

# Canadian Railway and Marine World

July, 1919

## The June Mechanical Conventions at Atlantic City.

The two great annual railway mechanical conventions of the American Railway Master Mechanics' Association and the Master Car Builders' Association, held principally at Atlantic City, N.J., for many years, were suspended after 1916, in consequence of the United States having entered the war, but meetings of the executive committees were held in Chicago in 1917 and 1918, at which reports of various committees were presented.

As announced in Canadian Railway and Marine World for April, the Director General of the U.S. Railroads decided to provide, during the period of federal control, a responsible channel through which he might obtain recommendations for the advancement of railway practice. The American Railway Association revised its organization, changed its name to the American Railroad Association, and enlarged its scope by covering the former activities of a number of other railway associations, etc., including among others, the American Railway Master Mechanics' Association, and the Master Car Builders' Association. The new American Railroad Association is divided into five sections, viz.: operating, engineering, mechanical, traffic and transportation, respectively.

The mechanical section took over the former activities of the American Railway Master Mechanics' Association, and the Master Car Builders' Association, the committee consisting of three representatives of the U.S. Railroad Administration, two representatives of each of the operating regions into which the U.S. has been divided and two representatives of Canadian railways. The chairman is C. E. Chambers, Mechanical Assistant to Regional Director, Allegheny Region, U.S. Railroad Administration, and the Canadian representatives on the committee are: W. H. Winterrowd, Chief Mechanical Engineer, C.P.R., and James Coleman, Superintendent, Car Department, G.T.R. The names of the other members of the committee were given in Canadian Railway and Marine World for Apr., pg. 187.

Under the mechanical section's management a convention was held at Atlantic City, June 18 to 25, master car builders' matters being dealt with from June 18 to 20; election of officers and committee being held June 21, and master mechanics' matters being dealt with from June 23 to 25. The most important features of the convention were, as usual, reports of the standing and special committees, and individual papers presented. The principal ones are given on this and following pages, either in full or in abstract.

### Prices for Car Labor and Material.

An American Railroad Association's mechanical section committee, P. F. Smith, Jr., General Superintendent, Motive Power, Pennsylvania Lines, chairman, reported as follows: Your com-

mittee, after the 1915 M.C.B. convention took up the work of analyzing prices for labor and material (as outlined by the committee on compensation for freight car repairs in their report to the 1915 convention) as instructed by the association. For the 1916 convention the report presented gave a general outline of the method being followed in carrying on the work, and included a list of items for rules 101, 107, 108, 111, 116 and passenger car rules to be added and changed. This report was adopted and the revised 1916 M.C.B. rules included the change in items and prices as suggested.

For the 1917 convention the report presented covered all items for labor and material for freight and passenger car repairs, and specified that during the ensuing year the studies of the committee would include the direct and overhead charge for yard repair work as compared with shop track work; center, intermediate and side sill renewals; tank car repair studies; items per rule 111; also give further consideration to material prices and make recommendations for alterations in such prices as may be found necessary. This report was adopted, subject to the modifications which the price committee had in mind and that were reported upon at the meeting held in Chicago instead of the convention generally held at Atlantic City; but, the items for labor and material, as reported on were not introduced in the M.C.B. Rules of Interchange, and the proceedings do not give any reasons therefor; further, the price committee were not informed or given any instructions how to proceed in the future.

For the 1918 meeting at Chicago, the report presented, due to abnormal conditions existing at that time, was to the effect that the items for labor and material as printed in the 1917 revised M.C.B. Rules, should stand, but the percentage to be added should be increased to 50%. On this report apparently no action was taken, as proceedings make no mention of such a report, further; price details were taken care of by arbitration committee. In view of the above, your committee ask for further instructions.

If it is decided to continue this committee, we suggest that the work left unfinished in our 1917 report be continued, and the entire price schedule be revised to date and submitted to the 1920 convention. We further recommend in the revision of time allowances that time basis be used and the hours divided on the decimal plan in multiples of tenths.

### Report of Committee on Train Lighting and Equipment.

An American Railroad Association's mechanical section committee, J. R. Sloane, Engineer Electric Car Lighting, Pennsylvania Rd., chairman, reported, outlining an exhaustive series of road and shop tests made on train lighting

equipment on the Pennsylvania Rd. From observations made on the tests, the following recommendations were made:

That the method of testing to determine the rating of an axle generator be as follows: That the generator, together with the generator and lamp regulator, if used, shall be connected in a normal manner to dead load resistance in the battery and lamp circuit; and shall be operated continuously for 5 hours, with commutator hand-hole covers removed, at the minimum r.p.m. that will generate rated volts at the load side of the generator regulator and carry the current; and that the net current output shall be the armature current less all current consumed in the generator fields, generator regulator, and lamp regulator, if used.

That the rating of an axle generator when connected and operated as above, shall be the maximum net current that the generator will carry without exceeding the following values:

	Maximum Observable Temperature.	Maximum Observable Rise in Temperature.
Any part of generator or regulators, except commutator, brushes, brush rigging and bare copper solenoids .....	110 deg. C.	70 deg. C.
Commutator, brushes, brush and bare copper solenoids .....	130 deg. C.	90 deg. C.

That the rating test shall be made at or above 15 deg. C. ambient temperature.

That a badge plate be securely attached to each axle generator which shall show the manufacturer's name; type number; nominal voltage of generator (40 v. for 30 v. system and 80 v. for 60 v. system); rating in amperes as above determined, and minimum speed in r.p.m. at which generator will deliver rated volts and amperes.

That the above recommendations be submitted to letter ballot as recommended practice.

The final meeting of the committee was attended by representatives of all the axle generator manufacturers in the U.S., but one, and the above recommendations were unanimously approved by the representatives attending.

A method of rating axle generators is one of the essential portions of an axle generator specification. The committee, which they realize that it is impossible to draw complete detailed specifications that would be applicable to all types of axle generator equipment as now commercially manufactured, nevertheless believe that there are a number of essential characteristics that are common to all types of axle generators and which would be included in complete specifications. The committee therefore recommended that they be instructed to investigate this matter with a view to drawing up a partial specification which will include the features common to all axle generator equipment.

## Depreciation of Freight Cars Committee's Report.

An American Railroad Association's mechanical section committee, M. K. Barnum, Mechanical Engineer, assistant to General Superintendent Maintenance of Equipment, Baltimore and Ohio Rd., chairman, and of which L. K. Sillecox, Master Car Builder, Chicago, Milwaukee and St. Paul Rd., formerly Mechanical Engineer, Canadian Northern Ry., was a member, reported as follows:

In order that your committee's conclusions might be based on representative factors as to average life and residue values, circular 35 was issued requesting data on equipment dismantled during the 3 years, ended Dec. 31, 1917. This period was taken because it represented normal conditions more nearly than those existing during 1918, the first year of Federal control. This information was requested by classes, in three groups—wooden cars, wooden cars with steel underframes and cars of all-steel construction.

Replies were received from 55 railways and 7 private lines, representing ownership of 2,023,783 cars and covering 106,010 cars dismantled during the 3-year period. A summary of the latter is given below; cars retired in connection with rebuilding are not included:

All Wood Cars.			
Class	Average life of cars		
	Number	in years	Scrap value.
Box	47,672	22.3	12.2
Stock	5,201	20.1	12.1
Flat	6,800	22.3	17.1
Gondola	24,630	18.0	14.7
Hopper	16,082	20.3	14.4
Refrigerator	4,591	21.7	12.3
Tank	81	24.6	31.5
Weight average	105,057	20.9	13.5
Wood cars with steel underframe, none.			

All Steel Cars.			
Class	Average life of cars		
	Number	in years	Scrap value.
Gondola	817	13	11.7
Hopper	136	14.7	17.2
Weighted average	953	13.1	12

The information furnished regarding wood cars with steel underframes was very limited and not representative of average conditions, and your committee did not feel justified in using it.

The average life of railway owned wooden refrigerator cars dismantled was 17.1 years, and of private line wooden refrigerator cars dismantled was 21.9 years, making the average life for all wooden refrigerator cars dismantled 19.4 years. However, it is only fair to state that the average life of railway owned wooden refrigerator cars is very largely affected by two lines reporting the dismantling of a large number of cars of an average life of only 15 years, which is much lower than the general average for all railway owned wooden refrigerator cars, and by excluding these two lots of cars the results are as follows:

Railway owner	21.3 years
Private line owned	21.9 years
Average life	21.7 years

which your committee feels should be taken as the average life of wooden refrigerator cars and which has been shown in above table.

In order that the information would be obtained on a uniform basis, your committee asked that the scrap value be expressed in per cent of M.C.B. price of car, as shown in rule 112 in the 1918 M.C.B. Rules, using the 1918 price for scrap. From the information secured, we obtained a weighted average percentage of scrap of the M.C.B. value new, on all wooden cars, of 13.5%. It is your committee's opinion that 3/4c. a lb. is more

nearly representative of the average current market price for scrap than the 1/2c. a lb. as quoted in the present M.C.B. Rules, which would increase the weighted average percentage from 13.5% to 20.25%.

In settling for destroyed cars, recognition should be given to the fact that the car has a value to the owner above that of the actual value of the scrap to the line destroying the car, and further, that there is considerable serviceable material on which the line destroying the car can obtain the secondhand instead of the scrap value, and that if 20.25% represents the value of the scrap to the line destroying the car, your committee does not feel justified, in the absence of any other figures, in recommending any change in the provision of rule 112 which provides that in no case shall the depreciation exceed 60% of the value new.

The weighted average life of all classes of wooden cars was found to be 20.9 years, as indicated in the above table. We have no information as to the average life of cars of steel underframe or all-steel construction, in the absence of which we would suggest that on such cars, other than gondola or hopper cars, the same rate of depreciation be used as on wooden cars, until such time as experience may warrant a different rate.

The weighted average life of all classes of open top steel cars was found to be 13.1 years, but on account of your committee having knowledge that the cars reported as being dismantled during the period did not represent the present standard for this type of car we are inclined to believe that the information does not represent the average life of this class of equipment and, pending the time when experience will warrant a revision, your committee recommends considering 17 1/2 years as the average life for open top steel cars.

Based on the average life as indicated in the above table for wooden gondola cars, your committee suggests that wooden and steel underframe gondolas and hopper cars, for the purpose of depreciation, be included with similar cars of all-steel construction.

Opinions were requested as to whether depreciation should be applied on air brake values at the same rate as for car bodies and, on a car-owned basis, the majority of the replies favored depreciating both 8-in. and 10-in. air brakes at the same rate as the car body, which is recommended by your committee.

The majority of replies to the question about depreciation of trucks, considered on a car-owned basis, favored having the trucks carry their own rate of depreciation and having that rate less for all-metal trucks than for composite trucks. However, your committee finds that the rate of depreciation of car bodies should be reduced to 3% and 3 1/2%, according to construction, and we do not feel that a rate less than 3% for trucks is justified; therefore we recommend that the trucks be depreciated at the same rate as the car body to which they belong.

In view of the information at hand, your committee submits the following recommendations for a straight depreciation basis for freight cars.

	1918 Rules	Proposed
	change.	rate. %
Wooden car bodies, except gondolas and hoppers	5.5	3

Wooden car bodies, gondolas and hoppers	5.5	3.5
Wooden car bodies with steel underframes, except gondolas and hoppers with steel underframes	4.5	3
Wooden car bodies, gondolas and hoppers	4.5	3.5
Steel underframe flat cars	5	3
All-steel car bodies or those with steel underframes and steel superstructure frames, except gondolas and hoppers	4	3
All-steel car bodies or those with steel underframes and steel superstructure frames, gondolas or hoppers	4	3.5
Tanks for non-corrosive material	4	3
Tanks for corrosive material	5	3.5
Air brakes	None	Same rate as carbody
Trucks	Same	Same rate as carbody

The age of the car body shall govern in figuring depreciation on air brakes and trucks. The depreciation rate for the class of car shall govern in figuring depreciation on such betterments as are listed in rule 112 and shall be figured from date of application.

In its study of the subject of depreciation, your committee was confronted with the question of rebuilt cars and believes that this should be referred to a committee for consideration, and suggests this committee, if appointed, be requested to take up the part of rule 112 which provides that in no case shall the depreciation exceed 60% of the value new.

## Report of Committee on Powdered Fuel.

An American Railroad Association's mechanical section committee, C. H. Hogan, Assistant Superintendent Motive Power, New York Central Rd., chairman, reported as follows: At the time of the last report of your committee in 1916 there were several experimental installations for burning powdered fuel on locomotives in the U.S., but the increasing demands for transportation, due to the great war, and finally the entrance of the U.S. into the conflict, made the setting aside of even a single locomotive for such experimental purposes an impossibility. Accordingly all locomotives that had been equipped for the burning of powdered fuel were stripped of the special appliances intended for that purpose and returned to their regular service.

The general principles involved in the burning of powdered fuel were set forth in our last report in 1916, when the experiments were progressing so satisfactorily that they seemed about to spell success. That the principles were correct has been demonstrated, and it remained to work out the practical details to meet the varying requirements that locomotive service demanded, as has been done for stationary plants. But this sudden stoppage of the work, immediately after the presentation of our last report, leaves matters almost exactly as they were at that time.

It is probable that, as soon as the affairs of the railways are settled and normal conditions have been resumed, the experiments with and development of the devices for burning powdered fuel will be taken up again, which it will then be the pleasure of your committee to present to you. And, with conditions as they are, your committee is asking to be relieved from the necessity of making a report at this time and to be continued pending the resumption of the experimental work which they were appointed to watch and lay before the association.

# Welding Truck Side Frames, Bolsters and Arch Bars.

An American Railroad Association's mechanical section committee, W. O. Thompson, Superintendent Rolling Stock, New York Central Rd., chairman, reported in part as follows: The fact that so many cast steel side frames and cast steel bolsters are failing in the tension members is conclusive evidence of weakness in design, and the welding of the fractures will not add to the strength, but is likely to introduce a factor of further weakness by improper workmanship and change in the structure of the metal. It is, therefore, necessary to confine autogenous welding within specified limits on structures, subject to alternating stresses, and prescribe definite instructions to govern such welding. Other metal car parts subject to compression only, or compression and low tension strains, may be welded. Worn surfaces of any nature, and on any parts, may be built up, provided that the material remaining in parts subject to tension before welding, is equal to at least 80% of the original section area, and in parts such as bolster guides, column castings, center plate rings, etc., the material remaining must be equal to 60% of the original section area. It is recommended that the following general rules for autogenous welding be observed carefully:

1, Welding cracks or fractures will not be permitted on axles, arch bars, car wheels or tires, truck equalizers, spring or bolster hangers, brake staffs, brake wheels, coupler bodies, knuckles, knuckle pins, locks, lifters and throwers, parts made of alloy steel, and top chert angles of all open-top all-steel cars, if the fracture is located at a point between the bolsters more than 5 ft. from the center line of either body bolster.

2, Building up worn surfaces will be permitted on the following: Parts subject to compression only; \*spring or bolster hangers; \*holes in levers; \*\*center plates; \*\*truck sides, bolsters and column castings, journal boxes, coupler bodies, knuckles, locks, lifters and throwers, which must be dressed and checked for interchangeability; flat spots on rolled steel wheels and tires, if the thickness of the tread is 1 in. or more above the limit of wear groove.

\*Provided that the material remaining in the part is equal to at least 80% of the original section, and \*\* 60% of the section.

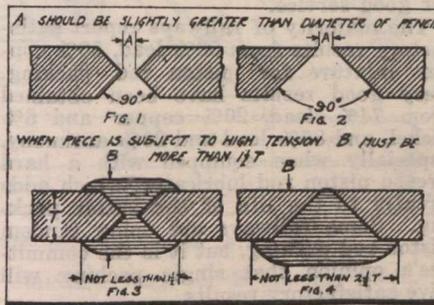
3, Welding cracks or fractures will be permitted on the following: Car and roof sheets; \*cast steel truck sides; \*pressed and structural steel truck sides, bolsters and transoms; \*cast steel bolsters; draft castings; \*brake beams; \*cast steel coupler yokes; car sills, posts, braces, stakes, carlines, side plates and end plates.

\*Welding is permitted only when the area of the crack is less than 40% of the total area through the section at the point of fracture, but it is not permitted to weld any crack located within 6 in. of an old weld.

4, All parts marked \*\* in section 3, except truck transoms, must not be welded unless removed from car or truck. Truck transoms may be welded in place by removing the truck from under car body. The edges of pieces for welding must be prepared as show in figs. 1 and 2. If both sides of the fractured member can be worked upon, the fracture should be prepared as in fig. 1, and where only one side of the fractured member is accessible, fig. 2 should be followed. The entire crack

should be burned or chipped out far enough back so that there will be no portion of the crack in the metal. Failure to do this permits the check or crack to work its way across the metal to the farther side, due to the constant vibration, even after the weld has been made. A hole may be drilled at the end of crack or check and chip or burn towards the hole. The surfaces where new material is to be deposited must be clean and bright and reasonably smooth and, therefore, if the surfaces are prepared by the burning process the surfaces must be finished by chipping before welding. The portion of the part adjacent to the fracture should be heated before the welding is begun. In welding, the operator should begin to weld at the point farthest away from the outside edge and work the weld towards the edge. All efforts must be made to prevent oxidizations, and to accomplish this the work should be placed at angle that will allow the blowing out of all slag or impurities in the fused metal, and by giving the torch a rotary movement it will assist in their removal.

The new material must be deposited to the form shown in figs. 3 or 4 in



Recommended Preparation for Welding and the Welds as Completed.

order to properly reinforce the weld, and B should be somewhat greater than T. For the important items marked \* in section 3, as well as for car sills, posts, braces, stakes, carlines, side plates and end plates, B must be at least 1 1/2 times T. The parts marked \* in sections 2 and 3, with the exception of truck transoms welded in place, must be carefully annealed by uniformly heating to approximately 1,400 or 1,500 deg. F. and allowed to cool slowly in the atmosphere. Worn surfaces permitted to be built up to the original section by depositing of new metal thereon must first be made clean, bright and fairly smooth, and after the metal is deposited must be dressed to the required dimensions and gauged where necessary. When truck side frames and bolsters are welded the weld must be made smooth and the following record legibly stamped on the weld by at least 3/8-in. steel stencils, in the following form:

(Mo.—Day—Yr.)	(Railway)
o—o—o—o	A.B.C.
XY	(X)
(Shop abbreviation mark).	(Welder's identification number or mark).

5, It is also recommended that reference be made in the Rules of Interchange to the effect that autogenous welding, by either gas or electric process, when performed, must be strictly in accordance with these limits and regulations. The present price in the Rules of Interchange, rule 107, item 432, will not properly com-

pensate the party performing the welding according to these regulations, and should be revised. A penalty should also be prescribed in the Rules of Interchange providing for the rejection of any car on which a truck side frame or truck bolster is welded, after the adoption of these regulations, when not conforming to same.

## Car Trucks Committee's Report.

An American Railroad Association's mechanical section committee, J. T. Wallis, General Superintendent Motive Power, Pennsylvania Rd., chairman, and of which J. Coleman, Superintendent Car Department, G.T.R., and W. J. Robider, General Master Car Builder, C.P.R., were members, presented a report, the principal feature of which is the marking of freight equipment cars to show the load limit. The points considered in this connection are the failure of axles in service due to be overloaded in accordance with the marked capacity of the cars, particularly the 60,000 lb. capacity cars; and the difficulty and confusion in determining the allowable lading that may be placed on the car from the weight markings stencilled on the cars, as well as from the provisions of the M.C.B. Rules of Interchange governing the amount of load that may be carried. The committee recommended that cars be marked with the maximum load, light weight and total weight, and include the cubical capacity under inside dimensions.

The Norfolk and Western Ry.'s request to have its special 5 1/4 x 9 in. journal approved, as having a capacity for a total weight of 152,000 lb., was not recommended, as the committee considers it no stronger than the standard 5 x 9 in. axles, with a capacity of 132,000 lb.

The question of remuneration for light weighing cars, spring plates, and the dust guard well for the 5 x 9 in. passenger journal box, was also considered, and minor changes in the last two were recommended.

## Report of Committee on Couplers.

An American Railroad Association's mechanical section committee, R. L. Kleine, Chief Car Inspector, Pennsylvania Rd., chairman, reported in part as follows: With the adoption, last year, of the details such as contour line, design of 6 x 8 in. shank, etc., for the M.C.B. standard D coupler, the duty assigned to the committee to present to the association a one standard coupler has been completed. To realize the benefits of this work it is essential that the coupler be placed into general use as soon as practicable. The design has passed the experimental stage and has been proved in service and the manufacture of the coupler has progressed to the end that the coupler manufacturers who have worked jointly with your committee in adopting the standard D coupler are in position to furnish the coupler in any quantities desired.

To accomplish the universal use of the standard coupler, your committee recommends the following program: Make it mandatory that all new cars built after a certain date be equipped with the M.C.B. standard D coupler with 6 x 8 in. shank. Make it mandatory that after the present stock of 5 x 7 in. couplers is used, all future renewals will be made with the M.C.B. standard coupler with 5 x 7 in. shank.

In order to carry out this program, the cars built after June 1, 1920, will not

be accepted in interchange unless equipped with 6 x 8 in. shank M.C.B. standard D couplers; existing cars, equipped with 5 x 7 in. shank couplers of the present types, when requiring coupler renewals, shall have 5 x 7 in. shank M.C.B. standard D couplers applied, this rule to be effective when present stock of new and secondhand 5 x 7 in. shank couplers have become exhausted. Existing cars equipped with 5 x 5 in. shank couplers shall have the existing type of couplers maintained in repairs. Where changes are made in the design of the draft arrangement, provision should be made for the

application of either the 5 x 7 in. or 6 x 8 in. shank M.C.B. standard coupler.

A revision of standards for uncoupling attachments is recommended, and the committee also recommends submitting to letter ballot the following: Coupler operating device for new freight cars and application of new design coupler operating device to existing freight cars must be of a type directly connected to coupler knuckle locking-block or locking-block lifter, without the use of clevises, links, chain or pin and must conform to the detailed specifications prescribed in the U.S. Safety Appliance Standards.

## Superheater Locomotives Committee's Report.

An American Railroad Association's mechanical section committee, W. J. Tollerton, General Mechanical Superintendent, Chicago, Rock Island and Pacific Rd., chairman, reported as follows:

The superheat schedule was somewhat delayed during the past few years, due to the shortage of labor and material caused by the war. Of the railways reporting, practically all are going to the piston valve when superheating, either by changing to piston valve cylinders or applying a piston valve steam chest. One railway, in superheating cross-compound locomotives, retained the slide valve on the low pressure side, using a double ported slide valve. Those reporting as retaining slide valves used bronze valves. In applying new cylinders new modern valve gears were applied to the locomotives. Considerable trouble was experienced in using the piston valve steam chest due to leaks and rapid wear. These defects have been overcome in the later designs. When superheat valve stem packing is used the life of the packing is about the same as that of a saturated locomotive.

**Lubrication**—On the railways using slide valves no change was made in the oiling or lubricating devices when bronze valves were used, but where the original cast-iron valves were used some trouble with cutting the seats was experienced and the application of an additional system of graphite lubrication stopped the trouble. The hydrostatic lubricator is still the standard for all locomotives and results from same as satisfactory in most cases.

A number of railways have taken up force feed lubrication, using a plunger type of lubricator. As this practice of lubrication is very recent, and data as to the performance limited, the committee does not feel justified in making any recommendation, but it is the opinion of the railways using it that the force feed lubricator when in good condition will distribute oil more economically, positively and regularly than the hydrostatic lubricator. It has the advantage of being outside of the cab and requiring no special attention of the locomotiveman, as the feeds are set and the lubricator stops feeding when the locomotive stops.

Sufficient information is not at hand to judge as to the life of packing rings and bushings; it is the committee's opinion that the life will be increased, but is unable to say to what extent.

Cylinder feeds are not extensively used and your committee is of the opinion that they are unnecessary and should be discontinued, as it is doubtful if any benefits are derived from their use.

The use of superheat valve oil is recommended by the majority of railways

reporting, but a large percentage use the ordinary valve oil and claim satisfactory results for same. Carbonization is caused by the manner of operation.

Considerable trouble has been experienced with cylinder and valve packing. Much of this trouble has been overcome by changing the design of the rings, which in most cases consisted of going from a ring, with a square cross-section, to a narrow faced ring, by using a better grade of material, and by admitting steam to the cylinders while drifting. It is your committee's opinion that 2 cylinder packing rings are ample for good service.

The majority of railways report satisfactory results from 50% lead, 50% copper mixture for piston rod packing. Very good results have been obtained from 74% lead, 20% copper and 6% nickel, and 80% lead and 20% antimony, especially when equipped with a hard grease piston rod lubricator, which adds greatly to the life of the softer packing. Some railways are using tandem piston rod packing, but it is the committee's opinion that single packing will give satisfactory results.

When automatic or manually operated drifting valves or drifting throttles are not used, instructions have been issued to locomotivemen to drift with what is called a cracked or drifting throttle. It is essential that steam be supplied to the cylinders while drifting. Drifting valves are not essential, but desirable, especially in a mountainous country, as the steam can be supplied by cracking the throttle. Automatic drifting valves of a good design are valuable as they eliminate the human element in furnishing steam for drifting. A number of roads are using a manually operated drifting throttle, others are using and experimenting with automatic valves of different makes. Fifty per cent of the roads reporting do not use steam chest relief valves, and 50% do when locomotives are not equipped with drifting valves or vacuum breakers. It is the committee's opinion that relief valves should be used on large power if it is not equipped with drifting valves or vacuum breakers. It is the committee's opinion that a properly designed drifting valve will eliminate carbon deposit, aid in lubrication, and increase the life of packing.

**Maintenance**—The superheater units have failed mostly at the rear return bend, the welded type giving the most trouble. The application of cast steel return bends has reduced this trouble. Some failures have occurred at the front end under the ball joint. This failure is due mainly to cinder wear, as the unit lies in the path of the cinders drawn

through the tubes at a high velocity. To protect against this wear, a shield of thin steel is spot welded to the unit. Failures at this point are repaired by cutting off the worn part and welding on a new piece. No particular difference has been noted in the cinder wear of a stoker fired and hand fired locomotive. The abrasive effect of the cinders varies greatly with different coals.

The tools used to repair and maintain the units are those recommended by the Locomotive Superheater Co. When units are removed, the joints should be re-ground and individually tested before being replaced, and collectively after being replaced. A periodical test might be desirable, but the committee feels that it is not essential.

The majority of railways purchase the header bolts. One uses 0.988% carbon steel heated, to between 1400° and 1500°, and plunged into an oil bath, then reheated and allowed to cool naturally. Another specifies that the material shall have a tensile strength of 90,000 lb. a sq. in., elastic limit not less than 65,000 lb. a sq. in., an elongation in 2 in. not less than 18%. The metal should have the following chemical properties: carbon, 0.45 to 0.60 per cent; manganese, not over 0.70%; sulphur, not over 0.05%; phosphorus, not over 0.05%. Some use a high grade iron without any heat treatment.

The investigation shows that in most cases a limit percentage of weight for scrapping of superheater flues has not been established. Some give the limit percentage as from 10 to 25 per cent in reduction. Some give flues the hammer test. Superheater flues are reclaimed by welding up pits and holes worn in by steam leaks. It is a good practice to weld the large superheater flues to the back flue sheet. Good results have been obtained from same, and the committee recommends this practice.

All boiler tubes should be blown out each time the fire is drawn and, at least, at each wahsout period all tubes should be cleaned thoroughly from end to end, and all accumulation removed; special attention should be given to the superheater flues. The flues should be blown with a ¼ in. or ⅜ in. pipe and 100 lb. of air.

The method employed in testing packing for leaks around the outside steam pipes where they enter the smoke box is by applying a lighted torch to all surface joints, while the blower is on. Much trouble is experienced in keeping these joints tight. Different kinds of packing have been used with varied results. Cement and ground magnesia have been used with some success. A mixture of ground magnesia and asphaltum, applied while hot, gives promise of better results; this is due to the heat keeping the mixture in a semi-plastic state. The design of construction used on the U.S. standard locomotives gives promise of a high efficiency.

Most railways have issued, through bulletins, or personally by the road foreman, instructions not to carry over 2 gauges of water; this, of course, depends on the water conditions of the locality in which the locomotive is operating. The use of a pyrometer will show the men the low temperature of the steam resulting from carrying high water; it will also show the effect the position of the throttle and reverse lever has on the superheat obtained. The majority of the roads prefer a wide open throttle, with as short a cut-off as pos-

sible, under the operating conditions. Some roads claim better results by using a loger cut-off and a lighter throttle, claiming better superheat.

Light, frequent and regular firing

proves to be the best practice, and produces the best degree of superheat, but it is essential that at all times the flues be kept clean. The method of firing depends on the quality of fuel used.

### Car Wheels Committee's Report.

An American Railroad Association's mechanical section committee, W. C. A. Henry, Superintendent Motive Power, Pennsylvania Lines, chairman, and of which W. H. Winterrowd, Chief Mechanical Engineer, C.P.R., was a member, reported as follows: Certain recommendations have been made by manufacturers of wrought-steel wheels and referred to your committee. Among them is one, that the 38 in. diameter wrought-steel wheel be eliminated from our standards, it being stated that the

have the points indicating the normal circumference of the 33-in. and 36-in. wheels located on the tape when laid out flat, or whether correction should be made for the tape thickness; there being a difference of 2-10 in., or more than one tape size, depending upon which way the tape is laid off. In laying out the wheel circumference measure, due correction should be made for the tape thickness and in order that absolute uniformity may be obtained the executive committee has decided that the association obtain

Rule 76 of the Rules of Interchange reads as follows: "Tread worn hollow; if the tread is worn sufficiently hollow to render the flange or rim liable to breakage." It is your committee's opinion that the meaning of this rule is not clear and is subject to wide variation in actual application; it having been found that many wheels are being withdrawn on account of tread wear without the wear being sufficient to injure the wheel. Your committee recommends that a gauge, as shown in fig. 3, be used in determining whether or not a wheel should be condemned on account of tread worn hollow; a wheel not to be condemned on this account unless the projection on underside of gauge does not come in contact with the tread of the wheel.

It has been recommended that a clause be inserted in our specifications, requiring that in case of cast-iron wheels failing to pass the M.C.B. test, the first letter of the initials of the purchasing road be chipped off with the idea of stopping the practice claimed to exist to a certain extent of roads purchasing rejected wheels. It is felt that action of this sort

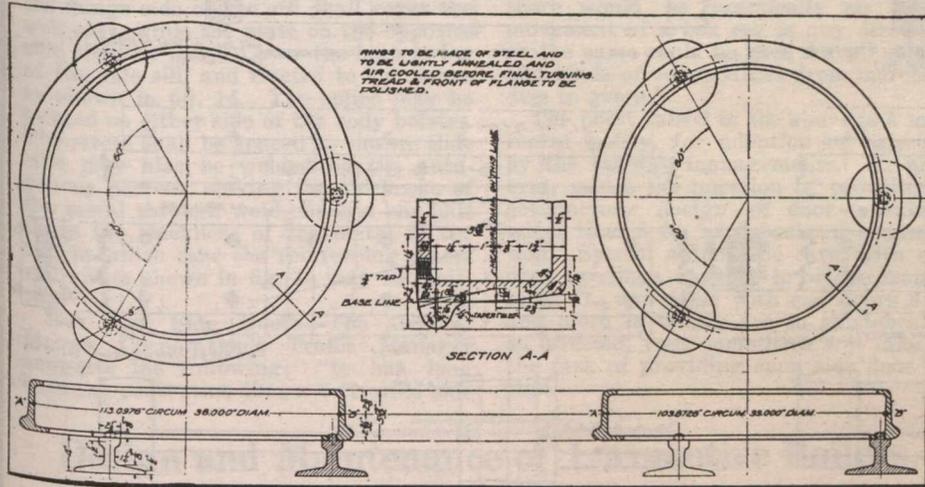


Fig. 1. Wheel Circumference Measure Test Rings for 33 and 36 in. Wheels.

number of wheels manufactured of this diameter is small and that in many cases the 36-in. wheel could be used. Your committee does not have sufficient information to justify making definite recommendations now, but arrangements will be made to obtain this information, and, in the meantime, the use of the 38-in. wheel should be discouraged, as it is advantageous to reduce the number of standards as far as can be done without causing undue hardship.

It has been recommended that the limit of wear groove for wrought-steel wheels be located 1/2 in. from inside of

standard rings of 33-in. and 36-in. diameter; these rings to be certified by the Bureau of Standards and be used in cases of dispute to check wheel tapes. Your committee was instructed to prepare design and mounting for these rings and same are submitted herewith, fig. 1.

The specifications for wrought-steel wheels permit a variation of 5 tape sizes under and 9 tape sizes over the size called for. It is felt desirable to provide for these additional tape sizes for 33, 36 and 38-in. wheels, by adding to the spaces now provided for taping cast-iron wheels. The continuous markings

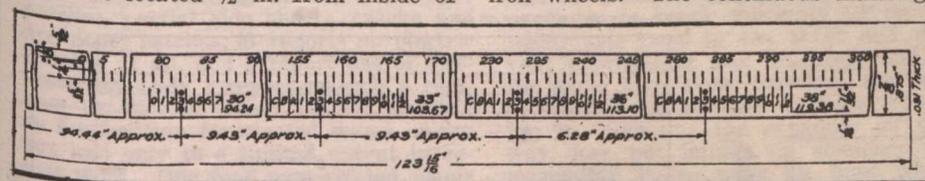


Fig. 2. Additional Spaces to be added to Standard Wheel Circumference Measure Tape for Taping Wrought Steel Wheels.

rim of wheel instead of 3/4 in. as at present, it being felt that the thickness of metal would be sufficient to afford the necessary strength. Other questions than the strength of the wheel are involved, viz.: maintenance of draw bar height, truck clearance, effectiveness of brakes with increased range in diameter of wheels. Your committee, therefore, requests that members give this subject consideration in order to reply to a circular of inquiry that will be sent out.

The question has been raised as to whether the standard wheel circumference measure, sheet M.C.B.-16B, should

on the upper side of the tape would then be used for mating worn wheels. Fig. 2 shows recommendations of your committee as to how this could be carried out.

The following note should be inserted on sheet M.C.B.-16B: "Linear dimensions shown represent measurements of actual circumference of the wheel and not straight length of the tape. Graduations to be spaced 1/8 in. apart with tape laid flat, and space between lines 157 and 158 on the upper side of tape to coincide with space representing tape size 3 for the 33-in. diameter cast-iron wheels."

