universal use of fixed automatic block signals is found in the continuous cost of maintenance.

The advantage in this respect of

## Simmen Automatic Block Cab Signals



is shown by the fact that none of the four roads which are operating the Simmen System have found it necessary to provide any special organization or additional labor for inspection purposes.

The reason for this is that the track and overhead installation of the Simmen System is so simple (involving no apparatus along the track except standard telephone overhead construction and simple signal rails) that the regular track and line maintenance labor is ample to care for these elements.

All operating electrical apparatus is either in the cab or in the dispatcher's office.

The cab apparatus is easily inspected when the car is in for regular inspection.

The apparatus in the dispatcher's office is readily inspected and cared for by the dispatcher, with the occasional assistance of a lineman.

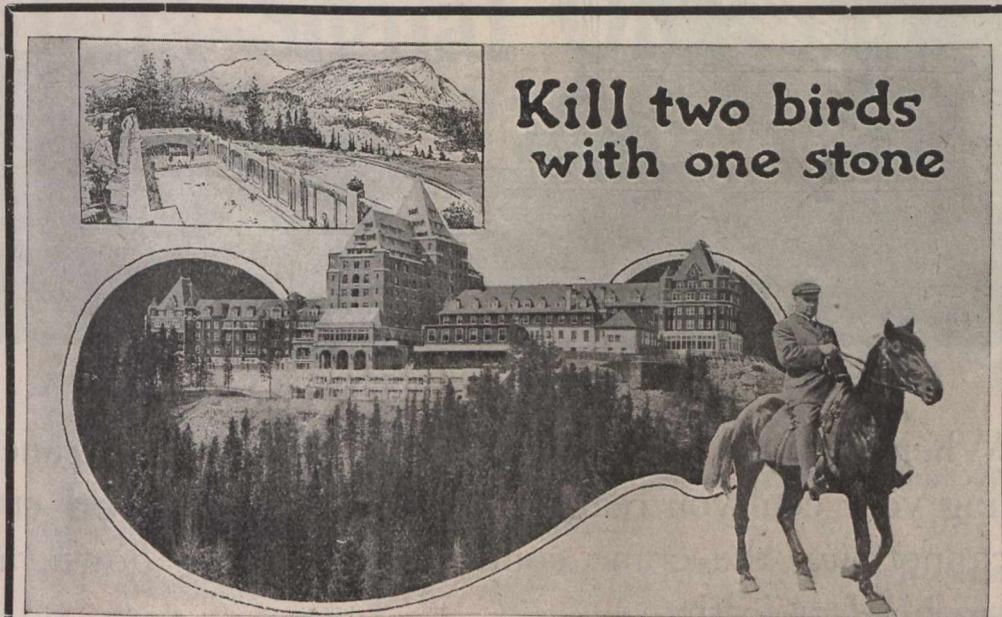
This enormous comparative saving in maintenance costs is proved by the experience of the four roads on which the **Simmen System** is now, and has for some time been, standardized.

The importance of this fact in any signal installation is obvious.

# THE NORTHEY-SIMMEN SIGNAL CO., Ltd.

## TORONTO

Simmen Automatic Railway Signal Co., Buffalo



and travel via THE  
**CANADIAN ROCKIES**  
 to the  
**PANAMA PACIFIC EXPOSITION**

If you are planning your 1915 trip to San Francisco, make sure your ticket reads via Canadian Pacific, otherwise you will miss the grandeur beauty of nature's most stupendous works—The Canadian Rockies.

**BANFF LAKE LOUISE FIELD GLACIER**

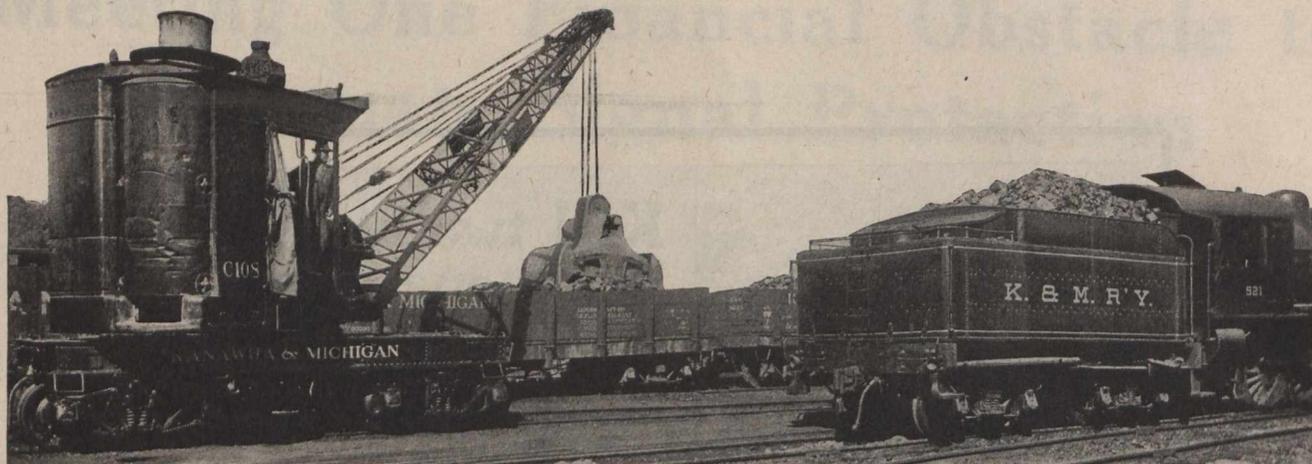
Are important tourist stop-over points on the Canadian Pacific Railway route to the Pacific Coast. These have excellent hotel accommodation, with opportunities for riding, climbing, swimming, boating and golf.

Agents will personally call on you to arrange your itinerary.

Write, phone or call on nearest C. P. R. Representative.

**W. FULTON**  
 Asst. Dist. Passenger Agent  
 Toronto.

**M. G. MURPHY**  
 Dist. Passenger Agent  
 Toronto.



When you are depending upon a locomotive crane for handling your coal you realize that it must be a **good** crane. You cannot have the crane continually breaking down, as it means a big loss in time.

## BROWNHOIST Locomotive Cranes

are being used to-day by railroad men because they realize that these cranes will do their work as it should be done. One road uses thirty of them. These cranes are built for hard, continuous service. And records prove that they will stand up under the severe working conditions. Ask the owners—they will tell you what Brownhoist cranes will do.

Write for our Catalog K, which shows how and where the Brownhoist Locomotive Crane is used.

**THE BROWN HOISTING MACHINERY CO.**  
**CLEVELAND, OHIO**

MONTREAL OFFICE, 145 St. James Street

# Galena-Signal Oil Company

Works

**Franklin, Pa., and Toronto, Ont.**

Canadian Sales Office—603 Shaughnessy Bldg., Montreal, Que.

Sole manufacturers of the celebrated GALENA COACH, ENGINE and CAR OILS, and SIBLEY'S PERFECTION VALVE and SIGNAL OILS.

GUARANTEE COST per thousand miles for from one to five years, when conditions warrant it.

Maintain EXPERT DEPARTMENT, which is an organization of skilled railway mechanics of wide and varied experience. Services of Experts furnished free of charge to patrons interested in the economical use of oils.

## STREET RAILWAY LUBRICATION A SPECIALTY

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USE

### Galena Railway Safety Oil

in Headlights, Marker and Classification Lamps, to secure Efficiency of Service, Maximum Candle Power, Clearness of Light.

### Galena Long Time Burner Oil

for use in Switch and Semaphore Lamps, and all lamps for long time burning, to avoid smoked and cracked chimneys and crusted wicks.

Tests and Correspondence Solicited.

**S. A. MEGEATH,**  
PRESIDENT.

**Highest Efficiency**



**CARS  
MADE  
RIGHT**

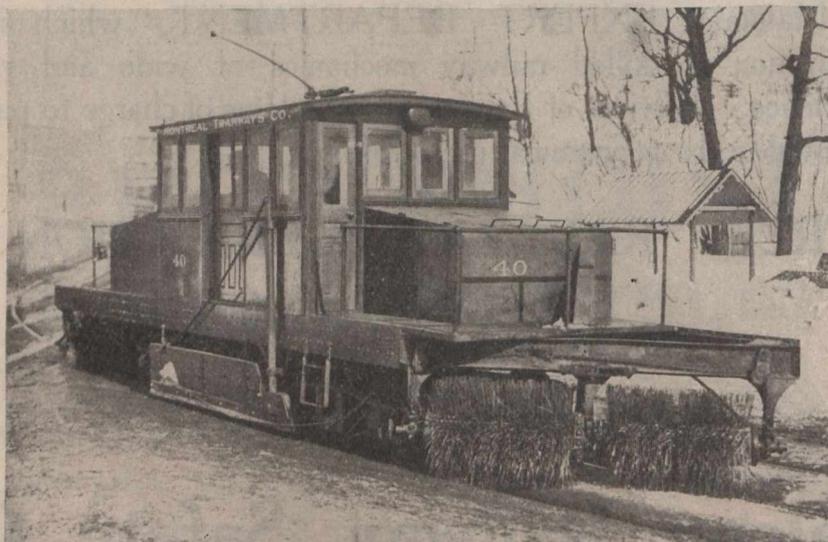
**Lowest  
Upkeep  
Cost**



**The  
OTTAWA CAR  
Manufacturing Co., Ltd.**

are Designers and Builders of

Electric City and Interurban passenger cars. Electric express cars and locomotives. Sprinklers and work cars. Car seats, car curtains and a very large variety of brass and bronze car fittings.



Snow Sweepers and Plows — the most perfect design and construction, simple mechanism, quick and effective operation. An immediate delivery can be made of Standard Sweepers, special types designed and built or built to your own specifications.

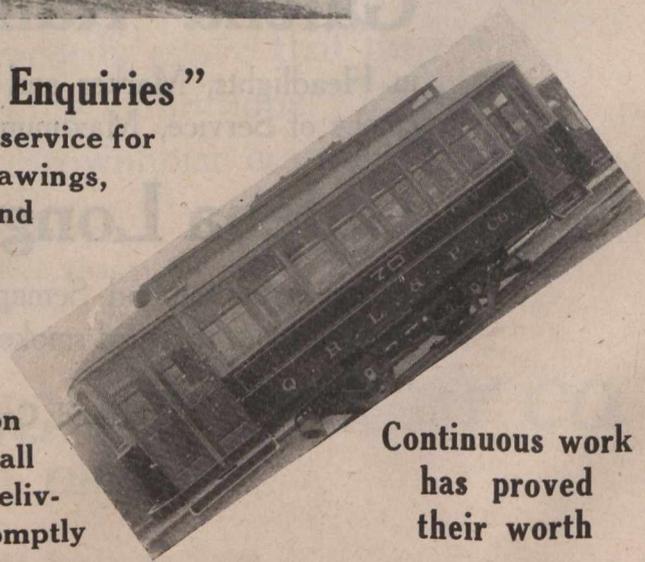
**“Send Them Your Enquiries”**

as they are at your service for specification, drawings, estimates and prices



**Always  
Ready  
for Service**

Satisfaction assured on all orders and deliveries made promptly

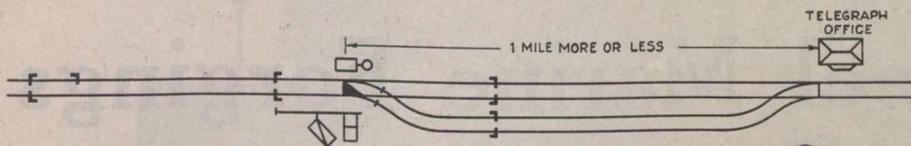


Continuous work has proved their worth

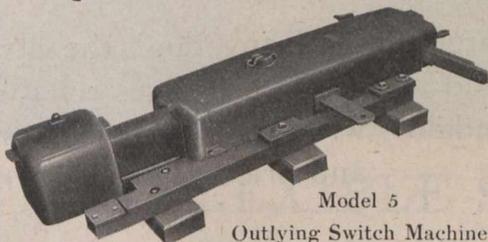
Remember the Address : COR. KENT AND SLATER STS., OTTAWA, ONT.

# Consider the Cost of Stopping Your Trains at Junction and Passing Track Switches in

## comparison to the cost of a Model 5 Low-voltage Switch Machine Layout



**T**HE elimination of one train stop per day would more than offset the fixed charges—interest on investment, depreciation and maintenance—of a Model 5 Outlying Switch Machine Layout.



Model 5  
Outlying Switch Machine

### Additional Stops Are Dollars Saved

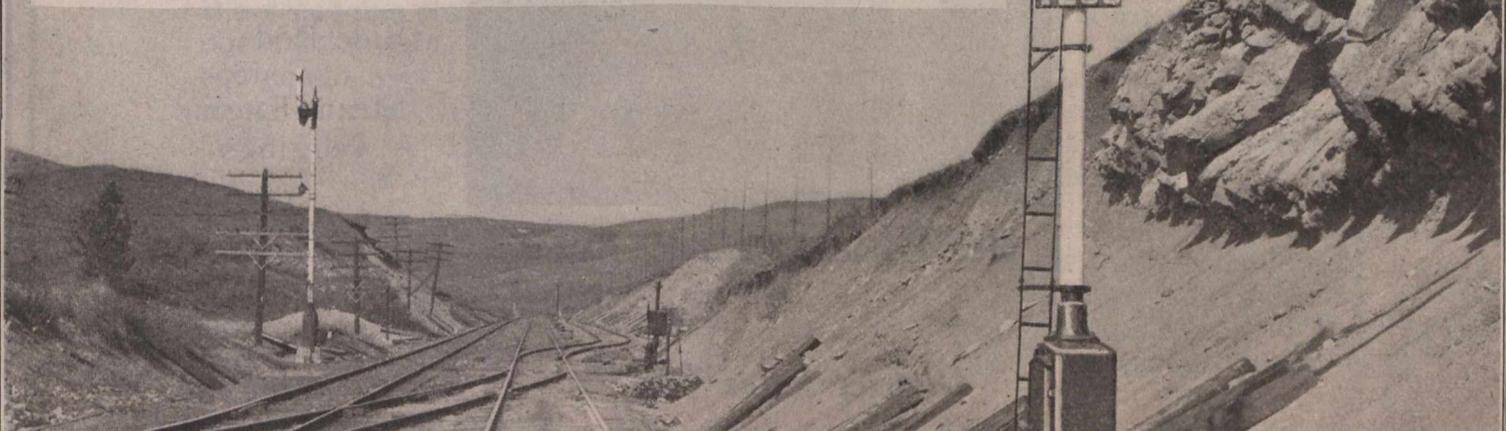
Four or more train stops per day eliminated will show a large yearly saving.

You not only effect a large yearly saving on a small investment, but you eliminate delays of several minutes for each train entering and leaving the siding, and thus facilitate traffic movements.

Further, you secure an efficient switch lock and insure a stop indication unless the switch points are in proper position.

With these facts before you, why not protect each outlying switch which will warrant the investment?

Ask for further information.



**GENERAL RAILWAY SIGNAL COMPANY**

**OF CANADA LIMITED**



Office and Works  
Lachine, Quebec

Branch Office  
Winnipeg, Man.

# The Steel Company of Canada, Limited

## HAMILTON, CANADA

### Special Steel Marine Forgings

When forgings are required to stand the strain of rough weather, and to prove themselves reliable and dependable, write us for particulars and prices.

We have the facilities for the production of heavy steel forgings of all kinds, including:

Connecting Rods

Crank Shafts

Eccentric or  
Cam Forgings

Marine Engine  
Forgings

Piston Heads

Piston Rods

Shafting



**Stern Frame of Steamship Hamonic**

Rounds

Squares

Rudder Frames

Stern Frames

Side Rods

Steam Engine  
Forgings

*District Sales Offices:*

**HAMILTON**

**MONTREAL**

**TORONTO**

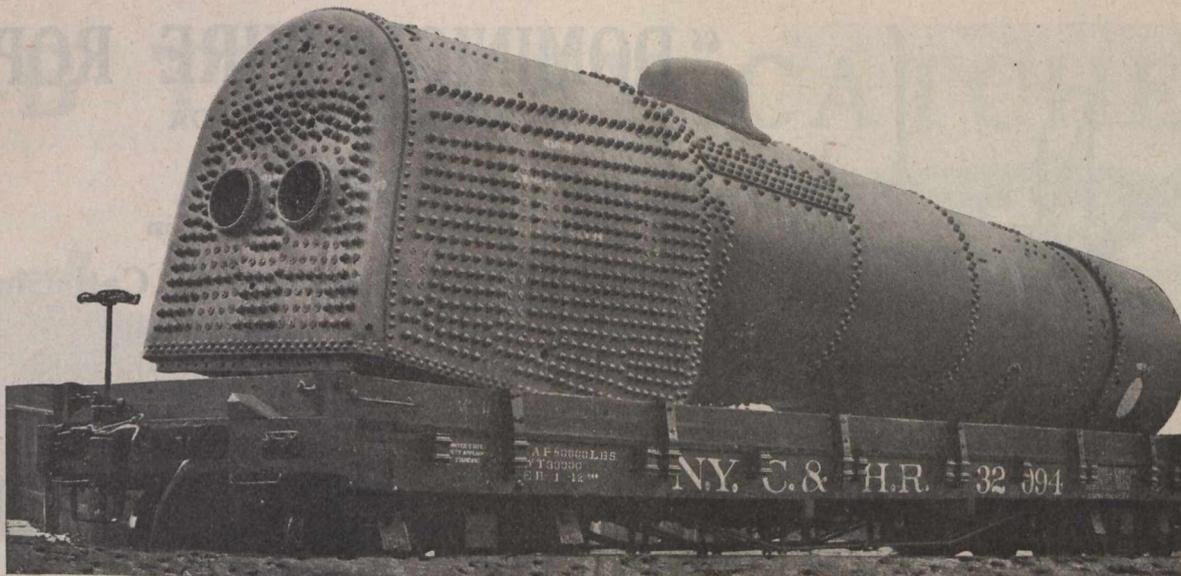
**WINNIPEG**

W. A. MacLennan, Vancouver, B.C.

J. B. H. Rickaby, Victoria, B.C.

H. G. Rogers, St. John, N.B.

Geo. D. Hatfield, Halifax, N.S.



## THE TATE FLEXIBLE STAYBOLT

VALUED NOT FOR WHAT IT COSTS  
BUT FOR WHAT IT SAVES—

It is quite difficult at times to determine the difference in the values of one article over another, for true values are oftentimes obtained only by service tests and experiments covering years of investigations and watchful attention.

**The true value of a staybolt** depends largely on what it can accomplish in the full scope of its usefulness over a long period of service, and in determining such, consideration should be given not only to the staybolt itself, but more particularly to what it accomplishes as a connecting member of the firebox in conserving and prolonging the life of the complete assemblage under all conditions of service.

**We recognize** that railroads are careful buyers—they have to be. The wisdom of obtaining net results at a minimum of expense in the use of their equipment over long periods of service, is the outcome of vast experiences, in which matters of true value regarding all purchases, are based not so much from the viewpoint of economy from first costs, as that obtained in the resulting or ultimate cost based on the service rendered.

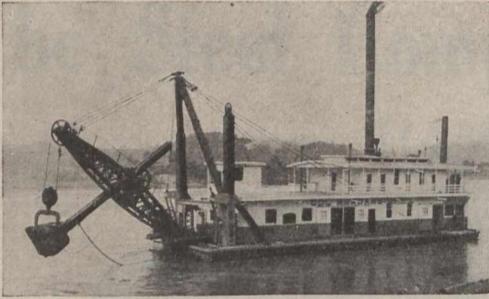
**The Tate Flexible Staybolt** is designed and made to give satisfactory results in the final measure of its usefulness, as an economic, safe and reliable factor in reducing the costs of firebox repairs and maintenance. This fact has been demonstrated in all instances where the Tate Bolt has been used, and it is the only way by which we can prove and point to its true value as a staybolt.

**SPECIFY AND APPLY THE TATE BOLT TO NEW FIREBOXES AND RENEWALS**

## FLANNERY BOLT COMPANY

Vanadium Building, Pittsburg, Pa.

Manufactured and Sold in Canada by Canadian Allis-Chalmers, Limited, General Offices, Toronto, Ont.



## “DOMINION WIRE ROPE”

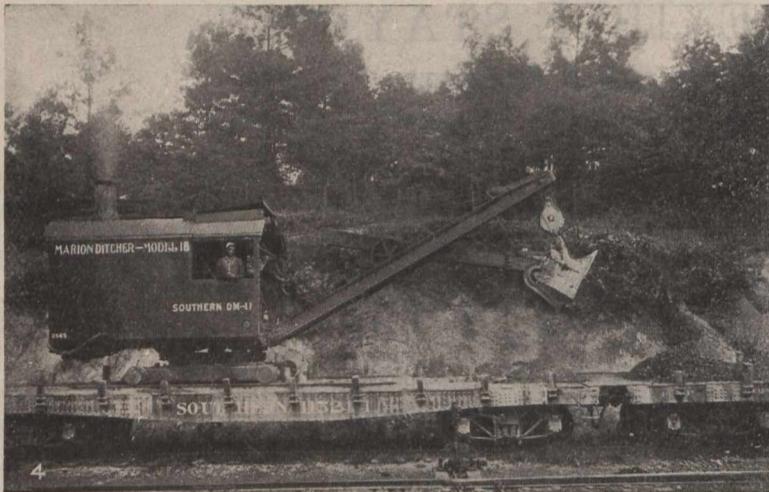
MADE IN CANADA

And Stocks Carried in

Montreal, Winnipeg and St. Catharines

Wire Rope for Dredges, Drag Line Excavators, Steam Shovels,  
Cranes, Derricks, Coal Towers, Towing, Etc.

**The DOMINION WIRE ROPE CO., LIMITED, MONTREAL**



## “Marion” Railroad DITCHERS

are specially designed for cleaning  
out or widening old ditches or cutting  
new ones along the right-of-way.

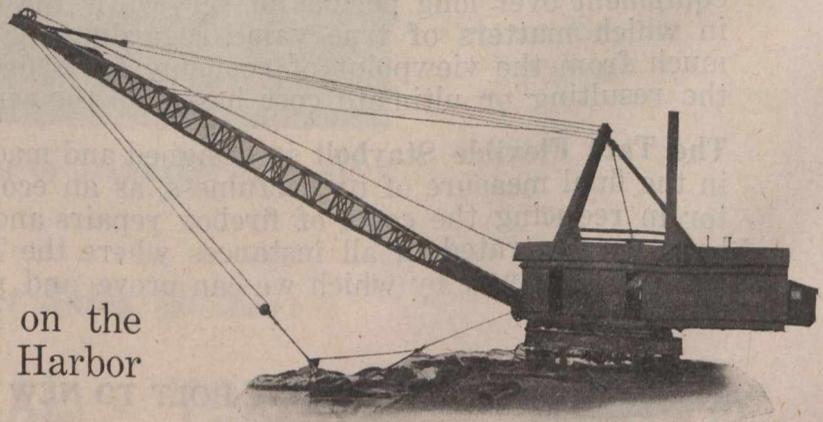
### —AUXILIARY USES—

They make excellent Revolving Shovels, Log  
Loaders, Locomotive Cranes, for handling  
Rails, Ties, Timbers, for Track-Laying pur-  
poses, Etc.

## “MARION” Scraper-Bucket Excavators

Built with Bucket Capacities  
Ranging from  $\frac{3}{4}$  to 6 cubic  
yards and Booms 40 to 115 ft.  
in length.

At present used in Canada on the  
Welland Canal and Halifax Harbor  
Work.



### BRANCHES

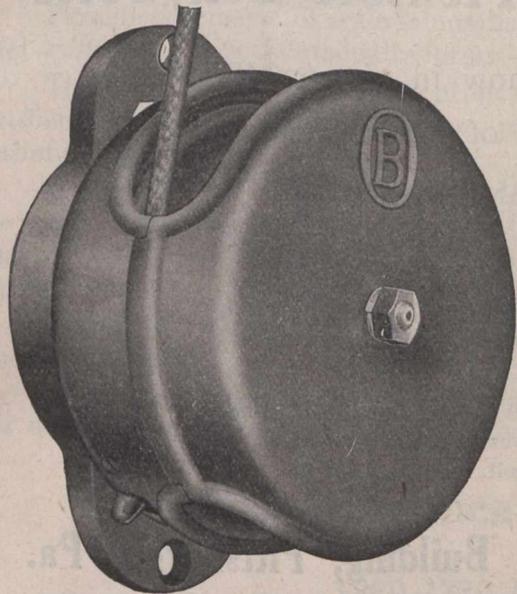
ST. CATHARINES, ONT.  
1206 Union Trust Bldg., Winnipeg, Man.  
VANCOUVER, B.C.

# F. H. Hopkins & Co

HEAD OFFICE  
MONTREAL

# O-B TROLLEY CATCHER

## Approved by Railway Men



Here are a few of the many favorable comments we have received:

“Goods furnished on trial have proved satisfactory, especially the trolley catcher.”

“Furnish just the same as those shipped on trial which were accepted.”

“You may bill us for the same at your earliest convenience. We feel sure they are well worth the price.”

We know the O-B Catcher is right and we want to show you. We will send you one for trial, to be returned at our expense if you are not pleased. Why not write to-day?

## The Ohio Brass Co.

Mansfield, Ohio, U.S.A.

# GENERAL SERVICE CARS

## OTIS DUMP CARS

PATENTED

THE MOST PRACTICAL CAR FOR ALL BULK FREIGHT.

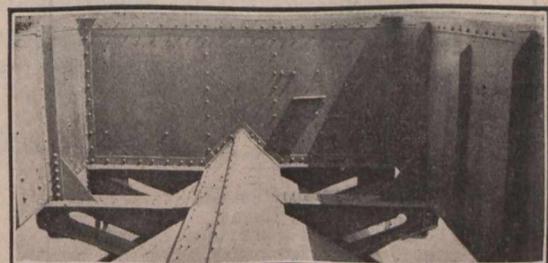
DUMP THE MATERIAL AND SAVE TIME AND MONEY. ALWAYS READY FOR USE.



In Ore Service.

THERE ARE THOUSANDS OF OTIS CARS IN USE IN COAL AND GENERAL SERVICE. A SIMPLE EASY OPERATING LEVEL FLOOR GONDOLA CAR THAT DUMPS THE ENTIRE LOAD.

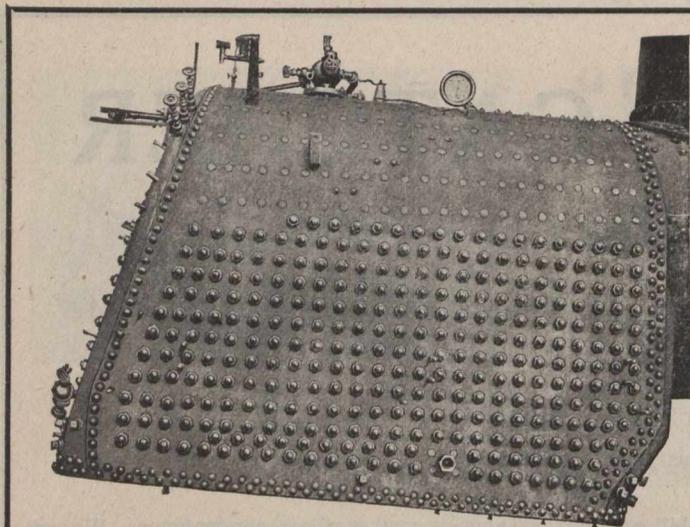
Made in All Sizes and Capacities for Regular or Special Requirements.



All Steel Car With Doors Open.

## THE HART-OTIS CAR CO., LIMITED : MONTREAL

—SOLE PATENTEES FOR GENERAL SERVICE CARS FOR CANADA—



## The Perfect Stay

For Locomotive Fire Boxes

## Tate Flexible Staybolts

Are now in use on 425 Railroads of the United States as well as the main Railroad Systems of Canada.

RECOGNIZED AS THE MOST ECONOMIC FLEXIBLE STAYBOLT now in the market, because the Tate Bolt has demonstrated its true functions as a mechanical appliance to service fire box requirements.

MANY RAILROAD SYSTEMS have kept accurate service records and show remarkable increase in the earning power of the locomotives that have been equipped with complete installations of the Tate Flexible Staybolt.

**FLANNERY BOLT COMPANY, Vanadium Building, Pittsburgh, Pa.**

Manufactured and sold in Canada by Canadian Allis-Chalmers, Limited, General Offices, Toronto, Ont.



### GRAND TRUNK HOTELS

#### The Chateau Laurier, Ottawa, Ont.

Accommodation 350 Rooms. Rates  
\$2.00 per day and upwards. Euro-  
pean Plan.

#### The Fort Garry, Winnipeg, Man.

Accommodation 300 Rooms. Rates  
\$2.00 per day and upwards. Euro-  
pean Plan.

#### The Macdonald, Edmonton, Alta.

Accommodation 250 Rooms. Rates  
\$2.00 per day and upwards. Euro-  
pean Plan.

Hotels under construction—  
The Qu' Appelle, Regina.  
The Prince Rupert, Prince Rupert.

G. T. BELL,  
Passenger Traffic Manager,  
Montreal, Que.

## Excellence in Railway Service

is expressed in what the

### Grand Trunk System

is offering the Travelling Public of Canada.

UNEXCELLED ROAD BED  
SUPERB DINING CAR SERVICE  
COURTEOUS ATTENTION  
MODERN EQUIPMENT

The Grand Trunk System reaches all trade centres in Eastern Canada, and is now a large factor in Western Canada traffic through the Grand Trunk Pacific Railway, recently completed to the Pacific coast.

### The International Limited

Canada's Train of superior service, leaves Montreal at 10.15 a.m. daily, arrives Toronto 5.45 p.m., London 8.53 p.m., Detroit 10.58 p.m., Chicago 8.00 a.m. Observation, Library, Compartment Cars. Modern in every detail. Electric lighted.

W. P. HINTON,  
Assistant Passenger Traffic Manager,  
Montreal, Que.

## The Science of Water Treatment

The Dearborn Company was organized because of the conviction on part of its founders that a scientific handling of the water treatment question was the only solution for the steam user of the troubles constantly arising as a result of scale formation, foaming, corrosion and pitting of boiler tubes, with all the attendant injury to the boilers, loss of heating efficiency, and waste of fuel.

Periodical removal of scale is unsatisfactory since there is a constantly increasing ratio of heat loss and fuel waste—as the scale gradually forms—aside from the injury to the boilers.

The Practical Method is **Prevention** and this can be effectively done only by attacking the mineral ingredients in the water with the proper reagents, changing their nature and character and eliminating their harmful qualities.

The application of scientific knowledge is most important in the choosing of reagents. Provision must be made for the various minerals present in the water, determined by analysis, as well as for the by-products that will be formed as a result of reactions brought about. Failure to give this phase due consideration may result in more serious trouble than the first condition of the water produced.

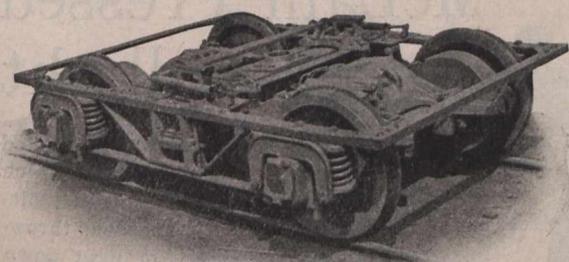
Unscientific "dope" compounds, ineffective and often harmful, have caused steam users endless annoyance and trouble.

We'd like an opportunity to demonstrate results by our methods. Gallon samples of the water supplies for analysis constitute the first step. May we have them?

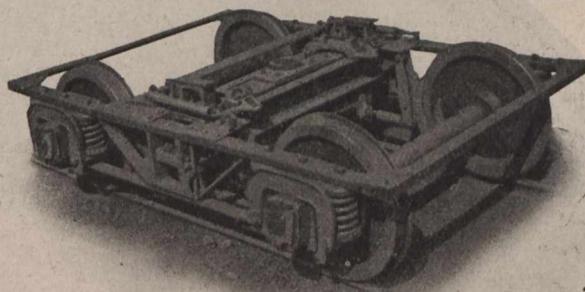
**Dearborn Chemical Company of Canada, Limited**

Office and Works,  
1220-1230 Dundas Street, TORONTO, ONT.

## The "National" Truck for Interurban Service



WITH MOTORS.



WITHOUT MOTORS.

When we can say that we have never had a dissatisfied customer it means that the "NATIONAL" Truck has unusual merit. It solves the problem of minimum weight with maximum efficiency and smooth riding qualities.

"There are no rough spots on the road that uses the "NATIONAL" Truck.

**National Steel Car Company, Limited**

Montreal Office  
Shaughnessy Building

ADDRESS INQUIRIES TO HAMILTON

Works and Operating Offices  
Hamilton, Ontario

MODERN HIGH-CLASS  
**ROLLING STOCK**



Passenger, Freight  
 and  
 Electric Railway,  
 Car Castings,  
 Forgings and Repair  
 Parts.

**CROSSEN CAR COMPANY, LTD.**  
 COBOURG      ONTARIO



The No. 25  
 McLain Pressed  
 Steel Headlight

is equipped with triple nickel-plated polished reflector of special parabolic design which centralizes the rays of a concentrated filament Mazda bulb perfectly focused, throwing a straight, strong beam of light down the track, far ahead of the car.

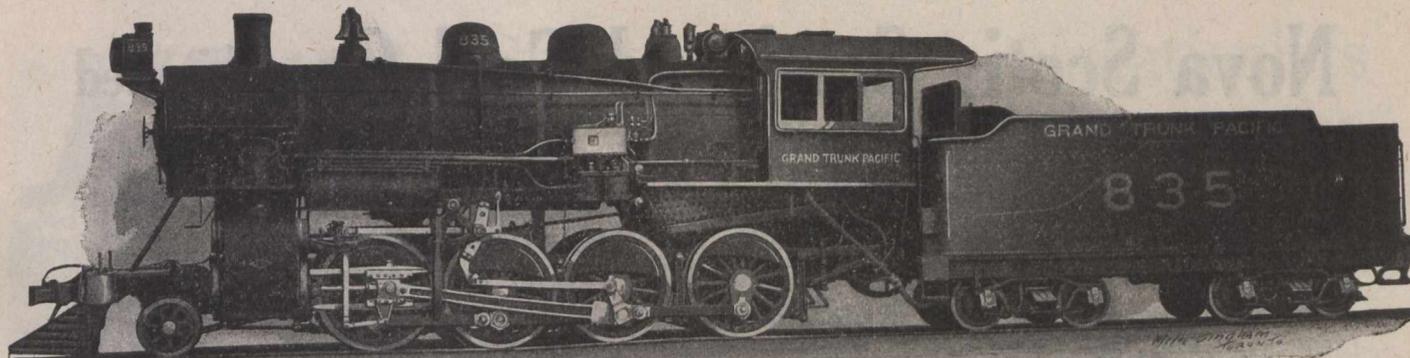
Extremely light—weighing three pounds less than any other Headlight.

No sacrifice has been made to attain this lightness of weight for the McLAIN No. 25 is as strong as any Headlight made, and has an illuminating power in excess of other Headlights employing an incandescent globe.

Has extended dash—Dust and waterproof.  
 Guaranteed to give good service.

Write for booklet and prices.

**The Trolley Supply Co.**  
 Canton, Ohio



Consolidated Type Locomotive Built for Freight Service on the Grand Trunk Pacific Railway.

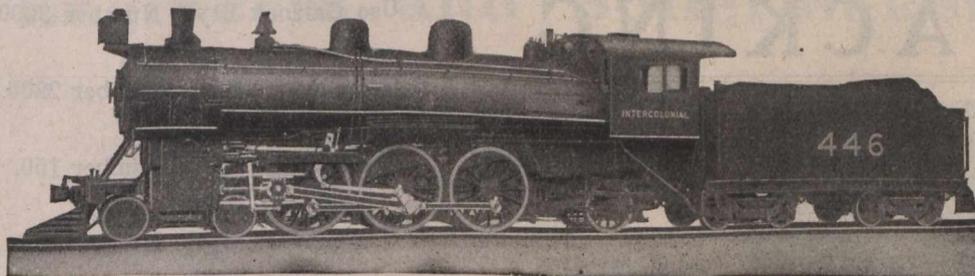
# LOCOMOTIVES

Long experience, new equipment, efficient management and expert workmen, are guarantees that our Locomotives will give record service. Over 1,200 Locomotives have been built at our Works since the erection of the plant. We are builders of Simple and Compound Locomotives adapted to every variety of service, for Railway Contractors, for Industrial Purposes, Mines, all classes of Railway Work, etc.

We are also builders of stationary boilers, suitable for contractors and industrial plants. Grey iron castings—any size or shape—ordinary or intricate—made promptly. New foundry, splendidly equipped. We would be pleased to quote on castings—singly or by contract. We also make drop forgings of all descriptions.

**CANADIAN LOCOMOTIVE CO., Limited, Kingston, Ontario**

## Heavier Trains—Less Coal and Water Per Trip



PACIFIC TYPE LOCOMOTIVE — INTERCOLONIAL RAILWAY.

Total weight of engine, 243,500 pounds; weight on drivers, 154,000 pounds; diameter of drivers, 73 inches; boiler pressure, 180 pounds; cylinders, 23½ x 28 inches; maximum tractive power, 32,400 pounds.

On a 185 mile run at an average speed of 40 miles per hour, these new Pacific type locomotives handle 10 cars and consume 12,884 pounds of coal and 9,750 gallons of water per trip.

Pacific type locomotives built five years ago, handled 9 cars on this same run at the same speed, but consumed 17,620 pounds of coal and 14,250 gallons of water per trip.

This is a saving of 26.9 per cent. in coal and 31.6 per cent. in water, with one extra car.

**MONTREAL LOCOMOTIVE WORKS, LIMITED,**  
DOMINION EXPRESS BUILDING, MONTREAL, CANADA

# Nova Scotia Steel and Coal Co., Limited

*Manufacturers of*

MARINE, RAILWAY AND GENERAL ENGINEERING FORGINGS OF ALL SHAPES AND UP TO 40 TONS IN WEIGHT, MADE FROM BEST ORDINARY OR HARMET FLUID COMPRESSED OPEN-HEARTH STEEL. OUR FORGE IS EQUIPPED WITH THE MOST MODERN STEAM HYDRAULIC PRESSES.

*RAILWAY TRACK MATERIAL, fish plate, tie plate, track bolts, spikes, tee rails—12 to 40 lbs. per yard.*

ROLLED STEEL FOR CAR BUILDERS' USE: Spring, machinery, tire, angle, and merchant bar steel, bright compressed shafting, rivets, tank plate—12-gauge up to 1" and 50" wide cold twisted steel bars for reinforced concrete work.

ALSO MINERS AND SHIPPERS OF THE CELEBRATED "OLD SYDNEY" COAL. HIGH CALIFORIC VALUE—LOW ASH—UNEXCELLED FOR STEAM-RAISING PURPOSES. BEST HOUSE COAL MINED IN CANADA.

Collieries, Iron and Steel  
Furnaces:  
SYDNEY MINES, C.B.

Coal Shipping  
Piers:  
NORTH SYDNEY, C.B.

Finishing Mills, Forge, and  
Engineering Shops:  
NEW GLASGOW, N.S.

ENQUIRIES SOLICITED

Western Steel Sales Office  
Room 14, Windsor Hotel,  
Montreal, Que.

Western Coal Sales Office:  
219, Board of Trade Bldg.,  
Montreal, Que.

Head Office:  
**NEW GLASGOW, N.S.**

## FOR PACKING



Style No. 3200

**THE GARLOCK PACKING CO.**  
HAMILTON ONTARIO

CALGARY  
TORONTO

BRANCHES:



MONTREAL  
WINNIPEG

Locomotive Throttles  
Use Garlock Style Number 3200.

Air Pump Piston Rods  
Use Garlock Style Number 2200.

Ball and Slip Joints  
Use Garlock Style Number 150.

Marine Engine Piston Rods  
Use Garlock Style Number 200.

Cold Water Piston Rods  
Use Garlock Style Number 99.

Inside Packed Plungers  
Use Garlock Style Number 260.

Outside Packed Plungers  
High Pressure Cold Water  
Use Garlock Style Number 960.

Outside Packed Plungers  
High Pressure Hot Water  
Use Garlock Style Number 1907.

These Packings are Guaranteed to give Satisfactory Service under the above conditions.



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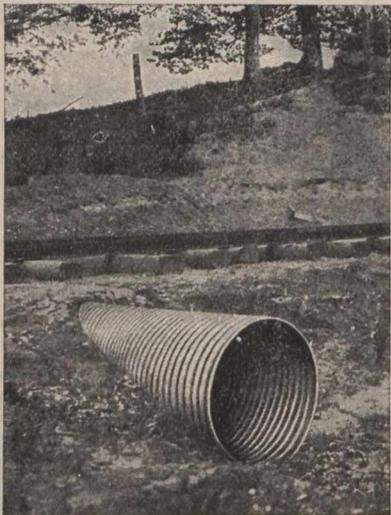
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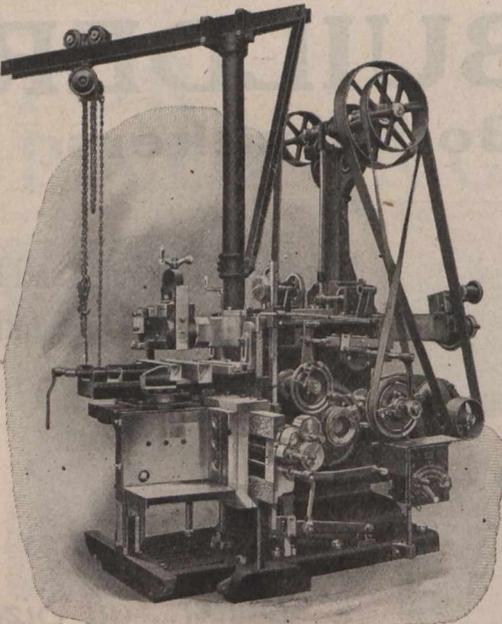
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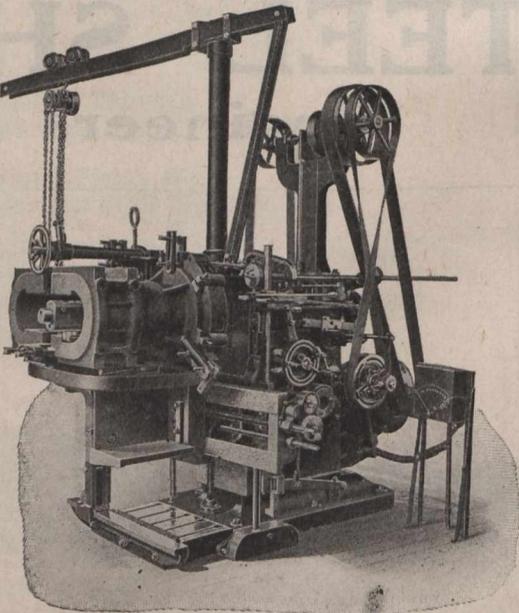
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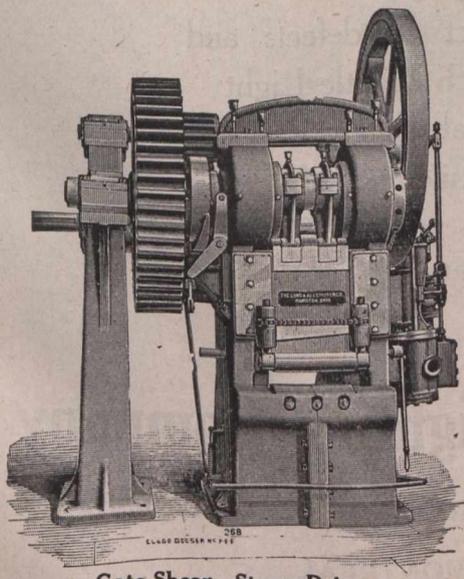
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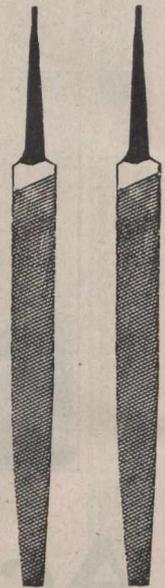
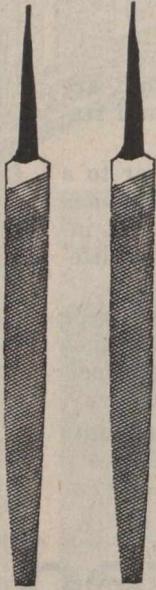
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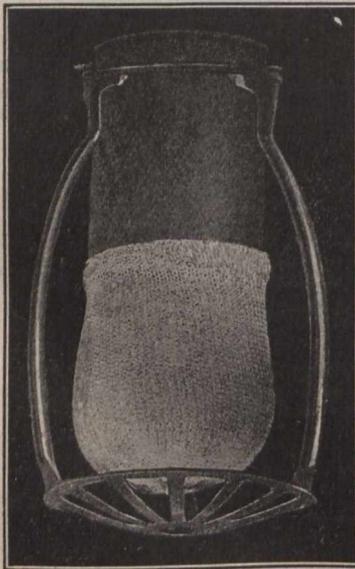
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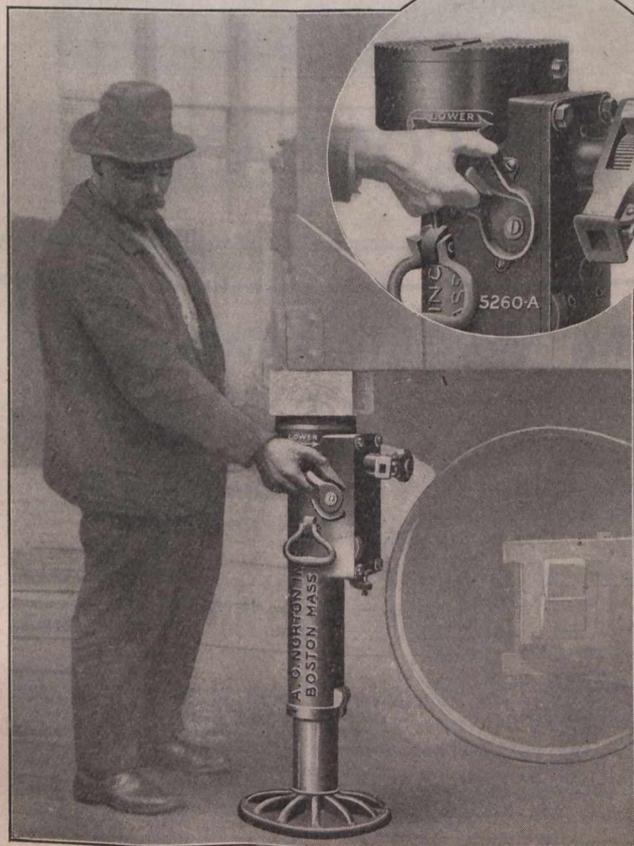
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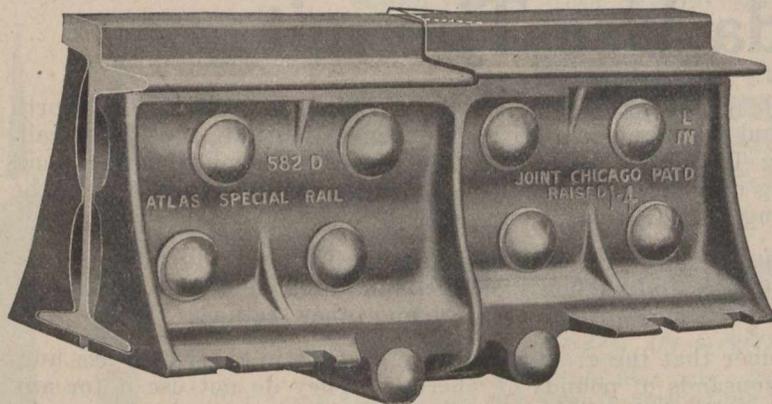
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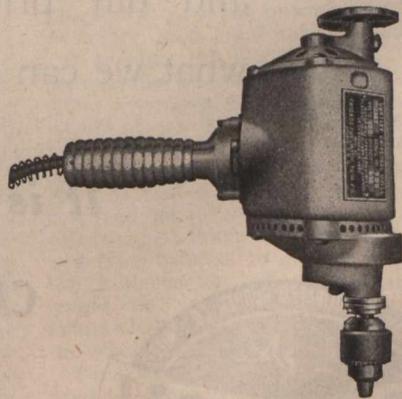
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# Canadian Railway and Marine World

July, 1915.

## The June Railway Mechanical Conventions at Atlantic City.

The two great railway mechanical conventions of the year, the American Railway Master Mechanics' Association, and the Master Car Builders' Association, were held in Atlantic City, N. J., the former on June 9 to 11, and the latter on June 14 to 16. The most important features of these annual conventions are the reports of the standing and special committees, and the individual papers presented, the principal ones of which are given on this and following pages, either in full or in abstract:—

### Report of Committee on Fuel Economy.

The American Railway Master Mechanics' committee, W. Schlafge, Mechanical Superintendent, Erie Rd., chairman, and of which W. H. Flynn, Superintendent of Motive Power, Michigan Central Rd., formerly Master Mechanic of its Canada Southern Division, was a member, submitted a report, of which the following is an abstract: Since its last report, the committee has been made a standing one, and as a result, an endeavour has been made to limit the scope of the report to a few of the leading essentials of fuel economy, that these might be completely determined.

The design of a locomotive boiler and firebox, together with appurtenances, which will permit of the largest possible amount of evaporation from a given amount of combustible burned, has the maximum efficiency, and is, therefore, the best boiler from the standpoint of fuel economy. Greater attention is now being given to the design of boilers, fireboxes, grates, ashpans and front ends, as these parts are interdependent. Comparisons of locomotives of 10 years ago with present day designs show that the ratio of total evaporative heating surface to grate area is now about 15% less, and the ratio of firebox heating surface to total evaporative heating surface, about 25% more than formerly, which is a step in the right direction. The amount of air opening in ashpans varies between large limits, from 3% to 18% of the grate area for bituminous, and from 10% to 33% for anthracite coal. The committee recommends that the air openings should never be below 12% for locomotives with 70 sq. ft. grate area, increasing for smaller grates.

The superheater means a saving of from 20% to 25% in coal and water, if properly maintained. Best operating results are obtained with full throttle opening and short cutoff. The principal causes of loss of superheater efficiency result from too high water causing priming, fire in poor condition, and the plugging of the superheater flues or superheater leaks. For best results, a temperature indicator is desirable, and a number of lines have so equipped their locomotives.

To obtain the best operating efficiency and fuel economy, in addition to the foregoing, the enginemen must be well instructed in their several duties. In consequence, the committee proposes a standard manual of instruction, which will embody all the essential points of efficient locomotive operation, and will at the same time be brief and

free from technical data. These instructions would be given in class and individually, followed by examinations.

The report contains the committee's conception of such a set of instructions. They commence with an introduction, explaining the need of co-operation, and showing the great expenditure on coal made by the railways. Bituminous and anthracite coals are then explained, followed by instructions on the inspection of the locomotive, preparation of the fire, taking coal and water, making the start, method of firing, operation of the locomotive, condition of fire reaching terminal, cleaning fires, final inspection and work reports and special instructions for the operation of superheater locomotives. The section on the method of firing is illustrated by 10 firebox diagrams, graphically illustrating the right and wrong methods. The instructions are very complete.

### Report of Committee on Draught Equipment.

The Master Car Builders' Association committee, D. F. Crawford, General Superintendent of Motive Power, Pennsylvania Lines West, chairman, submitted a report of which the following is an abstract:

Twenty questions were sent to the members, replies to which were received covering 956,879 cars. Sixty per cent. of these are of steel centre sill construction and are equipped with friction draught gear from a minimum of 100,000 lbs. to a maximum of 260,000 lbs. capacity. The capacity of these cars varies from 80,000 to 120,000 lbs. The question is involved whether the construction of a car is taken into consideration when a decision is being reached as to the capacity of the gear to be applied. It is evident that a draught gear of low capacity necessitates a better construction of car in order to take care of the shocks, which are meant to be absorbed by the gear.

The cars are about equally divided between friction and spring draught gears. About 75% experience trouble with the breaking off of the 1¼ in. rivets in the drawbar yoke of high capacity gears, but only a very small number experience difficulty with keys when used in place of rivets in yokes, or depending on keys instead of yokes. The preference in types of gears would appear to be with the friction type, over 80% favoring that kind. Opinion differs widely on recommended coupler travel in high capacity gears. With the friction type, this varies from 1 to 5 ins., with the larger number favoring travels around 2¾ ins.; with the spring type, from 1½ to 2¾ ins., the majority favoring 2½ ins. travel. Opinion also differs in the size of rivets used in front and back drawbar follower stops, varying from ⅝ in. with no. 6 both front and back, to ⅞ in. with no. 20, front and back. The greatest unanimity appears to be with ⅞ in. no. 9, ⅞ in. no. 10, and ⅞ in. no. 12. Seventy per cent. experience difficulty in keeping up the nuts on drawbar carry iron bolts. A speed limit on switching locomotives and cars in dump yards is reported by only 25%.

### Report of Committee on Maintenance and Operation of Electrical Equipment.

The American Railway Master Mechanics' Association committee, C. H. Quereau, Superintendent of Electrical Equipment, New York Central Rd., chairman, submitted a report of which the following is an abstract: Fourteen steam railways have been electrified to the extent of 591.3 route miles, including 1,761.65 miles of track. Ten years operation has proved its ability to handle successfully a heavy and exacting traffic, and experience gained has demonstrated that the only question to be considered is whether it will pay. This can only be determined by a detailed study of each problem.

The report includes plans and lists of shop equipment of shops built by two railways. A study of these shows that they are equally adapted to the repairs of either steam or electric equipment, and that the tools are necessary in any event for the maintenance of steam equipment alone. On the electrification of one line the only equipment required to be added to the shop that formerly handled steam equipment alone, was as follows: 21 x 12 in. portable hydraulic press using 1,100 lbs. water, and capable of exerting 190 tons pressure; hook for lifting the front end of locomotives; lifting beam for motors; lifting beam for removing and replacing cabs; special chuck for boring bearings; tension device for re-winding armatures on a driving wheel lathe; 3 k.w. insulation testing transformer mounted on a truck with voltmeters for testing between 200 and 6,000 volts; and a cradle for holding armatures. The manner in which the electrical equipment is handled is exactly the same as with any other equipment.

A noteworthy feature is that electric shops usually have lighter equipment than steam shops, due to the individual parts to be handled being lighter. The average age of employes in such shops is less than in steam shops, owing to the newness of the business, in which men have not had time to age in the service, the average older man fearing to take up a new line of work. Workmen with extensive electrical training are not essential, as 90% of the problems to be handled are mechanical. One characteristic difference between electric and steam equipment is that with steam equipment, the defect can be located in 5 mins., while with electrical, it takes an hour or two to locate, and from 5 mins. to a day to repair. A detailed discussion of maintenance methods would be unprofitable, as there are no acknowledged standard methods of handling the work.

The usual plan on the electrification of a road is to qualify the regular steam enginemen for service on the electric locomotives, which can be accomplished in a few days under the supervision of a qualified traveling engineer. A knowledge of the book of rules, significance of train orders and signals, experience in handling air brakes and an intimate knowledge of the territory constitute 90% of the qualifications of an engineman. The operation of electric equip-

ment is much simpler than steam equipment. It is thought advisable to consider only the mileage per detention in connection with

the records of the maintenance department, and the train delays under the subdivisions of man failure, electrical and mechanical.

### Report of Committee on Car Construction.

The Master Car Builders' Association Committee, W. F. Keisel, Jr., Assistant Mechanical Engineer, Pennsylvania Rd., chairman, submitted a report, of which the following is an abstract:

**Outside Hung Side Doors for New Cars—** Doors may be of either wood or steel, the former to be on a steel frame. They must be provided with continuous weather and fire proofing around the top, bottom, front and back edges when closed, with the top supported against outward pressure. The closed door stop must be of metal, preferably continuous, and if not, with at least two supports. The door bottom to be supported against outward pressure at least at two points. Bolt fastened door hangers to be so arranged that door cannot be removed without taking down track, the bolts to be at least 3/8 in., 4 per hanger. Door track to be either above or below the door opening. On wooden doors, the hasp fastener must be at least 24 ins. long, fastened with at least five 3/8 in. bolts, nuts on the inside. The hasp must be rivetted on steel doors. 3/8 in. bulging of door must not interfere with operation. These recommendations apply particularly to 6 ft. door openings and single outside hung side doors.

**Draught Gear.**—A large number of failures can be traced directly to weak centre sill construction and incorrect analysis of draught gear effect on centre sill construction, which has led to an elaboration in the report on draught gear problems. Rules have been formulated based on fundamental principles and comparable with the strength of other parts of the car. Many roads are modifying wooden cars, and the design shown herewith is submitted for the purpose of illustrating the use of the rules and formulae. The draught attachments must be of metal, either integral or rivetted, with a strength value of the draught attachments and centre sill equivalent to 10 sq. ins. of steel in tension and compression, 6 1/4 sq. ins. rivet bearing area, and 12 1/2 sq. ins. in shear, with a ratio of unit stress to end load not exceeding 0.15. The metal draught arms to extend at least 30 ins. beyond bolster, and securely fastened to bolster and centre sills, and where possible butted against compression members placed between the draught arms and needle beams and also between the needle beams. Hardwood or yellow pine centre sills may be considered equivalent to steel in centre sill construction between bolsters, if they have 4 times the specified unit values, but if reinforced with metal, either the wood or steel alone must meet the strength requirements.

The intensity of end force is assumed at 250,000 lbs. static, considered as concentrated on the draught gear centre line, or distributed between the draught gear and end sill, with the point of contact between the horn of the coupler and the striking plate 2 ins. above the top of the coupler shank. A 5 in. deep shank is 4 1/2 ins. from centre line to point of contact of coupler horn. The end force on the striking plate is 250,000—R, where R is the draught gear resistance when the horn touches the striking plate. Hence, with a 5 in. deep coupler shank, with the horn touching the striking plate the draught gear is solid, the end force of 250,000 lbs. is effective on a line a distance Y above the

$$\text{centre line, } Y = 4.5 \left( 1 - \frac{R}{250,000} \right)$$

In the design shown, the area of the centre sill is 21.28 sq. ins. Since under end shock the critical strain is compression, no reduction for rivet holes is necessary. The total moments of the sections about the top line of the cover plate is 98.44 in.-lbs., which, divided by the area 21.28, places the neutral axis of the section 4.626 ins. below the top line of the cover plate. The total moment of inertia works out to 296.4. As the neutral axis is equidistant from top and bottom fibres, the section modulus in both cases is the same, SM=296.4 ÷ 4.625=64. Then  $1 - \frac{X}{A} = \frac{1}{SM} - \frac{1}{X}$  from which X=6.6 ins., A SM 21.28 64 the maximum permissible eccentricity of end force.