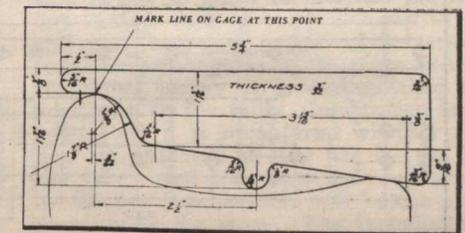


Fig. 3. Wheel Tread Worn Hollow Gauge.

is desirable, but the letter C in the legend M.C.B. be chipped off, for the reason that being located on the outside of the wheel it can be more readily seen than if a letter on the inside, where purchaser's name is placed, were chipped off. Furthermore, wheels not coming up to M.C.B. requirements cannot be considered M.C.B. wheels. Your committee, therefore, recommends that the following clause be added to specifications for cast-iron wheels under the heading "Rejection," par. 16: (d) In all cases where wheels are rejected the letter C must be chipped out of the legend M.C.B. on the outside face of each wheel." Your committee further recommends that a rule be inserted in the Rules of Interchange prohibiting acceptance in interchange of a car, any of the wheels of which have the letter C chipped out of the legend M.C.B.

The Association of Manufacturers of Chilled Car Wheels advises us that all information thus far available indicates superiority of the arch design of plate, adopted in 1917, for the 700 and 850 lb. wheels over what has been considered our standard design of plate. It is our feeling, however, that another year should be allowed to elapse in order to accumulate more information before considering the re-design of the 625 and 725 lb. wheels.

**Calgary and Fernie Ry.**—The Dominion Parliament has extended for five years the time within which the company may build its projected railway from Calgary, Alta., via the Kananaskis Pass to the headquarters of the Elk River in British Columbia, thence by the valley of the Elk River to Fernie, B.C. The company was incorporated in 1906, and has been granted several extensions of time for construction, the last being in 1917. (Jan., pg. 26).

## Car Construction Committee's Report.

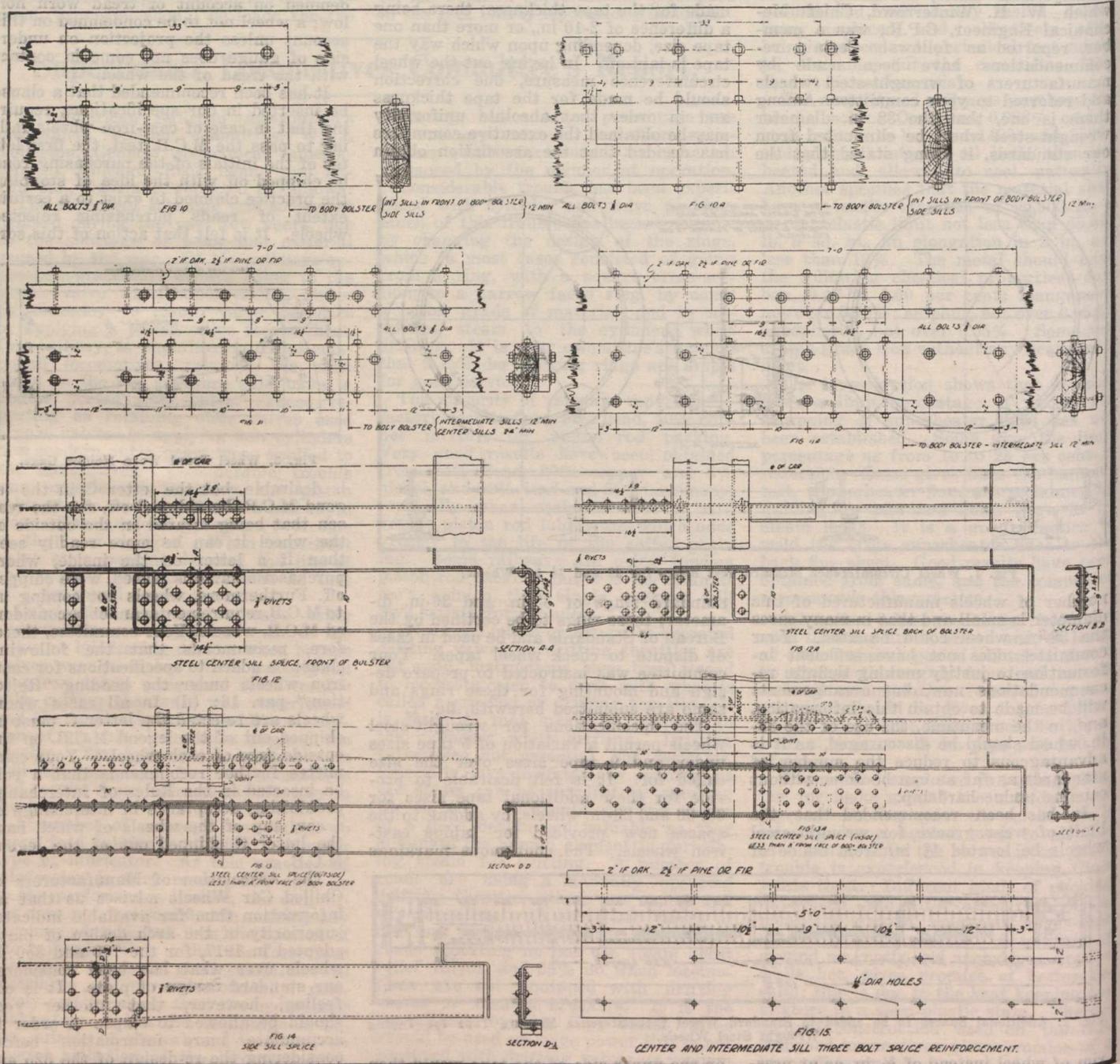
An American Railroad Association's mechanical section committee, W. F. Keisel, Jr., acting Mechanical engineer, Pennsylvania Rd., chairman, reported as follows:

In the past year, the subjects referred to your committee were: 1, Revision of rule 22, 1917, Code of Rules of Interchange; and 2, Suggested provision for side door openings 10 ft. wide in all box

"Cars having wooden sills—Draft timbers must not be spliced. Longitudinal sills must not be spliced between or over cross-bearers. Longitudinal sills (intermediate or side sills) may be spliced at both ends, on either side of body bolster. The nearest part of the splice must not be less than 12 in. from edge of body bolster. Intermediate sills, spliced between body bolster and cross-bearer,

the reinforcement shall be applied in accordance with fig. 15. Center sills shall be spliced only between body bolster and cross-tie timber. The nearest part of the splice must not be less than 24 in. from edge of body bolster. Center sill splices shall be in accordance with fig. 11. The diameter of horizontal or vertical splice bolts shall be  $\frac{3}{8}$  in.

"Cars having steel center sill splices



Diagrams of Car Construction Recommendation.

cars, the side door proper to be 6 ft. wide, with a removable door post, and an auxiliary door 4 ft. wide.

M.C.B. enquiry circular 19 was sent out to all members, asking for suggestions and recommendations for change in rule 22 of Code of Interchange, and the replies thereto were carefully considered by your committee, based on which the following rule has been formulated, and is offered herewith as a substitute for present rule 22.

must be reinforced as per figs. 11 or 11-A. Intermediate sills, spliced between bolster and end of cars, and side sill, spliced on either side of bolster, must be in accordance with figs. 10 or 10-A. When splicing or renewing any longitudinal sill, reinforcement shall be applied to all existing non-reinforced splices, in all sills except side sills. If the old splice is a 4-bolt splice, it shall be reinforced in accordance with figs. 11 or 11-A. If the old splice is a 3-bolt splice,

located at least 7 in. from face of bolster. Adjacent sills may be spliced. All splices shall be of the butt-joint type, reinforced on both sides by plates of not over 24 in. in length, and not less than twice the length of the protruding end when the projection is less than 12 in. The reinforcing plates shall be at least as thick as the web of the sill. The splice plate on the flange side of the sill shall be U-shaped, to include flanges, while the plate on the opposite side shall cover the web

only. Rivets to be spaced as shown in figs. 12 and 12-A. Where autogenous welding is available, the sills may be welded after riveting the U-shaped plate on the flange side, omitting the flat plate on web side.

"Cars having steel center sill splices located between body bolster and end sill, and less than 8 in. from face of bolster. All splices shall be of the butt-joint type, with the addition of a cover plate. The splice plates shall be at least as thick as the web of the sill. They may be located on either side of the sill, extending forward and back of the center line of bolster 30 in., as shown in figs. 13 or 13-A. The rivets shall be spaced as shown.

"Side sill splices. All splices must be of the butt-joint type, reinforced on both sides by plates 14 in. long. The reinforcing plates shall be at least as thick as the web of the sill. The splice plate on the flange side of the sill shall cover the web only, while the plate on the opposite side shall be flanged over the bottom leg of the side sill, and riveted to the same, as shown in fig. 14. The splice may be located on either side of the body bolster. The rivets shall be spaced as shown. Side sills may also be welded by the autogenous process, making the thickness of the metal through weld one and one-half times the thickness of the metal in the sill, in which case the reinforcing plates and rivets shown in fig. 14 may be omitted."

**Box Car Side Doors**—The General Motors Corporation's Traffic Manager suggests the following: "It has long been my contention that a 6-ft. wide side

door, with a movable post, and a 4-ft. extension beyond, is the proper kind of door to be used on either 36, 40 or 50-ft. cars. This kind of door enables everyone to use a box car. In other words, with only a 6-ft. door it confines the use of this box car to certain commodities, and certain other commodities, such as light bulky articles, are excluded from the use of these cars, as it is impossible to get a light and bulky commodity in anything less than an 8-ft. wide side door—10 ft. wide preferred. If all box cars in future were equipped with the kind of door above described, it would mean that on a car coming into our factory, loaded with any kind of commodity, when it was unloaded we could immediately use the car for loading automobiles or trucks, by removing the post and taking advantage of the 4-ft. additional extension. This gives a load to the car in both directions, and means that there would be practically no empty movement of a box car in any direction, as the same could be used for all classes and kinds of commodities from merchandise to grain."

The point raised in the above is a matter of policy, for adoption or rejection by the railway managements. It, however, raises the question of providing a satisfactory design of door openings, wider than 6 ft., as a basis of construction. Special automobile cars, with side door openings varying in width from 8 to 12 ft., and some with end doors 8 ft. and more in width, are in existence. If so directed, your committee will take up the task of providing such side door design.

## Design and Maintenance of Locomotive Boilers.

An American Railroad Association's mechanical section committee, C. E. Fuller, Superintendent Motive Power, Union Pacific Rd., chairman, reported as follows:

On Feb. 8, 1919, the committee issued a circular containing 6 questions and a request that all replies be in the chairman's office by Feb. 28. Up to Mar. 20 only 19 roads responded, and from their reports we derive the following general conclusions:

None of the 19 report introducing any new or special designs of locomotive boilers during the last two years; 9 roads use electric welding in fire boxes for patches, partial side sheets, cracks and fire door patches; 8 report no electric welding at all, and 2 report use of oxy-acetylene. Only 3 report making a common practice of using electric welding as a substitute for riveted seams in fire box and only to a limited extent in repair work. One road uses riveted seams strengthened by electric welding. In some cases seams between crown sheet and side sheets are welded the full length without rivets, and also fire door hole flanges, without giving any further trouble. One road reports that all cross seams, and, to some extent, the fire door sheets, are either electric or acetylene welded. Mud ring corners are being successfully repaired by cutting off 18 in. each way and welding in a new corner, but the report does not specify whether this operation is done by electric or acetylene process.

One road claims to have a successful method of reclaiming enlarged staybolt holes, by tapping out from 2 to 3 in. diam. and screwing in plugs the same

thickness as sheet, with both plug and sheet chamfered off  $\frac{1}{8}$  in. and the electric weld built up in the gutter thus formed, with a slight mound for strength, and cracks between staybolt holes repaired by cutting out crack to a 45 deg. bevel on each side—3-16 in. apart, and building in the electric weld.

One road furnishes sketch of a sectional flue expander, with the parts which, in the standard expander, would have a bearing against the bead of the flue, ground off. This is to be used on flues which are electric welded in the back sheet when they show leakage, the idea being that they will be able with this expander to knock the scale off on the water side next to the sheet and prevent overheating and cracking, and at the same time avoid crowding the bead of the flue against the weld and breaking it. Grinding the expander off this way does not impair its efficiency for locomotive house work on flues which have not been welded. Some of its large superheater flue expanders have been changed also, and it claims that up to date this seems to be the most efficient tool for keeping scale away from ferrule on the water side. This road finds it necessary to work the flues which have been welded in the sheet about every 60 days, and in bad water districts it does it oftener. A discussion of this process of removing scale and its effect upon welded flues is invited.

One road reports electric welding smoke box studs, the inference being that the studs are butt welded to the ring to save drilling and tapping. Another road electric welds arch brick studs in a similar manner.

The most approved methods of performing the various welding operations were included in last year's report and need not be repeated. Among the roads reporting last year, 25% used electric welding for entire new fire boxes, which does not agree perfectly, nor conflict radically, with the fact that none of the roads reporting this year mention such a practice, although one road uses oxy-acetylene welding in place of riveted seams, except in mud ring, for all new fire boxes.

Of the 19 roads reporting, only 10 have had experience with combustion chambers, and all that have had them any length of time report favorably, on account of improved combustion and less trouble with leaky flues. If there has been any notable change in locomotive boiler practice during the past year, it has been the re-introduction of the combustion chamber. These range all the way from the D-shaped tube sheet up to a combustion chamber reported on the new Pennsylvania Mallet as 10 ft. long. One member says his view of the combustion chamber is that its main function is not so much to increase the fire box surface as it is to shorten the tubes and give increased length of flamework, to allow combustion to be more nearly completed before it is extinguished by admission to the tubes. Combustion once completed, it is immaterial whether the heat be absorbed by the fire box or by the tubes, and the more heat extracted by the fire box, the less will be the evaporation of the tubes. The introduction of large combustion chambers naturally brings up the question of bridge walls between combustion chamber and fire box proper; possibly, also the desirability of some form of discharge for the bank of sparks carried over the bridge. While the committee has received no data on bridge walls, we have no doubt that a discussion will develop this feature.

A member has suggested as worthy of consideration the best method of determining the water level in the extremely long boilers of today. This refers particularly to the long boilers on Mallet locomotives, which operate over heavy humps and dips.

Eleven roads have experienced trouble from cracks in boiler where guide and waist sheet angle is fastened to the boiler shell. To overcome this, 6 roads have removed the rivets or studs, leaving a loose bearing. One road uses 2 small waist sheets instead of the one-piece design, which it finds permits greater flexibility, and one road is experimenting with flexible braces between guide yoke and boiler, but these have not been on the road long enough to produce results. One important road continues to rivet angle or T to the boiler with a  $\frac{1}{4}$ -in. liner inside of the boiler, which distributes the strain over a greater area with successful results. Another important road uses studs in some locomotives and rivets in others, but finds that the counterbalance has some effect in causing cracks at that point.

Thirteen of the 19 roads have no government locomotives, while the remaining 6 have nothing to say except one reference to the 2 water glasses and water column, which is believed by some to be superfluous.

The committee's attention has been directed to detail description and reports of the performance of a locomotive equipped with new type of fire box on the C.M. & St. P. Rd., known as the Nicholson thermic syphon. The principal fea-

tures of design consist of 2 water legs extending longitudinally from the throat to the crown sheet, thus dividing the front end of the fire box into practically 3 chambers. These syphons are triangular in form from the side elevation, and constitute a water space about 4 in. wide transversely, the 2 parallel surfaces being staybolted in the usual manner. The heating surface of this fire box in direct contact with the fire is materially increased, due to the area of these syphons. It is stated that the speed of the water through these syphons is

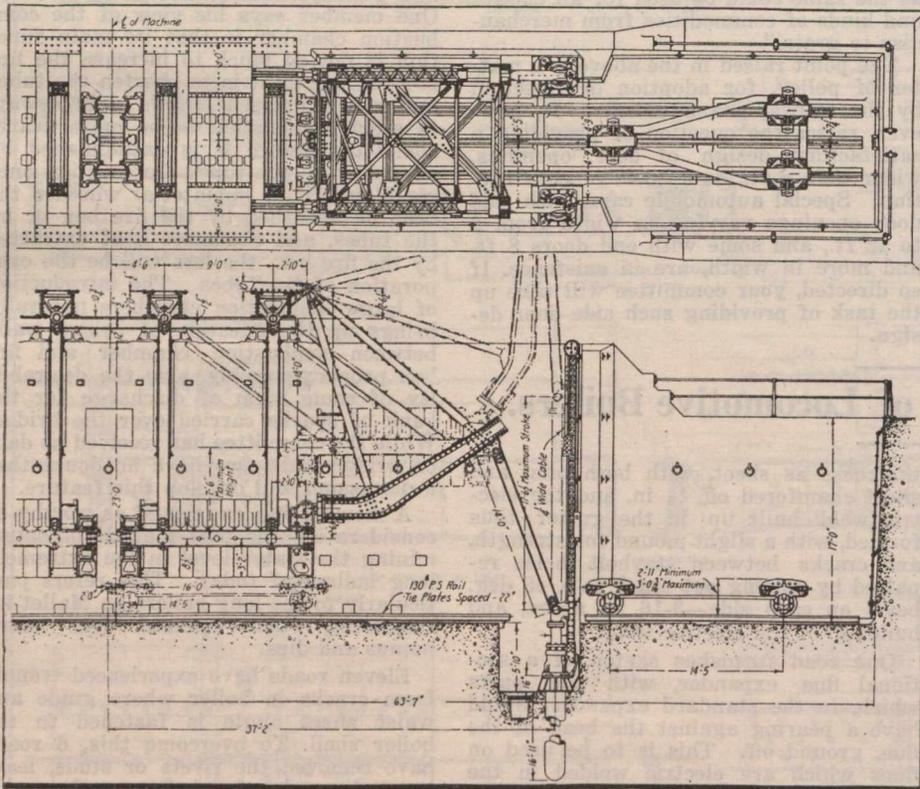
such that all the water in the boiler passes through them in 5 minutes. According to published test data, the locomotive equipped with these syphons appears to have produced some very economical results.

The limited response to this year's circular of inquiry, and consequent meagerness of your committee's report, may be due to war and other abnormal conditions that have existed, making it difficult for the railways to pursue the usual development of mechanical processes and new ideas.

## Report of Committee on Draft Gears.

An American Railroad Association's mechanical section committee, R. L. Kleine, General Car Inspector, Pennsylvania Rd., chairman, reported as follows: On Sept. 27, 1916, your committee addressed a circular of inquiry to the

taken from service, also that such tests should be made approximating as closely as possible actual service conditions, eliminating variables as far as possible. The static machine gives a certain comparison as determined by its diagram



Pendulum Draft Gear Test Machine on Pennsylvania Rd.

railways to ascertain the kind and capacity of draft gears in service, travel, performance, sustained capacity in service and repairs, also sill spacing, coupler attachments, rivetted versus key connection, draft lug spacing, overall length of gears, coupler horn, clearance, etc. Replies were received covering a total of 1,678,000 cars owned. The data received gives a very fair idea of the gears in service, forms of attachments used, spacing of sills, etc., but the information is very meager, generally, as to the efficiency of the gears in service, cost of maintenance, practicability of repairs and capacity of repaired gears, although valuable data is included on tests of two types of draft gears taken from service before repairs were made, as well as tests of these gears after repairs.

It was felt essential that gears should be thoroughly tested, not only when new, but after they had seen service, as well as after repairs had been made to gears

and absorption of work, but does not measure the capacity of the gear as a shock absorber. The 9000-lb. drop test machine will measure the height of drop at which various gears will close, and, therefore, can be considered a relative measure of shock-absorbing capacity in different gears. However, the weight used is so much less than actual service that the question arises whether the weight and height of drop of the test machine is comparable to the weight and speed of loaded car in service, and if a gear so tested in a 9000-lb. drop test machine will have the same relative efficiency in service under the heavier weight car and slower speed. The 15,000-lb. single pendulum machine in conjunction with the 30,000-lb. car on level track, as used by the Union Draft Gear Co., is another form of drop testing and is comparable with the drop weight. The Symington test plant, at Rochester, N.Y., consists of testing draft gears in full-sized freight cars. One car is dropped down

an incline and strikes another car standing on a level track. Facilities are provided for measuring the speed of moving car, tendency of lading to shift under impact and recoil, closing of gears and distance the standing car travels as a result of the impact. This testing arrangement represents more nearly actual service conditions than any of the tests previously referred to. It, however, necessarily includes a number of variables, but is, no doubt, valuable for check testing and action under service conditions.

In order to reduce to a minimum all variables and for the purpose of accurately measuring impact blows, recoil, etc., the Pennsylvania, under the direction of J. T. Wallis, General Superintendent Motive Power, designed a pendulum draft gear testing apparatus (illustrated herewith), consisting of 2 weights, 200,000 lb. each, suspended from a suitable framework, with provision for applying different draft gears. The weights may be varied up to 200,000 lb. as found desirable. It was the purpose of the draft gear committee to use this machine in tests conducted by it, but on account of the war, the machine has not been built.

On June 7, 1918, C. B. Young, Manager, Inspection and Test Section, Division of Operation, U.S. Railroad Administration, advised it was the desire and intention of that section to make an extensive test of draft gears, to determine what a draft gear should be, and also the value of the draft gears now on the market measured by the ideal standard, and invited suggestions and recommendations of the draft gear committee, draft gear manufacturers and railway officers. Your committee acted upon this invitation and placed at the government's disposal all the data and tests that had been collected, as well as their views in connection with the tests to be conducted. After outlining their plan of procedure, the Inspection and Test Section of the U.S. Railroad Administration conducted tests of draft gears on the static and drop test machines, for the purpose of calibrating the gears that will be used in the cars at the Symington testing plant, which latter tests were started Apr. 10, 1919, and to which your committee was invited.

In order to avoid duplication of work and entailed expense, your committee has suspended making any tests of draft gears, but will work in close harmony with the U.S. Railroad Administration, Inspection and Test Section, and thus have available the results of these tests for the committee work.

**St. John and Quebec Ry. Construction Financing**—Judgment was given in the New Brunswick Supreme Court of Appeal, June 6, in an action brought by the N.B. Government to recover from J. K. Flemming, the former premier, \$100,000, alleged to have been illegally obtained from A. R. Gould, former President of the St. John and Quebec Ry., in connection with contracts entered into in 1911 and 1912, between the N.B. Government and the company. The company's financing formed the subject of an investigation by a royal commission, and upon the findings of that commission this and other actions were instituted by the N.B. Government for the recovery of moneys alleged to have been illegally handled. Objection was taken by Mr. Flemming to the statement of claim, and the matter was argued through to the Supreme Court of Appeal which has decided in favor of the N.B. Government.

## Report of Committee on Locomotive Headlights.

An American Railroad Association's mechanical section committee, H. T. Bentley, Superintendent Motive Power and Machinery, Chicago and North Western Rd., chairman, reported in part as follows:

Heretofore, reports of the headlight committee have been more in the nature of results obtained by tests of electric headlights and at the time they were made and conclusions reached, most railwaymen, especially in thickly congested territory, and where high-powered lights had not been tried, were satisfied that such a device was a menace to the safe operation of a busy railway and should not be used. Now that the electric headlight is with us to stay, it may be in order, to refresh our memories, to give a brief history of its evolution, and after that, see what is still further needed to make the apparatus as reliable and free from failure as any other part of the locomotive.

The first arc light was operated in the early eighties by an oscillating engine, which later was changed into a turbine for furnishing the power, and this method, with modifications and improvements, is still in use. Objections to the arc light were many, among them being the necessity for continually changing carbons, the tremendous heat generated, the unreliability and variety in the intensity and direction of illumination, the burning out of carbon holders and other parts of the apparatus; there was no way of dimming or softening the light, and on account of its brilliancy it was very objectionable at stations or when passing trains on double track, etc. As an advertising medium and on single-track roads, particularly in the west, it was fairly successful, except for failures, some of which are mentioned above.

After much experimentation it was decided in 1915 to substitute the incandescent carbon filament lamp for the arc light and a remarkable improvement in cost and operation was shown, the light being steady, uniform and more reliable; it was also possible to have a smaller lamp in the same headlight casing, so that by use of a switch it could be used when the larger lamp was objectionable at stations or on double track. Improvements in electric lamp construction gave us the tungsten filament with its increased efficiency, so that for the same amount of current, very much greater illumination was furnished, but the

frailty of this filament caused considerable trouble and failures, the lamp manufacturers were appealed to and later furnished a type of lamp with a short, stiff filament that was very rugged and thus annoyance of failures from this cause was overcome.

On account of the lack of efficiency in the carbon lamp, it was necessary to use a comparatively large generator with an accompanying high steam consumption, and trouble was still experienced with the governor, and bearings had to be frequently lubricated or the machine was out of commission. The greater efficiency of the lamps enabled a very much smaller unit, with decreased steam consumption, to be used, and at about this time the lubricating devices were improved so that instead of having to oil the bearings about every 8 hours, they would run for several months without attention.

A dimming device was later designed, so that instead of using 2 lamps, one of which had to be out of focus, the 250-watt lamp in focus could be used for road work, or, through the medium of a resistance of 3.12 ohms, could be reduced by the movement of a switch, so that it was not objectionable to a locomotiveman opposing it. The difficulty of properly focusing lamp was taken care of by a device which enabled this to be done quickly and properly.

In the earlier recommendations of the A.R.M.M.A. committee, a 6-volt system was suggested, but on account of train-lighting systems being 32 volts, this voltage is now generally used for headlighting equipment, and on several roads, suburban trains' cars are lighted from the headlight equipment and to take care of this work a 2½ or 3 k.w. machine is used.

Towards the end of 1915 experiments were made with storage batteries to furnish current for the headlight. This equipment gave good results, except for lamp trouble, which difficulty was later overcome, but its first cost was so high and the length of time consumed charging batteries so great, where facilities were provided for that purpose, that its use was abandoned.

The headlight reflector, 18 in. diameter, 9 in. deep, silver plated, gives considerable trouble with tarnishing, and a glass reflector that can be readily kept clean is very desirable. Several makers have put such reflectors on the market and

hope before long the use of silver-plated reflectors will be a thing of the past.

Acetylene gas was tried for headlights on a number of roads, some using a generator apparatus on the locomotive while others used acetylene stored in tanks. With the former practice serious accidents occurred, due to men with open torches cleaning out the spent carbide before all of the gas had been dissipated; while the storage tanks, it required considerable work to replace them when discharged. The light furnished was of good quality, but due to breakage of piping, clogging of burners, and troubles mentioned above, the use of acetylene for headlight purposes was discontinued.

The amount of light necessary on a switch locomotive must be considered not only from the locomotiveman's requirements, but also from the switchman's safety standpoint, and complaints are continually being made by the former that the light is not bright enough, and from the latter that it is too strong, but by using a 40-watt lamp in a clean reflector, ample light is furnished to comply with the 300-ft. requirement of the law and not be objectionable to the switchmen.

There appears to be a demand in some quarters for an enclosed type of switch of more rugged construction and conveniently located within reach of the locomotiveman as complaints are made that the single-pole double-throw switch as generally used is not very satisfactory.

Failures frequently occur from broken steam pipes, broken field lead, excessive voltage, grounded brush holders, loose connections, worn bearings and excessive valve travel, but the manufacturers and repair men are making much progress in the correction of these difficulties and we soon will have the headlight equipment as free from troubles as any properly designed machine.

The American Railway Electrical Engineers' Association has been the committee with its report on this subject, and by permission, it is presented by us as we believe it gives a great deal of technical information from men well qualified to handle the subject, so that by a thorough discussion of this valuable addition to the literature on the subject, we will be in very much better position to know what is the best practice and be governed accordingly.

The A.R.E.E.A. report referred to gave full details of all recommended standard practice for electric headlights, fully illustrated with plans.

## Report of Committee on Mechanical Stokers.

An American Railroad Association's mechanical section committee, A. Kearney, Superintendent Motive Power, Norfolk and Western Rd., chairman, reported as follows: Your committee has been reporting to this association since the 1913 convention. In each successive report, it has been the purpose to acquaint the association with the developments of the various locomotive mechanical stokers up to that time, and to give consideration to the performance of stokers as experienced by the roads that have them in service. With each successive report, it became a greater burden for your committee to introduce additional features of interest and importance not already given consideration in previous reports, until it has now become extre-

mely difficult to compile any additional data that might be received with interest and appreciation. During the last two years, the railways have done very little research or experimental work, as all interests have worked with the one purpose in view of producing transportation, and other interests have been put aside for this end. Consequently, there has been practically no information established relative to the performance of locomotive stokers in service, such as is obtained from specially conducted tests.

This two-year's war period, from a manufacturer's standpoint, however, has been extremely active, and there have been a large number of stokers applied. Inquiry was made of the different stoker manufacturers as to the number of

stokers they had actually applied and were in service at Jan. 1, 1919. The following table indicates the number of different representative stokers then in service and the type of locomotives to which they have been applied:

Kind	Mallet	Mikado	Santa Fe	Centipede	12-wheel	Decapod	Consolidation	Mt Type & Mohawk	Pacific	Total
Street	424	638	380	4	14	...	22	3	37	1522
Duplex	240	804	195	...	...	...	53	1	1	1294
Standard	120	338	36	...	33	...	21	162	21	781
Hanna	70	6	73	...	16	...	...	4	...	169
Elvin	...	...	1	...	...	...	...	...	...	1
Total	854	1786	685	4	63	53	44	170	58	3717

There was a total of 3,717 stokers of the above types in service Jan. 1, 1919.

The stoker report of 1917 shows a total of 1,611 stokers (exclusive of Crawford) in service at Apr. 1, 1917. There were placed in service 2,106 stokers between Apr. 1, 1917, and Jan. 1, 1919, which indicates the rapid rate at which locomotive stokers are being applied. The types of locomotives to which the stokers are largely being applied are the mallet, mikado and Santa Fe, which represent the locomotives of large capacity. The question as to the size of locomotives upon which stoker installations are justifiable is one that is frequently referred to and is yet unsettled. It is your committee's opinion that the conditions surrounding individual conditions are so variable that no fixed rule can be recommended for guidance in this connection.

Suggestions have been made involving certain limits in the weight and tractive effort of locomotives, the character of fuel used and the rate at which it must be fired. Limitations on the basis of weight and tractive effort of locomotives may be feasible where the locomotives operate under uniformly heavy conditions, but even then there are certain local and physical conditions to be considered that prevent any general recommendation being laid down even on such basis as this. Locomotives operating in districts where the demand for maximum power is intermittent and for short duration could not be considered on the same basis as locomotives of the same weight and capacity operating where the maximum power is demanded for extended periods. The character of fuel available for firing may also be considered one of the controlling factors in consideration of the application of locomotive stokers to comparatively small locomotives. In view of these governing factors, your committee does not feel justified in attempting to suggest a ruling which might be followed in the consideration of this phase of the subject, as it is believed that this question will have to be settled based upon the surrounding conditions under which the locomotive is required to operate.

There were some questions of general interest in connection with stoker operation concerning which it was thought well to secure an expression from the roads using mechanical stokers. These questions were sent out to such roads and replies to this inquiry have been received from 32 roads; representing a total of 1777 of the stokers now in service. Inquiry was made relative to the kind and character of fuel used, and it is noticed that on all of the roads, bituminous fuel is used; the fuel reported varies in heat units from 9,212 to 14,250 btu.

In answer to the inquiry as to whether the same size exhaust nozzles are used on stoker-fired locomotives as on hand-fired locomotives, it seems that the general practice is to use the same size exhaust nozzle, although a few roads vary from this general practice. Three roads report smaller nozzles on the stoker-fired locomotives, ranging from  $\frac{1}{8}$  to  $\frac{1}{4}$  in. smaller in diameter. Two roads report that they are using nozzles from  $\frac{1}{8}$  to  $\frac{1}{4}$  in. larger in diameter than are employed on their hand-fired locomotives.

The consensus of opinion is that the stoker-fired locomotives burn more fuel than the hand-fired. Where percentages of different have been expressed they range from 10 to 41% in favor of hand-firing. This difference, however, is expressed in terms of coal as fired and does not recognize the advantages that

have been gained by improvement in the performance of the locomotive resulting in uniform steam pressure and more active and uniform performance over the division. These increases in fuel consumption may, in some instances, be considered as the price of firing locomotives of capacity beyond the range of successful hand-firing.

In referring to the continuous performance of stokers over a division, the record indicates that in the majority of cases the stokers are doing about 100% of the firing of the locomotive.

The failures occurring on the stoker equipment are the same old offenders and are classified as "failure of stoker parts," "foreign matter in fuel" and "wet coal." The record tabulated from the information received as to the percentage of failures that may be classified under these three headings is quite interesting in the variety it presented. On some roads the highest percentage of failures is due to broken stoker parts; on others, foreign matter in the fuel seems to be the chief offender, while on others the question of wet coal is apparently causing the most concern and delays to stoker-fired locomotives.

An effort was made to obtain information relative to the cost of stoker maintenance upon a 1000-mile basis. It develops that very few roads keep such a record, and those that have reported on this item, when grouped together, show a very wide range of costs. One road with 92 stokers in service reports a cost of \$1.77 per 1000 miles, while another with 54 stokers in service shows a cost of \$40 per 1000 miles. These are the maximum and minimum cost figures presented, and indicate the extent of the variation in cost, and if closely analyzed it would, no doubt, be found that local conditions were possibly largely responsible for the variation.

In the circular sent to the users of mechanical stokers, suggestions relating to features of mechanical stokers to which attention should be directed by the manufacturers were solicited, and for the benefit of the manufacturers it might be well to incorporate some of these suggestions in this record.

A simpler and more accessible lubri-

cating system has been suggested by several roads. Provision for the better handling of wet coal comes as a suggestion from roads that are experiencing trouble in this respect. Recommendations for more accessible conveyor screws are presented, which might be considered in conjunction with one road which suggests that the stoker be constructed so that it will be less susceptible to failure when foreign material gets into the stoker mechanism with the coal. Provision for overcoming the loss of fuel from the conveyor system may well be considered by the manufacturers as this feature has been suggested as a stoker deficiency. Improvement in the arrangement for the positive adjustments of conveyor adjusting plates is recommended, and it has also been suggested that consideration be given to the design of a system of conveyance of the fuel from the tender to the fire box that will provide against pulverizing the fuel in conveyance. Better protection from dust for the bearings and gears of the stokers is referred to as desirable.

In the 1917 report, additional reference was made to the Elvin stoker then undergoing development on the Erie Rd. This stoker has passed through its experimental stage and it is understood that it is now in condition to be presented as a commercial proposition. Your committee has learned from reliable sources that the Elvin stoker now in operation on the Erie Rd., is giving very satisfactory service, and that it embodies several individual features which may mean greater economy in mechanical firing. The opinion has been expressed by disinterested parties who have come in contact with this type of stoker and have seen it in operation that, while it may not have reached its final stage of development, there are, nevertheless, marked possibilities in a stoker of this type.

Your committee wishes to recognize the unceasing efforts and activity of the stoker manufacturers in the development of their respective devices, and is of the opinion that with continued effort in the light of service experience, a more perfect stoker may be developed in which objectionable features, such as those outlined, will have been eliminated.

## Report of Committee on Tank Cars.

An American Railroad Association mechanical section committee, A. W. Gibbs, Chief Mechanical Engineer, Pennsylvania Rd., chairman, reported in part, as follows: With the war came the necessity for the transportation of various products, among them toxic liquids for filling shells, not previously handled in tank cars. Your committee has given considerable time to the development of designs of cars for this purpose, principally in connection with the U.S. Ordnance Dept., engineering division. Some of the toxic liquids had low rates of expansion, so that the question of pressure was not material, the one important requirement being that leakage must not occur. The class III car was adapted to this service by the modification of certain details, such as omitting all openings in the shell, making the dome capacity about 1%, special arrangement for closing the dome, openings, etc. Another demand was for tank cars for carrying compressed liquefied gases, notably chlorine. The specification for class V cars, with welded tanks, adopted by

the association in 1917, with some modifications of details, met the situation very well.

Some difficulties were experienced in welding anchorages to the tanks. This was remedied by avoiding the use of anchorages having great length of welded contact with the shell.

While a design of safety valve was approved for use with a number of these cars, which it was important to get into service, there were some features of the valve which were not entirely satisfactory, and study of the question, in connection with the representatives of the Ordnance Dept., continued up to the time of the armistice, and has since been carried on by the committee.

The seams of these tanks were hammer welded throughout, using water gas as the heating medium. With steel of a proper quality there seems to be no difficulty in securing thoroughly sound welds and containers which are bottle tight.

Your committee is glad to report that the American Society for Testing Ma-

terials has prepared a specification for plates for forge welding, which meets the views of those engaged in producing welded containers. If this specification is adopted by the A.S.T.M. this year, your committee recommends that it be substituted for the specification of the A.S.T.M. for boiler plate steel, fire box quality, now prescribed by the tank car specification for tanks of class V cars. To insure getting satisfactory material under this latter specification it has been necessary for the users to make certain restrictions within its limits.

As stated in the committee's report last year, the necessity of keeping in service every car capable of safely handling liquid products made it advisable to suspend until July 1, 1919, the requirement of flange quality steel for class III tanks, and until Jan. 1, 1920, the hydraulic retests of tanks of classes I, II, III, IV and V cars, which in normal times are necessary from both the safety and economic standpoints. As the conditions which led to these suspensions have passed, your committee has recommended to the executive committee that no further extensions of these requirements be granted and that circulars be issued to inform all interested accordingly.

**Safety Valves.**—Owing to the pressure of other more important matters, the committee has been able to make but little progress during the past year with the experimental work in connection with the safety valve. For use in connection with these tests better springs than are ordinarily used in these valves have been purchased, but even these do not entirely comply with the specifications. It is very evident that for certain products it will be necessary to provide a safety

valve in which corrosion is guarded against by the use of non-corrosive material in both the housing seat and the bearing face of the valve proper. It is, of course, desirable that the quantity of non-corrosive metal used shall be as small as possible, to lessen the probability of its being stolen. The committee has made some experiments in electrically welding the non-corrosive metal to the iron parts, but the results so far have not been satisfactory. Further work will be done in this direction. It is not certain that an absolutely tight valve can be secured which will at the same time retain the valuable feature of the present design, viz., very free discharge in case of necessity. A considerable amount of information has been accumulated concerning the behavior of safety valves under pressure, and the committee hopes to be able to push the work to a conclusion during the coming year.

Certain changes are recommended in the safety valve collar, bottom discharge valve, rivetting, calking, hand brake power, application of running boards on tanks covered with jackets, application of dome platform brackets to tank cars covered with jackets, inspection, boards for attaching placards prescribed by the Interstate Commerce Commission, method of testing safety valve in place on the car, transportation requirements and draft attachments.

**U.S. Railroad Administration Tank Cars.**—On Feb. 7, 1919, the secretary, by direction of the executive committee, referred to the tank car committee the suggestion that they go over the plans and specifications for the U.S. Railroad Administration tank cars (oil cars, 7,000, 8,000 and 10,000 gal. capacity, and

acid cars of same capacities), and consider the advisability of adopting them as standards of the M.C.B.A., report to be made at the coming June convention. This involves two questions: 1. As to the wisdom of adopting any particular tank car designs as M.C.B. standards? 2. Whether from all standpoints the government tank car designs meet the requirements of the tank car traffic better than others now being followed? In deciding these questions the interests of the railways, the tank car owners, and the car builders must be properly considered.

Your committee believes that as long as the requirements of the M.C.B. standard specifications covering the essential features of tank car construction are complied with, it would be unwise to restrict the builders and users to certain standard designs, as the many commodities of widely different characteristics, weights and values transported in such cars require for their safe and economic handling various modifications in detail design. The Railroad Administration designs were prepared to meet the M.C.B. specifications, and your committee passed them in conference with the Railroad Administration mechanical people. The tank car equipment of the country, in which the railway ownership is comparatively small, must also be assumed to comply with the M.C.B. requirements, as it is moving in interchange. Specifications and prints have been furnished by the Railroad Administration for its cars, but the time available is entirely too short to permit the proper comparison and consideration of them and of the plans and specifications for other designs which must be gone over to answer the second question.

## Fuel Economy and Smoke Prevention.

An American Railroad Association's mechanical section committee, W. Schlafge, General Mechanical Superintendent, Erie Rd., chairman, and of which W. H. Flynn, Superintendent of Motive Power, Michigan Central Rd., formerly Master Mechanic, Canada Southern Division, Michigan Central Rd., was a member, reported as follows: Your committee was originally constituted in 1913, during a period when organized effort for the promotion of economy in the use of fuel for locomotive purposes was in its inception. The committee has heretofore aimed to deal with the methods of firing and the means to be adopted for developing the required supervision, rather than with the multitude of details in design and maintenance which, while important in themselves, are subjects that more properly fall within the scope of other committee assignments. However, the situation immediately preceding the report of 1918 was so extraordinary and the need for economy so pressing, that a departure was made from the earlier policy and some consideration given the more general features attending the purchase, transportation and use of railway fuel. The problem was not so much one of cost as of supply and the shortage made economy a patriotic, if not a humanitarian, duty. This situation has been practically relieved so that now the importance of the subject arises from its influence upon operating expenses which have reached a point where they are absorbing the gross rail revenues for many roads.

There has been a steady increase in the total fuel cost to the railways, chiefly caused by two factors—increased cost of production and increased consumption due to the natural expansion of traffic. The accompanying curve no. 1 exhibits the trend of total cost for the past 19 years for which there are available figures. Comparison with curve 2 shows that while the trend of prices at the mines has been steadily upward, the increased total cost is chiefly due to increased consumption. The increase was reasonably uniform for the 10 year period ended with 1919 and subsequently it was more gradual. On a basis of the general trend of increase for the previous few years, a reasonable estimate of cost would have placed the total for 1917 at about \$265,000,000, but owing to the circumstances arising through the war, the influence of winter traffic conditions and the scale of mine prices established, the total actually amounted to the stupendous sum of \$401,297,300, an increase of 55.9% over the preceding year. In this connection it is significant to note that in 1917 the cost of fuel for yard locomotives alone represented 88% of the total for all locomotives in 1899. The official statistics for 1918 will undoubtedly disclose a total even greater, although there will be a substantial decrease in 1919 due to the greatly reduced tonnage handled and to the influence of a generally organized effort to promote economies in every possible manner. But the total will still be a vast sum, and since it represents ap-

proximately 14% of the total operating expense it has assumed a greater importance than ever.

In view of the situation thus briefly presented, your committee is of opinion that its report for this year may be profitably devoted to some consideration of the application of its previous recommendations and to methods for economy in the use of fuel for other than locomotive purposes. In its presentation of these subjects the committee considers itself fortunate in having the advice and counsel of the Fuel Conservation Section of the U.S. Railroad Administration which has had an opportunity not enjoyed by any other agency to judge the benefits of organized measures for locomotive fuel economy. Moreover, the defects of earlier methods have been disclosed and the necessity for general coordinated effort emphasized.

In one of its earlier reports your committee provoked some criticism because of its suggestion that railway fuel should be purchased to specification, but the past few years have furnished convincing evidence that this procedure is highly important if reasonable economies are to be effected. The advantage lies not so much in the purchase of fuel having the high b.t.u. values as in the opportunity for selecting coal that can be economically burned under the peculiar conditions prevailing in locomotive service. A specification which limits the percentage of easily removable non-combustibles produces economies in fuel, labor and transportation and involves

no economic losses.

The greatly increasing coal consumption and the present growing importance of conserving this indispensable factor in our economic life, prompts your committee to say that in its opinion action should be taken at no distant date to determine the most favorable conditions under which economical combustion may be obtained with various grades of fuel so that plant design and equipment may be made to utilize available supplies to the best advantage. Such an investigation would naturally include the difficult and varied circumstances attending locomotive service.

In the committee's opinion public interest will ultimately require the exercise of reasonable efficiency in the use of fuel, which prompts a brief consideration of the conditions of purchase. Specifications should include the characteristics of the available supply with particular reference to the percentage of ash present, to its clinker forming qualities, and to its liability to spontaneous combustion. The size demanded for best results is also important and should be specified by the road supervision which should be familiar with requirements for the most satisfactory combustion conditions. It should be observed also that where these conditions cannot be obtained with one grade of coal, analysis will frequently develop that a suitable mixture may be secured with another grade. As is well known, the character of the ash content exercises a great influence upon the combustion conditions, since, under certain circumstances, the free burning of the combustible material is prevented and clinker forms over the grate surface, thus interfering with combustion by cutting off the air supply and not infrequently preventing proper operation of the grates to keep the fuel bed open.

There is also a common source of waste through clinkering coal, especially on long divisions where it is often the practice to clean fires between terminals, resulting in the usual cinder pit and accompanying losses, including those involved in handling and disposing of the ash. The ash constituents producing these conditions are not only visible and mechanically separable, but may be intimately mixed with the combustible elements, and, therefore, disclosed only by chemical analysis.

Reference has been made to the importance of properly grading the sizes of coal to ensure the greatest efficiency. It is generally understood that existing locomotive operating conditions prohibit the use of slack, but not that different grades of lump coal have different evaporation values. This has recently been demonstrated at the University of Illinois in a series of tests with a modern mikado type locomotive, the results of which are indicated below:

**Equivalent Evaporation Per Lb. Dry Coal.**

Size of coal.....	Medium rate tests.	High rate tests.
3 x 6-in. egg.....	10.21	9.09
Mine run.....	10.12	8.66
2-in. lump.....	9.95	8.32
2 x 3-in. nut.....	9.90	9.11
2-in. screenings.....	9.25	7.43
1 1/4-in. screenings.....	8.47	7.06

It should be said concerning these results that they are probably not generally applicable, since they were made with Illinois coal from a single mine with one locomotive, hence it is not impossible that other coals with a locomotive having different stoker, grate, fire box or front end conditions might develop a different ratio, but the figures are useful

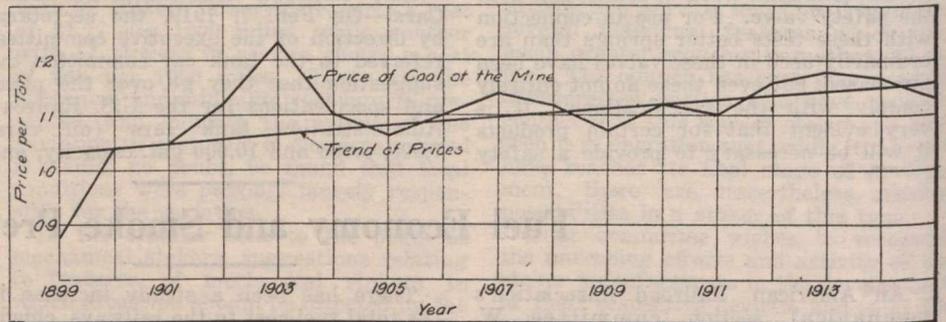
in demonstrating the importance of the subject and emphasizing the necessity for ascertaining the conditions applicable to the different coals on each railway.

The foregoing observations are made for the purpose of emphasizing recommendations of your committee made in earlier reports concerning the desirability of creating an organized fuel department which should embrace the services of a chemist and an inspection corps whose attention could be devoted to those problems involving research and experiment and whose co-operation with the purchasing department would ensure selection of those coals promising the greatest service value. Where the purchases are relatively small, a joint arrangement might be effected whereby the cost of this work could be distributed among several consumers. It is believed that the U.S. Fuel Administration and Fuel Conservation Sections have fully demonstrated the advantages of systematic inspection and analysis and a reasonable exercise of control over the supply. The benefits which have thus been received should be made permanent.

It may be well to briefly describe a system in effect for some time on a large railway which has proved satisfactory and which has resulted in co-ordinating the various agencies responsible for the purchase and use of fuel. A chart of the organization appears herewith and its functions are briefly described as follows: The chemist and coal inspectors

pluses effects contact between the road supervision and headquarters, interviews road supervision, investigates locomotive failures caused by poor coal, to ensure observance of the schedule provisions and to see that the quality of shipments is up to the standard; he checks manifests to ensure proper distribution, and the coal dock records to see that the right grade of fuel is used for the specified service. The other field inspectors are assigned to specific territories and live at a point central to them so that the necessity for travel is minimized.

The duties of the field inspection force comprise not only the preparation and sizing at the mines, but should include all features affecting efficiency, cost of transportation and handling, such as inspection of the empty cars for foreign matter, particularly sandstone, cinders, gravel and similar materials likely to be mixed with the coal and dumped into the pockets. Experience has demonstrated that a quarter of a ton of such refuse is frequently found in empty cars consigned to the mines. The inspection should also cover defects in equipment, such as warped doors, operating mechanism in bad order and all conditions affecting the loading, unloading or loss of lading in transit frequently overlooked in routine car inspection. Another feature of importance is the distribution of equipment to suit unloading conditions. Large losses are incurred in consigning flat bottom cars or cars with flat bottoms



Curve 2, Price of Coal at the Mine, Showing Upward Trend.

report to a staff officer of the mechanical department who is responsible for co-ordinating the laboratory and inspection work with that of the road supervision and the purchasing department. In this manner a proper analysis of the varying conditions is ensured and a check maintained upon shop maintenance and upon fuel distribution by the operating department.

Whenever purchase from a new mine is proposed analysis is made of a representative mine sample taken in accordance with the method outlined by the interior department in its "Directions for the Sampling of Coal for Shipment or Delivery." From this analysis the general availability of the coal is determined and, if satisfactory, road tests are conducted with the first consignments to determine the service characteristics. As a rule the chemical analysis and physical inspection at the mine are sufficient to justify conclusions, but final acceptance requires favorable report by the road supervision. Following regular shipments, samples from cars at destination are taken from time to time in conformity with the method recommended in the publication mentioned. These analyses are compared with that of the original mine sample in order to determine whether the quality remains uniform and to see that the characteristics do not change. The inspector taking these sam-

having hoppers to points where shipments may be handled in self-unloading cars. The cost of unloading is now a large item and it constitutes a part of the total fuel charge. The field inspection force should be required to maintain a check upon these details and upon the scale and manifest weights to detect discrepancies, and to ensure loading of equipment to the prescribed limit.

If the information collected by the inspection force is to be of value, it must be promptly transmitted to headquarters, consequently, a daily report should be required covering all the features of inspection, so that prompt steps may be taken in connection with any conditions requiring correction. One of the inspectors, designated chief, is held responsible for the work of the others and is expected to be informed on the technical features of the work so that the department will be assured of information concerning developments in the entire field of investigation concerning fuels, combustion and other related subjects. Such an organization requires a high order of ability, but the cost involved is readily justified in view of the possibilities for economy presented. While varying circumstances will affect the number of men required in such a force, it is believed that, in general, a thoroughly satisfactory inspection service for a large railway should involve an expense not ex-

ceeding 0.1% of the fuel cost.

The problem involved in the inspection, distribution and utilization of fuel is one in which each division of the operating department has some responsibility, and it is, therefore, advisable that the chief operating official should be fully informed as to the requirements, procedures and accomplishments of this branch of the organization. In the opinion of some recognized authorities, notably the Chief of the Fuel Conservation Section, the head of the fuel department should report direct to the chief operating official, but, in view of the wide divergence of opinion on the subject, your committee is not yet prepared to make such a recommendation, because it is thought that co-operation between the various operating branches will produce the required results, especially since fuel is now the second largest item of operating expense and, therefore, of prime importance to the transportation department.

The limitations upon a report of this kind and the subjects remaining for consideration do not permit further discussion of the features of inspection and we will now consider the second subject which relates to the locomotive and the influence of maintenance upon fuel consumption. Various publications have recently pointed out, graphically and otherwise, the sources of heat losses in locomotive service, and these are doubtless well understood, but since a knowledge of the nature of these losses is essential to a proper appreciation of the possibilities for economy, it is desirable that brief reference be made to the avenues through which heat is wastefully dissipated, which are as follows: 1. Steam leaks in fire box, superheater, front end or to the atmosphere. 2. Grate, cinder pit and stack losses. 3. Escaping steam through safety valves, unnecessary operation of auxiliaries, such as headlight generator, air pump, etc. 4. Unconsumed volatile usually denoted by excessive smoke. 5. Heat losses in escaping gases. 6. Radiation. These items are largely influenced by factors independent of operation and maintenance, but it is with the latter that we are now chiefly concerned and to which attention is directed.

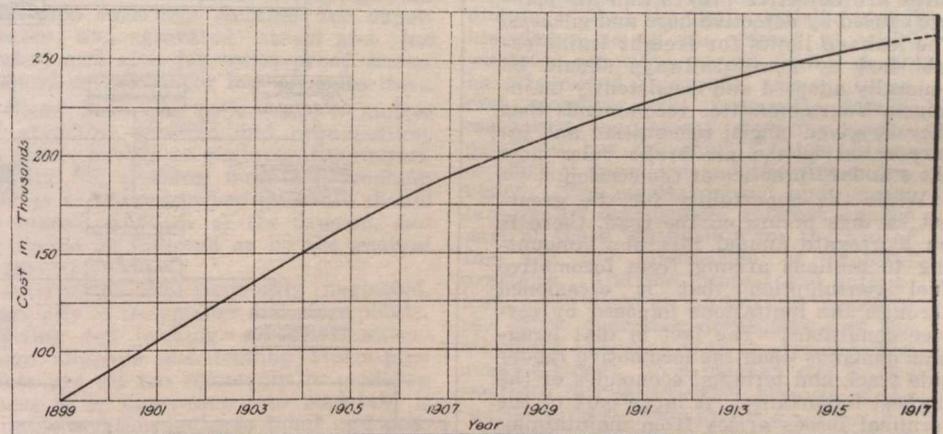
Recent observation, confirmed by the Fuel Conservation Section, indicates that steam leaks are not receiving the attention demanded by the extent of losses involved or the inefficiency of operation produced. One remedy for this situation lies in a proper inspection of locomotives while under steam in advance of each boiler wash. This inspection to be followed by a check inspection after the locomotive is ready for service. This practice would ensure reasonable freedom from leaks because excessive leakage rarely develops in the intervals between two boiler wash periods.

Large losses are sustained through faulty superheater maintenance. Pressure tests should be regularly applied to superheater units and steam pipe joints in order that defects may be located and corrected. Recent inspection on one railway developed that out of 15 locomotives in service, 11 had leaking superheater joints involving loss of fuel and locomotive efficiency. This condition can virtually be eliminated through the observance of standard methods for the maintenance of units. This should include proper assembly, with the required bands and supports in the tubes. Observation on several railways shows that this feature is being neglected, with the result that vibration opens the header joints,

causing bad leaks in the smoke box and, frequently, costly damage to adjacent parts.

Faulty combustion, represented by unconsumed hydrocarbons and high combustible in the ash, is most frequently occasioned by improper air supply. For a given furnace and fuel, the excess air is fixed within comparatively small limits. An increase in the air supply reduces efficiency, because of the loss in heating the excess, while on the other hand, a decrease below the required percentage produces less complete combustion. Coals having low percentages of volatile matter require less excess air for nearly complete combustion than those having higher percentages of volatile. This not infrequently accounts for better results with one grade of fuel than with another.

In locomotive service the air supply is controlled by front end, flue, grate and ash pan conditions, which often do not receive proper attention from the designers. Many modern locomotives have grates with insufficient air-inlet openings, or with openings that readily become clogged, thus increasing the resistance to air flow. Attempts are frequently made to overcome this condition by adjusting front ends or reducing the diameter of the exhaust nozzle.



Curve 1, Total Cost of Locomotive Fuel for the Last 19 Years.

Many of the older locomotives are still equipped with ash pans having insufficient air openings, a defect readily detected with a U tube draft gauge. There should be no indication of vacuum in the ash pan. Correction of this condition recently permitted an increase of  $\frac{1}{2}$  in. in the nozzle diameter of several locomotives and not only effected a substantial saving in fuel, but greatly increased the efficiency of the locomotives.

It is highly important that the flues and tubes be free from obstructions, which not only interfere with the air supply to the fire box, but reduce tube evaporating efficiency and superheater economy. The Fuel Conservation Section has recently pointed out that the fuel loss through drop in super heat with half the tubes stopped up may reach 24%. In order that thorough and efficient cleaning may be assured, standard apparatus and methods should be established and suitable records maintained. The maximum interval in mileage or time between cleanings, consistent with the requirements for different classes of power and service, should be determined, and flues thoroughly cleaned within these limits. Periodical checks by the supervising officers are required, to ensure proper work and continuous records.

Radiation losses have heretofore received little attention from writers on locomotive fuel economy, and even less from those responsible for locomotive design and maintenance, as a casual inspection of any locomotive will disclose. It is estimated that the radiation from each square foot of surface carrying 200-lb. pressure and surrounded by atmosphere at 70 deg. F. temp. wastes 1000 lb. of coal a year. This loss increases rapidly with decreasing temperatures, certain weather conditions and rapid circulation produced by moving locomotives. The average locomotive has approximately 100 sq. ft. of such exposed boiler and pipe surface, easily representing an annual loss of \$150 to \$200. This can be substantially reduced if cylinder heads, steam pipes and fire box surfaces are properly insulated and for this purpose it is recommended that magnesia-asbestos or hair felt be used and that it be not less than  $1\frac{1}{2}$  in. in thickness except for small pipes where  $\frac{3}{4}$  in. is sufficient. Fire boxes may be covered by removable sections where access to staybolts is required. These practices, once somewhat general, have been neglected because of the maintenance problems introduced with modern power.

A common source of loss of power and combustion efficiency arises from fre-

quent unnecessary changes in dimensions or adjustment of front end appliances. Standards suited to local conditions for each class of locomotive should be determined and maintained, and periodically checked by the inspection force. The common practice with respect to a poor steaming locomotive, for which the cause is not readily discernible, is to alter some of the front end details, whereas, proper investigation usually discloses a leak in some of the joints, frequently between the front and the ring, or around the outside steam pipe joints. As an over-drafted locomotive produces air, spark and back pressure losses, the importance of maintaining standard front end details may be understood.

In its last report your committee briefly covered those features of maintenance that contribute largely to power and fuel losses, but the work of the Fuel Conservation Section has demonstrated that two other appliances are exerting an appreciable influence upon locomotive fuel losses—the power reverse gear and the pneumatic sander. There are some power reverse gears in use that, not being positive, permit “creeping” while the locomotive is in operation, thus increasing the cut-off and decreasing efficiency. It is recommended that all such gears be modified, so as to permanently

correct this defect, and that particular attention be paid to the maintenance of valves and packing to ensure proper operating conditions.

The losses occasioned by poor sand and defective or inoperative sanding appliances, are greater than commonly supposed and arise chiefly through failure at critical points, necessitating stopping, taking slack and doubling hills. Your committee recommends the adoption of suitable specifications governing the purchase of locomotive sand which, by establishing reasonable limits for silicon content, will ensure a suitable quality. Then, to make the material effective, the sand pipes should be firmly held over the rail by substantial clamps not less than 1/2 x 2 in. section, attached to the extreme lower end of the pipes. With the adoption of these provisions the prescribed daily or trip inspections should ensure the desired sanding efficiency.

Previous discussion has been confined to the influence of the locomotive and its details of construction, maintenance and operation upon fuel consumption, but it may be well to mention the fact that car equipment also exerts a large influence upon the problem. While any defect contributing to increased resistance produces a corresponding increase in the fuel required, perhaps the most general features are defective brakes and air leakage caused by defective hose and gaskets. The leakage limits for freight trains established by many railways should be generally adopted and consistently maintained. Your committee recommends that they be given official recognition and incorporated in the air brake rules now the standard practice of the section.

While the opportunity for the greatest savings occurs on the road, there is an aggregate annual loss now amounting to millions arising from locomotive fuel consumption that is occasioned through the limitations imposed by service conditions. The fact is that irregular demands upon the locomotive render side track and terminal economies of the highest importance. A large part of the terminal losses arises from maintaining locomotives under steam when not required for early service, and from unnecessary cleaning or removal of fires. Where locomotives are not likely to be required for service within 20 hours, as frequently occurs on Sundays or holidays, or under special conditions arising from variations in operation incident to reduced business, fires should be drawn. Under all circumstances grates and stacks should be covered, to prevent the cooling effect of air circulation through the fire box and flues. This suggests the frequent waste observed through faulty methods of firing up, resulting in the loss of green coal through the grates, either because they are defective or the openings are large enough to permit the green coal to fall through. Observation of recently prevailing methods discloses that enough coal is frequently wasted in this manner to haul 1,000 tons one mile on the average railways. Grates should be covered with shavings, or wood, before coal is applied, which will not only minimize the loss mentioned, but reduce the quantity of coal otherwise required in kindling fires.

Side track losses arise from excessive draft, which should be regulated by means of the fire door. Another factor in this connection is the influence of the superheater damper, which is frequently tied open, a practice that should be discouraged, because of its influence upon

maintenance as well as upon fuel consumption.

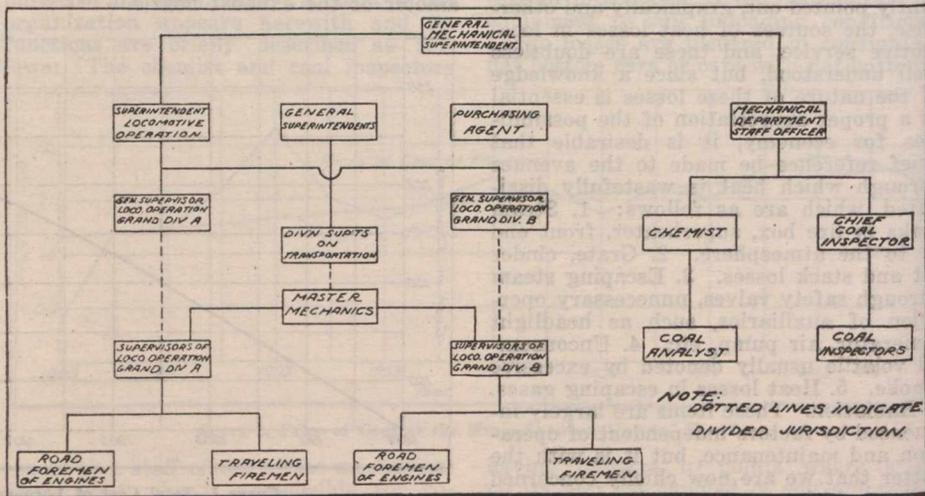
Cinder pit operation offers much greater opportunity for fuel economy than is generally recognized. Recent investigation developed that the combustible content of locomotive cinders at certain terminals averaged 35% by weight. In other words, every car of cinders contained more than a third of a car of coal. It is at present impossible to avoid large losses here, but they may be minimized through co-operation of locomotive men, firemen, hostlers and ash-pit foremen, by careful firing before locomotives reach the pit and avoiding the application of green coal immediately before fires are cleaned.

This suggests the service that competent supervision may render on the ash pit in cleaning fires promptly, moving locomotives as soon as ready, in careful cleaning of fires to properly remove ash and clinker without waste of fuel, in preventing the excessive use of air pump and steam blower and in maintaining co-operation with the locomotive house in order that no fire shall be dumped unnecessarily and no fire cleaned that will require subsequent dumping. The ash pit foreman should be provided with a copy of the monthly boiler list and see

conservation rests in a large measure upon the mechanical department, there are features of operation affecting the problem that are under the immediate control of associated departments, whose interest is essential to many economies that are possible only through improved efficiency in daily routine. This includes prompt dispatching of locomotives and trains, proper adjustment of tonnage, proper make-up of trains, prompt completion of station work and elimination of delays in the movement of ash pit and coal cars.

Maintenance of way and signal department officers can also render effective service, in the cause of fuel economy, by eliminating, as far as possible, the necessity for stopping or reducing the speed of trains because of prolonged slow orders, the unnecessarily prolonged display of caution flags or inoperative signals. This department is also directly responsible for lighting and pumping-plant operation, and should eliminate fuel losses through radiation from exposed surfaces and the steam leaks that are frequently characteristic of these isolated plants.

Locomotive fuel constitutes about 88% of the total railway consumption, and, therefore, offers the greatest opportunity



Fuel Organization for a Trunk Line Railway.

that fires are dumped as the locomotives pass over the pit.

The coal pocket foreman should be furnished with a schedule of coal required by locomotives in each class of service, and should be charged with the responsibility for observance of the schedule. The Fuel Conservation Section estimates that at least 100,000 tons of coal, unnecessarily carried on locomotive tenders, is being transported 100 miles every day, at a total expense for fuel alone equivalent to 1,000 tons a day. The schedule should also indicate the kind of coal required for different classes of locomotives and assignments, so that the better grades may be employed in the heaviest service.

The extent of the possible terminal losses suggests the desirability of an accounting system that will distinguish between the fuel consumption of locomotives in the hands of the mechanical and the transportation departments. Such records would readily disclose uneconomical practices and permit their prompt correction. The road performance should be compared with predetermined figures based on an estimate and trial under average conditions.

While the responsibility for fuel con-

servation and economy, but the remaining 12% represents the very substantial sum of \$45,000,000 on the 1918 basis, an amount approximating half the total fuel cost for locomotives 10 years ago. Of this total the largest percentage is represented by power plant consumption to which the remainder of the paper will be devoted.

Questions of relative economy in the purchase of power or its generation in privately owned plants are important, but do not fall within the scope of a paper which deals with the problems of operation rather than design, and consideration will, therefore, be given to those details susceptible of correction in existing plants.

The inefficiency in the ordinary railway stationary boiler plant arises from equipment, maintenance and operation. Large losses are frequently encountered because of insufficient or inefficient equipment. Investigation has developed frequent instances of low rates of evaporation in very inefficient plants, caused by an attempt to force boilers above their normal capacity. This is a frequent accompaniment of the discarded locomotive boiler, which is always uneconomical for stationary purposes. In one instance of re-

cent occurrence, a locomotive boiler in stationary service, consuming 7 tons of coal a day, was replaced by a return tubular boiler which effected a saving of 3 tons a day under the same service conditions.

Many stationary boilers are not provided with dampers in the uptake, and yet draft regulation should be obtained with dampers and the draft should be obtained with dampers and the draft should be varied to suit the rate of combustion which is proportional to the load. Maximum efficiency is attained when the proper draft for given rates of combustion under given condition is established by suitable tests. Tests made indicate how an average saving of 9½%.

Feed water heaters are not economically employed and yet the conditions prevailing in practically all railway power plants will permit their use for 8 months in the year. When it is considered that under average conditions an increase of 11 deg. F. in the temperature of feed water effects a saving of about 1% in fuel consumption, the loss from free exhaust steam is plainly evident. There is no more immediate and effective means of economy than through feed-water heating.

One other prime factor is power plant economy lies in the disposition of exhaust steam other than for feed-water heating purposes. This feature would not be lost to view if the engineer portion of the plant were considered, the auxiliary, and mechanical power a by-product. The fact is that under average conditions the heat consumption of stationary engines does not exceed 15% of the total heat generated, the difference being represented by the heat of the exhaust. In practically all railway shops, therefore, the heating requirements should be satisfied with exhaust steam, and in large plants the condensate should be returned through a suitable vacuum system. The outside purchase of power and the use of high pressure steam for heating purposes is an unwarranted extravagance.

Experience has convinced your committee that the largest losses usually encountered in the operation of stationary boilers on railways are included under the following headings, which are enumerated in the order of frequency and importance: 1. Leaky settings and stack connections. 2. Poor firing. 3. Radiation from uncovered surfaces. 4. Dirty flues.

Leaky settings produce excess air in the combustion space, although this may arise from other causes. The importance of this common source of inefficiency will be understood from the fact that boiler efficiency falls off in almost direct proportion to the percentage of excess air, and this not infrequently produces a loss of 40%. Brickwork settings are sure to develop cracks in addition to which the porous character of the brick permits air infiltration. All exposed brick settings should at least receive a coat of a good plaster sealing compound—a ½-in. covering of magnesia-asbestos cement, followed by the sealing compound, is even better.

Frequent leaks are found around stack connections, plates, dampers and doors, all of which influence the draft and reduce boiler efficiency. These parts require occasional inspection to insure a high order of maintenance.

Poor firing includes too thick or too thin a fuel bed, accumulation of clinkers, too frequent shaking, uneven distribu-

tion, permitting holes to develop, improper manipulation or neglect of dampers and carelessness in fire cleaning. Correction of these faults is a matter of analysis, education and supervision. It should be observed, however, that the economies of the best equipment may be lost in poor boiler room practice.