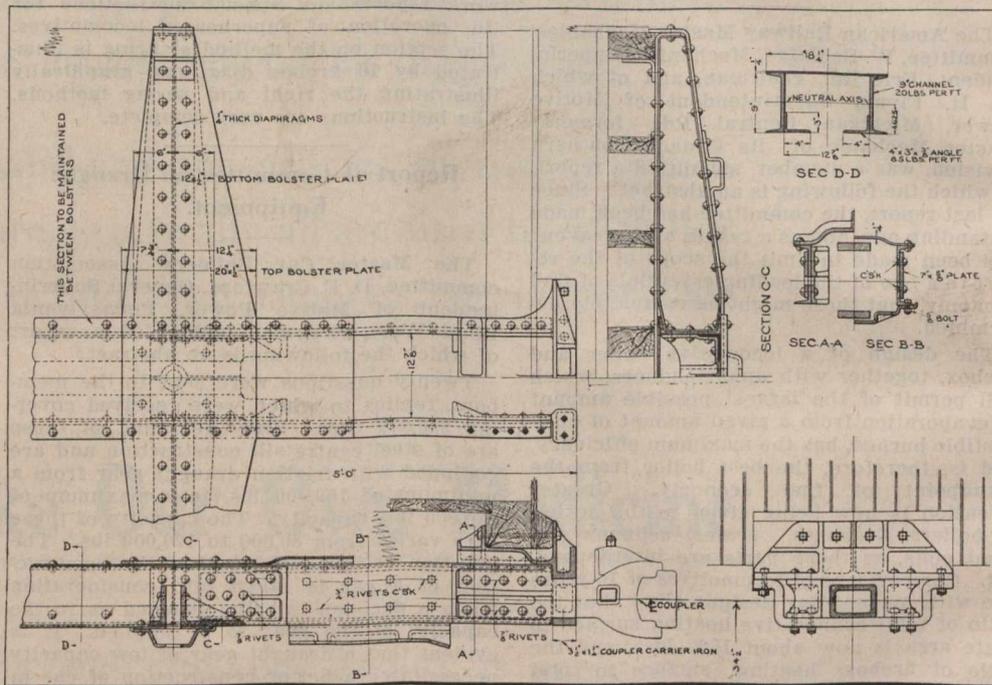
The permissible location of draught gear centre line depends on its resistance when

The highest line on which the total end force may be concentrated is 2 3/4 ins. above the neutral axis, or 4 ins. above the centre line of the draught gear, therefore the draught gear resistance when the horn of the coupler touches the striking plate must

$$\text{not be less than } 250,000 \left( 1 - \frac{4}{4.5} \right) = 27,800$$

lbs. Further analysis shows the minimum tension area is 17.2 sq. ins.; minimum compression area, 20.5 sq. ins.; minimum bearing area, 20.0 sq. ins.; and minimum shearing area, 13.8 sq. ins.; which meet requirements.

**Standard M. C. B. Box Car**—A tentative design of car is submitted in the report, that has a strength slightly in excess of the minimum requirements, a weight and cost the least possible per unit of strength, and one that will permit the substitution of stronger or patented parts. The steel sheathed type was selected as it avoids losses of lading on account of the shrinkage of single courses of wood, and because the smooth exterior reduces wind resistance, and because it permits the elimination of



Standard Reinforcing for Draught Gear of Existing Wooden Cars.

the coupler horn touches the striking plate. If this resistance, R, is 20,000 lbs., then  $Y = 4.5 \left( 1 - \frac{20,000}{250,000} \right) = 4.14$ . Hence, under

these conditions, the centre line must not be more than 6.6 + 4.14 = 10.74 ins. below the neutral axis, or not more than 6 1/2 ins. below the bottom line of channels. If R is 125,000 lbs., then Y is 2.25, giving a distance below the neutral axis of 8.85 ins. The design calls for the location of the draught gear 3 3/8 ins. above the bottom line of channels. The centre sill area is more than 16 sq. ins., so that it will meet requirements for steel underframes in existing cars, if the draught gear conditions are such that the ratio of unit stress to end force does not exceed 0.09. With the same procedure as before with this value, X is 2.75 ins., indicating that the resultant end force of 250,000 lbs. may take effect only within a range of 2 3/4 ins. above or below the neutral axis. As the actual location of the draught gear shown is 1 1/4 ins. below the neutral axis, it would be permissible to concentrate all the end force directly on the draught gear.

diagonal bracing. All parts of the underframe thought to be unnecessary have been eliminated, and as the side and end angles are a part of the side and end frames, the underframe consists of the centre sill construction, two bolsters and two crossbearers, the latter transferring the load from the centre sills to the side frame. The bolster cover plate is to be not less than 3/8 in. for 30 ton cars; 7-16 in. for 40 ton cars; and 1/2 in. for 50 ton cars. The centre sill end construction will have an area of 25.46 sq. ins., a neutral axis of section 4.938 ins. below the top of the cover plate, a moment of inertia of 462.4, and a section modulus at the top of 93.6, and at the bottom, of 86.03, giving a ratio of stress to end load less than 0.06. This centre sill is made up of a cover plate, two channels and two angles.

The side and end framing will be made of U shaped posts, with bottom angles and top Z bars. The side sheeting will be 1/2 in. thick, and the end sheeting, 1/4 in. The section modulus of all posts on a side, excepting the corner posts which will be 15.75, will be 20.7. The bottom angles and top Z bars for

the 30 ton cars will be  $\frac{3}{8}$  in. thick; 40 ton, 7-16 in.; and 50 ton,  $\frac{1}{2}$  in.

This box car has the following general dimensions:

Length of frame over striking casting .....	42 ft. 6 in.
Length over sheathing .....	9 ft. 1 $\frac{3}{8}$ in.
Length, inside .....	40 ft. 6 $\frac{1}{8}$ in.
Width, inside .....	8 ft. 6 in.
Height, inside .....	9 ft. 0 in.
Height, from rail to bottom of bolster .....	2 ft. 6 in.

Height, from rail to floor .....	3 ft. 8 $\frac{1}{2}$ in.
Height, from rail to top of running board .....	13 ft. 4 $\frac{1}{2}$ in.
Height, from rail to top of brake staff .....	14 ft. 2 in.
Width, at eaves .....	9 ft. 2 $\frac{3}{4}$ in.
Height, at eaves .....	12 ft. 5 $\frac{1}{4}$ in.
Side door opening:—	
Width and height .....	6 ft.; 8 ft. 6 $\frac{1}{4}$ in.
Cubic volume under carlines .....	3,096 cu. ft.

Complete drawings of this tentative design accompany the report.

second column of the table below, and then reduce to zero. Apply a 500 lb. load and reset the deflection instrument to zero. Apply the test load shown, and measure the deflection, which is desired to be 0.0625 in., and not exceeding 0.07 in. Then apply the set load, when the permanent set should not exceed 0.001 in. The beam should stand a total motion of the machine head of not less than 2 ins. without failure.

No. of Beam.	Def'n Load.	Set Load.	Ratio.
1 .....	6 500	14 000	47.0
2 .....	12 000	24 000	50.0
3 .....	18 000	30 000	60.0
4 .....	24 000	36 000	66.7
5 .....	30 000	42 000	71.2
6 .....	36 000	48 000	75.0

The test load corresponds with the working load, and with the exception of no. 1, varies at 6,000 lbs. intervals. The last column shows the ratio between the two loads.

## Report of Committee on Design, Construction and Inspection of Locomotive Boilers.

The American Railway Master Mechanics' Association Committee, C. E. Fuller, Superintendent of Motive Power, Union Pacific Rd., chairman, submitted a report, of which the following is an abstract:

Owing to the lack of time, the committee confined itself to the question of a uniform method of determining stresses:

**Longitudinal Barrel Seams and Patches**—In figuring net section of the plate, use the actual rivet hole diameter; in figuring rivet shear, use the actual diameter of the driven rivet; and in figuring the stress in the plate and the shear in the rivet when the barrel is not cylindrical where it joins the firebox wrapper sheet, use the maximum diameter. When the shells are cut to apply domes or manholes, the amount of metal in the flange and liner shall be equal in strength to the metal removed. When a separate flange is used at the base of the dome, its entire net area shall be assumed as reinforcement. Where the dome sheet is flanged directly to the shell of the boilers, a vertical distance of 2 ins. from the base of the flange shall be assumed as reinforcement, using the net area after the rivet holes are deducted and using 28,500 lbs. tensile strength per sq. in. as the ultimate strength if the dome sheet is welded vertically. Investigation of the strength of seams shall be along the lines of established engineering practice.

**Longitudinal Gusset Braces and Flat Surfaces**—In figuring the stress in diagonal braces, allow for the angularity of the braces. The sectional area of the brace and the strength of the attachment of the brace to the shell both be investigated and the lowest net strength used. In determining the strength of gusset braces for supporting the back head and tube sheets, use 100% of the rivet bearing area, measured at right angles to the longest edge of the gusset sheet, and of the three, select the minimum value. The calculation of stress in gusset braces shall cover both the section of the plate and the strength of the fasteners, and the lowest net strength shall be used. In figuring flat stayed surfaces such as back heads, the boundary of the unsupported flat surface shall be located a distance equal to outside radius of the flange measured from inside of shell. No supporting value shall be assigned to the stiffness of flat plates on flat surfaces, as it is too small to be of material value. Reinforcing plates such as back head liner shall not be figured as having any staying or supporting value, but shall merely be considered as mechanical reinforcements for various attachments, such as longitudinal stays, staybolts, etc. The distance beyond the outer row of flues on the tube sheets, assumed to be self-supporting, shall be 2 ins. In calculating the area to be stayed on front tube sheet, the area of the dry pipe hole shall be deducted. T irons or other members, when used subject to bending, shall be calculated without addition for strength of plate, and the stress in such beam and its abutments must not exceed 12,500 lbs. per sq. in. The spacing of

the rivets over the supported surface shall be in conformity with that specified for staybolts. No allowance for value of such beams shall be made in calculating the total area of longitudinal braces that may be attached thereto. Where there are a number of diagonal stays supporting a flat surface, such as back head or front tube sheet, the proportion of area allotted to each brace shall be as follows: Divide the entire net area to be stayed by the entire net area of braces. If it is felt that any individual brace is so segregated as to receive more than its fair proportion of the load, it shall be investigated separately as to the area which it supports. Patches when applied to the barrel of a boiler shall be designed with longitudinal and circumferential seams at least equal in strength to the main longitudinal and circumferential barrel seams. Patches may be applied to flat stayed surfaces with properly designed single rivetted seams without impairing the strength of the sheet.

**Staybolts, Radial Stays and Crown Bar Bolts**—In figuring the net area of staybolts to obtain the stress, the area of the tell-tale hole shall be deducted. When figuring area at root of thread, the area must depend upon the type of thread used, namely, U.S. V., or Whitworth. In determining the area for figuring stress on staybolts, the area of one staybolt shall be deducted from the rectangular area included between any four staybolts. In boilers with crown bars supported on fire box side sheets and sling stays, the sling stays shall be considered as carrying the entire load.

## Report of Committee on Brake Shoe and Brake Beam Equipment.

The Master Car Builders' Association Committee, C. H. Benjamin, Purdue University, chairman, submitted a report, of which the following is an abstract:

**Brake Shoes** have been tested at various speeds from 20 to 80 m.p.h., under pressures of application of from 1,080 to 2,000 lbs., from which certain conclusions have been deduced. The coefficient of friction diminishes as the pressure is increased, but for pressure between 12,000 and 18,000 lbs., the difference is slight. Pressures in excess of 18,000 lbs. are not economical. The coefficient of friction at high speeds is much less than at moderate speeds, the average at 80 m.p.h. being less than 10%, or less than half the corresponding average at 40 m.p.h. The coefficient of friction of filled or composition shoes is in all cases considerably greater than the average for cast iron shoes whether soft or chilled. General conclusions cannot be drawn as to the effect of speed on loss of weight, except that pressures in excess of 18,000 lbs. cause an abnormal loss. As pressure and speed increase, the wear of the shoe compared with the work done in stopping the wheel increases.

**Brake Beams**—For testing, apply an initial load corresponding to the beam in the

## Report of Standing Committee on Train Brake and Signal Equipment.

The Master Car Builders' Association committee, R. B. Kendig, General Mechanical Engineer, New York Central Rd., chairman, submitted a report of which the following is an abstract:

**Sliding Brake Pipe Hanger**—It has been found almost impossible to produce a gauge for use in determining the end locations of the brake and signal pipes to fix them in their proper relation to all other parts of the car so as to permit of the required lateral and vertical movements, with sliding or swinging hangers, without interference. The 1913 and 1914 reports contain ideas that will enable any road to design satisfactory devices.

**Clasp Truck Brake for Passenger Equipment Cars**—There are about 2,500 sets of clasp brakes on about a dozen lines. It appears to be maintaining its claims for reduced brake shoe wear per given number of ft. lbs. of brake work done, for reduced number of hot journals in so far as the brake may be responsible for them, for smoother riding of the car during the time of brake action and for remarkably low cost of maintenance, both with respect to the parts of the rigging itself and to the cost of brake shoe renewal, while the stopping efficiency is about 20% greater than the single shoe arrangement. Clasp brakes should be used where the wheel load is approximately 12,000 lbs., and should be used on all 4 wheel truck passenger cars weighing 96,000 lbs. or over, and on all 6 wheel truck cars weighing 136,000 lbs. or over.

**Hand Brakes for Heavy Passenger Cars**—No design of hand brake gear examined seems to be entirely satisfactory. What is needed is a hand brake rigging for heavy cars that will quickly take up all the brake chain slack, bringing the shoes in contact with the wheel, after which some means is required for easily increasing the leverage so as to make possible the required brake pressure by the average man, this increased leverage to come into play when the shoe movement is practically little or nothing. There is much to recommend the application of the hand brake to a single truck, since it reduces the total leverage.

Mathew Kelly, Resident Engineer, Toronto Terminals, district 4, C.P.R., Toronto, writes: "As a subscriber to Canadian Railway and Marine World for several years I wish to say that I find it very interesting."

The Canadian Pacific Ry. has in its board room in Montreal a map of Canada, size 100 x 10 ft., which took 3 draughtsmen 18 months to make.

## Report of Committee on Counterbalancing.

The American Railway Master Mechanics' Committee, S. G. Thompson, Superintendent of Motive Power, Philadelphia and Reading Ry., chairman, submitted a report of which the following is an abstract:

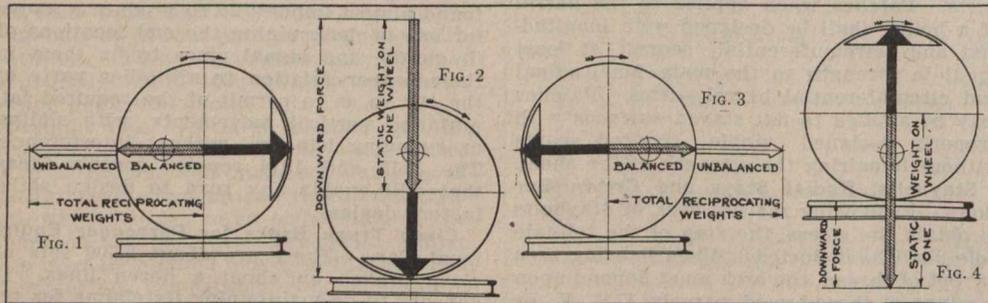
The report only considers the counterbalancing of two cylinder locomotives, as the three and four cylinder ones are less of a problem, their reciprocating parts largely balancing themselves. The principles are illustrated diagrammatically in the accompanying illustrations, representing conditions at high speed. The radius of the circle in each case represents the centrifugal force of the counterbalance, that is the centrifugal force of the weight added to partly counterbalance the reciprocating parts. The revolving parts may be assumed as perfectly balanced, so that the weight added for that purpose need not be considered, and is not represented in the figures.

Fig. 1 represents, by shaded and unshaded portions, the total weight of reciprocating parts, the shaded portion within the circle being balanced by the overbalance when the wheel is in the position shown. The portion without the circle is the unbalanced weight of reciprocating parts, which tends to cause

The main driving wheel should have added approximately half the total weight of the main rod, plus two thirds the weight of the eccentric arm, considered acting at crank pin distance, for outside valve gear.

The overbalance should be distributed as nearly equally as possible among all driving wheels, adding to it the weight of the revolving parts for each wheel. This sum for each wheel, if placed at a distance from the driving wheel centre equal to the length of the crank, or a proportionally less weight if at a greater distance, will be the counterbalance required.

Centrifugal and reciprocating forces are usually figured at a speed in miles per hour equal to the diameter of the driving wheel in inches, which may be considered a maximum for good practice. This is ordinarily referred to as diameter-speed. At this speed the reciprocating parts, due to the laws of inertia, tend to continue their motion at the end of each stroke with a force about equal to 40 times their weight. This dynamic augment varies with the stroke, ranging from 29.1 x W at diameter speed with an 18 in. stroke, to 54.9 x W at diameter speed with a 34 in. stroke. The overbalance exerts a



Figs. 1 to 4 Diagrammatic Representation of the Principles of Counterbalancing.

a nosing or fore and aft irregular movement of the locomotive.

Fig. 2 shows the position of the wheel after a quarter turn, in which the effect of the unbalanced reciprocating parts is eliminated, and the distorting forces are caused by the centrifugal force of the overbalance acting in a downward direction, the resultant effect on the track being the static weight on the driving wheel plus the centrifugal force of the overbalance. This position gives the greatest pressure on the rail.

Fig. 3 is similar to fig 1, and shows the effect of unbalanced reciprocating parts in the opposite direction, after another quarter turn. Slight differences in figs. 1 and 3, due to angularity of connecting rods, etc., need not be considered.

Fig. 4 shows the downward force on the track when crank pin is down and overbalance is up, this force being the difference between the static weight on driver and centrifugal force of the overbalance. This position gives the least pressure on the rail. The proportions show the overbalance to neutralize about half the static weight on the wheel, leaving half the static weight as the downward force on the track in this position of the crank.

The reciprocating parts to be considered in counterbalancing are: piston head, rod and nut; cross-head, cross-head key, pin and nuts; approximately half the total weight of the main rod; arm and link fastened to cross-head for outside valve gear. Each driving wheel should have sufficient weight added to counterbalance exactly the weight of its revolving parts, which are: crank pin, crank-pin hub, and the proportion of the weight of the side rods attached to the pin.

centrifugal force equal to about 40 times its weight, and is at a maximum at the top and bottom position of the crank. This force is added to the static weight, in the lower position of the overbalance, and is opposed to this weight, in the upper position, as shown in figs. 2 and 4. Approximately one fortieth of the static weight on a wheel will therefore give the weight of the reciprocating parts which could be balanced without causing the wheel to rise from the track at diameter-speed. This amount of balance would also double the load on the rail when the balance is down.

The method most generally used for many years in counterbalancing locomotives has been to balance a portion of the total weight of the reciprocating parts, usually about two-thirds. A second method, and the one recommended in the 1896-97 reports to the A.R.M. M., is to leave unbalanced, on each side of the locomotive, a portion of the reciprocating parts equal to 1-400 of the weight of the locomotive. Tests made on several locomotives disproved the value of both of these methods, and emphasized another relationship which seems paramount to proper counterbalancing: The ratio of the total weight of the reciprocating parts on each side of the locomotive to the total weight of the locomotive in working order. These tests also showed that the lighter the reciprocating parts can be made, better results will be obtained, and also that when counterbalancing for very high speed, a larger portion of the reciprocating weights can be left unbalanced than has been the practice.

A simple counterbalancing rule for good average results on any class of locomotives in any service, is as follows: Keep the total

weight of the reciprocating parts on each side of the locomotive below 1-160 of the total weight on the locomotive in working order, and then balance half the weight of the reciprocating parts. This general rule is based on diameter-speed, and should keep the dynamic augment well within the limits of good practice. Where the normal speed is regularly considerably below the diameter-speed, it may be desirable to increase the proportion of the reciprocating weights to be balanced, to as much as 60 or 65%.

Another counterbalancing rule is, to set an arbitrary percentage by which the dynamic force of the overbalance will be allowed to increase the static weight; for example: It is desired that the dynamic force of the overbalance at a diameter speed, should not increase the static weight on a wheel more than 50%. Then a 4-4-2 locomotive with 26-in. stroke and a static weight on one wheel of 30,000 lbs., the maximum permissible weight of reciprocating parts to be balanced in one wheel,

$$W = \frac{50\% \text{ static weight on one wheel} \times 0.312}{\text{crank radius in ins.}} = \frac{15,000 \times 0.312}{13} = 360 \text{ lbs. Therefore, the}$$

total reciprocating weight to be balanced on one side of this locomotive would be 720 lbs., and with 50% of the total reciprocating parts balanced on one side, the total weight of these parts must be designed to weigh 1,440 lbs.

The converse of this, given a weight of reciprocating parts balanced in one wheel, W, as 360 lbs., the dynamic augment,  $A = W \times 3.2 \times \text{crank radius in ins.} = 360 \times 3.2 \times 13 = 15,000$  lbs. Therefore, 15,000 lbs. dynamic weight is added to the 30,000 lbs. static weight, giving a total of 45,000 lbs. on the rail.

The dynamic augment may be expressed in percentage of the static weight on one driving wheel. 50% increase in the static weight on the driver at diameter-speed would represent good average practice, while much less than this percentage is greatly to be desired. The secret of proper counterbalancing for any class of locomotive in any service is to reduce the weight of the reciprocating parts as far as possible, lighter than the average practice, and more in line with those built in 1914, with specially light reciprocating parts.

Great benefit will be obtained if the railways will determine the maximum load that they can carry on the rails, bridges, etc., and then reduce the weight of the reciprocating parts to a point where the dynamic augment of the parts balanced will be only a small proportion of this maximum allowed load. Special designs of piston heads, cross-heads, hollow piston rods, and the use of high grade materials, including heat treated carbon and alloy steel, aluminum, etc., make it possible to construct very light parts, the expense of which will be many times justified by the consequent saving in repairs to equipment and track, as well as the saving due to the increase in tractive power of the locomotives. With a refinement of design along these lines, it is altogether possible to construct reciprocating parts approaching in lightness 1-240 of the total weight of the locomotive in working order, instead of 1-160 as expressed in the previously mentioned general rule representing a fair average. With an increased tendency toward these very light parts, the percentage of parts balanced or unbalanced becomes less and less a factor. Greater efficiency is thus given to the locomotive, in that more and more of the weight allowable on the rail will be used in starting and pulling the train.

### Report of Committee on Car Wheels.

The Master Car Builders' Association Committee, W. C. A. Henry, Superintendent of Motive Power, Pennsylvania Lines, chairman, and of which R. W. Burnett, ex-General Master Car Builder, C.P.R., is a member, submitted a report of which the following is an abstract:

The report is a progress one, as it was impossible to complete in time the various investigations on car wheel designs that are under way. A circular of enquiry elicited replies from roads covering 1,297,909 cars. Of wheels reported cracked or broken, 904 were 625 lb. wheels, 651 were 675 lb. and 647 were 725 lb. Of the 625 lb. wheels, 63.6% were under refrigerator cars, and as on all cars of 60,000 lbs. and less, only 11.6% are refrigerator, the percentage of failures is disproportionate. A large number of 625 lb. wheels failed under refrigerator cars of a gross weight of 105,000 lbs. or over, which is a greater weight than is supposed to be carried by those wheels.

Breaking and cracking of plates of cast iron wheels occurs to a large extent on roads having long and heavy grades, and the heating due to the continued application of the brakes is undoubtedly the reason for these failures. M.C.B. practice is to brake cars to 60% of their light weight with 50 lbs. pressure. The result of this is that a 60,000 lb. refrigerator car weighing 44,000 lbs. with 625 lb. wheels will have a braking power in many instances equal to or greater than a 100,000 lbs. car weighing 40,000 lbs. with 725 lb. wheels. It is again recommended that wheels of the proper size be used, as at present many cars are running with lighter wheels than are proper.

A suggested change of tread taper from 1 in 20 to 1 in 38 is not approved, as it is thought that any change would be detrimental to the wheel.

### Report of Committee on Locomotive Headlights.

The American Railway Master Mechanics' Association committee, D. F. Crawford, General Superintendent of Motive Power, Pennsylvania Lines, chairman, and of which W. H. Flynn, Superintendent of Motive Power, Michigan Central Rd., and formerly Master Mechanic of its Canada Southern division, is a member, submitted a report of which the following is an abstract:

Incandescent lamp headlight standards should be adopted. The voltage should be 6 volts, as this will permit the use of standard 6-volt automobile lamps in the cab, markers, etc., having the strongest possible filament of the most rugged construction. A complete line of 6 and 7 volt lamps has been manufactured for some years past for automobile service. This voltage will permit the use of a small storage battery on the locomotive, if so desired, and can be obtained from a small turbo-generator as readily as any other voltage.

An incandescent lamp of approximately 50 mean horizontal candle-power will give sufficient light to meet the recommended maximum requirement of 3,000 apparent beam candle-power. Concentrated filament tungsten lamps are now regularly manufactured in candle powers of 50, 100 and 160 at 6 and 7 volts, for headlight service. The two larger sizes are not deemed necessary by the committee. The lamps recommended for use in the headlight are 50 c.p., 7 volt, G-20 clear bulb, Edison screw base (style 100), loop-back tungsten filament, multiple burning, headlight lamp, and for use in the

cab, markers, etc., 6 c.p., 7 volt, G-10 clear bulb, double-contact bayonet candelabra base (style 1000), tungsten filament, multiple burning lamps. Standard bayonet double-contact sockets are recommended for bayonet base lamps. Standard Edison screw sockets, equipped with Benjamin lamp grip, or equivalent, are recommended for use with the headlight lamp. When metal reflectors are used, the minimum nominal diameter should not be less than 16 ins. When parabolic glass reflectors or semaphore type lenses are used, the minimum nominal diameter should not be less than 12 ins.

The report also outlines the recommended method of photometering and contains recent federal and state headlight legislation in the United States.

### Report of Committee on Loading Rules.

The Master Car Builders' Association committee, A. Kearney, Assistant Superintendent of Motive Power, Norfolk and Western Ry., chairman, submitted a report of which the following is an abstract.

The suggestions in the main have reference to new rules covering shipments of materials and machinery which have not been completely covered by former rules. In addition there are a number of corrections and minor alterations. The question of loading heavy stone shipments was considered, especially what is termed mill-block, containing 100 cu. ft. and upwards. Tests made with such blocks showed that at 4 m.p.h. with the standard end stakes, the blocks moved slightly. Tests in train service demonstrated the same thing. This subject is covered by a suggested addition to the present ruling on stone loading. Illustrations show the approved method of loading mining cars in gondola cars, loading gasoline tractor engines on flat cars and loading brick 15 ins. or less in length without door protection.

In the matter of loading rules regarding the overhead inspection of box cars, few additional roads have done very much toward even trying the proposed certificate of inspection card, although it was recommended by the American Railway Association. Those that are experimenting have found difficulty, it is reported, and quite naturally, on account of so few roads having taken up the proposed inspection. It may be unfortunate it has not received wider attention, if for nothing else than to ascertain its value or determine what, if any, alterations and modifications might be effected to make it more suitable, and possibly better accomplish the desired end, or possibly permit the working out of some entirely different direction for higher general efficiency.

With reference to loading rules regarding interline loading, after consultation with the American Railway Association, it has been concluded that doubtless the energies of the M. C. B. committee might be best utilized by assisting the committee of the American Railway Association. It was considered such a course would be most profitable, besides being helpful toward a better understanding of the M. C. B. loading rules requirements, which have for their principle mainly the safe carriage of shipments. It should also tend to harmonize related rules reached by the classification committee in the formulation of their schedules.

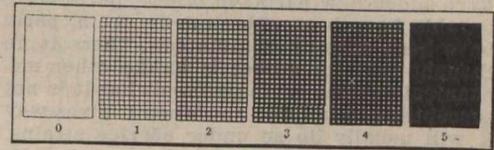
### Report of Committee on Smoke Prevention.

The American Railway Master Mechanics' Association committee, E. W. Pratt, Assist-

ant Superintendent of Motive Power, Chicago and North Western Ry., chairman, submitted a report of which the following is an abstract:

No new tests were made during the year with smoke preventing apparatus on locomotives, but as inquiries had been received by the committee on the smoke improvements in Chicago, the report deals with developments in that city. Another year's use of the steam jets, quick action blowers, etc., recommended in the 1913 report, confirms the belief that locomotives so equipped and properly handled are practically free from smoke. These devices are accepted as standard by the city.

City smoke inspection costs about \$39,000 a year, and railway inspection about \$65,000 a year. The railway inspectors have formed a joint smoke inspection bureau, which has issued instruction cards to all its inspectors.



The Ringelmann Smoke Chart.

These inspectors not only inspect their own lines, but also other lines. The city inspectors have their work divided into districts. They inspect the smoke for a total of 2 hours daily, either in one period, or in 15 min. periods, the Ringelmann chart shown herewith being used. An engine-minute covers the observation of one locomotive during one entire minute. During this minute, 14 secs. or less are not counted; 15 to 45 secs. count as  $\frac{1}{2}$  min.; and 45 to 75 secs. as 1 engine-minute. One minute of no. 1 density is a smoke unit, so that  $\frac{1}{2}$  min. of no. 1 is 0.5. The percentage of smoke density is obtained by multiplying the smoke units by 20, and dividing the product by the total engine minutes. The tabulation for Feb. 1915, shows the G. T. R. with the lowest percentage density, 1.91%. The total city density has decreased from 22.3% in 1910 to 7.41% in 1914.

### Report of Committee on Settlement Prices for Reinforced Wooden Cars.

The Master Car Builders' Association committee, J. McMullen, Mechanical Superintendent, Erie Rd., chairman, and of which H. G. Griffin, General Car Inspector, C.P.R., is a member, submitted a report of which the following is an abstract:

To get the proper perspective of the matter of settlement prices, it is necessary to keep steadily in view the essential fact that the basic, arbitrary prices now provided in the rules for wooden cars are quite liberal; hence, before it may be adjudged fairly that any particular part of a car or an appliance, even though obviously an improvement over wooden construction, merits a special price as a betterment, it should be determined whether the basal price does not cover, reasonably, any difference in value that such part or appliance bears over the type of construction upon which the basic prices were determined. Changes are recommended in rule 116 covering the prices for car bodies.

On the question of depreciation to be figured on rebuilt cars, the committee was unable to come to any conclusion, or arrive at any working basis upon which all could agree.

## Report of Committee on Locomotive Stokers.

The American Railway Master Mechanics' Association Committee, A. Kearney, Assistant Superintendent of Motive Power, Chicago and North Western Ry., Chairman, submitted a report of which the following is an abstract:

Another year's experience with the locomotive stoker strengthens the conviction that it is not only accomplishing its purpose, but withstands the test of continuous service with remarkable durability. While it may be said that nothing novel has been presented during the past year, a great deal of very good work has been done along already established lines. The effort has been chiefly in the refinement of detail parts; redesigning and improving them to better withstand the service. In some cases manufacturers have added new parts; in others, parts more durable have been substituted; again, parts have been entirely eliminated. There is no thought that the stoker is unlike other mechanical devices on the ground that it is not susceptible to failure; and when it gives way it will usually do so under service strains. The theory that the parts of the stoker be amply strong and in excess of the strength of the engine has its advantages. Attention is being given the matter of accessibility of parts. The stoker manufacturers have advanced considerably in their attempt to apply machines to existing locomotives, and it is safe to say their work has been somewhat hampered. Stokers will occasionally become inoperative by clogging, due to wet coal, and lump coal. Most of the clogging is caused by junk and foreign matter.

Time and experience have brought progress in the way of improving the manipulation of the scatter-type stoker, both in the care of the machine, as well as in a more efficient use of fuel. Instructions and experience have effected marked improvement, and now it is rather rare to find a fireman disturbing the grates so long as a sufficient steam pressure is maintained to handle the train efficiently and successfully. The stoker is started, stopped and otherwise controlled with better regulation of fire and less loss of steam through the relief valve. Experience shows that the grates should not be disturbed as long as the fire is maintained in good condition, and the required air is permitted to pass through the grates to supply the proper rate of combustion.

The cost of stoker maintenance has been somewhat affected in the aggregate during the past year by the modifications, improvements and changes introduced currently. Scatter-type stokers cost per 100 miles from 43 to 68 cts., and operate from 1,000 to 5,000 miles per failure.

It has been an open question as to whether it is more economical to prepare coal at wharves or on the tenders of the locomotives. There is strength in the theory that the centralization of crushing plants may be economical under service and physical conditions. Then again it is claimed to be good practice in certain localities to crush coal at outlying wharves or at coaling tipplers, as against equipping locomotives with individual crushers. The aggregate cost of maintenance of a crusher at a wharf may be less than that for a number of locomotives, and it should not be forgotten that while crushers may be obtained that will fairly well handle the major portion of foreign matter found in fuel, it is conceded difficult to cope with such conditions after it reaches the locomotive. Regardless of this, however, it may be economical to equip locomotives with individual crushers on account of the proportion or volume of fuel supplied, aside

from the advantages in being able to handle a wider range in grade of fuel supplied at outlying stations and on branch lines.

In the past year 15 Hanna stokers were applied to Mallet locomotives, 72.2 sq. ft. of grate area, and 12 Standards to mastodon locomotives, 45 sq. ft. grate area, on the same road. They are handling sometimes slack and in other cases run of mine coal, from which the product under 2½ in. has been screened; they have been put in general fast and slow freight service. Following is a statement of the stokers in active service: Underfeed type: Crawford; Overfeed or scatter type: Street, Hanna, Standard and Kincaid; Chain grate type: Ayers.

**Crawford Stoker.**—There are 282 Crawford double underfeed stokers on the Pennsylvania Lines West of Pittsburg. It is still the only underfeed type in service. 9 are being tried out experimentally on other lines, making a total of 291 in service. A new pattern is being constructed for test.

**The Street Stoker** shows the largest number in service, totaling 531, with 24 on order. The latest design has a variable speed engine and a friction clutch, instead of differential gear. In the latter designs the crusher was set aside. These stokers are in operation on 15 railways, mostly on eastern roads. They are operated in passenger, general fast and slow freight service, performing their work satisfactorily.

**The Hanna Stoker** is equipped with durable crushing facilities on the tank, consisting of a heavy helicoid conveyor screw and a bulkhead containing a restricted opening, partly encircled by two stationary knives. Coal is forced through the restricted opening in the bulkhead by the revolving conveyor screw, assisted by the two stationary knives for breaking the larger lumps, handling slack as well as run of mine coal efficiently. In the past year 18 Hanna stokers have been in continuous operation. Two distinct recourses can be utilized in emergencies; 1st, if any part of the tender conveyor becomes inoperative, the conveyor can be thrown out of operation and the coal shoveled into the locomotive hopper; 2nd, if the entire stoker becomes inoperative, coal can be shoveled to the plate by hand, from which it is driven to any section of the fire box by means of a blasting chamber and distributing plate.

**The Standard Stoker** is equipped with adequate crushing facilities on the tank, consisting of a durable helicoid conveyor screw and a bulkhead having a restricted opening partly surrounded by fixed centre punches. Coal is forced through the opening in the bulkhead by the revolving conveyor screw, assisted by the stationary centre punches for crushing the larger lumps. During the past year 20 Standard stokers have been put in operation in slow and fast freight service, and are working satisfactorily.

**The Gee Stoker** continues in service on a consolidation locomotive, and operates satisfactorily. It is still undergoing development.

**The Kincaid Stoker** continues to progress. The distributing features are attached to the fire door; coal is shoveled into a hopper elevated in front of and attached to the door, from which it gravitates to a distributing apparatus and is delivered to the fire box.

**The Elvin Stoker** has not substituted some other device or devices for the scoop. It is thought that within the near future the machine will be tested out on a locomotive.

**The Raite Stoker**, claimed to be either underfeed or a scatter type, embodies a combination of the two methods.

**The Ayers Stoker** is of the traveling grate

type, and reports progress. Last year a number of experimental trips were made, which are reported to be encouraging. It is thought that it will soon be ready for service.

During the past year, locomotive stoker patents were issued to 14 parties. The committee has been unable to learn of any further activity in the use of the following stokers: Barnum, Dickerson, Heyden, Heyden-Modified, Erie, McMullen, Harvey, Strouse. Stokers under development not yet applied are: Elvin, Raite, Dunning. Stokers for which no advice can be obtained as to their status are: Barnum, Dickerson, Erie, Heyden, Heyden-Modified, Harvey, Strouse.

The following are stokers in active service and on order respectively: Street, 531, 24; Crawford, 291, 1; Hanna, 18, 5; Standard, 22, 0; Gee, 1, 0; Ayers, 1, 0; and Kincaid, 1, 0.

The Street delivers fuel to 3 points of entrance through the back head of the boiler above the fire door; the Hanna delivers fuel to its distributing apparatus in the fire door proper; while the Standard elevates its feed by means of a vertical screw located just inside of the fire door to a point about on a level with the fire door. They are all three of the scatter type and each employs the steam jet in the distribution of its fuel.

It seems safe to say that the mechanical stoker has demonstrated by extensive service that it is capable of supplying coal to a locomotive fire box at a rate and under sufficient control to satisfactorily maintain the working steam pressure. It is also obvious, being a machine and working continuously, it should be capable of maintaining a more regular rate of steaming with certain grades of fuel than might be obtained in average hand firing practice. The average steam pressure for a division run seems to be in favor of the stoker on account of the higher average pressure maintained, especially toward the end of the run. It might be said, therefore, that greater work is done with the stoker, in terms of speed or tonnage, or both, under certain physical and operating conditions, while in another service with equally large locomotives and heavy tonnage, but under more favorable grade line and fuel conditions, as high efficiency has been obtained hand firing. It is also evident that the stoker, since it is a mechanical device, is only limited in capacity by its allowable dimensions, and its endurance should be that of machinery dependent upon design and attention.

The committee feels itself unable to point to any rule in terms of weight of locomotive or train load, or general conditions, where the stoker will always be applicable or necessary on account of the wide range of physical and operating conditions, as well as character of fuel, and the question of fuel is by no means a minor factor, for the reason that the choice of available coals demands consideration of their character as well as price, as the net result of using some of the finely divided grades of stoker prepared or mixed coal may be offset by a more attractive rate of consumption, better evaporation, and lower cost per ton mile with run of mine after it has been crushed to the desired grade.

## Report of Committee on Car Trucks.

The Master Car Builders' Association Committee, J. T. Wallis, General Superintendent of Motive Power, Pennsylvania Rd., chairman, and of which J. Coleman, Superintendent Car Department, G. T. R., and L. C. Ord, Assistant Works Manager, Car Shops, C. P. R., are members, submitted a report of which the following is an abstract:

**Specifications and Tests of Cast Steel**

Sides—For a proof test, take a minimum of one frame from each heat, and not less than 2% of all the frames supplied. In the 80,000, 100,000 and 140,000 lb. cars, the initial load will be respectively 20,000, 25,000 and 35,000 lbs., with proof test loads of 110,000, 125,000 and 175,000 lbs., the maximum deflection in each case not exceeding 0.15 in., and maximum set, 0.01 in. After applying the initial load, reduce the load to 5,000 lbs. and set the deflection instrument at zero; apply the requisite proof load and measure the deflection; reduce the load to 5,000 lbs., and measure the set.

Truck Sides shall not vary more than 3% above nor 2% below the determined normal weight of the casting. These for 100,000 and 140,000 lb. cars are respectively 505 and 665 lbs.

Cast Steel Bolsters. The objection raised

was based on a car loading that would raise the centre of gravity to 6 ft. above the rail, when it was determined that the distance from centre plate to side bearings must be at least 24 ins., in order to avoid overturning. The committee has arranged the design of the top plate of the bolsters so as to take the side bearing plates with spreads of 48 to 58 ins.

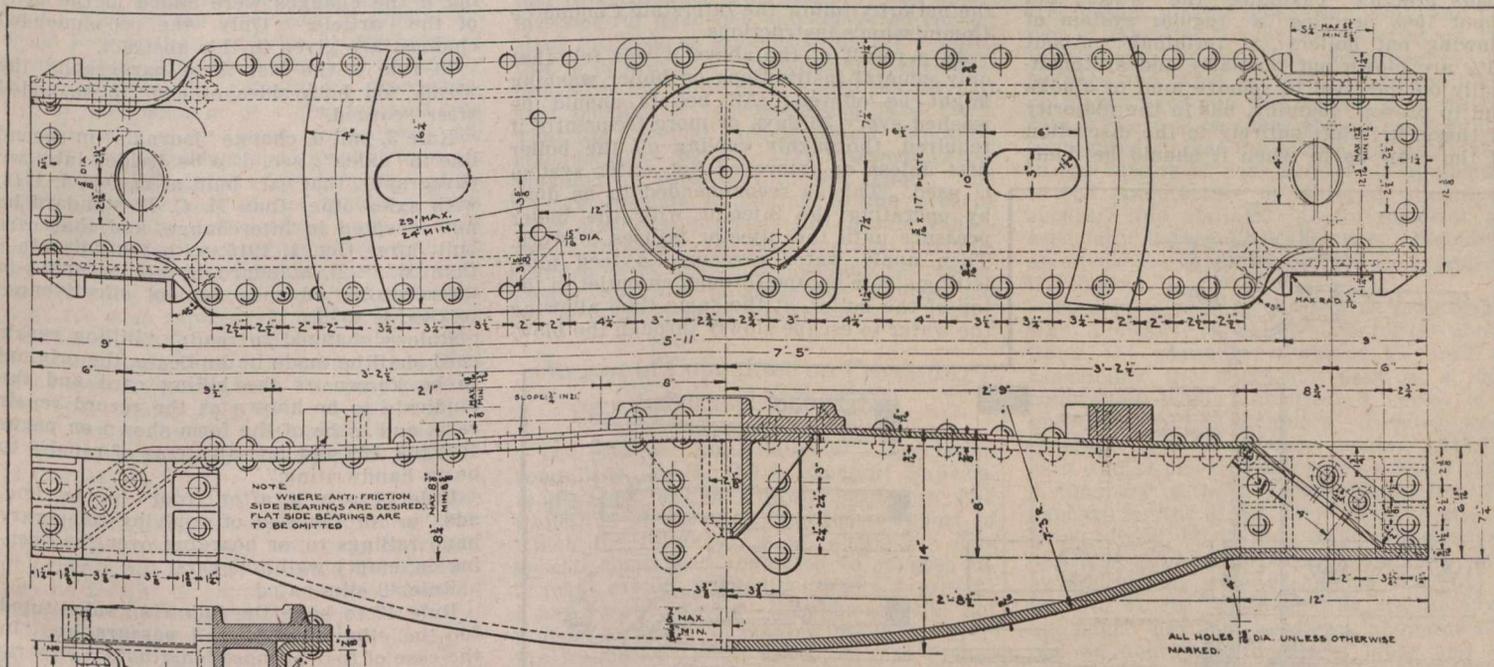
Centre Plates and Gauges. The design for 80,000 lbs., 100,000 lbs. and 140,000 lbs. capacity cars and gauges for same has been changed, providing for a uniform height of flange of 1 1/4 ins. on the outer ring of the female centre plates, and the radial diameters changed so as to provide a total clearance of 1/4 in. instead of the present 1/8 in. There is no necessity for increasing the bearing surface of centre plates for 140,000 lb. cars.

of sufficient capacity to prevent steam entering the gauge. Safety valves must be set to pop at not more than 6 lbs. above working pressure. A copy of the monthly inspection report must be placed under glass in the locomotive cab.

Regulations are given covering the operation of brakes on locomotives and tenders handled dead in the train and offered for interchange.

### Report of Standing Committee on Couplers.

The Master Car Builders' Association Committee, R. L. Kleine, Chief Car Inspector, Pennsylvania Rd., chairman, submitted a report of which the following is an abstract:



Pressed Steel Truck Bolster for 100,000 lbs. Capacity Cars.

### Report of Master Mechanics' Committee on Revision of Standards and Recommended Practice.

The American Railway Master Mechanics' committee, W. E. Dunham, Superintendent of Motive Power and Machinery, Norfolk and Western Ry., chairman, submitted a report of which the following is an abstract:

A revision is recommended in the specifications for steel axles for locomotive tenders, a copy of the recommended form being given.

For journal, box, bearing and wedge, minor changes in the drawings are recommended to correct errors and to improve certain details.

An error in the specifications for 33 in. cast iron wheels is corrected.

A revision of the specifications for boiler and fire box steel, locomotive forgings, cylinder castings, etc., and cast steel locomotive frames, is recommended, tentative modified specifications accompanying the report.

To conform to the latest revision of the United States federal regulations for the inspection and testing of locomotive boilers and their appurtenances, a revision is recommended in the rules of inspection and testing of locomotive boilers. At dates from 1916 to 1921, the minimum factor of safety is set on a rising scale varying from 3.25 to 4. Flexible staybolts without caps must be tested monthly. Every gauge shall have a siphon

Road service tests were continued throughout the year on the present style of coupler to determine its defects. Numerous road service tests were also conducted on the experimental couplers, many having been applied to cars on different railways in Canada and the United States. As frequently couplers operate satisfactorily when new, only developing defects with age, the committee cannot offer recommendations until the couplers have seen further service, not having been in service long enough to determine all the weak points or the seriousness of the defects. This is the consensus of opinion of the 32 roads submitting preliminary reports. These new couplers are now under trial on the C. P. R., G. T. R. and Intercolonial Ry.

Tests on the new couplers in the service testing machine were conducted, daily logs being taken and the couplers carefully inspected after each 10,000 cycles. Both couplers of the no. 5 contour were separately subjected to 30,000 cycles of the machine, every cycle representing one each of the following: coupling, lock setting, uncoupling, closing knuckle and throwing knuckle open.

It is recommended that all new equipment be designed to accommodate these new couplers. As a result of the investigations the committee unanimously decided to permit the manufacturers of the new couplers to make the final changes in accordance with the programme in the 1913 report.

to the design submitted last year for 80,000 lb., 100,000 lb. and 140,000 lb. cars was that the detachable centre plate added weight, the trouble with the integral plate not being considered of sufficient importance to warrant the extra expense of a separate centre plate. Two designs of bolsters are thus submitted, with and without separate centre plates. Tests also show that there is sufficient support under the centre plate.

Bolster Weights—Variations from the normal weight of more than 3% above and 2% below are not permitted. The normal weights for the 80,000 lb., 100,000 lb. and 140,000 lb. cars are to be respectively 710 lbs., 775 lbs. and 1,000 lbs.

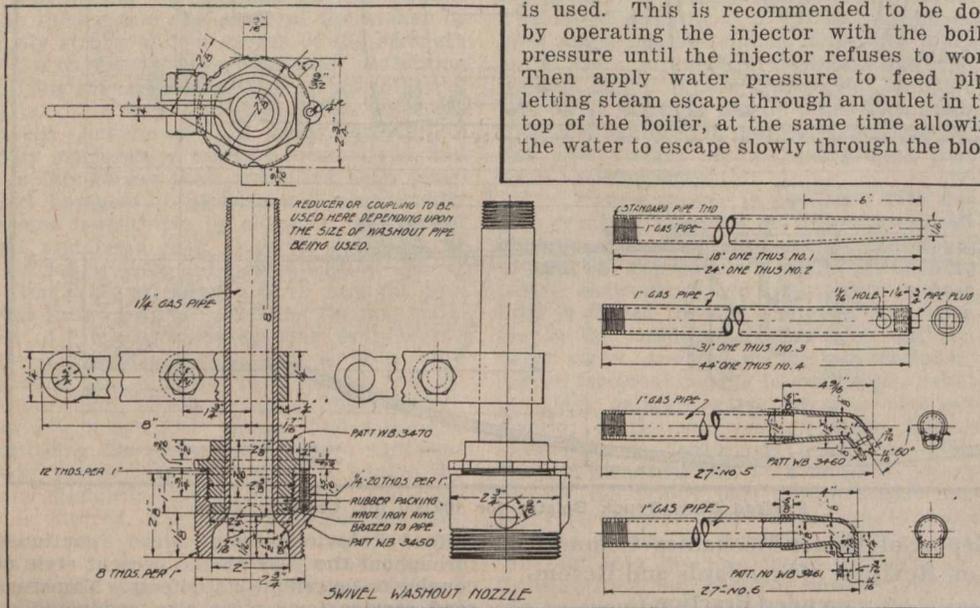
Pressed Steel Truck Bolsters—Four bolsters of each capacity, 80,000 lbs., 100,000 lbs. and 140,000 lbs. were tested, from which the average normal weight was determined for the three as respectively 795, 865 and 1,140 lbs. The design for the 100,000 lb. car bolster is shown in the accompanying illustration.

Spread of Side Bearings—The 50 in. side bearing spread recommended last year was defeated by a small majority. This spread

**Report of Committee on Boiler Washing.**

The American Railway Master Mechanics' committee, J. Purcell, Assistant to President, Atcheson, Topeka and Santa Fe Ry., chairman, submitted a report of which the following is an abstract:

Early this year 20 questions covering every phase of boiler washing, were sent to 118 heads of mechanical departments of member companies, the answers to which are embodied in the report. Replies covering 51,294 locomotives were received. Of these, 9,760 made less than 500 miles between washings; 11,283, from 500 to 1,000 miles; 8,312, from 1,000 to 1,500 miles; and 20,472, over 1,500 miles; the passenger locomotives made about 30% better mileage than the freight. Only about 5% of the roads practice changing the water, and about 15% practice a regular system of blowing out boilers at terminals. About 35% are blown out regularly and systematically on the road to remove mud or sludge and to prevent foaming, but in the majority of these, it is left entirely to the discretion of the crew as to when it should be done,



Boiler Washing Nozzles Recommended by Committee.

results showing that when intelligently performed, mileages over 2,000 are possible without foaming trouble. The maximum number of washout plugs in a boiler is 52, and a minimum of 10, averaging for all modern power, 32.

The cost of washing boilers varies from 10 cts. to \$5.50, costing about 35% less with hot than cold water. The conclusions drawn are that it can be thoroughly done with cold water for less than \$3.50. The average pressures used were 96 lbs. at the pump, and 72 lbs. at the nozzle. Hot water washing is used on 54 roads, with 13 installations on one line, and its use is rapidly increasing. It is claimed to be very desirable for pooled locomotives, where the power must be quickly turned. The reduction in water consumption from the use of hot water averages 3,427 gals., or 36%, some roads running as high as 9,000 gals. A saving in time of 1 hr. 54 mins., or 42%, and in fuel of 897 lbs., or 36%, also results. It also entails reduction in boiler troubles, such as cracked sheets, leaky stays, etc., averaging 34%.

Water softening plants at wayside tanks are reported from 31 roads, appearing to give better results than when the chemicals are placed in the tender tanks. Most treat-

ing plants are on the western lines in the bad water country. 45 roads report using chemicals directly in the tender tanks, 19 using soda ash and 26 boiler compound, this practice being more prevalent on lines having a few bad water districts. 76 roads use boiler compounds, soda ash and other chemicals to prevent incrustation, and 29 use boiler compounds or other chemicals to prevent foaming, but treated water appears to increase the tendency to foam, frequently requiring the additional use of anti-foaming compounds. But few roads treat water to prevent corrosion, and 7 claim increased repairs to valve packings due to foaming, with other general increases in repairs. Increased mileage as high as 300% is made possible, with an average of 100%. None of the roads use mechanical water purifiers. 16 roads have special rules governing washing, but the majority follow the Interstate Commerce Commission's instructions.

As a result of the above it was felt that only general instructions on boiler washing might be offered. All boilers should be washed every 30 days or more frequently if required, thoroughly cooling off the boiler first unless an improved hot water system is used. This is recommended to be done by operating the injector with the boiler pressure until the injector refuses to work. Then apply water pressure to feed pipe, letting steam escape through an outlet in the top of the boiler, at the same time allowing the water to escape slowly through the blow-

**Report of Committee on Arbitration.**

The Master Car Builders' Association committee, J. J. Hennessey, Master Car Builder, Chicago, Milwaukee and St. Paul Ry., chairman, and of which J. Coleman, Superintendent Car Department, G. T. R., is a member, submitted a report of which the following is an abstract: During the year, 48 cases were decided. A feeling has arisen that the rules should not be revised so often, and that their effectiveness should extend over a longer period. In view of this the committee has refrained from asking for further suggestions this year. In so far as interpretations of the rules are concerned it is recommended that they be placed on the page opposite the rules, as the latter are well understood, but might become confusing if the changes were added in the body of the article. Only the recommended changes are given in this abstract.

In rule 2, the last three paragraphs, the words "on both sides of car" to be added after "carded."

Rule 3, par. d, change "journals" in second line to "axles"; sec. d to be divided into two paragraphs, that cars built after Oct. 1, 1915, with axles other than M. C. B. standard be not accepted in interchange, and that cars built after Oct. 1, 1916, with journals other than M. C. B. standard be not accepted in interchange; advance date of effectiveness to Oct. 1, 1916.

Rule 8 changed to read: "Billing repair card shall be made in duplicate, the original to be known as the billing card and the duplicate to be known as the record repair card, and to be of the form shown on pages 107, 108, 109 and 110, all items of repairs to be in handwriting."

Rule 21, sec. a, after "roof" in last line, add "or for the cost of applying temporary hand railings to, or boarding over the opening on, empty well hole cars."

Rule 40 eliminated.

Rule 42 to have the following substituted for the eliminated second paragraph: "In the case of four or more longitudinal sills requiring renewal or splicing, if the repairs of each of such sills are due to decay or elongated bolt holes, the car shall be held and joint inspection statement forwarded to owner, who shall promptly authorize repairs at his expense, or destruction of car; in this case, any sill decayed and cracked, or decayed and broken, must be considered as a broken sill."

Rule 54 change to read: "Car owners are not responsible for damage to any part of the brake apparatus caused by unfair usage, derailment or accident that requires repairs or renewals."

Rule 60, after "tested" in second line, add: "or dirt collectors not cleaned."

Rule 68 to read: "Flat sliding; cast iron, cast steel, wrought steel or steel-tired wheels; if the spot is 2 1/2 ins. or over in length, or if there are two or more adjoining spots, each 2 ins. or over in length, the same responsibility to apply to mate wheel, regardless of length of slid spot. A separate defect card to be furnished in the case of wrought-steel or steel-tired wheels.

Rules 70, 74, 80, 83 and 98 have "forged" changed to "wrought."

Rule 94, an addition as follows: "Except as follows: In the case of repairs covered by defect card, if the owner changes the original standard of parts so involved, the charge must be no greater than if original design had been followed. If owner elects to dismantle the body or trucks, or both, charge may be made for such material as would have been required for the repairs covered by the defect card, but no labor shall be charged in such case, except in so far

off cock until the temperature is about 90 degs., when the plugs may be removed and the boiler allowed to drain.

To wash the boiler, remove all the plugs and begin washing through the holes on the side opposite to the front end of the crown sheet, washing top of the latter at the front, working back so as to shift the mud and scale away from the back ends of the flues. The crown sheet is next washed from the boiler head, next washing the back ends of the flues through holes in the connection sheet. Then wash the water space between the back head and the firebox door sheet through holes in the back sheet. Arch tubes must be washed and scraped every time the boiler is washed. The side sheet water spaces are next washed through the holes in the side of the boiler opposite the crown sheet. Then wash the barrel through a hole in the bottom, washing towards the front if there is a mud drum; otherwise wash towards the throat sheet. Wash as great a space of the tubes from that position, finishing the balance from the front end. The mud ring is then washed through the side and corner holes in the mud ring. When cooling and filling boilers, fill through the injector check. Recommended washing nozzles are shown herewith.

as labor is already included in M. C. B. prices for material."

Rule 95 to have new paragraph as follows: "Couplers, including yokes, springs, followers, and friction draught gears complete, when lost with the coupler."

Rule 96 to be corrected by changing the 4 columns for scrap credits on pg. 110 into 1 column, "credit for scrap;" also eliminate second paragraph and form on pg. 109.

Rule 97 to change "bills of statement" to "billing repair cards."

Rule 108, to be changed to read: "No labor to be charged for the inspection of cars, testing or adjusting of angle cocks or tightening unions; no charge to be made for the material or labor of lubrication."

Rule 112, heading to be changed to: "Settlement for destroyed or damaged cars."

Rule 120, disposition of worn out cars, to read: "Where the labor cost of repairs exceeds 10% of the base price of car body, as given in rule 116, such car shall be jointly inspected by handling line and a representative of car owner or of a disinterested line (whichever can be most conveniently obtained), and form furnished as shown on pg. 105, showing all defects found on car and an estimated total cost of the repairs. Upon receipt of this information, owner must either authorize destruction or repairs. In the latter case owner must forward to handling company necessary plans and specifications for such repairs. If owner authorizes destruction, handling line shall allow credit for all material at M. C. B. scrap prices, less labor cost of destruction. The base price of car body under rule 116, as referred to above, not to include value of air brakes, or other additions for special items as referred to in rule 116."

Rule 122, in third paragraph, change "should" to "must"; and add additional sentence: "A separate bill, with copy of freight or express bill attached, should be rendered for the freight or express charges, showing reference to bill covering repairs."

Passenger Car Rules.—Rule 3, last two paragraphs of c, called d.

Rule 4, new paragraph: "Billing repair cards shall be furnished in all cases where repairs have been made."

Rule 10, after "inches" in third line from bottom, add: "or having seamy journals, fillets in back shoulder worn out, the length of journal increased 1/2 in. over standard length, or collars broken off or worn to 1/4 in. or less under fair usage."

Rule 15, change "spot" in third line to "surface."

**Report of Committee on Forging Specifications.**

The American Railway Master Mechanics' Association committee, C. D. Young, Engineer of Tests, Pennsylvania Rd., chairman, submitted a report of which the following is an abstract: The committee issued a circular to the members, in which criticisms were requested on certain fibre stress figures to be used in heat treated carbon and alloy steel materials for forgings. Replies developed that there was little information available covering the results of the use of this material and the committee is, therefore, not prepared to recommend final figures for proper stresses for these heat treated parts, but feels that the following table expresses the maximum fibre stresses which should be used in this grade of material in the design and, presents it to the association as information, suggesting that it be submitted as recommended practice, with the understanding that this subject will again be reviewed after more extended experience of

the membership before considering it for advancement as an association standard:

	Heat-treated carbon.		Alloy.	
	Tension and com-pression.	Bend-ing.	Tension and com-pression.	Bend-ing.
Main and parallel rods .....	10,000	14,000	12,000	17,000
Piston rods .....	11,000	15,000	13,500	18,000
Driving axles .....	.....	20,000	.....	24,000
Crank pins .....	.....	17,000	.....	20,000

After consideration of the criticisms of a specification for alloy steel forgings of the chrome-nickel type, and of the quenched and tempered carbon steel and alloy steel (chrome-vanadium type) specifications, the committee recommends the following: That the present standard specifications for quenched and tempered carbon steel axles, shafts and other forgings for locomotives and cars, pg. 510, 1914 Proceedings, be modified in accordance with the proposed specifications for quenched and tempered carbon steel forgings as submitted in the report; this is in order to harmonize this specification with the alloy steel specifications and also includes a recommended proof test. That the present specifications for alloy steel forgings, pg. 505, 1914 Proceedings, be modified as submitted in the report; this change consists in adding to the present alloy steel specifications for chrome vanadium, a chrome-nickel alloy and also a recommended proof test. The committee recommends that these be submitted to letter ballot as recommended practice.

**Report of Committee on Prices for Labor and Material.**

The Master Car Builders' Association committee, F. H. Clark, General Superintendent of Motive Power, Baltimore and Ohio Rd., chairman, submitted a report of which the following is an abstract: The special committee appointed to suggest additional prices or modifications of present prices in the rules of interchange, did not prepare a circular of inquiry this year, covering freight car price rules, because it was thought proper by the committee to review the work already done and make only such changes as would make the rules clearer, so they would be more readily understood. It was found necessary, however, to add some additional items and prices for both labor and material that were not covered in the present rules.

Changes were made in the scrap prices for axles and for wheels from dismantled cars, and the prices for new wrought steel wheels based on new prices for scrapped wheels. Changes were also made in the credits for air brake hose fittings, and prices for pipe nipple on end of train line, release rod, triple piston and ring, triple main piston and ring, K type triple piston, K type main piston, triple piston ring, and a number of other small fittings. Changes were made in computing the prices for lumber. A new list of prices for the maintenance of passenger equipment is also included.

**Report of Committee on Compensation for Car Repairs.**

The Master Car Builders' Association committee, D. F. Crawford, General Superintendent of Motive Power, Pennsylvania Lines West, submitted a report of which the following is an abstract: It was concluded that it is proper that those making repairs to cars should be fully reimbursed for the actual expense incurred by them, including what are generally referred to as overhead charges, and that there should be added to the direct labor cost an allowance for the

expenditures made for: Direct supervision, to include the proper proportion of the wages of foremen, assistant foremen, gang foremen, clerks, etc., chargeable to the actual repairing of freight cars; amounts paid all other men whose time is properly chargeable to freight-car repairs, excepting those engaged in the manufacture of stock material; shop expenses, the proportion assignable to the actual repairing of freight cars, the expenditures for general employes, power, heating, lighting, shop supplies, and incidental expenses connected with shop operation; shop switching, as provided for by the authorized accounting system; superintendence, the proportion properly chargeable to freight car repairs of the salary and expenses of the general superintendents of motive power, mechanical superintendents, master car builders, superintendents of motive power, master mechanics, etc.; and the use of facilities, to include interest on the investment, depreciation, maintenance, insurance and taxes on that part of the plant or plants used for the repairing of freight cars. These allowances should be carefully segregated so that the allowances applicable to the repairs of cars, and those applicable to the manufacture of material, should be separate and distinct. As for material, an especially determined allowance, including an adequate amount for storehouse expenses, is required.

To determine as accurately as practicable what allowance should be made for the above items, the committee assigned the task of assembling the necessary data to a sub-committee, which submitted a series of 9 questions to the members. Replies were received from 58 railways owning 1,618,675 cars, and 11 private lines owning 52,102 cars. A summary of these replies showed that the average for the direct labor was 27.7 cts. an hour; direct labor plus direct supervision, 31.5 cts.; proportion of shop expenses, shop switching and superintendence, 9.4 cts.; a total of 41 cts. Consequently, as the average hourly payment for direct labor was 27.7 cts. an hour, and for direct labor and all supervision was 41.0 cts. an hour, an allotment of 48% must be added to the hourly payment for direct labor to fully reimburse those repairing freight cars, without any allowance for the use of facilities, such as interest on the investment, depreciation, taxes and insurance on, and maintenance of, shops, repair tracks, etc.

It is recommended that the prices for individual items of work performed, as now embodied in the code of rules of interchange of cars, be based on the average time required to perform each operation. That to simplify calculation and accounting a rate of 28 cts. an hour be used as representing the average hourly cost for direct labor, adding to this amount 12 cts. an hour as meeting the requirements for overhead charges. The reduction in the total hourly charge from 41 cts. to 40 cts. reduces the overhead rate from 48% to 44.4%, and is felt advisable, due to the fact that November, for which the figures were obtained, might not generally be considered as a representative month. That fixed prices, including labor and material, be determined and listed separately for such items as: Application of cotter keys, knuckle pins, knuckles, air hose, safety appliances, brake shoes, and kindred repairs such as are ordinarily done in classification yards. These fixed prices to apply whether the work is performed in the classification yards, shops or repair yards. That this report, with the approval of the convention, be referred to the committee on prices for labor and material, with such instructions as may be necessary to make effective the above recommendations.

### Report of Committee on Train Resistance and Tonnage Rating.

The American Railway Master Mechanics' committee, P. F. Smith, Jr., Superintendent of Motive Power, Pennsylvania Lines, chairman, submitted the following report:

Your committee has, in accordance with instructions, endeavored to get additional information to enable it to submit a final report at this convention. While some information has been available, yet we desire additional data as to the comparison of the drawbar pull curve of superheater locomotives, as compared with that of saturated locomotives. Also, we desire data as to the resistance of the 90 ton cars now coming into use. We will be able to obtain the information desired and submit a final report in 1916, and would ask permission to carry over the final report to that time.

### Report of Master Car Builders' Committee on Revision of Standards and Recommended Practice.

The Master Car Builders' Association committee, T. H. Goodnow, Assistant Superintendent of Car Department, Chicago and North Western Ry., submitted a report of which the following is an abstract: After due consideration of the present standards and recommended practices, together with replies from members to a circular of enquiry, also requests involving standards presented through the Secretary, a number of recommendations have been made, minor errors corrected, and a large number of suggestions not concurred in. Only the recommended changes are dealt with in this abstract.

Journals on M. C. B. sheets 3, 6, 9, 12 and 12-C should have journal box wedges provided with a hole through the flange of the wedge for all sizes of journals to facilitate the wedge removal by use of a packing hook. The marking of freight equipment cars recommended in 1914 and lost by letter ballot is again recommended, with the omission of the light weight stencilling at the end of the car. Additional sizes for lining for outside framed cars is recommended for sides and ends. Springs on sheets H and H-1 to be made standard. That committee be appointed to develop a standard steam hose coupling. Committee to be appointed to investigate safety chains for interchange of passenger equipment. A classification for house car equipped for carrying liquids, etc., as follows: XT—Box tank car, a box car without doors, metal lined, or enclosing tank for the shipment of water or other liquids. The description of RA meat and refrigerator cars should read: "A car with body, doors and hatch plugs equipped with insulation, brine ice tanks, and without ventilating devices;" the RM car to read: "This car has body, doors and hatch plugs equipped with insulation; with trap doors in the roof for admittance of ice and salt; also water seals inside the car;" the RS car as follows: "Standard refrigerator, a car with body, doors and hatch plugs equipped with insulation with ice tanks and either with or without ventilating devices; GF gondola car, a car equipped with coke racks and having solid bottoms; GS gondola car, a car with fixed sides and ends, and flat bottom composed of dump doors at inside edge, and dumping to the side of track."

Height from rail to top of platform buffer for passenger cars established nominally at 51 ins. U. S. railway mail service full postal car specifications and floor plans to be in-

corporated in M.C.B. proceedings. Method of making insulation tests, together with description of testing machine as approved by U. S. government railway mail service to be incorporated in the M.C.B. proceedings.

The following disposition was made of the subjects: approved, 6; Secretary instructed to make changes or additions, 10; referred to committee on car wheels, 1; referred to committee on car trucks, 1; referred to committee on train lighting and equipment, 1; referred to committee on draught gear, 2; referred to special committee to be appointed, 2; and referred to letter ballot for change in standard or recommended practice, 14.

### Report of Committee on Train Lighting.

The Master Car Builders' Association committee, T. R. Cook, Assistant Engineer of Motive Power, Pennsylvania Lines, chairman, submitted a report of which the following is an abstract:

One of the most important items that the committee has under consideration is the standardization of armature pulleys. This was of such importance that it was felt desirable to obtain as broad a view as possible on the matter, and the committee held a joint meeting with the Association of Railway Electrical Engineers' committee on standards, and with various axle dynamo manufacturing companies' representatives. The committee also invited to this meeting representatives from all railway companies operating a considerable number of axle dynamos, who did not have representation on the committee. New pulley designs were evolved, which were recommended for use on all new and remodeled axle dynamos provided with ball or roller bearings. These provide for either 8 or 11 in. pulleys. It was also recommended that in all new or remodeled ball or roller bearing axle dynamos the details of the pulley end of the armature shaft shall be in accordance with prescribed dimensions shown in a drawing attached to the report.

### Report of Committee on Dimensions for Flange and Screw Couplings for Injectors.

The American Railway Master Mechanics' Association committee, M. H. Haig, Mechanical Engineer, Atcheson, Topeka and Santa Fe Ry., chairman, and of which W. H. Winterrowd, Assistant to the Chief Mechanical Engineer, C.P.R., is a member, submitted a report of which the following is an abstract: A pitch of 10 threads per inch could be adopted with the least expense to all, of a modified U.S. thread, for use on all injector couplings. Investigation shows that certain sizes of coupling nuts can be selected as standard for certain sizes of iron and copper pipe, and that certain sizes of sleeves can be adopted as standard for use with definite sizes of nuts and pipes. Diagrams of these are shown in the report. It would be impracticable to attempt a universal set of sizes or capacities of injectors, or a set of common pipe or coupling sizes for each size of injector. The proposed standards for injector nuts include greater thicknesses throughout than common practice to prevent abuse with improper tools.

Copper pipe extending the full length of the coupling sleeve is favored under all conditions. When brazed, the end should be belled out to fit the chamfer at the upper end of each sleeve. The inside diameter of sleeves for iron pipe should be smaller in many cases than the inside

diameter of the pipe. Flange couplings should be made of forged steel.

### Report of Committee on Specifications and Test of Materials.

The Master Car Builders' Association committee, C. D. Young, Engineer of Tests, Pennsylvania Rd., chairman, and of which A. Copony, Master Car Builder, Western Lines, G.T.R., and E. P. Tilt, Engineer of Tests, C.P.R., are members, submitted a report of which the following is an abstract: The following newly draughted specifications are recommended for submission to the members: Structural steel, steel plate and steel sheets for passenger equipment cars; structural steel, steel plate and steel sheets for freight equipment cars; malleable steel castings for passenger and freight equipment cars; miscellaneous steel castings for passenger and freight equipment cars; journal bearings for passenger and freight equipment cars; mild steel bars for passenger and freight equipment cars; rivet steel and rivets for passenger and freight equipment cars; and galvanized sheets for passenger and freight equipment cars.

The specifications for chain for passenger and freight equipment cars to be altered, so as to make possible the use of electric welded chain. A digester test is recommended to be added to the physical properties and tests in the specifications for steam heat hose for passenger equipment cars. In this section also, add the word "steam" after the name of the road on the label. Changes are proposed in the standard specifications for air brake hose for passenger and freight equipment, as laid down in the report. On the request of the Manufacturers' Association, a list of 9 test laboratories is given where tests may be made in accordance with the requirements of the air brake hose specifications. The coupler specifications are proposed to be changed so that for every 1,000 ordered, there will be furnished by the manufacturer 1,008 instead of 1,013 as formerly, reducing by 5 the number to be subjected to the strike test.

### Report of Committee on Master Mechanics' Subjects.

The American Railway Master Mechanics' committee, A. W. Gibbs, Chief Mechanical Engineer, Pennsylvania Rd., presented the following report:

That the present standing committee be continued. That the following subjects be assigned to special committees: Equalization of long locomotives, so as to secure the most effective guiding from the trucks, both leading and trailing; tender trucks, best practice and type of tender truck for passenger locomotives, has a swing truck any advantage over a rigid truck?; reciprocating and revolving weights, committee to report on possibilities of lightening; transmission of electric power from motors to driving wheels of electric locomotives, committee to report on the progress in this direction; use of pyrometers on superheater locomotives; piston valves, rings and bushings, best material and sizes, with particular reference to superheated steam; metal pilot designs; and modernizing existing locomotives, which can then remain in service for 10 or 15 years.

That the following subjects be assigned for topical discussion: Advantages, if any, of compounding superheater locomotives; side bearings on tenders; tender derailments, causes and remedies; road instruction for enginemen and firemen; and cross head design.

## Report of Committee on Superheater Locomotives.

The American Railway Master Mechanics' Committee, H. H. Vaughan, Consulting Engineer, C.P.R., chairman, did not submit any written report in view of the lack of new material concerning superheater locomotives. It submitted, however, the results of further tests made by the Pennsylvania Rd. on its class E 6s locomotives as published in the Pennsylvania Rd. pamphlet no. 27 with a recommendation that it be incorporated in the proceedings, which was adopted.

## W. H. Flynn on Compounding Superheater Locomotives.

In the discussion on compounding superheater locomotives at the American Railway Master Mechanics' Association's convention at Atlantic City, W. H. Flynn, Superintendent of Motive Power, Michigan Central Rd., and formerly Master Mechanic of its Canada Southern Division, said: We have 90 compound locomotives on our division, and about 12 of them are equipped with superheaters. The results have so pleased the mechanical department, as well as the operating department, that I think I am safe in saying that we will apply superheaters to the balance. On the division where we conducted one of our most important tests we found we could increase the tonnage of the superheater compound over the saturated compound 15%. That seems an astonishing figure, but it is true; and the superheater compound would handle that increased tonnage more satisfactorily than a saturated compound would do it, and not burn quite as much coal. These are used in slow speed freight service. We had occasion to put one of these superheater compounds on a passenger train, and we found the locomotive would run about 10 or 12 miles faster than a locomotive of the same class without the superheater-compound arrangements.

## Disposition of Committee's Reports at Atlantic City.

**American Railway Master Mechanics' Association.**—The committee on locomotive headlights was continued another year. The report of the committee on the design, construction and inspection of locomotive boilers was accepted, and the recommendations will be submitted to a letter ballot. The recommendations of the committee on superheater locomotives was adopted. The committee on flange and screw couplings for injectors was continued and directed to submit another report next year.

**Master Car Builders' Association.**—Revision of standard and recommended practice; motion carried that committee include in its report a recommendation in favor of adopting the left side as the standard location of passenger car uncoupling levers, and that it be submitted to letter ballot. Train brake and signal equipment; conductor's valve, clasp truck brakes and hose coupling gasket gauge to be submitted to letter ballot as recommended practice. Car wheels; report received and will be printed, and the secretary will arrange for making the curves as suggested. Arbitration, prices for labor and material, compensation for car repairs, and settlement prices for reinforced wooden cars; accepted. Couplers; the sense of the convention was that the strength of the coupler and its resultant weight as presented by the committee is necessary to provide for the proper strength and service in inter-

change. Safety appliances; accepted. Loading rules; recommended to be submitted to letter ballot. Car construction; referred to letter ballot the specifications for box car outside hung doors for new cars, the rules under draught gear, and recommendations concerning malleable cast iron and shearing values of structural, rivet and mild steel. Specifications and tests for material; to be submitted to letter ballot for adoption as recommended practice.

## Election of Railway Mechanical Associations' Officials.

The following elections took place at Atlantic City:

**American Railway Master Mechanics' Association.**—President, E. W. Pratt, Assistant Superintendent of Motive Power, Chicago and North Western Ry.; First Vice President, W. Schlafge, General Mechanical Superintendent, Erie Rd.; Second Vice President, F. H. Clark, General Superintendent of Motive Power, Baltimore and Ohio Rd.; Third Vice President, W. J. Tolerton, General Mechanical Superintendent, Chicago, Rock Island and Pacific Ry.; Treasurer, Angus Sinclair, Editor, Railway and Locomotive Engineering; executive members, C. H. Hogan, Assistant Superintendent of Motive Power, New York Central Rd., J. F. DeVoy, Assistant Superintendent of Motive Power, Chicago, Milwaukee and St. Paul Ry., J. T. Wallis, General Superintendent of Motive Power, Pennsylvania Rd.

**Master Car Builders' Association.**—President, D. R. MacBain, Superintendent of Motive Power and Rolling Stock, New York Central Lines West; First Vice President, R. W. Burnett, ex General Master Car Builder, C. P. R.; Second Vice President, C. E. Chambers, Superintendent of Motive Power, Central Rd. of New Jersey; Third Vice President, T. W. Demarest, Superintendent of Motive Power, Pennsylvania Lines West; Treasurer, J. S. Lentz, Master Car Builder, Lehigh Valley Rd.; executive members, C. E. Fuller, Superintendent of Motive Power, Union Pacific Rd., F. R. Gaines, Superintendent of Motive Power, Central of Georgia Ry., and I. S. Downing, General Master Car Builder, Cleveland, Cincinnati, Chicago and St. Louis Ry.

**Railway Supply Manufacturers' Association.**—President, O. F. Ostby, Commercial Acetylene Railway Light and Signal Co.; Vice President, E. H. Walker, Standard Coupler Co.; Executive Committee, First District, J. G. Platt, Hunt-Spiller Manufacturing Corporation, Second District, C. D. Eaton, American Car and Foundry Co., Fourth District, J. F. Schurch, Damascus Brake Beam Co., and Seventh District, C. B. Cass, Westinghouse Air Brake Co.

## Canadian Railway Officials at Atlantic City Conventions.

Among the Canadian and allied railway officials, etc., in attendance were the following:

**GRAND TRUNK RY.**—A. A. Maver and R. Patterson, Master Mechanics; J. Powell, Chief Draughtsman, Motive Power Department and Secretary, Canadian Railway Club; J. Coleman, Superintendent Car Department; J. Hendry and T. A. Treleaven, Master Car Builders; K. F. Nystrom, Chief Draughtsman, Car Department.

C. W. Van Buren, General Master Car Builder, Canadian Pacific Ry.; A. L. Graburn, Mechanical Engineer, Canadian Northern Ry.; M. Goodrich, Master Mechanic, Ottawa and New York Ry.; W. T. Kuhn, Superintendent of Motive Power, Toronto,

Hamilton and Buffalo Ry.; W. H. Flynn, Superintendent of Motive Power, Michigan Central Rd.; W. Gillespie, Master Car Builder, Central Vermont Ry.; W. E. Ladley, Superintendent of Motive Power, Reid Newfoundland Co.; G. R. Joughins, Superintendent of Motive Power, Intercolonial Ry.; H. J. White, General Car Foreman, Canadian Northern Quebec Ry.; and G. N. Fosnot, Chief Clerk to Master Mechanic, Central Vermont Ry.

J. Powell, Chief Draughtsman, Motive Power Department, G.T.R., and Secretary, Canadian Railway Club, was also among those present at the annual meeting of the Society of Railway Club Secretaries at Atlantic City, June 12.

## Railway Supply Exhibits at the Atlantic City Convention.

The Railway Supply Manufacturers' Association exhibit, was, as usual, of a very comprehensive nature. While the total of exhibits was somewhat smaller than last year, there was a larger number of new devices than has hitherto been the case. Among the principal exhibitors were the following:—

American Brake Shoe & Foundry Co., Mahwah, N. J.—Locomotive and car brake shoes illustrating modern practice.

Anchor Packing Co., Philadelphia, Pa.—Packing for air pumps; throttles and general railway purposes.

Buffalo Brake Beam Co., New York, N.Y.—Buffalo freight brake beams; truss beams with malleable iron or forged steel struts; beams for E. & L. equipment and all classes of electrical equipment for standard, broad and narrow gauge; Buffalo passenger brake beams for all classes of service including P. C. and L. N. equipment with automatically adjustable heads and safety locks.

Dearborn Chemical Co., Chicago, Ill.—Water treating preparations scientifically prepared to suit conditions shown by analysis of the boiler water supplies, for prevention of scale, corrosion, pitting and foaming.

Detroit Lubricator Co., Detroit, Mich.—Bullseye locomotive lubricators; flange lubricators; air cylinder lubricators; sight feed lubricators; force feed oilers; Detroit packless radiator valves.

DuPont Fabrikoid Co., Wilmington, Del.—Fabrikoid car window curtain material; Fabrikoid vestibule curtain material; Fabrikoid car seat upholstery material.

Edison Storage Battery Co., Orange, N. J.—Edison storage batteries for train lighting; industrial shop and baggage trucks; multiple unit control; locomotive headlights; railway signaling; inspection lamps.

Flannery Bolt Co., Pittsburg, Pa.—Tate flexible staybolts, including standard water space stays, flush type, adjustable crown stays, section of boiler showing typical installations, tools for installation of Tate bolts, photographic views of various installations and display at the Panama Pacific Exposition. F. B. C. nut locks for freight and passenger cars.

Franklin Railway Supply Co., New York, N.Y.—Franklin fire door; Franklin water joint.

Galena-Signal Oil Co., Franklin, Pa.—Reception booth.

Garlock Packing Co., Palmyra, N. Y.—Air pump and throttle packings; air brake and triple valve gaskets; special packings for accumulators and compressors; general line of shop packings.

Goldschmidt Thermit Co., New York, N. Y.—All materials for welding locomotive frames and other broken locomotive parts; large sample welds on crank shafts; photo-

graphs of important welding operations; demonstrations of the process as applied to pipe welding and samples of metals and alloys produced free from carbon by the Thermit process.

Hunt Spiller Manufacturing Corporation, South Boston, Mass.—Cylinder bushings; cylinder packing; piston heads; valve bushings; valve packing; valve bull rings; eccentrics and straps; crosshead shoes; driving boxes; pedestal shoes and wedges; rod bushings.

Independent Pneumatic Tool Co., Chicago, Ill.—Reception booth.

Johns-Manville Co., H. W., New York, N. Y.—Magnesia lagging; fire felt lagging; vitribestos; pipe coverings; air pump and throttle packing; sheet packing; gaskets; millboard; transite and ebony asbestos wood; asbestos shingles; friction and rubber tapes; electrical materials; fibre and sectional conduit; dry batteries, asbestos roofings; asbestos corrugated roofing; waterproofing and mastic; J-M expander rings; hair felt insulators; passenger and refrigerator car insulations; Vulcabeston; high temperature and insulating cements; smoke jacks; cork; armored hose; brake band lining; asbestos-metallic brake blocks.

Locomotive Superheater Co., New York, N. Y.—Locomotive superheaters and accessories.

McCord & Company, Chicago, Ill.—Steel and malleable journal boxes; force feed locomotive lubricators.

Norton, A. O., Inc., Boston, Mass.—Self lowering high speed jacks.

Safety Car Heating & Lighting Co., New York, N. Y.—Safety under-frame car lighting equipment; Pintsch mantle car lighting equipment; gas and electric lighting fixtures safety electric fan; oxy-Pintsch metal cutting and welding equipment.

Westinghouse Air Brake Co., Pittsburg, Pa.—Reception booth.

Westinghouse Electric & Manufacturing Company, East Pittsburg, Pa.—Reception booth. Lighted with 200-watt type C Mazda lamps.

Wheel Truing Brake Shoe Co., Detroit, Mich.—Samples of abrasive brake shoes for truing up car wheels and locomotive driver wheels.

The Quebec Transportation Club's annual meeting was held at Kent House, Montmorency Falls, June 1, when there was a large attendance. Following are the officers and committee for the current year.—Hon. President, H. G. Matthews, General Manager, Quebec Ry. Light, Heat and Power Co.; First Hon. Vice President, E. O. Grundy, General Freight and Passenger Agent, Quebec Central Ry.; Second Hon. Vice President, W. M. MacPherson, Manager, White Star-Dominion Line; President, J. S. Thom, Manager, Quebec Transportation Co.; First Vice President, J. H. Davidson, Superintendent, Lake St. John Division, Quebec Grand Division, Canadian Northern Ry.; Second Vice President, J. A. Everell, Superintendent, Quebec Ry. Light and Power Co.; Secretary-Treasurer, A. F. Dion, Traffic Manager, Quebec Harbor Commission; Committee, G. J. P. Moore, W. J. Thompson, J. T. Cassels, J. A. Cote and J. A. Vallerand.

Canadian Society of Civil Engineers, Vancouver Branch.—Following are the officers for the current year elected at the annual meeting, June 3:—President, R. F. Hayward; Vice President, H. C. Carry; Secretary-Treasurer, A. H. Robertson; Executive Committee: D. Cameron, C. E. Cartwright, A. G. Dalziel and E. G. Matheson. G. R. G. Conway, T. H. White and N. Kerr, being members of the executive council of the association are ex-officio members of the Vancouver Executive Committee.

### Birthdays of Transportation Men in July.

Many happy returns of the day to:—  
J. H. Black, ex-Superintendent, Timiskaming and Northern Ontario Ry.; now at Cobalt, Ont., born near Smiths Falls, Ont., July 8, 1874.

M. S. Blaiklock, Engineer Maintenance of Way, G.T.R., Montreal, born at Quebec, July 19, 1859.

D. E. Blair, Superintendent of Rolling Stock, Montreal Tramways Co., born at St. Thomas de Montmagny, Que., July 25, 1877.

H. F. Bradley, Passenger Manager, Allan Line Steamship Co., Montreal, born at Waterville, Que., July 20, 1876.

D'Alton C. Coleman, Assistant General Manager, Western Lines, C.P.R., Winnipeg, born at Carleton Place, Ont., July 9, 1879.

Geo. Collins, Superintendent, Ottawa Division, Ontario Grand Division, Canadian Northern Ry., Trenton, born at Kingston, Ont., July 20, 1860.

G. C. Conn, Vice President, Pere Marquette Rd., Detroit, Mich., born at Woburn, Mass., July 1, 1867.

D. D'E. Cooper, Canadian Freight Agent, Lehigh Valley Rd., Toronto, born at Buffalo, N.Y., July 8, 1862.

John Corbett, ex-General Foreign Freight Agent, C.P.R., Montreal, born in Lanarkshire, Scotland, July 19, 1863.

H. Darling, Locomotive Foreman, G.T. Pacific Ry., Smithers, B.C., born in Northumberland, Eng., July 27, 1873.

S. E. Dewey, Commercial Agent, All Rail Line, G.T.R., New York, born at Beckenham, Kent, Eng., July 4, 1879.

F. C. Foy, Canadian Passenger Agent, New York Central Lines, Toronto, born there, July 5, 1881.

J. F. Gildea, District Master Mechanic, C. P.R., Montreal, born at Strood Park, near Horsham, Sussex, Eng., July 7, 1884.

A. D. Huff, ex-Division Freight Agent, G.T.R., Ottawa, now Traffic Manager, Laurentide Co., Montreal, born at Chatham, Ont., July 17, 1866.

C. W. Johnston, Assistant to Passenger Traffic Manager, G.T.R., Montreal, born at Actonvale, Que., July 27, 1879.

A. E. Lock, Car Accountant, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., born at Albany, N.Y., July 14, 1879.

R. G. McNeillie, Assistant General Passenger Agent, Western Lines, C.P.R., Winnipeg, Man., born at Lindsay, Ont., July 1, 1883.

H. D. Mackenzie, District Master Mechanic, Intercolonial Ry., Stellarton, N.S., born at Churchville, N.S., July 22, 1864.

T. J. Maguire, Accountant Quebec Central Ry., Sherbrooke, Que., born at Quebec, July 31, 1860.

J. E. Morazain, Assistant Superintendent, District 3, Eastern Division, C.P.R., Montreal, born at Wheatland, Que., July 31, 1875.

R. E. Perry, Assistant General Freight Agent, Canadian Government Railways, Moncton, N.B., born at Drayton, Ont., July 5, 1876.

R. Preston, Assistant Superintendent of Motive Power, Western Lines, C.P.R., Winnipeg, born at Toronto, July 28, 1863.

J. E. Quick, General Baggage Agent, G.T.R. and G.T.P.R., Toronto, born at Richmond, Ontario Co., N.Y., July 10, 1851.

G. G. Ruel, Chief Solicitor, Canadian Northern Ry., Toronto, born at St. John, N.B., July 5, 1866.

P. E. Ryan, Secretary, National Transcontinental Railway Commission, Ottawa, born there July 26, 1876.

Geo. Stephen, General Freight Agent, Canadian Northern Ry., Winnipeg, born at Montreal, July 5, 1876.

R. F. Struthers, Chief Inspector of Time Service, C.P.R., Winnipeg, born at Stratford, Ont., July 31, 1879.

Sir Thos. Tait, President, Fredericton and Grand Lake Ry. and Coal Co., Montreal, born at Melbourne, Que., July 24, 1864.

### Greater Winnipeg Water District Railway.

In connection with the project for securing a water supply for Winnipeg and surrounding municipalities from Shoal Lake, adjoining Lake of the Woods, the Greater Winnipeg Water District Commission had a big problem to be solved before bids could be advertised—that of transporting materials to the work. In addition to its great length the aqueduct line traverses a swampy country which is well nigh impassable except when the ground is frozen, and it was realized that reasonable bids for the construction of the works could not be secured until means of access to the remote parts could be provided. The Commission decided, therefore, to open up the territory for construction purposes by building its own railway and operating the line with its own forces, charging the contractors for the transportation of materials according to a schedule of rates published in advance of the receipt of tenders. The route, about 90 miles long, exclusive of sidings, was surveyed, built and placed in service in a single working season, a feat of no mean magnitude considering the character of the country. The line is laid with 60-lb. rails, is well drained and designed for heavy and continuous traffic. It is hoped, on each contract, to maintain a rate of progress sufficient to complete the aqueduct by the autumn of 1918, and it was of first importance that no delays in the delivery of materials should be caused by roadbed defects.

The terminus of the line is at Deacon, south and west of Transcona, where the Grand Trunk Pacific shops are located. A station and a storehouse for cement and other freight has been erected at Deacon. Cars of supplies, received from foreign roads, are delivered on the transfer tracks at Paddington, near Winnipeg, and picked up by the district's train crews and unloaded at Deacon or hauled to the work. The road is a single track line with about ten permanent sidings and spurs, making a total trackage of about 105 miles, and arrangements have been made to cut the track and put in switches, if necessary, at points where contractors may best be served.

The contractors are arranging their plants on a plan calling for movable wooden platforms to lie lengthwise of the main track and span the railway ditch. These platforms, upon which the sand and gravel will be dumped direct from the cars, are in units that can be picked up and moved ahead successively as construction progresses. At each camp the contractors will provide storage for cement. At the eastern terminal of the line, at Indian Bay, are yards and storage tracks. The railway follows the aqueduct line closely for almost its entire length.

Canadian Overseas Railway Construction Corps. In the list of officers of this corps given in Canadian Railway and Marine World for June it was stated that there were two vacancies, viz., No. 1 Company, Mechanical Engineer, rank captain; and No. 2 Company, Bridge Engineer, rank captain. We are advised that these have been filled by the appointment of Lieutenants D. Hillman and H. Wellwood respectively, they having been recommended for promotion by the officer commanding, Lt. Col. C. W. P. Ramsey.

## Railway Development.

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

**Alberta and Great Waterways Ry.**—Ballasting has been completed on the first 50 miles of track laid out of Carbondale, the junction with the Edmonton, Dunvegan and British Columbia Ry., and the gangs are engaged on ballasting the remaining 85 miles on which track has been laid. It is expected to complete the ballasting and other finishing work to Lac la Biche, mileage 114, by Sept. 1. At this point the company is building a hotel for tourist traffic. Grading is in progress between the end of steel and Fort McMurray, 165 miles, which it is expected to complete this season. (June, pg. 212.)

**Athabasca and Fort Vermillion Ry.**—A. G. Mackay, Edmonton, Alberta, solicitor for the company, is reported to have given out the following statement, June 11: "We have been busy in formulating plans ever since the charter was granted by the Legislature. Through the Hudson's Bay Co. I have got into touch with C. E. Law, Canadian representative of D. A. Thomas of Cardiff, Wales, who is interested in the Pacific, Peace River and Athabasca Ry. As a result of three interviews matters have been got into working shape, and all the necessary documents are signed and all forces amalgamated for business. Within two weeks, one of the ablest expert bridge engineers on the continent, and one of the most reliable and competent bridge builders with an experienced staff will reach Athabasca Landing to begin work. After the question of the crossing of the river has been settled reconnaissance work will be pushed throughout the entire route from Athabasca to Fort Vermillion. It is expected that this survey work will be completed in three months. If the project is found to be a feasible one, application will be made to the Dominion Parliament and the Provincial Legislature, and if this is given construction work will be started at once, with the expectation of completing the line within two years." (May, pg. 170.)

**Central Canada Ry.**—A subcontract is reported let to J. Timothy for grading the last 22 miles to Peace River Crossing, Alta. Track laying is reported completed to mileage 28 from McLennan, the junction with the Edmonton, Dunvegan and British Columbia Ry. The grading to be done includes some very heavy work, but it is expected to have it finished by Oct. 1. Track laying is expected to be completed and the line ready for operation by Dec. 31. (June, pg. 212.)

**Edmonton, Dunvegan and British Columbia Ry.**—Edmonton, Alberta, papers June 18, report that a subcontract has been let for the grading of the whole or part of the 60 mile line from the Spirit River to the Grand Prairie settlement to G. Webster. (June, pg. 212.)

**Edmonton, Dunvegan and British Columbia Ry.**—Work has been commenced on the piers and abutments for the bridge across Big Smoky River, mileage 290 from Edmonton, Alta., and grading is in progress all the way to the Spirit River, mileage 357 from Edmonton. It is expected to complete construction to this point this year. Ballasting to the Big Smoky River has been fully completed for the first 200 miles, and the gangs are at work on the remaining 90 miles. (June, pg. 212.)

**Glengarry and Stormont Ry.**—This newly completed railway from St. Polycarpe, Que., 27.5 miles, was opened for traffic May 31. It is leased to the C.P.R., and is being operated as part of the Eastern Division.

**Intercolonial Ry.**—We are officially advised that a contract has been let to J. W. McManus and Co., Moncton, N.B., for building the industrial spur line at Bathurst, N.B., 2.3 miles.

Contracts have been let for buildings as follows: Combined station and freight shed, Trenton, N.S., Rhodes, Curry and Co., Ltd., Amherst, N.S.; combined station and freight shed, Derby Jct., N.B.; and station building at Humphreys, N.B., McLaggan, McBean and Bell; freight shed, 400 x 40 ft., at Levis, Que., G. B. Mitchell, Montreal.

Tenders are under consideration for building a number of small concrete culverts and arches, and the concrete substructures for steel viaducts at Ottawa Brook and Walker's Gulch, on the Sydney, N.S., Sub-division.

Press reports state that in addition to the regular season's work on the Sydney Sub-division, a number of steel bridges will be renewed and strengthened.

The general work of betterments for this year includes the relaying of about 75 miles with new 85 lb. rails. An Atlantic type shovel has been bought for ballasting, and there are now at work on the line four steam shovels getting out material. (June, pg. 212.)

**The Kent Coal and Ry. Co.,** which was incorporated by the New Brunswick Legislature last session, is authorized to build the following lines: From between Kent Jct. and Harcourt on the Intercolonial Ry. to Chipman; from Chipman to Minto, and from Rexton or Richibucto on the Kent Northern Ry. to Richibucto Head, all of which lines are to be subject to the approval of the Lieutenant Governor in Council. The company is authorized to acquire the Kent Northern Ry., and may acquire stock or other securities in any coal company owning coal areas in the counties of Queens or Sunbury; construct wharves or docks, and for the purpose of its business may navigate passenger vessels. The authorized capital is \$400,000, and the company may issue bonds for \$25,000 a mile in respect of its projected railway. The office of the company is fixed at Richibucto, N.B., the provisional directors being: W. W. Duncan, T. J. Lannen, A. L. Marsh, A. C. McNaughten, F. Erickson Brown, Toronto; T. J. Bourque, Richibucto, N.B.; A. R. Slipp, Fredericton, N.B., and D. K. Hazen, St. John.

The Kent Northern Ry., which the company is authorized to acquire, extends from Kent Jct. on the Intercolonial Ry. to Richibucto, N.B., 27 miles, and operates under lease the St. Louis and Richibucto Ry., 7 miles. The company was incorporated by the New Brunswick Legislature in 1874 and the line was opened for traffic in 1883. The St. L. and R. Ry. Co. was incorporated by the New Brunswick Legislature in 1882, and the line was opened in 1885. After a somewhat checkered career, the line was leased to the K.N.R., but it does not appear to be regularly operated. (June, pg. 212.)

**Kettle Valley Lines.**—The first train on the Kettle Valley Ry. as a factor in the east and west traffic of southern British Columbia was run between Midway and Merritt, 275 miles, May 31, thereby connecting the C.P.R. Crowsnest Pass line with the transcontinental line. The Penticton Board of Trade and the municipal council entertained K.V.R. and C.P.R. officials, who travelled on the opening train. The line is leased to the C.P.R., and it is being operated in connection with that company's lines, under the

charge of O. E. Fisher, Superintendent, with offices at Penticton. The new line starts at Midway, and runs through to Merritt, 274.8 miles, which mileage includes 1.5 miles from South Penticton to the wharf in Penticton. From Princeton, mileage 71.3, to Brookmere, mileage 109.8, the track is owned by the Vancouver, Victoria and Eastern Ry. (G.N.R.), and is operated as a joint section with the K.V. Lines. At Merritt connection is made with the Nicola branch, which connects with the main transcontinental line at Spences Bridge. The other mileage operated is from Carson to Grand Forks, 4.00 miles, and from Grand Forks to Lynch Creek, 18.5 miles. The line also extends to Republic, Wash. (June, pg. 212.)

**Pacific Great Eastern Ry.**—Announcement has been made in Vancouver that through an arrangement with the Dominion and Provincial Governments funds have been provided for the continuance of construction between Vancouver and Fort George, B.C. The line is at present in operation for some miles out of North Vancouver toward Squamish, and from Squamish to Lillooet, 120 miles. Considerable work has been done between Lillooet and Fort George, and it is expected to have the line completed for a further 100 miles by the end of the year. The objective for the year's tracklaying is the Hundred Mile House in Cariboo district (May, pg. 171.)

**Peace River Tramway and Navigation Co.**—The Board of Railway Commissioners has approved location plans for the projected lines at the Peace River Chutes, 5.00 miles, and along the north bank of the Peace River from Smith Landing to Fort Smith, Alta., 15 miles. (Jan., pg. 11.)

**Timiskaming and Northern Ontario Ry.**—The survey party, in charge of W. R. Maher, which has been working for some time along the Long Sault rapids on the Abitibi River, returned to Cochrane, June 6, their camp having been burned out. (May, pg. 173.)

**C.P.R. British Columbia Employes and the War.**—The company's records show that 206 of its employes in British Columbia have been engaged in active service in Europe, or are preparing for it. Of this number, eight are reported killed and three missing. The killed include, J. H. Avery, clerk, local freight office, Vancouver; R. Burns, chief clerk, Fuel Department, Vancouver; C. Dennehey, rod man, Nelson; A. Lee, trucker, Vancouver; H. Springthorpe, car cleaner, Vancouver; A. J. Stewart, laborer, Vancouver, and F. G. Olson, train clerk, Vancouver. The missing are, A. J. Cleeton, shed foreman, Rossland; L. C. Smith, civil engineer, Nelson, and S. B. Weber, clerk in Marine Superintendent's office, Vancouver.

**A Kettle Valley Ry. Construction Suit.**—Grant Smith and Co. have entered action in the British Columbia courts to recover \$699,609 balance claimed to be due for work on the line. The statement sets forth that the net cost of construction on the Penticton-Hydraulic Summit section was \$2,804,168.73, and the contractors' profit of 10% made the total amount due \$3,084,585.60. \$2,384,976.60 had been paid on account, leaving the amount claimed, on which the contractors claim interest from Oct. 21, 1914.

**Projected Elevator at Owen Sound.**—The Owen Sound, Ont., Town Council is considering the advisability of submitting a bylaw to the ratepayers, to authorize \$300,000 of debentures for the construction of a modern concrete elevator of 1,000,000 capacity. If the decision is made to build an elevator it will probably be placed under the management of a commission of three members.

## Progress on Rogers Pass Tunnel Construction, Canadian Pacific Railway.

The following table shows the progress made during Feb., Mar., April and May, and also the totals to May 27, for which we are indebted to J. G. Sullivan, M.Can.Soc.C.E., Chief Engineer, C.P.R. The figures show the number of feet.

	Jan. 28 to Feb. 25.	Feb. 25 to Apr. 1.	Apr. 1 to Apr. 29.	Apr. 29 to May 27.	Total to May 27.
Pioneer heading, east end .....	619	682	692	596	9,221
Main heading, east end .....	446	271	405	377	5,450
Main tunnel, east end .....	417	440	519	624	3,769
Pioneer heading, west end .....	687	710	516	652	7,270
Main heading, west end .....	606	857	707	575	6,081
Main tunnel, west end .....	176	479	542	593	2,165

## National Transcontinental Railway Operation.

Since the first announcement of the taking over by the Dominion Government of the National Transcontinental Railway, including the Grand Trunk Pacific Ry.'s Lake Superior branch, for operation in conjunction with the other Canadian Government Railways, there has been some temporary modification of the plans, consequent upon questions relating to what is known as the G.T.P.R. Lake Superior Division, which includes the N.T.R. from St. Boniface, Man., to Graham, Ont., 258.4 miles, and the G.T.P.R. branch from Graham to Fort William, 190 miles. Among the appointments announced in our last issue was that of R. S. Richardson as Superintendent of District 3, Armstrong to Winnipeg (excluding Armstrong) and Superior Jct. to Fort William. The question of the taking over of the Lake Superior branch, while authorized by the Government had not then been arranged, the matter of terms, whether lease or purchase, being under discussion. As also stated in our last issue the G.T.P.R. announced the appointment of A. Kilpatrick, as Superintendent of its Lake Superior Division, vice A. A. Tisdale, on temporary leave of absence. The question of jurisdiction over the Superior Jct.-St. Boniface section of the N.T.R. was thus raised, and the whole question was taken into consideration. As the result of negotiations it is said that a temporary arrangement has been made respecting the operation of the lines in question. The arrangement, it was reported June 11, is such that the G.T.P.R. will continue to operate the line from St. Boniface via Superior Jct. to Fort William, on behalf of the Dominion Government, pending the completion of the negotiations for the taking over of the Superior Jct.-Fort William line. The G.T.P.R. local staff will, it is said, be absorbed into the Canadian Government staff gradually, so that when terms are finally arranged the G.T.P.R. local staff will be non-existent. It is further stated that the Lake Superior branch will be taken over on the basis of a rental, the amount named approximately \$500,000 a year. The eastern terminus of the G.T.P.R. will, it is stated, be Transcona, Man., which terminal facilities will be used jointly with the N.T.R. F. P. Gutelius, General Manager, Canadian Government Railways, is reported to have stated, June 11, that it would be some time before the final arrangements were completed, and the agreement entered into, there being many details to be worked out. One of these is as to the rolling stock, it being said that G.T.P.R. rolling stock on the division is to be taken over. (June, pg. 210.)

## Grand Trunk Pacific Railway Construction.

The company started operating three through trains a week in each direction between Winnipeg and Prince Rupert, June 6. Heretofore there have only been two

trains a week from Edmonton to Prince Rupert, the Winnipeg-Edmonton service being conducted independently. The train for Prince Rupert leaves Winnipeg on Tuesdays, Fridays and Sundays at 6 p.m., while on the other days of the week it does not run further than Edmonton. The eastbound trains leave Prince Rupert, Tuesdays, Thursdays and Saturdays. A tri-weekly steamship service between Prince Rupert, Vancouver and Seattle, will be maintained in connection with the train service.

The question of the building of a transfer track between the G.T.P.R. and the C.P.R. at Calgary, Alta., came before the Board of Railway Commissioners there, June 9. The Board decided that the transfer track should be laid on land owned by the Globe Elevator, and that they should be put down by the G.T.P.R. The company, however, states that it is impossible to provide the money for this at present, but it is willing to pay a rental for its use if somebody else will build it. The Commissioners suggested that the city buy the land, build the track and collect the cost, spreading the payment over a term of years. The city does not appear to view the project with favor.

The importance of Prince Rupert as a trading centre is developing rapidly. Fishing is at present the most important industry from which the railway derives its traffic there. Until the advent of the G.T.P.R. the fishing steamboats carried most of their catch to Seattle, Wash., whence it was shipped east. During 1914, about 100 steamboats used Seattle as their landing port, and from that place some 40,000,000 lbs. of fish, principally halibut and herring, were shipped east. In Jan., 1914, the Dominion Government authorized the carriage of fish for the U.S. in bond through Canada, and the G.T.P.R. set out to obtain a share of the trade. Starting with the shipment of 60,000 lbs. in Sept., 1914, the shipments increased to 598,881 lbs. in March, 1915, 533,285 lbs. in April, by express, in addition to 789,240 lbs. in March and 740,000 lbs. in April by special train. Fourteen steamboats are now landing their catches at Prince Rupert, and the number is increasing. Special wharves are being built for the accommodation of the traffic. Five fish trains a week are being run from Prince Rupert to Chicago. The first car of copper ore for the smelter at Granby Bay, was reported to have reached Prince Rupert June 7, and a continually increasing tonnage of mineral traffic is looked for. It is stated that from 3,000 to 5,000 tons of ore for smelting will be carried at an early date.

The company's new hotel at Edmonton, Alberta, is completed and will be opened for business July 1. (June, pg. 224.)

## Inverness Railway and Coal Company's Finances.

Canadian Railway and Marine World for June contained some information about the meeting of I.R. & C. Co.'s bondholders called for June 30 to consider action to be taken in view of the company's inability to

meet the interest on its securities matured May 1. In connection with the notice calling the meeting the following circular was issued by the Secretary, L. W. Mitchell:

The conditions at present existing may be briefly summarized as follows: The company is capable of producing approximately 1,000 gross tons of coal per working day, but the cost of mining the coal, in view of the depth and extent of the workings, has reached a point where the margin between the cost of production and the price realized is very small. Under normal conditions the percentage of slack coal produced by the company is above the average, owing to the friable nature of the coal seams, and it has always been found difficult to market this without suffering heavy loss. Under present conditions, with the limited market, and that market calling for screened coal to a very large extent, the percentage of slack is naturally high, with the result that, owing to the company's inability to market its production of slack coal, it has been necessary from month to month to waste considerable tonnage. The quality of the coal has not shown the expected improvement in chemical analysis as the workings have been extended, nor has it become any less friable in formation. The revenue from the railway is largely dependent upon the coal shipments, inasmuch as the local business is small, and were the company's mines to close it is doubtful if the railway could be operated on a paying basis. The management are of the opinion that it can be operated with a prospect of paying interest on its outstanding securities only by the perfecting of a system of briquetting coal without the use of a binder in the shape of pitch, which will enable the company to make use of its slack coal. Such a method of briquetting slack coal is being carried out on the continent, and experiments on an extensive scale are being conducted in England with every prospect of success.

The holders of a large proportion of outstanding bonds have expressed their approval of an arrangement to waive default already existing in respect of the interest which matured May 1 and of several instalments of sinking fund, and to postpone the payment of interest and sinking fund for a period of years after the close of the war, and it is suggested that the meeting to be called should consent to such waiver and postponement. During such period an opportunity will be afforded to ascertain whether the proposed system of briquetting can be conducted successfully from the company's properties, and the meeting will be asked to adopt a plan to provide the necessary funds, by authorizing an issue of prior lien securities or otherwise.

## Locking Gear Ordered for Dampers of C.P.R. Locomotive Ash Pans.

The Board of Railway Commissioners passed the following general order, 145, May 31:—Re order 15988, Feb. 17, 1912, providing that all railway companies equip their locomotives with ash pans that can be dumped or emptied without the necessity of an employe getting under the locomotive, except in cases of emergency. Upon hearing the matter at Ottawa, April 6, 1915, in the presence of counsel for and representatives of the Canadian Pacific, Grand Trunk, and Canadian Northern Railways, the Brotherhood of Locomotive Engineers, and the Brotherhood of Locomotive Firemen and Enginemen; and upon reading the further submissions filed it is ordered that the C.P.R. be directed, by July 1, 1915, to equip its locomotives with a locking gear for the dampers of the ash pans: provided that no locomotive shall be operated from and after that date unless so equipped.

### Canadian Northern Railway Construction, Betterments, Etc.

**Canadian Northern Quebec Ry.**—The original route of the projected extension of the old Montford and Gatineau Colonization Ry. from Huberdeau, Que., was approved by the Minister of Railways, Sept. 30, 1912. The new location, which has just been approved, was found necessary for the betterment of grades and curvature. It proceeds along the east bank of the Rouge River to the Argenteuil county line, crossing to the west side of the river, and ties in with the originally approved route about six miles from Huberdeau. The route has been approved to near St. Remi d'Amherst.

**Canadian Northern Ontario Ry.**—The Hamilton City Council has been notified by the company of its objection to the construction of cement sidewalks on Palmerston Ave., between Gertrude St., and 550 ft. northerly, within the area through which the C.N.O.R. is located.

A start will be made early in July to finish up all the work on the line to Port Arthur, generally referred to as the Sudbury-Port Arthur line, but which actually covers the section of the line westerly from Ruel to Port Arthur. The principal work to be done consists of clearing out cuttings which have been affected by the winter weather, lining and surfacing. It is expected to have this work done by the middle of September.

**Canadian Northern Ry.**—The terms of the agreement between Port Arthur, Ont., and the company, which was defeated by the ratepayers at the January municipal elections is again under consideration. The company has offered a number of concessions, which are considered reasonable, and it is expected that a new agreement will be reached at an early date.

A press report states that arrangements are being made for an early start on the construction of the projected line from Bienfait to Esteven, Sask. Construction material was delivered at Bienfait, and Midale early in June, but up to June 12, nothing further had been done.

The Board of Railway Commissioners has authorized the opening for traffic of the line northwesterly from Battleford, from the present terminal at Edam, mileage 37, to Turtleford, mileage 57, Sask.

Construction is reported to have been resumed on the line from Oliver to St. Paul de Metis, Alta. D. F. McArthur took in a grading outfit, May 24, and at a meeting held at St. Paul, a few days previously the Minister of Municipal Affairs stated that on the representations of the Government Mr. McArthur had been given this contract. About 14 miles of grading had previously been done by him.

It is reported that 250 teams, with the necessary men, are grading south of High River, on the Calgary-MacLeod Line, Alberta. The section of the line between Calgary and DeWinton is also being graded. The Northern Construction Co. is the general contractor and the Wilson-Frederick Co. is reported to have a subcontract.

**Canadian Northern Pacific Ry.**—A Vancouver report, June 5, says that up to May 31 there had been deposited on the company's terminal site at False Creek, 1,500,000 cubic yards of material. Of this amount 400,000 yards had been pumped into the area enclosed by a bulkhead extending transversely down the creek since the reclamation operations were resumed in January. A 64-acre section of the company's holdings are barricaded, the entire tract being nearly 165 acres. It is estimated that it will take 3,250,000 yards of dirt to reclaim the whole of the property. The aspect of

the central portion of False Creek is being rapidly changed. At low tide an island of considerable size can be seen where formerly there were mud flats.

The Vancouver City Council decided, June 3, to take steps to compel the company to expedite work on the station and other buildings on the terminal site. (June, pg. 218).

### Grand Trunk Railway Betterments, Construction, Etc.

**Track Elevation in Montreal.**—The report of the City Engineering Department, respecting track elevation, referred to in our last issue, shows that the elevation of the tracks would affect 32 streets, as follows: Mountain, Aqueduct, Versailles, Lusignan, Guy, Richmond, St. Martin, Seigneurs, Chatham, Canning, Fulford, Dominion, Vinet, Atwater, Greene, Rose de Lima, Du Couvent, Place St. Henri, St. Philippe, Ste. Marguerite, Lacasse, DeCourcelles, St. Remi, Wellington, Hibernia, Charlevoix, D'Argenson, Atwater (aqueduct), St. Patrick, St. Ambrose, and Croissement. The cost of the work will be largely determined by the type of construction adopted. The city desires that tunnels with supporting columns in the centre of the roadway be adopted, while the city's engineering department favors overhead structures supported on columns, a system which has been found satisfactory in London, Eng., as well as in the United States. It is also claimed the column system would be more advantageous to the general street traffic. Working on this basis the estimated cost of the elevation would be: cost of work, \$2,635,045; general expenses, including engineers' fees, \$342,555; purchase of land, \$1,339,300; damages, \$500,000; total \$4,816,900. However, allowing for possible deviations from this general scheme by the adoption of some alternative plans at some of the streets, or by order of the Board of Railway Commissioners, the city's railway engineer, G. R. MacLeod, puts \$6,000,000, including interest at 5%, as the outside cost of the work. The G. T. R. estimate is \$8,000,000, which includes interest at 6%. (June, pg. 223.)

### Union Station for North Toronto.

Work has been started on the union station to be built at North Toronto for joint use by the C.P.R. and the Canadian Northern Ry. P. Lyall & Sons, Ltd., have the contract for the excavations, the only one left. Darling and Pearson, architects, Toronto, are preparing plans for the building, which are expected to be completed at a very early date, and plans of the track layout, etc., are being prepared under the direction of J. M. R. Fairbairn, Assistant Chief Engineer, C.P.R. An illustration made from a preliminary sketch of the building has been published in a Toronto daily paper, but that plan will be considerably changed. The station, 115 x 44 ft., will be built with its west end facing the east side of Yonge St., just south of the C.P.R.'s West Toronto-Leaside line on a

portion of which work has been in progress for over two years, the progress having been delayed materially by prolonged differences with the city. The building will face south, a central entrance leading into a general waiting room 50 x 69 ft. This waiting room will be flanked on the right by men's and women's rest rooms and lavatories, and on the left by telephone and telegraph booths and ticket office. A central exit from the waiting room will pass into a midway under the tracks, from which stairs will lead up to three platforms, serving the six tracks. The platforms will have umbrella sheds. There will also be a shelter 60 x 20 ft. on the station side of the track level.

On the Yonge St. side of the building there will be a clock tower, with an entrance way on the ground level leading into a concourse back of the main waiting room. The concourse will communicate with the midway, and it is through this routing that it is expected the majority of the passengers will pass, eliminating the waiting room. The baggage room will be located under the tracks to the east of the midway, and will be served by a driveway on the Yonge St. side, where the baggage will be delivered and received. The station will be built of cut stone, and will have a flat roof.

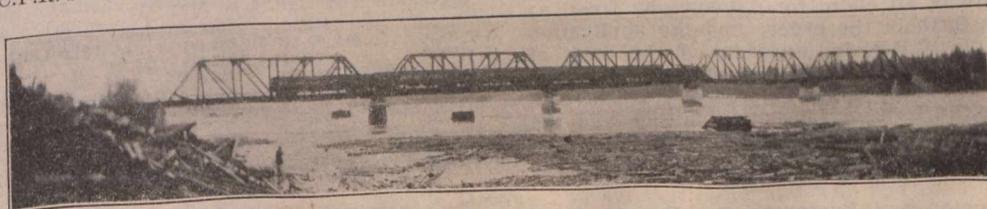
### Great Northern Railway Lines in Canada.

**Vancouver, Victoria and Eastern Ry. and Navigation Co.**—The Board of Railway Commissioners has authorized a connection with the C. P. R. near Granby Smelter, B. C.; and also with the Kettle Valley Ry., at Brookmere, B.C.

**Vancouver Terminals.**—The Board of Railway Commissioners, June 2, authorized a change in the location of the projected station building at False Creek, Vancouver, from the Prior St.-Park Lane section of the property, to next the property line of the Canadian Northern Pacific Ry., and directed that work is to be commenced at the expiration of six months from the date of the order, and completed by June 1, 1917.

Filling-in work on the False Creek flats is still being proceeded with, the City Engineer estimating that 800,000 cubic yards of material are still required on the company's property. The question whether the station to be built will be a union station with the Canadian Northern Pacific Ry., or an entirely separate building though adjacent thereto, is not yet decided. (June, pg. 225.)

**The Dominion of Canada Trust Corporation,** which is being wound up in London, Eng., attributes its failure among other things to the cancellation by the Dominion Parliament of the Halifax and Eastern Ry. charter. That company was chartered several years ago to build a railway from Dartmouth through the Musquodoboit River Valley, but despite liberal subsidies by the Dominion and by Nova Scotia, the company was unable to raise the necessary capital, and about three years ago the Dominion Government decided to build the line itself, hence the cancellation of the charter.



Railway Bridge Between St. Leonard, N.B., and Van Buren, Me.  
This illustration shows the first passenger train crossing the bridge. A full description of the bridge appeared in Canadian Railway and Marine World for May, pg. 167, and plans showing its location, etc., were given in the June issue, pg. 205.

**Traffic Orders by the Board of Railway Commissioners.**

**Switching Rates at Hamilton.**

23681. May 14. Re complaint of Steel Co. of Canada, Ltd., against the switching rates charged by Toronto, Hamilton & Buffalo Ry. in its Hamilton terminals, under Tariff C. R. C. 858, effective April 1, 1913, as amended by Supplement 4, effective May 5, 1913: Upon reading what is alleged in support of the complaint and on behalf of the railway company, and the report of the Chief Traffic Officer of the Board, it is ordered that the complaint be dismissed.

**Paper Rates to Central Freight Association Territory.**

23708. May 20. Re complaint of Laurentide Co., Ltd., against rates charged by the railway companies on paper to Central Freight Association Territory, effective May 27, 1915, it is ordered that the following tariffs, C.R.C. no. E.2999 Canadian Pacific Ry.; C.R.C. no. E.3157 and C.R.C. no. P115 Grand Trunk Ry.; C.R.C. no. E.641 Canadian Northern Ry.; C.R.C. no. 1103 Ottawa & New York Ry. be suspended until further order.