Radiation losses are usually considerable and nearly always neglected. At 100-lb. steam pressure and 70 deg. atmospheric temperature, the loss in radiation amounts to 718 lb. of coal per sq. ft. of uninsulated surface per year. Is is, unfortunately, common practice to burden railway shop boiler plants with a multitude of accessories usually involving large heating loads. It is certainly economy to centralize steam production, but economical steam distribution is a matter too frequently left to the division plumber or the shop pipe foreman, who may be masters of the technique of their trade, but to whom lost b.t.u.'s are of no particular interest. The surest evidence of this statement lies in the appearance of bare ground in winter over the average buried steam pipe. And here it should be said that plain, unprotected, asbestos covering, on an underground steam pipe, may be expected to become a surface condenser of large capacity.

Your committee takes this occasion to recommend the adoption of specifications for pipe coverings suitable for superheater and saturated steam and hot water, and also for water-proof underground coverings for low pressure lines.

Clean flues and boilers are a matter of standard practice and organization. In plants having no engineer, the responsibility for cleaning flues and washing boilers at the prescribed intervals should be placed upon one of the firemen, and he should be followed up by the general supervision.

Auxiliaries are frequently neglected, especially in the smaller and older plants. Blowing rod packing, excessive water-pump slippage and leaking steam-pipe joints are all too commonly in evidence where it is unnecessary to maintain a suitable relation between input and output.

The losses outside the plant are also much greater than usually supposed, particularly in compressed air lines. It is estimated that the cost of air, compressed in a modern plant, approximates 10c for each 1,000 cu. ft. of free air used, and yet the waste in many plants is enormous. Reasonable economy requires that a periodical inspection of air losses shall be conducted and leaks in pipe lines, valves and hose promptly repaired. Once each week is not too frequent for inspection in the average shop.

Preparation of systematic records is essential to every well operated plant. The possibilities should be developed through suitable experiments, and standards once established should be checked with the daily operation. Such records should be made to correspond with the available equipment, and, for smaller plants, may be very simple. The results for a general division of a railway may be tabulated and a rating established which will stimulate competition. For this purpose plants having the same general facilities should be grouped by classes in order that the ratings may be comparable.

It should be said that stationary power-plant operation may be reduced to a reasonably exact basis and that best results are attained when the equipment

is planned for the required service. Results may then be obtained upon a basis corresponding with reasonable exactness to a predetermined production cost, but the variables in the operation must be worked out to produce maximum economy for various rates of output. These are problems requiring skill and experience, and should be entrusted only to qualified engineers. Your committee repeats its recommendations of last year that mechanical stationary power plants be placed under the responsible supervision of one man, whose time on the larger systems can profitably be devoted to the problems and economies in steam generation and utilization.

Your committee recognizes that without any attempt at research or experiment, it has been necessary to sacrifice originality of subject matter. But if many of the things mentioned have long been familiar to mechanical department officers, perhaps their present existence is the best of reasons for their consideration at this time. It is reasonable to assume that neither the cost of mine production, nor that of transportation, will be appreciably lower in the immediate future, so that economy in consumption assumes an importance relatively greater than ever before. But, it may be asked what shall be done to realize the economies admittedly so necessary? The answer is that the first requisite is full knowledge as to the extent to which wasteful practices prevail which should be determined by careful survey. Remedial measures will frequently involve mechanical equipment requiring appropriations, but the chief problem is one of efficient operation and effective supervision. The results depend upon maintaining an enthusiastic interest on the part of those responsible for the use of fuel and the elimination of wasteful practices. And the interest and enthusiasm must begin at the top and permeate the entire operating organization if the maximum efficiency is to be attained. The great difficulty, on a railway lies in the tendency to relaxed effort, because of the routine involved, but this is a subject demanding sustained and interested support from the chief operating officer to the fireman and the locomotive house man.

### Train Brake and Signal Equipment Committee's Report.

An American Railroad Association's mechanical section committee, T. L. Burton, Consulting Air Brake Engineer, New York Central Rd., chairman, reported in part as follows: The question of air brake maintenance was discussed at a committee meeting in Nov., 1918, the findings of the committee being embodied in a circular on the subject, which was approved by the U.S. Railroad Administration.

It is suggested that the recommended practice packing ring gauge be made a standard, with tolerance dimensions provided for in the gauge, and the specifications to include instructions as to its use.

The practice of taking the cylinder piston and packing leather, when removed, to a conveniently located shop, where the leather is cleaned by a specially assigned man, and tested on the test rack, should be extended and made standard practice. With this in view, the committee has prepared drawings on suitable test racks and their use. While considering the new

triple valve test rack as superior to the older types, it does not consider it so much as to recommend that older types be discontinued.

It is recommended that when brake cylinders and triple valves are cleaned, they be stencilled on one side in two lines, one showing the place, month, date and year of cleaning, the other line showing the road on which the work was performed.

In connection with retaining valves for

freight cars, a large number of different types and capacities are required to make proper repairs to foreign cars. The recommendation is made that two pressure spring type retaining valves of such capacity as may be required by individual roads, be used, leaving the question of standard capacity open for further consideration.

Detailed recommendations for recommended and standard practice are embodied covering the foregoing points.

## Design, Maintenance and Operation of Electric Rolling Stock on Heating of Passenger Trains Drawn by Electric Locomotives.

An American Railroad Association's mechanical section committee, C. H. Quereau, Superintendent, Electrical Equipment, New York Central Rd., chairman, submitted a report of which the following is an abstract:

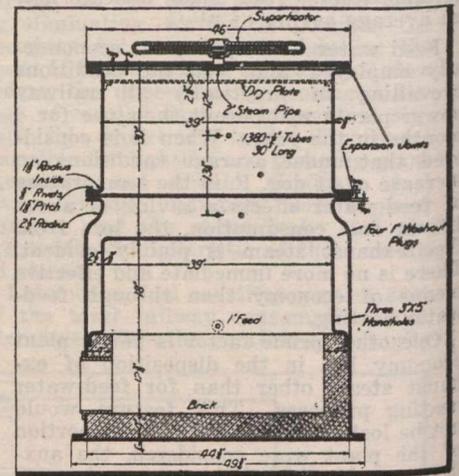
Successful electric operation of through passenger trains over the usual steam railway division, or for any distance approximating this, would be impracticable unless the locomotive can furnish sufficient steam to satisfactorily heat the train. A study of the problem was commenced in 1902, and from then until 1913, there were 9 designs of boilers built and tested, 4 of them using electricity as the source of heat, and 5 using fuel oil. The electric boilers did not prove satisfactory, while the oil-fired type has been finally developed to a point where it is quite generally adopted.

oil and water storage tanks and piping, but without fuel oil or water, the heater equipment weighs 5,850 lb., and occupies a circular floor space less than 5 ft. in diameter for the boiler, and about the same for the storage tanks. Under service conditions, these boilers evaporate over 5 lb. of water per sq. ft. of heating surface, and over 6 lb. of water per lb. of oil, though in carefully conducted tests, the evaporation per lb. of oil has frequently been over 10 lb.

When using eastern fuel oil, which has a paraffine base, or kerosene, the lower section of the burner, which carries the steam or air for atomizing the oil, projects beyond the oil orifice, forming a lip or shelf on which the excess oil may flow and still be atomized. Where it is more economical to use the heavy western oils, having an asphalt base, it has been found necessary to leave off the lip,

the steam is somewhat superheated, it requires less steam per car per hour to satisfactorily heat it.

The type of boiler illustrated is standard for the New York Central Rd. electric passenger equipment, where the capacity is rated at 2,200 lb. of steam an hour; on the Chicago, Milwaukee and St. Paul Rd., where it is rated at 2,600 lb. of steam an hour; on the New York, New Haven and Hartford Rd., where the maximum capacity is given at 2,700 lb., and an average of 2,200 lb. an hour. It has been adopted for the Canadian Northern Ry.'s electrified zone, where the heating plant is installed in a separ-

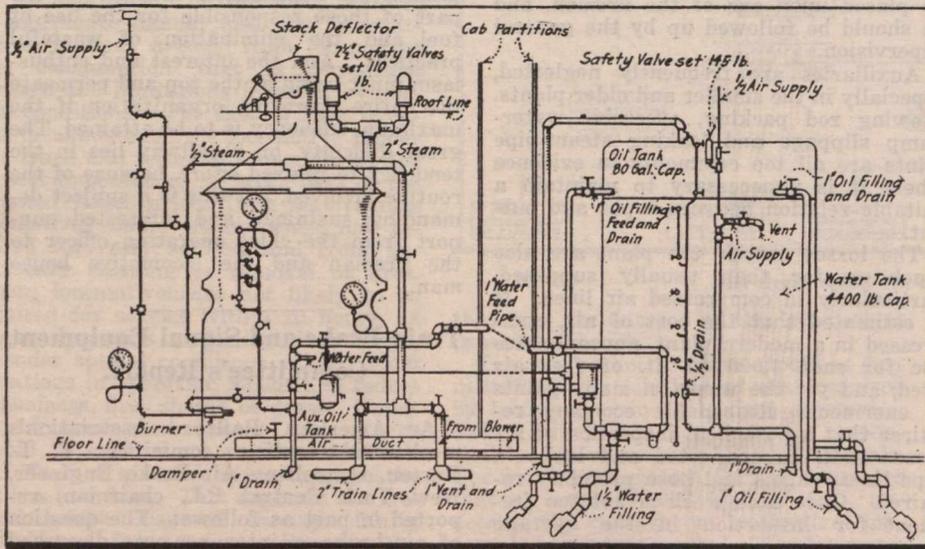


Cross Section of Oil-Fired Boiler.

ate car, or trailer, instead of on the locomotive. Each of the railways reports satisfactory results from these boilers. In each case, the cars are heated from a steam header at terminals before the locomotives are attached, or are delivered, properly heated, by steam locomotives to the electric locomotives.

The amount of steam necessary to satisfactorily heat the car depends on a number of governing factors, such as outside temperature, wind, size of car, etc., but it would appear that for the average modern car, with outside temperatures between 20 and 30 degs. F., each car takes about 200 lb. of steam an hour, and with outside temperature of 0 deg. F., the consumption of steam per car approximates 225 to 250 lb.

Considering the extra plant required for electric heating, it was estimated a few years ago that with a 35-locomotive installation, electrically generated steam would cost about \$45,000 a year more than oil generated, not including fixed charges in the cost of current. If fixed charges are included, there would be a saving of over \$100,000 a year in favor of oil as a source of heat.



Assembled Installation of Oil-Fired Heating Equipment.

The type of oil-fired boiler shown in the accompanying illustrations was that finally adopted as giving the most satisfactory results. It was designed in 1912 and applied to 29 locomotives. They have 436 sq. ft. of heating surface, with a working pressure of 110 lb., and a capacity of 2,200 lb. of steam per hour. Though based on previous designs, there were several radical changes, the most important being the use of a water leg 18 in. deep and 2 1/2 in. wide, increasing the bridges between the tubes to 3/8 in.; the substitution of a forced draft in the fire box with a closed door for the natural draft used previously; and the use of two expansion joints of the bellows type in the boiler shell. Complete with

because of the liability of oil accumulating at that point and interfering with the steam jet. Only when the boiler is started is air from the main reservoir turned into the stack blower to insure a draft, and on to the burner to atomize the fuel oil. When the steam pressure approximates 50 lb., a 3-way cock substitutes steam for air. It only requires 10 min. from starting the fire to develop 110 lb. steam.

There is a superheater in connection with the boilers, as shown, and it is possible to obtain any reasonable degree of superheat. Good practice indicates that about 15 degs. is desirable, as a high superheat damages the steam hose and gaskets. Tests show that when

**English Valley and Hudson Bay Ry.—**  
In connection with the application of the company, for which H. A. Stewart, Toronto, is solicitor, to the Dominion Parliament for an extension of time for the construction of a railway from near Brereton, Man., station, on the National Transcontinental Ry. from Moncton, N.B., to the English River, Ont., between the eastern boundary of Manitoba, and the 9th meridian of longitude, the House of Commons railway committee reported that the granting of the extension would not be in the public interest. The House of Commons adopted the report on June 10, and directed that the fees paid, less cost of printing and translation, be returned.

### Other Master Car Builders' Reports.

In addition to the various committee reports given in full, or in abstract, in this issue, the following committees also submitted reports:

**Revision of Passenger Car Rules of Interchange**—A committee of which H. H. Harvey, General Car Foreman, Chicago, Burlington and Quincy Rd., was chairman, and of which C. J. Forrester, General Car Inspector, G.T.R., was a member, recommended certain additions, changes and omissions in existing rules.

**Specifications and Tests for Materials (M.C.B.)**—A committee of which F. M. Waring, Engineer of Tests, Pennsylvania Rd., was chairman, recommended a number of changes in existing M.C.B. tests and specifications.

**Standard Blocking for Cradles of Car Dumping Machines**—A committee, of which J. McMullen, Mechanical Superintendent, Erie Rd., was chairman, found, by observation of the operation of the machines equipped with the present M.C.B. blocking, that cars receive more or less damage while passing through the machines. After experimenting in co-operation with the heads of various industries in the coal and ore districts, they have developed a blocking which they consider suitable for protecting cars. It consists of vertical posts covered with 3 in. horizontal planking, the latter so arranged that it does not interfere with the various projecting edges of the cars. A plan of the proposed blocking accompanies the report.

**Loading Rules**—A committee of which J. J. Burch, General Foreman Car Department, Norfolk and Western Ry., was chairman, recommended numerous changes in existing rules for loading. The principal part of the report is a complete set of instruction on the loading of automobiles, trucks and trailers.

**Arbitration**—A committee of which J. Hennessey, Assistant Master Car Builder, Chicago, Milwaukee and St. Paul Rd., was chairman, and of which J. Coleman, Superintendent Car Department, G.T.R., was a member, recommended a number of changes in existing practice.

**Standards and Recommended Practice**—A committee of which T. H. Goodnow, Superintendent Car Department, Chicago and North Western Rd., was chairman, recommended a number of changes in standards and recommended practice.

### Other Master Mechanics' Reports.

In addition to the various committee reports given in full, or in abstract, in this issue, the following committees also presented reports:

**Train Resistance and Tonnage Rating**—A committee of which O. P. Reese, Superintendent Motive Power, Pennsylvania Lines, was chairman, reported no new development.

**Specifications and Test Materials (A.R.M.M.)**—An American Railroad Association mechanical section committee, F. M. Waring, Engineer of Tests, Pennsylvania Rd., chairman, recommended changes in several existing specifications.

**Standards and Recommended Practice**—A committee, of which W. E. Dunham, General Superintendent Motive Power and Car Department, Chicago and North Western Rd., was chairman, recommended some changes in standards and recommended practice.

### Officers and Committee for 1919-1920.

An American Railroad Association's mechanical section committee, F. W. Brazier, Superintendent Rolling Stock, New York Central Rd., chairman, and of which W. J. Robider, General Master Car Builder, C.P.R., was a member, reported as follows:

The present officers and general committee of the mechanical section of the American Railroad Association were elected at a joint meeting of the executive committees of the American Railway Master Mechanics' and Master Car Builders' Associations, held in New York, N.Y., Feb. 1, 1919, to serve tentatively until permanent officers and general committee could be regularly elected by members at the 1919 convention.

Sec. 5 (a) of the rules of order for this section provide that "it shall be the duty of the nominations committee to offer to the convention the name of one representative member as a candidate for chairman and one for vice chairman, and the names of 7 representative members as candidates for the general committee." As the present general committee is a tentative committee to serve only until this convention, your committee has nominated a chairman and 7 members for the general committee to serve for 2 years, and a vice chairman and 7 members of the general committee to serve for one year. This will provide that future nominations for the general committee can be made for the regular 2-year term in accordance with the rules.

In addition, F. McManamy, Assistant Director, Division of Operation, U.S. Railroad Administration, C. B. Young, Manager, Inspection and Tests Section, U.S. Railroad Administration, and F. F. Gaines, Chairman, Board of Railroad Wages and Working Conditions, U.S. Railroad Administration, are also members of the general committee representing the U.S. Railroad Administration. Your committee suggest the following:

To serve for two years—Chairman, W. J. Tollerton, General Mechanical Superintendent, Chicago, Rock Island and Pacific Rd.; general committee, J. T. Wallis, General Superintendent Motive Power, Pennsylvania Rd.; T. H. Goodnow, Superintendent Motive Power, Chicago and North Western Rd.; W. H. Winterrowd, Chief Mechanical Engineer, Canadian Pacific Ry.; C. H. Hogan, Assistant Superintendent Motive Power, New York Central and Hudson River Rd.; J. E. O'Brien, Mechanical Superintendent, Missouri Pacific Rd.; A. Kearney, Superintendent Motive Power, Norfolk and Western Rd., and C. F. Giles, Superintendent Machinery, Louisville and Nashville Rd.

To serve for one year—Vice Chairman, J. Coleman, Superintendent Car Department, Grand Trunk Ry.; general committee, J. W. Small, Mechanical Assistant to Regional Director, Southern Region, U.S. Railroad Administration; J. S. Lentz, Master Car Builder, Lehigh Valley Rd.; H. R. Warnock, General Superintendent Motive Power, Chicago, Milwaukee and St. Paul Rd.; C. E. Fuller, Superintendent Motive Power, Union Pacific Rd.; S. Lynn, Master Car Builder, Pittsburgh and Lake Erie Rd.; A. P. Prendergast, Mechanical Superintendent, Texas and Pacific Rd., and J. R. Gould, Superintendent Motive Power, Chesapeake and Ohio Rd.

The report was adopted and the officers and committee elected as recommended.

### Railway Supply Exhibits at the Atlantic City Conventions.

The Railway Supply Manufacturers' Association's exhibits were, as usual, of a very comprehensive nature, in fact, larger than in any previous year, there being 301 exhibits, occupying about 93,500 sq. ft. of floor space, against 277 exhibits and 87,360 sq. ft. of floor space for 1913, the previous record year. Among the principal exhibitors were the following:—

American Brake Shoe & Foundry Co., New York, N.Y.—Reinforced brake shoes for locomotives and cars; malleable iron locomotive and car brake heads and keys.

American Locomotive Co., New York, N.Y.—Flexible staybolts; power reverse gear; intercepting valve; piston valve.

American Steel Foundries, Chicago, Ill.—Simplex clasp brake; Economy cast steel draft arm; Davis steel wheel; Ajax and Hercules brake beams; Simplex and American coupler pockets; Simplex coupler; Atlas safety guard and third point support; cast steel bolsters; Vulcan trucks.

Association of Manufacturers of Chilled Car Wheels, Chicago, Ill.—One 33 in. 625 chilled iron wheel for 30-ton cars; one 33 in. 700 chilled iron wheels for 40-ton cars; one 33 in. 725 chilled iron wheel for 50-ton cars; one 33 in. 850 chilled iron wheel for 70-ton cars; one pair 850 lb. M.C.B. wheels for 70-ton cars, mounted on axle with flange increased 3-16 of an inch, as recommended by the association.

Boss Nut Co., Chicago, Ill.—Boss lock nuts.

Buffalo Brake Beam Co., New York, N.Y.—Brake beams and brake beam parts.

Chase & Co., L.C., Boston, Mass.—Mohair plush upholstery for railroad coaches, steamships and automobiles; leatherwove upholstery for railroad coaches.

Dearborn Chemical Company, Chicago, Ill.—Showing method of Dearborn water treatment for prevention of scale formation, corrosion, pitting and foaming. Waters analyzed. Operators of analytical laboratories; No-ox-id rust preventive.

Du Pont Fabrikoid Co., Wilmington, Del.—Railway car seats; dining car seats; leather substitutes; a Cadillac roadster with entire surface covered with Craftsman Fabrikoid.

Edison Storage Battery Co., Orange, N.J.—Edison alkaline storage battery for railway train lighting, railway signaling; industrial trucks and tractors; commercial vehicle and delivery wagons; storage battery locomotives; mine lamps; meter testing; manhole lighting; ignition and lighting.

Electric Service Supplies Co., Philadelphia, Pa.—Keystone turbo-generator; Keystone locomotive headlight switch; Golden Glow locomotive headlight.

Flannery Bolt Co., Pittsburg, Pa.—Tate flexible staybolts for water space; adjustable crown stays; flexible flush staybolts; flexible drilled (hollow) staybolts; F.B.C. solid flexible staybolt (new design); F.B.C. hollow flexible staybolt (new design); installation tools for the application of Tate and F.B.C. staybolts; model of section locomotive boiler with complete installation—all types.

Franklin Railway Supply Co., Inc., New York, N.Y.—Franklin automatic adjustable driving box wedge; Franklin automatic driving box lubricator; Franklin automatic fire door; Economy trucks;

McLaughlin flexible conduits; Franklin ball joints.

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

Garlock Packing Co., Palmyra, N.Y.—Special packings for railway shops and roundhouses; for air pumps, throttles, compressors, accumulators, steam hammers, stationary engines and pumps.

Gold Car Heating & Lighting Co., New York, N.Y.—Vapor combination pressure and vapor pressure, hot water and electric car heating systems. Thermostatic control for all types of car heating systems and buildings; ventilators for railway cars; pressure regulators.

Grip Nut Co., Chicago, Ill.—Grip nuts. Hunt-Spiller Manufacturing Corporation, South Boston, Mass.—Air furnace gun iron castings.

Independent Pneumatic Tool Co., Chicago, Ill.—Piston air drills and reamers, non-reversible and reversible; pneumatic grinders; stay bolt drivers; hoists; pneumatic chipping hammers; pneumatic caulking hammers; pneumatic flue heading hammers; pneumatic light riveting hammers; pneumatic long-stroke riveting hammers; sand rammers; electric drills and grinders; pneumatic tool hose and hose couplings; close corner drills.

Ingersoll-Rand Co., New York, N.Y.—Showing Little David type of pneumatic tools.

Johns-Manville Co., H. W., New York, N.Y.—Air brake cylinder packing cups and expander rings and gaskets; slack adjusters; insulating materials; pipe coverings; hair felts; boiler lagging; roofings; packings; pump valves; insulating cements; high temperature cements; ceillinite; ebony and asbestos paper and millboard; vitribestos; fire felt; fibre conduit; sheet fibre; metallic flexible conduit; tape extinguishers; fuses; asbestos shingles; boiler wall coating; mastic; water-proofing materials; 85% magnesia and fire felt for locomotive boiler lagging; salamander insulation for steel passenger and postal cars; Keystone hair felt insulation for refrigerator cars.

Joliet Railway Supply Co., Chicago, Ill.—Huntoon brake beams; Huntoon truck bolsters; Joliet journal boxes; Peerless, Burry & Perry side bearings; Hartman center plates; Burnett reinforced box car end; Burnett angle cock holder; Burnett train pipe anchor; Rex emergency knuckle.

KeYoke Railway Equipment Co., Chicago, Ill.—Cast steel friction draft gear; keyed cast steel coupler yokes; keyless cast steel coupled yokes.

Locomotive Stoker Co., Pittsburg, Pa.—Type D duplex stoker; type D slope sheet coal pusher.

Locomotive Superheater Co., New York, N.Y.—Pyrometer for superheater locomotives; developments in construction of superheater units; stationary superheaters.

McCord & Co., Chicago, Ill.—Journal boxes.

Metal & Thermit Corporation, New York, N.Y.—Thermit and appliances; sample welds; samples of carbonfree metals and alloys produced by the Thermit process; large sample weld on a 9 in. crankshaft; materials for demonstration pipe welding for locomotive superheater units; sample of superheater unit so welded.

Mudge & Co., Chicago, Ill.—Mudge peerless ventilator; Mudge Slater removable box front end; Mudge Salvit compound.

National Lock Washer Co., Newark, N.J.—Models of car curtains; car cur-

tain fixtures; window locks; sash balances; weather stripping; curtain rollers; national rib lock washers.

Pratt & Whitney, New York, N.Y.—Moving pictures of railway machine tools in actual shop operation.

Norton, Incorporated, A.O., Boston, Mass.—High speed self-lowering lifting jacks.

Pyle-National Co., Chicago, Ill.—One type K2 500-watt maximum capacity turbo-generator; one type E2 500-watt normal capacity turbo-generator; one type E, 1,500-watt turbo-generator; one type T, 2½ k.w. turbo-generator; one type M, 3½ to 7 k.w. turbo-generator; one special 18 in. incandescent case and reflector fitted with no. 1450 lamp stand; one standard 18 in. incandescent case and reflector fitted with no. 1450 lamp stand; one model of Young valve gear.

Safety Car Heating & Lighting Co., New York, N.Y.—Pintsch mantle light; car lighting electric generators; car lighting electric generators; car lighting fixtures; Oxy-Pintsch metal cutting equipment; electric fans.

Symington Co., The T. H., New York, N.Y.—Farlow draft attachments; Symington journal boxes; Symington flexible dust guards.

Union Draft Gear Co., Chicago, Ill.—Cardwell friction draft gear type G class 11A; Cardwell friction draft gear type G class 11A-compound.

Universal Draft Gear Attachment Co., Chicago, Ill.—Universal cast steel re-inforcing draft arms, coupler yokes and malleable draft lugs and plates.

Vapor Car Heating Co., Chicago, Ill.—Passenger train car heating; vapor system of heating; steam pressure system of heating; combination steam and hot water heating system; car heating specialties; steam specialties; emergency stoves; ventilators.

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

Westinghouse Electric & Manufacturing Co., Pittsburg, Pa.—Arc welding motor-generator; small turbine generator unit; motor driven grinder; small portable drills; electric fans.

Wheels Truing Brake Shoe Co., Detroit, Mich.—Various forms of abrasive shoes designed for grinding car wheels and locomotive driver-wheels.

Whiting Foundry Equipment Co., Harvey, Ill.—Working models of type R electric crane trolley and Whiting electric screw-jack locomotive hoist; photos, drawing and catalogues of foundry equipment, cranes and railway equipment, such as coach hoists, turntable centers and tractors, transfer tables, car wheel foundries.

**Exploration of Quebec Hinterland**—A press dispatch of June 5, from Seven Islands, on the St. Lawrence River, reported the arrival there of F. Kissick, one of the leaders of the party which started from Quebec, Apr. 8, for a general exploration of the Ungava territory, and the laying out of a route for a railway from Seven Islands to Big Lake Kapachoo proposed to be built by a company incorporated by the Quebec Legislature as the Quebec and Ungava Ry. The party reported that all the preliminary work had been done for 75 miles inland, and that M. A. McCullough of Winnipeg, one of the party, had been drowned, near the camp on East River, 50 miles from Seven Islands. — Jenny, Montreal, is reported to represent the company, and is expected to give directions as to the future work of the party at an early date.

## Hydro Electric Railway Construction for Ontario.

The Hamilton, Ont., City Council is reported to have passed a resolution June 10, calling upon the Hydro Electric Power Commission of Ontario to start work immediately upon the construction of the projected electric railway from Toronto via Hamilton to Niagara Falls. Sir Adam Beck, chairman of the commission, who was present, is reported to have informed the council that the money market is now so much easier that it is expected that the funds for construction can be secured at less than 5% and that there is possibility of construction work being started in the autumn.

Similar resolutions have been passed by the Burlington and Nelson municipal councils, and the matter, so far as the municipalities are concerned, is now completed, the Hydro Electric Power Commission of Ontario, being responsible for the carrying on of construction work,

**Private Car for Minister of Militia**—At a sitting of the committee of the House of Commons public accounts committee recently, some information was elicited as to the cost of the private car, Roleen, for the Minister of Militia. According to press reports, the car was bought in the United States second-hand in 1913, for the department, when Sir Sam Hughes was minister, by D. B. Hanna, then Third Vice President Canadian Northern Ry., for \$9,800. Shortly afterwards \$1,200 was spent in repairs, and in 1916 the car was overhauled and refurbished in the G.T.R. Montreal shops at a cost of \$26,843.46. This amount included 15% profit on the cost of materials and 10% profit on the cost of labor.

**Level Crossings Elimination**—The Dominion Parliament has passed an act extending for 10 years, the provision of \$200,000 a year to aid in eliminating level crossings of the railways in Canada. This act was passed in order that the work of eliminating these crossings with government assistance can be carried on in the event of the Consolidated Railway Act not being passed at parliament's present session. (May, pg. 248).

**C.P.R. Quebec Terminal Facilities**—Sir Thomas White submitted in the House of Commons, June 16, a copy of an agreement entered into between the Dominion Government and the C.P.R. for the use of the terminal facilities in Quebec. For the year ended Mar. 31, 1918, the Dominion Government paid the C.P.R. \$28,637.47, and for the year ended Mar. 31, 1919, \$136,787.07.

**Lake St. Joseph Hotel Ownership**—The Minister of Railways stated in the House of Commons that the Lake St. Joseph Hotel, at Lake St. Joseph, Que., is owned by the Quebec and Lake St. John Ry., and that 85% of that railway's stock is owned by the Canadian Northern Ry., which forms part of the Canadian National Rys.

**Alberta Public Utilities Commission**—The Alberta Legislature at its recent session, amended the Public Utilities Act so that any application, petition, matter or complaint within the board's jurisdiction may be heard by a single member, and the board may, on his report, deal with such matter as if the hearing had been before the full board.

# Steam Railway Operating Statistics for Year Ended June 30, 1918.

In the following table the column headed gross earnings includes passenger and freight earnings, as well as miscellaneous earnings from operation, the latter not being shown separately; the next four columns give the operating expenses classified under their various headings, while the last gives the net earnings, which are arrived at by deducting the totals of the four columns referred to from the figures in the gross earnings column. The minus (—) mark before figures in the net columns shows that there was a deficit in the operation of the line to the extent of the figures given. The cents have been omitted in all cases, and the figures in the totals show the aggregate earnings, etc., including the cents, omitted from the detailed items. The figures in the the first column, "First track mileage," include the first track of main line, branches and spurs of lines represented by the respective companies' capital stock, the lines of proprietary companies, the lines operated under lease, and lines operated under contract, but not lines operated under trackage rights, the mileages of which are included in those for the respective owning companies. There are 20 companies operating under trackage rights over 1,028.33 miles of the lines of other companies. In addition to the 38,878.52 miles of first track operated, there are 2,522.73 miles of second track, details of which are given under "Notes to Steam Railway Statistics," on another page of this issue.

The figures in the last column of the table show the net earnings or loss from the operation of the various railways, and their necessary adjuncts. Many companies have income from other sources, and in some cases carry on business apart from their railways; these revenues are brought together in the "Income account," and from them are deducted taxes, rents for lease of other lines, etc., interest or funded debts, sinking funds, etc., leaving in the final analyses, the net corporate revenue available for dividend, or the gross deficit for the year. Another table containing these figures will be published in Canadian Railway and Marine World's next issue.

Name of Railway	First track mileage	Passenger earnings	Freight and switching earnings	Gross earnings from operations	Maintenance of way and structures	Maintenance of equipment	Traffic and transportation expenses, etc.	General expenses	Net operating earnings
Alberta and Great Waterways..	113.20	\$ 28,215	\$ 50,360	\$ 90,707	\$ 20,709	\$ 19,055	\$ 53,114	\$ 7,685	\$ —9,856
Algoma Central & Hudson Bay	347.80	99,728	1,591,837	2,000,842	356,521	224,203	774,866	66,635	578,615
Algoma Eastern .....	89.45	57,183	763,934	879,158	143,225	115,348	332,854	20,592	287,730
Atlantic, Quebec & Western.....	103.08	42,758	139,545	182,304	50,165	27,482	87,131	15,888	1,635
Brandon, Saskatchewan & H.B.	69.45	25,940	23,293	49,703	59,885	13,300	66,421	4,774	—94,677
British Yukon .....	101.12	45,040	167,336	215,797	35,901	11,367	54,113	21,458	92,956
Canada Southern .....	380.54	4,479,533	10,771,470	15,364,792	1,651,159	1,910,526	6,218,084	346,499	5,238,522
Canada & Gulf Terminal.....	35.80	20,563	49,663	72,340	12,129	11,977	30,598	7,931	9,703
Canadian Government Railways									
Intercolonial .....	1,592.35	6,731,799	12,846,185	20,259,232	4,584,863	3,850,563	13,527,193	375,613	—2,079,001
International of N.B.....	111.30	39,909	124,898	165,935	112,405	44,854	171,954	7,405	—170,685
St. John and Quebec.....	119.87	33,903	64,419	98,684	53,834	6,776	93,346	3,722	—58,996
Prince Edward Island.....	278.81	208,788	306,361	653,145	310,655	128,334	715,974	15,414	—537,233
National Transcontinental...	2,002.92	1,217,775	7,684,679	8,976,203	3,765,959	2,191,099	5,040,161	178,488	—2,199,505
Canadian Northern System.....	9,320.15	9,662,065	32,370,273	44,067,825	7,673,480	7,060,069	22,654,276	1,136,440	5,543,559
Canadian Pacific .....	13,294.60	43,583,160	101,706,249	150,274,101	19,031,500	24,334,150	65,574,664	2,629,633	38,704,152
Cape Breton .....	31.00	8,976	5,642	14,619	9,810	1,543	13,062	2,286	—12,084
Caraquet & Gulf Shore.....	84.78	21,958	83,866	105,825	33,793	15,581	44,038	11,631	780
Central Canada .....	48.50	10,980	11,628	23,365	19,226	3,659	22,111	6,881	—28,513
Central Vermont .....	125.20	128,186	214,580	348,598	144,940	33,214	177,857	10,666	—18,080
Crows Nest Southern.....	74.18	14,962	76,490	92,763	70,233	31,089	88,834	7,160	—104,553
Cumberland Ry. and Coal Co....	32.00	19,174	103,554	129,815	31,729	15,473	61,235	6,708	14,669
Detroit River Tunnel Co. (1)...	1.45	.....	.....	.....	.....	.....	.....	.....	.....
Dominion Atlantic .....	274.16	476,706	717,001	1,212,773	218,853	97,163	528,513	71,023	297,220
Eastern British Columbia.....	14.00	2,078	38,500	41,352	15,423	5,785	17,439	3,002	—298
Edmonton, Dunvegan & B.C....	406.80	233,945	413,221	664,186	180,754	80,559	250,805	33,899	188,167
Elgin & Havelock.....	27.00	1,360	14,696	16,056	9,568	2,088	7,940	1,000	—4,541
Esquimalt & Nanaimo.....	199.20	265,882	532,159	821,825	139,982	104,587	269,744	11,356	296,354
Essex Terminal .....	21.00	.....	92,592	119,187	19,309	12,158	36,808	20,582	30,328
Fredericton & Grand Lake C. & Ry. Co. ....	35.00	11,382	139,458	150,922	19,748	5,647	56,266	4,393	64,865
Grand Trunk .....	3,567.07	13,917,578	36,005,741	50,966,328	6,065,644	10,765,338	24,986,516	1,434,504	7,714,324
Grand Trunk Pacific.....	1,681.57	1,948,721	5,795,830	7,855,741	2,096,208	2,233,079	3,699,735	240,790	—414,072
Grand Trunk Pacific Branch Lines .....	1,032.63	480,425	1,334,050	1,836,685	668,804	596,088	1,116,626	74,069	—618,912
Hereford .....	53.06	24,272	44,235	69,168	50,119	21,749	77,736	5,422	—85,879
Inverness Ry. & Coal Co. (2)	60.91	.....	.....	.....	.....	.....	.....	.....	.....
Kent Northern .....	27.00	11,344	19,385	32,064	6,944	4,084	10,578	2,001	8,454
Kettle Valley .....	355.69	243,331	348,841	607,770	271,997	77,555	290,513	15,997	—38,293
Klondike Mines (2).....	31.81	.....	.....	.....	.....	.....	.....	.....	.....
Lotbiniere & Megantic.....	30.00	6,167	35,324	41,507	11,824	4,279	14,228	5,575	5,599
Magneta River (3).....	1.91	.....	.....	.....	.....	.....	.....	.....	.....
Maine Central (Princeton Branch) .....	5.10	13,696	7,171	20,868	3,139	2,791	12,752	1,088	1,096
Manitoba Great Northern.....	91.77	4,991	17,654	23,158	66,829	9,736	45,379	3,756	—102,547
Maritime Coal, Ry. & Power Co.	15.00	7,132	100,001	107,193	21,964	8,972	43,485	3,818	28,952
Mississippi Valley .....	35.46	69,171	148,610	220,443	71,201	48,880	181,584	12,036	—93,259
Midland of Manitoba.....	6.40	136,091	133,953	283,394	53,233	54,635	241,006	15,193	—80,674
Moncton & Buctouche.....	34.00	12,570	21,147	34,787	30,061	8,112	17,122	5,841	—26,350
Montreal & Atlantic.....	184.40	234,405	1,171,843	1,445,713	233,251	305,173	811,101	37,225	8,962
Morrissey, Fernie & Michel....	10.85	10,856	83,914	94,770	11,981	13,302	43,149	14,094	12,242
Napierville Jct. ....	27.06	96,742	195,397	293,375	47,862	25,869	104,918	22,745	91,979
Nelson and Fort Sheppard.....	55.42	23,196	28,859	55,291	41,514	10,723	51,172	5,073	—53,193
New Brunswick Coal & Ry. Co.	58.00	18,836	38,301	58,426	27,976	6,017	16,972	3,630	4,830
New Westminster Southern.....	15.18	609	4,394	5,006	7,937	1,963	6,908	807	—12,610
North Shore (2).....	8.63	.....	.....	.....	.....	.....	.....	.....	.....
Northern New B. & Seaboard (2)	19.80	.....	.....	.....	.....	.....	.....	.....	.....
Nosbonsing & Nipissing (4)....	5.50	.....	.....	.....	.....	.....	.....	.....	.....
Ottawa & New York.....	56.90	118,303	160,498	280,647	85,832	51,774	211,522	7,673	—76,155
Pacific Great Eastern.....	180.27	.....	.....	.....	.....	.....	.....	.....	.....
Pere Marquette .....	198.81	140,698	3,121,464	3,289,199	355,951	237,156	1,337,836	107,618	1,253,636
Phillipsburg Ry. & Quarry Co.	6.00	.....	.....	.....	.....	.....	.....	.....	.....