**Glengarry and Stormont Railway Tariff.**

23709. May 19. Approving Glengarry Stormont Ry.'s Standard Freight Tariff, C. R. C. 1.

**Refund of Overcharge on Household Goods.**

23781. May 28. Re complaint of C. M. Sinclair, of Bridgeburg, Ont., against rate charged by Windsor, Essex & Lake Shore Rapid Ry. on shipment of household effects from Kingsville to Bridgeburg. Upon reading what is alleged in support of the complaint and on behalf of the railway company; upon its appearing that the rate charged should have been 52c. per 100 lbs., and that the charge would have been \$3.12 instead of \$4.10; and upon the railway company consenting to abide by any decision arrived at by the Board, it is ordered that the company be authorized to refund to the complainant the difference in the said charges, viz., 98c.

**Freight on Mixed Carloads of Lumber and Shingles.**

23813. June 2.—In the matter of the complaint of the Grain Growers' Lumber Co., of Vancouver, B.C., that, under note 2 of Supplement 45 to Tariff C.R.C. 1806, the C.P.R. exacts a higher weight basis on mixed carloads of lumber and shingles to points in Western Canada than to points in Eastern Canada under Tariff C.R.C. no. W. 1615, and Transcontinental Tariff C.R.C. 1790: Upon hearing the complaint, in the presence of counsel for the C.P.R., no one appearing for the complainant, although duly notified; upon reading the report of the Chief Traffic Officer of the Board, and hearing what was alleged, the board ordered that the complaint be dismissed.

**C.P.R. Release Form for Carriage of Perishable Freight.**

23860. June 16.—The order 23392, Mar. 4, 1915, directing the C.P.R. to accept shipments of such perishable freight as beer, fruit and vegetables for carriage in heated cars, upon the shipper signing a "release" waiving all claim for damages by frost, as set forth in the order; and the application of the C.P.R. for approval of the draft of "release" submitted in conformity with the requirements of the said order: Upon reading the form of release submitted, and the report of the Chief Traffic Officer and the Law Clerk of the Board, it is ordered that the said form be approved.

**Moncton and Buctouche Ry. Freight Mileage Tariff.**

23861. June 15.—The application of Moncton and Buctouche Ry., under Sec. 327 of

the Railway Act, for approval of its Standard Freight Mileage Tariff, C.R.C. no. 21: Upon the report and recommendation of the Chief Traffic Officer of the Board, it is ordered that the said tariff be approved.

**Canadian Northern Railway Earnings, Etc.**

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1913-14, from July 1, 1914:

	Gross Earnings	Expenses	Net Earnings	Increase or Decrease
July	\$1,504,300	\$1,163,800	\$420,500	x \$83,800
Aug.	1,367,700	1,123,000	244,700	x 163,900
Sept.	2,109,900	1,519,000	590,700	65,800
Oct.	1,895,300	1,332,100	563,200	x440,900
Nov.	1,670,200	1,123,100	547,100	x417,700
Dec.	1,329,100	908,000	423,100	200,900
Jan.	950,500	773,000	177,800	x175,100
Feb.	1,105,100	823,700	281,400	42,800
Mar.	1,379,000	956,000	423,000	62,600
Apr.	1,429,000	940,000	489,000	74,800
	\$14,830,400	\$10,659,900	\$4,170,500	\$1,236,300
Decr.	\$4,573,400	\$3,337,100	\$1,236,300	.....

x Decrease.

Approximate earnings for May, \$1,193,900 against \$1,641,600 for May, 1914, and for two weeks ended June 14, \$543,100 against \$736,900 for same period, 1914.

**Canadian Pacific Railway Earnings, Etc.**

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those of 1913-14, from July 1, 1914:

	Gross Earnings	Expenses	Net Earnings	Increase or Decrease
July	\$10,481,971.72	\$6,703,525.89	\$3,778,445.83	\$338,347.35
Aug.	8,917,764.38	6,554,606.68	3,373,157.70	597,981.54
Sept.	10,754,139.67	6,387,091.28	4,367,048.39	48,530.30
Oct.	9,282,923.49	5,261,600.13	3,321,323.36	2,281,529.43
Nov.	8,057,358.89	5,413,286.72	2,644,072.17	2,244,173.89
Dec.	7,443,962.43	5,244,438.62	2,199,523.81	2,027,297.90
Jan.	6,109,026.94	4,968,793.64	1,140,233.30	140,059.24
Feb.	6,735,678.49	4,756,663.87	1,879,014.62	507,438.16
Mar.	7,852,989.67	4,879,974.94	2,973,014.73	x126,224.14
Apr.	7,455,859.54	4,763,104.33	2,687,755.21	657,109.81

\$84,091,680.22 \$55,698,086.10 \$28,453,594.12 x\$7,673,696.96  
Dec. \$25,872,793.61 \$18,199,096.65 \$7,673,696.96 .....

xDecrease.

Approximate earnings for May, \$6,996,000 against \$9,533,000 for May, 1914, and for two weeks ended June 14, \$3,208,000, against \$4,329,000 for same period, 1914.

During the weeks ended May 31, June 7 and 14, the mileage was increased to 12,491, 12,633 and 12,748 respectively.

**Grand Trunk Railway Earnings, Etc.**

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

Grand Trunk Railway.		Grand Trunk Western Railway.		Detroit, Grand Haven and Milwaukee Ry.	
Earnings	\$3,200,309	Earnings	\$608,250	Earnings	\$197,200
Expenses	2,032,800	Expenses	590,500	Expenses	205,000
Net earnings	\$1,167,509	Net earnings	\$17,750	Deficit	\$7,800

Approximate earnings for May, \$4,015,302 against \$4,309,610 for May, 1914, and for two weeks ended June 14, \$1,908,290, against \$1,996,679 for same period, 1914.

**TRAFFIC RECEIPTS OF THE SYSTEM.**

	1915	1914	Incr.	Decr.
G.T.R.	\$14,971,617	\$16,633,441	.....	\$1,661,824
G.T.W.R.	2,850,844	2,947,518	\$3,326	.....
D.G.H.&M.R.	961,518	953,424	8,094	.....
Totals	\$18,783,979	\$20,434,383	.....	\$1,650,404

**Grand Trunk Pacific Railway Earnings.**

The approximate earnings of the Prairie Section and Lake Superior Branch, 1,104 miles, for May, were \$274,541, against \$440,857 for May, 1914, and the aggregate from Jan. 1 to May 31, was \$1,431,697, against \$2,055,408 for same period 1914.

**Canadian Pacific Railway Construction, Betterments, Etc.**

**Ontario Division.**—The Board of Railway Commissioners has ordered the C.P.R. to build a transfer track at Trenton, Ont., to connect with the Canadian Northern Ry.

Work was started, June 1, on the removal of old buildings and excavation on the site of the new station at North Toronto for the C.P.R., the Canadian Northern Ry. to have a joint right of use. The work is being done by the P. Lyall and Sons Construction Co., Montreal. The contract for the building has not been let.

**Kootenay Central Ry.**—The Board of Railway Commissioners has approved of revised location for half a mile of this line from lot 3947 to lot 272 East Kootenay District, B.C.

**British Columbia Division.**—Reports from Vancouver, B.C., state that four tracks from the C.P.R. right of way to the new government wharf and elevator at the foot of Salisbury Drive, are to be laid at an early date. The matter is under consideration by the city council, with a view to securing proper protection for the public. (June, pg. 220.)

**Rogers Pass Tunnel.**—A system of ventilation is being worked out which will permit of the operation of this tunnel by steam power instead of by electricity as was at one time spoken of.

**Locomotive Boiler Inspection in Nova Scotia.**—The Nova Scotia Government has passed an order in council approving the regulations drawn up under the provisions of the amendment to the Provincial Railways Act passed last session, for the testing and inspecting of locomotive boilers used on railways subject to provincial jurisdiction. The regulations, which come into effect July 1, call for certified monthly inspections by the officer in charge of locomotives; quarterly inspection by the company's inspector, and an annual report by the inspector and the officer in charge of each locomotive. Specification cards for each locomotive are to be filed with the Government. The 38 regulations deal in detail with the manner of inspection.

**C.P.R. Manufacturing Munitions.**—A press report says:—"Linked with Sir Thomas Shaughnessy's conferences with the British officials in London are reports that the C. P.R. plants are being turned into a great munitions factory. The Angus locomotive and car shops of that company, at Montreal, are working 24 hours a day with a force of 12,000 men, and all the other C.P.R. plants and shops are preparing to begin this kind of work."

**Fire Guards on Prairie Railways.** The Board of Railway Commissioners' Chief Fire Inspector, Clyde Leavitt, has issued notice to the Canadian Pacific, Canadian Northern, Grand Trunk Pacific, Great Northern and Edmonton, Dnvegan & British Columbia Railways to establish and maintain fire guards on both sides of their right of way in Manitoba, Saskatchewan and Alberta, in accordance with the Railway Act, sec. 298, sub sec. 4, and general order 107, regulation 8.

**Telephone Train Dispatching on the G. T. Pacific Ry.** The system of dispatching trains by telephone has been installed throughout the G. T. P. R. main line. Portable telephones are carried on each train, keeping the train crews in touch with the dispatchers at all times and places. A regular system of watch inspection has also been put into force.

The Canadian Northern Ry. started a campaign, June 18, for the destruction of weeds along its lines in Saskatchewan. W. Kilby, Regina, is in charge.

## Mainly About Railway People.

Sir Thomas Shaughnessy sailed from Liverpool towards the end of June, for New York, after a business trip to England.

Lieut. Hon. R. H. P. Howard, who was killed in action at Ypres recently, was a grandson of the late Lord Strathcona.

Lady Mackenzie, wife of the President of the Canadian Northern Ry., has offered a house at Lakefield, Ont., as a convalescent home for soldiers.

W. G. Cooper, Road Foreman of Locomotives, Wabash, Rd., St. Thomas, Ont., died there, June 11, after an attack of typhoid fever.

David McNicoll, ex Vice President, C.P.R., who spent most of the winter in the south, is visiting his son on his ranch at Penticton, B.C.

John G. Haslett, who died at Winnipeg, June 17, aged 60, was, prior to 1905, for 14 years, Colonization Agent for the C.P.R. in London, Eng.

Sir Thomas Tait, President, Fredericton and Grand Lake Coal and Ry. Co., is spending the summer at St. Andrews, N.B., with Lady and Miss Tait.

J. O. Apps, General Baggage Agent, C.P.R., Montreal, was married at Westmount, Que., June 6, to Miss B. A. McAllen, and left for a trip to the Pacific coast.

C. W. Fisher, Chief Dispatcher, C.P.R., Lethbridge, Alta., attended the Train Dispatchers' Association of America's convention at Minneapolis, Minn., June 15.

J. F. Chapman, Manager, Thousand Islands Ry. and Oshawa Ry., Gananoque, Ont., has offered an island and cottage near Stave Island for wounded and sick soldiers.

Sir Wm. Van Horne returned from Cuba to Montreal recently, and with Lady and Miss Van Horne will spend most of the summer at Covenhoven, St. Andrews, N.B.

Huntley Drummond, a son of the late Sir George Drummond, director, C.P.R., has given \$100,000 to the Dominion Government to purchase machine guns for Canadian overseas troops.

C. A. Cotterell, Superintendent, District 2, British Columbia Division, C. P. R., Vancouver, was called to Fort William, Ont., early in June, on account of the death of his father.

B. B. Kelliher, who was, until recently, Chief Engineer, Grand Trunk Pacific Ry., Winnipeg, was married in London, England, early in June, to Miss C. O'Connor of Wexford, Ireland.

J. H. Fulford, who died at Brockville, Ont., June 8, was a former mayor of the city, and for a considerable period acted as city agent there for several steamboat and railway lines.

W. Marshall, Assistant Manager of Telegraphs, Western Lines, C. P. R., Winnipeg, was operated on for appendicitis, June 3, and is reported to be progressing satisfactorily.

J. W. Stewart, President, Pacific Great Eastern Ry., Vancouver, has contributed \$450 to the 47th Highlanders for the equipment of a pipe band of eight pipers and four drummers.

Miss Margaret Armstrong, daughter of L. O. Armstrong, of the Natural Resources Department, C.P.R., was married at Montreal recently to C. B. Amory, of Boston, a lieutenant in the U.S. army.

C. C. Carr, son of C. E. A. Carr, Railway Supplies, Toronto, who went to Europe with the first contingent, and was reported missing after the battle of Langemarck, has been

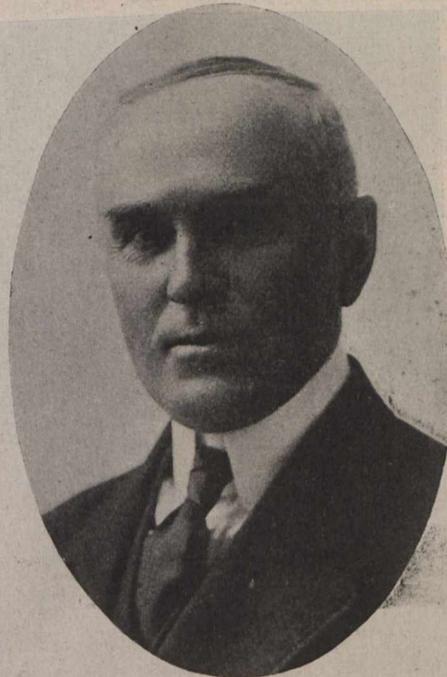
located in a German hospital, where he is reported to be recovering from wounds.

F. N. McCrea, M. P. for Sherbrooke, Que., formerly President, Lotbiniere & Megantic Ry., has been unanimously selected as the Liberal candidate for that constituency at the next general election.

Thomas Cantley, Vice President, Nova Scotia Steel and Coal Co., and Eastern Car Co., New Glasgow, N.S., has been elected First Vice President, Canadian Manufacturers Association, for the current year.

F. L. Wanklyn, General Executive Assistant, C. P. R., Montreal, who is honorary colonel of the Canadian Overseas Railway Construction Corps, entertained the officers to dinner at St. John, N. B., June 5.

W. S. Ousman, formerly of the Canadian Freight Association's Montreal office, has enlisted for overseas service with the 38th Battalion, Canadian Expeditionary Force, and is now at Barriefield Camp, Ont.



R. S. Richardson,  
Superintendent, District Three, National  
Transcontinental Railway.

David Lyall, who was Chief Engineer and Manager for C. J. Wills and Sons of London, Eng., during their contract on the Central Railway of Canada, a year or two ago, is now with the Royal Engineers in France.

Mrs. E. W. Rathbun, wife of the President, Oshawa Ry., who has gone to Europe with the Canadian overseas Expeditionary Forces, has offered their home at Deseronto, Ont., as a convalescent home for wounded and sick soldiers.

James Dunsmuir, Jr., who lost his life through the torpedoing of the s.s. Lusitania by the enemy recently, was the third son of James Dunsmuir, director, C.P.R., and a former Lieutenant Governor of British Columbia.

G. H. Stott, City Passenger and Ticket Agent, G.T.R., Quebec, has received word that his son, Percy Stott, a member of the 8th Battalion, was taken prisoner by the Germans, after one of the engagements at Ypres, Belgium.

Capt. A. T. Shaughnessy, who is serving with the 60th Battalion, now recruiting for active service in Europe, is a son of Sir Thomas Shaughnessy, President, C.P.R.,

and a member of the Montreal Stock Exchange, as partner of C. Meredith and Co.

Mrs. G. McLaren Brown, wife of the European Manager, C.P.R., London, Eng., has received a letter by the Queen's command, asking her to convey to the ladies of the Canadian War Contingent Association, thanks and appreciation for clothing, etc., contributed.

W. W. Butler, Vice President, Canadian Car and Foundry Co., returned to Montreal at the end of June after having been in Europe for several months, a considerable portion of his time having been spent in Petrograd, where he secured large orders for shells.

Rev. J. Gilbert Baylis, D.D., Canon of Christ Church Cathedral, Montreal, who died there, June 21, aged 76, came to Canada about 60 years ago, entered G.T.R. service soon after his arrival, and spent several years in it prior to entering college to study for holy orders.

H. R. Bullen, who has been Soliciting Freight Agent, G.T. Pacific Ry., Regina, Sask., was made the recipient of a present by the local staffs there recently on his transfer to San Francisco, Cal., as Soliciting Freight and Passenger Agent, G.T.R. and G.T. Pacific Ry.

Lieutenant W. E. B. Schreiber, who was reported recently to have been killed in active service in France, was well known in Quebec, where he had lived for six years since coming from England. He was for some time engaged on survey work on the National Transcontinental Ry.

J. K. L. Ross, director, C.P.R., is reported to have purchased the steam yacht Winchester in New York. She was built at Glasgow, Scotland, in 1913, and is 405 ft. long, with a draught of 6 ft., and is screw driven, burning oil. She is said to be capable of a speed of 30 knots.

H. D. Leach, whose body was found in the lake near Whitby, Ont., June 8, was formerly in the Canadian Freight Association's service at Toronto as an inspector. He had not been in that service for several months, and was undergoing treatment for mental trouble.

J. H. Kennedy, M. Can. Soc. C. E., Assistant Chief Engineer, Vancouver, Victoria and Eastern Ry. and Navigation Co., Vancouver, B. C., has resigned after 14 years with the company, which is a subsidiary of the Great Northern Ry. He has been connected with the Canadian Society of Civil Engineers since 1887.

Lieut. R. Falshaw Morkill, Signal Engineer, G.T.R., Montreal, who went to Europe with the first Canadian Overseas Expeditionary Force, has been promoted to a captaincy in the Royal Engineers, and has been mentioned for the military cross in connection with engineering work done at the Ypres Canal.

C. F. Dibblee, who died at Woodstock, Ont., June 1, aged 75, was a well known railway engineer and contractor, having carried out several contracts on the National Transcontinental Ry. He was father of H. B. Dibblee, A.M. Can. Soc. C.E., formerly Superintendent, National Transcontinental Ry., Edmundston, N.B.

Lieut. H. F. H. Hertzberg, son of A. L. Hertzberg, M. Can. Soc. C.E., Division Engineer, Ontario Division, C.P.R., Toronto, who was wounded at Langemarck, as mentioned in our last issue, and who had been treated in one of the hospitals in England, was struck by a motor truck in London, Eng., during June, and sustained some painful,

but not serious injuries. He has received the military cross for his work at the front.

**D. A. Thomas**, who has been appointed to superintend the manufacture of munitions in Canada and the United States on behalf of the British Government, is President of the Pacific, Peace River and Athabasca Ry., and the Peace River Tramway and Navigation Co., which have charters for the building of certain railways in the Peace River district of Alberta.

**J. F. Richardson**, who resigned his position as Superintendent of Telegraphs, Saskatchewan Division, C.P.R., Moose Jaw, recently, did not leave for Montreal as stated in our June issue. After nearly 32 years of service with the C.P.R. Telegraph Department from coast to coast he will take a rest for the summer with his parents at Lanigan, Sask., before taking up other work.

**Angus Sinclair**, railway contractor, Toronto, has gone to England, where his son, Lieut. Ian M. R. Sinclair, who went through the battle of Langemarck safely, but was wounded in the left leg with shrapnel in the Orchard battle subsequently, is convalescing. Lieut. Sinclair was in the 48th Highlanders, Toronto, but was transferred to the 5th Royal Highlanders of Montreal. Mrs. Angus Sinclair and Miss Dorothy Sinclair have also gone to England.

**James Russell**, who has been appointed General Manager, Denver and Rio Grande Rd., Denver, Col., was from 1879 to 1882 in G.T.R. service as agent and operator at various points, and from 1883 to 1887, operator and dispatcher, Canada Southern Ry. and Michigan Central Rd., and from 1887 to 1903, dispatcher, Chief Dispatcher and Superintendent, consecutively, St. Paul, Minneapolis and Manitoba Ry., and Great Northern Ry.

**A. D. MacTier**, General Manager, Eastern Lines, C.P.R., Montreal, received word, June 20, of the death of his father, at St. Andrews, Scotland, June 19, aged 93. The late Mr. MacTier was formerly Surgeon-General in the British Army at Bengal, India, and served through several Indian campaigns. Major H. M. MacTier, of the 2nd Battalion, 39th Garwhal Rifles, one of the Indian regiments now fighting in Europe, who was killed in action in March, was a brother of A. D. MacTier.

**Colin D. MacKintosh**, who has been appointed Superintendent, District 1, Alberta Division, C.P.R., Medicine Hat, was born at Auckland, New Zealand, Sept. 24, 1882, and entered C.P.R. service, Sept., 1905, since when he has been, to 1906 in junior positions in the Engineering Department; 1906 to 1909, transit man on location survey; 1909 to 1910, Resident Engineer; 1910 to 1911, Locating Engineer; 1911 to 1913, Assistant Engineer on Construction; 1913 to June, 1915, Division Engineer.

**J. R. Bruce**, ex Traffic Auditor, Intercolonial Ry., Moncton, N.B., died at his home at Shediac Cape, N.B., June 21, following an attack of influenza. He was born at Portsoy, Scotland, Sept. 23, 1848, and came to Canada at the age of 21. He entered I.R.C. service in 1873 as clerk in the General Manager's office, and was later transferred to the Paymaster's office, and in 1876 became chief clerk to the General Manager. He was appointed Traffic Auditor in 1883, and was superannuated in 1909.

**J. McMillan**, who was appointed Manager, C.P.R. Telegraphs, Montreal, recently, was presented at Winnipeg, May 31, with an illuminated map, by members of the Western Associated Press, Ltd., showing the wire mileage of the newspaper territory served by it, with the names of the papers concerned. Prior to his promotion to Montreal, Mr. McMillan had been General Superintendent, Western Lines, C.P.R. Telegraphs, at Winnipeg, for several years.

**Leon Spoor Landers**, who has been appointed Resident Engineer, District 4, Intercolonial Ry., Truro, N.S., was born at Farnham, Que., Dec. 15, 1888, and entered railway service in May, 1910, since when he has been, to Feb., 1911, rod man, C.P.R., Farnham, Que.; Feb., 1911, to Mar., 1912, draughtsman, Resident Engineer's office, Eastern Division, C.P.R., Montreal; Mar., 1912, to Oct., 1913, transit man, C.P.R.; Oct., 1913, to May, 1915, transit man, District 4, Intercolonial Ry., New Glasgow, N.S.

**George Geoffrey Grundy**, General Manager, Temiscouata Ry., who died of heart disease, at Riviere du Loup, Que., June 9, was born at Brecon, Wales, June 12, 1877, and entered railway service in Oct., 1893, since when he has been in the Engineering Department, Quebec Central Ry., Sherbrooke, Que.; on construction of Western Lines, C.P.R., and from 1897 to Oct. 1, 1909, Superintendent, Temiscouata Ry., Riviere du Loup, Que.; and from Oct. 1, 1909, until his death, Secretary and General Manager, same road.



A. H. Kendall,  
Assistant Works Manager, Angus Locomotive  
Shops, Canadian Pacific Railway.

**W. C. Sealy**, whose appointment as Master Mechanic, Ontario Lines, G.T.R., Toronto, was announced in our last issue, was educated at Stratford, Ont., and entered G.T.R. service there as an apprentice in 1901, when the company had just inaugurated its apprenticeship educational system. He remained at Stratford for 7½ years, as apprentice, charge hand and General Foreman of the shop, after which he was appointed General Foreman at Toronto, and in 1913 Assistant Master Mechanic, Ontario Lines, which position he retained until his present appointment.

**Albert Henry Kendall**, who has been appointed Assistant Works Manager, Locomotive Department, Angus Shops, C. P. R., Montreal, was born at Aspatria, Cumberland, England, Apr. 4, 1878, and entered railway service in June 1901, since when he has been, to Jan. 1904, Locomotive Foreman, C. P. R., Nakusp and Revelstoke, B. C.; Jan. to Nov. 1904, Locomotive Foreman, G. T. R., London, Ont.; Nov. 1906 to July 1913, gang foreman, erecting shop foreman and General

Foreman, Angus Shops, C. P. R., Montreal; July to Dec. 1913, Locomotive Inspector, C. P. R., Kingston, Ont.; Dec. 1913 to Apr. 1915, General Foreman, C. P. R., North Bay, Ont.

**W. A. Fitch**, who has been appointed Assistant Superintendent, Intercolonial Ry., Moncton, N.B., was born at Kentville, N.S., Nov. 25, 1867, and entered I.R.C. service, Oct., 1880, since when he has been, to Jan., 1882, telegraph operator at Folleigh, N.S.; Jan., 1882, to Apr., 1883, telegraph operator at Maccan, N.S., Sackville, N.B., and St. John, N.B.; Apr., 1883, to July, 1885, agent at Folleigh, N.S.; July, 1885, to Aug. 25, 1886, dispatcher's operator at Truro, N.S.; Aug. 25, 1886, to Mar. 30, 1903, dispatcher at Truro, N.S., Campbellton, N.B., Moncton, N.B., and Truro, N.S.; Mar. 30, 1903, to June 1, 1912, Chief Dispatcher at Sydney, N.S.; June 1, 1912, to May 23, 1915, Assistant Superintendent, Sydney, N.S.

**Mathew Kelly**, who has been appointed Resident Engineer, District 4, Ontario Division, C. P. R., Toronto, was born at Thamesville, Ont., July 6, 1874, and entered railway service, Aug. 1900, since when he has been, to Apr. 1902, bridge man, G. T. R., London, Ont.; May 1902 to Apr. 1905, bridge man, C. P. R., London, Ont.; May to July 1905, chain man, C. P. R., London, Ont.; Aug. 1905 to Mar. 1906, rodman, C. P. R., London, Ont.; Apr. 1906 to Apr. 1910, transit man, C. P. R., London, Ont.; May 1910 to Apr. 1911, Resident Engineer, C. P. R., Toronto; May 1911 to May 1913, Resident Engineer, C. P. R., White River, Ont.; June 1913 to June 1915, Resident Engineer, C. P. R., Brownville Jct., Me.

**John N. Beckley**, President, Toronto, Hamilton and Buffalo Ry., who has also assumed the position of General Manager, was born at Clarendon, N. Y., Dec. 30, 1848, was educated at Genesee Wesleyan Seminary and Genesee College, and was admitted to the bar in New York in June 1875. He removed to Rochester, N. Y., in May 1877, and was City Attorney there from 1884 to 1888. From 1890 to 1891 he was Secretary, Rochester Ry.; 1891 to 1892, Vice President, and 1892 to 1900, President, Rochester Ry. Co., and also from 1891 to 1896, President, Taunton St. Ry. Co., Taunton, Mass., President, Globe St. Ry. Co., Fall River, Mass., and President, Lawrence St. Ry. Co., Lawrence, Mass. He was elected President, Toronto Hamilton and Buffalo Ry. in 1895.

**Archibald McTavish**, who has been appointed Locomotive Foreman, G. T. Pacific Ry., Biggar, Sask., was born at Palmyra, Ont., May 19, 1875, and entered railway service, Apr. 1896, since when he has been, to Aug. 1898, fireman, Niagara, St. Catharines and Toronto Ry., St. Catharines, Ont.; Aug. 1898 to Aug. 1902, not in railway service; Sept. 1902 to Oct. 1903, fireman, C. P. R., Brandon, Man.; Oct. 1903 to May 1908, locomotive driver, C. P. R., Brandon, Man.; May 1908 to Nov. 1910, locomotive driver, G. T. Pacific Ry., Melville, Sask.; Nov. 1910 to Nov. 1911, Road Foreman of Locomotives, same road, Melville, Sask.; Nov. 1911 to Sept. 1913, Locomotive Foreman, same road, Melville, Sask.; Sept. 1913 to Feb. 1915, locomotive driver, same road, Melville, Sask.; Feb. to May 1915, Locomotive Inspector, same road, Transcona, Man.

**Oliver Charles Bishop**, whose appointment as Superintendent, Sleeping, Dining Cars and News Service, Canadian Northern Ry., Winnipeg, was announced in our last issue, was born at Escanaba, Mich., Dec. 10, 1876, and entered railway service Sept., 1893, since when he has been, to Apr., 1895, waiter and pantryman, Minneapolis, St. Paul and Sault Ste. Marie Ry., Manistowic, Mich.; May, 1895, to May, 1900, waiter, C.P.R., Montreal and Winnipeg; May, 1900, to May, 1903, conductor of dining car, C.P.R.,

July, 1915.]

Montreal and Winnipeg; June, 1903, to Nov., 1904, waiter on dining car, Canadian Northern Ry., Winnipeg; Nov., 1904, to June, 1909, dining car conductor, C.N.R., Winnipeg; June, 1909, to Sept., 1910, dining car inspector, C.N.R., Winnipeg; Sept., 1910, to May, 1915, Assistant Superintendent of Sleeping and Dining Cars and News Service, C.N.R., Winnipeg.

**Hon. Samuel Barker, M.P.**, who died suddenly at Hamilton, Ont., June 26, was born at Kingston, Ont., May 25, 1839. He practised as a lawyer in London, Ont., for many years, and was, at one time mayor of that city. He was Solicitor and General Counsel of the Great Western Ry. of Canada from 1872 to 1882, and General Manager, Northern and Northwestern Ry., Toronto, from 1883 to 1888, both railways now forming part of the G.T.R. He was President of the St. Louis, Kansas and South Western Ry. in 1899, and was also President of Muskoka and Georgian Bay Navigation Co. at one time. He acted as an arbitrator between the Toronto St. Ry. Co. and the City of Toronto in 1890.

**Sir John S. Hendrie**, who was created a Knight Commander of the Order of St. Michael and St. George, on the King's birthday, is Lieutenant-Governor of Ontario, and was for some years Chairman of the Railway Committee of the Ontario Legislature, in the government of which Province he was a minister without portfolio. He is a son of the late Wm. Hendrie, with whom he was associated in his early days as a railway contractor, building several railways in Canada and the United States. He has also been a director of the Northern Navigation Co. and the Niagara Navigation Co. He has been connected with military affairs since 1883, and holds the rank of lieutenant-colonel in the Canadian Artillery. He commanded the Canadian Artillery at the Queen Victoria diamond jubilee celebrations in London, Eng., in 1897, and was then created a Companion of the Victorian Order.

**Frederick Fanning Backus**, who has been appointed Assistant to the President, Toronto, Hamilton and Buffalo Rv., Hamilton, Ont., was born at Rochester, N.Y., June 4, 1860, and entered transportation service, June 4, 1876, since when he has been, to 1887, with Merchants Despatch Transportation Co.; 1877 to 1881, clerk, Local Freight Office, New York Central and Hudson River Rd.; 1881 to 1883, chief clerk to General Northwestern Agent, Lehigh Valley Rd., Rochester, N.Y.; 1883 to 1885, Travelling Freight Agent, same road, Buffalo, N.Y.; 1885 to Oct., 1886, Assistant Claim Clerk, General Office, Blue Line (New York Central Fast Freight Line), Rochester, N.Y.; Oct., 1886, to Apr. 7, 1887, Assistant to General Agent, same line, Toronto; Apr. 7, 1887, to Dec., 1897, General Agent, same line and Canada Southern Ry., Toronto; Dec. 1, 1897, to July 1, 1912, General Freight and Passenger Agent, Toronto, Hamilton and Buffalo Rv., Hamilton, Ont.; July 1, 1912, to June 11, 1915, General Traffic Manager, same road, Hamilton, Ont.

**S. W. Foster**, who died at Knowlton, Que., May 31, after a short illness, was born in 1827, and was chiefly known as a railway organizer. He took an active part in securing the construction of the Stanstead, Shefford and Chambly Rv., and later, in association with his brother, was connected with the promotion and construction of the South Eastern Rv. He also obtained a charter for the Montreal and Champlain Jct. Ry. for a branch from the Victoria Bridge to the International boundary, and later was actively connected with the G.T.R. At various times he was director, Montreal and Champlain Jct. Ry., President and Managing Director, Orford Mountain Ry.,

and President, United States and Canada Ry. He was admitted to the bar in 1854, and acted as a judge of the sessions for Bedford, Que., from 1869 to 1877. The funeral, which took place at Knowlton, June 2, was attended by a number of representatives of various transportation interests in Montreal, etc.

**Reuben S. Richardson**, who has been appointed Superintendent, District 3, National Transcontinental Ry., Winnipeg, was born at Napanee, Ont., Apr. 9, 1865, and entered transportation service in 1878, since when, to 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., Smith's 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.

**Sir Henry Lumley Drayton**, who was created a knight bachelor on the King's birthday, was born at Kingston, Ont., Apr. 27, 1869, and educated in England and Canada, commencing his legal career in 1886 as a law student at Toronto. He was admitted to the Ontario bar in 1891 and commenced practice in Toronto, being appointed Assistant City Solicitor in 1895, resigning in Sept. 1900 to re-engage in private practice. On Jan. 29, 1904, he was appointed Crown Attorney for the county of York, Ont., and resigned in Nov. 1909 to resume private practice. He was appointed a K.C., Jan. 20, 1908, and on Apr. 25, 1910, was appointed counsel for the City of Toronto, and subsequently was one of Toronto's representatives on the Ontario Hydro Electric Power Commission. In July 1912 he was appointed Chief Railway Commissioner, following the death of J. P. Mabee. On the outbreak of war he was in London, Eng., and under the acting High Commissioner rendered good service in connection with the aiding of Canadians who were stranded at various points on the continent on account of the war.

**William A. Cowan, A.M. Can. Soc. C.E.**, who has been appointed Division Engineer, National Transcontinental Ry., Cochrane, Ont., was born at Galt, Ont., Jan. 22, 1877, and commenced railway service July 23, 1899, as bridge carpenter, C.P.R., London, Ont., where he remained until Sept. 25, 1901. He graduated from the School of Practical Science, Toronto, Apr. 30, 1904, and from May 1, 1904 to Feb. 1, 1905, was transit man, C.P.R., London and Toronto; Feb. 1 to Oct. 15, 1905, Assistant Engineer of Terminals, C.P.R., Toronto; Apr. 15, 1905 to Feb. 14, 1908, Resident Engineer, District 3, Ontario Division, C.P.R., Toronto; Feb. 19, 1908 to Nov. 1, 1909, Resident Engineer, District 2, Ontario Division, C.P.R., London, Ont.; Nov. 1, 1909 to Oct. 1, 1911, Resident Engineer, District 1, Eastern Division, C.P.R., Farnham, Que.; Oct. 1, 1911 to Nov. 1, 1912, Assistant Engineer, C.P.R., Montreal; Nov. 1, 1912 to Jan. 9, 1914, Superintendent, District 1, Atlantic Division, C.P.R., Brownville Jct., Me.; Jan. 10 to Mar. 15, 1914, Engineer of Construction, Halifax Ocean Terminals, Intercolonial Ry., Halifax, N.S.; Mar. 15, 1914 to May 1, 1915, Resident

Engineer, District 3, Intercolonial Ry., Truro, N.S.

**Sir Percy Girouard**, who has been appointed the chief organizer of the new Department of Munitions in England was engaged from 1886 to 1888 on construction work on the C.P.R. He subsequently entered the Royal Engineers as 2nd Lieutenant and became Traffic Manager of the Royal Arsenal railways, Woolwich, England. He was appointed to attend the International Railway Congress in 1895, and was the author of a paper in 1891 on engineering, wherein he outlined a plan for the protection of the coast of England. In 1896 he became a member of the Dongola Expedition under Major General Sir Herbert Kitchener, now Earl Kitchener, as Director of Railways, and was in charge of the railway battalion during the campaign, with the rank of Bimbashi, or Major, in the Egyptian Army. He was also associated with Sir Herbert Kitchener in the last Boer war, his work relating mainly to railways, and was subsequently appointed Governor of Nigeria, West Africa, chiefly with the view of developing the Government railway system there. On the completion of his term in that position he became Vice President, Armstrong, Whitworth and Co., which position he resigned at the commencement of the war, on receiving an appointment in connection with the supply of munitions, under the War Office.

**John Murray Cameron**, who has been appointed General Superintendent, Alberta Division, C.P.R., Calgary, was born at Lochabar, N.S., Dec. 18, 1867, and entered railway service, July 1883, since when he has been, to Dec. 1883, laborer, C.P.R., Moose Jaw, Sask.; Dec. 1883, to Apr. 1884, wiper, C.P.R., Moose Jaw, Sask.; Apr. 1884 to Apr. 1885, bridge and building laborer, Western Division, C.P.R.; Apr. 1885 to Feb. 1886, pump man, Western Division, C.P.R.; Feb. 1886, to Oct. 1888, brakeman and train baggage man, C.P.R., Medicine Hat, Alta.; Nov. 1888 to June 1889, brakeman and conductor, Northern Pacific Ry., Tacoma, Wash.; June 1889 to Dec. 1890, brakeman and conductor, Oregon and Washington Territory Rd., Walla Walla, Wash.; Dec. 1890 to July 1892, conductor, Columbia and Puget Sound Rd., Seattle, Wash.; July 1892 to June 1893, brakeman and conductor on construction, Great Northern Ry., Seattle and Spokane, Wash.; June 1893 to Oct. 1895, conductor, G.N.R., Great Falls, Mont.; Oct. 1895 to Sept., 1899, conductor, Kaslo and Slocan Ry. (G.N.R.), Kaslo, B.C.; Sept., 1899 to May 1900, conductor and construction trainmaster, G.N.R., Bonners Ferry, Idaho; May 1900 to Aug. 1907, brakeman and conductor, C.P.R., Nelson, B.C.; Aug. 1907 to Oct. 1909, Trainmaster, C.P.R., Nelson, B.C.; Oct. 1909 to June 1910, Trainmaster, C.P.R., Vancouver, B.C.; June to Dec. 1910, Superintendent, C.P.R., Moose Jaw, Sask.; Jan. 1911 to Dec. 1914, Superintendent, C.P.R., Medicine Hat, Alta.; Jan. to June, 1915, Assistant General Superintendent, British Columbia Division, C.P.R., Vancouver.

**Wood Borers in Halifax Harbor**—In excavating for the new pier 2 of the Intercolonial Ry. at Halifax, N.S., a number of old pine stumps were found. They were the remains of piles which had been eaten through by limnoria below low water level. It was found that uncreosoted timber was eaten from extreme low water down to the mud level even when that was 30 ft. below. Several creosoted hard pine piles that had been in the water about 4 years were found to have been attacked to a depth of about 1/2 in. No signs of the teredo were found; apparently, all of the boring in this harbor is confined to limnoria.

Railway Rolling Stock Notes.

The C.P.R., between Apr. 15 and June 15, received 1 steel mail car and 4 class D4 locomotives from its Angus shops, Montreal.

The National Steel Car Co., according to a Hamilton press report, has secured an order for 1,300 freight cars for the Northern Ry. of France.

The Grand Trunk Pacific Ry. has received 34 express refrigerator cars, nos. 6013 to 6046, from Canadian Car and Foundry Co., making 47 delivered out of an order for 50.

The Russian Government has ordered 100 decapod (2-10-0) superheater locomotives, 5 ft. gauge, and of approximately 197,000 lbs. each, from American Locomotive Co., Schenectady, N.Y.

The Eastern Car Co., which has received an order for 2,000 box cars from the Russian Government, is reported to have received a large order for freight cars from the French Government.

The Intercolonial Ry. has received 15 box cars, 80,000 lbs. capacity, from Nova Scotia Car Works; 94 all steel general service cars, 100,000 lbs. capacity, from Eastern Car Co., and 2 switching locomotives from Canadian Allis Chalmers Ltd.

Aemilius Jarvis, President, Canadian Locomotive Co., Kingston, Ont., on his return from Europe recently announced that the Russian Government had given the company an order for 50 decapod (2-10-0) locomotives, at an approximate cost of \$1,250,000.

The Edmonton, Dunvegan & British Columbia Ry. has been ordered by the Board of Railway Commissioners to remove its locomotive no. 3 from service until it is put in a proper condition for safe operation to the satisfaction of one of the board's inspectors.

The Canadian Government Railways have ordered 650 box cars, 40 tons capacity, from Canadian Car and Foundry Co.; 350 box cars, 40 tons capacity, from National Steel Car Co., and 15 consolidation locomotives from the Canadian Locomotive Co. It is expected that these will be used principally on the National Transcontinental Ry.

In addition to the order from the Russian Government, to the Canadian Locomotive Co., for 50 locomotives, it is reported that the same government has ordered 250 locomotives from the Baldwin Locomotive Works, and 100 locomotives from the American Locomotive Co., while it is also stated that the Belgian Government has ordered 20 locomotives from the American Locomotive Co.

With reference to the orders for rolling stock placed by the Russian Government, it is stated that negotiations are still proceeding for such orders aggregating 22,000 cars. A small portion of the order has been placed, viz., that with the Eastern Car Co., for 2,000 cars, which we have already mentioned, but it is stated that no other contracts have actually been made for the balance owing to a difficulty regarding financing.

Press reports stated recently that Hon. F. Cochrane, Minister of Railways, and F. P. Gutelius, General Manager, Canadian Government Railways, were visiting the U.S. for the purpose of buying rolling stock to be used in connection with the Government operation of the National Transcontinental Ry. and the Grand Trunk Pacific Ry. Lake Superior Branch. Enquiry on our part elicits the information that the report was unfounded. As mentioned on this page, orders have been placed in Canada for 15 locomotives and 1,000 box cars.

Canadian Government Railways have ordered 650 box cars, 40 tons capacity, from Canadian Car and Foundry Co., 500 of which will be built at the Dominion and Turcot shops, Montreal, and 150 at the Amherst, N.S., shops. Delivery is required by Sept. 1. Following are some of the details:

Extreme width ..... 9 ft. 3 1/2 ins.  
 Width inside ..... 8 ft. 6 1/2 ins.  
 Length inside ..... 36 ft.  
 Width of door opening ..... 5 ft.  
 Height of door opening ..... 7 ft. 8 7-16 ins.  
 Distance centre to centre of trucks, 26 ft. 10 ins.  
 Height top of rail to top of brake mast ..... 13 ft. 10 ins.  
 Height top of rail to top of floor ..... 4 ft. 0 1/8 in.

The Alberta and Great Waterways Ry. has received one 10 wheel passenger locomotive equipped with superheater, from Canadian Locomotive Co. Following are the chief details,—

Weight on drivers ..... 102,000 lbs.  
 Weight, total ..... 125,000 lbs.  
 Wheel base, rigid ..... 11 ft. 10 ins.  
 Wheel base, total engine ..... 21 ft. 7 ins.  
 Wheel base, engine and tender .. 49 ft. 4 1/4 ins.  
 Heating surface, firebox ..... 123.5 sq. ft.  
 Heating surface, tubes ..... 1,047.5 sq. ft.  
 Heating surface, arch tubes ..... 15 sq. ft.  
 Heating surface, total ..... 1,186 sq. ft.  
 Driving wheels, diar. .... 63 ins.  
 Driving wheel centres ..... Cast iron  
 Driving journals, diar. and length. 8 1/2 by 10 ins.  
 Cylinders, diar. and stroke ..... 19 x 26 ins.  
 Boiler, type ..... Radial stay  
 Boiler pressure ..... 180 lbs.  
 Tubes, no. and diar. .... 122, 2 ins.; 18, 5 1/2 ins.  
 Tubes, length ..... 11 ft. 10 ins.  
 Injectors ..... Locomotive type  
 Safety valves ..... 2, 3 in. locomotive pop.  
 Brakes ..... Westinghouse American  
 Packing ..... Metallic  
 Superheater ..... Schmidt type A  
 Weight of tender loaded ..... 116,500 lbs.  
 Tank, type ..... U type  
 Water capacity ..... 5,000 imp. gals.  
 Coal capacity ..... 9 tons  
 Truck, type ..... 4 wheel, arch bar  
 Truck wheel diar. .... 30 ins.  
 Truck wheel type. Steel tired, cast iron centre  
 Journal, diar. and length ..... 5 x 9 ins.  
 Brake beam ..... Simplex

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

	Aeres.
Calgary and Edmonton Ry. ....	3,370.40
Canadian Northern Ry. ....	482.25
Canadian Pacific Ry. grants ..... 69.81	
Canadian Pacific Ry. roadbed and station grounds ..... 6.16	
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co. ....	1,485.70
Total .....	5,414.32

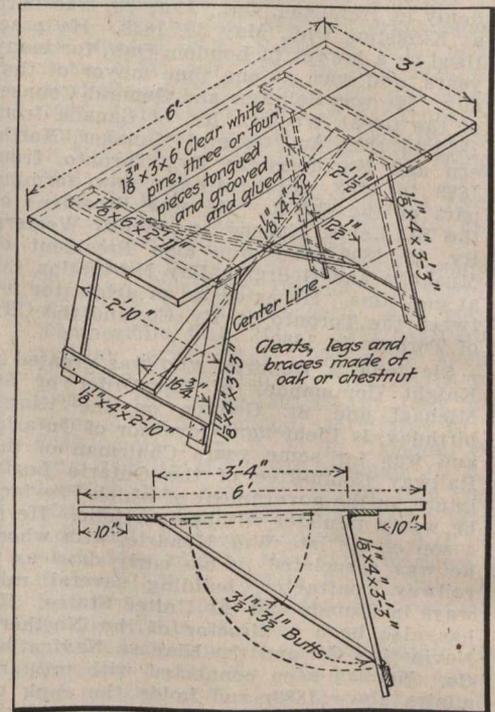
**C.N.R. Locomotive Men's Wages.**—A board of conciliation has been appointed to investigate complaints of the company's locomotive drivers and firemen on the eastern lines, who are asking for working conditions similar to those obtaining on the western lines. F. H. McGuigan, a former Vice President of the G.T.R., Toronto, will represent the company; D. Campbell, Winnipeg, the men, and Judge Coatsworth, Toronto, has been appointed Chairman.

**The Canadian Overseas Railway Construction Corps,** organized by the C.P.R., under command of its Engineer of Construction, Lt. Col. Ramsey, sailed from St. John, N.B., June 14, on the s.s. Herschel, and arrived safely at Davenport, Eng. Full particulars of this corps were given in Canadian Railway and Marine World for April and June, pgs. 129 and 219.

The Imperial Privy Council has decided in favor of the C.P.R., in an appeal against the judgment of the Quebec courts granting \$12,000 to a brakeman named Frechette for injuries. The Privy Council's judgment stating, "While sympathizing with the respondent, their Lordships are clearly of the opinion that he was the victim of his own negligence."

A Field Draughting Table.

Engineering operations which require temporary offices require also portable draughting boards or tables. A draughting board resting on horses or trestles is unsatisfactory, since it lacks stability, and the trestles take up valuable space when packed in a vehicle. The accompanying illustration



tion shows a convenient draughting table patterned after a folding table of older design. This one, however, is steadier when open and more compact when closed. It has been tried out long enough to demonstrate its durability.—W. L. Webb, Philadelphia, Penn., in Engineering News.

National Transcontinental Railway's Operation.

An Ottawa press report, June 23, says the negotiations between the Department of Railways and the Grand Trunk Pacific Ry. respecting the leasing of the latter's Lake Superior branch by the Government have been completed, and that a lease, in which the rental is fixed at \$600,000 a year, only awaits ratification by the Government. This amount is said to represent interest at the rate of 4 1/2% upon the ascertained cost of the construction of the branch, and its terminal facilities at Fort William, Ont.

**The Canadian Northern Ry. Toronto Employees' third annual picnic** took place at Orillia, Ont., June 26, some 1,100 being present.

Arrangements have been made with the British Government whereby the C.P.R. will act in connection with the accumulation and shipping of munitions and war supplies in Canada. Sir Thomas Shaughnessy, who was in England in June making the necessary arrangements, is reported to have stated that the C.P.R. intended to reconstruct its manufacturing equipment so that it can make any and every sort of material that may be called for by the War Office, and the company's Purchasing Department had been placed at the British Government's disposal, and the officials would see to the shipping of all supplies.

## Transportation Appointments Throughout Canada.

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

**Canada Southern Ry.**—F. D. POWELL has been appointed Commercial Agent, C. S.R., operating over Michigan Central Rd. via Buffalo, and the Pennsylvania Rd. and connections, vice L. S. Livingston transferred. Office, 635 La Salle Station, Chicago, Ill.

**Canadian Government Railways.**—W. R. DEVENISH, heretofore Division Engineer, I.R.C. and P.E.I.R., Moncton, N.B., has been appointed Principal Assistant Engineer, Canadian Government Railways. Office, Moncton, N.B.

A. M. HARVEY has been appointed Signal Supervisor. Office, Moncton, N.B.

See also Intercolonial Ry. and National Transcontinental Ry.

**Canadian Pacific Ry.**—G. HODGE, heretofore General Superintendent, Eastern Division, Montreal, has been appointed Assistant to General Manager, Eastern Lines. Office, Montreal.

L. C. ORD, heretofore Assistant Master Car Builder, Eastern Lines, Montreal, has been appointed Assistant Works Manager, Angus Car Shops, Montreal.

A. H. KENDALL, heretofore General Foreman, Locomotive Shops, North Bay, Ont., has been appointed Assistant Works Manager, Angus Locomotive Shops, Montreal, vice G. I. Evans, Superintendent Locomotive Shops, transferred.

W. TANSLEY, heretofore Assistant Superintendent, District 3, Eastern Division, Smith's Falls, Ont., has been appointed Acting Superintendent of Car Service, Eastern Lines, vice F. A. Gascoigne, commanding the 60th Battalion Canadian Expeditionary Force. Office, Montreal.

A. E. STEVENS, heretofore General Superintendent, Alberta Division, Calgary, has been appointed General Superintendent, Eastern Division, vice G. Hodge, promoted. Office, Montreal.

E. J. MELROSE, heretofore Assistant Superintendent, District 2, Eastern Division, Montreal, has been appointed Assistant Superintendent, District 3, Eastern Division, vice C. W. Lott, transferred. Office, Montreal.

R. G. EDWARDS, heretofore General Yardmaster, Smith's Falls, Ont., has been appointed Assistant Superintendent, District 2, Eastern Division, vice E. J. Melrose, transferred. Office, Montreal.

H. S. BARE, heretofore Resident Engineer, Angus Shops District, Montreal, has been appointed Resident Engineer, District 2, including the Angus Shops territory, which has been abolished as a separate district, vice N. E. Gutelius, transferred. Office, Montreal.

A. S. PIERS, heretofore Real Estate Agent, has been appointed Manager, Real Estate Department. Office, Montreal.

C. W. LOTT, heretofore Assistant Superintendent, District 3, Eastern Division, Montreal, has been appointed Assistant Superintendent, District 5, Eastern Division, vice W. Tansley, promoted. Office, Smith's Falls, Ont.

J. T. PEARSON, heretofore night yardmaster, has been appointed General Yardmaster, Smith's Falls, Ont., vice R. G. Edwards, promoted.

A. P. WALKER, heretofore Division Surveyor, Ontario Division, Toronto, has been appointed Assistant Division Engineer, vice G. H. Davis, transferred, and his former position has, for the present, been abolished. Office, Toronto.

J. A. IRVINE, heretofore Resident Engineer, District 4, Ontario Division, Toronto, has been appointed Resident Engineer, District 3, Ontario Division, vice D. M. Ewart, who has joined the 2nd Field Company, Canadian Engineers, for active service in Europe. Office, Toronto.

M. KELLY, heretofore Resident Engineer, Brownville Jct., Me., has been appointed Resident Engineer, District 4, Ontario Division, vice J. A. Irvine, transferred. Office, Toronto.

W. WELLS, heretofore General Foreman, McAdam, N.B., has been appointed General Foreman, North Bay, Ont., vice A. H. Kendall, promoted.

C. E. LEGG has resumed his position as General Agent, Fort William, Ont., and his former position of Trainmaster, Winnipeg Terminals, has been abolished.

O. GLEASON, heretofore General Agent, Fort William, Ont., has been appointed Agent, Union Stockyards, Winnipeg.

T. C. MACNABB, heretofore Resident Engineer, District 1, Saskatchewan Division, Regina, has been appointed Division Engineer, Saskatchewan Division, vice C. D. Mackintosh, promoted. Office, Regina.

G. A. DELACHEROIS, heretofore Resident Engineer, Saskatoon, Sask., has been appointed Resident Engineer, District 1, Saskatchewan Division, vice T. C. Macnabb, promoted. Office, Regina, Sask.

E. A. KELLY, heretofore Resident Engineer, Nelson, B.C., has been appointed Resident Engineer, Saskatoon, Sask., vice G. A. Delacherois, transferred.

J. M. CAMERON, heretofore Assistant General Superintendent, British Columbia Division, Vancouver, has been appointed General Superintendent, Alberta Division, vice A. E. Stevens, transferred. Office, Calgary.

M. E. THORNTON, heretofore District Representative, Land Department, Department of Natural Resources, Chicago, Ill., has been appointed Superintendent of Agencies, same department, Calgary, Alta.

C. D. MACKINTOSH, heretofore Division Engineer, Moose Jaw, Sask., has been appointed Superintendent, District 1, Alberta Division, vice W. A. Mather, promoted. Office, Medicine Hat.

A. DEHARNAIS has been appointed Roadmaster, Coutts, Cardston and Stirling subdivisions, with head-quarters at Langton, Alta.

W. A. MATHER, heretofore Superintendent, District 1, Alberta Division, Medicine Hat, has been appointed Assistant General Superintendent, British Columbia Division, vice J. M. Cameron, promoted. Office, Vancouver.

R. G. THOMPSON, heretofore Assistant Colonization Agent, C.P.R., has been appointed District Representative, Land Branch, Department of Natural Resources, Chicago, Ill., vice M. E. Thornton, promoted.

**Central Vermont Ry.**—J. E. MAUN, heretofore Assistant Superintendent, Montpelier, Vt., has been appointed Superintendent, Northern Division, vice S. S. Russell, whose appointment as Special Agent was announced in our last issue. Office, St. Albans, Vt. The position of Assistant Superintendent at Montpelier has been abolished.

G. W. BROOM is reported to have been appointed Assistant to Superintendent, and Chief Dispatcher, Northern Division, St. Albans, Vt.

**Grand Trunk Pacific Ry.**—T. W. McDONAGH has been appointed Travelling Passenger Agent, Winnipeg, vice H. J. Lambkin, assigned to other duties.

J. A. MITCHELL, heretofore Locomotive

Foreman, Biggar, Sask., has been appointed General Foreman, Transcona Shops, Transcona, Man.

A. McTAVISH, heretofore Locomotive Inspector, Transcona, Man., has been appointed Locomotive Foreman, Biggar, Sask., vice J. A. Mitchell promoted.

N. C. HOOPER has been appointed Car Foreman, Smithers, B.C., vice A. McKinnon transferred.

A. McKINNON, heretofore Car Foreman, Smithers, B.C., has been appointed Car Foreman, McBride, B.C., vice W. B. McNiece transferred.

W. G. CONNOLLY, heretofore in the City Ticket Office, Vancouver, B.C., is reported to have been appointed City Passenger and Ticket Agent there.

W. B. McNIECE, heretofore Car Foreman, McBride, B.C., has been appointed Car Foreman, Prince Rupert, B.C., vice W. Thompson assigned to other duties.

H. R. BULLEN, heretofore Soliciting Freight Agent, Regina, Sask., is reported to have been appointed Soliciting Freight and Passenger Agent, G.T.R. and G.T.P.R., San Francisco, Cal.

The following station agents have been appointed: Graham, Ont., J. T. Hamlin; Mawer, Sask., W. G. Stimpson; Battleford, Sask., W. Willis. The stations at Uno, Man., and Griffin, Sask., have been closed.

**Grand Trunk Ry.**—A. E. CLARE has been appointed City Freight Agent, Montreal, vice H. A. Laird resigned to enter Canadian Government Railway's service.

H. R. BULLEN, heretofore Soliciting Freight Agent, G.T.P.R., Regina, Sask., is reported to have been appointed Soliciting Freight and Passenger Agent, G.T.R. and G.T.P.R., San Francisco, Cal.

The following station agents have been appointed: Elmvale, Ont., R. M. Black; Britton, Ont., passenger, Mrs. A. Hoad; Centralia, Ont., S. D. Bishop; outside agency, Clifton Hotel, Niagara Falls, Ont., G. J. McNamara. The outside agencies at Hemmingford, Que., and Perth, Ont., have been closed.

**Intercolonial Ry.**—C. W. PRICE, heretofore Chief Dispatcher, Moncton, N.B., has been appointed Assistant Superintendent, District 4, vice W. A. Fitch transferred. Office, Sydney, N.S.

L. S. LANDERS, heretofore transit man, District 4, Intercolonial Ry., New Glasgow, N.S., has been appointed Resident Engineer, District 3, vice W. A. Cowan transferred to National Transcontinental Ry. Office, Truro, N.S.

G. FEETHAM, heretofore locomotive driver, has been appointed acting Roundhouse Foreman, Truro, N.S., vice W. Davidson, who has left the service.

W. A. FITCH, heretofore Assistant Superintendent, District 4, Sydney, N.S., has been appointed Assistant Superintendent, District 3, vice R. S. Richardson, transferred to National Transcontinental Ry. Office, Moncton, N.B.

A. R. MACGOWAN has been appointed Division Engineer, I.R.C. and P.E.I.R., vice W. R. Devenish, promoted. Office, Moncton, N.B.

**London and Port Stanley Ry.**—W. M. GUY, heretofore chief clerk, Pere Marquette Rd., London, Ont., has been appointed General Traffic Manager, L. & P.S.R. Office, London, Ont.

**National Transcontinental Ry.**—As mentioned in Canadian Railway and Marine World for June, the National Transcontinental Ry. from Moncton, N.B., to Graham, Ont., is being operated as part of the Government railway system. F. P. Gutelius, General Manager, has announced that the jurisdiction of the following general officials has been extended over the N.T.R.: C. A. Hayes, General Traffic Manager; S. L.

Shannon, Comptroller and Treasurer; H. F. Alward, General Solicitor and General Claims Agent; R. W. Simpson, General Fuel and Tie Agent; H. H. Melanson, General Passenger Agent; G. E. Smart, Master Car Builder; L. Lavoie, Purchasing Agent; W. F. Taylor, General Storekeeper; W. N. Rippey, Superintendent Car Service; all with offices at Moncton, N.B.

C. A. Hayes, General Traffic Manager, has issued a circular, announcing the extension of the jurisdiction of the following officials of the Traffic Department over the N.T.R.: D. A. Story, General Freight Agent; H. H. Melanson, General Passenger Agent; A. T. Weldon, Assistant General Freight Agent; R. E. Perry, Assistant General Freight Agent; O. Cameron, Freight Claims Agent; G. C. Allen, General Baggage Agent; all with offices at Moncton, N.B.

We have been officially advised that the Grand Trunk Pacific Ry. Lake Superior Branch has not yet been taken over by the Government, and that therefore the jurisdiction of R. S. RICHARDSON, whose appointment as Superintendent, District 3, Armstrong to Winnipeg, and Superior Jct. to Fort William, with office at Armstrong, Ont., was announced in our last issue, is confined to the territory between Lake Superior Jct. and Armstrong, but it is expected that the Lake Superior Branch will shortly be taken over, when he will cover the whole territory, with office at Fort William, Ont.

C. WHITE has been appointed Round-house Foreman, National Transcontinental Ry., Edmundston, N.B.

A. BABIN, formerly Resident Engineer on Construction, La Tuque, Que., has been appointed Resident Engineer, Maintenance of Way, District 1, N.T.R., Quebec to O'Brien. Headquarters, Quebec, Que.

J. E. LePAGE has been appointed Division Freight Agent, N.T.R., west of Edmundston, N.B., to O'Brien, Que. Office, Quebec, Que.

A. BEAUSEIGLE has been appointed Roadmaster, District 1, N.T.R., at Parent, Que.

M. CASEY has been appointed Roadmaster, District 1, N.T.R., at Parent, Que.

S. G. TIFFIN, heretofore Division Freight Agent, Montreal, has been appointed Assistant General Freight Agent in immediate charge of traffic on the Intercolonial Ry. west of Campbellton, N.B., and on the N.T.R. west of Edmundston, N.B., to Graham, Ont. Office, Montreal.

L. G. ROBLIN, heretofore District Master Mechanic, District 1, Lake Superior Division, C.P.R., North Bay, Ont., has been appointed General Master Mechanic, N.T.R., Quebec to Winnipeg, and the Lake Superior Branch of the G.T. Pacific Ry., from Fort William to Superior Jct. Office, Cochrane, Ont.

W. A. COWAN, heretofore Resident Engineer, District 3, Intercolonial Ry., Truro, N.S., has been appointed Division Engineer, N.T.R., Cochrane, Ont.

A. H. WILLET has been appointed Assistant Division Engineer, N.T.R., Cochrane, Ont.

J. E. GIBAULT has been appointed Resident Engineer, District 2, N.T.R. Headquarters, Cochrane, Ont.

H. A. LAIRD, heretofore City Freight Agent, G.T.R., Montreal, has been appointed Division Freight Agent, N.T.R., O'Brien, Que., to Graham, Ont. Office, Cochrane, Ont.

W. J. CHISHOLM has been appointed Bridge and Building Master, N.T.R., Cochrane, Ont.

P. HOUSTON has been appointed Roadmaster, N.T.R., Cochrane, Ont.

J. WILSON has been appointed Roadmaster, N.T.R., Grant, Ont.

Pere Marquette Rd.—L. C. WHITE has been appointed General Car Foreman, St. Thomas, Ont., vice A. Ward, who has left the service.

R. W. YOUNG, Division Freight and Passenger Agent, Pere Marquette Rd., London, Ont., has had his office moved to St. Thomas, Ont., the office at London having been closed.

Quebec Central Ry.—J. T. REID, heretofore Assistant Superintendent, has been appointed Superintendent, vice J. Fortin, who has asked to be relieved of the responsibilities of the position, owing to impaired health. He has been assigned to special duties in the General Manager's office. Office, Quebec, Que.

Southern New England Rd.—J. E. O'DONNELL has been appointed Assistant Engineer, Providence, R.I.

Temiscouata Ry.—C. A. STEWART, Accountant, has been appointed acting Manager, vice G. G. Grundy, General Manager, deceased. Office, Riviere du Loup, Que.

Timiskaming and Northern Ontario Ry.—T. J. GRACEY has been appointed Accountant, vice H. F. Macdonald resigned. Office, Toronto.

D. HAMILTON has been appointed Assistant Accountant, Toronto.

R. H. MITCHELL, heretofore Traffic Accountant, North Bay, Ont., has been appointed Auditor and Car Accountant.

The Superintendent's Accountant's office at North Bay, Ont., has been abolished.

Toronto, Hamilton & Buffalo Ry.—J. N. BECKLEY, President, Rochester, N.Y., has assumed the duties of General Manager as far as necessary owing to the resignation of J. W. Eber, heretofore General Manager, on account of ill health.

F. F. BACKUS, heretofore General Traffic Manager, has been appointed Assistant to the President, and represents him at Hamilton in connection with the conduct of the company's business. All reports and correspondence from departments heretofore made to the General Manager are made to him. Office, Hamilton, Ont.

G. C. MARTIN, General Freight and Passenger Agent, now has charge of the Traffic Department, the position of General Traffic Manager having been abolished.

### Railway Finance, Meetings, Etc.

Canadian Northern Ry.—A supplementary trust deed made between the C.N.R. and the British Empire Trust Co., London, Eng., and the National Trust Co., Toronto, respecting the company's 5% income charge convertible debenture stock has been filed with the Secretary of State at Ottawa.

Canadian Pacific Ry.—The Board of Railway Commissioners is being asked to approve a lease of the Glengarry and Stormont Ry. to the C.P.R. The G. and S. R., which extends from the C.P.R. at St. Polycarpe, Que., to Cornwall, Ont., was opened for traffic, May 31.

Dominion Steel Corporation's Railways.—The President, J. H. Plummer, in his report at the annual meeting, June 24, said:—"I should include a few words about our important properties the Sydney and Louisburg Ry., and the Cumberland Ry. In addition to the carriage of the company's coal, which in itself constitutes a heavy traffic, these lines carried during the year 214,533 passengers, with passenger earnings of \$64,901.25. The freight earnings, apart from amounts charged to the Dominion Coal Co. were \$157,923.01. Their combined equipment consists of 33 locomotives, 13 passenger cars, 111 freight cars and 1,968 cars for the carriage of coal."

The Grand Trunk Ry. offered in England from June 2 to 5 an issue of £2,500,000 five-year 5½% secured notes dated July 1, 1915, due July 1, 1920, interest payable half yearly, the issue price being 99. The proceeds are to be applied in repayment of £2,000,000 of one year bills maturing July 15, 1915, and the balance to the company's general purposes. The prospectus stated that notwithstanding the far-reaching results of the war and the effect of two bad harvests the surplus net earnings in excess of fixed charges in 1914 were £425,000. As bills for £2,000,000 are to be paid out of the proceeds of this issue the increase in interest charges will amount to only £37,500 a year. A London cablegram of June 8 stated that the public subscriptions absorbed 56% of the offering, the underwriters taking the balance.

Montreal and Vermont Jct. Ry.—The officers and directors for the current year are: Chairman, E. J. Chamberlin; President, E. C. Smith; Vice President, J. G. Smith; Secretary and Treasurer, G. R. Hurlburd; Assistant Secretary and Treasurer, W. H. Chaffee; other directors, G. C. Jones and F. Smith; E. J. Chamberlin, E. C. Smith and J. G. Smith are Managing Directors.

Temiscouata Ry.—Net earnings for Feb., \$965, and for two months ended Feb. 28, \$4,991.

Toronto, Hamilton & Buffalo Ry.—In an extract from the Michigan Central Rd.'s report for the past fiscal year published in this department in June, it was stated that the M. C. R. had advanced to the T. H. & B. R. \$100,000,000 as its one-sixth proportion of the estimated cost of construction of the Erie & Ontario Ry. The amount advanced, it is almost needless to say, was \$100,000, the extra figures having been added by a typographical error.

The directors for the current year are: A. H. Smith, W. H. Newman, H. B. Ledyard, J. N. Beckley, Sir Thomas Shaughnessy, D. McNicoll, W. K. Vanderbilt, Jr., Sir Edmund Osler, D. W. Saunders, W. P. Torrance and W. L. Scott.

White Pass and Yukon Route.—Gross earnings from Jan. 1 to Apr. 21, \$57,976 against \$83,404 for same period 1914.

John Bertram & Sons Co., Ltd., machine tool manufacturers, Dundas, Ont., have offered to the Dominion Government the free use of the Wilson residence property in Dundas, which the company owns, as a home for convalescing soldiers for whatever time it may be required. The house, which has a broad verandah, is situated in about an acre of ground which is shaded by large elms and well supplied with fruit trees. It will accommodate from 30 to 40 men.

Smoke Prosecution.—The C. P. R. was fined \$25 in the Ottawa Police Court, June 8, for permitting black smoke to issue from the locomotive house chimneys on June 29. The smoke was described as being dense for 39 minutes in one hour and for 46 minutes in another hour. On the last occasion fence it appealed and the conviction was when the company was fined for a similar offence.

G. T. Pacific Ry. Hotel at Edmonton. The Hotel Macdonald, built by the G. T. Pacific Ry. at Edmonton, Alta., has been opened for business, with L. Low as Manager. There are six bedroom floors with 34 bedrooms on each, all with outside light. Of these, 22 on each floor have private baths, and the balance are equipped with running water. All have telephones.

A. McTavish, Locomotive Foreman, Grand Trunk Pacific Ry., Biggar, Sask., writes:—"I have taken Canadian Railway and Marine World for some 3 or 4 years and am pleased every time I get it."

# Canadian Railway AND Marine World

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ADVERTISING RATES furnished on application.

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TORONTO, CANADA, JULY, 1915.

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## Sale of Alaska Northern Railway Questioned.

Washington, D.C., press dispatch, June 15.—Questioning the right of some of the defendants to sell the Alaska Northern Ry. to the U. S. Government to form part of the government railway in Alaska, E. A. Shedd & Co., bankers, of Chicago, J. R. Thompson, City Treasurer, of Chicago, and others, today filed suit in the Supreme Court of the District of Columbia asking that a receiver be appointed to receive the purchase price. Some of the defendants are: F. K. Lane, Secretary of the Department of the Interior; W. G. McAdoo, Secretary of the Treasury; J. Burke, Treasurer of the United States; the American Surety and Trust Co., the Sovereign Bank of Canada, the International Assets, Limited, W. E. Stavert, F. G. Jemmett, W. J. Boland and G. T. Clark-son, of Toronto.

Associate Justice W. P. Stafford issued a rule for the defendant Government officials to show cause on June 18 why they should not be restrained by an order of the court "from paying defendants Stavert, Jemmett, Boland, G. T. Clarkson or the International Assets, Limited, \$1,150,000, or any part thereof, and the American Security & Trust Co. from surrendering possession of the stocks, bonds and securities, the subject of the contract mentioned in the bill."

Seward, Alaska, press dispatch, June 19: "Preparations by the Alaskan Engineering Commission to take over the Alaska Northern Ry. next month were practically completed to-day. The commissioners have gone ahead with their plans without regard to the suit brought in Washington, D.C., by the bondholders of the old Alaska Central Rd. to prevent the Government making payment to the Canadian bondholders of the reorganized Alaska Northern."

A locomotive failure for every 18,000 miles for a regularly assigned locomotive, as against 6,000 miles per failure with pooled locomotives, over a 6 months period, is the experience of the St. Louis and San Francisco Rd. Changing from the pool system has also brought about a decrease of 6% in the fuel used, with an increase of 2.33% in the tonnage handled.

## Transportation Members of Canadian Society of Civil Engineers Serving in the War.

Among the many members of the Canadian Society of Civil Engineers serving in the war are a number who are normally engaged in transportation service. Following is a list of these:

Members—H. S. Greenwood, Colonel, First Contingent; ex-Assistant Chief Engineer, Mackenzie, Mann and Co., Ltd., Toronto.

C. L. Hervey, Major, Superintendent of Construction, Canadian Overseas Railway Construction Corps; Civil Engineer, Montreal, formerly in charge of the Glengarry and Stormont Ry. construction.

J. C. Hesketh, First Contingent; Assistant Engineer, C.P.R., Winnipeg.

R. W. Leonard, Major, Corps of Guides, England; ex-Chairman, National Transcontinental Ry. Commission.

C. W. P. Ramsey, Lieut. Colonel, Canadian Railway Construction Corps; Engineer of Construction, C.P.R., Montreal.

F. A. Wilkin, First Contingent; C.P.R., Winnipeg.

Associate Members—J. C. Ball, Lieutenant, 7th Battery, 3rd Brigade, Canadian Field Artillery, First Contingent; Welland Ship Canal, Section 3.

H. L. Bodwell, Adjutant, 47th Battalion; Assistant Engineer, Grand Trunk Pacific Ry., South Fort George, B.C.

W. T. Daniel, Lieutenant, First Contingent; Assistant Engineer, C.P.R., Regina, Sask.

W. M. Everall, First Contingent; Government Inspecting Engineer, Canadian Northern Ry., Port Arthur, Ont.

G. B. Hughes, First Contingent; British Columbia Electric Ry., Victoria.

D. A. Livingston, 2nd Canadian Mounted Rifles, Second Contingent; C.P.R. Construction Department, Winnipeg.

A. deC. Meade, Royal Engineers; Regina Municipal Ry., Regina, Sask.

V. Michie, First Contingent; Assistant Engineer, C.P.R., Winnipeg.

T. Muirhead; British Columbia Electric Ry., Victoria.

A. Stewart, 29th Battalion; Engineering Department, Esquimalt and Nanaimo Ry., Victoria.

R. A. Stirling, 12th Battalion, First Contingent; National Transcontinental Ry., Quebec.

J. A. Symes, Lieutenant, 56th Battalion, C.P.R. Irrigation Department, Calgary.

Junior—L. E. Allen, Divisional Engineers, First Contingent; National Transcontinental Ry., Hearst, Ont.

S. R. Lamb; C.P.R. Construction Department, Winnipeg.

J. A. Mackenzie, Captain, 26th Battalion, Second Contingent; National Transcontinental Ry., La Tuque, Que.

L. F. Merrylees; Board of Engineers, Quebec Bridge, Nelsonville, Que.

G. H. N. Monkman, Canadian Railway Construction Corps; C.P.R. Construction Department, Winnipeg.

H. K. Morrison, Divisional Engineers, Second Contingent; Canadian Northern Ontario Ry., North Bay, Ont.

S. W. Shackell, Lance Corporal, Divisional Engineers; C.P.R., Smiths Falls, Ont.

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

Calgary and Edmonton Ry.	Acres. 1,760.00
Canadian Pacific Ry.	1,273.387
Qu' Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	2,483.22
Total	5,516.607

# Electric Railway Department

## Electrification of the London and Port Stanley Railway.

The electrification of the L. and P. S. R. is nearing completion, and the official opening is to occur at an early date, possibly during this month. The line is 23.66 miles long, connecting London, Ont., with Port Stanley, on Lake Erie, passing through St. Thomas. This line was one of the earliest built in this country, and since its inception in the early fifties, has had an interesting history, passing through several different managements in an attempt on the part of the municipal owners to secure better operation.

The line had its inception in a public meeting held in London in Jan. 1853, to consider the building of a line from London to Port Stanley, the movers being Murray Anderson, for many years President of the line,

ever, reports from 1860 to 1870 showed that in no year did the gross earnings fall below the operating expenses. In 1870, 14 years after the line had been placed in operation, the revenue was \$43,002.44, and the working expenses \$30,293.00, leaving a net profit of \$12,709.44. This was obtained with a total train mileage of 48,418, of which over 90% was revenue traffic. The total operating cost, including repairs, etc., was 62 cts. per train-mile.

The building of the line was commenced with a view to the general advantage and improvement of the country interested, rather than from any expectations of profits to be directly derived from revenue. It is said that in the early days the amount of

20 years. As the leasing company had the standard gauge, the L. & P. S. R. gauge was changed to conform to it. The L. & P. S. R. had another change when on Aug. 12, 1882, the G. T. R. absorbed the Great Western Ry., and operated the line until the completion of the lease in 1894. Prior to the expiration of the lease, the city of London acquired the stock held by the city of St. Thomas, in 1893.

On Dec. 1, 1893, an agreement was made between the L. & P. S. R. and the Lake Erie and Detroit River Ry., for the lease by the latter of the L. & P. S. R. for 20 years from Jan. 1, 1894 for \$10,000 a year rental, and in addition 10% on all gross earnings and receipts exceeding \$80,000 a year, which was

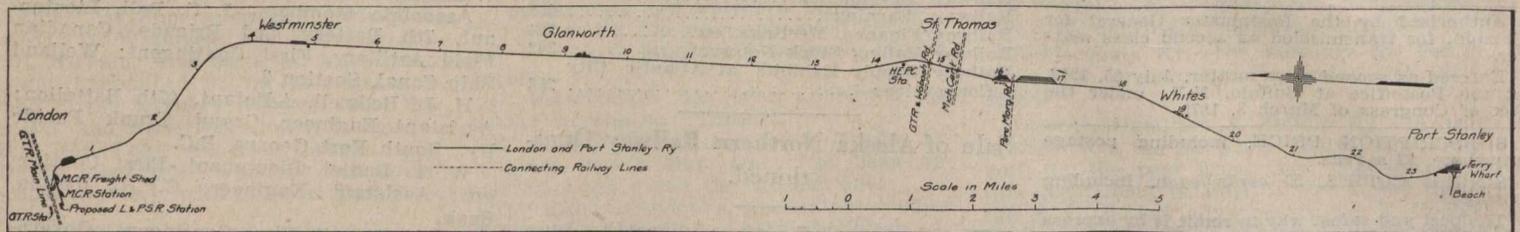


Fig. 1.—London and Port Stanley Railway, showing Connections.

and John Carling. The company was incorporated under its present name in 1853, under chap. 133, statutes of Canada. In August of that year the city of London de-

traffic anticipated was not realized by the projectors, but by bringing into competition the then existing trunk lines, a reduction in freight rates on farm produce and merchan-

confirmed by the Ontario Legislature in 1894. This lease was transferred to the Pere Marquette Rd. about 1906, when the latter leased the Lake Erie and Detroit river Ry. On the expiration of the L. & P. S. R. lease on Jan. 1, 1914, a temporary arrangement for the operation of the line was entered into with the Pere Marquette Rd., pending the electrification of the line, which was then in contemplation.

By the City of London Act, 1913, the corp-

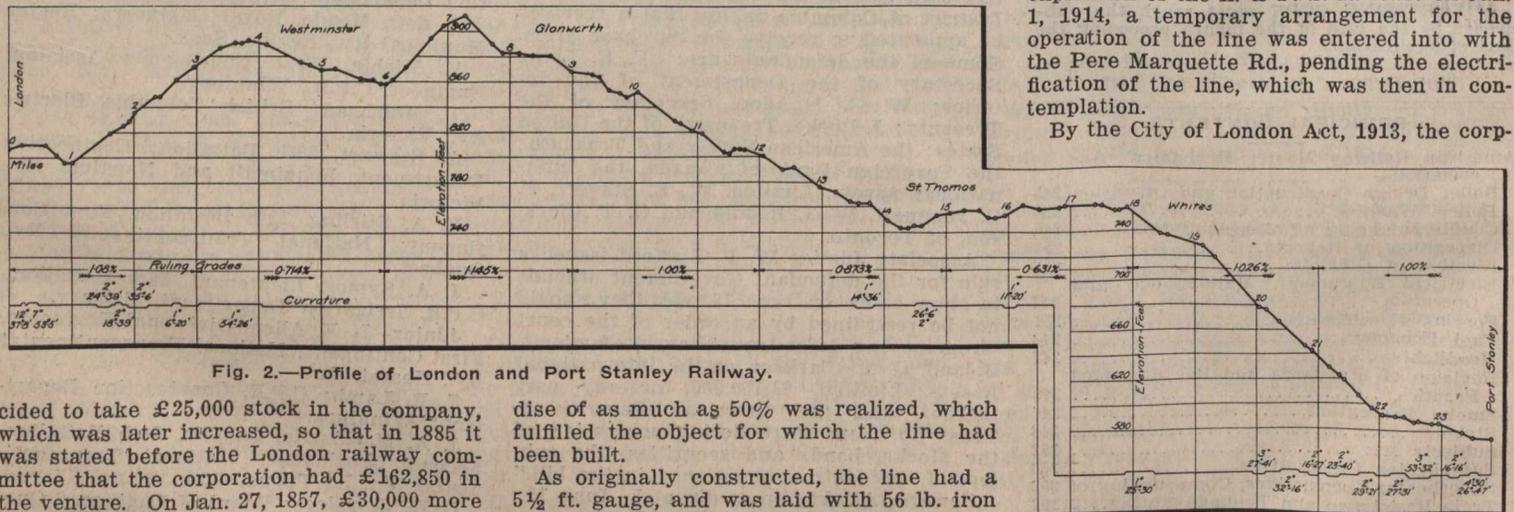


Fig. 2.—Profile of London and Port Stanley Railway.

ecided to take £25,000 stock in the company, which was later increased, so that in 1885 it was stated before the London railway committee that the corporation had £162,850 in the venture. On Jan. 27, 1857, £30,000 more was granted by London to the railway. A book on Canadian railways, published in 1870, states that at that time the stock subscribed by the different municipalities, was as follows: London, \$220,000; Middlesex county, \$80,000; Elgin county, \$80,000; St. Thomas, \$8,500; total, \$388,500. It was also stated that the railway was then indebted to London as follows: 1st mortgage bonds, \$175,000; stock, \$220,000; loans on 1st and 2nd mortgage bonds, \$220,000; interest, etc., \$502,126; total, \$1,342,248. The amount of private stock held at that time was only \$27,750. The line was opened Oct. 2, 1856.

From the first the line labored under financial difficulties from the fact that the cost of construction, which amounted to \$1,027,928.24, exceeded the estimate by about \$400,000, owing to the heavy cuttings, long embankments, and expensive bridges. How-

dise of as much as 50% was realized, which fulfilled the object for which the line had been built.

As originally constructed, the line had a 5½ ft. gauge, and was laid with 56 lb. iron rails. The bridges and all buildings were of wood. The rolling stock in 1860 consisted of 2 locomotives, 3 passenger cars, 42 freight cars and 2 baggage cars. This had been increased in 1870 by the addition of 3 more passenger cars and 2 freight cars. Between 1860 and 1870, the passengers carried had increased from 21,919 to 44,427, more than double, and the freight tonnage from 16,780 to 23,831, about 30%. The original gauge of 5½ ft. received early consideration with regard to changing to the standard 4 ft. 8½ in. gauge, as all the connections with the exception of the G. T. R. were adopting that gauge.

On Apr. 25, 1870, the Great Western Ry. entered into an agreement with the L. & P. S. R. for a 99 year lease for the station and connection at Waterloo St., London, in consideration of the building of shops, and on Mar. 24, 1874, it leased the L. & P. S. R. for

oration was given power to lease the L. & P. S. R. from the L. & P. S. R. Co., to construct and equip the line as a steam or electric road, and to raise not exceeding \$700,000 to construct, equip and operate it. The act also provided that the city might, by passing a bylaw, form a commission to be called The London Railway Commission, which would have the whole management and control of the construction, equipment, maintenance and operation of the line, the commission to have a membership of five, including the mayor ex officio, the other four to be elected for periods of two years, two to be elected annually. The implementing bylaw was passed by the London City Council, Nov. 29, 1913. The commission now consists of Sir Adam Beck, M.L.A., Chairman, P. Pocock, Vice Chairman, W. Spittal, Secretary (pro tem), M. D. Fraser, K.C., and H.

A. Stevenson, Mayor. This commission decided on the electrification of the line.

Traffic. As mentioned earlier the line was originally projected as a means of developing the country it traversed, and at the same time to provide an outlet for the populated centres along it to visit the pleasure grounds at Port Stanley, where the company acquired an area on the shore for that purpose. From the earliest days a heavy excursion traffic has been developed, for the encouragement of which rates less than  $\frac{1}{4}$

handled one mile amounted to 10,322,663, the average distance hauled is about 16 miles, showing that the bulk of the traffic is through, making for good operating conditions. The total freight revenue was \$84,692.88; total freight earnings, \$93,373.65; freight earnings, per train mile, \$1.6146; proportion of total freight earnings to total earnings, 68.73.

For the year ended June, 30, 1914, maintenance of way and structures cost \$25,008.89; maintenance of equipment, \$31,257.03; traffic

the London Railway Commission that the existing traffic interchange agreements will terminate July 1, 1915. Negotiations are now in process with both this line and the other three for new interchange arrangements, and it is expected that an early settlement of the question will be made.

The L. & P.S.R. has been using the G.T.R. station in London, but arrangements are being made for a separate terminal to the south of the G.T.R. station, on Richmond St., where the line will stub end. To permit



Fig. 3.—Sixty Inch Concrete Culvert replacing Wooden Box.

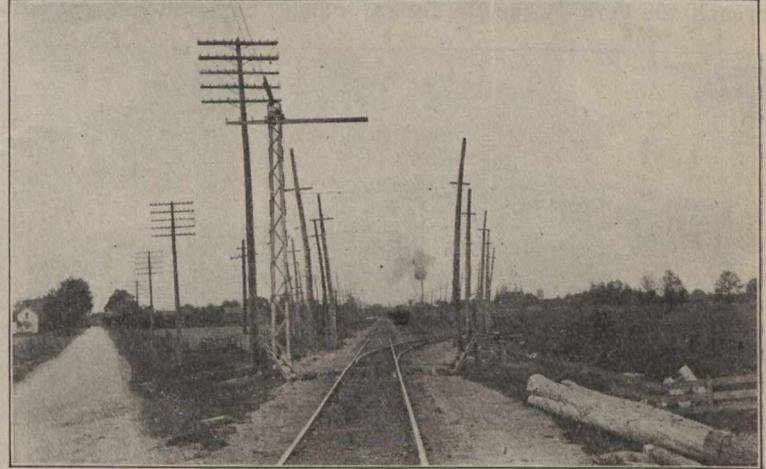


Fig. 5.—St. Thomas Yard, Looking North from Southerly Approach.

ct. a mile were given. This traffic has ever since remained the principal passenger business handled, large numbers travelling by the line from both London and St. Thomas during the summer, a good service at attractive rates having been maintained by the successive operating companies. For the year ended June 30, 1914 the passengers carried were 132,669, at a rate of 1.574 cts. a mile. The mileage of passenger trains was 64,551, and of mixed trains 14,739. The

expenses, \$6,777.00; general expenses, \$8,230.15; total operating expenses, \$180,915.11. This gave a ratio of operating expenses to operating revenue of 133.18, a deficit of \$45,073.37.

In addition to the traffic handled by the lessee, the Pere Marquette Rd., the Michigan Central Rd. runs all its trains to London over the line from St. Thomas. The freight traffic of this line in London is very high. Likewise, the Pere Marquette traffic from

the entry of its line to this new point, the Board of Railway Commissioners for Canada issued orders 23,752 and 23,753, May 28 and 27 respectively, granting the railway power to construct a track on the north side of Bathurst St. between Wellington and Richmond Sts., and to take possession of certain G.T.R. lands as follows: A 40 ft. strip between Wellington and Clarence Sts., a 50 ft. strip from Clarence St. westerly, immediately north of Bath-

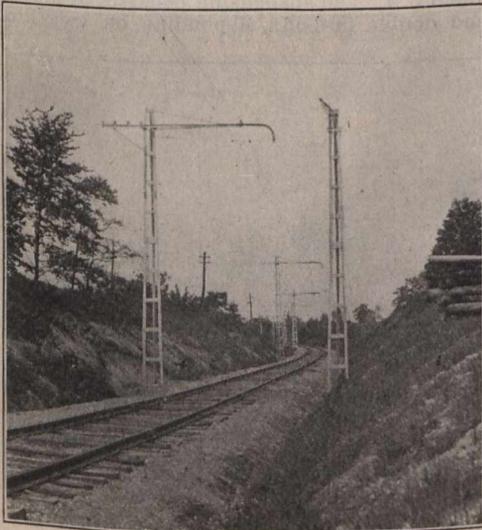


Fig. 4.—Overhead Construction on a Curve.

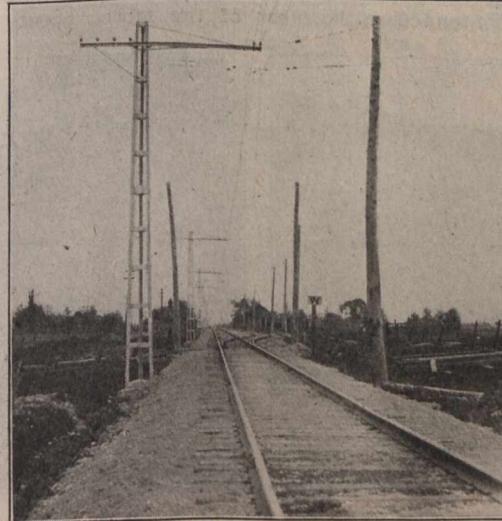


Fig. 6.—Overhead Construction at Glanworth Siding.



Fig. 7.—Overhead Construction on Bridge south of St. Thomas.

revenue per passenger train mile was \$0.51563. The total passenger earnings were \$40,884.22, or 30.09% of the total earnings.

Freight is of course the principal part of the traffic handled, consisting primarily of coal brought across Lake Erie from the Pennsylvania coal fields to Port Stanley by car ferry. Of the total freight tonnage of 637,869 tons carried by the line in the above mentioned period, 552,182 tons, or 86%, was coal, of which 482,807 tons was bituminous and 69,375 tons anthracite. As the freight

the west, coming into St. Thomas over its leased Lake Erie and Detroit River Ry., is interchanged there for passage easterly by the Michigan Central Rd., over the section of the L. & P. S. R. connecting the two lines in St. Thomas, a distance of nearly a mile.

Agreements exist for the interchanging of G. T. R., Michigan Central Rd., Pere Marquette Rd. and Wabash Rd. traffic, the first at both London and St. Thomas, and the latter three at St. Thomas only. The Michigan Central Rd. has served notice on

the west of the foregoing for approximately the same distance to the easterly limits of Richmond St., immediately north of Bathurst St. It is also authorized to construct its tracks and erect poles, fixtures and wires along Bathurst St., between its present track at Burwell St. to connect with the authorized property on Wellington St., and is authorized to use the existing track of the Michigan Central Rd. between Burwell and Wellington Sts.

It is proposed to erect a new station on

the west side of the line in St. Thomas on Talbot St. to replace the existing station about two blocks further north, which will then be removed. No immediate changes are in contemplation for the terminals at Port Stanley.

**Rehabilitation of the Line.** When the line was taken over by the London Railway Commission it was physically in a very bad condition, and required complete rehabilitation of the track, and structures, with the exception of the bridges, to place it in good operating condition. The renovating was handled through the Pere Marquette forces, which

All the bridges were in good condition and required no repairs of consequence, but the culverts had for the most part fallen into disrepair, and required either replacement or reinforcing. Two new reinforced concrete culverts were built at mileage 3.2 and 12.4, replacing in one instance a broken masonry one, and in the other, a wooden box culvert. These two culverts are 8 x 6 ft., made of reinforced concrete, with wing walls on each side. Seven old masonry culverts were reinforced with a 6 in. lining of reinforced concrete, the mud sills being also removed and replaced with from 6 to 12 ins.

28 in. centres. The cross arm, 26 ft. clear above the rail, is a 4 in. 5¼ lb. channel, bolted to two of the vertical arms, and is braced in front with light angles. The pole legs have a slight batter, 28 ins. from corner to corner of the angles at the base, and 12 ins. at the top of the pole. The poles are placed at 180 ft. centres on tangents, and at from 140 to 160 ft. on curves. They call for a strength to resist a strain of 2,000 lbs. at the top, failing at from 2,500 to 2,700 lbs. The tension will seldom exceed from 500 to 1,000 lbs. In yards, either wooden poles alone, or the steel poles with intermediate wooden

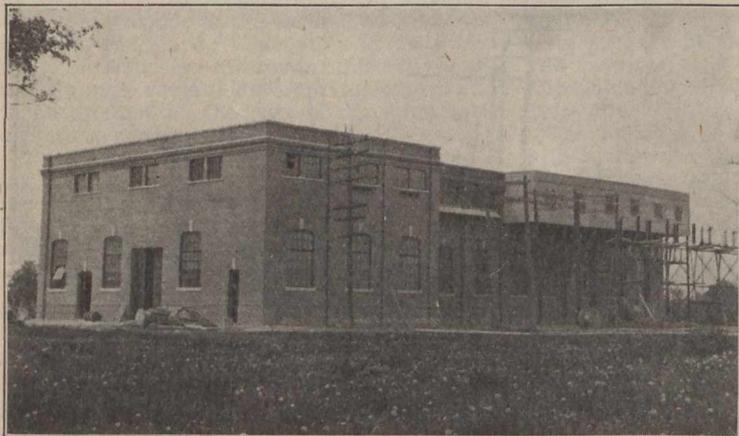


Fig. 8.—Hydro Electric Power Commission Sub Station at St. Thomas.



Fig. 9.—Method of Stringing Trolley and Feeder Wires.

was still looking after the line on the short term agreement made on the expiration of the 20 year lease. As mentioned in Canadian Railway and Marine World, Sept. 1914, contracts were let as follows: Algoma Steel Co., 3,000 tons of steel rails and angle bars and 30,000 tie plates; J. J. Gartshore, 380,000 spikes; Canadian Ramapo Iron Works, 52 sets of switches and frogs; Steel Co. of Canada, 34,000 track bolts and 65,000 tie plates; and Canadian Concrete Products Co., 1,100 ft. of concrete piping of various sizes. The rails are 80 lb. Canadian Northern section,

of concrete. About 15 concrete pipe culverts were put in, replacing for the most part broken down wooden box culverts. These varied in size from 24 to 72 ins., one of the 60 in. ones being shown in the accompanying fig. 3.

**Electrification.** For the electrification of the line, 1,500 volt d.c. was selected after a study of the single and three phase a. c. system, and the high and low d.c. systems, the 1,500 volt d.c. offering what appeared to be the best power for the conditions to be contended with, most of the more recent

poles, are employed, all at 90 ft. spacing. The wooden poles used are from 35 to 40 ft. long, with an 8 in. top.

Catenary suspension is employed on all main line work, with direct suspension in yards with wooden poles. The trolley wire is 4-0 grooved copper, suspended by clips at 20 ft. centres from a 300,000 c.m. copper catenary wire. The trolley wire is 23 ft. 3 ins. above the rail, giving a suspension at the poles of about 3 ft. The suspension consists of single and double pull-offs, depending on location.

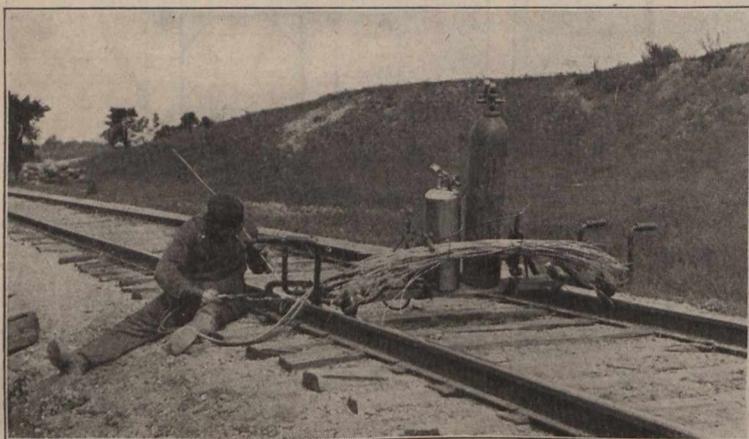


Fig. 10.—Bonding Rails with the Oxy-acetylene Torch.

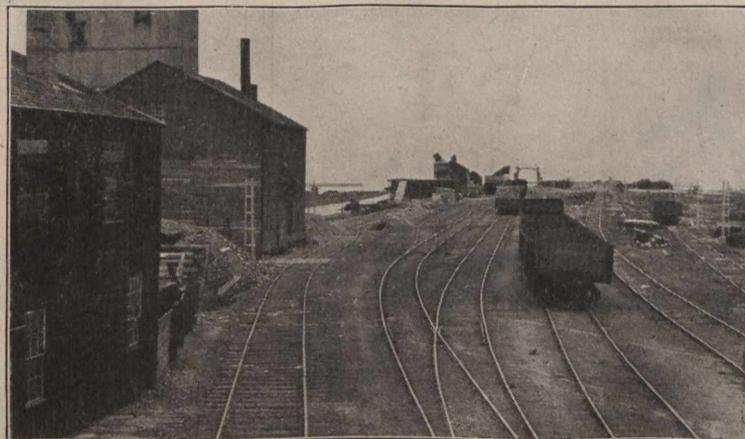


Fig. 11.—Port Stanley Yards, showing Car Ferry Wharf in Distance.

and with the exception of the tracks in London, St. Thomas and Port Stanley, and certain sidings, were laid during 1914. All other rail laying, with the exception of a few of the sidings now under discussion with the Pere Marquette Rd. with regard to transferring to the Commission, have since been laid, most of the ties being replaced by new untreated cedar throughout the whole length of the line, and all the track rebalasted with gravel taken from a gravel pit adjoining the line just south of St. Thomas, near Whites, so that today the track is in excellent condition.

interurban electrification projects in Canada and the United States having adopted this voltage. The overhead work is supported on steel poles, which also carry the feeders, and dispatching wires. The poles are made of galvanized structural steel shapes, and weigh complete about 800 lbs. They are of triangular form, 35 ft. 0½ in. high, bedded in a triangular concrete base to give a 4 in. casing of concrete outside of the corners. The bases are 7 ft. deep, and are imbedded 6 ft. in the earth. They consist of three 60 deg. angles, 3-16 in. thick flanges, tied together with 3-16 x 4½ in. batten plates about

The line is anchored every ¼ mile by steel poles placed on the opposite side of the track, with an anchoring wire between it and the next adjoining pole, to which the catenary is tied. Dead ends are inserted at every 4 miles, arranged for in a somewhat similar manner to the anchoring, with a pole on the opposite side, the dead ended wires paralleling each other a short distance, and then swinging off to the dead end poles. An anchor pole is shown in fig. 4.

Deflectors are provided at all switches, and in the larger yards the overhead work is direct suspended from cross spans from

the wooden poles, as in the St. Thomas yard, as shown in fig. 5, where the poles and cross suspension wires are shown prior to the trolley wire suspension. At minor sidings, such as that at Glanworth, fig. 6, the steel poles are carried through, with wooden poles on the siding side of the track, with suspension wires across from the adjoining steel poles to the wooden ones. On bridges the catenary construction is carried through by suspending the wires from a light steel overhead bridge as shown in fig. 7. All the insulators are tested to 3,000 volts. The sectionalizing is manually operated. Lightning protection is of the circuit breaker type and is provided at every fifth pole.

The bracket on the off side of the pole will carry 4 signal wires and a 500,000 c.m. aluminum feeder from the St. Thomas substation to Port Stanley. There are substations at London and St. Thomas, each equipped with two 500 k.w. 1,500 volt d.c. rotary converters, the one at London being located in the municipal electric plant, and the other at St. Thomas, in the Hydro Electric Power Commission of Ontario's substation, shown in fig. 8.

The method of erecting the overhead work is shown in fig. 9. The tops of two box cars were fitted with wooden frames, between which boards were placed on longitudinal members. The side railing above this floor was collapsible, swinging down on the floor when travelling on the line. The two cars, with a cable car, were moved along the line by a locomotive.

The process of bonding is shown in fig. 10. Ohio Brass Co. 4-0 copper bonds are used, welded to the outer side of the rail heads. The outfit employed consisted of a light four wheel car on the rails, carrying two cylinders, one of oxygen, and one of acetylene, behind which were supported a number of strands of copper wire for brazing. The process makes a good union very quickly.

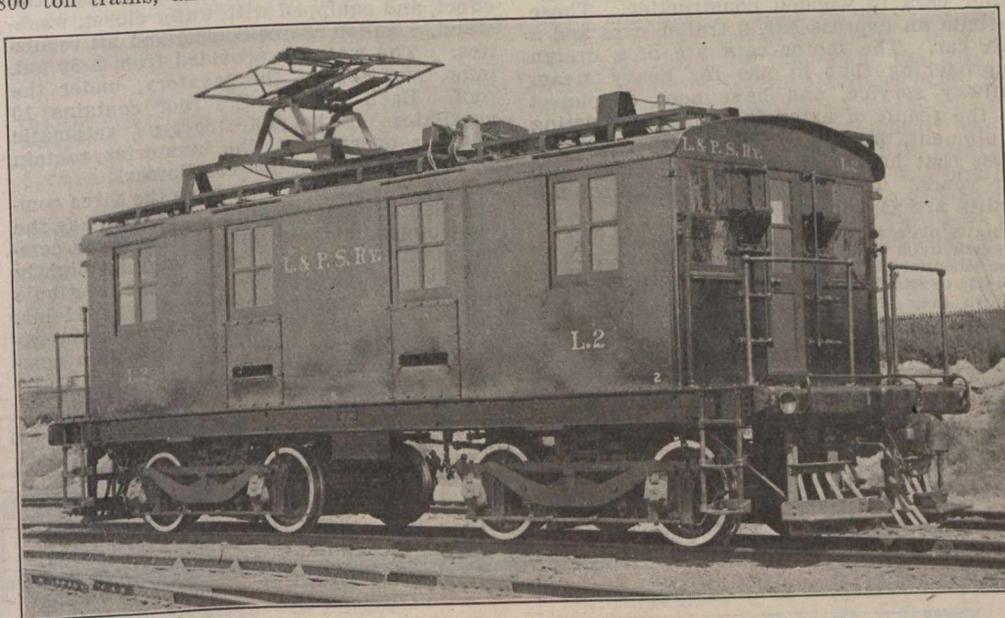
**Electric Locomotives.** As mentioned, the freight traffic consists chiefly in hauling loaded coal cars from Port Stanley to St. Thomas and London, a car ferry, operating over 10 months in the year, delivering the

ing to the line 30 loaded cars, and taking away 30 empties, each trip. The Port Stanley switching yard is practically level, and is approximately 1,000 ft. long. It is shown in fig. 11, which also shows the ferry dock in the distance.

These were the conditions to be met in designing the electric locomotives. For the purpose of specifying their capacity it was assumed that the traffic would be handled in 800 ton trains, and that certain periods of

sidings, and a train made up for the return trip, consuming possibly an hour.

Three electric locomotives, preliminary descriptions of which appeared in Canadian Railway and Marine World, Nov. and Dec. 1914, have been built. They are of the 4-0-4 type and are carried on two swivel trucks bringing all the weight on the drivers, while the equipment is housed in a steel box type cab extending over practically the entire length of the locomotive. Each one is pro-



Locomotive (Temporarily Equipped with One Light Trolley).

time would be desirable in handling the switching and interchange at points along the line. For instance, immediately after unloading and reloading the ferry, the locomotive would be required to classify the cars and make up the train in an approximate time of 45 mins., the maximum train to be moved being assumed at 15 loaded cars of 70 tons each. After this Port Stanley yard switching, the locomotive would haul the assumed loading of 800 tons up grade to

vided with four GE-251, 750-1500-volt motors designed for 750 volts across each armature and insulated for 1500 volts. Two motors are connected permanently in series and the two-motor groups thus formed are capable of connection in series or parallel for speed control. The cab is divided into three compartments, one at each end for accommodating the operator, and an intervening compartment where the control equipment and accessories are located. The operating compartments are provided with 1500 volt electric heaters. Each of the GE-251 motors has an hourly rating of 245 h.p. with 1500 volts on the trolley. At this rating the locomotives exert a tractive effort of 21,500 lbs. Control is effected by a double end, type M, standard equipment, a master controller at each operating position actuating the main 1500-volt contactors by means of a 600-volt circuit supplied from a dynamotor. Multiple unit train operation is arranged so that the simultaneous control of three locomotives coupled together can be accomplished from any master controller. The equipment is also so designed that a locomotive may haul a train of 8 or 10 passenger trailer cars and provide 600 volt lighting energy for them. The current collectors consist of pantograph slider trolleys having two contact pans pressing against the trolley conductor. Two of these devices are furnished on each locomotive. They are electro-pneumatically controlled from any operating position with one, two or three locomotives hauling a train. The pantograph is shown in fig. 12. It is novel in design, the legs crossing each other in lazy-tong fashion, the reason for this arrangement being the requirement of a vertical range of 9 ft., without unduly lengthening the length depressed. The specifications call for a maximum safe speed of 45 m.p.h., and a capacity for accelerating an 800 ton train on a 1% grade with a clean, dry rail, and to be able to develop a drawbar pull for a 5 min. period corresponding to a 35% adhesion. They

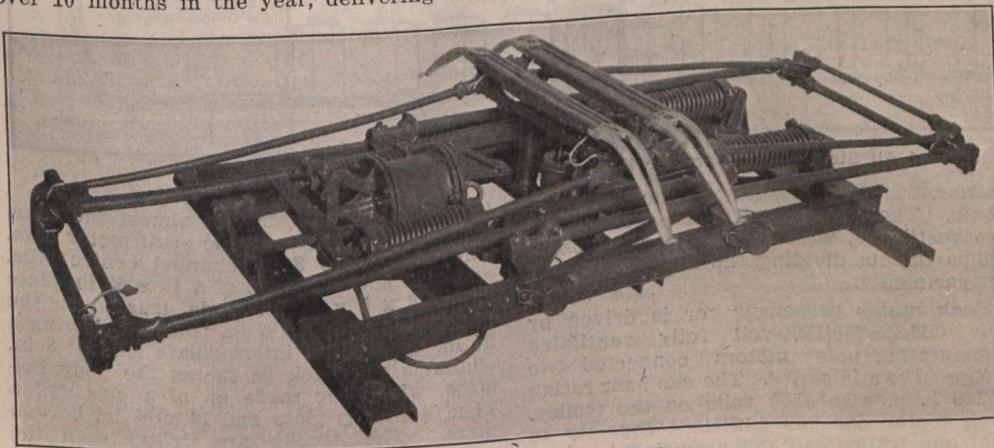


Fig. 12. Pantograph Slider Trolley.

cars to the line from the Pennsylvania coal fields across Lake Erie. Some additional traffic, consisting principally of loaded coal and merchandise cars, is delivered to the line at St. Thomas for London. The traffic from London to St. Thomas consists of loaded merchandise cars, and empty coal cars, while between St. Thomas and Port Stanley it consists almost entirely of returning empty coal cars for delivery to the car ferry. This ferry has a capacity of 30 cars on its four tracks, the two central tracks holding 8 cars each, and the outer two 7 cars each. It can make two round trips a day, deliver-

St. Thomas, with power to stop and start again at Whites, where a car might be passed. In St. Thomas the switching service, consisting of picking up and setting off cars to interchange lines and sidings, might take about 30 mins. The assumption is made that the trainload before reaching and after leaving St. Thomas would be approximately the same, on account of the balance between the freight dropped off and the London interchange from the connecting railroads. Stops might be required at Glanworth and Westminster, and on arriving in London the cars would be distributed to the various

were delivered last week by the Canadian General Electric Co.,

**Cars.** The original intention in ordering the car equipment was to provide 5 motor cars and 4 trailers, of all steel construction, the design of which was given in detail in Canadian Railway and Marine World, Jan. 1915. A plan and elevation of this all steel car is shown in fig. 13. It was subsequently decided to proceed as at first intended with the 5 steel motor cars, and to change the other cars to wooden construction. These include an express car, 3 trailer cars and a box car. The motor cars are of a design approaching that in use for heavy steam railway service, and have been developed as the result of extensive study of existing equipment, profiting by the experience of lines that have had steel equipment in use for years. The general dimensions of the bodies are as follows:—

Length over all .....	59 ft.
Length over end vestibules .....	58 ft.
Length over end of car body .....	48 ft.
Width over all .....	9 ft. 6 ins.
Width over sheathing .....	9 ft. 6 ins.
Width over platform floor, including trapdoors .....	9 ft. 5 ins.

ments, and the hinges, etc. The basket racks are continuous, removable in sections, running the full length of the car, and of a bronze finish. The seats are of a high back design, finished in plush for the main compartments, and in pantasote for the smoking compartments. They are 40 ins. wide overall, with the back rising to a height of 42 ins. The aisle width is 26 ins.

Each car has two lavatories, finished in white, with a sheet steel ceiling, giving a tile effect, and equipped with water closet, washstand, 5 gallon water cooler, and all requisites. The water is provided from a 50 gal. tank over top of the lavatory, under the roof. Each side of the roof contains 10 ventilators of the deflector type, automatic in their operation. The lavatories contain special lavatory room ventilators.

Four of the motor cars have the three compartment layout, while the other one has the two compartment layout. In the three compartment layout, the car end is slightly changed so as to incorporate the vestibule into the baggage compartment, 8 ft. 11 ins. long. Adjoining is the smoking compartment, 13 ft. 8 ins. long, with the main com-

also for simultaneous sanding, by electro pneumatic valves, of all cars from any operating position. The pantograph trolleys are identical with those on the locomotives.

Each car carries a combined straight and automatic air brake outfit of the variable release type, with the air supply furnished by 1500-volt compressors. The compressor governors are all equalized on a special wire running throughout the train in the auxiliary train cable.

The original intention was to have the heaters of the hot air type, situated at one end of the car, delivering air through a 3 x 8 in. duct of ½ in. steel along the floor line of the wall. This has been changed to individual seat 1,500 volt electric heaters, 28 heaters under the seats, 2 in the vestibule, and 3 in the baggage compartment. As the trailers are to be used for summer traffic only, they have no heaters, but air ducts are provided so that hot air heating may be installed if found necessary. The baggage car has 12 electric heaters; the box car will have none. The steel motor cars were built by the Jewett Car Co., Newark, Ohio.

The trailer cars are of wooden construc-

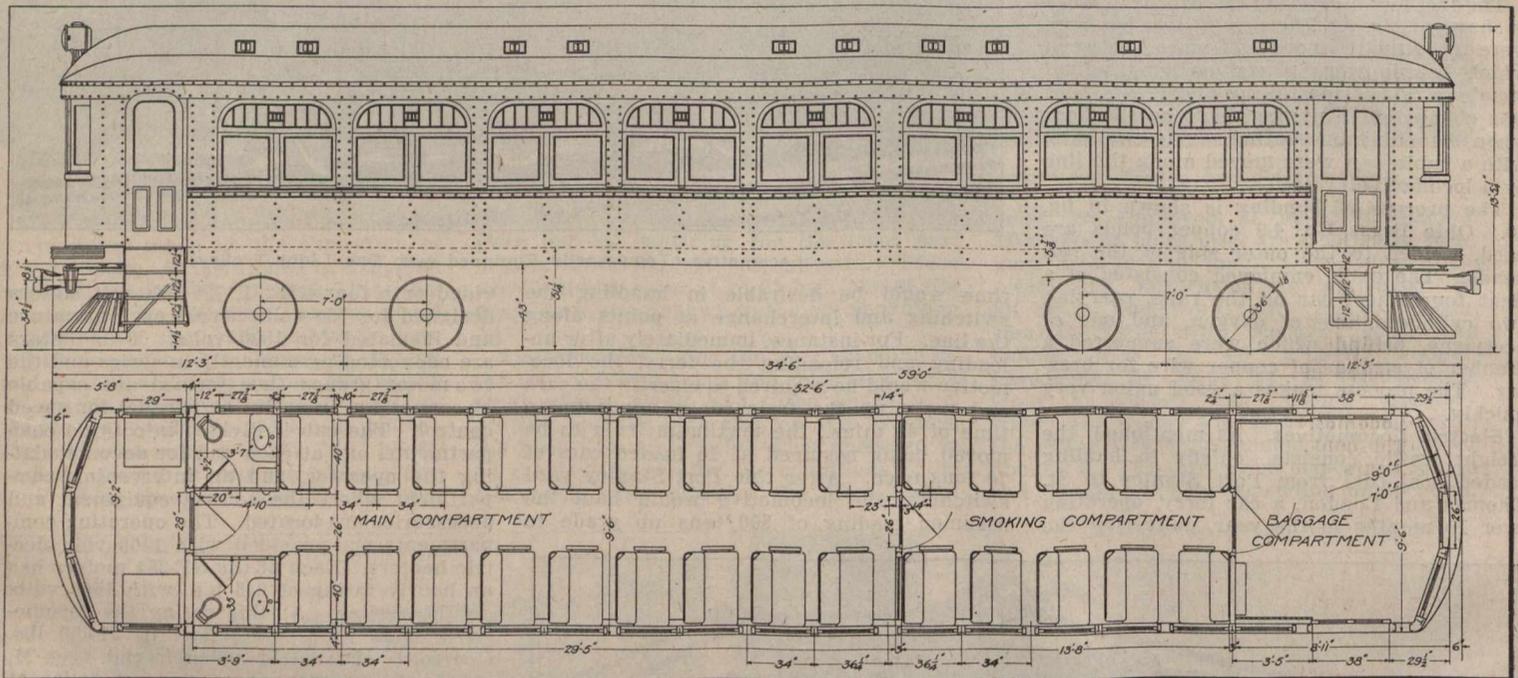


Fig. 13. Plan and Elevation of All Steel Motor Cars for London & Port Stanley Railway.

Height from rail to top of roof, car light .....	13 ft. 5¼ ins.
Height from under side of sills to top of roof, car light .....	9 ft. 10¼ ins.
Height from top of rail to top of platform .....	4 ft. 3¼ ins.

The weight of the car body, including heating equipment, seats, light foundations, brake rigging, draught gear, including supports, ready for the installation of the control equipment and air brakes, has been estimated as follows:—

Car body, complete as above .....	38,320
Control equipment .....	9,500
Air brake equipment .....	2,220
Four motors complete at 4,000 lbs. ....	16,000
Two 7 ft. wheel base trucks with 36 in. steel wheels .....	26,880
<b>Total weight in lbs. ....</b>	<b>92,920</b>

The entire frame of the cars is of structural steel shapes and plates, with the centre and side sills continuous. The inside finish is of the best selected inlaid mahogany, natural sanitary finish, including the doors, linings and mouldings, and the trimmings are of solid bronze, and include grab handles on the body corner posts and vestibule corner posts, match scratchers between the seats in the smoking compart-

ment 29 ft. 5 ins. long to the other vestibule. The two compartment car has the two vestibules, with the main and smoking compartments dividing the length into two compartments.

Each motor passenger car is driven by four GE-225-750/1500-volt fully ventilated commutating pole motors connected two groups of two in series. The one hour rating is 125 h. p. with 1500 volts on the trolley. Each motor car has sufficient capacity to haul one trailer car and provision is made for the motor and trailer cars to be operated in trains up to a total of three motor and three trailer cars. All trailer cars are equipped with master controllers at each end so that multiple unit train operation is possible from either end of any motor or trailer car.

Control energy for a motor and trailer is derived from a 1500/600-volt dynamotor on each motor car. The dynamotor will also supply energy for lighting one motor and one trailer car. Main and auxiliary train cables run continuously through a train, provision being made for the simultaneous raising and lowering of all pantographs and

tion, steel underframe, of almost the same general dimensions as the steel motor cars. They have two 8 in. channel centre sills, and side sills made up of a 12 x ¾ in. plate and a 3 x 5 x ¾ in. angle, trussed on the under side with a 1½ in. truss rod having a 24 in. drop. End intermediate sills of 8 in. channels run back as far as the body bolsters, which are made up of angles and a 14 x ¾ in. top plate and 14 x 5/8 in. bottom plate. The trucks are lighter than the motor car trucks, with 33 in. wheels and a 6 ft. wheel base. They are of the two compartment layout, as in some of the motor cars.

The express car is of wooden construction, steel underframe, the same as the trailer cars, only 64 ft. long, with the same motor equipment as the steel motor cars. It is slightly narrower than the passenger cars, 9 ft. 2¼ ins. wide, and has two 6 ft. doors on each side. It is equipped for double end operation.

A standard 30 ton box car, finished outside the same as the passenger cars, will be used for light freight service. It is of wooden construction throughout. The underframe consists of six sills, two side and

two centre of 4 x 6 in. section, and two intermediate of 3 x 6 in. section. It is 36 ft. 9 3/4 ins. long over the end sills, and 9 ft. wide. It has a 6 ft. centre door, an end door and windows each side of it, and side doors at the end. It uses standard freight equipment trucks. The trailer cars, baggage car and box car have been built by the Preston Car and Coach Co.

At June 30, 1914, the line had 1 passenger locomotive, 2 freight locomotives, 2 second class passenger cars and 1 combination passenger car.

**The Toronto and York Radial Railway Franchise on Yonge Street, Toronto.**

The section of the Metropolitan Ry., owned and operated by the Toronto and York Radial Ry., from Shaftesbury Ave., about 100 ft. north of the C.P.R. tracks on Yonge St., northerly to Farnham Ave., approximately 1,220 ft., under franchise from the City of Toronto, was cut off at the latter point by order of the City Council at midnight, June 25, on the expiration of the franchise. Earlier on that day, the Toronto Board of Control received a letter from R. J. Fleming, General Manager, Toronto Ry., advising that the latter company had by agreement with the Toronto and York Radial Ry., taken over the portion of the latter's railway from Shaftesbury Ave. to Farnham Ave., including all rails, ties and overhead equipment, and that the Toronto Ry. would henceforth operate the section under its franchise from the City of Toronto, and as soon as the subway under the C.P.R. was completed, it would continue its Yonge St. double track through the subway and up to Farnham Ave., and give a continuous service.

A meeting of the Board of Control was immediately called, and it was urged that if the company was allowed to give such service it might be considered an extension of the franchise just expired, and therefore it was decided that the rails be disconnected at Farnham Ave. to prevent the continuance of service. On June 28, the balance of the rails were removed by the city, and the Mayor announced that the poles and overhead equipment would also be removed forthwith, and the material handed over to the T. & Y.R.R.

On June 17, 1913, the Ontario Railway and Municipal Board authorized the Metropolitan Ry. to deviate its line from Yonge St. to a private right of way from Farnham Ave. to a terminal to be built 800 ft. west and north of the C.P.R. This terminal was to take the place of the old Metropolitan Ry. station, which had been abandoned on account of the grade separation work being undertaken by the C.P.R. At that time the terminus of the line was located at Shaftesbury Ave., the continuation from that point to the C.P.R. track, or the old station, being to be abandoned. The city took the matter to the Ontario Court of Appeal, which decided against the company making the proposed deviation, and the company appealed to the Imperial Privy Council, which confirmed the Ontario Court's decision.

The franchise under which the Toronto Ry. operates gives the company the right to operate street railway lines on any of the streets within the city limits as at 1891, which included the section of Yonge St. north of the C.P.R. tracks to Farnham Ave., but it was specifically provided for this section, that the right of the Toronto Ry. there was subject to the existing right of the Metropolitan Ry., then operating there. The Toronto Ry. applied to the Ontario Railway and Municipal Board, June 29, for mentioned. The city opposed, claiming that the Board had no jurisdiction, and judgment was reserved.

**Electric Railway Finance, Meetings, Etc.**

**Brantford Municipal Ry.** The earnings of the Brantford St. Ry., a part of the Brantford Municipal Ry., for April were \$3,263.62, and for May \$3,032.50, against \$2,728.85 for April, and \$2,833.22 for May, 1914. The difference in the earnings for May 1915 as compared with the previous month is accounted for by the fact that traffic was suspended for a portion of the time owing to the construction of the Eagle Place loop.