Steam Railway Statistics for Year Ended June 30, 1918 (Continued from page 365)

Name of Railway	First track mileage	Passenger earnings	Freight and switching earnings	Gross earnings from operations	Maintenance of way and structures	Maintenance of equipment	Traffic and transportation expenses, etc.	General expenses	Net operating earnings
Quebec Central .....	277.00	519,942	1,409,443	1,962,558	275,115	190,614	883,734	59,843	553,249
Quebec, Montreal & Southern..	192.18	171,767	469,053	645,671	172,136	189,445	290,126	23,227	-29,264
Quebec Oriental .....	100.00	76,758	224,850	301,609	106,920	35,862	115,864	16,987	25,974
Quebec Ry., Light & Power Co.	30.82	4,239	116,308	120,841	13,120	23,738	48,680	13,223	22,078
Red Mountain .....	9.59	2,821	8,890	12,187	11,806	1,758	19,612	892	-21,882
Roberval-Saguenay .....	36.80	18,879	162,241	199,542	32,581	15,524	79,596	22,284	49,555
Rutland & Noyan.....	3.39	2,974	7,682	10,657	4,629	2,397	8,615	890	-5,875
Salisbury & Albert.....	45.00	9,652	36,167	50,677	19,069	4,385	20,762	6,362	97
St. Clair Tunnel (3).....	1.23								
St. Lawrence & Adirondack....	46.14	266,090	1,081,807	1,362,884	121,106	61,781	530,368	12,282	637,545
St. Martins .....	30.00	3,707	10,866	14,660	7,163	447	9,525	1,314	-3,790
Sydney & Louisbourg.....	70.27	56,499	842,922	920,712	162,389	265,307	342,585	43,255	107,174
Temiscouata .....	113.00	62,256	228,844	300,961	62,608	37,964	116,098	17,282	67,006
Timiskaming & Northern Ontario .....	328.50	779,174	1,765,936	2,651,109	462,892	382,105	1,221,773	105,531	478,806
Thousand Islands .....	6.33	13,940	29,195	46,888	5,060	276	22,837	4,026	14,688
Toronto, Hamilton & Buffalo....	100.30	512,385	1,987,490	2,565,708	317,566	398,082	861,591	89,997	898,470
Vancouver, Victoria & Eastern	269.61	161,381	429,502	661,600	420,822	117,899	625,006	25,590	-527,718
Victoria & Sidney.....	15.97	19,205	11,655	31,144	5,722	2,571	23,253	2,883	-3,286
Victoria Terminal Ry. & Ferry Co. ....	0.99	1,434	725	2,202	350	158	1,492	184	17
Wabash (5).....		514,979	3,061,492	3,635,278	356,953	728,749	1,934,172	104,122	511,280
York & Carleton.....	10.50	1,861	7,783	9,645	1,990	213	5,990	36	1,415
	38,878.52	\$88,192,056	\$231,813,388	\$330,220,149	\$51,614,857	\$57,304,234	\$157,438,358	\$7,597,985	\$56,264,714

Notes to Steam Railway Statistics.

The following notes refer to the statistical table on page — of this issue:

(1) The Detroit River Tunnel is operated by the Michigan Central Rd., which controls the Canada Southern Ry. Its earnings are reported in a separate table respecting international lines.

(2) The Inverness Ry. & Coal Co. Ry. in Nova Scotia is being operated by its receiver, but no particulars except mileage are available. The Klondike Mines Ry. in Yukon Territory; the North Shore Ry. (formerly the Beersville Coal & Ry. Co.), in New Brunswick, and the Northern New Brunswick & Seaboard Ry. are not being operated.

(3) The Magnetawan Ry. and the St. Clair Tunnel are operated by the Grand Trunk Ry. The earnings of the first named are included in those of the G.T.R., while those of the tunnel are re-

ported in a separate table respecting international lines.

(4) The Nobonsing & Nipissing Ry., 5.50 miles, was taken up several years ago.

(5) The Wabash Ry., while operating in Canada, does not own any railway in the country, but runs over the G.T.R. from Windsor to the Niagara River under a lease. It does both a through and local business in Canada, the officials acting jointly for the G.T.R. and Wabash Ry.

International Railways—The following table gives particulars of operations of companies which are of an international character, operating across the International boundary. The Detroit River Tunnel is owned by the Michigan Central Rd.; the International Bridge Co., and the St. Clair Tunnel are owned by the Grand Trunk Ry., and the Pullman Co., operates sleeping and parlor cars over some Canadian railways.

	Total revenue	Total operating expenses	Net operating revenue
Detroit River Tunnel .....	\$1,050,000		\$1,050,000
International Bridge Co. ....	438,831	\$ 83,255	355,576
St. Clair Tunnel.....	324,694	176,058	148,636
Pullman Co. ....	744,261	583,294	160,966

The Van Buren Bridge Co., operating between St. Leonards, N.B., and Van Buren, Me., which reported for 1916-17, did not report for 1917-18.

Second Track—Following are details of second track, in addition to the first track mileage given in the table on page 365, and this page, col. 1.

	Miles.
Canada Southern Ry.....	243.04
Canadian Pacific Ry. ....	1427.60
Grand Trunk Ry. ....	723.37
Grand Trunk Pacific Ry. ....	14.94
Intercolonial Ry. ....	72.86
Montreal & Atlantic Ry. ....	6.50
National Transcontinental Ry. ....	5.31
Quebec Ry., Light and Power Co.....	9.50
Sydney and Louisburg Ry. ....	1.00
Timiskaming & Northern Ontario Ry.....	1.70
Toronto, Hamilton & Buffalo Ry.....	9.79
Vancouver, Victoria & Eastern Ry.....	7.12

An Address on Car Service.

By J. D. Altimas, Assistant General Superintendent Car Service, Canadian Pacific Railway.

The following address was given at a meeting of C.P.R. officers, agents, foremen, etc., in Montreal recently:—

“Car service in its essentials means the prompt and proper handling of cars, i.e., getting them ready for placement as soon as ordered, preparing the billing and other papers, and moving them out immediately they are loaded, prompt movement while in transit, prompt placement at destination, and switching them out after they are made empty, so as to make them available for further loading. In all circumstances, cars must be used to the best possible advantage.

“Heretofore we have classed all cars of foreign ownership as foreign cars, but, from now on, we will draw the line a little closer and classify foreign cars of Canadian ownership and of United States ownership. Under the new arrangement, Canadian-owned cars must be used as much as possible for business originating at and moving to points in Canada.

Canadian Pacific cars, however, must, whenever possible, be used for business moving from and to points on the C.P.R. only, and all foreign cars will still cost 60c a car per day while they are on our rails, therefore, it will be just as important as ever to get rid of all classes of foreign cars as promptly as possible. When foreign cars are to be loaded, they should be used for loads that will take them off our rails via the shortest route, but always in accordance with the rules. When no loading is in sight they must be reported to the proper officer for disposal.

“Every effort should be made to load cars to their full carrying capacity. Even in times of car surplus, the maximum loading should be obtained, because this factor has a most important bearing upon the cost of handling tonnage in trains.

“The points which I have mentioned are the essentials of the car service problems. The details covering the han-

dling of the various classes of cars of different ownership, both railway and private, are contained in the circulars issued by the car service department. All agents should study these rules carefully, so that they will understand what is required and so that they may instruct their subordinates and see that all concerned carry out the instructions.

“With all the instructions that are issued, and all the reports that are compiled, very often we do not get proper results, simply because we fail in some of the essentials. My experience leads me to the conclusion that where most of us fail is in not keeping proper records. Occasionally when proper records are installed, they are allowed to go wrong owing to a lack of supervision. We know that an agent, usually, is a pretty busy man, and has many things to look after, but he should make it his business to see that a proper record is kept of every car in his yard, from the time it arrives

until it leaves.

"The agent may not have, in fact very seldom has, the time to do this work himself. He should, first of all, see that the information is obtained from the proper source, i.e., from the cars themselves, as to initials and car numbers, the other information from the waybills, or other data which accompany the cars. Next he should see that the information is entered promptly and correctly into the records. With his station records in good shape, it then becomes an easy matter for the various reports, daily, weekly, or monthly, to be correctly compiled and forwarded to the proper officers. The daily car report for the car service department is without doubt, the most important report an agent has to compile. When cars are promptly and properly reported, the car service department is enabled to give orders for their disposal, and in a great measure the proper and prompt disposal of equipment is a big factor in the economical handling of tonnage, which affects the expenses of operation and in the securing of business which affects the earnings. Once the records are properly started, the agent, or in the case of larger stations, the chief clerk, can check up and supervise the records very quickly. Surprise checks are always productive of good results. We very soon learn which clerks require close supervision. The fact that checking up and supervising is in effect, prompts everybody in the office to see that the work is promptly and efficiently done.

Interswitching, so far as the car service department is concerned, means the interchange of cars. Every physical movement of a car from one road to another, must be properly shown in the interchange report. The correct number, with the correct initials or marks, is just as important as the correct date of interchange. The most important feature of all, however, is to see that each and every car interchanged is shown in the report. There are too many cars omitted from the interchange reports, which would not be the case if the importance of these reports was impressed upon all concerned and a little supervision was given by the agent or chief clerk. Recently I have not been following up closely the record of errors and

omissions in the interchange reports, but I mentioned this matter a few days ago to Mr. Phelan, our car accountant, who tells me we are getting good results from the agents in clearing the outstanding records, but apparently there is still lots of room for improvement. Best results can only be obtained by close checking and supervision, which will ensure more correct and complete reports in the first place, which would, of course, eliminate all the unnecessary work in both the car accountant's office and in the agent's office. In every case where we are unable to pay per diem to the car owners, in accordance with the rules, we are penalized by the addition of a penalty of 5c per day, which makes the per diem charge 65c a day instead of 60c. When you consider that we are paying on an average over \$345,000 a month for the use of foreign cars, while our accounts against foreign roads for the use of our cars average over \$529,000 a month, you will realize how important it is for the car accountant to get proper interchange reports, since the whole accounting system is based upon these reports.

"There is another good reason why we must make every effort to improve the interchange reports. The American Railroad Association has under consideration a new method of settlement for car hire. Under our present method we settle for each individual car, allowing to the car owner direct 60c for each day one of his cars is on our rails. The proposed plan contemplates a settlement between connecting roads on daily balances of the number of cars received and delivered at the interchange point, regardless of ownership of such cars, the final settlement being made with the car owner, through the medium of a per diem clearing house. You will readily understand that to operate a plan of this kind the interchange reports must be absolutely correct. As a preliminary to this plan, the American Railroad Administration at Washington has decided to inaugurate a per diem bureau for the settlement of per diem accounts between U.S. roads and Canadian roads, and it has already started a campaign to ensure all interchange reports at border points being prepared on a proper basis. Special meetings are being convened at the principal points and all concerned are being

instructed as to what is required. In addition the various car accountants are to prepare complete data, covering errors and omissions in the reports, showing the record for each station and these statements are to be forwarded to the Railroad Administration. It will be necessary for all of us to get busy and make sure that all concerned understand what is required, otherwise, we will be sure to hear from headquarters.

"I am prompted to tell you of something which I discovered by a little checking up at one of our large interchange points. The interchange reports from this particular station contained quite a few errors in initials and numbers, and numerous omissions. Our analysis developed that these errors and omissions were in the reports covering Sundays. The next time I visited that station I took this matter up with the agent, and we soon discovered that as the regular interchange clerk was entitled to one day off each week, he had decided to lay off Sundays, and a substitute was furnished in the person of the lamplighter, who was very glad to earn the extra money. Sometimes you will find a lamplighter who will make a good interchange clerk, but in most cases if such a man could make a good interchange clerk, he would not be a lamplighter very long. My advice, therefore, is not to depend on the lamplighter, or any other similar help, to look after interchange work.

"This question of records in connection with car service and interchange work is most important and I will take this opportunity to point out that the index record should be properly maintained at all times for the reason that it is the key to all the information in your station records. We are preparing a new form of index record, something similar to old form 908b, which we believe can be used more effectively at the smaller stations.

"I will again impress upon you the necessity of exercising supervision over the work of your subordinates. We have tried this method in our own office to good advantage and I am certain that you will improve conditions and get better results if you will give a certain amount of your time each day to supervising the several desks in the offices under your care."

## The Canadian Railway Troops Splendid Work in the War.

The story of the Canadian Railway Troops is one of the romances of the war, recording how one battalion of Canadian railwaymen grew into a corps of nearly 16,000 strong, which, from the spring of 1917, took a major part in the construction and maintenance of railways of all gauges to within easy reach of the front line. After the battle of the Somme, it was clearly proved that road and animal transport could not alone take forward in the fighting zone, over shell-torn terrain, the weight of war material (as much as 2,000 tons a mile of active front per day) required to stage a modern battle.

In the early stages of the war, the French General Staff assumed the entire responsibility for the maintenance and construction of railways, in the British armies zone on the western front. Though six Imperial Royal Engineer Railway Construction Companies were sent to France in 1914, they were not

permitted by the French to do any, or scarcely any, work, until it was recognized that the duration of the war would be indefinitely prolonged, and the French Government would be unable to furnish either sufficient railway construction personnel or material.

In 1914, some well known Canadian railway contractors requested the Militia Department to be allowed to raise a railway construction unit, but for reasons outlined above, this proposal was not approved. However, in the spring of 1915, the War Office requested the Canadian Government to send over two railway construction companies. These, the Canadian Pacific Ry. Co. undertook to organize at the Militia Department's request, with the result that the Canadian Overseas Railway Construction Corps proceeded to France in Aug., 1915. This unit was made up of 500 picked men from the C.P.R. construction forces. Each man, before enlisting, was required to pass a

test as to his technical ability before he joined the unit, which was the pioneer Canadian railway construction unit in France.

After personal representations had been made to several War Office departments, it was finally decided in May, 1916, to ask Canada to furnish another unit, approximately 1,000 strong, for railway construction work on the western front. The organizer of this battalion, Lt.-Col. J. W. Stewart, of Vancouver, now Major-General J. W. Stewart, C.B., C.M.G., who gathered recruits from among the experienced railway workers of every province in the Dominion. It was known as the 239th Overseas Railway Construction Corps, but, before it could sail, Lt.-Col. Stewart was called to England, at the War Office's request, to assist in the general organization of better transport facilities on the western front.

As outlined above, after the commence-

ment of the battle of the Somme, it was decided by the Imperial General Staff to make greater use of railways, and more especially of light railways in forward areas as used by both the French and Germans. To accomplish this, Sir Eric Geddes was appointed Director General of Transportation, with practically plenipotentiary powers to reorganize all the transportation services on the British western front. As during recent years more new railways have been built in Canada than in any other part of the British Empire, Sir Eric Geddes naturally looked to Canada for a man to su-

Bramshott, Eng., was re-organized as the 2nd Battalion Canadian Railway Troops, proceeding to France, Jan. 11, 1917.

The 239th Battalion was re-named the 3rd Battalion, Canadian Railway Troops, and went to France, Mar. 22, 1917.

The 4th and 5th Battalions were organized at Purfleet, and proceeded to France in Feb., 1917.

However, before the 3rd Battalion left for France on Mar. 22, 1917, it had been decided to increase the number of battalions to 10, and as more units arrived from Canada, they were sent to Purfleet.

General Headquarters in France in Mar., 1917, to enable Brigadier-General Stewart to fill the dual capacity of General Officer Commanding the Canadian Railway Troops, and Deputy Director of General Transportation (Construction).

The Railway Troops arrived in France just in time to prove their worth. During the German retreat on the Somme, in Feb. and Mar., 1917, the first of the battalions to arrive were able to push forward standard gauge and light railway lines with surprising rapidity, in spite of the obstacles and difficulties imposed by atrocious weather and the thoroughness of the destruction left by the enemy in the wake of his retreat.

On Apr. 9, 1917, began the battle of Arras, when the Canadians attacked and captured Vimy Ridge, then the strongest German fortress on the western front. For several weeks prior to the opening of the attack, the weather had been extremely bad, and the ground in the battle area was like a quagmire. Notwithstanding this, the Canadian Railway Troops had laid rails to within a short distance of the front line. Then, as soon as the infantry advanced on that memorable Easter Monday, the railway battalions constructed new lines on the heels of the fighting men. Supplies and ammunition were carried forward on standard and narrow gauge lines, and the wounded were evacuated over them to the very doors of the field ambulance dressing stations and the casualty clearing hospitals. It was the first time that such work had been accomplished during the war. Within a week of the opening of that Arras offensive, trains were running to the brow of Vimy Ridge, and by the end of April, by which time the British lines had been pushed for some distance across the level plain stretching beyond the ridge, light railways were running forward as far as the battalions' ration dumps.

The next big offensive in 1917 was at Messines, and there the railwaymen from Canada contributed their quota to



Canadian Pioneer Battalion building grade, Lebuquiere East Diversion, in France, Nov. 22, 1917. Photograph loaned by C.P.R.

pervise and direct the construction of railways.

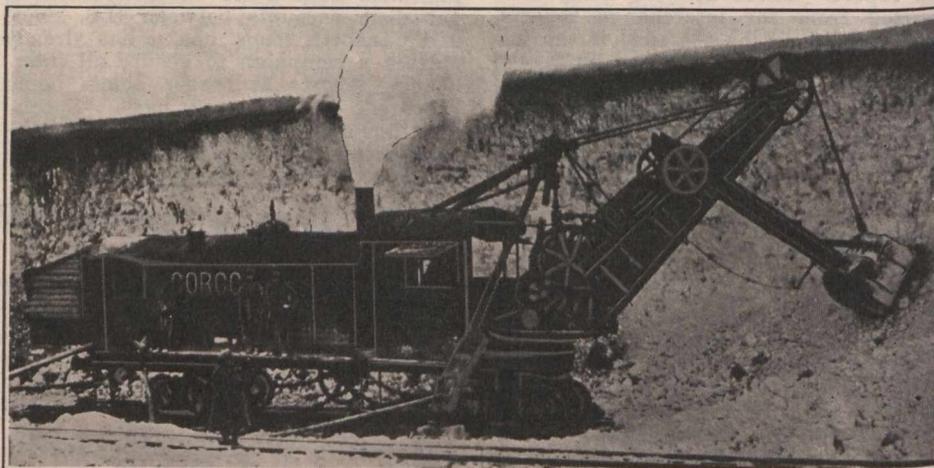
It was agreed that Canada should furnish five battalions of construction men, to be known as the Canadian Railway Troops, and that Col. Stewart should proceed to France immediately to act as Deputy Director of Light Railways, as well as being in immediate command of the Canadian Railway Construction Battalions on their arrival in France. Lt.-Col. Angus McDonnell, now Colonel Angus McDonnell, C.M.G., was delegated to remain in England to organize the units and to follow Lt.-Col. Stewart as second in command, on the completion of the organization.

On Jan. 1, 1917, Brigadier-General Stewart (having been promoted to that rank), was appointed Deputy Director General Transportation (Construction), and made directly responsible to the Director General of Transportation, for all railway construction, the maintenance and provision of necessary material, thus having supervision of the work done by the Royal Engineers' Railway Construction Companies (at that time numbering 5,312 all ranks), in addition to that done by the Canadian Railway Troops, as well as direct administrative command of the latter. An administrative office to deal with the organization was set up in London, and a depot established at Purfleet, Essex. The original five battalions were made up as follows:

The 1st Canadian Overseas Construction Battalion, which had proceeded to France in Oct., 1916, and was working on standard gauge railways, was re-organized and re-equipped as the 1st Battalion Canadian Railway Troops in France.

The 127th Infantry Battalion, then at

So swiftly was the new organization carried out, that by Apr. 1, 1917, there were six Canadian Railway Troops battalions fully equipped and serving in the field. All ten battalions were at work on the British western front by the end of June, 1917. The greater number of



Steam shovel working in chalk pit, for railway construction on British Western Front, Nov. 26, 1917. Photograph loaned by C.P.R.

the units were employed on light railway construction and maintenance, and, with the help of attached labor, since 1917, all the light railway construction and maintenance, on the British western front, until the armistice was signed, was carried out by Canadian Railway Troops.

The whole Canadian Railway Troops organization was separate from the Canadian Corps. The administrative headquarters of the Canadian Railway Troops were established at the British Army's

success, in spite of interruptions caused by enemy shell fire, the almost impassable sea of mud which they were compelled to cross, and the many other obstacles that beset the path of railway construction on the battlefield, obstacles that are unknown to the civilian railroad worker. Nor were the Railway Troops less determined and successful during the final attack at Passchendaele, in which the Canadian corps again won undying fame, under conditions among

the most trying and exasperating encountered during the war.

The difficulty of the task set the Canadian Railway Troops in the Ypres salient may be gauged from the fact that during more than two months of the summer of 1917, the average daily number of breaks in the light railway lines, due to enemy shell fire, was about 100, in the areas of the 2nd and 5th British armies alone.

It was in Mar., 1918, when the German offensive began in the Somme sector, that it unfortunately became necessary to leave many miles of standard and light gauge railways in the enemy's hands. Seven battalions of the corps of Canadian Railway Troops had to be withdrawn from railway work and were employed for a time on the construction of a rear defence trench system. In this work, which was carried out under the direction of Brigadier-General Stewart, they were assisted by 20,000 troops from labor, engineer, road and other technical units. When the task was completed, they had built a defensive trench system on a front over 30 miles, with a total trench mileage of approximately 120 miles. In addition, many strong points and machine gun emplacements were built and the whole front protected with thick belts of wire. In addition to this work the railway system was being altered and lines added, so that, if the position became still more serious, supplies and material could be handled with greater dispatch and convenience. Nor was this all. On the southern part of the front, a point where the German thrust had been most successful, the Railway Troops were kept busy on the re-organization of the lines of communication.

March and April, 1918, were indeed eventful for the corps of Canadian Railway Troops, for not only did the situation strain their wonderful adaptability to the utmost, but it threw out a direct challenge. There arrived a moment when it became necessary for the Canadian Railway Troops suddenly to transfer themselves into fighting men. They met the challenge with a skill and a success which proved the wisdom of the policy insisted on by the Canadian military authorities, that every Canadian at the front engaged on work of a technical nature, should first be trained as a soldier.

It was during the last four days of March, when the enemy was advancing on Amiens, that one battalion of the corps of Canadian Railway Troops was called on to take part in the defence of the city. The railwaymen promptly organized 16 Lewis gun teams and held tenaciously to the position allotted them, until relieved by troops from the New Zealand Division. Again, in the first British army area, three of their battalions were organized into what was called the Canadian Railway Brigade. No sooner, however, had they become so formed, than the importance of engineering again became such a paramount consideration that the Canadian Railway Brigade, which had been organized with every intention of making use of it as a fighting force, had to be disbanded. Two companies, however, from still another railway battalion, were put into the line and did very good work until relieved by Imperial troops.

In the meantime, the number of battalions had been increased to 13, by the conversion and re-organization of the 2nd and 3rd Canadian Railway Labor Bat-

talions with the 11th and 12th Battalions, Canadian Railway Troops, respectively, and the formation of the 13th Battalion from personnel at the depot at Purfleet, England.

Later in the spring of 1918, the Germans launched an offensive in two sectors in the north, with the intention of reaching the Channel Ports. This, too, placed a considerable strain on the corps of Canadian Railway Troops, as they were at once put to work on the construction of broad gauge lines and the elaboration of the light railway system which acted as a feeder to the front line trenches.

In the early summer of 1918, the Canadian Overseas Railway Construction Corps, the 58th Broad Gauge Operating Company, the 13th Light Railway Operating Company, the 69th Wagon Erecting Company, and the 85th Engine Crew Company, were brought under the Headquarters, Canadian Railway Troops, and the whole formed into the corps of Canadian Railway Troops. About the same time Brigadier-General Stewart was appointed Director of Construction, and as such his duties embraced all construction of a civil engineering character in the zone of the British armies. This work continued until the end of July, 1918, and at the beginning of August preparations were being made by the railwaymen for the work which would be required of them in the attack by the allies on a 20 mile front beyond Amiens. The achievements accomplished by the corps of Canadian Railway Troops in that battle formed a brilliant chapter in their career, and from then on the railwaymen continued to lend invaluable aid in the successive offensive which, launched on different parts of the front, finally led to victory.

Mention should not be omitted of the fact that during the offensive in Palestine in the summer of 1918, when General Allenby called for a party of expert bridge builders, the War Office requisitioned the services of Canadian Railway Troops. Six officers and 250 other ranks were thereupon selected from among the volunteers who came forward in France, and left for Palestine on Sept. 20, 1918.

It should be added that many officers were seconded from the Canadian Construction Railway Troops to fill executive positions in different departments under the Director General of Transportation, which should be considered as a high tribute to the technical efficiency of the officers concerned and the corps of Canadian Railway Troops as a whole.

The following table shows the comparative strength of the Imperial and Canadian Railway Construction Forces on the western front as at the dates given:

Date.	Nom'l. strength Imperial Ry. Con. Troops	Nom'l. strength Canadian Ry. Con. Troops
Dec. 31, 1914.....	1,476	.....
Dec. 31, 1915.....	2,440	512
Dec. 31, 1916.....	4,900	1,617
Jan. 30, 1917.....	7,340	11,562
Dec. 31, 1917.....	7,340	13,772
Nov. 11, 1918.....	7,340	14,877

In addition there were four Canadian Railway Troops Operating Companies, with a strength of 1,087, all ranks, on Nov. 11, 1918. The total strength of Canadian Railway Troops in England on Nov. 11, 1918, was 3,364.

During their career at the front, the personnel of the Corps of Canadian Railway Troops were awarded 489 honors and decorations. The construction units of the corps of Canadian Railway Troops were more mobile than any other con-

struction units on the British front, as their establishment provided for 280 mules, 10 lorries and 8 box cars per unit. They also were able to carry out new construction with great rapidity by using scrapers and mules, thereby saving man power, one of the most important questions in the concluding phases of the campaign.

In this necessarily condensed report, it is impossible to give more than the briefest outline of the organization, functions and operations of the Canadian Railway Troops. The importance of the work assigned to them can easily be understood by anyone with only a rudimentary knowledge of warfare, as, since prehistoric times, mobility has been organized as an essential factor to victory. The career of the Canadian Railway Troops on the western front furnishes one of the most engaging chapters in the record of Canada's contributions in the war, and was a factor in helping to spell victory with a capital "V."

Summary of work done by Corps of Canadian Railway Troops during 1918.

Standard Gauge Lines, 4 ft. 8½ in.	
Miles located .....	211.28
Miles graded .....	369.65
Miles grade repaired.....	338.52
Miles track laid.....	1038.00
Average number of miles maintained monthly .....	154.18
Average number attached labor daily on construction .....	4616.
Average number other ranks, C.R.T. daily on maintenance.....	997.
Narrow Gauge (Decauville) Lines, 2 ft.	
Miles located .....	1494.19
Miles graded .....	722.37
Miles grade repaired .....	385.76
Miles track laid .....	823.79
Average number of miles maintained monthly .....	546.81
Average number attached labor daily on construction .....	3288.
Average number other ranks, C.R.T. daily on maintenance.....	2166.

The foregoing is reproduced from the report of the Minister of Canadian Overseas Military Forces, Sir Edward Kemp, of which it forms a chapter.

Canadian Manufacturers' Association's President on Government Ownership.

W. J. Bullman, of Winnipeg, President, Canadian Manufacturers' Association, in his opening address at the recent annual meeting in Toronto, said: "A great experiment is being tried now in the government ownership of railways. While this association in annual convention at Winnipeg in 1917 declared against the public ownership of railways, and even suggested that further aid should be given to certain railways under proper supervision, so that their identity might be continued, the fact must not be forgotten that the construction of these railways was duly authorized by the people at large and would not have been built without such endorsement. However, as the government has been compelled to take over the Canadian Northern Railway and to operate the Grand Trunk Pacific under a receivership, the experiment must proceed, and the government is to be congratulated on the effort which is being made through legislation to keep the operation of these railways free from politics.

"It may be necessary for the government to take over the Grand Trunk Railway, but the extension of the principle of government ownership to the Canadian Pacific Railway would prevent competition, and, by overloading the government, would endanger the success of the whole undertaking."

## Mainly About Railway People Throughout Canada.

**J. C. Beckwith**, who has been appointed District Engineer, Levis, Edmundston and St. Maurice Divisions, Quebec District, Canadian National Rys., Quebec, Que., was born at Fredericton, N.B., Aug. 1, 1875, and entered railway service, June, 1898, since when he has been, to 1900, rodman and draftsman Columbia and Western Ry., Boundary District, B.C.; 1900, draftsman, C.P.R., in British Columbia and Ontario; 1901, draftsman, Algoma Central and Hudson Bay Ry. in Western Ontario; 1901 to 1902, draftsman, C.P.R., Winnipeg; 1902 to 1903, leveller and transit man, C.P.R., Winnipeg; 1903, Resident Engineer, C.P.R., Winnipeg; 1903 to 1904, transit man and Resident Engineer, C.P.R., Winnipeg; 1905 to 1907, Assistant Engineer, Construction Department, Eastern Lines, C.P.R., Montreal; 1907 to 1908, Engineer in Charge, New Brunswick Southern Ry., St. John, N.B.; 1909, Division Engineer, New Canadian Co., Port Davis, Que.; 1909 to 1912, Assistant Engineer, Construction Department, Western Lines, C.P.R., Winnipeg; 1912 to 1913, Assistant Engineer, Construction Department, Eastern Lines, C.P.R., Montreal; 1913 to Apr. 1, 1914, Assistant Engineer, Canadian Government Rys., Moncton, N.B.; Apr. 1, 1914 to May 1, 1919, Engineer of Construction, Canadian Government Rys., Moncton, N.B.

**Van Tuyl Boughton**, whose appointment as Assistant Superintendent, C.P.R., Chappleau, Ont., was born at Troy, N.Y., Sept. 9, 1888 and entered railway service in July, 1910. From July, 1910 to Oct., 1910, he was rodman, C.P.R., Schreiber, Ont.; July, 1911 to Nov., 1912, transitman, C.P.R., Sudbury, Ont.; Nov., 1912 to June, 1916, Resident Engineer, C.P.R., Chappleau, Ont.; June, 1916 to May, 1917, Resident Engineer, C.P.R., Sudbury, Ont.; May, 1917 to May, 1919, with 11th Engineers (Railway) U.S. Army.

**Lady Brown**, wife of Sir Geo. McLaren Brown, European General Manager, C.P.R., who has been spending some time in Canada, principally in Hamilton and Montreal, has returned to England.

**Sir Geo. Bury**, ex-Vice President, C.P.R., assumed his duties as President, Whalen Pulp & Paper Mills Ltd., at Vancouver, June 2.