**British Columbia Electric Ry., and allied companies.**

	Apr. 1915	Apr. 1914	July 1, 1914 to Apr. 30, 1915	July 1, 1913 to Apr. 30, 1914
Gross earnings	\$540,861	\$698,508	\$6,295,902	\$7,450,590
Expenses	485,553	502,546	5,011,043	5,425,769
Net earnings	55,308	195,962	1,284,859	2,024,821

**Cape Breton Electric Co.**

	Apr. 1915	Apr. 1914	Jan. 1 to Apr. 30, 1915	Jan. 1 to Apr. 30, 1914
Gross earnings	\$25,164.46	\$26,505.11	\$101,153.46	\$108,139.00
Expenses	15,336.02	16,694.57	63,844.35	67,313.35
Net earnings	9,828.44	9,810.54	37,309.11	40,825.65

**Dominion Power and Transmission Co.—**

The directors have declared a dividend of 2% on the limited preferred stock, payable July 15, to shareholders of record June 18. This leaves a further 1/2 of 1% to be paid on this stock, after which it becomes common stock, and will probably be placed on a 4% dividend basis. The directors also declared the regular semi-annual dividend of 3 1/2% on the 7% preferred stock, also payable July 15 to shareholders of record June 18.

**Hamilton St. Ry.** The receipts for the first three months of this year were \$132,536, against \$148,292 for the same period in 1914. The city percentage was \$10,602.

**London St. Ry.**

	Apr. 1915	Apr. 1914	Jan. 1 to Apr. 30, 1915	Jan. 1 to Apr. 30, 1914
Gross earnings	\$29,449.35	\$30,041.54	\$121,523.85	\$113,256.16
Expenses	23,067.25	22,631.45	87,668.22	82,747.65
Net earnings	6,382.10	7,410.09	33,855.63	30,508.51

**Morrisburg and Ottawa Ry.—**The Ontario Court of Appeal has dismissed the appeal of 11 shareholders against county court judgments directing them to pay the balance due on shares subscribed for in the company.

**Toronto Ry., Toronto and York Radial Ry., and allied companies.**

	Apr. 1915	Apr. 1914	Jan. 1 to Apr. 30, 1915	Jan. 1 to Apr. 30, 1914
Gross earnings	\$795,816	\$830,299	\$3,227,243	\$3,292,255
Expenses	422,757	443,103	1,731,845	1,719,482
Net earnings	373,059	387,196	1,495,398	1,572,773

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

Month	1915		1914	
	Receipts	City percentage	Receipts	City percentage
Jan.	\$ 471,226.33	\$ 70,486.33	\$ 501,843.70	\$ 75,276.56
Feb.	440,313.95	67,047.09	461,274.45	72,069.90
Mar.	488,463.30	93,141.32	530,751.18	102,150.24
Apr.	467,701.62	93,540.32	501,435.10	100,287.02
May	468,953.00	93,790.00	534,465.00	106,593.00
	\$2,336,663.20	\$417,005.06	\$2,509,769.43	\$456,664.72

**Windsor, Essex & Lake Shore Rapid Ry.**

—The Canadian Dominion Traction & Lighting Co., which has taken over the Windsor, Essex & Lake Shore Rapid Ry. bonds held by the Independent Order of Foresters and the Union Trust Co., Toronto, has filed a certificate showing a decrease in common stock from \$10,000,000 to \$8,000,000. The authorized issue remains at \$2,500,000.

**Winnipeg Electric Ry.**

	Apr. 1915	Apr. 1914	Jan. 1 to Apr. 30, 1915	Jan. 1 to Apr. 30, 1914
Gross earnings	\$264,856	\$337,414	\$1,233,405	\$1,413,875
Expenses	177,336	190,815	733,156	836,489
Net earnings	87,520	146,599	450,249	582,386

The regular quarterly dividend of 2 1/2% for the quarter ended June 30 has been declared, payable July 2 to shareholders of record June 28.

**Proposed Motor Bus Service for Toronto.**

The Toronto Board of Control has been approached by representatives of a projected company with an application for the right to operate motor busses on about 13 routes in various parts of the city. It was stated that the company would only use high grade vehicles and would spend about \$250,000 in starting the service. Before dealing with the application, the Board decided to consult with the City Solicitor as to the city's standing in regard to the Toronto Ry. Co.'s franchise, and other points. In a joint report by the Chief Constable, the City Solicitor and the Works Commissioner, it is stated that the application seems to contemplate an agreement extending over a period of years for an exclusive franchise for the operation of motor busses, which the city is not in a position to give except as a matter of public policy and subject to certain restrictions as to the submission of the question to the ratepayers, etc., and if anyone chooses to inaugurate a system of transit by motor busses properly licensed there is nothing to prevent them, but the city cannot enter into an agreement for protection either as to length of franchise or freedom from opposition, except as mentioned. A. D. McBride and J. W. Bain are interested in the proposal.

**Essex County Hydro Radial Railway Association.**

The above mentioned association has been organized in Essex County, Ont., with the following officers: Honorary Vice Presidents, O. J. Wilcox, M.P.; A. H. Clark, M.P.; Honorary Vice Presidents, J. C. Tolmie, M.L.A., S. Ducharme, M.L.A., and L. Wigle; President, Mayor A. W. Jackson, Windsor; 1st Vice President, Reeve C. J. Montueul, Ford; 2nd Vice President, M. H. Swatman, Leamington; 3rd Vice President, Reeve E. J. O'Neil, Paquette; 4th Vice President, Reeve J. Ducharme, Belle River; Treasurer, W. R. Woollatt, Walkerville; Secretary, H. R. Hatcher, Walkerville. The executive is composed of the above mentioned officers and the mayors and Reeves of all the municipalities in the county.

It is announced that the association has been organized to promote adequate transportation facilities within the county, to extend a plan of education throughout the county favorable to the idea of public ownership of public utilities, more particularly electric power, lighting and railway systems, and to prevent the renewals of charters or franchises for electric railways or power companies by the Province of Ontario or municipalities, or the granting of new charters or franchises to private promoters where electric railway or power facilities can be furnished by the Hydro Electric Power Commission of Ontario.

The London & Port Stanley Ry., as electrified, will be officially opened July 22, and members of the Hydro Electric Railway Association of Ontario throughout the province and many others have been invited to attend. The delegates will be taken from London to Port Stanley on special cars, and on returning to London will be entertained at dinner as the guests of the city.

**St. Thomas Street Ry.**—It has been suggested that this line which is owned and operated by the City of St. Thomas, Ont., be taken over by the London & Lake Erie Railway & Transportation Co., which operates a line from London through St. Thomas to Port Stanley and which runs over the St. Thomas Street Ry. track for a short distance.

## Answers to Questions on Electric Railway Topics.

Following are questions submitted to the American Electric Railway Association's question box, with replies thereto by Canadian electric railway officials:

**Boiler Capacity and Efficiency.**—Have any of the member companies, (a) installed vertical baffle plates in Heine type boilers? (b) installed an additional horizontal baffle plate in Heine type boilers without taking out tubes? (c) What methods have been successfully adopted with Heine type boilers to increase capacity considerably over rated capacity and still maintain fair efficiency?

A. J. MacDougall, Toronto Ry., Toronto.—(a) We have not installed vertical baffle plates in Heine type boilers. (b) We have changed vertical baffling to horizontal baffling on top and bottom rows of tubes but did not put an additional row of baffles on top and middle row of tubes. An additional baffling on top of middle row of tubes gives no benefit which may not be obtained by regulating the flow of gases by proper operation of the dampers. An additional horizontal baffling where there is a poor draught will reduce the capacity of the boiler, as with the additional baffling the same volume of gases have to pass through half the area and travel twice the distance. (c) To obtain considerable capacity over rated capacity of boiler, more coal must be burned. This may be done, either by means of better coal, increased grate area, mechanical draught, or mechanical stokers. The best method is to install mechanical stokers, preferably of the inclined underfeed type, with forced draught. By this means 300% of rating may be obtained with but little loss of efficiency.

**Flats on Commutator.**—One of our substations is equipped with two 300 k.w. 6-phase rotary converters which are connected to the secondaries on the same bank of transformers. We have had considerable commutation trouble. These rotaries are operated alternately. Four flat spots 90 deg. apart developed on the commutator on each rotary. Have any member companies experienced similar trouble, and if so, what was found to be the cause?

Wm. Volkmann, Toronto Ry., Toronto.—We have had somewhat similar trouble on our 1,000 k.w. 600-volt railway rotaries, developing either 6 or 12 spots. Your machines are apparently four or eight pole with a black spot for each pole or every other pole. This can be caused by high commutator bars in one spot gradually causing the four spots, high mica, by poor connection in armature, by poor equalizer connections in armature, by poor connections from collector ring to armature, by high resistance short between armature turns caused by dirt, etc. After having repaired or eliminated all or any of the faults noted above, it may be found advisable to undercut the mica in the commutator, so as to eliminate any future trouble from this point.

**Diameter of Car Wheels.**—We are investigating the matter of placing 36 in. rolled steel wheels under our passenger cars in place of the 34 in. wheels. We have four W. H. 93A motors, 50 h.p. each, one K14 controller, pinion 25 teeth, gear 62 teeth, Baldwin interurban trucks, 34 in. rolled steel wheels with 5½ in. axles. (a) What benefit would the change be to us? (b) Would it enable us to keep our cars on schedule time better than at present? (c) Would it take more or less power, and be harder or easier on our power plant and substation? (d) What are the objections to changing from 34 to 36 in. wheels, and also what are the advantages?

G. Gordon Gale, General Manager, Hull

Electric Co., Hull, Que.—(a) Better motor clearance when treads have worn to minimum thickness. (b) If motors are not now working at full load cars would maintain better schedule. (c) It would take more power. (d) Objections are, increased height from ground to first step, increased cost of wheel, increased weight of wheel. The 36 in. wheel would have a longer life.

**Conductors and Refunds.**—What are general instructions to conductors in cases where passengers pay fare twice? For example, passenger tenders 25c. and same is registered and then only three passengers board car; or if five passengers board the car the first pays the fares, and one of the following pays also. In each case a refund is requested.

G. Gordon Gale, General Manager, Hull Electric Co., Hull Que.—On request of passenger, refunds are made through the office on receipt of full report from conductor. These refunds are of rare occurrence.

**Radius of Curves.**—Very short radius curves are guarded inside and out; (a) What is the minimum radius where the guard on the inside only is necessary? (b) What is the minimum radius where no guard is required at all?

J. G. Smith, Track Superintendent, Toronto Ry.—(a) 40 ft. radius in city practice, 8 ft. to 8½ ft. wheel base. (b) 100 ft. radius in city practice, 8 ft. to 8½ ft. wheel base.

**Special Track Work.**—Under your practice, both from the physical and accounting standpoint, what is the definition of the term "track special work," and what forms of track structure are included thereunder? What are the reasons for such practice?

J. G. Smith, Track Superintendent, Toronto Ry.—Any portion of track wherein two rails cross each other, whether curved or straight, or where two rails meet each other and have to be machined or planed so as to form a junction, and requiring to be bolted, cast, or welded together, may be termed "special track work." This would include turnouts, crossings, single, or any number of curves that required switches, mates, frogs, etc., for the make up of an intersection. The reasons for this practice are: First, for defining exact locations; Second, excessive cost above straight track; Third, enquiry to manufacturers being common practice to denote the above as special track work; Fourth, Accounting Department maintenance charges which are under account numbers.

**Track Tenders' Reports.**—Do curve greasers and track sanders report to the Way or Transportation Department?

J. G. Smith, Track Superintendent, Toronto Ry.—To the Way Department.

**Railway Spike Heads.**—Standard hook head railway spikes, have an angle of 103° made by the body of the spike with the underside of the head. This provides for their use with A. S. C. E. and other rails having a "base angle" of 13°. Most electric railway rails of the girder type have a "base angle" of 10°. The following questions then arise: (a) Would there be any gain in the holding power of the spikes if the angle of their heads were changed to 10° to suit the rail angle? (b) If there is an object in making these angles the same for standard T rail work, is it not logical to assume that they should agree in girder rail work, even at the inconvenience of carrying the two styles of spikes in stock?

W. F. Graves, Chief Engineer, Montreal Tramways Co.—(a) Owing to the inaccuracy of driving spikes, the change in the angle of the body of the spike with head of 3° would not, in my opinion, affect the holding power of spike. (b) In theory this is logical, but

in practice the inconvenience of carrying two styles of spikes is very great.

**Rail Corrugations.**—(a) What type of rail and section, whether T or girder, 7, 8, or 9 ins. in depth, have shown least effects from corrugation? (b) What type of substructure is used: Stone, gravel, or cinder ballast; solid concrete; concrete slab; ballast under ties, with concrete between ties? (c) Type of paving?

W. F. Graves, Chief Engineer, Montreal Tramways Co.—(a) T rail of the 7 in. type. (b) Stone, gravel or cinder ballast under the ties with concrete between ties for paving foundation. (c) Brick and granite.

**Tie Rod Construction.**—Is it advisable to use tie rods with the following construction? 7 in. 70 lb. T rail, steel ties weighing 9½ lbs. per foot, 3 ins. high, 7 ft. long, spaced 5 in. centres, concrete base 5 ins.; concrete under ties 6 ins. deep, 18 ins. wide, 1 ft. 6 ins. long; brick pavement between rails and 1½ ft. outside of each rail; single truck cars weighing 20,000 lbs. operated?

W. F. Graves, Chief Engineer, Montreal Tramways Co.—Yes.

**Soliciting Business.** What do you find to be the best method of soliciting passenger, freight and express business, so as to increase earnings? A brief outline of such systems as have been found in practice to be profitable, will be appreciated. C. L. Wilson, Assistant Manager, Toronto & York Radial Ry, Toronto.—By carefully following the possible routes of shipment, and ascertaining from the consignees in the district where your railway serves, the business they are doing and where it originates, and following it up. Our best results, we feel, have been obtained by systematically calling on the consignees along the railway and listening to the complaints and suggestions which they have to offer.

**Fares on Interurban Railways.** Should a larger cash than ticket fare be charged on interurban railways; how should the system be handled? C. L. Wilson, Assistant Manager, Toronto & York Radial Ry., Toronto.—From our experience we feel that the cash fare should be higher than the straight line tickets sold by agents and offices, and as far as possible the greater percentage of the fares collected should be covered by agent and station tickets. Arrangements with storekeepers along the road can be made for a small amount per annum to act as agents for the company.

**Packing of Package Freight.** (a) Are strawboard, fibreboard, or pulpboard boxes, as specified in the official classification, of sufficient strength for goods handled by electric railways, when the diversified character of the load, necessary in single unit distributing cars is considered? (b) Do any member companies publish exceptions covering the handling of glass and glassware when so packed? C. L. Wilson, Assistant Manager, Toronto & York Radial Ry., Toronto.—(a) We do not think they are of sufficient strength or proper. (b) We handle this class of material under the Canadian Freight Classification, which permits of refusal by the railway company if the packing is not considered sufficient, and further, glassware is shipped entirely at owner's risk.

**Advertising Expenses.** What percentage of gross earnings should be appropriated for advertising? C. L. Wilson, Assistant Manager, Toronto & York Radial Ry., Toronto.—The amount which should be set aside for advertising should depend entirely on the class of business and district served. Last year we did not expend one-tenth of 1% of gross earnings on advertising.

**Folding Steps on Old Cars.** Considered from an accident standpoint, does it pay to equip old cars with folding steps? C. L.

Wilson, Assistant Manager, Toronto & York Radial Ry., Toronto.—Providing the old cars could be so altered as to have the steps fold in combination with the doors closing, would consider it advisable.

### Edmonton Property Owners' Association and the Radial Railway.

The Edmonton, Alta., Property Owners' Association has received a report from a committee of five of its members, P. E. Butchart being chairman and F. R. Coutant, Secretary, which was appointed to investigate the operations of the Edmonton Radial Ry., to find out the reasons for the losses sustained, and to offer suggestions as to how these losses might be remedied.

The committee finds that the system consists of 53 miles of line, on which 86 cars are being operated. It is capitalized at something over \$3,000,000. This capitalization is about \$1,000,000 in excess of the capital expenditure on the 71 mile system in Calgary, and about the same amount in excess of the Ottawa system, which has approximately the same mileage and requires 199 cars for its operation. The interest charges amount to \$143,000 and in addition \$170,000 is being provided to bring the capitalization down to a point more closely corresponding to the physical value, for depreciation, etc. No suggestion can be offered on this point, as the expenditures have been incurred, and the charges must be met. One point, however, is referred to, viz., the Highlands extension. This was built under an agreement with Magrath and Holgate and it is claimed that it has resulted in a loss of \$6,000 to the city, partly on capital and partly on operation account. The loss on capital account appears to be due to a lack of definiteness in the agreement, and the loss on operating account appears to be "absurdly low in comparison with the loss per mile shown by the other mileage of the utility."

"It is, however, in matters of maintenance and operation that great savings can and will eventually be made," the committee reports, and observes that apart altogether from charges upon an excessive capitalization "sufficient value is not received" for the expenditure on operation and maintenance. Independently of the depreciation charge the system shows a loss. The total deficit (including capital charges, depreciation, operation and maintenance) in 1914, was \$30,000 in excess of that of 1913, notwithstanding considerable reductions in operating expenses. The committee estimates that the deficit should not have been increased by more than \$3,000 in that period, and adds "We are at a loss to understand the heavy increase."

After reviewing the operation charges under the several headings:—Power, maintenance of ways, structures and equipment, transportation charges and equipment—the committee points out that it costs 24.8 cts. a car mile to operate the line, of which 2,500 is "dead" mileage per month, an increase of 2,400 a month in a year. The expenditures in most departments have increased, and it is shown that during 1914 it cost \$3,065.26 to handle freight from which \$3,012.47 was received, while in 1913, three times as much revenue was received from this source, at the same cost, and in the first three months of 1915, freight receipts were \$1,257.45, while the cost of handling the freight is given as \$55.70.

The committee is of opinion that the amount of power used for the operation of cars is excessive, and could be considerably reduced by more careful instruction of the motormen. It is suggested that by the use of one-man cars on six lines, about \$50 a day could be saved in wages. The car

schedule could be improved in the public interest; the 5c. fare system with transfers is considered inelastic, and it is suggested that consideration be given to the zone system. Some improvements are suggested in connection with the cars, notably a lowering of the high step, which prevents ladies and children boarding them readily; and the use of safety appliances, particularly on the high level bridge, would give people greater confidence and induce more travel.

The committee is of opinion that the system has not been over extended, and concludes by observing that while the March statement shows that considerable economies have been made, further savings could still be made, in the administration and other departments without impairing the efficiency of the system.

Following are the earnings and expenditures for the four months ended April 30, compared with the corresponding period of 1914:—

	1914.	1915.
Passengers carried .....	4,897,008	3,724,023
Gross earnings .....	\$207,397.54	\$185,888.93
Gross expense .....	298,533.95	236,164.93
Surplus on operation .....	18,289.11	48,489.58
Total deficit including fixed charges and depreciation .....	91,136.41	50,275.90

### Jitney Regulation Required in Toronto.

The Toronto Mail and Empire says:—"In most American cities where the jitney has appeared it has been found necessary to regulate it. In this city the jitney is not only competing against the street railway company and the taxicabs, but it is competing against the citizens. Since the city of Toronto receives one dollar out of every five that the Toronto Railway collects the city is losing one dollar out of every five that the jitney service wins from the company's service. In other words, out of every five jitneys one is engaged exclusively in depriving the city of Toronto of revenue, and is doing its share to increase the rate of taxation. Should the industry grow to sufficient proportions it might materially reduce not only the gross amount that the Toronto Ry. Co. is obliged to pay to the city of Toronto, but the percentage as well. On this account the citizens have a special reason for regulating the jitneys, which, while they are no doubt supplying a public demand for cheap and rapid transportation, are doing so to some extent at the expense of the taxpayer.

"Another reason for their strict regulation lies in the fact that some of the drivers are persons from whom an action at law for damages might fall to obtain redress. A jitney driver who ran down and injured a pedestrian might be sent to jail if criminal negligence could be proved, but how many of them are men of sufficient substance to financially indemnify those whom they might injure? Since so many of the jitney cars are old ones, it is all the more necessary that they should not be unduly crowded, and that passengers should not be permitted to sit on the doors, and thus run the risk of serious harm. The jitney driver depends upon proceeding at a high rate of speed for his living. The faster he goes the more money he makes. It will be seen, therefore, that his interest is not exactly identical with the interest of the great majority of citizens who do not patronize the jitneys and who may be imperiled by their operations."

The first convention of the Brotherhood of Railway Signalmen of America to be held in Canada took place at St. Thomas, Ont., June 17, where the only lodge of the order is located. W. J. Pettit, La Sallette, Ont., was elected Grand Chief Signalman for the current year.

### Proposed Absorption of Halifax Electric Tramway Company.

Halifax, N.S., press dispatch, June 16.—The Nova Scotia Tramways and Power Co. took the first step today to carry into effect the legislation enabling the company to take over the Halifax Electric Tramway Co.'s properties and the Nova Scotia Light and Power Co.'s hydraulic powers on the Gaspereau. The granting of the charter was strongly opposed by the City of Halifax. The step now taken comes in the form of a petition to the Board of Public Utilities Commissioners, which was filed today, asking for permission to proceed. The Legislature provided, in granting the charter, that before anything was done the consent of the Public Utilities Commissioners must be obtained. A public hearing on this petition will be held on July 7th.

The petition asks that the capital of the company be increased to \$10,000,000; that \$5,000,000 first mortgage 30-year gold bonds be issued at 5%, \$3,000,000 to be presently issued, and the balance of the future requirements only to be issued against 80% of expenditures on capital account when the earnings of the company for the fiscal year preceding any proposed issue have been at least one and three quarters times the net charges on the bonds already issued and on those proposed to be issued, and when such issue is approved by the Public Utilities Commissioners. The petition also asks the board to approve of \$3,000,000 par value of said bonds, 32,500 shares of preferred stock and 62,500 shares of ordinary or common stock, to the order of the Nova Scotia Light and Power Co. The petition is followed by schedules giving a description of the Halifax Electric Tramway Co.'s property and plant, of the power sites, lands and privileges on the Gaspereau River, a description of the equipment of the cost of development of the Gaspereau made by J. G. White and Co. of New York, which is placed at \$1,534,960.

The offer of the Nova Scotia Tramways and Power Co. states that the net earnings will be sufficient to pay between 5 and 6% on \$12,500,000.

### Interurban Cars for Toronto Suburban Railway.

The Toronto Suburban Ry. has ordered 6 interurban cars for its new Toronto-Guelph line that will be a novel departure in interurban rolling stock in this country. They will be of the centre entrance type, of steel frame construction throughout, it having been decided that this type offers distinct advantages for interurban service. The principal point of advantage lies in separating the baggage compartment entirely from the main passenger section of the car, at the front or motorman's end, it not being necessary for passengers to pass through or around this section as is usual in the end entrance type of car.

The cars will be about 59 ft. long, with seating accommodation for about 70, according to the present tentative plans, although it is possible that these dimensions will be altered, as it is desired that the maximum weight of car be limited to 75,000 lbs. They will be designed for single end operation, with the baggage compartment just back of the motorman. Between that point and the centre of the car will be the smoking compartment, with the rear half of the car for the main passenger section. The rear of the car will be rounded, forming a kind of observation end. They will be equipped with four 80 h.p. motors, but the type of truck has not been determined. The car bodies will be built by the Preston Car and Coach Co.

## Canadian Electric Railway Association's Annual Meeting.

The annual meeting held at the Chateau Frontenac, Quebec, June 21 and 22, was attended by officials of member companies throughout the Dominion and was very successful in every way. The chair was occupied by the President, C. B. King, Manager, London St. Ry., who opened the meeting with an address.

The Secretary-Treasurer, Acton Burrows, Managing Director, Canadian Railway and Marine World, presented a very comprehensive report dealing with the Association's work during the past year and covering a wide range of other subjects including the following: Membership; representation at American Electric Railway Association's convention; representation of electric railways on Government maps; compensation for transportation of postmen; customs duty on continuous rail joints; workmen's compensation acts; Ontario legislation respecting electric railways; hydro electric railways for Ontario; responsibility for watchmen at steam railway crossings; Toronto Suburban Ry. Co.'s appeal granted by British Privy Council; judgment in the Vancouver bridges case; speed of cars in cities; automobiles passing standing electric cars; public utilities commission for Alberta; Manitoba's Public Utility Commissioner tells why electric railways cannot be extended or fares reduced; standard specifications for steel rails; inquiries for information from non member companies; transportation of postal mail; transportation of baggage, parcels, etc.; transportation of newspaper representatives; transportation of soldiers on electric railway cars; comparative gross earnings of electric railways; data respecting street railway traffic; percentage payments to cities; contracts for advertising in cars; wages of employes; accident liability, insurance and workmen's compensation acts; use of pilots on cars on city streets; use of trolley rope retrievers or catchers; lavatory arrangements on interurban cars and at stations; jitney automobiles. The whole of the first morning session was devoted to the reading of the report and its discussion.

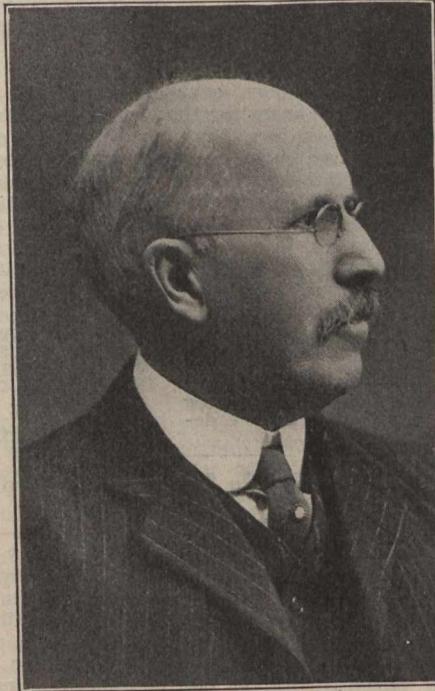
The question of the requirements of the Ontario Government in regard to returns for taxation purposes was introduced by J. D. Fraser, Director and Secretary-Treasurer, Ottawa Electric Ry., and fully discussed.

W. F. Graves, Chief Engineer, Montreal Tramways Co., as chairman of the special committee on the proposed standardization of steel rails for electric railways, presented a very comprehensive report which was referred to the incoming executive committee and will be again taken up by the Association with a view of securing uniformity of practice.

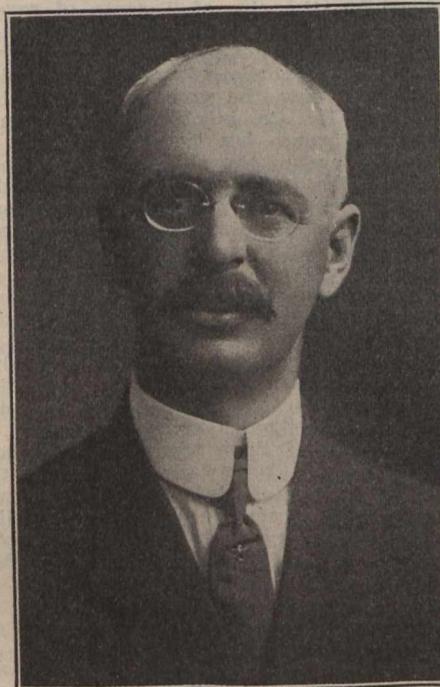
The following copyrighted papers were read: "Development of tourist traffic on observation cars," by R. M. Reade, Superintendent, City Division, Quebec Railway, Light, Heat & Power Co.; "A proper accident department," by C. L. Wilson, Assistant Manager, Toronto & York Radial Ry.; "Jitney competition," by E. P. Coleman, General Manager, Dominion Power & Transmission Co.; "Coasting," by A. Gaboury, Superintendent, Montreal Tramways Co.; "Economy in the electric railway repair shop," by E. A. W. Turbett, Mechanical Superintendent, Quebec Railway, Light, Heat & Power Co.; "Methods to minimize fire risks and secure reductions of premiums," by J. H. Ryan, New York. As above mentioned these papers are copyrighted and will be printed in the Association's annual proceedings and distributed to officials of member companies.

Officers, etc., were unanimously elected as

follows: President, James D. Fraser, Director and Secretary-Treasurer, Ottawa Electric Ry.; Vice President, E. P. Coleman, General Manager, Dominion Power & Transmission Co.; Honorary Secretary-Treasurer,



James D. Fraser,  
Director and Secretary-Treasurer, Ottawa  
Electric Ry. Co., and President, Canadian  
Electric Railway Association.



E. P. Coleman,  
General Manager, Dominion Power and  
Transmission Co. Ltd., and Vice President,  
Canadian Electric Railway Association.

Acton Burrows, Managing Director, Canadian Railway and Marine World, re-elected for the ninth consecutive year; Executive committee: A. Eastman, Vice President and General Manager, Windsor, Essex & Lake Shore Rapid Ry.; A. Gaboury, Superintendent, Montreal Tramways Co.; H. G. Matthews, General Manager, Quebec Railway,

Light, Heat & Power Co.; M. N. Todd, President, Galt, Preston & Hespeler St. Ry.; C. L. Wilson, Assistant Manager, Toronto & York Radial Ry.; Assistant Secretary, Aubrey Acton Burrows, Business Manager, Canadian Railway and Marine World.

The officials of member companies attending the meeting were given every opportunity of thoroughly inspecting the Quebec Railway, Light, Heat & Power Co.'s unique system. On the afternoon of the first day they were taken by special car over the suburban line to Ste. Anne de Beaupre, which is operated by both electricity and steam, and which last year carried over 2,000,000 pilgrims to the shrine. On the return journey one of the company's power houses at Montmorency Falls was inspected. On the afternoon of the second day they were taken over the company's city division in a special observation car and had every opportunity of carefully studying the successful operation of a line handicapped by narrow streets and heavy gradients, and inspection was made of the St. Malo car barns. The officials of the Quebec Railway, Light, Heat & Power Co., especially H. G. Matthews, General Manager; R. M. Reade and J. A. Everell, Superintendents; W. J. Lynch, Treasurer and Comptroller; L. Burran, Chief Electrical Engineer; P. Hamel, Secretary, and C. J. Pigot, Maintenance of Way Engineer, were very attentive to the visitors, furnishing all information in their power and doing everything possible to make the meeting a most successful one.

### The Electric Railway Situation in Toronto.

R. C. Harris, Commissioner of Works, has reported to the Committee on Works that it is expected to lay the report of a special investigation into the proposals for rapid transit in Toronto before the City Council, by Nov. 1, and until this is done he considers it would be unwise to project additional civic street railway lines.

The particular matter calling forth this report was the projected lines on Annette St., and Pacific Ave., West Toronto, within the area over which the Toronto Suburban Ry. holds the franchise. The construction of these lines was ordered by the Ontario Railway and Municipal Board, and the company expressed its willingness to abandon its franchise over these streets if the city would not require the enforcement of the order. This matter is being considered by the City Counsel's department and deputations have waited upon the Commissioner to argue both for and against the building of the lines. The Commissioner expressed the opinion that the governing consideration as related to conditions in West Toronto is that of rapid transit rather than local accommodation. This question of rapid transit is being considered by the Chief Engineers of the Hydro Electric Power Commission of Ontario, and of the Harbor Commission and the Commissioner of Works, with a view of co-ordinating the electrical railway projects for which Ontario Hydro Electric Power Commission is responsible, with the requirements of the Harbor Commission, and the needs of the city, having in mind the acquisition by the city of the Toronto Ry., when its franchise expires in 1921. The report upon this matter is that to which the Commissioner of Works refers.

**Canadian Society of Civil Engineers.**—A branch has been organized at Regina, Sask. The officers for the current year are,—Chairman, O. W. Smith; Secretary, L. W. Wynne-Roberts; executive committee, A. J. McPherson, F. McArthur and I. N. DeStein.

## The Jitney Automobile Situation.

The jitney situation on the United States Pacific Coast is stated to be having a hard fight for its existence and to be slowly but surely on the decline. The reason for this is stated to be the new type of motor bus which is being put on in many cities and which is reported to be more economical in its operation than automobiles. Another reason for the decline of the jitney is the regulations which have been put in force all over the country which have resulted in the elimination of irresponsible drivers, and the poorer class of vehicles, and are regulating the routes operated and the number of passengers carried. The New York State Legislature has passed a law authorizing the regulation of the traffic, and under it the cities of Syracuse, Utica and Schenectady have passed bylaws. The putting in force of these regulations has brought about the removal from the streets of all unlicensed cars, in Schenectady. In Syracuse the license rates run from \$75 for a five passenger car, to \$200 for a 16-passenger car, while the bonds required run from \$10,000 for the five passenger cars to \$20,000 for the 16-passenger cars.

In Canada, while there was an increase during June in the total number of jitney cars being operated in the different centres, there are indications that with the strict enforcement of the regulations, which have been passed in some places, considerable numbers of jitneys are being taken off the service on the better travelled routes, and are being used in an endeavor to open up new routes. There does not appear to be any extension of the traffic in Quebec and other eastern provinces, while in Ontario the area within which the jitneys are operating is increasing, although in Toronto, the jitney traffic, particularly along Yonge St., is not so dense as it was a month ago. A larger number of routes are being operated, and there are also a number of irregular jitneys operating without any regular schedule. The City Treasurer is reported to have said that the loss of revenue to the Toronto Ry., and consequently to the city, is not entirely due to the jitney traffic, an opinion in which the Toronto Ry. management agrees. City officials have had men engaged in collecting statistics of the jitney traffic, but these are not yet available for publication. The information, however, has been given to the Police Commission, which regulates the traffic. As a result a bylaw has been drafted which was given two readings at the meeting of the City Council, June 14. The license fee was fixed at one dollar a month and the other regulations require that a seat be provided for each passenger carried; that no one shall sit on the sides of, or stand up in the cars; that drivers shall be prohibited from smoking when carrying passengers; that the jitney shall be kept clean and in good condition; that the council shall set apart stands at the terminal points of the jitney routes, and that a bond of \$1,000 shall be put up by each owner.

On June 15 application was made to the Toronto Board of Control on behalf of A. B. McBride for permission to operate motor buses in the city. A list of 13 routes was given, and an agreement was asked for. The Chief Constable saw no objection to the operation of the buses, but a joint report from the City Solicitor, the Chief Constable, and the Commissioner of Works said:—"The application seems to contemplate an agreement extending over a period of years, and practically an exclusive franchise or right to operate motor buses. In other words, the company wishes an agreement as to time, and also to prevent opposition. This, we think, the city is not in a position to give.

If anyone chooses to inaugurate a system of transit by means of motor buses, properly licensed and regulated, there is nothing to prevent this being done at any time; but the city cannot enter into an agreement and afford protection either as to the length of the franchise or freedom from opposition without complying with the restrictions above quoted." The Board decided to adjourn the consideration of the matter.

The Toronto Jitney Association has been incorporated under the Ontario Companies Act, with an authorised capital of \$40,000 to deal in automobiles and to operate the same in the transportation of passengers and freight, the provisional directors being:—G. Gregory, A. Trowther and J. W. Bicknell.

In the vicinity of Toronto, in addition to the routes mentioned in our last issue as being served by jitneys, a service is being given along the Lake Shore Road to Long Branch, paralleling the Toronto and York Radial Ry., and from West Toronto to Weston, competing with the Toronto Suburban Ry. The Toronto Jitney Association has started a route to Balmy Beach.

In Belleville, Ont., Belleville Jitneys, Limited, with S. E. Carman, S. R. Burrows and C. R. Burrows as provisional directors, has been organized, and some cars are being operated. A jitney service is being operated between Oakville town and the G.T.R. station there, which is a convenience to "commuters." At a recent meeting of the Hamilton City Council's Legislative Committee arrangements were made with the local jitney association for the further regulation of the traffic. In the course of the discussion it was stated that the most profitable routes for jitney traffic are King and Barton Streets, while no profit is made on the route on Main St., and that the running expenses are 7½c. a mile. A jitney service was started in London, Ont., Jan. 5, under the management of C. Swayzie, which is catering principally for the military traffic. A suggestion at the city council, June 15, to draw up a bylaw to regulate the traffic was not favorably received.

At the Brantford City Council, July 14, the suggestion was made that the city should operate jitneys to and from West Brantford, and other points not reached by the municipal railway.

Up to May 31, the Manitoba Government had issued licenses for 6,700 automobiles, and there are also about 700 motor cycles in the Province. The increase in the number of auto licenses issued is stated to be almost entirely due to the jitney traffic, owners having sold their old cars to chauffeurs for use as jitneys and to have bought new cars. The working of the new traffic bylaws has been watched by the police, and some minor amendments were decided upon, June 9, the most important of which is that autos not being used for hire may stand within a certain restricted area, from which they were excluded under the bylaw. Recent reports state that there are 572 cars being operated in Winnipeg, of which 428 have been licensed under the jitney bylaw.

The Trade and Labor Council at Saskatoon, Sask., while of opinion that the city's electric railway could give better service to the public, has called upon all union men to patronize it rather than the jitneys; while the Trades and Labor Council at Regina, Sask., has expressed the opinion that the coming of the jitney there will have done some good if it brings about an improvement of service upon the municipal railway.

At Calgary, Alta., a bylaw has been drafted fixing \$5 a year per 18-in. seat as the license fee, and \$2,500 for three cars, and \$5,000 for more than three cars, as the

amount of the bond to be entered into before a license can be issued. It also authorizes the commissioners to name the streets on which jitneys may or may not be operated, to define the routes to be followed, and to generally regulate the traffic. At present the only jitney traffic is from the end of the municipal railway to the military camp at the Sarcee Reserve.

Prior to the putting in operation of the "tango" 8 for 25c. no transfer tickets by the British Columbia Electric Ry. there were 664 cars operating under jitney licenses in Vancouver. With this and the putting in force of the city bylaw necessitating the filing of bonds, this number has been reduced to about 250 cars, of which about one half are operating independently of the association. The motor traffic in the city has heretofore been regulated under bylaw 952, which has been amended and extended by the passing of bylaw 1218, since the new legislation respecting jitney traffic was passed. The two bylaws as consolidated, have been published in pamphlet form. There are 60 regulations. The schedule fixes the license fee at \$25 for a seven passenger car, \$50 for larger cars, and \$2 for the driver. Drivers are to be examined and cars are to be inspected before licensing by the Inspector of Motor Vehicles, who may appoint assistants to see that the cars used for hire shall be kept clean, dry and in good repair. The regulations also provide for the conduct of drivers when in charge of motors, the number of persons to be carried, the point on the streets where they may be stopped, the sign to be carried on the cars, and for the closing of the right hand doors, so that passengers must enter and alight by the left hand door. Provision is made for the hearing of complaints for breach of regulations for which the council may suspend licenses. The bond required to be filed is to the extent of \$1,000 for an individual claim, and of \$5,000 for a group of claims arising out of any one accident.

A jitney service has been organized at Vernon, B.C., in connection with the military camp there.

## The Montreal Tramways Franchise Question.

The Montreal Board of Control decided, on June 8, to write to the company asking whether it would build the various lines necessary to provide increased accommodation on the city guaranteeing the cost of the lines, and to provide for the cost of their operation. This resolution was passed on motion of Controller Duncan McDonald, ex-General Manager of the Montreal Tramways Co., who argued that as the company could not build the lines owing to the difficulty of raising money in the face of the short life of the present franchise, it might possibly do so if the city guaranteed the money. President Robert replied, June 10, that the proposal submitted could not be entertained by the company, etc. The matter came up again for consideration by the Board of Control, June 11, but was adjourned. (June, pg. 229.)

**A Jitney Decision in Illinois:**—The Illinois Public Utilities Commission held jitney buses to be public utilities. Ruling in the case of the Jacksonville St. Ry., against the L. F.-O'Donnell Transportation Co., Commissioner O. P. Thompson held that jitneys render a public service such as to bring them under the intent of the utilities law and that they must incorporate and seek certificates before operating. The commissioner also ruled jitneys may not operate along streets where they become a parallel competition to a railway.

### Electrification of Schomberg and Aurora Railway.

The Schomberg and Aurora Ry., a subsidiary of the Toronto and York Radial Ry., is being electrified. It is 15 miles long, extending from Schomberg, Ont., to a junction with the T. & Y.R.R. at Yonge St., near Bond Lake, about 4 miles south of Aurora, and has been operated by steam power. The rolling stock consists of a steam locomotive, 2 passenger cars and 15 flat cars.

The S. & A.R. Co. was incorporated by the Dominion Government in 1896 to build and operate a line from a point on the G.T.R. Toronto-North Bay line, between King and Newmarket, to or near Schomberg. This power was exercised shortly after and the line constructed. The Dominion Parliament in 1900 further empowered the company to extend its line southeasterly to Oshawa, and northwesterly through Shelburne to Durham, but this was never proceeded with. The latter act also gave the company power to enter into an agreement with the T. & Y.R.R. (then the Metropolitan Ry.), to convey or lease its line. In 1904 the T. & Y.R.R. purchased the line.

The electrification will be similar to that of the T. & Y.R.R., for which it will form a feeder. The trolley will be a 4-0 round copper wire, with a 4-0 feeder. Power will be delivered to the line at the line voltage of 600 volts from the Bond Lake substation. T. & Y.R.R. rolling stock will be used. The work is being done by the T. & Y.R.R. line crew in its spare time, no extra forces being employed on the work.

### Jitney Regulation in New York State.

The New York State Legislature has passed an act to amend the transportation corporations law, in respect to stage routes, bus lines and motor vehicles carrying passengers for hire in cities.

"The laws of 1909, chap 219, sec. 25, are amended to read as follows:

25. Additional persons and corporations subject to the public service commissions law. Any person or any corporation who or which owns or operates a stage route, bus line or motor vehicle line or route or vehicles described in the next succeeding section of this act wholly or partly upon and along any street, avenue or public place in any city shall be deemed to be included within the meaning of the term 'common carrier' as used in the public service commissions law, and shall be required to obtain a certificate of convenience and necessity for the operation of the route or vehicles proposed to be operated, and shall be subject to all the provisions of the said law applicable to common carriers."

The following section is added to article 4 of said chapter as follows:

"26. Consent required. No bus line, stage route nor motor vehicle line or route, nor any vehicle in connection therewith, nor any vehicles carrying passengers at a rate of fare of 15 cts. or less for each passenger within the limits of a city or in competition with another common carrier which is required by law to obtain the consent of the local authorities of said city to operate over the streets thereof shall be operated wholly or partly upon or along any street, avenue or public place in any city, nor receive a certificate of public convenience and necessity until the owner or owners thereof shall have procured, after public notice and a hearing, the consent of the local authorities of said city, as defined by the railroad law, to such operation, upon such terms and conditions as said local authorities may prescribe, which may include provisions covering description of route, rate of speed,

compensation for wear and tear of pavement, improvements and bridges, safeguarding passengers and other persons using such streets, and no such operation upon the streets of any such city shall be permitted until the owner or operator of such vehicles or proposed line or route shall if required by such local authorities have executed and delivered a bond to such city in an amount fixed by said local authorities and in the form prescribed by the chief law officer of said city with sureties satisfactory to the chief fiscal officer of said city, which bond may be required to provide adequate security for the prompt payment of any sum accruing to said city, and the performance of any other obligations, under the terms and conditions of such consent, as well as adequate security for the payment by such owner of any damages occurring to, or judgments recoverable by, any person on account of the operation of such line or route, or any fault in respect thereto."

### Winnipeg Electric Railway Protests Against Jitney Competition.

Wilford Phillips, Manager and acting Secretary, Winnipeg Electric Ry. wrote the City Clerk of Winnipeg recently as follows: "I am instructed by the directors to inform the city council of the position taken by this company with reference to the attitude of the council towards the jitneys as a means of transporting passengers along the streets and highways of the city in competition with this company. In the first place, we contend that the attitude of the council is a violation of the contract entered into with us in pursuance of city bylaw 543, whereby we were given for valuable consideration exclusive rights for our transportation system on the city streets. In the next place, the competition is extremely unfair. The money invested in this undertaking was so invested on the faith of the contract we have referred to and many onerous terms were imposed, in the way of paying 5% of our gross revenues to the city, an annual car tax on rolling stock, cost of pavements and taxes upon property. The city is now permitting competition by parties who have practically no capital invested, and whose only object is to make a little ready money temporarily. There is no doubt that this competition is being allowed by the city. Naturally the British capitalists who have their money locked up in Canada look to the local authorities for protection. Considerably more than half the capital invested in the street railway system here is British money. One of the problems the city has to face at the present time is that there is no British capital coming in for investment. When conditions change, unless during this strenuous period the capital already in the country has been protected, it will be very difficult indeed to get more in. If this competition is allowed to continue the company will necessarily be compelled to cease making further extensions, and indeed will find it difficult to obtain capital. This would not be a good thing for the city at large. I do not suppose it is necessary to point out also the interest the city has in the success of our undertaking. No doubt it fully appreciates that without comment upon our part. The same remarks I suppose would apply to the council's duty to the public to protect them against the dangers occasioned in the operation of cars by irresponsible and unfit persons. If the city expects this company to maintain adequate service (and prevent still further reduction of the present service) the city will be obliged to do its part and eliminate unfair competition."

### Canadian Autobus Company's Offer to City of Montreal.

The Canadian Autobus Co. advised the Montreal Board of Control, June 22, through its Secretary, G. Renaud, that it had been experimenting with various types of busses and had finally approved of one tested in the city recently. It proposes to build these cars in Montreal and place them in service if an arrangement can be made under which the city will guarantee the company's bonds for \$3,000,000, upon the understanding that the service is to be inaugurated within 12 months, and half the profits paid into the city treasury.

The company's estimated income is shown in a table presented in the letter. The daily run of an autobus is placed at 150 miles, and the service, which would be operated by 300 busses, would therefore cover 45,000 miles a day. Allowing five passengers to the mile, this would mean 225,000 passengers a day. At 5c. each the passengers would contribute \$11,250 daily. Allowing 21c. a mile for expenses, the daily cost of operation would be \$9,450, leaving a net profit of \$1,800 daily, or \$3,375,000 for a year of 300 days. The net profit works out at \$540,000, of which the city's share, one-half, would be \$270,000.

Under the contract between the city and the company dated Aug. 22, 1912, the city was to receive shares in the company, and the present proposition is made with a view of getting out of any legal entanglements which might ensue between the city and the Montreal Tramways Co., through the city holding shares in the Autobus Co. The letter concludes: "It is understood, of course, that this proposition is made without prejudice to our contract still in existence with the city, but we desire you to notice that the acceptance of our offer would place the city in a position to give almost immediately a satisfactory service to distant wards such as Emond, Cote des Neiges, Ahuntsic and Bordeaux and others, which are to-day compelled to pay higher fares than other sections of the city."

### Wages on the Toronto Railway.

The employes are negotiating with the company in connection with a new agreement to take the place of the one signed in 1912 for three years, and which expired June 16. At a meeting of the men it was decided to ask for an all round increase of  $\frac{1}{2}$ c an hour, and some other requests were made for a change of certain conditions, which the men claimed would not affect the company in any way financially. Eventually it was decided to drop these requests, and intimate to the company that the men were willing to accept the old agreement for a further two years. In response to this the Toronto Ry. management stated that it was thought the agreement might be renewed for three years. At the time of writing (June 25) no decision appears to have been reached, but the men's agent is reported to have stated that if the two year extension is not accepted by the company, an application will be made for a board of conciliation to settle matters on the original proposition for an increase of  $\frac{1}{2}$ c an hour. The present rates of wages are: Motor-men and conductors first year 23 $\frac{1}{2}$ c, second year 25 $\frac{1}{2}$ c, third year 27 $\frac{1}{2}$ c; shed men, foreman 27 $\frac{1}{2}$ c, assistant foreman 24 $\frac{1}{2}$ c, motor and truck repair men, first year 23 $\frac{1}{2}$ c, second year 25 $\frac{1}{2}$ c, third year 27 $\frac{1}{2}$ c, and 4c an hour extra for Sunday work. The men pay for their uniforms the first year, pay half the second year, and thereafter are supplied free.

## Electric Railway Projects, Construction, Betterments, Etc.

**Brantford Municipal Ry.** The building which was utilized as a power house by the Brantford St. Ry. Co., immediately east of the G. T. R. Colborne St. Station, has been entirely refitted and is now being used as the general office of the Brantford Railway Commission and the City's Hydro Electric Commission, jointly under the management of L. G. Ireland.

The Eagle Place loop line has been completed and cars are being operated over it. (May, pg. 190.)

**Calgary Municipal Ry.**—The city commissioners of Calgary, Alta., have under consideration the building of a temporary line, 1.50 miles, towards the military camp on the Sarcee Indian Reserve. The material is on hand, and the labor cost is estimated at \$800. A motor bus line is being operated to the camp, but is not sufficient to cope with the traffic. The construction of the temporary line would also enable the city to handle the traffic more expeditiously than at present. It is estimated by T. H. McCauley, Superintendent, that the revenue from the line would average \$50 five days a week, and \$100 a day on Wednesdays and Sundays. (April, pg. 147.)

**Hydro Electric Power Commission of Ontario's Electric Railways.**—At a meeting of the Essex Hydro Electric Radial Association, recently, a resolution was passed pledging the association to use all legal means to prevent extension of franchises and charters to electric railway companies, and making this one of the principles of the association's constitution. Each municipality pays a fee of 50c per 1,000 of population and sends two delegates to the annual meeting. Officers for the current year are:—President, A. W. Jackson, Mayor of Windsor; First Vice President, C. H. Montreuil, Reeve of Ford City; Second Vice President, M. Swart-City; Third Vice President, G. man, Leamington; Fourth Vice President, J. O'Neill, Sandwich South; Secretary, J. B. Ducharme, Belle River; Treasurer, W. R. Woollatt, Walkerville. (June, pg. 227.)

**London St. Ry.**—We are officially advised that the company is rebuilding its single track on Ridout St., from Horton St. to Garfield St., 4,000 ft., and repaving the track allowance. The track will be relaid with 80 lb. A. S. C. T rail, supplied by the Algoma Steel Co., and a single track Y, of 108 lb. Some other track renewal work will be undertaken if the city council decides upon paving the streets. C. B. King, London, Ont., is Manager. (Mar., pg. 108.)

**Moncton Tramways Electricity and Gas Co.**—We are officially advised that it is expected to build about a mile of track from Main St. on Bonaccord St. to John St., to Union to Church St. extension at an early date, for which rails and ties will be required. Orders have been given Canadian Steel Foundries, Montreal, for switches, frogs, etc., for the double track work at the Main St. subway under the Intercolonial Ry. (June, pg. 229.)

**Montreal and Southern Counties Ry.**—The company is proceeding with the construction of its extension from St. Cesaire to Granby, Que., 16 miles. It is proposed to build a substation and car barn at Granby. Tenders have been invited for all necessary overhead material and bonds, and also for a 400 k. w. motor generator set, and other equipment for the substation. (May, pg. 190.)

**Montreal Tramways Co.**—We are officially advised that the company is building 1.1 mile of new track, and reconstructing a like

mileage on Notre Dame St., between First Ave., and Dominion Park, changing the location, so that when the new road is established by the city, the track will be in the centre of the road, instead of on the north side as at present; and is also reconstructing and extending the line between Dominion Park and Bernard Ave., approximately 4.3 miles of single track. The company has just completed the work of extending about one mile of single track from the Y at Bernard Ave. to the westerly limits of Montreal East, which work was started towards the end of 1914. During 1914 the company constructed approximately eight miles of single track in the municipalities of Montreal East and Pointe aux Trembles. All this track is of the company's no. 1 standard type, with the exception that the rails being used at present in the reconstruction and extension work are no. 87 L-399 section, while that used in the extensions in Montreal East and Pointe aux Trembles was no. 80 A.S.C.E. section. J. E. Hutcheson is General Manager. (June, pg. 229.)

**Niagara, St. Catharines and Toronto Ry.**—We are officially advised that the company proposes to build a station at Niagara-on-the-Lake, Ont., the terminus of its line from St. Catharines to the mouth of the Niagara River. E. F. Seixas, St. Catharines, Ont., is General Manager.

The new station at Niagara-on-the-Lake will consist of a station building 47 x 25 ft., with an open shed 48 x 20 ft., making a total length of 95 ft. by 20 ft. wide, with an overhanging roof 4 ft. The exterior of the building will be stone up to 5 ft., the balance being shingle construction, while the open shed will be carried on pillars resting on stone pedestals 5 ft. high. The interior of the station building will be finished with oak wainscoting 4½ ft. high, with metallic sidewalls and ceiling. This portion of the building will be divided into three apartments, waiting room, 20 x 25 ft.; ticket office, 20 x 15 ft.; and baggage room, 20 x 12 ft. The building is expected to be completed early in July.

**Ottawa and St. Lawrence Electric Ry.**—An order for the winding up of the Ontario and St. Lawrence Construction Co., which was formed for the building of the O. and St. L. E. R., was made at Osgoode Hall, Toronto, June 2, on the application of J. H. Rogers. G. T. Clarkson, Toronto, was appointed interim liquidator.

**Ottawa Electric Ry.**—Work was started June 6 on the pavement renewal work on Bank St., Ottawa, the Somerset and Britannia cars being temporarily rerouted. Particulars of the track work to be done were given in our last issue. (June, pg. 229.)

**Peterborough Radial Ry.**—We are officially advised that the Peterborough, Ont., City Council contemplates doing some new paving work which will necessitate certain changes in track. Nothing definite has been settled about the work, its extent or when it will be undertaken by the city. (Dec., 1914, pg. 558.)

**Regina Municipal Ry.**—The extension proposed to be built on Young St., Regina, Sask., is for freight service only, and connects the track leading to the city's new electric light and power plant with the C. P. R., in order to enable the city to handle cars of coal and other materials to and from the power house. The piece of track will be 3,500 ft. long, and will be laid on Young St., from 16th Avenue to Arcola St. The freight will be moved on the line by the city's motor haulage car. The estimated cost of the line and other work proposed to be done in connection with

the system is \$75,000. D. W. Houston is Superintendent. (June, pg. 229.)

**Sandwich, Windsor and Amherstburg Ry.**—We are officially advised that the company is constructing a second track on 0.66 mile of track in Sandwich, Ont.; and is paving and renewing a mile of track in Sandwich, and 0.25 mile of track in Amherstburg. Jas. Anderson, Windsor, Ont., is Manager. (June, pg. 229.)

**Sarnia St. Ry.**—We are officially advised that the company expects to start work at an early date with an extension of track from the corner of Christiania and St. Clair Sts., to Clifford St., and west along Clifford St., 0.5 mile. For this work the company is in the market for half a mile of rails, trolley wire, ties, etc. G. E. Wadland, Sarnia, Ont., is Manager and Secretary Treasurer. (Sept. 1914, pg. 554.)

**St. John Ry.**—In connection with the track renewal work at the corner of Princess and Sydney streets, St. John, N. B., some differences arose recently between the company and the city respecting the use of T rails, and it was subsequently agreed that the T rail might be used instead of the grooved rail, if concrete were used between the rails.

**Transcona, Man.**—The agreement with J. H. Kern for the building of an electric railway in the town having been disposed of, the Town Council is now in a position to consider the applications of W. J. Christie, and H. W. Adcock of Winnipeg for franchises, to negotiate with the Winnipeg Electric Ry., or to consider the building of a municipal railway, which is being advocated. (June, pg. 234.)

**The Transcona, Man., Town Council,** on June 10, expressed an opinion favorable to the proposition of H. W. Adcock, Winnipeg, for the building of a line from Winnipeg to Transcona. A 25-year franchise is being asked; the line to be built to Transcona by October and extended to the south side of the town by the spring of 1916. Gasoline is the motive power proposed. Cars similar to those in use at present between Lac du Bonnet and Point du Bois to be used. (June, pg. 234.)

**Toronto and York Radial Ry.**—We are officially advised that it is proposed to electrify the Schomberg and Aurora Ry., which extends from near Bond Lake, on the company's Metropolitan Ry., to near Lldoytown, Ont. Part of the material necessary for the purpose has been ordered.

**Windsor, Essex and Lake Shore Rapid Ry.**—We are officially advised that paving on the company's line in Windsor and Essex, Ont., is being done, and that in connection with this there will be some track renewals. Orders have been placed for a supply of oak ties. A. Eastman, Kingsville, Ont., is Vice President and General Manager.

**Winnipeg Electric Ry.**—We are officially advised that the company is making a one mile extension of its tracks on Marion St., St. Boniface, Man., for the purpose of giving a service to the Union Stock Yards, and has under consideration the renewing of half a mile of track on Osborne St., from Kylemore Ave. to River Park. Wilford Phillips is Manager. (June, pg. 229.)

The Dorchester Electric Co.'s plant and franchises were advertised for sale by auction, June 30, by the Royal Trust Co., on behalf of the bondholders. The Shawinigan Water and Power Co. is reported to be the owner of the majority of the bonds, and the sale is being made in order to simplify the reorganization of the company's affairs.

The London St. Ry. is having a number of its old cars remodelled at Preston, Ont., for p.a.y.e service.

## Electric Railway Notes.

The Regina Municipal Ry. ordered 28 headlights recently.

The Sandwich, Windsor & Amherstburg Ry. is in the market for 2 single truck p.a. v.e. cars.

The Halifax Electric Tramway Co. has ordered 6 closed city cars, 21 ft. long, from the Nova Scotia Car Works, for delivery by the end of September.

The Port Arthur, Ont., Electric Ry.'s north belt line was started on June 14 to be operated in either direction instead of one way only as formerly.

The British Columbia Electric Ry. started its observation car service in Vancouver, June 17, putting in operation a 25c fare instead of the 50c one charged in previous years.

A conference was held at Brantford, Ont., June 15, between G.T.R. and Brantford Municipal Ry. officials respecting the interchange of traffic at Blue Lake on the B. M. R.'s Grand Valley section.

The Halifax Electric Tramway Co. has ordered 6 closed street cars from the Nova Scotia Car Works. They will be 21 ft. long inside, 30 ft. long over all, mounted on single trucks with 8 ft. wheel base.

The Hamilton St. Ry. has inaugurated a special car service on Sundays to connect with the Canada Steamship Lines steamboats, which now run between Toronto and Hamilton on Sundays.

The Winnipeg Electric Ry. proposes to substitute a 5c. fare on its line in West Kildonan, in place of the 2c. a mile rate now in force. The municipal council is protesting to the Manitoba Public Utilities Commission.

The Windsor, Essex & Lake Shore Rapid Ry. has been authorised by the Board of Railway Commissioners to refund to C. M. Sinclair, of Bridgeburg, Ont., 98c. overcharge on a shipment of household effects from Kingsville, Ont., to Bridgeburg.

In the Lake Erie and Northern Ry.'s electrification it is said to be the intention to use a steel trolley wire, catenary suspension, the same as is used on the Pacific Electric Co.'s lines. The transmission wires and feeders will be aluminum.

The Toronto City Council has approved recommendations of the Works Commissioner for equipment for the Toronto Civic Ry.'s Gerrard St. car line, consisting of 4 heaters from the C. E. A. Carr Co. at \$175 each and 16 walkover rattan seats from the Preston Car & Coach Co. at \$15 each.

A delegate at a meeting of the Regina, Sask., Trades and Labor Council, May 24, is reported to have stated that "the city aldermen were deliberately attempting to make the municipal railway system as unsatisfactory as possible so that it will eventually have to be taken over by a private firm."

The Toronto Board of Control invited tenders recently for the machine shop equipment of the Toronto Civic Ry.'s new Danforth Ave. car barns, consisting of a 14 in. lathe, 150 ton wheel press, shaper, radial drill, vertical drill, 3,000 lb. portable crane, double emery stand, vise, hack saw, and a 35 h.p. induction motor.

The Vancouver City Council passed a resolution, May 25, instructing the City Solicitor to inform the British Columbia Electric Ry. that it was violating its agreement by issuing the so-called "tango" tickets without transfer privileges, and to advise the council as to the steps necessary to be taken to enforce the agreement.

It is stated that the Toronto Commissioner of Works will assemble the cars to be used on the Lansdowne Ave. line of the

Toronto Civic Ry. at the local car barns. He expects to do this and have the cars completed at a total cost of \$4,750 each, the lowest tender received for the cars complete being \$5,200 each. A full description of these cars was given in Canadian Railway and Marine World for May, pg. 187.

The Hamilton St. Ry. is using a new transfer ticket, white on even numbered days, and yellow on odd numbered days of the month. The route from which the passenger seeks a transfer, and the one to which he is going must be punched out by the conductor. With the old form the passenger simply stated he wanted a transfer north, south, east or west, and received it accordingly.

The Saskatoon and Sutherland Construction Co., and its members personally, gave a note for \$3,800 with interest at 8%, to Longergan and Haresford, in connection with the building of the electric railway from Saskatoon to Sutherland, Sask. The note was made Dec. 19, 1913, and became due April 18, 1914. Since maturity \$700 has been paid, and the holders sued to recover the balance, which with interest, amounts to \$3,421.95. Judgment was reserved.

The Toronto Ry. recently brought the parents of a number of small children before the police magistrate, for refusing to pay fares for their children on the company's cars. No fines were asked for or inflicted, the magistrate informing the parents, that for children who were able to walk and occupied seats in the cars, the half fare demanded by law must be paid, and being seated on passengers' knees does not make children free passengers.

The Hamilton, Grimsby and Beamsville Electric Ry. has been granted leave to appeal against the order of the Ontario Railway and Municipal Board respecting the provision of sanitary accommodation on its cars and at stations. The question at issue is one of jurisdiction, the company claiming that its railway is subject to the jurisdiction of the Board of Railway Commissioners. The order was given in full in Canadian Railway and Marine World for June, pg. 226.

H. G. Matthews, General Manager, Quebec Ry. Light, Heat and Power Co., is reported to have stated, June 3, that it is hoped by the end of the year to have the welding of the joints throughout the whole track in the city completed. A section of this work has been completed, producing a smoother running of the cars. Six double truck cars were placed in service on the extension to Limoilou towards the end of June, and it is stated that by the autumn only double truck cars will be run on Crown St.

Twenty-five Brantford citizens are speculating as to what responsibility transportation companies assume when they issue combination tickets, particularly on public holidays. They purchased tickets from the Brantford and Hamilton Ry., entitling them to make the trip to Toronto and return by electric railway and steamboat on May 24. The return steamer was late and did not arrive in Hamilton until 2.30 on the morning of the 25th at a time when there were no cars being operated. Some of the passengers expressed the opinion that the company should have put on a special car, or that they should have been provided for at an hotel. The company points out that the combination ticket is only issued for the convenience of the passenger, to relieve him of the necessity of buying tickets from each company affected, and unless special travelling facilities are offered, does not impose any obligation on any of the companies concerned to do more than operate its regular service.

## Mainly About Electric Railway People.

Norman Coryell has been appointed Master Mechanic, Moncton Tramways, Electricity & Gas Co., Ltd., succeeding R. A. McCharles.

R. J. Fleming, General Manager, Toronto Ry., is importing 19 Jersey cattle from the Rothschild herd in England, for his farm at Pickering, Ont.

E. A. W. Turbett, Mechanical Superintendent, Quebec Railway, Light, Heat & Power Co., has joined the Canadian Overseas Railway Construction Corps.

H. A. Robson, Public Utilities Commissioner for Manitoba, has been appointed one of a commission of three to investigate charges of a political saw off having been made in Manitoba recently.

Wm. C. Hawkins, Managing Director and Secretary, Dominion Power & Transmission Co., Hamilton, Ont., spent the latter part of June in Cape Breton with Mrs. Hawkins on a fishing trip.

W. L. Wright, C.P.R. general offices, Montreal, has been appointed Secretary-Treasurer, Hull Electric Co., succeeding A. E. Robertson, who was acting Secretary Treasurer.

A. B. Colville, Vice President, Electric Power Co., Ltd., of which the Peterborough Radial Ry. Co. is a subsidiary, is going on overseas service as a lieutenant in the 39th battalion.

L. G. Ireland, Manager of the city's hydro electric plant at Brantford, Ont., has, as foreshadowed in our last issue, also been appointed Manager of the Brantford Municipal Ry.

E. A. Evans, M. Can. Soc. C.E., Quebec, formerly General Manager, Quebec Railway, Light, Heat & Power Co., and a former President of the Canadian Electric Railway Association, is convalescing after a severe attack of pleuro-pneumonia.

W. G. Ferguson, Manager, Otonabee Power Co., has also been appointed acting Manager, Peterborough Radial Ry., Peterborough, Ont., during the absence of W. H. Munro, Local Manager, who has received a commission in the Motor Transport Branch, Canadian Overseas Expeditionary Force.

A. J. Mitchell, Comptroller, Mackenzie, Mann & Co., Ltd., and Assistant to the Vice President, Canadian Northern Ry., Toronto, has been elected Vice President of the Chatham, Wallaceburg & Lake Erie Ry., succeeding J. D. Morton, Assistant Comptroller, Canadian Northern Ry., Toronto.

Lt. Col. J. E. Hutcheson, General Manager, Montreal Tramways Co., who is second in command of the Montreal Home Guard, a body 2,000 strong, is giving a trophy for the aggregate of the best three scores to be made during the season with the Savage rifle at the Pointe Aux Trembles range.

A. L. Farquharson, Manager of Public Utilities, Fort William, Ont., has taken over the management of the municipal electric railway there, succeeding M. O. Robinson, formerly Manager of both the Fort William and Port Arthur Municipal Electric Railways, who continues to manage the Port Arthur Electric Ry.

Clark V. Wood, who has been elected President, Springfield St. Ry., Springfield, Mass., and also Vice President of several smaller electric railways forming part of the Springfield system, vice J. T. Harmer, resigned, entered G.T.R. service in 1881, and served as operator at various points between Montreal and Portland, Me. He subsequently served with other railways in the U. S., and prior to his election as President, was Vice President, Springfield St. Ry.

**Capt. C. E. McGee**, Accountant, Moose Jaw Electric Ry., Moose Jaw, Sask., who has been killed in action in Belgium, was a son of J. J. McGee, ex Clerk of the Privy Council of Canada, and nephew of the late Hon. Thos. D'Arcy McGee, M.P., who was assassinated in Ottawa shortly after Confederation. He served in the South African war in the 1st Canadian Mounted Rifles and was at the side of Trooper Mulloy when the latter was blinded, the same explosion tearing a rifle out of McGee's hands. After the South African war he was appointed by the British Government as Customs Inspector at Lorenzo Marquis. Some 3 years ago he returned to Ottawa and about 2 years ago went to Moose Jaw.

**James Dewar Fraser**, who has been elected President, Canadian Electric Railway Association for the current year, and whose portrait appears in this issue, was born at St. Andrews, Que., Mar. 26, 1851. From 1871 to 1882 he was accountant and telegraph operator, W. McClymont and Co., Ottawa; 1882 to 1891, Secretary-Treasurer, Ottawa City Passenger Ry.; in 1891 he was appointed Secretary-Treasurer, Ottawa Electric Ry., which position he still holds. In 1893 he was also appointed Secretary-Treasurer, Ottawa Car Co., now Ottawa Car Manufacturing Co., and in 1906 he was elected a director. In 1913 he was elected a director, Ottawa Electric Ry. Co., and in 1914 also a director, Ottawa Traction Co. In addition to these positions, he is a director and Secretary-Treasurer, Wallace Realty Co.

**E. P. Coleman**, who has been elected Vice President, Canadian Electric Railway Association, and whose portrait appears in this issue, was born at Taunton, Mass., June 14, 1867, and educated at the public schools there. He was, from Feb. 9, 1885, to Feb. 9, 1896, in the draughting room of Hubeck Printing Press, at the shops of the Taunton Locomotive Manufacturing Co., with which his father and grandfather had been associated for many years; Jan. 1, 1896, to Sept. 1, 1900, Treasurer and General Manager, Attleboro Steam and Electric Co., Attleboro, Mass.; May 5, 1898, to Mar. 31, 1899, in United States service during the Spanish war as Second Lieutenant and Battalion Adjutant, 5th Massachusetts Infantry; July 1, 1899, to Sept. 1, 1900, General Manager, Plymouth Electric Light Co., Plymouth, Mass.; Sept. 1, 1900, to June 1, 1905, Vice President and General Manager, Consolidated Lighting Co., Montpelier, Vt.; June 1, 1905, to Mar. 1, 1907, in practice as consulting engineer, general, electric light, power, railway and quarry work, and Treasurer and Manager, Wetmore and Morse Granite Co., Montpelier, Vt.; Mar. 1, 1907, to Jan. 1, 1909, General Manager, Great Northern Power Co., Duluth, Minn.; Mar. 1, 1909, to Oct., 1912, Manager of Railways, and since Oct., 1912, General Manager, Dominion Power and Transmission Co., Ltd., Hamilton, Ont.

**Detroit Freight Contract.**—The Detroit (Mich.) United Railway freight department reports closing a contract to handle 18,000 tons of sand, gravel and cement from the Grand Trunk Ry. connection between Birmingham and Royal Oak, Mich., a distance of approximately 5 miles. This material will be set on team trucks and will be used in constructing good roads. The freight department of this road has also closed a contract to transport 25,000 automobile touring bodies between Detroit and Flint, Mich. These shipments will include sedan and couplet bodies manufactured by the Fisher Body Company, Detroit, and will be delivered to the Buick Motor Car Company, at Flint, Mich. The total haul will be approximately 68 miles, and it will take four months to handle the 1050 cars required for this contract.—Electric Railway Journal.

**Calgary Municipal Railway Earnings, Etc.**

The results of operation for May, compared with those for May, 1914, are as follows:

	-1915.	1914.
Earnings .....	\$45,745.75	\$61,596.15
<b>Expenditure.</b>		
Maintenance of Way and Structures .....	907.08	620.74
Maintenance of Equipment .....	2,824.43	4,810.01
Transportation .....	23,497.73	34,610.99
General Expenses .....	1,954.51	2,961.91
Total operating expenses .....	29,183.75	43,003.65
Balance revenue over same .....	16,562.00	18,592.50
Fixed charges .....	16,725.31	15,125.67
Deficit for month, 1915.	163.31	
Surplus for month, 1914		3,466.83

Statistics.		38	48
Cars operated, regular .....		22	12
Cars operated, extra .....		226,172	267,468
Miles operated .....	1,099,604		1,490,319
Passengers carried .....		20,226 Cents.	23,029 Cents.
Revenue per car mile .....		12.903	16.078
Operating expenses per car mile .....		2.892 "	3.518 "
Cost of power per car mile .....		4.060 "	69.8%
Average fare collected .....		63.8%	4.011 "
Proportion operating expenses to gross revenue			

**London and Port Stanley Railway Traffic Matters.**

It is said that the passenger fares upon the newly electrified London and Port Stanley Ry., will be at 2c. a mile with a 30c. fare from London to Port Stanley at least one day in the week. Books of tickets for commuters will, it is said, be issued at \$5. The rate charged on this railway heretofore between London and Port Stanley, under steam operation, has been 30c., but notwithstanding this, passengers have preferred to travel by the London and Lake Erie Ry. and Transportation Co.'s electric line at a 50c. fare, the proportion being, it is reported, at the rate of four to one in favor of the L.E.R. & T. Co.'s line. A 40 minute service will, it is said, be given between the termini, and it is expected that the trip will be made in 45 minutes. In an interview, June 11, Vice Chairman Pocock of the London Railway Commission is reported to have said: "The advantage of a properly managed public utility is that the price of the commodity will be reduced as conditions demand. We have had continual reductions in the price of hydro, because the public use the commodity and we are able to cut the price, because of the increase in business. The same will follow with respect to fares on the London & Port Stanley line. We are going to serve the public at the lowest possible rate. We will have the best equipment in Canada, and the passenger traffic will be handled in the most efficient and speediest manner possible."

The Michigan Central Rd. has terminal facilities in London, partly laid out on land owned by a local company which still preserves its separate corporate existence. The M.C.R. lease of this property is about to expire and in connection with its future plans for serving London negotiations were opened June 5, with the London Railway Commission. It was also reported, June 11, that the Wabash Rd. was about to submit a proposition to the Commission for running rights, either over the whole line or the section between St. Thomas and London. The Vice Chairman of the Commission is reported to have said, June 11, that Pere Marquette traffic between London and St. Thomas would be handled by the Commission.

Another question, viz., that of the G.T.R. traffic, is under discussion. The G.T.R., which is the minority stockholder in the L. and P.S.R., operated the line for about 20 years and then abandoned it. A local paper says the City Corporation subsequently

asked the G.T.R. "to operate the line at a rental of one cent a year, and met with a refusal." According to a statement made on behalf of the G.T.R. during the electrification campaign, that company provides or controls 80% of the traffic going over the line, and "in the event of electrification we would be forced to provide such a channel for freight as we would feel assured would be necessary to protect our own interests in the regulation and prompt handling of supply coal." The G.T.R. holds a charter and has had surveys made for the building of a line from Port Burwell into London, which it was proposed to build, and to transfer to Port Burwell, the car ferry traffic heretofore being operated to Port Stanley. Nothing has been done in the way of arranging

for construction on this line, but the Pere Marquette Rd., which through its Canadian end, the Lake Erie and Detroit River Ry., has been operating the L. and P.S.R., has started work on the enlargement of its coal dock facilities at Rondeau, south of Chatham. Press reports state that the G.T.R. proposes to route its coal traffic to Rondeau instead of Port Stanley, and carry it to London by way of Chatham. (June, pg. 229.)

**Regina Municipal Railway Earnings, Etc.**

The operating results for April, compared with those for April, 1914, are as follows:

	1915.	1914.
Revenue .....	\$12,946.92	\$18,124.24
Expenses .....	14,245.67	20,404.43
Capital charges .....	9,137.58	7,476.52
Operating deficit .....	1,298.75	2,280.19
Expenses per car mile without power .....	13.63c	14.59c
Expenses per car mile with power .....	18.03c	19.48c
Power per k.w.h. ....	2.04c	2.00c
Platform wages per car mile .....	74.06c	73.91c
Expenses, percentage of earnings, less capital charges .....	110.03%	
Expenses, percentage of earnings, with capital charges .....	180.61%	

**Grand Valley Ry.**—The City of Brantford, Ont., which owns the Grand Valley Ry. from Paris to Galt, has offered to sell the line to the Lake Erie and Northern Ry., which is leased to the C.P.R. for 99 years, and which will, on completion be operated as part of the Galt, Preston and Hespeler St. Ry., of which Martin N. Todd is President, and which is also controlled by the C.P.R. The city's offer is stated to be the sale of the G.V.R. from Paris to Galt. for \$30,000, the city to retain the portion to Blue Lake siding, and the L.E. & N.R. to electrify its line from Port Dover to Brantford. The L.E. & N.R. makes a counter proposal, which is stated to be \$26,000 for the G.V.R., the city to retain the transformer house at Galt, and to agree to the electrification of the L.E. & N.R. from Galt to Brantford only.

**The Cobourg Steel Co.** has been incorporated under the Ontario Companies Act, with an authorized capital of \$400,000 and office at Cobourg, Ont., to carry on a general manufacturing business in steel goods.

**The partially decarburized faces of a rail** ingot, leaves a thin layer of soft metal on the surfaces of the finished rail, to which is attributed the sloughing off of the rail head under the cold rolling action of the wheels.

# Marine Department

## The United States and Railway Ownership of Lake Steamship Lines.

The Panama Canal Act, which came into force in the United States when that Government completed and opened for traffic the Panama Canal, provides, among other things, that any railway company owning or controlling and operating vessels on any waters under U. S. jurisdiction, shall divorce such interests, so that the two means of transportation shall be under separate control. By a decision of the Interstate Commerce Commission of May 15, several railway companies owning or controlling, either wholly or in part, steamship lines on the Great Lakes were ordered to divest themselves of their holdings. The Commission has, however, the right to permit the continuation of such operation under certain conditions, and applications concerning the operation of steamships by Canadian railway companies with U. S. connections have been dealt with, those of the C.P.R. in connection with the Pennsylvania-Ontario Transportation Co., the G.T.R. in connection with the Ontario Car Ferry Co., and the Grand Trunk Western Ry. in connection with the Grand Trunk Milwaukee Car Ferry Co., being granted, and one of the G.T.R. in connection with the Canada Atlantic Transit Co. being denied as from Dec. 1, 1915. Following are the Commission's decisions summarised:—

### Pennsylvania-Ontario Transportation Co.

This case involves applications of the Pennsylvania Co. and the C.P.R. under the provisions of sec. 5 of the Act to Regulate Commerce, as amended by the Panama Canal Act, to continue their interest in and joint operation of the Pennsylvania-Ontario Transportation Co., and were heard together. The Pennsylvania Co. owns and operates a railway from points in Pennsylvania to Ashtabula Harbor, Ohio. The C. P. R. owns and operates a railway in Canada with a line running from Woodstock to Port Burwell, Ont. The Pennsylvania-Ontario Transportation Co. owns and operates a car ferry plying on Lake Erie between Ashtabula, Ohio, and Port Burwell, Ont. The capital stock of this company, \$375,000, is held jointly, one-third by the Pennsylvania Co., one-third by the C.P.R., and one-third by J. W. Ellsworth & Co. It has no bonds outstanding and no obligations of any kind other than those for current expenses. Under its organization it has a board of directors, each one-third interest being represented by two directors. It appears that there is some sort of an operating agreement between the several parties interested in this car ferry by which the two petitioners alone share all expenses and profits. The Pennsylvania-Ontario Transportation Co. owns and operates between Ashtabula Harbor, Ohio, and Port Burwell, Ont., one steam vessel, the Ashtabula, having a registered tonnage of 125 tons, with ferry capacity of 32 cars. It is not equipped to carry passengers and files no tariffs with the Commission publishing passenger fares. The boat makes two trips a day. It does not appear that either of the petitioners owns a line of railway operating between the ports served by their boat, nor is either petitioner an integral part of any railway system owning such paralleling rails. It appears, however, that each of the petitioners is a party to through routes via the Buffalo gateway to and from the ports served by their boat, by which it is possible for them to compete with their boat for

traffic within the meaning of the act to regulate commerce. The car ferry primarily provides a short route for the transportation of coal to Canada and serves practically as a bridge over Lake Erie, by which there is a saving in rail haul of some 200 miles.

From a consideration of all the conditions and circumstances of record, the Commission is of opinion and finds that the existing specified 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 a continuance thereof will neither exclude, prevent, nor reduce competition on the route by water under consideration. It is therefore ordered that the applications herein for an extension of time beyond July 1, 1914, within which petitioners may continue their interest in and joint operation of the existing specified service by water herein concerned be granted, subject to further orders by the Commission, and that the rates, fares, schedules and regulations applicable to the transportation by water concerned be filed with the Commission and posted to the public as acquired by the Commission's regulations, effective July 1, 1915.

### Ontario Car Ferry Co.

The application of the G.T.R. involves its interest in and joint operation of the Ontario Car Ferry Co., and its interest in and joint operation of the Canada Atlantic Transit Co. of the United States. This report concerns only this railway's interest in and joint operation of the Ontario Car Ferry Co., which is a Canadian corporation, with a capital stock of \$500,000, divided into 5,000 shares of \$100 each. The G.T.R. owns 2,497 shares, and the Buffalo, Rochester & Pittsburgh Ry. owns a like number, the 6 remaining shares are held by the 6 directors of the ferry company, 3 of whom represent the G.T.R. interests, and the other 3 the B., R. & P. R. interests. The Ontario Car Ferry Co. owns one steel vessel, Ontario No. 1, of Canadian register, of car ferry type, with a capacity on main deck of 28 loaded coal cars, and is equipped with passenger accommodations sufficient for 900 passengers, in addition to the crew, which plies between Genesee Dock, about 2½ miles south of Charlotte, N.Y., and Cobourg, Ont., about 60 miles, connecting the Buffalo, Rochester & Pittsburgh Ry. at Genesee Dock with the G.T.R. at Cobourg, Ont. The company is building a sister ship, known as Ontario No. 2, of similar design and capacity to Ontario No. 1. The G.T.R. operates a railway in Canada and in the U.S., serving territory contiguous to the northern shore of Lake Ontario, reaching several ports on the lake, among others Cobourg, and the Buffalo, Rochester & Pittsburgh Ry. operates in Pennsylvania and New York States reaching the southern shore of Lake Ontario at Genesee Dock, N.Y.

It does not appear that the petitioner owns rails paralleling the water route of the Ontario Car Ferry Co. or that it is interested in a system of railway owning such paralleling rails. From tariffs on file with the Commission it appears that the petitioner herein makes joint through rates all rail via the Niagara gateway from Cobourg, Ont., to Genesee Dock, N.Y. By reason of the existence of these through route arrangements it is possible for the

petitioner herein to compete for traffic with the ferry boats in which it is interested within the meaning of the act. It appears from the record that this ferry line was primarily established to transport coal to Cobourg, Ont., for G.T.R. use. In addition to this coal traffic, however, the ferry company has developed a carload business in other freight. No less-than-carload freight is carried. During the summer many tourist passengers are hauled to the Muskoka Lakes, Kawartha Lakes, and other Ontario resorts. The Ontario Car Ferry Co. is in competition for passenger business with the Canada Steamship Lines Ltd. The passenger fares via the ferry line are the same as the fares via the other boat lines, and the freight rates via the ferry line are the same as the all-rail rates. It appears, however, that the ferry line is somewhat of a transportation convenience in that it relieves the congestion incident to all-rail movement via the Niagara transfer and in that it provides a quicker transportation route between the two ports which it serves.

From a consideration of all the circumstances and conditions the Commission is of opinion and finds that the existing specified 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 thereof will neither exclude, prevent, nor reduce competition on the route by water here under consideration. It is therefore ordered that the application for an extension of time beyond July 1, 1914, during which petitioner may continue its interest in and operation of the existing specified service by water be granted subject to such future orders of the Commission, and it is further ordered that the rates, fares, schedules and regulations applicable to the service be filed with the Commission and posted to the public according to the Commission's rules, effective July 1, 1915.

A similar order was issued concerning the joint operation of the Ontario Car Ferry Co. by the Buffalo, Rochester & Pittsburgh Ry. on the latter's application.

### Grand Trunk Milwaukee Car Ferry Co.

The Grand Trunk Western Ry. Co. operates an interstate railway between Port Huron, Mich., and Chicago, Ill., via Durand, Lansing, and Battle Creek, Mich., and South Bend and Valparaiso, Ind. It owns no capital stock in any boat or line of boats operating on the great lakes or tributary waters. A large majority of its capital stock, however, is held by individuals as trustees for the G.T.R. Co. of Canada, and that company through trustees controls and owns the capital stock of the Detroit, Grand Haven & Milwaukee Ry., operated from Detroit, Mich., westerly to Grand Haven, Mich., intersecting the line of the petitioning railway at Durand, Mich. From Grand Haven, Mich., the D., G. H. & M. R. reaches Milwaukee, Wis., by car ferry boats owned by the Grand Trunk Milwaukee Car Ferry Co., which is organized under the laws of Wisconsin, having an identity in ownership with the G.T.R. Co. of Canada, the D., G. H. & M. Ry. Co., and the petitioning railway. It does not appear in the record how or by whom the stock of the car ferry company is held, but it does appear that these four companies have stockholders, directors, and officers in common,

and are integral parts of the G.T.R. system. It does not appear that the rails of the petitioning railway or those of the G.T.R. system reach Milwaukee. It appears, however, from the record that the petitioning railway makes joint rates from points on its line via Chicago to points beyond in the general territory west of Lake Michigan, to which rates are also made by the D., G. H. & M. R. via Grand Haven and the car ferry through Milwaukee. It also appears from a tariff published by the petitioning railway, G.T.W.L.I.C.C. no. A-1630, that the petitioner makes joint through all-rail class rates via Chicago to Milwaukee. It appears that the petitioner has in effect through joint rates, all rail, to the port served by boats belonging to the same system of which it forms a part, it can but result that by reason of such through routes and joint all-rail rates the petitioner may compete with the boats in which it has an interest and that a possibility of competition exists between such all-rail route and the route by water. It should be borne in mind that the all-rail route would be very indirect, and the probability of active competition between the two routes is remote.

It is contended on behalf of the petitioner that the purpose of the act with respect to waters "elsewhere" is necessarily controlled by the purpose of Congress with respect to the water routes through the Panama Canal, and that the purpose of the act with respect to the water routes through the Panama Canal was to prevent any railway having an all-rail transcontinental route from owning a boat line operating via such water route which it could use to eliminate independent water lines operating through the canal, and thus dominate and control the business by reason of monopoly of the water route. It should be noted, however, that when Congress enacted this law there was no single railway company nor any system of railway owning or operating rails reaching from the Atlantic coast to the Pacific coast, but that the only transcontinental all-rail routes existed only under through route arrangements over which joint rates were made applicable, and that, therefore, if it was not in the mind of Congress that the existence of joint through route arrangements constituted such an all-rail line as brought about a condition of potential competition between a railway participating in such through route arrangements and a boat line which it intended to operate through the Panama Canal, this part of the act is so many meaningless words and is of no avail. It appears that the Grand Trunk Milwaukee Car Ferry Co. owns and operates two car ferry boats, known as the Grand Haven and the Milwaukee, the former having a freight capacity of 28 cars and a licensed passenger capacity of 1,500, equipped with sleeping accommodations for about 100 passengers, while the latter has a freight capacity of 30 cars and a licensed passenger capacity of 3,000, equipped with sleeping accommodations for about 100 passengers. The distance across Lake Michigan traversed by these boats from Grand Haven to Milwaukee is about 85 miles, and this ferry line serves practically as a bridge by means of which the D., G. H. & M. Ry. may reach Milwaukee. It appears that the idea of a car ferry between these two points was conceived and inaugurated as a private independent enterprise, but that under its former operation it was a failure and was taken over by G.T.R. interests and has been maintained without view to the cost of the service but rather to the character of the service possible through its maintenance. It appears that at times the Chicago gateway on all-rail movements of traffic is greatly congested so that serious delays result, which delays are overcome by routing

traffic over this car ferry. The car ferry is operated regularly, without regard to the amount of traffic offered per trip, and furnishes an all-season service. It appears also that in addition to the G.T. Milwaukee Car Ferry there is a car ferry operated by the Pere Marquette Rd., from Ludington to Milwaukee; also a car ferry operated by the Ann Arbor Rd. from Frankfort to Menominee, Mich., and Kewaunee and Manitowoc, Wis.; also an independent break-bulk steamship line operated by the Goodrich Transportation Co. on regular sailings from Grand Haven to Milwaukee via Chicago. It appears further that rates via this car ferry are the same as rates applicable to the all-rail movement, and that rates since the car ferry came into the port there has been no lowering or increase of session of the G.T.R. in 1906. It is contended that if the joint ownership and operation were discontinued the car ferry company would necessarily go out of business because of expensive operation and resulting loss that would accrue to the company. It appears that the profit accruing to the car ferry company, as shown by its statement for the half year ended Dec. 31, 1913, was \$58,300.41, which was turned over to the D., G. H. & M. R. to discharge indebtedness to that company.

From a consideration of all the circumstances and conditions, the Commission is of opinion and finds that the existing specified 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 a continuance thereof will neither exclude, prevent, nor reduce competition on the route by water under consideration. It is therefore ordered that the application for an extension of the time beyond July 1, 1914, during which petitioner may continue its interest in and operation of existing specified service by water be granted subject to such future orders of the Commission, and that rates, fares, schedules and regulations applicable to such service be filed with the Commission and posted to the public according to the Commission's rules, effective July 1, 1915.

#### Canada Atlantic Transit Co.

The Canada Atlantic Transit Co. is owned by the G.T.R. Co. of Canada and operates three steamships between Depot Harbor, Georgian Bay, Ont., and Chicago and Milwaukee. The G.T.R. reaches Depot Harbor, which is the only port served in common with its transit line, but by reason of its ownership through stock control, of the Grand Trunk Western Ry., it reaches Chicago and Port Huron over that line. The first controlling question under this application, is whether or not, within the meaning of the Panama Canal Act, there is or may be competition for traffic between the vessels operated and the railway interested in them. The physical situation would itself establish the case if the ports of call were served in common by the boats and the paralleling railway, but no such case is made out in the records. It is a fact, however, that the G.T.R., the owning entity, has an interest in other railways whose paralleling rails do serve ports of call in common with the boats. It is urged that this does not establish a case within the meaning of the act, and that the act only applies to cases where there is competition, actual or potential, between the boats and the rails actually operated by the owning entity. The section of the act referred to reads as follows,—

"From and after July 1, 1914, it shall be unlawful for any railroad company or other common carrier subject to the act to regulate commerce, to own, lease, operate, control, or have any interest whatsoever (by stock ownership or otherwise, either directly or indirectly, through any holding company, or by stockholders, or directors in common, or in any

other manner) in any common carrier by water operating through the Panama Canal or elsewhere with which said railroad or other carrier aforesaid does or may compete for traffic or any vessel carrying freight or passengers upon said water route or elsewhere with which said railroad or other carrier aforesaid does or may compete for traffic; and in case of the violation of this provision each day in which such violation continues shall be deemed a separate offence."

The unsoundness of the contention is at once manifest when it is seen how the act could be evaded by a reorganization incorporating the parallel rails which reach the port of call into an entity distinct from the entity owning the boats, with the real ownership, through stock control, remaining as before. From a consideration of all the circumstances and conditions disclosed in the records, the Commission is of opinion and finds that the specified service by water concerned is not operated in the interest of the public or is of advantage to the convenience or commerce of the people within the meaning of the act, and that an extension and continuance thereof will prevent, exclude and reduce competition on the Great Lakes. It is therefore ordered that the application be denied, effective Dec. 1, 1915.

#### Marquette and Bessemer Dock and Navigation Co.

In the application of the Pere Marquette Rd., and the Bessemer and Lake Erie Rd., concerning their joint operation of the Marquette and Bessemer Dock and Navigation Co., the record shows that the P.M.R. extends from Buffalo, N.Y., through Ontario to Windsor, Ont., where it is intersected by the Detroit River, and thence to Chicago, Ill., with a branch in Canada to Sarnia, Ont., where it is intersected by the St. Clair River, and then extends from Port Huron to Ludington, Mich. Where it is intersected by the two rivers named, the P.M.R. operates car ferries uniting its rails in Ontario and Michigan. The boat operating on the Detroit River between Windsor and Detroit is Pere Marquette No. 14, with capacity of 26 cars, and the one operating on the St. Clair River, between Sarnia and Port Huron is International, with capacity of 15 cars. It does not appear that the P.M.R. owns any paralleling rails reaching the ports served by either of these ferries, nor is it a part of a railway owning such parallel rails, nor does it appear that the P.M.R. is a party to any paralleling through all-rail routes between such ports, and therefore it cannot compete for traffic with its ferries within the meaning of the act. The P.M.R. alone, also operates five ferry boats on Lake Michigan connecting its lines at various points, but in these cases it appears that the P.M.R. is a party to paralleling through all rail routes by means of which it may compete for traffic with its ferry boats within the meaning of the act. These boats are an essential part of the system and enable the P.M.R. to participate in through transportation to the north west from which it would be otherwise excluded, and that independent operation of the ferries would be impracticable, since it appears that no one would be able to operate them independently for what the company could afford to pay an independent ferry for getting its cars across Lake Michigan in competition with all rail routes. They are operated on a fixed schedule to expediate the through movement of freight.

From a consideration of all the circumstances and conditions, the Commission is of opinion and finds that the existing specified service by water on Lake Michigan is being operated in the interest of the public and is of advantage to the convenience and commerce of the people, and that a continuance thereof will neither exclude, prevent nor reduce competition on the routes by water under consideration.

The P.M.R. through operating rights over the London and Port Stanley Ry. from St. Thomas, Ont., reaches Port Stanley. The Bessemer and Lake Erie Rd. operates a line of railway from Pittsburg to Erie, Pa., with a branch to Conneaut, Ohio. The Marquette and Bessemer Dock and Navigation Co. has a capital stock of \$50,000, half of which is owned by the P.M.R. and half by the B. & L.E.R. It owns and operates a steel car ferry with capacity of 30 cars, on Lake Erie, between Port Stanley, Ont., and Conneaut, Ohio. Neither of the petitioners owns paralleling lines reaching the ports named, nor is either an integral part of a railway system owning such paralleling rails. Each of the petitioners, however, is a party to through all rail routes via the Buffalo gateway to these ports, and it therefore results that each may compete for traffic with their boats within the meaning of the act. The chief traffic hauled on the ferry is coal for railway use in Canada, originating on the B. & L.E.R., and by means of the ferry they are enabled to furnish an expedited service for this traffic which would otherwise have to move through the Niagara frontier and be subject to delays due to congestion. From a consideration of all the conditions and circumstances, the Commission is of opinion and finds that the existing specified service by water on Lake Erie, operated by the petitioners jointly, and the service on Lake Michigan operated by the Pere Marquette Rd., is in the public interest, and of advantage to the convenience and commerce of the people, and it is ordered that the application for an extension of time beyond July 1, 1914, within which they may continue such service is granted, the rates, schedules and regulations concerning such service to be filed with the Commission and posted to the public according to the Commission's rules, effective July 1, 1915.

The Commission has denied the applications of the Pennsylvania Rd. and Northern Central Ry. regarding the Erie and Western Transportation Co.; the Lehigh Valley Rd., concerning the Lehigh Valley Transportation Co.'s lake line; New York Central and Hudson River Rd., concerning the Mutual Transit Co., and the Western Transit Co.; the Rutland Rd., concerning the Rutland Transit Co., the Erie Rd., concerning the Erie Rd. lake line, and the Mutual Transit Co.

Canada Steamship Lines, Ltd., commenced a Sunday service between Toronto and Hamilton, June 12, four trips being made.

### Fishery Patrol Boat for Lake Winnipeg.

The Marine and Fisheries Department's patrol steamboat for the fisheries service, which has been under construction for some time at Selkirk, Man., was launched there at the end of May, and christened George H. Bradbury, the ceremony being performed by Mrs. R. Rogers, wife of the Minister of Public Works.

The vessel was specially designed for this particular service, and in addition to performing general patrol duties, will carry large quantities of spawn in connection with the fish hatchery at Lake Winnipegosis, and also install and handle buoys on Lake Winnipeg. She is of steel throughout, and built to Lloyd's 100 A1, lake service class, with a raked stem and cruiser stern. The hull is divided by five main transverse watertight bulkheads, and two longitudinal bunker bulkheads, also watertight. At the fore end special strengthening has been introduced for working in light ice. The underwater portion of the vessel is sheathed with wood. The deck auxiliaries include the usual windlass, capstan and steering gear, the steering engine being located in the engine casing and connected to the rudder head by chains and quadrants, and controlled from the wheel house on the navigating bridge. Complete systems of steam heating, ventilation, pumping and draining, fresh water and sanitary services are provided, the last mentioned being on the pressure system supplied from a duplex pump situated in the engine room. The electric generating set consists of a steam turbo-generator of 14 k.w. capacity, capable of supplying at the same time the ordinary ship's lighting and the searchlight. The searchlight is located on top of the wheel house and is of 16,000 c.p. The equipment is in accordance with Lloyd's rules and the Canadian steamboat regulations, and includes the usual lifeboat accommodation, sufficient for all on board, and also a motor launch with a speed of eight miles an hour. Accommodation is provided for a crew of 17, including officers, men and fish crew. The propelling machinery consists of two sets of inverted, vertical, direct acting, triple expansion, jet condensing engines with cylinders 11, 18 and 30 ins. diam., by 20 ins. stroke, capable of developing 900 i.h.p. when running at 180 r.p.m. with 180 lbs. of steam. Steam is supplied from two cylindrical, single ended boilers 11 by 10½ ft. fitted with Morison's furnaces and worked under forced draught.

The dimensions are, length overall 149½ ft., length between perpendiculars 140 ft.,

breadth moulded 26½ ft., breadth extreme 27 ft. ¾ in., depth moulded 13½ ft., draught mean 7½ ft., speed 12 knots an hour.

She was designed by, and built under the superintendence of C. F. M. Duguid, Naval Constructor to the Marine and Fisheries Department, and was fully described in Canadian Railway and Marine World for July, 1913.

### Montreal Harbor Improvement Programme for 1915.

After the Harbor Commissioners' annual inspection of the harbor, towards the end of May, W. G. Ross, Chairman, outlined the programme of improvements to be undertaken this year, for which \$2,000,000 has been provided. This includes another addition to no. 1 elevator, increasing the capacity from 2,500,000 to 4,000,000 bush., making it the largest elevator at any Atlantic seaport. On the completion of this addition the port of Montreal will have a storage capacity of 11,250,000 bush. A large amount of dredging will be undertaken this summer in different parts of the harbor, particularly in the channel between St. Helens Island and the south shore. The dredging of the south shore channel to 20 ft. is to be pushed forward as rapidly as possible, the material dredged being used for filling in where the wharves are being built. Two dredges are working behind St. Helens Island, where last year they dredged an area of about 1,000 by 335 ft. The extension of the Jacques Cartier pier is also to be undertaken, and it is proposed to make additions to two of the high level piers, of about 250 ft. for carrying steel freight sheds. The work of enlarging the Victoria pier is to be continued, providing accommodation for two additional ocean going vessels and for smaller vessels. Several new wharves will be built and the harbor railway will be extended to high level from Racine pier to the Vulcan wharf at Longue Pointe. The industrial wharf commenced last year at Pointe aux Trembles will be completed, and work will be commenced on a 400 ft. extension southerly at the Bickerdike pier, for additional coal handling facilities.

The American Line management granted increases of \$5 a month to engineers on its s.s. Philadelphia, which sailed from New York, June 6, with the privilege of leaving the vessel at Liverpool. The men are said to have at first demanded an increase of 100%.

### List of Steam Vessels Registered in Canada During May, 1915.

No.	Name	Port of Registry	Where and When Built	Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines, Etc.	Owner or Managing Owner
134,511	Glenshee (1).....	Sarnia, Ont. ....	Cleveland, Ohio.....	1908 480 0	54 0	26 0	5667	3788	180 sc..	Reid Wrecking Co., Sarnia, Ont.
133,915	Ioffre D.....	Sorel, Que. ....	Sorel, Que. ....	1913 52 6	13 1	5 9	38	19	13 sc..	A. Derochers, Sorel, Que.
135,668	Margaret.....	Ottawa.....	Woolston, Eng.....	1914 182 4	32 3	15 0	756	278	385 sc..	Minister of Customs, Ottawa.
134,485	Progresso.....	Montreal.....	Sorel, Que.....	1915 66 3	16 0	7 5	90	43	24 sc..	J. Reid, Montreal.
134,370	Richelieu.....	Sorel, Que.....	Sorel, Que.....	1915 96 3	22 5	6 9	194	118	13 sc..	J. L. Leclaire, Sorel, Que.
134,018	W. G. Harrow.....	Port Arthur, Ont.....	Port Huron, Mich.....	1898 94 5	19 2	9 0	110	75	20 sc..	Dominion Fish Co., Warton, Ont.

(1) Formerly Howard M. Hanna, Jr., a recovered wreck.

### List of Sailing Vessels and Barges Registered in Canada During May, 1915.

No.	Name	Port of Registry	Rig	Where and When Built	Length	Breadth	Depth	Reg. Tons	Owner or Managing Owner
137871	Cupola.....	Lunenburg, N.S.....	Schr.....	La Have, N.S.....	1915 72 0	22 4	18 8	73	A. A. D'Entremont, Pubnico, N.S.
137872	Dorothy P. Sarty.....	".....	".....	Shelburne, N.S.....	1915 93 0	23 0	9 9	77	J. W. Sarty, M.O., La Have, N.S.
134408	Douglas B. Conrad.....	".....	".....	".....	1914 93 0	23 0	9 9	76	J. E. Conrad, M.O., La Have, N.S.
135893	L. C. Tower.....	Parrsboro, N.S.....	".....	Port Grenville, N.S.....	1915 175 5	36 4	12 9	518	G. M. Cochrane Co., Fox River, N.S.
134369	Marcedes L.....	Sorel, Que.....	Dredge.....	Sorel, Que.....	1915 109 5	28 3	7 9	163	N. Laroche, Sorel, Que.
137981	Stone Boy.....	Kingston, Ont.....	Scow.....	Kingston, Ont.....	1915 80 9	19 9	6 0	82	G. Pyke, Kingston, Ont.
134409	Tipperary.....	Lunenburg, N.S.....	Schr.....	Lunenburg, N.S.....	1915 96 2	24 4	9 4	92	W. N. Reinhardt, M.O., La Have, N.S.

**Shipbuilding and Repairing Plant at Prince Rupert.**

The Grand Trunk Pacific Ry.'s drydock and its surrounding plant, foundry, machine shops, etc., is expected to be ready for business early in August. Prince Rupert will then have on its harbor front the finest drydock plant along the Pacific coast, either in Canada or the United States. It has been undertaken at a cost of about \$1,500,000. The dock consists of three units, with a total capacity of 20,000 tons. There will be two end sections of 5,000 tons each, and a middle section capable of holding a boat of 10,000 tons. All the units are interchangeable, and each dock is complete in itself, with pumps and air compressors. If necessary all three sections, or units, could be joined to hold a boat 600 ft. long and weighing 20,000 tons.

In addition to the actual dock, there are four other parts to the plant, namely: the foundry, which will be able to make castings as heavy as 12 tons; a boiler shop for marine repairs as well as for the construction of boilers; a machine shop, which is equipped amongst other things with a lathe having a 72-in. head; a ship shed and carpenter shop, 160 x 300 ft., and a power house equipped with two large turbo-generators and a 15,000 ft. air compressor.

Construction work in connection with the drydock and its accompanying plant has been under way since the beginning of 1912, and the builders will soon be replaced by a staff of operators. Prince Rupert correspondence Toronto Globe, by Norman Lambert.

**Steel Tank Vessel for Imperial Oil Co.**

The Imperial Oil Co., Ltd., Toronto and Sarnia, Ont., has ordered a steel oil tank vessel, to be 258 ft. long, 43 ft. beam, and 18 ft. deep to main deck, with an expansion trunk 7½ ft. above the deck running fore and aft. The vessel is to be classed with Lloyd's for highest classification for ocean going steamers, and will be used either on the lakes or ocean as may be required.

A great many closely spaced bulkheads will be fitted 'thwartships, and a continuous longitudinal bulkhead to divide the hold spaces up into 10 tanks for crude or refined oil, and four tanks for carrying lubricating oil, and four tanks for carrying oil fuel. A cross bunker for carrying oil fuel will be fitted forward of the boiler room. The pump room will be located at the fore end of the foremost tank, in which will be placed the large pumps for handling oil cargoes. She will have a speed of eight knots loaded.

The order has been given to Collingwood Shipbuilding Co., Collingwood, Ont., delivery to be made at the opening of navigation next year. The Imperial Oil Co. has heretofore had its vessels built in Scotland.

**German Vessels after the War.** The British Solicitor-General, in conducting a case in London, Eng., recently, made the statement that detained German steamships in British ports would only be handed back to their German owners at the conclusion of the war, if the German Government observed the rules of the Hague Convention and agreed to return British vessels detained at German ports.

A Montreal press dispatch states that the Postmaster General has entered action in the Admiralty Court against the owners of the s. s. Storstad, claiming \$375,360 for loss of registered mail matter dispatched by the C. P. R. s. s. Empress of Ireland, which was sunk by the Storstad in the St. Lawrence early in 1914.

**Dominion Steel Corporation's Fleet and the Admiralty.**

The Dominion Steel Corporation's President, J. H. Plummer, in his report at the annual meeting, June 24, said:—"The prospects of the Dominion Coal Co. for the coming year are good. The efficiency of the company's arrangements for transportation has been maintained as fully as possible, but we have suffered severely through the requisition by the Admiralty of some of our best colliers. The company has lost in this way the services of the Twickenham, 8,100 tons dead weight capacity; Kendal Castle, 6,750 tons; Lord Strathcona, 11,000 tons; Kamouraska, 7,400 tons; Wabana, 7,400 tons and Maskinonge, 7,400 tons; a total carrying capacity of 48,050 tons. The completion of the Dagchild has been indefinitely postponed by the Admiralty requirements. These losses interfere seriously with the delivery of coal by water, and while we have been able to secure a number of smaller steamships, chiefly from the upper lakes, the lost tonnage has not been fully replaced, and in any case the cost of transportation must be much increased over last year.

**Steamboat for Testing and Sweeping St. Lawrence Ship Channel.**

The Dominion Parliament at its last session voted \$30,000 for a steamboat for testing and sweeping the St. Lawrence ship channel. The vessel, which is being built at the Dominion Government shipyard, Sorel, Que., under W. S. Jackson, Superintendent of Shipyard, and which was launched May 24, has the following dimensions, etc.: Length between perpendiculars, 140 ft.; breadth moulded, 35 ft.; depth moulded, 15 ft.; coal capacity (bunkers), 100 tons; speed, 11 miles.

It is being built of steel throughout, with 6 watertight bulkheads and double bottom for water ballast under the engines and boilers and in the fore peak for trimming purposes. The vessel has been specially designed for sweeping and sounding the St. Lawrence deep water channel for obstructions. This work is carried out most effectively by the use of a bar 40 ft. long, made of steel tube 12 ins. dia. x ¾ in. thick, suspended amidships on each side of the vessel, with steel wire ropes carried up to

the navigating bridge with gauges marking the depth of water. There will be steadying wire ropes carried forward and aft to keep the bar in position, the whole being operated from a specially designed steam winch, made at the shipyard. When working or sounding, the vessel will travel slowly against the current with the bar lowered to the testing depth. The smallest obstruction in the channel, or a variation in depth will be at once detected by the gauges (hence the name of the vessel Detector).

The vessel will be propelled by twin screws having two sets of compound surface condensing engines with cylinders 14 and 28 x 18 in. stroke, supplied by steam from a Scotch marine return tube boiler 15 ft. diam. by 11 ft. long, with 3 corrugated furnaces and having a working pressure of 130 lbs. a sq. in. The boiler is being built at the shipyard. Powerful steam steering gear, steam windlass, and boat hoisting winch will be fitted on board. One mast with a powerful derrick for handling buoys will be provided. There will be good accommodation for the staff, captain, officers and crew. Electric light will be fitted throughout.

**Toronto Harbor Navigation.**—During this year dredging operations will be carried on in connection with the Toronto harbor improvements, in the lake east of the eastern channel, and platforms placed on piles are to be erected at various points. These platforms will be lighted at night and will be quite visible during the day but will frequently be connected by heavy cables which will be invisible. All classes of vessel should keep at least 2,400 ft. from the shore between Woodbine Ave. and the eastern channel so as to clear the outside line of the platforms. From the western channel to the Humber River vessels should keep at least 1,200 ft. from the shore, as cribwork is being built between these two points approximately 1,100 ft. from the shore. Large sections of the cribs are submerged, and while every effort will be made to keep these lighted at night, safety can only be assured by avoiding the danger area. Other works are being built in the water east of a line from Parliament St. to the east pier of the Eastern channel, where there are several submerged walls. Vessels should keep west of the line indicated.

**Sault Ste. Marie Canals Traffic.**

The following commerce passed through the Sault Ste. Marie Canals during May.

ARTICLES	CANADIAN CANAL	U. S. CANAL	TOTAL
Copper..... Eastbound	Short tons 1,351	21,018	22,369
Grain..... "	Bushels 3,107,921	2,389,150	5,497,071
Building stone..... "	Short tons		
Flour..... "	Barrels 296,560	872,423	1,168,983
Iron ore..... "	Short tons 29,120	4,877,668	4,906,788
Pig iron..... "	"		
Lumber..... "	M. ft. b.m. 7,527	44,191	51,718
Silver ore..... "	Short tons		
Wheat..... "	Bushels 2,747,811	10,519,686	13,267,497
General merchandise..... "	Short tons 26,929	15,651	42,580
Passengers..... "	Number 560	277	837
Coal, hard..... Westbound	Short tons	248,110	248,110
Coal, soft..... "	" 44,675	1,203,772	1,248,447
Flour..... "	Barrels	100	100
Grain..... "	Bushels	21,250	31,250
Manufactured iron..... "	Short tons 1,801	36,520	38,321
Iron ore..... "	"		
Salt..... "	Barrels 420	95,944	96,364
General merchandise..... "	Short tons 33,191	89,998	123,189
Passengers..... "	Number 471	36	507
Summary.			
Vessel passages.....	Number 459	1,902	2,361
Registered tonnage.....	Net 640,666	5,405,580	6,046,246
Freight—Eastbound.....	Short tons 288,714	5,496,824	5,675,538
—Westbound.....	" 79,727	1,593,302	1,673,029
Total freight.....	" 318,440	7,030,126	7,348,566

## Shipping Letters From the Head of the Lakes.

F. & W. Jones, brokers, Fort William, Ont., have issued weekly letters as follows:

**June 5.**—The coal business has been fairly active during the week, 6 cargoes having been unloaded, 4 anthracite and 2 bituminous, three carried in Canadian steamships and three in United States steamships. The outlook for the coming week is not over bright, with only two cargoes in sight, one for the C.P.R. and one for the Canadian Northern dock. It is anticipated that business in coal during June will be very light. Western car shipments were practically nil during the week.

There have been no shipments of ore during the week and no charters are in sight. Ore is arriving at the dock at the rate of about 400 tons a day, and there is still about 40,000 tons to come down.

The opening of June brought a big decrease in grain shipments, there being a drop of 1,335,060 bush., compared with the last week of May. No U.S. steamships cleared, but one is loading at present. One cargo of barley was taken to Toledo in a Canadian vessel. Receipts also dropped off, but only very slightly, about 100,000 bush. Owing to the big falling off in shipments and only small drop in receipts, stock in store this week are nearly 500,000 bush. greater than last week. Weather in the west continues favorable. There was general rain in Manitoba, Saskatchewan and Alberta during the week, and it appears, too, judging from recent reports, that the cutworm peril has now passed. Leading grain experts stated this week that, with a reasonable amount of rain and other satisfactory weather conditions, the present prospects are that Canada will harvest the largest crop in 15 years.

Stocks in store at date, receipts and shipments during the week are:

	Stocks.	Receipts.	Shipments.
Wheat .....	3,235,921	1,161,289	664,860
Oats .....	1,364,023	162,527	180,681
Barley .....	248,937	23,382	128,328
Flax .....	1,451,552	21,279	5,460

**June 12.**—Coal receipts have fallen off this week, with only four cargoes arriving, 2 anthracite and 2 bituminous—three were carried in Canadian bottoms and one in an U.S. bottom. There are three steamships reported en route, one for the C.P.R. dock and two for the Canadian Northern dock. For the balance of this month the coal business will be very light, only sufficient coal to fill actual requirements is being shipped west, and there is no inclination on the part of shippers to increase their stocks at the present time. One small cargo, about 5,600 tons, was unloaded at Jackfish this week, and was carried in a Canadian bottom. This makes a total of about 25,000 tons, all bituminous, shipped to Jackfish this season, with nothing more in sight at present.

No ore has been shipped this week and no steamships are reported as chartered. There is now from 10,000 to 12,000 tons on the dock, and cars from the mines continue to arrive, so that stocks are rapidly increasing.

There was a slight increase in grain shipments this week over last, approximately 132,569 bush., eight cargoes having been shipped, all in Canadian vessels consigned to Canadian ports. Receipts show a decrease of about 372,296 bush. and stocks show a decrease of about 113,720 bush. below last week. The statement of Canadian visible supply handed out on June 4 showed 11,741,843 bush. of all kinds of grain, excepting flax, in store, as compared with 31,056,133 bush. this date last year. Of this, 4,847,881 is in the terminals at Fort William and Port Arthur, 4,265,517 in store

at Montreal, 1,382,701 in store at Port Colborne, and the balance distributed in various terminals at eastern ports. By the foregoing figures it will be easily seen that very little movement can be expected until the new crop is harvested. Weather conditions in the west continue favorable, there has been general rain in the western provinces, which will be beneficial not only because of the moisture it brought to the soil as a nutrient, but also because of its probable killing of the cutworms that have caused damage in some localities. The reports are altogether optimistic, and satisfactory progress in the growth of crops is reported from all the prairie provinces. It is now finally estimated that the increased acreage in both barley and flax is very small, but in wheat it is about 14.5%, and in oats about 10.2%. Basing an estimate on these figures and assuming favorable weather conditions continue, there should be available for lake shipments from 200,000,000 to 260,000,000 bush. of all grains. It is still considered that harvesting will commence at least three weeks earlier than in previous seasons.

Stocks in store at date, with receipts and shipments, are:

	Stocks.	Receipts.	Shipments.
Wheat .....	3,087,070	785,351	934,200
Oats .....	1,438,297	155,869	81,595
Barley .....	194,050	23,763	78,651
Flax .....	1,467,296	32,196	16,452

**June 19.**—Coal receipts this week were about the same as last week, four cargoes arriving, three bituminous and one anthracite, one carried in U.S. bottom and three in Canadian bottoms. There are three cargoes reported en route, two for the C.P.R. dock, one anthracite and one bituminous, and one for the C.N.R. dock with bituminous. Shipments to the west remain very light, and the prospects for any immediate increase in the coal trade are poor, in fact no great movement is expected until well into August. One cargo of ore (about 3,000 tons) was shipped this week. There is still considerable ore on the dock, but no further charters are reported. Grain shipments during the past week have continued to show slight increase in volume, the total moved by lake transit being 1,489,340 bush., against 997,181 during the previous week, an increase of 493,159. There were eight vessels cleared with grain during this period, only one of which was U.S. register, two cargoes only going to U.S. ports. Receipts from the west have shown a decline of 125,000 bush., compared with last week, thus elevator stocks, after allowing for an increase in lake movement and decline in western receipts, naturally show considerable decrease, 5,492,736 bush. of all grains, against 6,315,177 a week ago. Reports of crop conditions still continue favorable, although somewhat modified in tone. Heavy rain storms have been general throughout the western provinces, with several degrees of frost in Saskatchewan. The frost, however, is not reported as being sufficient to cause serious damage being counteracted by the rain. In result it is expected that the present wet will probably lower the grades and cause some delay in date of harvesting, but will not affect volume. The total acreage under cultivation in the western provinces is reported by the Government as being: Wheat, 12,896,000 acres; this is 2,602,000 acres in excess of that harvested in 1914, and is the largest ever sown in Canada; oats, 11,427,000 acres, an increase of 1,365,500 over 1914; other grains approximately 2,500,000 acres. Prospects, therefore, of a record crop still remain good, but harvesting will probably not be quite as early as previously forecasted. Stocks in

are:	Stocks.	Receipts.	Shipments.
Wheat .....	2,731,487	679,580	1,035,163
Oats .....	1,135,213	138,608	441,691
Barley .....	168,874	24,082	49,257
Flax .....	1,457,161	30,039	40,174

## Car Ferry Facilities at Rondeau.

In connection with the operations of the Pere Marquette Rd. in Ontario, the company in 1902 built a car ferry slip at Rondeau, Ont., and for about two years subsequently operated a car ferry service across Lake Erie to Conneant, Ohio, after which coal shipments were handled in bulk. It was decided recently to resume the Rondeau-Conneant car ferry service, and as, since the Rondeau dock was last in use larger car ferries have been built, it was found necessary to enlarge the slip proper and also the apron, from three to four tracks, necessitating new steel for the apron. The cost of reconstruction and remodelling is estimated at \$10,000. The entire construction is of wood, excepting the girders, which form a movable apron and counterweight apparatus. The construction is of the usual form for car ferry slips, consisting of a double row of sheet piling with suitable sheeting on both sides for a length of 100 ft. on the east and 40 ft. on the west side of the slip, this sheet piling being for the purpose of guiding the boat into position and holding it in place so that the ends of the rails on the boat will come exactly in line with those on the apron. The so-called apron consists of a movable piece of track, carried on four steel plate girders about 55 ft. long, on which four tracks, corresponding to those on the car ferry, are laid. The shore end of this apron rests on suitable fixed pile foundation, while the free end rests on and is attached to the boat when in position, thus making continuous track from the land to the deck of the ferry. An adjustable leaf of the apron is required to meet the varying stages of the water and the load on the car ferry. The car ferry has four tracks, with a capacity of seven cars each, or a total of 28 cars. It is said that the G.T.R. is contemplating having its coal brought in via Rondeau in future, instead of to Port Stanley and thence over the London and Port Stanley Ry. to London.

## A Staff Captain for the Northern Navigation Company.

The Northern Navigation Co., as a continuance of the progressive movements which have marked this company for several years, has instituted a new position on its s.s. Noronic, the last addition to its fleet. A staff captain has been appointed, whose duties are personally to see that the life saving apparatus on the vessel are in good shape, that the crew is practised in boat drill constantly, make a complete inspection of the vessel each day in company with the chief steward, purser and chief engineer, visiting all departments, including the kitchen, dining room, state rooms, etc., and in a general way to look after the comfort of the passengers. His duties will be subordinate to those of the captain, who will be able to devote his entire attention to the navigation of the vessel. Capt. Jas. Harrison, formerly in the service of Canadian Northern Steamships, Ltd., has been appointed to the position. He has had a wide experience on ocean vessels, and although the Northern Navigation Co. has always prided itself on the high state of discipline on its vessels, the new departure is looked to achieve results making for additional safety and comfort for those travelling on the company's vessels.