**George Judson Cooper**, whose appointment as General Claims Agent, Grand Trunk Western Lines Rd., Detroit, Michigan, was announced in our last issue, was born at Chicago, Ill., Aug. 25, 1892, and entered railway service Sept. 1, 1909, since when he has been, to Oct. 1, 1910, clerk to General Claim Agent, Pere Marquette Rd., Grand Rapids, Mich.; between Oct. 1, 1910 and Nov. 1, 1913, he attended Wisconsin University; Nov. 1, 1913 to Jan. 1, 1914, Claim Agent, Illinois Central Rd., Paducah, Ky.; Jan. 1 to June 1, 1914, Claim Agent, same road, Freeport, Ill.; July 1, 1914 to Jan. 1, 1915, Claim Agent, same road, Springfield, Ill.; Jan. 1, 1915 to May 1, 1917, Assistant to General Claim Attorney, Pere Marquette Rd., Grand Rapids, Mich.; May 1, 1917 to July 15, 1918, Assistant General Claim Agent, same road, Detroit, Mich.; July 1, 1918 to Jan. 15, 1919, he held a commission in the U.S. Navy; Mar. 1, to May 1, 1919, District Claim Agent, U.S. Railroad Administration, Detroit, Mich.

**Emery C. P. Cushing**, who has been

appointed Purchasing Agent, C.P.R., Calgary, Alta., was born at Ottawa, Ont., Nov. 13, 1886, and entered C.P.R. service Dec. 1, 1902, since when he has been, to Mar. 15, 1907, clerk and stenographer, Passenger Department, Ottawa; Mar. 15, 1907, to Aug. 1, 1908, clerk and stenographer, General Passenger Department, Montreal; Aug. 1, 1908, to Aug. 1, 1912, clerk and stenographer, President's office, Montreal; Aug. 1, 1912, to May 1, 1918, chief clerk and secretary to President (Lord Shaughnessy), Montreal; May 1 to Sept. 30, Assistant to General Purchasing Agent, Montreal; Sept. 30, 1918 to May, 1919, Assistant Purchasing Agent, Winnipeg.

**Louis Charles Dupuis**, whose appointment as Division Engineer, Canadian National Rys., Quebec, Que., was announced in our last issue, was born at St. Roch des Aulnais, L'Islet County, Que., Nov. 8, 1886, and entered railway



**H. C. Martin**,  
Freight Traffic Manager, Grand Trunk Railway.

service, Aug. 20, 1911, since when he has been, to May, 1912, Assistant Engineer, Intercolonial Ry., Moncton, N.B.; May, 1912 to Jan., 1913, Assistant Engineer, I.R.C., Levis, Que.; Jan. to Oct., 1913, Resident Engineer, I.R.C., Levis, Que.; Oct., 1913 to Jan., 1916, Assistant Engineer in charge of double track, St. Romuald to Charing, Que., Canadian Government Rys., Levis, Que.; Jan., 1916 to May, 1919, Assistant Engineer, C.G.R., Levis, Que.

**Llewellyn E. Edwards**, Supervising Engineer, Railways, Bridges and Docks, Works Department, Toronto, has resigned on his appointment as Bridge Engineer, in the Bureau of Public Roads, U.S. Department of Agriculture, Washington, D.C. He was born near Portland, Me., and in 1907, was Structural Engineer, G.T.R., Montreal, and was engaged on the design and construction of the Coteau bridge over the St. Lawrence River, at Valleyfield, Que. He entered the City of

Toronto's service in Feb., 1913, and was engaged on general bridge construction, and when the U.S. entered the war, he was appointed a captain in the Engineers Corps, U.S. Army, and was incapacitated from further service by an accident sustained whilst training troops in a southern camp.

**Ulmus E. Gillen**, who has been appointed General Manager, Toronto Terminals Ry. Co., Toronto, was born at Brooklyn, Mo., Feb. 27, 1867. He entered railway service in 1884, and was, to Apr., 1885, clerk, telegraph operator and relief agent, Chicago, Milwaukee and St. Paul Ry., Canton, S.D.; Apr., 1885 to 1888, telegraph operator, Missouri Pacific Ry., Pacific, Mo.; 1888 to 1892, operator in dispatcher's office, same road, St. Louis, Mo.; 1892 to 1901, dispatcher, and chief dispatcher, same road, St. Louis; 1901 to 1902, Trainmaster, G.T.R. Belleville, Ont.; 1902 to 1904, Assistant Superintendent, same road, Belleville, Ont.; 1904 to 1907, Assistant Superintendent same road, London, Ont.; 1907 to 1912, Superintendent, same road, Montreal; 1913 to Sept. 1, 1917, General Superintendent, Western Lines, same road, Chicago, Ill.; Sept. 1, 1917 to June 17, 1919, Vice President in charge of transportation, G.T.R., Montreal, and since Oct., 1918, on leave of absence through illness. He was President of the G.T.R. Maintenance of Way Association for 1916, and in 1917 was President of the General Superintendents' Association of Chicago. He is a member of the American Railway Engineering Association.

**Casimir Stanislaus Gzowski, Jr.**, whose appointment as Special Engineer to Vice President, Operation, Etc., Canadian National Rys., Toronto, was announced in our last issue, was born at Toronto, May 1, 1876, and entered transportation service in April, 1897. While attending Toronto University he was engaged during the summers on survey work, in 1897 being with the C.P.R. on survey and construction on its Crowsnest Branch and subsequently in various positions in charge of location and construction work for the C.P.R. and other roads. In 1905 he became a partner in Macdonell, Gzowski & Co., Vancouver, B.C., and later with a branch in Spokane, Wash., under the name of G. O. Foss & Co., as contractors and engineers, building the C.P.R. Nicola Branch, changes of line on C.P.R. at Rogers Pass, near Nelson, B.C., and on the Esquimalt & Nanaimo Ry., Vancouver Island. The firm also built parts of the Milwaukee extension westerly, Great Northern Ry. changes of lines and parts of branches in Canada and the U.S.; C.P.R. spiral tunnels at Field, B.C., and considerable other railway work in Canada and the U.S., until its dissolution in 1914, after which he did valuation work for the Dominion commission of enquiry into railways and also acted as special engineer for the Canadian Northern Ry. on the government arbitration of its stock valuation.

**Mrs. Grant Hall**, wife of the Vice President, C.P.R., returned to Montreal, early in June, after spending several weeks with her sister, Mrs. Allen Weagant, in Winnipeg.

**George Ham**, of the C.P.R. headquarters staff, Montreal, visited Vancouver in June, having accompanied the first party of passengers on the new C.P.R. Trans-Canada Limited train.

**E. J. Hilliard**, who has been appointed Division Freight Agent, G.T.R., Ottawa, Ont., was born at Montreal, Apr. 14, 1870, and entered G.T.R. service in 1886, since when he has been consecutively, to June, 1904, clerk, Passenger Department; in Chief Accountant's office; stenographer, General Manager's office and Division Freight Agent's office; Contracting Freight Agent, Montreal; Contracting Freight Agent, New York; Travelling Freight Agent, Montreal; chief clerk, Division Freight Agent's office, Montreal; Travelling Freight Agent, Moncton, N.B.; June, 1904 to June, 1919, Commercial Agent, Buffalo, N.Y.

**Chas. R. Hosmer**, of the C.P.R. directorate, who was in the Royal Victoria Hospital, Montreal, for a number of weeks, during which he had to undergo two operations, was reported June 1 to have recovered sufficiently to leave the hospital, return to his house and take daily motor drives. He left Montreal June 18, with Mrs. Hosmer, to spend some weeks at their summer house at St. Andrews, N.B.

**H. Hulatt**, Manager of Telegraphs, G.T.R. and Grand Trunk Pacific Ry., Montreal, has been elected second vice chairman, Telegraph and Telephone Division, American Railroad Association, formerly Association of Railway Telegraph Superintendents, for the current year. Last year he was one of the committee of directors.

**F. James**, foreman of the planing mill, Canadian National Rys., Moncton, N.B., retired from active service, May 31, after 44 years service, and was presented with a gold watch and locket by the employees.

**Thomas Kearney**, who has been appointed Resident Engineer, Canadian National Rys., Montreal, was born at Donegal, Ireland, July 19, 1887, and was educated at the Royal School, Raphoe, and University College, Galway, Ireland, and graduated from the National University of Ireland, in science, in 1911, and in engineering in 1912. He came to Canada in 1913, and from Apr. 10, to May 1, 1914, was Assistant Engineer, Canadian Northern Quebec Ry., Quebec, Que.; May 1, 1914 to Apr. 1, 1919, Assistant Engineer, C.N.Q.R., Montreal.

**H. G. Kelley**, President, G.T.R. and Grand Trunk Pacific Ry., has been elected a member of the American Railroad Association's executive committee.

**E. R. Lewis**, Chief Engineer, Duluth, South Shore and Atlantic Rd., Duluth, Minn., has resigned, to take up railway editorial work.

**R. W. Long**, who has been appointed Division Freight Agent, G.T.R., Toronto, was born at Appin, Ont., Mar. 20, 1873, and entered G.T.R. service in March, 1889, since when he has been, to Oct., 1896, operator and clerk in Commercial Agent's and Local Freight Agent's offices, Buffalo, N.Y.; Sept., 1901 to May, 1904, Commercial Agent, Buffalo, N.Y.; June, 1904 to July, 1907, Division Freight Agent, Stratford, Ont.; July, 1907 to June, 1919, Division Freight Agent, Hamilton, Ont.

**Mrs. Malcolm**, widow of Thos. Malcolm, formerly President, International Ry. of New Brunswick, Campbellton, N.B., who has been living at the Ritz Carlton, Montreal, for some time, left for England early in June.

**Gordon A. McGuire**, who has been appointed Commercial Agent, G.T.R., Buf-

falo, N.Y., entered G.T.R. service in 1905 and served at Montreal and Toronto, until 1908, when he was transferred to Grand Trunk Pacific Ry. service at Winnipeg, in 1913, being chief clerk to Division Freight Agent, Edmonton, Alta.; 1916, tariff clerk, General Freight office, Winnipeg, and later he was appointed chief clerk to Vice President (Traffic), G.T.R., Montreal, which position he held at the time of his present appointment.

**Sir Wm. Mackenzie**, ex-President, Canadian Northern Ry., left Toronto, May 14, for England, expecting to return about the end of July.

**J. K. McNeillie**, Superintendent, Susquehanna Division, Delaware & Hudson Rd., Oneonta, N.Y., formerly General Superintendent, Canadian Government Rys., Moncton, N.B., has been elected a director of the Oneonta Chamber of Commerce, for three years. The Oneonta Star says his election is in recognition of his public spirited interest in all that pertains to the welfare of the town since he became a resident of it.

**C. E. McPherson**, Assistant Passenger Traffic Manager, C.P.R., Winnipeg, who travelled on the first Trans-Canada Limited train, from Winnipeg to Vancouver, recently, went on to San Francisco on business.

**G. W. McVicar**, Travelling Auditor, G.T.R., Guelph, Ont., won a McLaughlin motor car in a Great War Veterans' Association's drawing recently.

**W. M. Noon**, Superintendent, Duluth, South Shore and Atlantic Rd., died at Miami, Fla., recently. He had been in railway service for 52 years, was with the D.S.S. & A.R. for the past 29 years, and was a member of the American Railway, Bridge and Building Association.

**H. D. Reid**, President, Reid Newfoundland Co., St. John's, Nfld., was married June 5, to Miss M. M. Robert.

**J. G. Rutherford**, C.M.G., one of the members of the Board of Railway Commissioners for Canada, has been given the degree of Doctor of Veterinary Science, by Toronto University. He has been appointed chairman of a commission of four, to investigate the potentialities of the arctic and subarctic regions of Canada as a grazing country for the development of musk ox and reindeer herds for commercial and national purposes.

**Lady Schreiber**, widow of the late Sir Collingwood Schreiber, who at the time of his death was General Consulting Engineer for the Dominion Government, has left Ottawa for England to visit her sister, Mrs. Baldwin.

**Hon. W. J. Shaughnessy**, who has been elected a director of the C.P.R., succeeding Jas. Dunsmuir, resigned, is the only surviving son of Lord Shaughnessy, his brother having been killed in the war. He was educated at Laval University, Montreal, and Cambridge, Eng., and practices law in Montreal. He served overseas for three years, leaving Canada as Captain and Adjutant of the 199th Irish Rangers, recruited in Montreal, and was in charge of the arrangements for the Battalion's Irish tour. On the breaking up of the Irish Rangers, he went to France as A.D.C. to Brig.-Gen. Simms, Canadian Representative at British general headquarters, and afterwards was transferred to the Canadian Corps headquarters, as A.D.C. to Lieut.-Gen. Sir Arthur Currie, Corps Commander.

**Alex. T. Shortt**, Superintendent of Ogden shops, C.P.R., Calgary, Alta., died

at the Calgary General Hospital, May 27, aged 46, after a short illness. He had been, at various times, Master Mechanic of the Saskatchewan and Alberta Divisions, and was in C.P.R. service for about 20 years.

**A. H. Smith**, President, New York Central Rd., has been elected President, Cleveland, Cincinnati, Chicago and St. Louis Rd. Co. and also the Canada Southern Ry., Lake Erie and Western Rd., and other New York Central subsidiaries, vice W. K. Vanderbilt, Jr., resigned.

**Lord Mount Stephen**, first President C.P.R. Co., who has lived in England for many years, was 90 years of age on June 5.

**Mrs. Stitt**, widow of Wm. Stitt, who at the time of his death was General Passenger Agent, Eastern Lines, C.P.R., is spending some weeks at Delta, on Lake Manitoba.

**Sir Thomas Tait**, President Fredericton and Grand Lake Coal and Ry. Co., motored recently from Montreal to St. Andrews, N.B., where he and his family spend the summer at the Algonquin Hotel.

**Lady Van Horne** and Miss Van Horne left Montreal, June 19, to spend the summer at their house, Covenhoven, St. Andrews, N.B.

**Robert James Scott Weatherston**, who has been appointed Division Freight Agent, G.T.R., Hamilton, Ont., was born at St. Thomas Ont., Jan. 27, 1878, and entered G.T.R. service July 4, 1893, since when he has been, to Dec. 31, 1901, clerk in Transportation Department, Hamilton, Ont.; Jan. 1 to July 22, 1902, clerk in Traffic Department, Hamilton, Ont.; July 23, 1902, to May 10, 1903, Soliciting Freight Agent, Hamilton, Ont.; May 11, 1903, to June 17, 1906, Soliciting Freight Agent, Toronto; June 18, 1906, to May 31, 1907, Travelling Freight Agent, Ottawa, Ont.; June 1, 1907, to Oct. 31, 1911, chief clerk to Division Freight Agent, Hamilton, Ont.; Nov. 1, 1911, to Jan. 31, 1919, Division Freight Agent, Stratford, Ont.; Jan. 31 to June, 1919, Division Freight Agent, Ottawa, Ont.

**J. K. Yorston**, who has been appointed Locating Engineer, Western Lines, C.P.R., Winnipeg, entered C.P.R. service Aug., 1906, and has been, to Jan., 1907, rodman; Jan., 1907 to May, 1908, chairman and topographer; May, 1908 to Dec., 1909, rodman, experiment man, chairman on location and experiment man on construction; Dec., 1909 to Jan., 1913, resident engineer on construction; Jan. to Apr., 1913, transit man on location; Apr., 1913 to Sept., 1915, resident engineer on construction; Sept., 1915 to Dec., 1916, inspector of concrete and experiment man, Rogers Pass tunnel; in Apr., 1917, he was appointed resident engineer, Lethbridge Division, Alberta District, C.P.R., Lethbridge, Alta., which position he held at the time of his present appointment.

**Car Demurrage Rules, Influenza Epidemic**—The Board of Railway Commissioners issued a circular May 31, referring to its judgment of Nov. 25, 1918, and stating that the special treatment given in respect to influenza conditions would terminate on June 15, but that this, of course, would not in any way affect claims under consideration, or in respect of relief under the judgment which might be filed prior to June 15.

## Transportation Appointments Throughout Canada.

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

**Canadian Government Merchant Marine Ltd.,** R. B. TEAKLE, formerly Manager, Allan Steamship Line, at Boston, Mass., and latterly Manager, France-Canada Line, at Philadelphia, has been appointed Manager, C.G.M.M. Office, 230 St. James St., Montreal, Que.

**THOS. TODD,** formerly Chief Accountant and Purchasing Agent, Allan Steamship Line, Montreal, and subsequently loaned by the C.P.R. to the Canadian Cheese Commission, has been appointed Auditor, C.G.M.M. Office, 230 St. James St., Montreal.

**Canadian National Rys.,** J. C. BECKWITH, heretofore Engineer of Construction, Canadian Government Rys., Moncton, N.B., has been appointed District Engineer, Levis, Edmundston and St. Maurice Division, Canadian National Rys. Office, Quebec, Que.

**LIEUT.-COL. F. F. CLARKE,** who prior to the war was in Canadian Northern Ry. service, has resumed his duties as Chief Land Surveyor, Canadian National Rys., with jurisdiction over the whole system.

**C. M. HAMILTON,** of Weyburn, Sask., who has been nominated as the Liberal candidate for the provincial constituency, is reported to have stated that he intended to resign as a director of the Canadian National Rys.

**J. J. LEYDON,** heretofore city ticket agent, Halifax, N.S., is reported to have been appointed City Passenger Agent there.

**W. C. MOIR,** formerly in the city ticket office, Halifax, N.S., and latterly in active military service, is reported to have been appointed city ticket agent there, vice J. J. Leydon, promoted.

**A. PATRICK,** formerly Sleeping and Dining Car Inspector, Western Lines, Canadian Northern Ry., and latterly in the Royal Air Force, has been appointed Agent, Sleeping, Dining and Parlor cars, Canadian National Rys., Quebec, Que., vice Jas. Baird, transferred.

**Canadian Pacific Ry.,** M. W. BOUCHER, heretofore Locomotive Foreman, Ignace, Ont., has been appointed Locomotive Foreman, Field, B.C.

**H. G. BUCHANAN,** heretofore City Freight Agent, Edmonton, Alta., has been appointed District Freight Agent there, and his former position has been abolished.

**E. C. P. CUSHING,** heretofore Assistant Purchasing Agent, Winnipeg, has been appointed Purchasing Agent, Calgary, Alta., vice B. W. Roberts, transferred to Vancouver, B.C.

**H. G. DRING,** formerly General Passenger Agent, has been appointed European Passenger Manager, C.P.R., and not European Passenger Manager, Canadian Pacific Ocean Services Ltd., as stated in Canadian Railway and Marine World for June. His initials were erroneously stated as H. D. Office, London, England.

**C. H. FOX,** heretofore, Resident Engineer, Portage Division, Manitoba District, Winnipeg, has been appointed Division Engineer, Saskatoon Division, Saskatchewan District, vice E. A. Kelly, transferred. Office, Saskatoon.

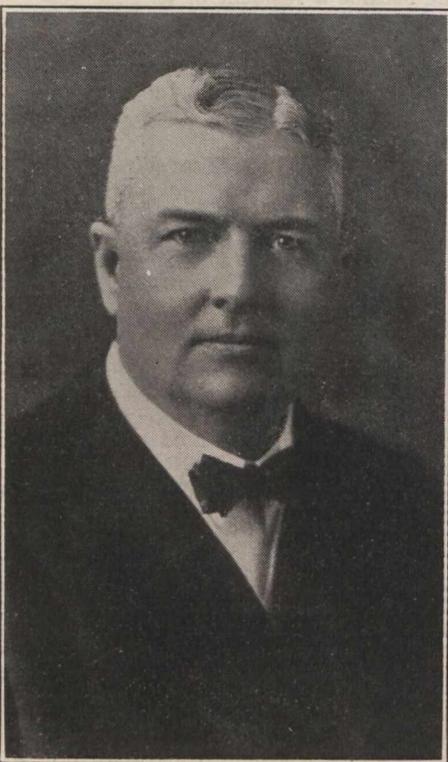
**E. J. MELROSE,** heretofore Assistant Superintendent, London Division, Ontario District, London, Ont., has been appointed

Assistant Superintendent, Bruce Division, Ontario District, vice W. J. Stinson, transferred. Office, West Toronto, Ont.

**J. MILES,** heretofore Assistant Superintendent, Toronto Terminals Division, West Toronto, has been appointed Assistant Superintendent, Trenton Division, Ontario District. Office, Trenton, Ont.

**COL. C. W. P. RAMSEY, C.M.G.,** formerly Engineer of Construction, Eastern Lines, who returned from overseas some little time ago, and re-entered the C.P.R. service, is for the summer attending to the work of superintendents at various points, who are given their usual leave of absence.

**LIEUT. COL. BLAIR RIPLEY, C.B.E., D.S.O.,** formerly Engineer of Grade Separation, C.P.R., Toronto, having returned from overseas, has re-entered the company's service and has been assigned special duties for the present.



U. E. Gillen,  
General Manager, Toronto Terminals Ry. Co.

**B. W. ROBERTS,** heretofore Purchasing Agent, Calgary, Alta., has been appointed Purchasing Agent, Vancouver, B.C.

**HON. W. J. SHAUGHNESSY,** son of Lord Shaughnessy, has been elected a director, succeeding Jas. Dunsmuir, of Victoria, resigned. The vacancy on the board caused by the death of W. D. Matthews, of Toronto, has not been filled.

**L. J. SKELLY,** heretofore Assistant Superintendent, Montreal Terminals Division, Quebec District, has been appointed Traffic Supervisor, Toronto Terminals Division, Ontario District. Office, West Toronto, Ont.

**W. J. STINSON,** has been appointed Assistant Superintendent, Toronto Terminals Division, West Toronto, Ont., vice J. Miles, transferred.

**J. K. YORSTON,** heretofore Resident Engineer, Lethbridge Division, Alberta District, Lethbridge, Alta., has been appointed Locating Engineer, Western

Lines. Office, Winnipeg.

**Canadian Pacific Ocean Services, Ltd.,** E. C. BROWN, has been appointed Purchasing Agent, Montreal.

**H. G. DRING** has not been appointed European Passenger Manager, C.P.O.S., London, as stated in Canadian Railway and Marine World for June, his appointment being that of European Passenger Manager, C.P.R. His initials were erroneously stated as H. D.

**CAPT. THOMAS FISHER, R.N.,** has been appointed General Manager, London, Eng.

**J. A. MARTIN,** heretofore Assistant Manager, has been appointed Manager, Liverpool, Eng.

**A. S. MAYNARD,** heretofore Commissary Agent, has been appointed General Purchasing Agent, Montreal.

**E. T. STEBBING,** heretofore Agent, New York, has been appointed Passenger Manager for Great Britain and the European continent, vice H. S. Carmichael, resigned. Office, Liverpool, Eng.

**WILLIAM WAINWRIGHT,** formerly with the Allan Line Steamship Co., and latterly with the British Ministry of Shipping (Canada), has been appointed Assistant to the Chairman, C.P.O.S. Ltd. Office, Montreal.

**Caraget & Gulf Shore Ry.—F. V. BURTON,** not F. B. Burton, as stated in Canadian Railway and Marine World for May, Superintendent, Bathurst, N.B., is now in direct charge of this line, consequent on the death of W. B. Cronk, Vice President.

**S. G. WOODWARD,** formerly Roadmaster, British Chemical Co., and Assistant Roadmaster, Central Ontario Ry., Trenton, Ont., has been appointed Roadmaster, C. & G.S. Ry. Office, Bathurst, N.B.

**La Cie. Canadienne Transatlantique Ltee.,** Canada Steamship Lines., Ltd., General Agents—**DUNCAN D'E. COOPER,** formerly Agent, Lehigh Valley Rd., Toronto, has been appointed Agent for Ontario for La Compagnie Canadienne Transatlantique, in charge of export and import traffic. Office, Foy Bldg., Front St. West, Toronto.

**Grand Trunk Ry.—I. N. CLARK,** heretofore Travelling Car Inspector, Eastern Lines, Montreal, has been appointed Master Car Builder, Ontario Lines, and his former position has been abolished. Office, London, Ont.

**F. FOUSE,** heretofore Travelling Car Inspector, Ontario Lines, London, Ont., has been appointed Master Car Builder, London shops, and his former position has been abolished. Office, London, Ont.

**E. J. HILLIARD,** heretofore Commercial Agent, Buffalo, N.Y., has been appointed Division Freight Agent, Ottawa, vice R. J. S. Weatherston, transferred.

**R. W. LONG,** heretofore Division Freight Agent, Hamilton, Ont., has been appointed Division Freight Agent, Toronto, vice L. Macdonald, promoted.

**J. HENDRY,** heretofore Assistant Master Car Builder, Montreal, has been appointed Master Car Builder, Eastern Lines, and his former position has been abolished. Office, Montreal.

**W. J. HYMAN,** Chief Draftsman, Car Department, has resigned, and has been appointed Sales Engineer, International Equipment Co., Montreal.

**G. A. McGUIRE** has been appointed Commercial Agent, Buffalo, N.Y., vice E. J. Hilliard, promoted.

**JOHN McMURTY,** has been appointed

Road Foreman of Locomotives, Hamilton, Ont., vice G. Cooper, promoted.

D. C. MESSEROLL, heretofore Lubricating and Air Brake Inspector, Montreal, has been appointed General Traveling Car Inspector, and his former position has been abolished. Office, Montreal.

N. P. NORTH, heretofore Trainmaster, Districts 2 and 3, Montreal Division, has been appointed Trainmaster, Districts 6 and 7, Montreal Division, vice H. M. Gain, transferred. Office, Belleville, Ont.

W. A. PITT, heretofore Assistant Master Car Builder, London, Ont., has been appointed Master Car Builder, Montreal shops, and his former position has been abolished. Office, Montreal.

R. J. S. WEATHERSTON, heretofore Division Freight Agent, Ottawa, Ont., has been appointed Division Freight Agent, Hamilton, Ont., vice R. W. Long.

Grand Trunk Pacific Ry.—A. C. LIPSETT, recently in active service overseas, is reported to have been appointed acting City Passenger and Ticket Agent,

Calgary, Alta., vice R. Merritt, who has been granted extended leave of absence on account of illness.

Toronto Terminals Ry. Co.—U. E. GILLEN, heretofore Vice President in charge of transportation, G.T.R., Montreal, has been appointed General Manager, Toronto Terminals Ry. Co., vice J. W. Leonard, deceased. Office, Toronto.

J. M. ROSEVEAR, General Auditor, G.T.R., Montreal, has also been appointed Auditor, T.T.R. Co., vice W. H. Ardley, retired. Office, Montreal.

## President Beatty, of the C.P.R., on Government Ownership, Etc.

E. W. Beatty, K.C., President C.P.R., during his trip from Montreal to the Pacific coast and return, in the latter part of May and early in June, addressed a number of meetings, including the following: Associated Boards of Trade of British Columbia, at Nelson; Canadian Club, at Victoria; Board of Trade and Canadian Club, at Vancouver; Canadian and Rotary Clubs at Calgary; business men, at Edmonton; Canadian Club, at Fort William.

Following is a complete report of Mr. Beatty's remarks:—"I feel that I need make no apology for speaking very briefly on a matter which is engrossing the attention of the most serious thinking Canadians, and that is, what is to be the ultimate end of our railways and under what auspices or method of administration are they to be managed. The possession by the Canadian Pacific Ry. Co. of a system involving 13,770 miles in Canada, of which 8,750 miles are west of the Great Lakes, gives in itself a reason why its officers should have some knowledge and some views on the subject, and if they are of any value, those that have an equal voice in the final determination of the question are certainly entitled to the benefit of them.

"I have an additional reason for mentioning this subject, in that a great deal of misapprehension seems to exist in some quarters as to just what the problem is. We have private ownership of some railways and we have public ownership of others, both existing in the country now. The fact that the country has been compelled, through the financial failure of some systems, to take them over, in order to prevent them from falling into utter desuetude is one thing, but that it is quite a different problem from the question of a permanent policy of government owned and government managed railways. I do not know that the Government could have done anything else than it did do, but I do feel that neither the Government nor the people of this country are yet in a position to determine finally what the future of all these systems must be.

"I think it is unfortunate that fuller discussion of this subject has not obtained in Canada up to now. It is true it occupies certain space in the newspapers, and has been discussed in parliament, but always with the unsatisfactory result that the advocates of the different methods of administration are considered prejudiced. If a public man speaks, we shrug our shoulders, and say it is politics; if a railway man speaks, he is said to be prejudiced by his railway association. Not all the men who go to Ottawa are governed absolutely and exclusively by political considerations, and the railway man can still be a railway man and be a good citizen of Canada, with an honest

desire to see the transportation future of his country assured.

"Government ownership in theory has much to recommend it. It has been said by a very able member of the Government that the advisability of its increases as you approach a state of monopoly, and that is probably true, but it has not been determined in any satisfactory way up to date, whether Government management of our systems is feasible or even possible. Until it is determined, I should conclude it would be well for the government and the people to withhold their final judgment. Among the advocates of this system are many men who are sincerely and honestly convinced that in the last analysis it will be for the benefit of the people of this country, and that is the only angle from which the question can be viewed. It is unfortunate however, that most of these large enterprises, and the wish for success is father to the thought, that success will result. We have recently had the benefit of the results of similar experiments in Great Britain and the United States, and while I am quite prepared to admit that the abnormal conditions under which the systems had to be operated during the war, make the lessons to be drawn from this method of administration not entirely conclusive, I am strongly of the view that there is nothing in these results which gives confidence or justifies the hope that we would avoid the disaster they have experienced, and that the difficulties which at least, contributed to their failure would be absent from the administration of Canadian railways under like auspices.

"You will recall that the United States systems broke down when put to the test. They broke down physically and financially. Both could, I think, have been avoided, or at least minimized, had a little broader view of the needs of U.S. railways been taken by U.S. tribunals in the five years prior to the entry of the U.S. into the war. What was subsequently done, was done in an attempt to meet a highly emergent situation and with an intent that the cost, whatever it might be, of mistake or should be borne in the interest of the principles for which the allied nations were contending in this war. The result is described as a debacle, the deficits have been enormous, and the efficiency and character of the service lessened to an alarming degree. The U.S. people were, however, fortunate their experience was crowded into a comparatively short time, and they were enabled to learn the lesson it taught without protracted experiments.

"As a result of this experience and that which they had through the operation of cables, telegraphs and telephones, I think it may be safely said that the last vestige of desire for government op-

eration of these utilities has departed from the majority of the U.S. people. In fact, those actually entrusted by the government with the administration of the properties have admitted the unwisdom of the continuance of the system. The Postmaster-General has agreed to the return of the cables and the telegraph lines, and the President of the U.S. has directed the return of the railways. The Director-General of Railroads, Mr. Hines, who has been connected with the U.S. Railroad Administration from the beginning, first as Assistant Director-General and latterly as Director-General, expresses his views as follows: "I want to tell you that in my judgment, based on a very careful study of this subject since the Federal Control began, the best interests of the country will be promoted, not through permanent government operation, but through the return of the railways to private management. I believe the American public wants competition in service, and private initiative is, I think, of the utmost importance in order to get satisfactory public service. Mr. E. N. Hurley, Chairman of the U.S. Shipping Board, states that it is his belief that combinations between government and business are almost as dangerous as combinations between church and state. The results in the U.S. will be available to this country and the ultimate solution adopted there will be of use to us in determining what our policy will be, because the evils of government administration if present in one country will be difficult to avoid in the other.

"It may be said that my own views are prejudiced, and they are to the extent that they are the result of 18 years intimate association with the workings of one railway company and an appreciation from the inside of what factors contributed to its efficiency and success. It is a long and arduous work to hammer together an efficient organization which must be so widespread in its activities and so widely separated as to locality as the organization of a transcontinental railway. In the case of the C.P.R., it has been in existence for almost 30 years, and the organization has been built up painfully and slowly. It has now reached an efficiency in all ranks, which it will be easier to maintain, but it could not be developed, nor can it be maintained without the enterprise, resourcefulness, loyalty, initiative and esprit of the officers and men of the company. There is something which gives rise to this spirit which comes from within the organization itself, and I would need be assured not only that independent non-political administration is possible, but that it would provoke this spirit, before I would cast a vote for a permanent policy of government ownership and operation. When I speak of government

ownership and operation, I do so because interference in the latter is the necessary consequence of the establishment of the former. It is not possible, in my opinion, to divorce the responsibility for operation from those upon whom rests the responsibilities for the results. In theory, it may seem reasonable, but in practice I am quite convinced it will be found impossible to persuade those who vote the money for these enterprises to exclude themselves entirely from the administration of the properties for which they supply the money.

"In the determination of this question, I know of no consideration less important than that of political expediency. It is particularly a question of national economics, and what system will give the best and cheapest service to the people of this country. The crux of the whole thing lies in this, that is, the ability of governments to carry on enterprises such as this with the same competency and efficiency as private owners. I am not attempting to persuade you to my views; they are not unalterable, but I have not yet found anyone who could adduce evidence of the success of a government operated system in former days, or in other countries, where similar conditions prevail, and before we adopt a similar policy which will saddle us with the principles of public ownership and operation of our systems, we should, I think, be very sure of our ground. The question cannot be determined in accordance with the wishes and views of financiers, stock holders, politicians, or any one set of men; it must be determined on the one ground by balancing its advantages with its disadvantages and considering which is in the best interests of Canada.

"In order to reach a decision, the most careful consideration and analysis of results here and in other countries is necessary. With knowledge and experience, we can determine it, without it, we will add to our railway mistakes. That we have made serious blunders is evident, but we are all responsible. We built railways in wrong places, and at wrong times, but these mistakes, serious as their consequences have been, would be minor compared to the mistake if we adopted a wrong principle for their administration, and add the continuing and pyramiding losses, which would result from extending these wrong principles to a largely extended system.

"I am a great believer in this country and I believe that our difficulties, economically and commercially speaking, will be solved. Some of these difficulties appear serious, and they are, and in expressing hope and confidence, I do not wish to minimize the danger of the situation. I am convinced, however, that the difficulties are not insuperable, nor should they be entirely unexpected. It is the most natural thing, and quite in accordance with the precedent of history, that following such a terrible four years world eruption, there should now arise, both nationally and individually, conditions which it will take extraordinary measures to meet. Last summer the railways of the country were threatened with very serious labor troubles; wage adjustments were made and rates were raised, but the individual difficulties due to unrest did not thereby disappear. The railways, in conjunction with the government and the labor unions, adopted a course quite without precedent in the history of Canada. Their heads sat round a table, discussed the best methods to adopt, and in the end constituted

what is known as Railway Board of Adjustment No. 1, composed of six representatives of the labor unions and six railway executives. The board was empowered to adjust and make binding upon the parties concerned all disputes arising between railway employes and the railway companies. In the event of failure to agree, there was a provision for calling in an outside and independent referee, who would give the casting vote. Whether or not it was because the number this gentleman would bear was no. 13, I cannot say, but 32 main disputes, in some cases involving half a dozen minor differences, each one of which might have precipitated a strike, have been determined by this board, and in no case has there been an absence of agreement, and in no case have either the executives or the men complained that substantial justice was not done. Now the reason for the extraordinary success of the tribunal, which was formed to exist during the period of the war only, but which I hope will continue long after peace has been declared, is this—it was composed of men determined to see that right was done; men who respected their colleagues on the board and themselves; men who were actuated by the spirit of adjustment. In no case has the board ever forgotten its judicial attitude, nor has there been any evidence of feeling on either side.

"It is not for me to suggest what measures would be appropriate for industries, but I can assure you that the workings of the Canadian Board of Adjustment No. 1 can be looked to with great satisfaction, and I should think, with some advantage by all those who have to deal with the existing labor problems. You are all aware of the high scale of wages now existing in this country and of the prevailing unrest. As representing a company whose operating expenses increased by \$34,000,000 in the short period of two years, I have had some experience of the manner in which these rapidly increasing costs affect large enterprises. We are all disposed to attribute these things to the high cost of living, but few, if any, of us know what is responsible for it, or what the ingredients in it are. It has recently been announced by the Minister of Labor that the government has quietly made investigations and will be able shortly to make an announcement of the results of them, and undoubtedly that is the first step to be taken, because if these costs are improper costs, we should know where the unfairness rests; if they are otherwise, we must take means to ensure our ability to meet these higher standards of living. Here again, it is the actual facts, which will enable the people to decide what should be done and whether our highly increased wages are due to reasons which could be avoided, or whether they are inevitable.

"It has been announced that conventions are to be held in the coming summer for the purpose of developing the natural resources of the western provinces, and the establishment of industries there in order that they may be more self contained. This is as it should be. We need immigrants; principally of the agricultural class, and we need to know and interest others in the local possibilities of Western Canada. Most of us believe that they are almost limitless, but we must interest capital in order that these resources can be developed and industries maintained in the development of the whole country."

## Freight and Passenger Traffic Notes.

The Canadian National Rys. are reported to have bought the old Sun Life Bldg., James St. North, Hamilton, Ont., for an up-town office.

The C.P.R. is reported to be arranging for the establishment of a tourist route from Vancouver, by water, around the west coast of Vancouver Island, during the summer, the round trip to last a week.

A Quebec press report of June 12 stated that the putting on a daily passenger train service on the Quebec and Saguenay Ry., between St. Joachim, and Murray Bay, Que., for July, Aug. and Sept., was being discussed.

The Canadian National Railways, District Passenger Agent's office, and city ticket office, heretofore located in the Transportation Building, 120 St. James St., Montreal, were removed June 23 to the Canadian National Rys. Bldg., 226-230 St. James St.

The Vancouver Board of Trade, the Canadian Manufacturers' Association's British Columbia branch and other allied trading bodies, are reported to have arranged for establishing a freight traffic bureau for the province with headquarters at Vancouver.

The Canadian National Rys. advised the Edmonton, Alta., Board of Trade, recently, that it was impossible to put on a freight service over the 44 miles of the line from Oliver towards St. Paul de Metis, on which track was laid, on account of it not being ballasted.

Freight traffic over the Quebec bridge for the week ended June 15, was, according to a press report, 335 loaded cars from the bridge station to Chaudiere Jct., and 252 from Chaudiere Jct. to the bridge station, a total of 587, against 618 for the corresponding week of 1918.

The car ferry steamship Prince Edward Island, operating between Cape Tormentine, N.B., and Borden, P.E.I., is making two trips a day, thus giving a double daily service for passengers, mail and freight. The 6.15 a.m. train out of Charlottetown, connects with the Ocean Limited train, and the 12.50 p.m. train out of Charlottetown connects with the maritime express, going west; while passengers on these trains going east change at Sackville, N.B., to trains connecting with the ferry. Passengers arriving in Prince Edward Island on the ferry's afternoon trip can get through to Tiquist, and those arriving in the evening ferry can get to Summerside.

Mail from Edmonton to McMurray, Alta., heretofore carried via Athabasca Landing by rail, thence by motor boat to House River, and then by portage to destination, is now being carried by rail to Lac la Biche on the Alberta and Great Waterways Ry., thence by a gasoline "speeder" to the end of track, for the remaining eight miles the mail is carried to wagon to the Clearwater River, and thence by launch to destination. The mail is now delivered twice a month. A press report states that the mail contractor is having a motor car fitted to run on the Edmonton, Dunvegan and British Columbia Ry., with a view of making weekly round trips.

The British Columbia Government issued an order in council recently, granting running rights over the Victoria and Sidney Ry., to the Canadian National Rys. The operation of the V. and S. Ry.

was abandoned by the Great Northern Ry., and the company's affairs are in a receiver's hands. A conference is reported to have taken place at Vancouver recently between A. T. Goward, Local Manager of the British Columbia Electric Ry. at Victoria, and the liquidator of the V. and S. Ry., with a view of the B.C.E.R. taking over the section of the line from Victoria to the nearest point of contact with its own line, thus making a loop line.

A. P. Barnhill, K.C., a director of the Canadian National Rys., is reported to have said in Montreal, June 20, that as soon as the St. John and Quebec Ry. is completed from Gagetown to the C.P.R. to Westfield, N.B., and the Fredericton-McGivney Jct. improvements on the old

Canada Eastern Ry. are done, it will be possible to run through trains between St. John and Montreal. The trains will start from the west side of the harbor in St. John, and reach Westfield over the C.P.R., running rights having been arranged for, thence over the St. John and Quebec Ry. to Fredericton, thence over the I.R.C. to McGivney Jct. and thence by the National Transcontinental Ry. to Levis, and from Levis by the Intercolonial to Montreal. It is expected that the new route will be opened up in September. The distance from St. John to Montreal, by the proposed route will be 660 miles, and trains leaving St. John at 3 p.m., will, it is said, be timed to reach Montreal at 8 o'clock on the following morning.

dispatches three times.

**Capt. Howard Reid**, recently of the Royal Air Force, who is acting as official starter of various flying machines in Transatlantic flights, making Newfoundland their starting point, is a son of Sir Wm. Reid, formerly President, Reid Newfoundland Co. He was one of twelve British airmen to start a flight from Mudros to Bucharest in 1916, across the Bulgarian and Turkish battle lines and thence northward to Russia and to England by way of Archangel. Only two of those who started finished the flight.

**Lieut. W. H. Roberts**, who has resumed duties in the C.P.R. ticket office at Edmonton, Alta., enlisted in the old 9th Battalion and served in France with a machine gun brigade. He was given a commission in Aug., 1917, and was awarded the Military Cross, for conspicuous gallantry at Amiens, in 1918.

**Lieut. E. E. Soper**, son of W. Y. Soper, Vice President, Ottawa Electric Ry. returned to Canada, June 5, after 3 years service overseas. He left Canada in 1916 with the Canadian Army Service Corps and on arrival in England was transferred to the Forestry Corps, and went to France as Quartermaster of No. 48 Company, which operated chiefly in Southern France. He returned to England in February. His wife returned to Canada with him, she having been engaged in war work as deputy administrator of the women's section of the Royal Air Force, at Bushey Park, near London.

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

Canadian Railway and Marine World readers who are returning to civil life from military, naval or other government service are strongly urged to send in items about themselves and about their friends who are in a similar situation. Items should give former position, describe character of military or other service and state the civil work to which the transportation official, etc., in question, is going. In the case of those with service abroad, information regarding the activities of the units to which they were assigned is especially desired.

**Troop Transportation Expenditures**—According to Canadian National Rys. statistics, the total number of troops

tion, Dec. 1, 1918 to May 31, 1919, 153,609 men were handled by special trains at Halifax, N.S., westerly, and 17,680 by regular trains. For home coming troops to the latter date, 353 special trains were used with a total mileage of 303,515.

### PERSONAL NOTES.

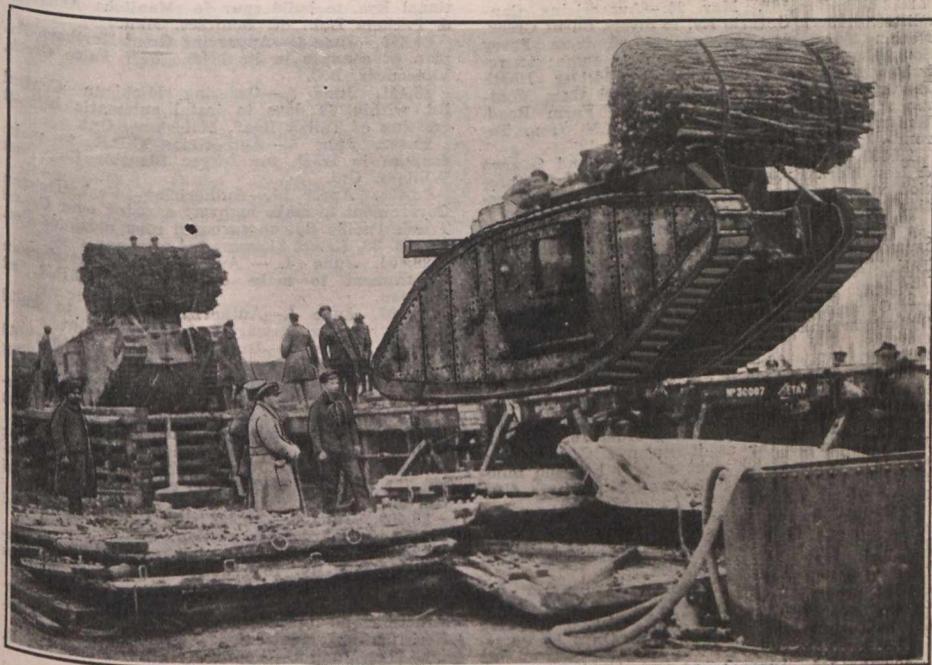
**Lieut.-Col. Blair Ripley**, D.S.O., formerly Engineer of Grade Separation, C.P.R., Toronto, who returned to Canada recently with the 1st Battalion, Canadian Railway Troops, of which he was O.C., has been made a Commander of the Order of the British Empire.

**Lieut.-Col. H. F. H. Hertzberg**, D.S.O., M.C., who has returned to Canada after

**C.P.R. Boys' Club, Montreal**—In connection with its welfare work, the C.P.R. has organized a club for the boys employed in the offices at the Windsor St. station, Montreal. The membership at its recent organization consisted of about 150 employes under 18 years of age. The club engages in various athletic and other amusements, and the members take up various branches of study connected with their work, 50% of the cost of instruction being borne by the company.

**Canadian National Rys. Headquarters**—A report that the C.N.R. headquarters were to be removed from Toronto to Montreal having been in circulation recently, the mayor of Toronto telegraphed Sir Robert Borden, protesting, and received the following reply:—"Your telegram regarding reported removal Canadian Government Railway headquarters from Toronto to Montreal, Government has no intention of any such proposal, nor has it been considered."

**The C.P.R. Social Club** was organized recently at Fort William, Ont. The officers elected are: Honorary President, A. F. Hawkins, Superintendent; Honorary Vice Presidents, the heads of all departments at the terminal; President, J. D. Callahan, Yard Office; Vice President, J. C. Watson, General Office; Secretary, Insp. M. A. Woodworth, Superintendent's Office; Treasurer, Insp. J. Rowe, Port Arthur, freight department. There is an executive committee representative of the employes of the different departments. The club aims at the promotion of more intimate intercourse among the staff of the different departments, and the fostering and encouraging of activities in all branches of sport. It is intended to equip club rooms for the members, the company having granted the use of rooms on the second floor of the freight and grain office for this purpose. We are advised that over 300 of the company's employes have already joined the club.



Tanks loaded on railway cars, on British Western Front, showing bundles of wood carried, to dump in deep trenches, to allow tanks to cross. Photograph loaned by C.P.R.

moved to camps and seaports east of Winnipeg, between Aug., 1914 and May 31, 1919, was 1,108,081. The estimated cost is based on a calculation of from \$10 to \$15 a man. Between Aug., 1914 and Nov. 30, 1918, the actual war period, the C.N.R. handled 462,240 men by special trains and 296,585 by regular trains all outward bound. The number of special trains required was 1,191 and the special train mileage was 808,359. From the commencement of demobiliza-

considerable service in France, is a son of A. L. Hertzberg, Engineer, Ontario District, C.P.R., Toronto. He went overseas as a lieutenant with the first contingent and in April, 1915, was wounded, while serving with the 1st Field Co. of the 3rd Brigade. In June, 1915, he was awarded the Military Cross for conspicuous gallantry and devotion to duty, and in Jan., 1918, received the Distinguished Service Order. In addition to these decorations he was mentioned in

## Orders by Board of Railway Commissioners for Canada.

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

General order 264. May 13.—Authorizing Bell Telephone Co.'s increased tolls for long distance service and on all toll rates and charges for exchange telephone service and charges incidental thereto, of 10%; service connection charge, so-called, to be disallowed, increased tolls for exchange service already installed to be effective July 1.

28,318. May 14.—Authorizing Grand Trunk Pacific Branch Lines Co. to build spur for Rocky Hard Collieries Ltd., in northwest  $\frac{1}{4}$ , Sec. 35, Tp. 47, Range 20, west 5th meridian, Alta.

28,319. May 14.—Approving plan of work to be done on Barons drain, under C.P.R., of South Dorchester Tp., Ont.

28,320. May 15.—Authorizing Canadian National Rys. to cross highways on its Melfort-Humbolt Branch between Sec. 4, Tp. 38, Range 22, and Sec. 33, Tp. 37, Range 22, between Secs. 23 and 21, Tp. 37, Range 22, and between Secs. 21 and 20, Tp. 37, Range 22, west 2nd meridian, Sask.

28,321. May 15.—Authorizing Esquimalt and Nanaimo Ry. to build spur for Victoria Lumber & Mfg. Co., Nanaimo, B.C.

28,322. May 12.—Approving G.T.R. plan of revised location of station at St. Agapit, Que.

28,323. May 16.—Relieving Canadian National Ry. from providing further protection at the crossing of Dawson Road, Man.

28,324 and 28,325. May 15.—Authorizing Canadian Northern Ontario Ry. to rebuild bridges over Mill Creek, Ont., mileage 59.25, from Montreal; and Squiers Creek, mileage 49.76, from Picton, Ont.

28,326. May 16.—Authorizing Canadian National Rys. to cross highway between Secs. 23 and 26, Tp. 38, Range 22, west 2nd meridian, Sask.

28,327 and 28,328. May 16.—Authorizing Canadian Northern Ontario Ry. to rebuild bridges over Cold Creek, mileage 38.13; and over Squiers Creek, mileage 51.35, from Picton, Ont.

28,329. May 16.—Authorizing G.T.R. to operate over crossing at Junction Cut, Ont., without first stopping.

28,330. May 14.—Approving agreement, Apr. 25, between the Bell Telephone Co. and North Brock Telephone Co. in Ontario County, Ont.

28,331. May 20.—Authorizing Canadian Northern Ontario Ry. to rebuild bridge over Black River, mileage 86.90, from Toronto.

28,332. May 21.—Relieving Montreal Tramways Co. and G.T.R. from protection at crossings of G.T.R. along the front of the city docks, and Dominion Coal Co.'s spur.

28,333. May 19.—Authorizing Niagara, St. Catharines and Toronto Ry. to build spur for A. Martin & Son, Thorold, Ont.

28,334. May 19.—Authorizing Grand Trunk Pacific Ry. to build spur for Penny Labor Co. at mileage 1,205, British Columbia.

28,335. May 20.—Authorizing Canadian National Rys. to cross highway between Secs. 22 and 23, Tp. 38, Range 22, on its Melfort-Humbolt Branch, Sask.

28,336. May 19.—Approving G.T.R. clearances at Robinson ash hoist, Brockville, Ont.

28,337. May 20.—Authorizing Canadian Northern Quebec Ry. to rebuild bridge over River Ouareau, mileage 7.29, from Joliette, Que.

28,338. May 20.—Authorizing Canadian National Rys. to cross highway between Secs. 10 and 15, Tp. 38, Range 22, on its Melfort-Humbolt Branch, Sask.

28,339. May 19.—Relieving Quebec, Montreal & Southern Ry. until Oct. 1, from complying with order 27,741, Oct. 1, 1918, re mixed trains service between Noyan Jct. and Lacolle Jct., Que.

28,340. May 19.—Ordering Canadian National Rys. to stop train 7 at Richmond, Ont., on Saturday nights.

28,341. May 20.—Authorizing Hydro Electric Power Commission of Ontario to build spur across Niagara, St. Catharines and Toronto Ry. on lots 77 and 90, Stamford Tp., Ont.

28,342. May 20.—Authorizing C.P.R. to open for traffic its second main track between Fairfield and West St. John, N.B., from mileage 0.07 to 1.11.

28,343. May 20.—Authorizing Canadian Northern Ontario Ry. to rebuild bridge over Chenail Ecart Creek, Hawkesbury, Ont.

28,344. May 20.—Authorizing Canadian National Rys. to rebuild bridge over Sinclair St., Cobourg, Ont.

28,345. May 20.—Authorizing Canadian National Rys. to build across highway between Secs. 3 and 4, Tp. 38, Range 22, on its Melfort-Humbolt Branch, Sask.

28,346. May 20.—Authorizing G.T.R. to rebuild bridge across Conestoga River, near St. Jacobs, Ont.

28,347. May 21.—Amending order 28,291, Apr. 28, re C.P.R. bridge near Atwater Ave., Montreal.

28,348. May 19.—Rescinding order 27,348, July

17, 1918, suspending C.P.R. and G.T.R. tariffs cancelling special commodity rates on glass bottles in carloads, Hamilton, Toronto and Montreal, and authorizing them to cancel special commodity rates on bottles in carloads from Wallaceburg made effective in pursuance of judgment of July 30, 1904, to take effect simultaneously.

28,349. May 2.—Authorizing Great Northern Ry. to discontinue train service between Grand Forks and Phoenix on Vancouver, Victoria & Eastern Ry. & Nav. Co., on condition that satisfactory freight service be furnished.

28,350. May 19.—Approving agreement, May 9, between Bell Telephone Co. and Welland County Telephone Co., Welland County, Ont.

28,351. May 21.—Ordering that crossing of Powell St., Vancouver, B.C., by the Vancouver, Victoria & Eastern Ry. & Nav. Co. (G.N.R.), to take up tracks to stop at northern boundary, Dominion Biscuit Co. property; Canadian National Rys. to extend the V.V. & E.R., over which it has running rights to south of Hastings St., northerly and easterly, crossing Powell St. and C.P.R. main line.

28,352 and 28,353. May 26.—Approving Bell Telephone's agreements with Ivy Thornton Telephone Co., Simcoe County, Ont., May 26, and Durham Road Telephone Co., Bruce County, Ont., May 8.

28,354. May 26.—Authorizing Canadian Northern Ontario Ry. to rebuild bridge over Talbot River, Mara and Thorah Tps., Ont., mileage 67 from Toronto.

28,356. May 26.—Authorizing Canadian Northern Ontario Ry. to rebuild bridge over Laronde River, Beauceage Tp., Ont., mileage 74.7 from Brent.

28,355. May 28.—Suspending pending hearing at Ottawa, June 10, tariffs of C.P.R., G.T.R., Canadian National Rys., New York Central Rd., Quebec, Montreal & Southern Ry., Napierville Jct. Ry. and Montreal & Southern Counties Ry., increasing, effective June 1, rates on milk in passenger or mixed train service.

28,357. May 23.—Amending order 28,147, Mar. 11, re maintenance of signalmen at G.T.R. crossing at Southwold, Ont., and Michigan Central Rd. at Appin, Ont.

28,358. May 27.—Authorizing Saskatchewan Government to build highway crossing over Canadian National Rys. on dead line between Secs. 6 and 7, east to Hague Ferry, Sask.

28,359 to 28,361. May 26.—Authorizing Canadian Northern Ontario Ry. to divert Burnt Creek, Neelon Tp., Ont., mileage 107.80 from Parry Sound, and to rebuild bridge over same; to rebuild bridge over South Nation River, North Plantagenet Tp., Ont., mileage 78.26 from Montreal; and to rebuild bridge over Farm Road, Whitechurch Tp., Ont., mileage 34.50 from Toronto.

28,362. May 26.—Ordering C.P.R. and Ottawa & New York Ry. to change timetables in connection with trains at Finch, Ont., and the connection there.

28,363. May 27.—Authorizing Grand Trunk Pacific Ry. to divert road allowance in northeast  $\frac{1}{4}$ , Sec. 2, Tp. 24, Range 9, in Stanley rural municipality, no. 215, Sask.

28,364. May 27.—Authorizing Canadian Northern Ontario Ry. to rebuild crossing over arm of Sydenham Lake, mileage 166.10 from Todmorden, Ont.

28,365. May 26.—Authorizing C.P.R. to build spur to Dryden ballast pit, Zealand Tp., Ont.

28,366. May 27.—Ordering G.T.R. to build farm crossing for J. Demers, St. Agapit Parish, Que.

28,367. May 26.—Rescinding order 16,128, Mar. 15, 1912, in so far as it exempts C.P.R. from erecting fences along right of way between mile-age 42.3 and 42.5, and 45.5 and 45.8, north side, such fencing to be done by June 30, 1919.

28,368. May 21.—Approving Canadian Northern Western Ry. location through Tps. 14 and 18, Ranges 6 and 9, west 4th meridian, Alta., from mileage 92.40 to 128.68.

28,369. May 21.—Dismissing application for order directing Lake Erie and Western Ry. (C.P.R.) to provide access to M. F. Muir's property on the river front at Brantford, Ont., by crossing beneath tracks.

28,370. May 30.—Authorizing Niagara, St. Catharines & Toronto Ry. to build spur for Clemens & Miller, Welland, Ont.

28,371. May 29.—Authorizing Canadian Northern Quebec Ry. to build spur for H. Walsh & Son, St. Andrews, Que.

28,372 to 28,374. May 29.—Authorizing Canadian Northern Saskatchewan Ry. to build across three highways in Saskatchewan.

28,375. May 29.—Authorizing C.P.R. to build spur for Canadian Co-operated Wool Growers, Ltd., in York Tp., Ont.

28,376. May 31.—Authorizing Canadian National Rys. to connect with Grand Trunk Pacific Branch Lines Co.'s line at Moose Jaw, Sask.

28,377. May 30.—Authorizing Canadian Northern Western Ry. to cross highway between Sec. 3 and 4, Tp. 17, Range 8, west 4th meridian, Alta.

28,378 to 28,382. May 29.—Authorizing Canadian Northern Saskatchewan Ry. to build across

five highways in Saskatchewan.

28,383. June 3.—Authorizing Canadian National Rys. to operate over portion of Victoria & Sidney Ry. (G.N.R.) from Sidney, B.C., to Canadian Northern Pacific Ry. crossing, for three months from date.

28,384. May 30.—Authorizing G.T.R. to take certain land for track for suburban trains, new team tracks and house tracks serving new freight shed near Point St. Clair, Que.

28,385. May 31.—Authorizing Town of Drumheller, Alta., to make highway crossing over Canadian National Rys. Y on Third Ave.

28,386. June 4.—Authorizing C.P.R. to build spur for B. Blair Co., Blandford Tp., Ont.

28,387. May 30.—Approving agreement between Bell Telephone Co. and Imperial Munitions Board Liquidation Committee, dated May 17, re operating exchange at Nobel, Ont.

28,388. May 30.—Authorizing Canadian Northern Western Ry. to cross 26 highways in Alberta.

28,389. June 5.—Authorizing McDougall Tp., Ont., to make highway crossing over Canadian National Ry. at Lot 28, Con. 6.

28,390. June 5.—Approving plans and specifications of work on Parent outlet relief train on G.T.R. lands, Sandwich East Tp., Ont.

28,391, 28,392. June 2.—Authorizing Canadian Northern Saskatchewan Ry. to cross two highways in Saskatchewan.

28,393. May 31.—Approving Canadian National Rys. plan of alterations to station building at Kamsack, Sask.

28,394. June 5.—Approving changes in G.T.R. spur for Steel Co. of Canada, Belleville, Ont.

28,395. June 2.—Amending order 27,996, Jan. 8, re protection by C.P.R. at street crossings in Peterborough, Ont.

28,396. May 31.—Ordering Canadian National Rys. to move portable station at Runnymede, Sask., to 50 ft. east of east switch and to make road past station and adjoining road allowance.

28,397. May 29.—Amending order 25,540, Oct. 17, 1916, re protection of crossing of C.P.R., Canadian National Rys. and G.T.R. in Riverdale Park, Toronto.

28,398. May 28.—Authorizing Lake Erie & Northern Ry., Toronto, Hamilton & Buffalo Ry., and G.T.R. to operate over interchange track at Brantford, Ont.

28,399. May 31.—Authorizing Canadian National Rys. to build spur for Manitoba Abattoir & Packers Ltd., St. Boniface, Man.

28,400. June 4.—Approving Great Northern Ry. plan of changes in its bridge over False Creek, Vancouver, B.C.

28,401. June 5.—Ordering Michigan Central Rd. within 60 days to instal automatic bell at crossing of Talbot Road, Maidstone, Ont.

28,402. June 6.—Authorizing C.P.R. to make changes in track for Dwyer Elevator Co., Fort William, Ont.

28,403. Apr. 19.—Authorizing Saskatchewan Government to make highway crossing over Grand Trunk Pacific Ry. on surveyed road north of Sec. 29, Tp. 39, Range 21, west 3rd meridian.

28,404. June 4.—Authorizing Saskatchewan Government to make crossing over C.P.R. at Amazon.

28,405. June 4.—Authorizing G.T.R. to build branch line for Stewart Ltd., Sarnia, Ont.

28,406. June 2.—Ordering C.P.R. within 60 days to instal two automatic bells at crossing of Anderson St., Grenfell, Sask.

28,407. June 6.—Authorizing Canadian Northern Pacific Ry. to build spur for Queen Bess Mine, Lot 1652, Kamloops Land District, B.C.

28,408. June 6.—Approving clearances for Canadian National Rys. overhead unloading apparatus for tank cars, to be erected for Imperial Oil, Sarnia, Ont.

28,409. June 6.—Authorizing C.P.R. to rebuild bridge near Ardendale station, Ont.

28,410. June 6.—Authorizing Canadian Northern Ontario Ry. to rebuild bridge over Seguin River, at Parry Sound, Ont.

28,411. June 6.—Approving G.T.R. plan of construction and location of passenger shelter, at St. Henri station, Montreal.

28,412. June 9.—Approving relocation of C.P.R. station at Coldwater Jct., Ont.

28,413. June 4.—Ordering Canadian National Rys. to make certain alterations in station at Balduf, Man., to be completed by Aug. 1.

28,414. June 4.—Ordering G.T.R. to divert road allowance between Cons. 4 and 5, Raleigh Tp., Ont., to make it cross tracks at right angles with turns outside of right of way.

28,415. June 4.—Approving Michigan Central Rd. clearances at belt conveyor for Queenston Quarry Co., St. Davids, Ont.

28,416. June 9.—Ordering C.P.R. to appoint male caretaker at Laval Rapids, Que., to see that station is kept clean and in proper condition for l.c.l. freight and express and for passengers.

28,424. June 11.—Authorizing Canadian National Rys. to build spur for Manitoba Coal & Development Co., Drumheller, Alta.

28,425. June 11.—Authorizing Dominion Government to build highway over C.P.R. near Lake Louise, Alta.

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**TORONTO, CANADA, JULY, 1919.**

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**Canadian Northern Ry.**—There has been filed with the Secretary of State at Ottawa duplicate of a lease, dated May 1, made by Canadian Northern Rolling Stock Ltd., to the Canadian Northern Ry. of certain rolling stock, attached to which is an assignment of the same to the Girard Trust Co.

**Grand Trunk Ry.**—The Dominion Parliament has authorized the company to issue additional perpetual consolidated 4% debenture stock, in such amounts as the proprietors of the company entitled to vote shall from time to time determine, provided that the aggregate amount of the interest to be paid annually on the stock to be issued under the present act shall not exceed £100,000. Such stock is to rank equally and be consolidated with the present consolidated debenture stock, and the holder shall be entitled to the same voting powers. The proceeds of the stock issued may be applied in the exercise of any of the powers specifically conferred upon the company, and for the company's general purposes.

A special meeting of shareholders was called to be held in London, Eng., June 30, to approve of the act, and authorize the directors to exercise the powers conferred by the act.

**Grand Trunk Pacific Ry.**—The Dominion Parliament has confirmed the two orders in council under which the Minister of Railways was appointed Receiver for the G.T.P.R. and its subsidiary companies. These orders were given in full in Canadian Railway and Marine World for April.

**Grand Trunk Pacific Ry.**—The Premier of Saskatchewan is reported to have stated, June 5, that the Saskatchewan Government had paid the interest due on the bonds issued by the Grand Trunk Pacific Ry., and subsidiary companies, in respect of branch lines in the province, the payment of which had been guaranteed by the Saskatchewan Legislature. The half year's interest, due May 1, amounted approximately to \$260,000.

**Roberval-Saguenay Ry.**—The Saguenay Pulp and Power Co., which owns the Roberval-Saguenay Ry. Co.'s stock, placed on the market, June 9, an issue of \$5,500,000 6½% serial gold bonds, dated June 1. They are issued in denominations of \$100, \$500 and \$1,000 and are redeemable as to \$100,000 on July 1, 1921, and in increasing amounts on each succeeding July 1, until 1934, when the balance of \$2,476,000 will become due. The security for the issue includes \$1,333,000 of 7% bonds, \$800,000 or 6%, non-cumulative preferred shares, and \$1,200,000 ordinary shares of the Roberval-Saguenay Ry., these being the entire bonds and shares issued by the company. The profits of the railway for the year ended Dec. 31, 1918, are stated to have been \$105,002.88. The directors of the Saguenay Pulp and Power Co. include: Hon. F. L. Beique, a director of the Canadian Pacific Ry., and Hon. J. M. Wilson, a director of the Montreal Tramways Co.

**Rutland Rd.**—There has been deposited with the Secretary of State at Ottawa an agreement dated April 5, between the company and the Guaranty Trust Co. of New York, supplemental to the lease of April 1, 1913, establishing the Rutland Rd. Equipment Trust of 1913.

**Toronto, Hamilton and Buffalo Ry.**—

Following are the directors for the current year, elected at the annual meeting in Hamilton, Ont., June 3:—H. B. Ledyard, J. N. Beckley, W. K. Vanderbilt, Jr.; Lord Shaughnessy, D. W. Saunders, W. P. Torrance, E. W. Beatty, W. L. Scott, A. K. Harris, Grant Hall, A. H. Smith.

**Rolling Stock Orders and Deliveries.**

The C.P.R., between Apr. 13 and June 14, ordered 3 vans from its Winnipeg shops.

The C.P.R., between Apr. 13 and June 14, received the following additions to rolling stock: 108 flat cars, and 7 locomotives, from its Angus shops; and 4 vans from its Winnipeg shops.

The Canadian Locomotive Co. has made no deliveries of locomotives on order since those last mentioned in Canadian Railway and Marine World on account of the plant being closed owing to a strike.

The G.T.R. has received 4 switching locomotives from its Montreal shops, leaving 5 of an order of 20 under construction there. A full description of these locomotives was given in our last issue.

The National Steel Car Co., between May 13 and June 12, delivered 427 box cars, 40 ft. long, to Canadian National Rys., and is continuing delivery of railway material to the Federated Malay States Government.

Canadian National Rys. has invited tenders for the construction of 20 steel postal cars and 20 steel first class passenger cars. The postal cars are to be supplied with the latest Canadian Railway Mail Service's requirements and also with those of the U.S. Railway Mail Service. They are to be 73½ ft. long.

Canadian Car and Foundry Co., between May 13 and June 12, delivered to Canadian National Rys. 347 steel frame box cars, completing an order for 5,000; 41 colonist cars; 142 ballast cars, and 22 Eastman heater cars, which were equipped at the company's Amherst plant. It has also delivered 6 electric locomotives to the Hydro Electric Power Commission of Ontario, and 23 refrigerator cars, which have been repaired at Montreal, to the G.T.R.

**Quebec Board of Trade on Government Ownership of Railways.**

The Quebec Board of Trade passed the following resolution recently:—"That the President be requested to write to Sir Robert Borden, Prime Minister, stating that while quite understanding that urgent reasons compelled the government to take over and operate the National Transcontinental Ry. and the Canadian Northern Ry., the Quebec Board of Trade would respectfully suggest that it would not be wise for the government to take over and assume the indebtedness of any other railway, at least until two or three years trial of the roads they are now operating shall have proved whether this can be done with advantage and without increasing the already very heavy financial burdens of the country. An opportunity to ascertain, by a little delay, would seem prudent, in view of the enormous losses sustained by the United States Government in operating the railways of that country, even with increased rates, and in view of our own experience with the Intercolonial Ry."

### Canadian Pacific Railway Trans-Canada Trains.

As announced in advance, in Canadian Railway and Marine World for June, the C.P.R.'s new Trans-Canada Limited started running on June 1, the first westbound train leaving Montreal at 3.30 p.m. and reaching Vancouver, Jan. 6 at 10 a.m., making the annual running time for the 2,885.8 miles, 93½ hours. It was never behind time on the whole run, and at some points exceeding its schedule, and it could have reached Vancouver considerably earlier.

As stated above, the running time from Montreal to Vancouver is 93½ hours. From Toronto to Vancouver it is 89¾ hours. Eastbound the running time is, from Vancouver to Montreal, 92¼ hours, and from Vancouver to Toronto, 88 hours.

On leaving Montreal the train had about 100 passengers and picked up others en route. The highest number of passengers was 125. The passengers on the cross country flight were largely from Boston, New York, Washington, D.C., and San Francisco. Some left at

sleeping car, Vancouver to Montreal; standard sleeping car, Vancouver to Winnipeg, Winnipeg to Montreal; standard sleeping car, Winnipeg to Fort William; compartment car, 1 drawing room, 7 compartments, Winnipeg to Toronto; compartment observation car, 1 drawing room, 3 compartments, Vancouver to Montreal.