### Atlantic and Pacific Ocean Marine.

The crew of the s.s. *Voltaire*, who struck work at Montreal, June 8, for increase of pay, on account of the increased danger of the trip, were granted an increase of \$5 a month.

The C.P.R. has contributed £250 to the fund which is being raised in England for the relief of those dependent on persons who lost their lives in the destruction of the s.s. *Lusitania* by the Germans.

The Thomson Line s.s. *Iona*, while bound from Middlesbrough, England, to Montreal, was torpedoed by the Germans, in the North Sea, June 3. There were no passengers aboard. The captain and crew were landed safely at Kirkwall, Scotland.

The s.s. *Cheltonian*, which struck a rock off Cape Ray, Nfld., May 24, was under charter to the Cunard Line. She put in at Sydney, N.S., where some temporary repairs were made, and then proceeded to Halifax, where she drydocked for complete overhaul and repairs.

The British steamship *Carisbrook*, under charter to McLean, Kennedy and Co., Montreal, and en route from Montreal to Leith, Scotland, was sunk by gun fire from a German submarine, in the North Sea about June 20. Reports state that 13 of the crew of 24 are unaccounted for.

The British steamship *Tunisiana*, owned by Furness Withy and Co., en route from Montreal to Hull, Eng., was torpedoed in the North Sea about June 20. She was kept afloat and was subsequently beached. She carried about 240,000 bush. of wheat and a general cargo.

The s.s. *Leuctra*, formerly owned by the Thomson Line, and operating in the Canadian trade, was torpedoed by Germans in the North Sea, June 2. She was one of a number of vessels of small tonnage, all named to commemorate Greek battles, and formed what was familiarly known as the Battle Line.

At the annual meeting of shareholders of the International Mercantile Marine Co., the retiring directors were re-elected for the current year. No annual report was presented owing to the difficulty in getting the accounts closed owing to war conditions generally. A receiver was recently appointed to safeguard the company's interests.

One of the features of the early portion of the St. Lawrence navigation season, is the number of tramp vessels coming up to Montreal. Owing to the demands for space for war materials, etc., it has been difficult to arrange for the shipping of anything but Government orders, but with the continued arrival of tramp vessels these difficulties will be minimized and gradually disappear.

A number of claims have been entered against the C.P.R. and the owners of the s.s. *Storstad* in connection with the loss of life in the running down of the s.s. *Empress of Ireland* by the *Storstad* in 1914. The time limit for the receipt of claims expired at the end of May, and it is stated that a writ of attachment has been made against the \$175,000, which was paid into court as the result of the sale of the s.s. *Storstad*, on behalf of the various claimants.

The Pacific Mail Steamship Co., a U.S. corporation, incorporated in New York in 1848, will, it is stated, dissolve during this year. The reason for this step is stated to be the recently enacted Government Seamen's Act, which goes into effect Nov. 4, and which is designed to replace cheap Oriental labor by United States union labor. It is stated that the last sailing of the company's vessel will be made from San Fran-

cisco for far eastern ports, Nov. 2, after which all of the vessels will be for sale in the open market.

The report of the British Empire Steam Navigation Co., (Furness Withy and Co.) for the year ended Apr. 30, shows trading profits of £49,902 18s. 7d. After deducting all interest and expenses, there is a balance of £32,367 13s. 2d. Of this amount £25,000 was absorbed on account of flotation expenses, leaving £7,367 13s. 2d., out of which a dividend of 10% was paid to ordinary shareholders, absorbing £6,790 8s. 3d., and the balance was carried forward. This company, which was formed Feb. 17, 1914, has vessels, including some under construction, with a deadweight capacity of 74,590 tons.

The report of the Oceanic Steam Navigation Co. (White Star Line), for 1914 shows a profit of £795,955 11s. 6d., which with interest on investments makes a total of £887,584 11s. 4d. After deducting debenture and general interest, directors' fees and income tax, and writing off £398,967 18s. 3d. for depreciation on vessels and buildings, and also half the expenses of the new debenture issue, there is a balance of £233,429 13s. 11d., which with £90,669 16s. 11d. brought forward makes a total at the credit of profit and loss account of £324,099 10s. 10d. During the year dividends were paid absorbing £262,500, leaving the balance to be carried forward.

The Russian Volunteer Fleet, which commenced a steamship service last year between Vladivostok, Russia, and Vancouver and Puget Sound ports, but which service was somewhat disorganized by the war, is completing arrangements for the re-establishment of the service on a more elaborate basis. The Russian Government has made agreements with the C.P.R., which is acting as agent for the Russian Volunteer Fleet and the Eastern Asiatic Steamship Co., providing for a through freight service, which, it is stated, grants importers and exporters facilities hitherto unobtainable, and which will enable merchants to negotiate international trade documents through banks.

Two members of a firm in Glasgow, Scotland, acting as agents for the Nova Scotia Steel and Coal Co., New Glasgow, N.S., have been sentenced to six months imprisonment for trading with the enemy. The case was considered a bad one and the sentence light for the nature of the offence. The Nova Scotia Steel and Coal Co. has issued a statement to the effect that three cargoes of ore were shipped to Germany in July last, before the war broke out, and instructions were given to divert all three vessels to Great Britain. The company succeeded in diverting two of the three, the remaining one entered Rotterdam, Holland, a few days after war was declared, when the purchasers exercised their right under the law, to possession.

In order to ensure that the requirements of the British Home Office are observed, it has become necessary for steamship companies booking passengers across the Atlantic, to examine all passengers' credentials before allowing them to board vessels on this side. The Government order is interpreted that all eastbound passengers will require to have passports, those who are friendly aliens complying with the regulations, and those who are not aliens, to prove that they are not. Photographs attached to passports or other documents should be certified by respective consuls to avoid possibility of substitution. Booking agents are instructed before issuing tickets to see that passengers are able to comply with the regulations, as those who do not comply will not be allowed on board, and the companies assume no responsibility.

### Maritime Provinces and Newfoundland.

The channel to the Government wharf at Whycomagh, N.S., has been dredged to a width of 100 ft. and a depth of 13 ft. for about 1,100 ft., and a basin 300 x 300 ft. has been dredged in front of the wharf to the same depth. The position of the channel is marked by wooden spar buoys.

The Reid Newfoundland Co. has purchased the s.s. *Sagona* from the Newfoundland Produce Co., St. John's, for its mail and passenger service. The price paid is reported as £23,000. The *Sagona* was built at Dundee, Scotland, in 1912, and is 808 tons gross and 420 tons register.

The contract awarded some time ago by the Dominion Government to Norton Griffiths and Co., for the harbor improvements and dry dock at Courtenay Bay, St. John, N.B., has been cancelled. It is stated that the contractors were unable to proceed to the satisfaction of the Government owing to the difficulties of financing due to war conditions. Reports are current that the contract will be taken over by another concern, under arrangement with the Government.

The Canada Atlantic and Plant Line Steamship Co.'s s.s. *A. W. Perry*, en route from Boston, Mass., to Halifax, N.S., ran ashore at Chebucto Head, 8½ miles from Halifax, during a fog, June 8. There was about 40 passengers on board, all of whom, together with the crew, were removed safely. There was also considerable cargo. On the following day she slipped from the rocks and sank in deep water. She was built at Belfast, Ireland, in 1897, and named *Beverly*. Her dimensions were,—length 225 ft., breadth 34 ft., depth 22 ft.; tonnage, 1,601 gross, 957 register. She was screw driven by engine of 370 n.h.p.

The Dominion Coal Co.'s s.s. *Morwenna*, under charter to the Red Cross Line, was torpedoed by a German submarine, at the end of May, while bound from Cardiff, Wales, to Sydney, N.S. During last year she was operated by the Black Diamond Steamship Co., another subsidiary of the Dominion Steel Corporation, in the passenger and freight trade, between Montreal and St. John's, Nfld., and owing to the discontinuance of that business by the Black Diamond Steamship Co., for the present, she had just been chartered to Bowring and Co., for operation by the Red Cross Line in the trans-Atlantic trade. One of the crew was killed and a number injured, the latter being rescued by a Belgian trawler and landed at Cardiff. She was built at Dundee, Scotland, in 1904, and was 260 ft. long.

### Province of Quebec Marine.

The Marine Department has placed a gas buoy above St. Jean wharf in the St. Lawrence River below Quebec, to mark the wreck of the steamboat *Christine*. The light is placed 250 ft. south of the wreck and is white, automatically occulted at short intervals.

The Marine Department has issued a notice to mariners navigating the Lachine Canal, stating that at nights the lights shown on the C.P.R. swing bridge over the Canal, stating that at night the lights swing protection and a red light at both ends of the swing span when the passage is closed, and green light when open.

It is announced that the Dominion Government has settled its claim against the owners of the s.s. *Lingan* in connection with the sinking of the Government s.s. *Montmagny*, which was rammed and sunk in the St. Lawrence below Quebec, Sept. 18,

1914. An action was entered in the Exchequer Court, and \$400,000 was claimed. The amount accepted by the Government in settlement is stated to be \$100,000.

The s.s. Prefontaine, registered in Montreal, in the name of Jos. Malo, is reported to have been sold to a new company, for operation twice weekly between Montreal and Quebec, with J. O. Read as master. She is being repaired and overhauled at Montreal. She was built at Sorel, Que., in 1896, her dimensions being, length 202 ft., breadth 30.6 ft., depth 8 ft.; tonnage 899 gross, 533 register, and she is screw driven by engine of 56 n.h.p.

The Montreal City Council has abolished the fares for the ferry between the city and St. Helens Island, and has arranged with Canada Steamship Lines, Ltd., for the operation of the company's s.s. Longueuil on the route for the summer. The vessel has accommodation for about 800 passengers, and the service will cost the city \$17,730. The Mayor is reported to have outlined a proposal "to saddle the Montreal Tramways Co. with the cost when a new contract for street car service is made."

The Marine Department is carrying out a series of works with the view of raising the water levels in the St. Lawrence between Montreal and Lake St. Peter. The ship channel is to be dredged to a uniform depth of 35 ft., and compensating works are to be built near Lake St. Peter. The dredging of the channel through Lake St. Peter to 35 ft. will, it is expected, be finished by the end of the year, while the whole work will take a few years to complete. The compensating works include the erection of a dyke about 4,800 ft. long opposite Pointe du Lac, the closing of five channels through the group of islands at the head of Lake St. Peter, and the construction of a dyke about 3,500 ft. long between Ile a Bague and Ile Bellegarde.

The two parallel locks which are to be built in the St. Charles River at Quebec will be 450 x 65 ft., and will be of concrete. The dam which is under construction there is expected to be finished this year. The whole work of improving the lock accommodation, which includes dredging, the building of the new locks and the erection of a new railway and passenger bridge will, it is expected, take two years. A suction dredge has just been completed and placed in operation. Other machinery in operation on the site include a four yard dipper dredge, a gasoline launch for towing, a number of scows, 17 hoisting engines and a 30 ton crane. Quinlan and Robertson are the contractors.

Mariners are warned that owing to the construction of a dam and locks in the River St. Charles near the Canadian Northern Ry. bridge, the river channel is partly obstructed. A row of piles will be erected from about 140 ft. inside of the Quebec gap of the swing bridge, to the Quebec shore, extending about 600 ft. down the river at right angles to the bridge, the lower part being marked by a pier covered at high water, from which a fixed white light erected on a pole will be exhibited. The channel is on the right hand side of the light when going up. A caisson is being sunk on the north or Limoilou side, obstructing the northern channel through the bridge. Vessels should pass towards the Quebec side of the swing bridge within a line from the pier with light to the shore end of the Quebec side gap in the swing bridge.

The Quebec Board of Trade sent a deputation to the Government, June 2, asking for extensive improvements in the harbor, and for a 10c rate on wheat carried over the National Transcontinental Ry. from Winnipeg to Quebec, with a proportionate

rate on the eastern section to St. John and Halifax. In the improvements asked for are a 10,000,000 bush. grain elevator and additional docking accommodation for 15 ocean going vessels. Sir Robert Borden stated, in replying to the arguments, that such improvements were, for the present, restricted by the difficulty in raising the necessary money, and any such must be confined to the actual present needs. A large sum would have to be spent for the equipment of the N.T.R., and the volume of traffic both east and west would help to fix the rate to be charged. He also stated that the Government had spent over \$25,000,000 in and around Quebec in the last four years.

### Ontario and the Great Lakes.

A hopper barge, No. 3, was launched at Collingwood, June 19, for the Dominion Government.

The Public Works Department is having built at Collingwood, a steel steam hopper scow for use in connection with the dredging operations in the St. Lawrence River.

Canada Steamship Lines s.s. Turbinia, is undergoing overhaul and repairs at Kingston, after which, it is stated that she is to be sent to the Atlantic coast under charter.

The United States War Department has awarded the contract for cement masonry on lock 4 of the Sault Ste. Marie canal to O. Daniel, Chicago, Ill., for \$1,010,048.

Canada Steamship Lines motor vessel Fordonian broke her crank shaft above Whitefish Point, June 17, and was taken to Port Huron. She was eventually taken to Port Colborne, where repairs were made.

Forwarders, Ltd., Kingston, have chartered their steamships Port Colborne, Port Dalhousie and W. H. Dwyer to the International Paper Co., and these vessels will run into Portland, Me., during the summer.

Gas buoy no. 9 at Round Island, Lake Huron, has been moved to the end of the shoal north of the island, and placed in 19 ft. of water. It is spar shaped with an occulting white light of 120 c.p., 13 ft. above water.

The Reid Wrecking Co. is renewing its attempts to raise the United States lightship 82, which was lost off Point Abino, in Lake Erie, in Nov., 1913. The work, which was taken in hand last autumn, had to be abandoned owing to the storms.

Work was started on the drilling of the undredgable material at the bottom of Lake Ontario at the Port Weller entrance to the Welland Ship Canal. It is stated that the work will take three years. J. Manley, Merriton, Ont., has the sub contract.

The Great Lakes Transportation Co. commenced a direct trans-Atlantic service from the head of the lakes recently, when its s.s. Glenfoyle left Fort William with 122,000 bush. of grain for Manchester, Eng. It is interesting to note that neither port can be considered an ocean one.

The underwriters received tenders, June 15, for the raising of the s.s. Charles S. Price, one of the United States vessels lost in the great storm on the Great Lakes in Nov., 1913. It is believed that it is possible to raise the vessel, but tenders which were invited on two previous occasions were all considered unsatisfactory.

The Department of Trade and Commerce has asked carriers by the lake route from the head of the lakes to Montreal to quote prices for the transportation of 1,000,000 bush. of wheat between the points named. This grain has been purchased by the Dominion Government for New Zealand, and it is hoped to ship it from Montreal.

The Department of Marine is reported to

have chartered the steamships La Salle, Athene and Thyra for fisheries patrol service on the Great Lakes. It is stated that the La Salle will be confined to Lake Erie, the Athene to Lake Ontario and the St. Lawrence River, and the Thyra in the Thunder Bay district from Otter Head Point to the International boundary.

A large steel tug was launched at Grand Haven, Mich., June 19, for the Canadian Stewart Co., for towing barges in connection with the development work in Toronto harbor. The tug is 82 ft. long, 20 ft. beam and 10 ft. deep, equipped with a fore and aft compound engine with cylinders 16 and 34 by 26 ins., supplied with steam by a Scotch boiler 10¼ ft. diam. by 11 ft. long.

The s.s. Trevisa, which was launched at Londonderry, Ireland, in May, was specially designed and built for service on the Canadian Lakes, but owing to the demand for tonnage in British waters, she has been chartered for special services in connection with the supply of stores for war purposes. Her dimensions are, length 250 ft., breadth extreme 42½ ft., depth moulded 20 ft.

The Marine Department is building a new lighthouse on the southwest point of Battle Island, Lake Superior, consisting of a white reinforced concrete tower surmounted by a red octagonal lantern, 43 ft. high. The light is of the catoptric order of 20,000 c.p., showing three flashes at 4 second intervals every 24 seconds. It is at an elevation of 118 ft. and visible for 16 miles.

A special meeting of shareholders of Canada Steamship Lines Ltd. was held at Montreal, June 19, to authorize the directors to apply for supplementary letters patent extending the company's powers to allow it to take advantage of certain amendments to the Companies Act, made in 1914, and issue its bonds and debentures in other sums than authorized by its act of incorporation, viz., \$100 and £20.

The Duluth, South Shore and Atlantic Ry., a subsidiary of the C.P.R., the Grand Rapids and Indiana Ry. and the Michigan Central Rd., have been allowed by the Interstate Commerce Commission, to continue the joint ownership of the ferry boats operated under the name of the Mackinac Transportation Co., between St. Ignace and Mackinac City, Mich., which, otherwise, under the Panama Canal Act, they would not be entitled to do.

The U. S. Lake Survey reports the levels of the Great Lakes in feet above tidewater for May, as follows.—Superior 601.65; Michigan and Huron 579.64; Erie 571.69; Ontario 245.15. Compared with the average May levels for the past ten years, Superior was 0.30 ft. below; Michigan and Huron 1.07 ft. below, Erie 1.12 ft. below and Ontario 1.76 ft. below. It was anticipated that during June, Superior, Michigan and Huron would rise 0.3 ft., Erie 0.2 ft., and Ontario 0.1 ft.

Canada Steamship Lines' s.s. Rochester has been libelled at Buffalo, N.Y., on claims totalling \$265,000, by residents of the State of Rhode Island, who allege that during an excursion in 1913, impure water was supplied on the vessel, causing an outbreak of typhoid fever. A Canada Steamship Lines official at Montreal is reported to have stated in connection with the case, that at the time mentioned there were outbreaks of typhoid fever in several of the U. S. cities visited by the vessel, and that a number of U. S. soldiers on the vessel were taken ill, and as a result of an enquiry by the U. S. Government, the company was entirely exonerated from all blame.

The British Government and the Dominion Flour Mills Ltd., have libelled the s.s. Valcartier, owned by Lake Commerce Ltd., Toronto, for loss of cargo, as a result of a

collision with the s.s. F. M. Osborne in Lake Huron recently. Lake Commerce Ltd. is applying in the Federal Court at Detroit, Mich., for a limitation of liability, and denies any fault for the collision, stating that those in charge of the F. M. Osborne were incompetent and that an efficient lookout was not maintained, that she altered her course to starboard without having a passing agreement to pass port to port, and that she so passed despite a warning signal from the Valcartier. It is estimated that repairs to the vessel will cost about \$20,000, and that the total loss to the company owing to the vessel being out of business will be \$41,000.

Turret Chief, Ltd., has been incorporated under the Ontario Companies Act, with \$40,000 capital and office at Hamilton, to carry on a navigation and transportation business. The provisional directors are, A. B. MacKay, J. G. Gauld and C. V. Langs, Hamilton. The Turret Chief was owned by the Canadian Lake and Ocean Navigation Co., Toronto, and was wrecked in Lake Superior in Nov., 1913, when she was abandoned to the underwriters. She was eventually sold, salvaged and repaired and again sold to A. B. MacKay, who it is reported has chartered her for trans-Atlantic service. She was built at Sunderland, Eng., in 1896, and is of steel construction with double bottom for water ballast. She is equipped with triple expansion engines with cylinders 20, 34 and 57 ins. diam. by 39 ins. stroke, of 1,100 i.h.p., supplied with steam by two water tube boilers 12¼ by 10 ft. by Babcock and Wilcox. Her dimensions are, length 253 ft., breadth 44 ft., depth 19 ft. 7 ins.; tonnage, 1,881 gross, 1,197 register.

### Manitoba, Saskatchewan and Alberta.

The Governor General in council has approved the Winnipeg and St. Boniface Harbor Commissioners' bylaws.

A gasoline boat service is being operated on Lesser Slave Lake, in the passenger service, between Grouard and Indiana, Alta., on the Edmonton, Dunvegan and British Columbia Ry. The boats, which are named Northwest and Dreadnought, have capacity for 30 passengers each, and are operated by the Northwest Transportation Co., of which J. A. Powers is Manager.

### British Columbia and Pacific Coast.

The name of the Marine Department's s.s. Falcon, registered at Victoria, B. C., has been changed to Berquist. This vessel was built at Port Moody, B. C., in 1902, and was formerly named Ruth.

The s.s. Wellington, owned by Canadian Collieries (Dunsmuir) Ltd., which has not been used for some years, is reported to have been chartered for a trip to New York with a cargo of B. C. fir.

The British Yukon Navigation Co.'s s.s. Nasutlin sailed from Dawson, Yukon, May 27, for Whitehorse, opening navigation on the Yukon River. The first vessel sailed from Whitehorse, June 1, on the regular schedule.

The All Red Line, Ltd., Vancouver, has made the following appointments on its two vessels for this year: Santa Maria, S. G. Mortimer captain, T. M. Stephens chief engineer; Selma, H. E. Lawrey captain, H. Hunter chief engineer.

H. E. Kemp, a former Secretary-Treasurer, North Vancouver Ferry Co., is taking action against the company, claiming \$2,000 for wrongful dismissal. The company alleges that he had falsified books and made wrong reports.

The Grand Trunk Pacific Coast Steamship

Co. has reduced the time taken by its steamships on the route between Vancouver and Prince Rupert, from 33 to 30½ hours. The distance is 482 nautical miles, the average run being 16 miles an hour.

Tenders are under consideration by the liquidators of the Canadian Northern Pacific Fisheries Ltd., for the purchase of the company's fleet of whaling and fishing vessels. At the time of writing, it was not known how the business would be disposed of, but it was stated that if the bids for the entire fleet were not considered satisfactory, the property would be divided and disposed of in small lots.

During May, work proceeded rapidly on the construction of the breakwater at Victoria, which is under contract to Grant, Smith and Macdonnell. During the month 7,253 tons of granite were laid and 19,022 tons of rubble were placed on the foundations extending seaward, and 1,334 cubic yards of concrete were also laid. The third crib is under construction at Rosebank, and steel is being placed on the ways for the building of the fourth crib.

A San Francisco press report of June 26 states that the Robert Dollar Steamship Co. is arranging to change five of its steamships from U.S. registry to British registry, on account of the Seamen's Act, which becomes effective Jan. 1, 1916. It is also stated that it is probable the headquarters of the company will be moved to Vancouver, B.C. Some of this company's vessels have been on the British register (Canadian) for several years, and were transferred just recently to the U.S. register, when the regulations respecting foreign built vessels came into force in the U.S.

A. Johnston, Deputy Minister of Marine, returned to Ottawa at the end of May, after a trip to the Pacific coast, when, accompanied by Col. W. P. Anderson, Chief Engineer of the Department, he inspected the port and navigation facilities there, as far north as Prince Rupert. A number of questions were dealt with on local complaints, covering additional aids to navigation, pilotage charges, the operation of gasoline boats by uncertificated men, etc., and these will be subjects for report to the Department, with recommendations.

The British Columbia Indian Commission, which reported recently on the question of the disposition of the Kitsilano Indian Reserve, has recommended that the property be handed over to the Vancouver Harbor Commission, for development along with other lands covered by the general harbor improvements in progress there. Plans have been prepared by A. D. Swan, M. Can. Soc. C.E., Chief Engineer to the Commission, and it is stated that these provide for the accommodation of the largest vessels operating on the Pacific Ocean, with ample warehouse space and railway facilities.

The C.P.R. s.s. Princess Irene, which was requisitioned by the British Admiralty at the commencement of the war, was blown up in Sheerness harbor, England, May 26, it is stated, as the result of an accident. At the time of the disaster she was undergoing an overhaul, and all the members of the crew, with the exception of one, lost their lives. She was built at Dumbarton, Scotland, was launched in July, 1914, and she was intended for the company's British Columbia Coast Service, but was taken over by the Admiralty before she was out of the builders' hands. Her dimensions were: length, 395 ft.; breadth, 54 ft.; depth 28¼ ft. A full description of the vessel and her sister, Princess Margaret, launched just previously, and also taken over by the Admiralty, was given in Canadian Railway and Marine World for Aug., 1914.

### Stranding of the s.s. Cheltonian.

An investigation into the causes of the stranding of the British s.s. Cheltonian near Cape Ray, Nfld., May 23, was held at Halifax, N.S., June 18, by Capt. L. A. Demers, Dominion Wreck Commissioner, and the following judgment, concurred in by Capt. John Fleming and D. Stewart, as nautical assessors, was delivered: The court, having carefully reviewed the evidence submitted by the master, which was very intelligently set forth, finds that up to the moment of and prior to the stranding the vessel was navigated in a proper and seamanlike way; but we are of opinion that when Bird Rock was not seen, nor the whistle there heard, it was the duty of the master to have taken frequent soundings, and make absolutely certain, by the various means at his disposal, of the exact position of his vessel, which he failed to do. We regret to say that he took too much for granted, and omitted the minor details which prudence and good navigation required. Therefore, owing to these omissions, which we cannot overlook, we censure the master, Richard Jones, for this error of judgment; but under the circumstances the court must say that it is very much impressed by the fact that he brought his vessel, which had a valuable cargo on board, back to Sydney, and subsequently to Halifax for repairs, under very adverse conditions, as the engines and boilers were out of alignment, and the holds were not free from water. This was indeed a gigantic task and the captain, engineer and assistants deserve unstinted praise for their successful efforts in this connection. In view of these circumstances we have pleasure in complimenting the master upon his actions in saving the vessel and her valuable cargo; and we also compliment the chief engineer for the marvellous work which he performed in nursing the engines so that they answered the demands and trials to which they were subjected.

**Beeson's Marine Directory.** The 29th issue of this publication maintains the high standard of previous years regarding the classification of the Canadian and United States vessels operating on the Great Lakes, and also the collection of interesting information connected therewith. There are included in the volume descriptive details of Canadian harbors on the Upper St. Lawrence, the Great Lakes, Georgian Bay, etc., which are published under the authority of the Minister of Marine. The book consists of 288 pages, 10 by 7 ins., bound in cloth, and is published by Harvey C. Beeson, 732 South Sherman St., Chicago, Ill., at \$5.

**The Erie Rd.,** in pursuance of the order of the Interstate Commerce Commission and of the Panama Canal Act, is taking steps to divest itself of its lake steamship holdings, and has sold four of its eight lake steamships to W. G. Davidson, New York. It is stated that the vessels sold cost on an average, \$200,000, and that the price realized is \$600,000 for the four. It is announced that the vessels will be taken to New York, two being placed in the coast trade and two being used for trans-Atlantic routes. They will have to be cut in two in order to pass the locks of the Welland Canal.

**The Great Lakes Red Book,** 4¼ by 3 ins. published by the Marine Review, Cleveland, Ohio, at \$1, is a handy vest pocket reference book containing a list of over 1,000 vessels operating on the Great Lakes, with the names of owners, captains and engineers. The vessels are classified in a unique manner whereby quick reference can be made for the information desired.

**Additional Steamship for Canadian Pacific Railway Atlantic Service.**

The Canadian Pacific Ry. has purchased the s.s. Frankmount from the Palace Shipping Co., Liverpool, Eng., and has changed her name to Medora. She is being thoroughly overhauled at Belfast, Ireland, and we are advised that she is very similar in type to the C.P.R. steamships Missanabie and Metagama, which have been put into service recently on the C.P.R. Montreal and Liverpool freight and passenger service. A full description of these latter vessels was given in Canadian Railway and Marine World for Aug. 1914, pg. 388.

The s.s. Medora was built at Port Glasgow, Scotland, in 1912, and has steel hull, two steel decks, is classed 100 A1 at Lloyd's, and is equipped with triple expansion engines with cylinder 25, 42 and 70 ins. diam., by 48 ins. stroke, 477 n.h.p. She is an up to date vessel, with electric lighting equipment and all the modern life saving and other appliances.

**Telegraph, Telephone and Cable Matters.**

The Association of Railway Telegraph Superintendents held its annual convention at Rochester, N. Y., June 22 to 25, when a number of papers on a variety of subjects concerning the construction and operation of railway telegraph systems were read and discussed.

The U. S. Circuit Court of Appeals has confirmed the judgment of the lower courts in granting a preliminary injunction against the DeForest Radio Telephone and Telegraph Co., the Standard Oil Co. of New York and L. DeForest, restraining them from infringing the fundamental Marconi and Lodge patents.

The Great North Western Telegraph Co. has opened offices at Bala Park, Lake Joseph, Niagara Military Camp, Port Cockburn, Queens Royal Hotel, Niagara on the Lake, Rosseau, Sparrow Lake, Ont., Richmond and Valcartier Camp, Que.; and has closed its offices at Rosebank, Man., Allanburg, Banning and Teeswater, Ont., St. Cesaire Station, Que., and Mikado, Sask.

R. N. Young, Superintendent, C. P. R. Telegraphs, British Columbia Division, returned to Vancouver recently after an inspection trip through the Kootenay District. He stated that telegraph communication would soon be opened along the Kettle Valley lines between Midway and Merritt, thus practically completing the company's service in the interior. There is now a direct wire from Vancouver to Penticton and Kelowna, connecting up the lower Okanagan district.

The New Brunswick Telephone Co.'s earnings for the year ended Mar 31 were \$455,066.53, against \$422,700.45 for the previous year. During the year dividends totalling 6% were paid, and a 1% bonus for the year was paid Apr. 15. The board for the current year is,—President, S. H. White; First Vice President, Hon. F. P. Thompson; Second Vice President, Lieut.-Col. Black; A. W. Bennett, H. P. Robinson, F. B. Carvell, M.P., F. W. Sumner, E. O'Leary, Lieut.-Col. J. L. McAvity, R. B. Emerson, J. M. Robinson, G. W. Ganong, L. B. McFarlane, A. R. Slipp and W. B. Snowball.

**Western Crops.** The C. P. R. estimates the acreage under crop in the prairie provinces this year as follows,—Wheat 12,809,000, an increase of 22%; oats 6,963,000 an increase of 12%; barley 2,224,000 an increase of 15%; flax 864,000 a decrease of 14%; total acreage 22,860,000 an increase of 16%.

**Among the Express Companies.**

O. E. Ford, formerly agent, Western Ex. Co., Spokane, Wash., has been appointed route agent, Dominion Ex. Co.'s Pacific Division.

F. H. Hill, heretofore messenger, has been appointed agent, Dominion Ex. Co., at Kelowna, B. C., vice C. E. McIntyre resigned.

The Dominion Ex. Co. has opened offices at Little Bras D'Or, N. S., Iona, Ont., Horizon, Eastend, Raycraft, Regina Beach, Sask., Hayter and Waldo, Alta.

The Canadian Ex. Co. having placed its service on the St. John and Quebec Ry., now being operated as part of the Canadian Government Railways, has opened offices at Centreville, Lakeville, Meductic, Roseborough and Woodstock, N. B.

**Trade and Supply Notes.**

The matter which appears under this heading is compiled, in most cases, from information supplied by the manufacturers of, or dealers in, the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers distinctly to understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

The West Disinfecting Co., New York, announces that it will erect a manufacturing plant at Montreal to be in operation early in the autumn.

The International Nickel Co. 43 Exchange Place, New York, N. Y., has issued a booklet "Monel Metal" describing its properties, uses, etc.

Independent Pneumatic Tool Co., Chicago, has appointed G. C. Wilson Manager of its Atlanta, Georgia, Branch, vice F. H. Charbono, transferred to Boston, Mass.

Franklin Railway Supply Co., 30 Church St., New York, N.Y., has issued a catalogue describing and illustrating its automatic driving box lubricator for lubricating driving journals with grease instead of oil.

The Rail Joint Co., New York, N.Y., announces that it has received the only medal of honor awarded by the Panama-Pacific International Exposition at San Francisco for rail joint products in the transportation department.

The Dominion Iron & Steel Co.'s order from the South African Government Railways for rails, referred to in Canadian Railway and Marine World for June, is for about 25,000 tons of 80 lb. sections and about 10,000 tons of 60 lb. sections. The rails will be shipped from Sydney, N.S., during the next few months.

B. J. Coghlin Co., Limited, manufacturers of railway supplies, Montreal, have issued an 85 pg. catalogue covering a wide range of railway accessories including springs for locomotives, tenders, passenger and freight cars, and electric railway cars, waggons,

trucks, cranks, etc., also a full line of track tools, including guy rods, ground anchors, tie plates, rail braces, and wrecking chain.

M. Beatty & Sons, Ltd. received an order on May 29 from the War Purchasing Commission at Ottawa for 5 carloads of material handling machinery, consisting of hoisting engines, derrick irons, turn tables, centrifugal pumps and clam-shell buckets for use by the Canadian Overseas Railway Construction Corps in Europe. The goods went forward, June 1, knocked down and packed for ocean shipment.

John Bertram & Sons Co., Ltd., machine tool manufacturers, Dundas, Ont., have offered to the Dominion Government the free use of the Wilson residence property in Dundas, which the company owns, as a home for convalescing soldiers for whatever time it may be required. The house, which has a broad verandah, is situated in about an acre of ground which is shaded by large elms and well supplied with fruit trees. It will accommodate from 30 to 40 men.

American Steel Foundries, McCormick Building, Chicago, has issued a unique calendar for 12 months commencing June, 1915. Each sheet contains a calendar for three months, viz., the current month in the centre of the sheet and the previous and coming months above and below it respectively. At the end of each month the entire sheet can be torn off with the result that the ensuing current month will have the centre position on the sheet with the past and coming months in plain view.

**Transportation Conventions in 1915-16.**

- July 13-16.—International Railway General Foremen's Association, Chicago, Ill.
- July 13-16.—American Railroad Master Tanners, Coppersmiths and Pipefitters Association, Chicago, Ill.
- July 19-21.—American Railway Tool Foremen's Association, Chicago, Ill.
- July 21.—American Association of Demurrage Officers, Milwaukee, Wis.
- Aug. 17.—International Railroad Master Blacksmiths' Association, Philadelphia, Pa.
- Aug. 19, 20.—American Association of Railroad Superintendents, San Francisco, Cal.
- Sept. 14-16.—Roadmasters' and Maintenance of Way Association, Chicago, Ill.
- Sept. 14-16.—Master Car and Locomotive Painters' Association of the United States and Canada, Detroit, Mich.
- Sept. 14-17.—Railway Signal Association, Salt Lake City, Utah.
- October.—American Association of Dining Car Superintendents.
- Oct. 4, 5.—American Association of Traveling Passenger Agents, Boston, Mass.
- Oct. 4-8.—American Electric Railway Association, San Francisco, Cal.
- Oct. 5-7.—Railway Fire Protection Association, Chicago, Ill.
- Oct. 13-15.—American Association of Railway Surgeons, Chicago, Ill.
- Oct. 19-21.—Maintenance of Way and Master Painters' Association of the United States and Canada, St. Louis, Mo.
- Oct. 19-21.—American Railway Bridge and Building Association, Detroit, Mich.
- Dec. 7-10.—American Society of Mechanical Engineers, New York, N.Y.
- Jan. 18-20, 1916.—American Wood Preservers' Association, Chicago, Ill.
- March 21-23, 1916.—American Railway Engineering Association, Atlantic City, N.J.
- May 2-5, 1916.—Air Brake Association, Atlanta, Ga.
- June 28, 1916.—Association of American Railway Accounting Officers, Detroit, Mich.

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### Transportation Associations, Clubs, Etc.

The names of persons given below are those of the secretaries unless otherwise stated:

Canadian Car Service Bureau—J. Reilly, Manager, 401 St. Nicholas Building, Montreal.

Canadian Electric Railway Association—Acton Burrows, 70 Bond Street, Toronto.

Canadian Freight Association (Eastern lines)—G. C. Ransom, Canadian Express Building, Montreal.

Canadian Freight Association (Western lines)—W. E. Campbell, 805 Boyd Block, Winnipeg.

Canadian Railway Club—J. Powell, St. Lambert, Que. Meetings at Montreal 2nd Tuesday each month, 8.30 p.m., except June, July, and August.

Canadian Society of Civil Engineers—C. H. McLeod, 176 Mansfield St., Montreal.

Canadian Ticket Agents' Association—E. de la Hooke, London, Ont.

Central Railway and Engineering Club of Canada—C. L. Worth, 409 Union Station, Toronto.

Meetings at Toronto, 3rd Tuesday each month, except June, July, and August.

Dominion Marine Association—F. King, Counsel, Kingston, Ont.

Eastern Canadian Passenger Association—G. H. Webster, 54 Beaver Hall Hill, Montreal.

Engineers' Club of Montreal—R. W. H. Smith, 9 Beaver Hall Square, Montreal.

Engineers' Club of Toronto—R. B. Wolsey, 94 King Street West, Toronto.

Express Traffic Association of Canada—W. H. Burr, Chairman, Toronto.

Great Lakes and St. Lawrence River Rate Committee—James Morrison, Montreal.

Hydro-Electric Railway Association of Ontario, T. J. Hannigan, Guelph, Ont.

International Water Lines Passenger Association—M. R. Nelson, New York.

Niagara Frontier Summer Rate Committee—James Morrison, Montreal.

Nova Scotia Society of Engineers—A. R. McCleave, Halifax, N.S.

Quebec Transportation Club—A. F. Dion, Quebec.

Ship Masters' Association of Canada—Capt. E. Wells, 45 St. John Street, Halifax, N.S.

Toronto Transportation Club—W. A. Gray, 143 Yonge Street, Toronto.

Western Canada Railway Club—Louis Kon, Box 1707, Winnipeg. Meetings at Winnipeg, 2nd Monday each month, except June, July, and August.

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Canadian Railway & Marine World



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Forms of tender, with plans and specifications, may be obtained on application to the undersigned.

The plans and specifications will also be exhibited in the offices of the District Engineers, Department of Public Works, Toronto and Windsor, and at the present Life Saving Station, Point Pelee.

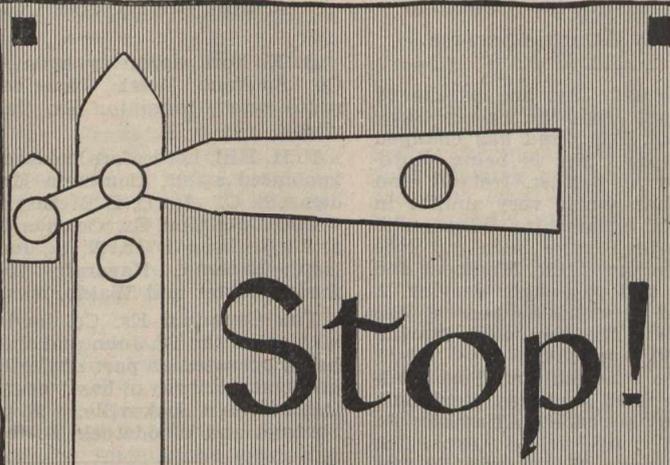
G. J. DESBARATS,

Deputy Minister of the Naval Service.

Department of the Naval Service,  
Ottawa, June 15th, 1915.

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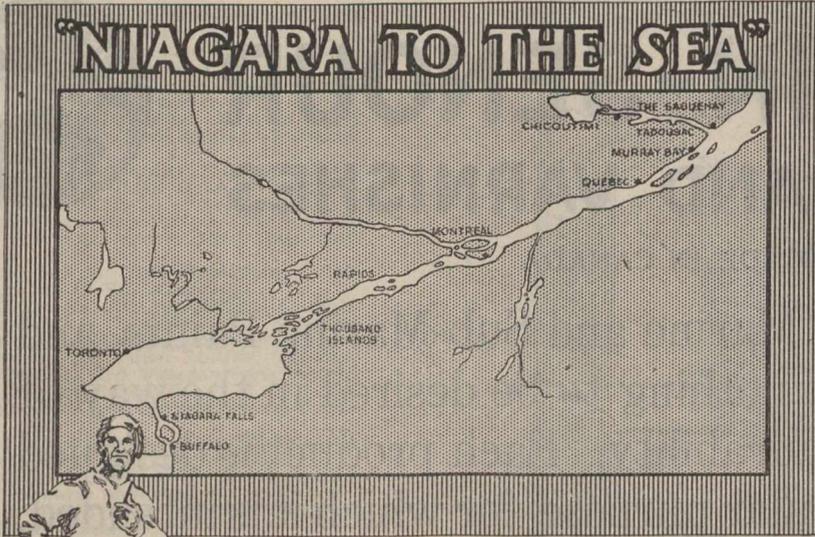
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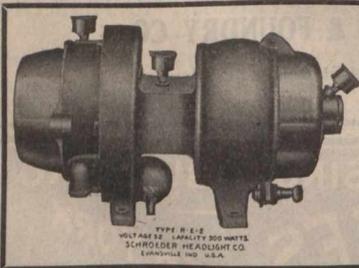
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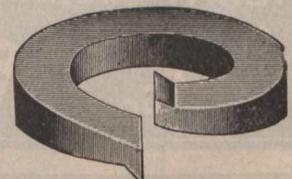
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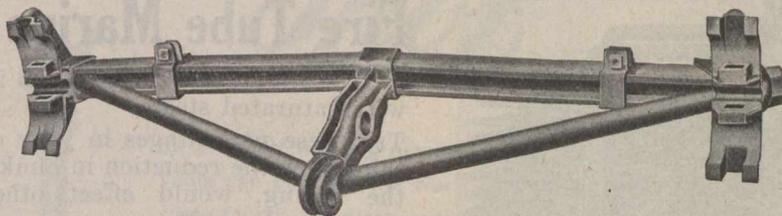
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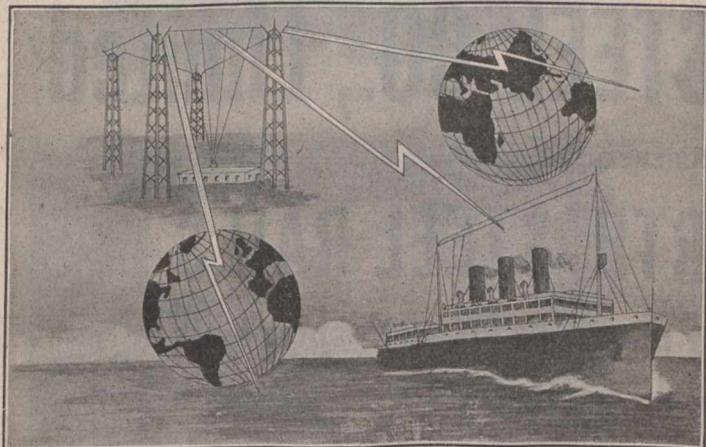


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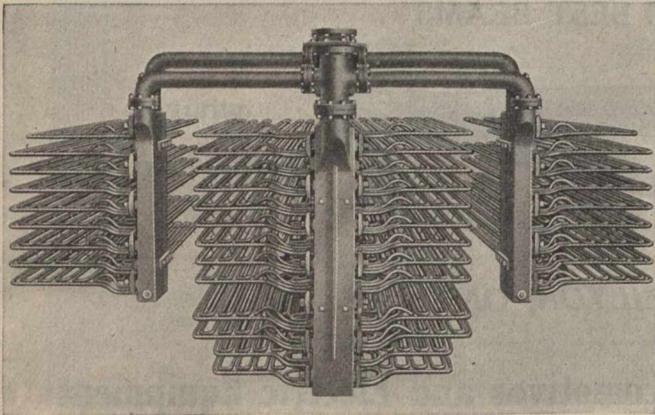
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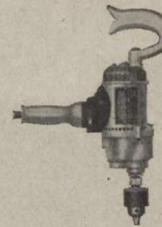
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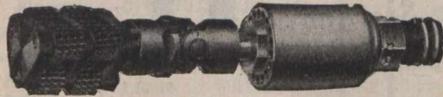


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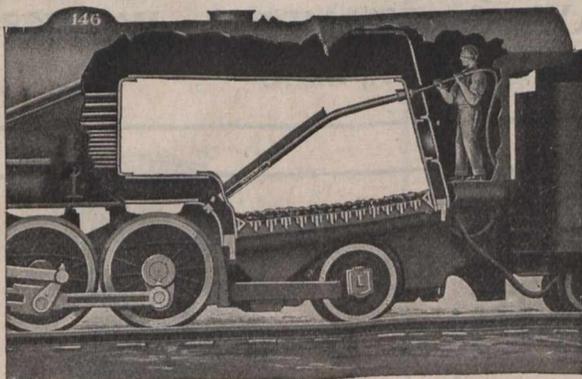
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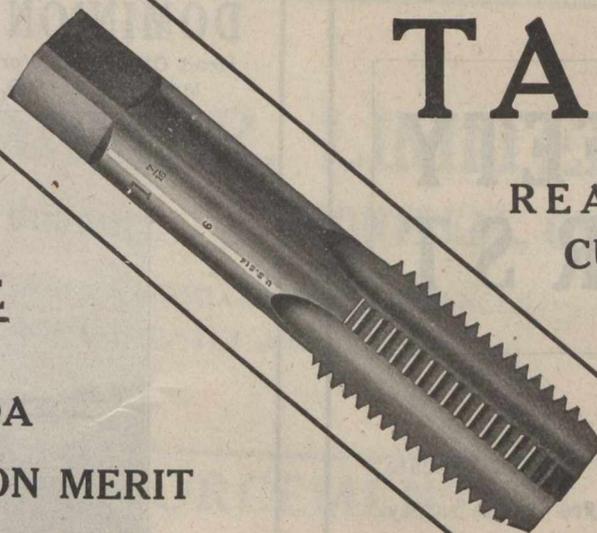
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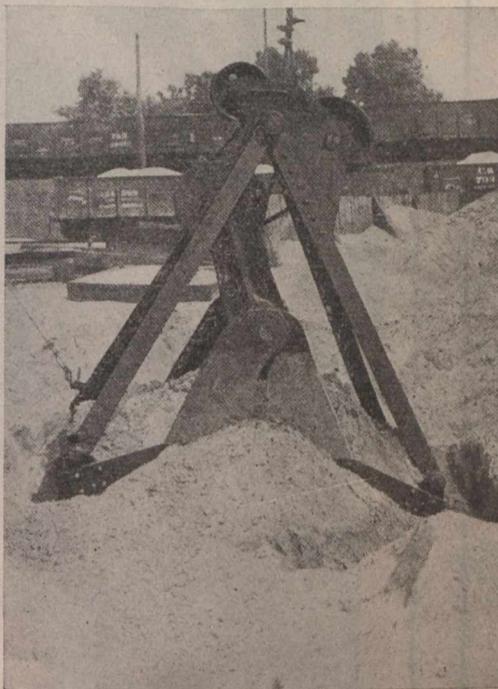
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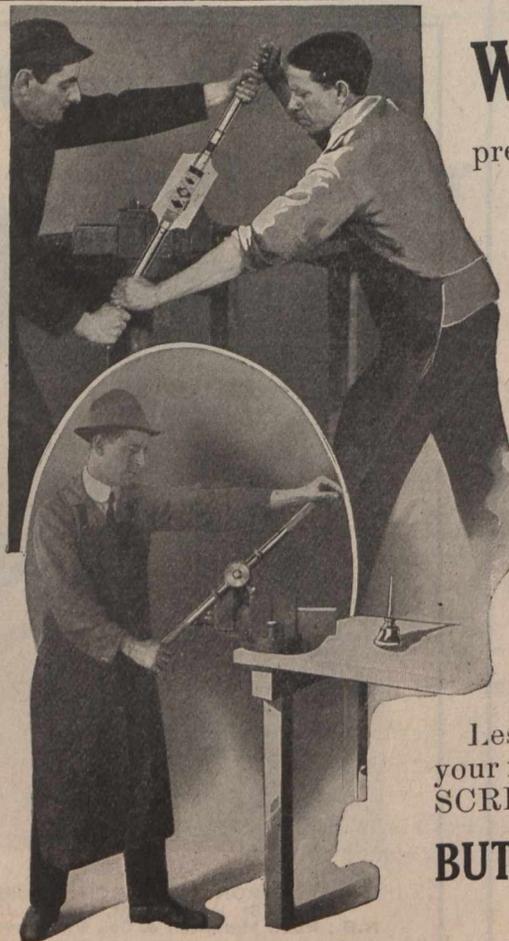


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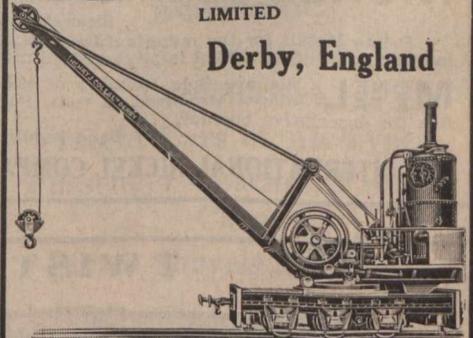


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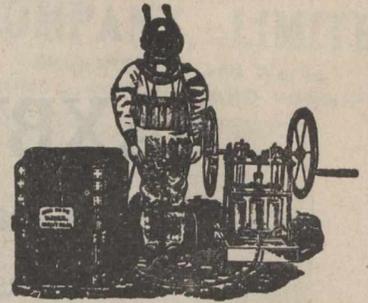
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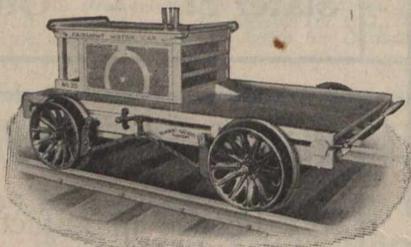
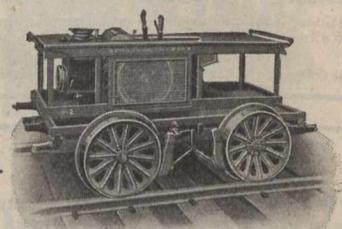
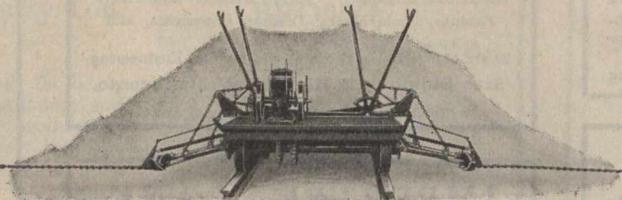
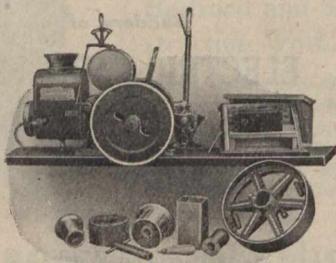
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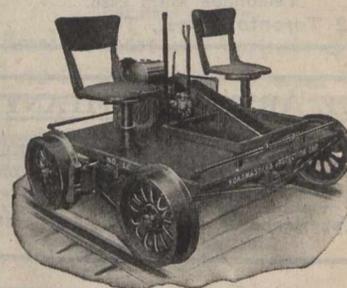
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It is the result of thorough investigation and careful observation under actual working conditions.

The Detroit Automatic Flange Lubricator, Pendulum Type, gives efficient lubrication in exact accordance with the requirements of the service—and does it automatically. It requires no manipulation by the engineer—takes up no room in the cab—requires no steam.

The oil is applied just when and where it is needed—there is no spattering, no waste.

The Detroit Pendulum Type Flange Lubricator is made in two sizes—two feed and four feed.

The illustrations herewith show a sectional view of a four feed tank, also a four feed lubricator, installed on a switching engine which shows the device complete, and location of regulating valve and check valve.

The Pendulum Type Lubricator actually pumps the oil to the feed nozzle on the flange and operates in the following manner:

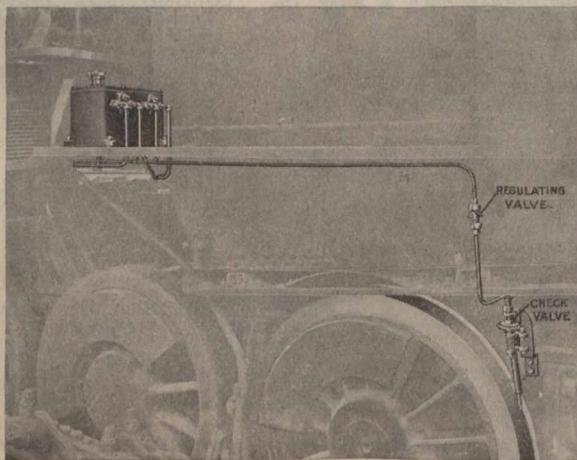
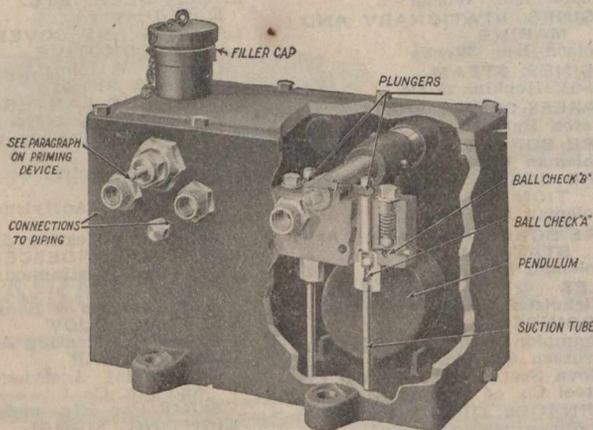
Any swinging motion or rolling on curves or lateral motion of any kind causes the "pendulum" to swing; as the "pendulum" is pinned to shaft "R" this swinging motion results in alternating strokes of the two "plungers."

On the up stroke of a "plunger" oil is drawn up past the ball check "A"; on the down stroke the ball check "A" closes the passage into the "suction tube" and oil is forced past the ball check "B" and into the pipe leading to the "feed nozzle."

The "regulating valves" installed in the pipe line control the flow of oil to the flanges, and are regulated by the operator to meet the requirements of the service.

Once the regulating valve is set to suit local conditions, the lubricator does not need the daily adjustment as required by lubricators in the cab.

The new booklet just issued completely describing this new Detroit Automatic Flange Lubricator, Pendulum Type, gladly sent on request. Ask for FO-81.



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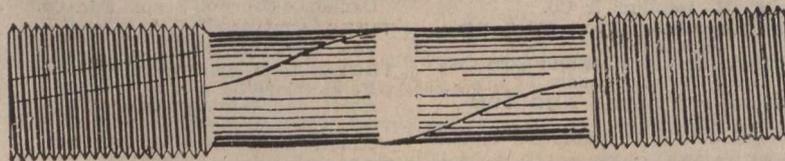
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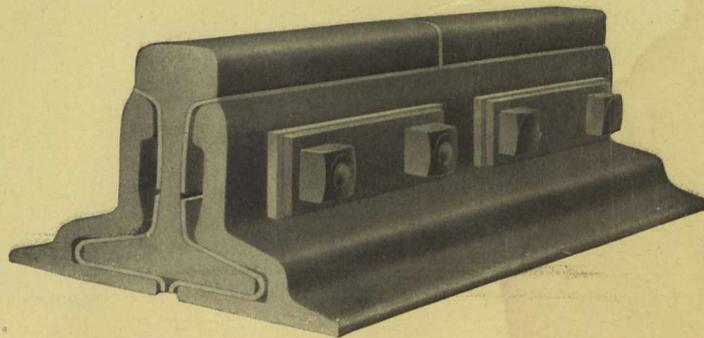
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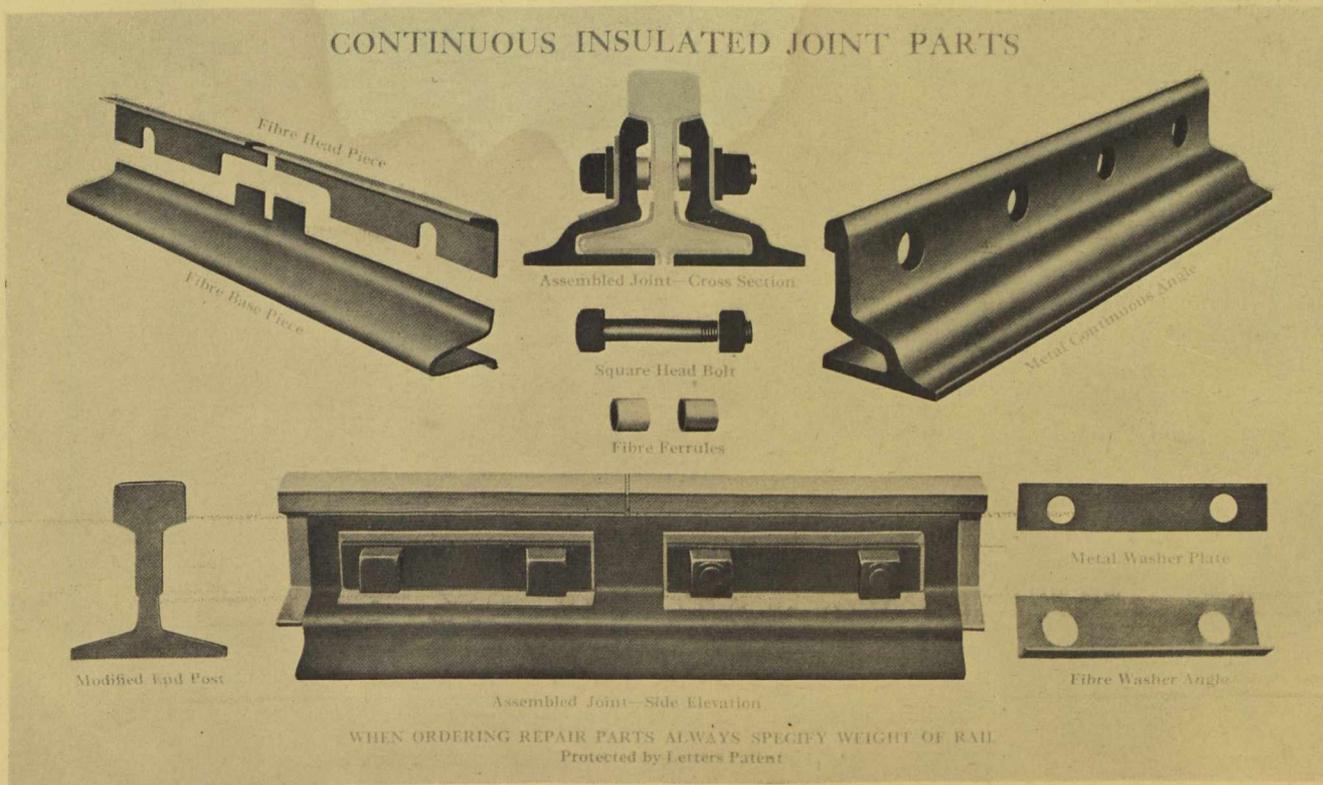
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