The new trains, east and west, require for their operation, 59 sleeping cars, the value of which at present prices is approximately \$2,478,000; fifteen dining cars, \$750,000; twelve observation cars, \$480,000; five compartment cars, \$210,000; twelve baggage cars, \$180,000, and 24 locomotives, \$1,464,000; making a total of \$5,762,000 on a very conservative estimate. The labor cost is less easy to compute, but each train itself requires 12 train crews, and 24 locomotive crews.

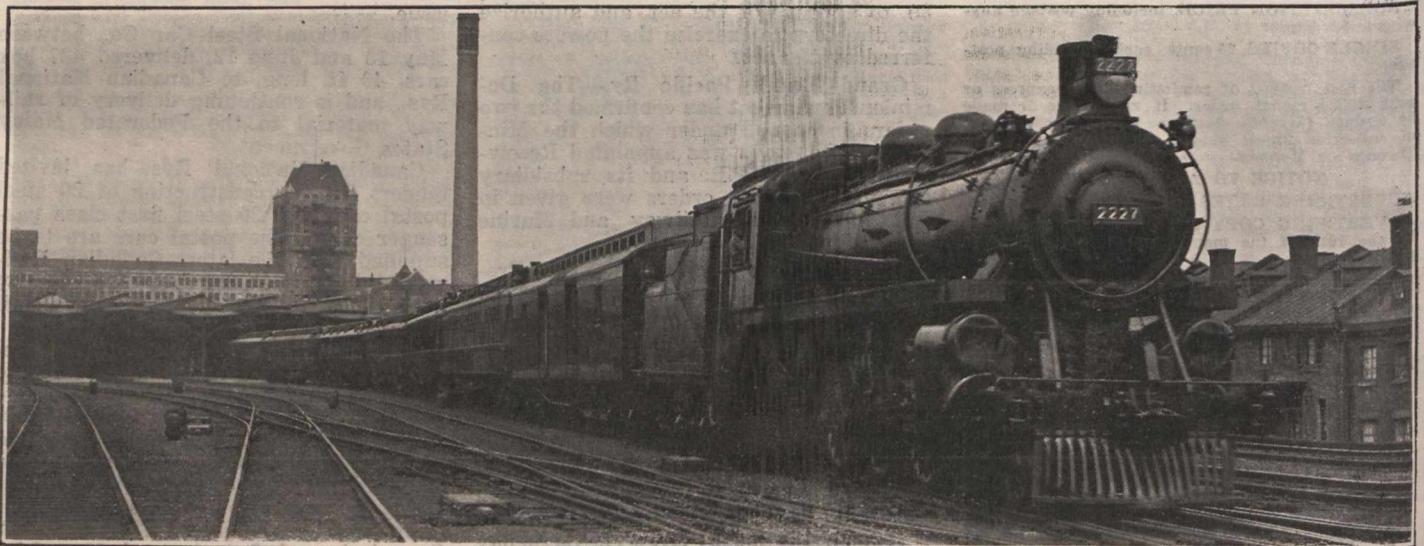
The first westbound train carried many photographers, who took views en route.

### Steel Rails Ordered for Canadian National Railways.

Following is a copy of a report of a committee of the Privy Council, approved

Minister, on the advice of the Deputy Minister of the Department of Railways and Canals, recommends that authority be given for entry into a contract with the Algoma Steel Corporation for 10,000 gross tons of 85 lb. steel rails; the price per ton not to exceed the actual cost of production as ascertained by the Minister of Railways and Canals upon investigation, and in no event to exceed \$50 a ton, or such lesser price as may be agreed upon with the Canadian Pacific Railway Co. for any rails which may be rolled for them by the Algoma Steel Corporation, at any time prior to Sept. 15, 1919, the said rails to be used on the Canadian National Railways and to be rolled in accordance with the same specifications as used by the company in manufacturing the rails covered by their recent contract of Jan., 1919. The committee concur in the foregoing recommendation and submit the same for approval."

The contract as above outlined was accepted by W. C. Franz, President Algoma Steel Corporation, in a letter to the Deputy Minister, in which he said:—"Referring to order in council, dated June 2, 1919, covering purchase of 10,000 gross tons of 85 lb. rails. We are quite agree-



Trans-Canada Limited Train, Canadian Pacific Railway, leaving Windsor Street station, Montreal, June 1, 1919, on its first run to Vancouver. B.C., 2885.8 miles.

Banff, but the majority went through.

Following are particulars of the equipment of the Trans-Canada Limited trains. Train 7, from Montreal to Vancouver, and train 9, from Toronto to Sudbury, where it is consolidated with train 7: Dining car Montreal to Vancouver; Toronto to Sudbury, standard sleeping car, Montreal to Vancouver; standard sleeping car, Montreal to Winnipeg; Winnipeg to Vancouver; standard sleeping car, Toronto to Vancouver; standard sleeping car, Toronto to Winnipeg, Winnipeg to Vancouver; standard sleeping car, Fort William to Winnipeg; standard sleeping car, Winnipeg to Vancouver; compartment car, 1 drawing room, 7 compartments, Toronto to Winnipeg; compartment observation car, 1 drawing room, 3 compartments, Montreal to Vancouver.

Train 8, from Vancouver to Montreal, and train 10, from Sudbury to Toronto: Dining car, Vancouver to Montreal; Sudbury to Toronto; standard sleeping car, Vancouver to Winnipeg; standard sleeping car, Vancouver to Toronto, standard sleeping car, Vancouver to Winnipeg, Winnipeg to Toronto; standard

by the Governor-General, June 6, 1919:—"The committee of the Privy Council have had before them a report, dated June 2, 1919, from the Minister of Railways and Canals, representing that the Algoma Steel Corporation have advised that, as the production of munition steel now has ceased, they are without orders with which to keep their plant running, and that if this continues, they will be forced to close down their plant, throwing 2,000 and 3,000 men out of employment. That a deputation of the employees of this company recently had an interview with the Minister of Railways and Canals, and drew attention to the fact that the closing down of the plant would throw them out of employment, leaving them with no means of supporting their families.

"That the matter has been taken up with the management of the Canadian National Railways, who advise that an additional quantity of steel rails, up to 10,000 tons, could be used by them in work which has not been laid out for the present season, but which it would be advisable to have carried out this year, if the rails required are available. The

able to accept all conditions regarding daily tonnage, and price to be actual cost not exceeding \$50 a ton. However, the last clause referring to C.P.R., we ask to apply on any rails we might sell to the C.P.R. prior to Sept. 15, 1919, as we now have a balance due that company on old contract made in 1917, that was at a price of \$33 a ton, that we would like to be free to roll at any compromise price we might make with the C.P.R. when this tonnage is supplied them."

The Canadian Railway and Marine World is advised that the 10,000 tons of rails are to be used to replace 60 lb. rails on the Saskatoon-Calgary Line.

**Business at National Transcontinental Ry. Stations**—The Minister of Railways stated in the House of Commons, June 4, in reply to a question, that it was not in the interest of the Canadian National Rys. System that information as to the business done at each station, either by way of receipts or cars received, or dispatched, should be given to competing systems. The request was that this information be given for each station on the Transcontinental Ry. for each month.

## Canadian National Railways Construction, Betterments, Etc.

**Appropriations for Construction and Betterments**—The Minister of Railways informed the House of Commons, June 5, when the vote of \$11,121,681 for construction and betterments on the Canadian Government Railways came up for consideration, that the amount included \$6,004,140 for work on lines east of Quebec; \$1,600,000 for the Halifax Terminals; \$500,000 for branch lines in New Brunswick; \$993,208 for work on the National Transcontinental Ry. west of Fort William; \$524,333 for the mechanical department, and \$1,500,000 for general appropriations in connection with construction and betterments.

**Prince Edward Island Ry.**—In connection with the vote on account of \$11,121,681 for construction and betterments on the Canadian Government Rys., the Minister of Railways said in the House of Commons, June 5, that it was decided last year to standardize the gauge of the P.E.I.R. between Port Borden and Summerside so that standard gauge cars could be loaded between these points and taken over the main line. That work was started and proceeded with as rapidly as possible. The present information is that if labor can be obtained during the summer, it will be possible to operate standard gauge cars into Summerside and Charlottetown. It is not intended to standardize the line any further than Charlottetown or Summerside during this year. After the rails are laid there will be a lot of work to do in putting the road in shape, and it is felt that under present financial conditions the government would not be justified in proceeding further during this year. It is the government's intention to standardize the whole line, but the Minister could not say how much will be done next year.

**Prince Edward Island Car Ferry**—Tenders were received to June 28 for improvements, including dredging, of the entrance channel and turning basin at the car ferry terminal at Cape Tormentine, N.B.

**Halifax Ocean Terminals**—Tenders were received to June 30 for the construction of a train shed at Halifax, N.S., as part of the Halifax ocean terminals plans. Ross and McDonald, Montreal, are the architects.

**Orangedale to Cheticamp Branch**—A public meeting at Inverness, N.S., May 24, passed a resolution asking the Dominion Government to build a branch line from the Intercolonial Ry. at Orangedale, mileage 153, on the Truro-Sydney line, to Cheticamp. The meeting appointed a railway extension committee for the Inverness County, and also a delegation to go to Ottawa to present the resolution. A press report of the meeting says that reports on the route and the prospects of traffic were made to the government in 1912 and 1914.

**Pugwash, N.S., Spur**—The Minister of Railways stated in the House of Commons, June 4, that the cost of the spur from the I.R.C. main line to the brick yards at Pugwash, N.S., was \$92,452.67, and that the work was completed, Aug. 28, 1918. There were four claims outstanding in respect of right of way, which were in course of settlement, the total amount involved being \$694.78. The same freight rates apply on traffic from and to the Nova Scotia Clay Works spur line, as from Pugwash itself, except on shipments of ore, on which there is a

switching charge of 1c per 100 lb. The total receipts from such switching charges to Mar. 31, were \$82.40. The total tonnage handled over the spur from date of opening to Mar. 31, 1919, was 2,479 tons, and the total earnings therefrom from originating point to destination were \$5,167.63. The Nova Scotia Clay Works is to pay rental for this spur of \$1,700 a year for 15 years.

**Second Track on Intercolonial Main Line**—We are officially advised that new second track is to be built this year between Truro and Belmont, mileage 0 to 7.57, and between Springhill Jct. and Maccan, mileage 59.54 to 68.67. Between Truro and Belmont there will be only slight changes in alignment on curves, and the gradients will remain unchanged, except slightly at a few locations.

On this stretch there are three bridges to be doubletracked, the following being the details: Salmon River bridge being 0.6, two 105 ft. deck plate girder spans, each track; new abutments and pier to be built and new steel placed; existing spans to be removed; old piers and abutments to be dismantled to bed of stream. North River bridge, mile 2, two 105 ft. truss plate girder double track spans; new abutments and pier to be built and new steel to be placed; existing spans to be removed; old abutments to be dismantled. Belmont River bridge, mileage 7.3, two 105 ft. truss plate girder double track spans; new abutments and pier to be built and new steel spans placed; existing spans to be removed and old abutments and pier to be dismantled.

Between Springhill Jct. and Maccan there will be a few slight changes in alignment and curves, also some slight changes in gradients, to make same more uniform and to take out small snags. On this stretch there is one bridge to be doubletracked, at Little Forks, mileage 62.9, consisting of one 104½ ft. deck plate girder span, with one 35 deck plate girder span at either end for each track, the existing 104½ ft. deck plate girder span to be raised; new substructure consisting of 2 piers and 2 abutments for double track.

Tenders for grading for the above work were received to June 28, the work being as follows:—

Grading for one additional main line track, between Truro and Belmont, N.S., for approximately 7.57 miles, partly on the right side and partly on the left side of the present track.

Grading for one additional main line track between Springhill and Maccan, Amherst Subdivision, N.S., for approximately 9.13 miles, partly on the right side and partly on the left side of the present track.

Tenders were also received to June 28, for the following second track and diversion work:—

Grading for double track railway at Moncton, N.B., approximately 3.35 miles, consisting of grading on the north side of and parallel to the present track on the St. John Subdivision from mile 1.44, to 2.53, both approximate, and grading for double track from mile 2.53, St. John Subdivision, to mile 3.50, Newcastle Subdivision.

Grading for double track diversion from mileage 108.21 to 112.91, on Chaudiere Subdivision, between Ste. Rosalie and Charlotte, Que.

Fredericton - McGivney Jct. Better-

ments—We were officially advised, June 11, that work had not then been started on the improvement of the section of the old Canada Eastern Ry., between Fredericton and McGivney Jct., N.B., which is to be used in connection with the through route from the National Transcontinental Ry., via the St. John and Quebec Ry. to St. John, N.B.

**Grand Lake, N.B.**—The proposal for the building of a 5-mile spur line from the National Transcontinental Ry. to the Grand Lake coal areas of New Brunswick, has, we are officially advised, been considered by Canadian National Rys. executive and it has been decided not to build it.

**Double Track Bridge Near Sackville**—Tenders were received to June 28 for the construction of the substructure for a double rack railway bridge over the Tantramar River, about a mile east of Sackville, N.B., on the I.R.C. main line.

**Section Houses**—Tenders were received to June 28 for building section houses at the following points:—Napadogan Subdivision-Pacific Jct.; Alward, Pangburn, North Cains, N.B.; Edmundston Subdivision-Juniper, Summit, N.B.; Leonard Subdivision—Grog Brook, N. Grog Brook, Sirios, N.B.; Monk Subdivision—Lapointe, Picard, Bretaque, Lefebvre, Que.; Quebec Subdivision—Hervey Jct.; Lac Chat, Que.; Fitzpatrick Subdivision—Hibbard, Que.; Parent Subdivision—Parent, Monck, Que.; Doucet Subdivision—Vilmontel, Que.

Tenders were received to June 28 for the construction of a coaling plant and sand house at Sydney, N.S., and a freight shed at Rothesay, N.B.

Tenders were received to June 28, for the erection of three dwellings at Napadogan, N.B.

**St. Ubalde, Que.**—A press report states that "the Canadian National Rys. contemplates building a spur line near St. Ubaldo to connect with new mines." We cannot locate St. Ubaldo, but there is a St. Ubalde, in Portneuf County, the nearest station to which is St. Casimir, mileage 124, from Montreal on the Canadian Northern Ry. to Quebec, and mileage 505 on the National Transcontinental Ry. from Moncton.

**St. Malo Shops**—We are officially advised in connection with the track to be laid at the St. Malo Shops, Que., that it is not intended to build a new line connecting the shops with the main track, that line being already laid, but that it is intended to relay some of the tracks leading to the car and erecting shops.

The shops were expected to be partly opened before the end of June.

**Cap Rouge to Portneuf, Que.**—Tenders were received to June 21 for rock filling, riprapping, broken stone ballasting, etc., on the St. Lawrence Subdivision between Cap Rouge and Portneuf. This work is in connection with the rebuilding of the washed out roadbed and track between the places named.

**National Transcontinental Ry.**—Tenders were received to June 30, for the erection of no. 1 section houses at Frederick, Hunta, Moonbeam, Savoff, Jacobs, Fowler, Superior Jct., Quibell, Dugald, and Oscar, east and west of Superior Jct., Ont. J. Schofield, is the railway's architect at Winnipeg.

**Toronto-Sudbury Line Betterments**—Tenders were received to June 28 for the

construction of concrete culverts and bridge abutments between mileage 56, Pefferlaw, and 94, Sparrow Lake, on the Muskoka Subdivision; and for concrete culverts and bridge abutments and piers between mileage 82, Porlock, and 108, Coniston, on the Sudbury Subdivision.

**Port Arthur Elevator**—Tenders were received to June 30 for the construction of the superstructure of a grain elevator workhouse of about 700,000 bush. capacity, with unloading shed and complete elevator equipment at Port Arthur, Ont. The plans, specifications, etc., were given out to tendering firms by C. D. Howe & Co., consulting engineers, Port Arthur.

**Port Arthur Locomotive House**—A press report states that a 5-stall addition is to be made to the locomotive house, and that the foundation under the turntable will be replaced this year.

**Prairie Provinces Extensions**—In further reference to the matter published under this head in Canadian Railway and Marine World for May, we have been officially advised that on the Amaranth extension the 35 miles to be built is divided into two parts, 15 miles to be added northerly from Amaranth, Man., the other 20 miles to be added to the St. Rose du Lac branch, which leaves the main line at Ochre River, running easterly, and is at present in operation to St. Rose du Lac, Man. This 20 miles is to be graded in northerly and northwesterly from the present end of grade, 9 miles from St. Rose du Lac. The grading to be done on the Swift Current extension is let for 27 miles instead of 25 miles as mentioned in the article referred to above.

In connection with this latter line, we are advised that the firm of Gibbs Bros., to which the contract was let, consists of J. N. F., D. C. and W. C. Gibbs, the latter of whom is Manager. The work was started May 15, and is in charge of D. C. Gibbs, who has his headquarters at Gravelbourg, Sask.

The Western Construction Co., to which was let the contract for the construction of the 23 mile extension of the Luck Lake branch, is a recently incorporated company in which Jas. Miller and L. Parke, are principally interested. The company's headquarters are at North Battleford, Sask.

**Western Lines Locomotive Houses**—We are officially advised that the locomotive houses to be built at Kamsack, Humboldt and North Battleford, Sask, will have brick walls, mill construction, supports and roofs, and concrete pits, the stalls being 100 ft. long. The buildings at Kamsack and Humboldt will have 10 stalls, and that at North Battleford, 15. The machine shop attached to each will be of similar construction, 30 x 80 ft.

**Water Supply at Wartime, Sask.**—Tenders were received to June 20 for the construction of a water supply pipe line at Wartime.

**Rosebud Diversion**—Tenders were received to June 19, for the construction of stream diversions at mileages 324 and 332, Calgary Subdivision.

**Hanna-Medicine Hat Line**—The Secretary of the United Farmers of Alberta is reported to have received a letter recently from A. E. Warren, General Manager Western Lines, in which he said that it was hoped to begin operations on the Hanna-Medicine Hat Line in three or four weeks, and that it would take about six weeks to lay the track from the

present railhead, mileage 11.8, to the river.

**Kamloops-Kelowna-Lumby Line**—We are officially advised that this line will have a total length of 132 miles. It is already built from the Canadian Northern main line across the Thompson River into Kamloops (see Canadian Railway and Marine World, Mar., pg. 128), and the contract let recently to John W. Stewart & Co., Winnipeg, is for the comically advised that the line running from Kamloops through Armstrong to Vernon is 83.7 miles long; the line from Vernon to Kelowna, is 33 miles long, and the line from Vernon to Lumby is 15 miles long. The route from Kamloops is along the southern bank of the Thompson River, then along Monte Creek to Monte Lake, and across the Grande Prairie County to Ashcroft, Armstrong and Vernon, where the line branches, one section running easterly for 15 miles to Lumby, and the other southerly via Long Lake, to Kelowna, on Okanagan Lake. The maximum gradient is 1.56%, and the maximum curvature 10 deg., there are no large bridges on the line, but there will be a number of timber trestles.

A recent press report states that sub-contracts have been let for the grading approximately 10-mile sections to Rankin Bros., Carleton and Barber; Lieut.-Col. McDonald, Major Stewart and Capt. McLeod.

**New Westminster to Vancouver, B.C.**—We are officially advised in connection with the press report referred to in our last issue as to a proposed line from New Westminster to South Vancouver, that it is intended to build the line from the south end of the bridge over the Fraser River into New Westminster, approximately a mile. Until the surveys, which are to be extended beyond New Westminster are completed, no decision can be reached as to further construction, route, etc.

**Vancouver Island Lines**—Tenders were received recently for erecting a pile trestle on a spur line to Cameron Mill, Selkirk Water, Victoria, B.C.

Tenders were received recently for grading the company's railway terminal north of Point Ellice bridge, Victoria, B.C. A press report states that the work to be done requires the removal of about 40,000 cubic yards of material from the area between Point Ellice bridge and the southern end of the Selkirk Water bridge. (June, pg. 318).

**Alien C.P.R. Stockholders**—The Quebec Court of Appeal has dismissed the C.P.R.'s appeal from an order of the Superior Court under sec. 28 of the Consolidated Orders in Council respecting trading with the enemy. Under this order approximately \$22,000,000 of C.P.R. stock held by or on behalf of Germans, was given into the charge of the Finance Minister as custodian. Counsel moved, on behalf of the Secretary of State, to dismiss the appeal on the following grounds: That the Superior Court was exercising special statutory jurisdiction and acting as a curia designata; that no right of appeal existed under the statute or otherwise; that the judgment appealed from was not a final judgment, and did not order the doing of anything which could not be remedied, and did not decide the issues in whole or in part; that there was concurrent jurisdiction in the Court of King's Bench and the Superior Court created by the order in council; and that the appellant had no interest in prosecuting this appeal.

**Canadian National Railways Earnings.**

The gross earnings of the system from Jan. 1, compared with those for the same period of 1918, are as follows:

	1919	1918
January .....	\$ 6,744,018	\$ 4,696,567
February .....	6,000,342	4,421,504
March .....	6,827,491	5,710,660
April .....	6,909,632	7,165,890
May .....	7,518,244	6,580,745
	\$33,999,727	\$28,575,366

Approximate gross earnings for two weeks ended June 14, \$2,924,017, against \$2,980,286 for same period, 1918.

**Canadian Pacific Railway Earnings, Expenses, Etc.**

Gross earnings, working expenses, net earnings, and increases or decreases, from Jan. 1, 1919, compared with those of 1918:

	Gross	Expenses	Net	Increases or decreases
Jan. ....	\$13,028,328	\$11,474,816	\$1,553,512	\$ 385,519
Feb. ....	11,064,167	10,083,051	981,116	390,218
Mar. ....	12,374,182	10,835,188	1,539,044	*1,453,737
	\$36,466,677	\$32,393,005	\$4,073,672	*\$678,000
Incr. ....	\$ 3,674,643	\$ 4,352,643		
Decr. ....			\$ 678,000	

\*Decreases.  
Approximate earnings for April, \$12,780,000; May, \$13,277,000, and for two weeks ended June 14, \$6,019,000, against \$13,007,000; \$13,024,000, and \$5,760,000, for same periods respectively in 1918.

**Grand Trunk Railway Earnings, Expenses, Etc.**

Gross earnings, working expenses, net earnings and increases or decreases compared with those for 1918, from Jan. 1, 1919:

	Gross	Expenses	Net	Increases or decreases
Jan. ....	\$ 4,405,402	\$ 5,121,779	x\$ 716,377	*\$ 81,816
Feb. ....	4,090,800	4,401,019	x 311,219	660,372
Mar. ....	5,517,223	4,676,174	841,049	763,616
Apr. ....	5,360,896	4,604,585	756,311	93,047
	\$19,374,321	\$18,803,557	\$ 569,764	\$1,435,219
Incr. ....	\$ 5,318,527	\$ 3,883,308	\$1,435,189	

xDeficits. \*Decreases.  
Approximate gross earnings for May, \$5,272,060, and for two weeks ended June 14, \$2,288,670, against \$4,863,585, and \$2,126,210 for same periods respectively in 1918.

**Canadian Northern Ry.'s Winnipeg Taxes**—The Canadian Northern Ry., and the Winnipeg City Council were reported, June 14, to have reached an agreement with regard to local taxes. The city, is said to have agree to accept \$100,000 in full payment of all taxes due by the company as owner or lessee for the periods ended Dec. 31, 1917, and Dec. 31, 1918, the company to pay all the local improvement assessments against its lands in the city from and including the year 1918.

**Railway Lands Patented**—Letters patented were issued during May for Dominion railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acres.
Alberta & Great Waterways Ry.....	31.84
Canadian Northern Ry.....	940.70
Edmonton, Dunvegan & British Columbia Ry. ....	16.60
Grand Trunk Pacific Ry.....	8.92
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.....	69.70
Total.....	1,067.76

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

**British America Nickel Corporation**—We are officially advised in connection with a press report as to the construction of a line from Nickelton to Sudbury, Ont., that the company has made a survey for such a line, but has no immediate intention of building it. J. H. Gillis, Nickelton, Ont., is the company's Superintendent of Construction. (June, pg. 313).

**Burrard Inlet Tunnel and Bridge Co.**—A deputation from the Vancouver area headed by the mayor of North Vancouver, B.C., waited on the Dominion Government at Ottawa recently to urge that the Dominion undertake the construction of the projected bridge across the Second Narrows of Burrard Inlet, as a part of the projected Vancouver harbor works. It is reported that the delegation was informed that the appropriations include amounts for a car ferry and terminal railway to serve the North Shore industries, and that the question of the erection of a bridge is one more for the consideration of the British Columbia Government and for the municipalities than for the Dominion Government. (June, pg. 313).

A delegation which visited Ottawa recently in connection with the projected bridge over the Second Narrows of Burrard Inlet, is reported to have made the following report to the north shore reconstruction committee, on June 10:—"The bridge is accepted as a definite part of the whole scheme of harbor development; the Minister of Marine is heartily in favor of its construction when finances will permit; when built it will be financed by the harbor board, Canadian National Rys., and the municipalities with possible provincial government assistance; there is still a possibility of obtaining a portion of the \$5,000,000 appropriation for harbor improvements; Commissioner McClay has declared his intention of standing for the appropriation of \$500,000 of board funds towards bridge construction; Messrs. Stevens, Crowe and Cooper have specifically declared that they will secure a commencement of bridge construction next year, while Messrs. Hanna and MacLeod, of the C.N.R., have declared their readiness to enter into an arrangement for the joint construction of the bridge and to prepare their plans in time for the submission of bylaws in Jan."

**Calgary and South Western Ry.**—The route map of this projected railway shows a line starting from Sec. 27, Tp. 23, Range 1, west 5th meridian, near Turner, 6 miles out of Calgary on the C.P.R. Calgary-Macleod line, cutting across the southeast corner of the Sarcee Indian reserve, crossing Fish Creek at Priddis, Fisher Creek at Millerville, the north branch of Sheep River at Kew, thence to the valley of the south branch of the Sheep River, the north bank of which is followed up to its source in the Rocky Mountains Forest Reserve in Sec. 15, Tp. 19, Range 7, west 5th meridian. The total distance is 59.4 miles. We are officially advised that construction will be deferred until next autumn, or early in the spring of 1920. John Callaghan, Calgary, Alta., is Chief Engineer. (May, pg. 253).

**Central Ry. Co. of Canada**—The Dominion Parliament has passed an act providing that subject to the provisions of sec. 3, chap. 83, statutes of 1914

(Consolidated Railway Act). "The Central Ry. of Canada or the purchaser thereof in the proceedings now pending in the Exchequer Court of Canada, may complete within five years of the passing of this act the uncompleted portions of the railway authorized by chap. 172 of the statutes of 1903, and the acts amending the same, to be constructed between Rockland and South Indian, between South Indian and Hawkesbury, between Hawkesbury and Glen Robertson, Ont., and between St. Andrews and Ste. Agathe, Que.," with the proviso that if 25 miles of the uncompleted portions of line are not completed and put in operation within two years, and 25 miles additional built each succeeding year, and the whole lines completed within five years, the powers granted shall cease in so far as the uncompleted portions of the lines are concerned. The Minister of Railways explained to the House of Commons that the passage of the act in this form gives the bondholders the power to sell anything that has any value. The company has an interest in 35 miles of line, serving Glen Robertson and Hawkesbury and leased to the G.T. R., and owns, in addition, the right of way for the South Indian-Hawkesbury and the St. Andrews-Ste. Agathe lines. (May, pg. 260).

**Esquimalt and Nanaimo Ry.**—The Dominion Parliament has authorized the building of a line from between Port Alberni and Bainbridge, on the existing Parksville Jct.-Alberni line, northwesterly via Great Central Lake and Ash River Valley to Comox Lake, with a branch line from near Sproat Lake to Long Beach on the west coast of Vancouver Island. Plans for these lines are reported to have been prepared. (Apr. pg. 191 and Feb., pg. 79).

The Minister of Public Works is reported to have advised the mayor of Victoria that the Dominion Government has definitely decided not to make a contribution towards the cost of the Johnson St. Bridge. The modified plans for the bridge prepared by the City Engineer of Victoria after the conference with the C.P.R. officials, have been forwarded for final approval by P. B. Motley, Engineer of Bridges, and J. M. R. Fairbairn, Chief Engineer C.P.R. The estimated cost of the bridge is \$525,000, of which the C.P.R. will contribute \$100,000, the city \$225,000, and the government \$200,000. (June, pg. 313).

**Great Northern Ry.**—About 1,000 yards of the right of way, about 10 miles south of Nelson, B.C., on the Bedlington and Nelson Ry., one of the lines owned by the G.N.R. in Canada, is reported to have been washed out by floods.

A recent decision of the Board of Railway Commissioners rejected the City of Vancouver's application for an amendment of the order with respect to the interlocking and derailing plant at the Powell St. crossing, on a new line which is to be double tracked and will connect the G.N.R. spur from False Creek with the C.P.R. service track north of the main line, connections being made east and west with the government dock and the G.N.R. dock, respectively. The order suggests that a new line might be built from just south of the Hastings St. viaduct, under the viaduct, with a trend north and east, instead of north and west. (May, pg. 253).

**Grand Trunk Ry.**—The Dominion Parliament has extended for two years the time within which the Lachine, Jacques Cartier and Maisonneuve Ry. may build its projected line from Lachine Parish to Hochelaga Ward, Montreal, or in the Town of Maisonneuve, passing in the rear of Mount Royal, with power to extend the line from the starting point to Dorval, on one side, and to the northern end of the Montreal Island on the other. The construction of this line was originally authorized in 1909; it was declared to be a work of the general advantage of Canada in 1911, and extensions of time for its construction have been granted, the one prior to the present being in 1917. Surveys were made several years ago, and plans were approved by the Minister of Railways and the Board of Railway Commissioners, but considerable difficulties were experienced in securing right of way, and the approval of the municipalities for the crossing of highways.

The Toronto City Council has authorized the company to erect a bridge shop near Main St., York Station, East Toronto, at an estimated cost of \$7,500.

A press report states that the company is considering the purchase of some property east of Rectory St., London, Ont., to extend its east end yards. (June, pg. 313).

**Kettle Valley Lines**—A press report states that representations have been made to the British Columbia Government to urge the company to build a line southerly from Penticton, through the 22,000 acres of land set apart mainly for settlement by returned soldiers. It is said that the matter was discussed with E. W. Beatty, President, C.P.R., which company leases the K.V.R. during his recent visit to Victoria.

In connection with the building of the branch line from Princeton to the Copper Mountain district, a local correspondent gave some details recently of the development work in progress at Princeton, Allenby and Copper Mountain in carrying out the Canada Copper Corporation's plans. He says that at Allenby it appears as though there were two railways building into the town, one on each side, with the lower one some 200 ft. beneath the upper one. In making distance, in order to secure a feasible gradient, a loop is formed, and by a clever piece of engineering, the line comes in at the upper side of the mill to which it will deliver the crude ore, and it goes out from the lower side at which it will receive the concentrates for delivery at the Trail smelter. A good deal of development work is reported to be at a standstill, waiting for the completion of the branch line, which was to have been finished in June. The railway contractors' men are reported to have stopped work Apr. 1, and practically no work has been done since. (Mar., pg. 135).

**Lacombe and North Western Ry.**—A press report states that ties and telephone posts have been delivered at Gull Lake, and that construction gangs are making preparations for the extension of the line from its present terminus near Bentley to Rimby, Alta. The line is owned by the Alberta Government, and provision for the extension was made at the legislature's recent session. (June, pg. 313).

**Montreal Central Terminal Co.**—The Senate's railway committee reported June 5 that C. N. Armstrong, one of the promoters of the bill, having made application for leave to withdraw it, he be allowed to do so and that the fees paid less cost of printing and translating be remitted. This report was approved by the Senate June 6, and the bill was withdrawn. The bill asked for an extension of time within which the company could construct its proposed terminals, bridge and other projected works in Montreal.

The company, according to a press report, applied to the Minister of Public Works at Ottawa, June 11, for approval of its plans for a tunnel or tunnels proposed to be built under the St. Lawrence River from Longueuil on the south shore to Montreal in lieu of the bridge originally proposed, and for certain railway connections therewith. Counsel or engineers were present on behalf of the Railways Department, the Montreal Harbor Commission, the municipalities interested on the south shore, the Grand Trunk Ry., etc., and all expressed their opposition to the plan. C. N. Armstrong, the principal promoter of the project, stated that, apart from outlays on land, \$250,000 had been expended in connection with the proposal. The company desired to provide facilities for access to the east end of Montreal for railways not having them. The company was not asking a guarantee of bonds or a subsidy, but desired to have a traffic agreement for the government lines to use the tunnel and terminal. If the company could not get that the tunnel would not be built. Counsel for the Railways Department stated that the only effect of sanctioning the scheme would be to compel the Canadian National Ry. to buy out the company; the engineer for the Grand Trunk Ry. said it would cost between \$80,000,000 and \$90,000,000 to carry out the company's plans and that the project could never be made to pay without having industrial connections; the secretary of the Montreal Harbor Commission said the sanction of these plans would interfere with the commissions plans for the proposed bridge to the south shore, via St. Helen's Island, and the south shore municipalities' representatives stated that only a bridge would meet with their approval and support. The Minister reserved his decision. (June, pg. 313).

**The North West Route**—The Senate Standing Committee on Railways reported June 5 with respect to the bill for the incorporation of a company with this title, which had been passed by the House of Commons, that after examination it had arrived at the decision that the incorporation of the company proposed to be created would not be in the public interest. This report was adopted by the Senate June 6. The bill provided for the incorporation of a company to develop certain stretches of navigable waterways, and to connect the same by means of railways, so as to provide a rail and water connection between the westerly end of Baker Lake, at the headwaters of Chesterfield Inlet, Hudson Bay, and Old Fort Reliance at the easterly end of Great Slave Lake. (May, pg. 254).

**Pacific Great Eastern Ry.**—A press report states that delivery has been completed of the rails which were ordered in the United States prior to the war. There are said to be about 1,500 tons at Fort George, and about 9,000 tons at

the present end of track, the remaining 10,000 tons were loaned to the Dominion Government for the Canadian Northern Ry. The 9,000 tons at the end of track will, it is estimated, be sufficient to lay track from mileage 210 to William Lake, about 70 miles. Tracklaying is expected to begin July 1, and to be completed to Williams Lake by Sept. 1.

In the course of a recent speech, the Premier of British Columbia is reported to have said that a number of miles of the railway would have to be abandoned. It would cost the province a considerably greater sum than the government had anticipated in the first place, to get the railway linked up with the Grand Trunk Pacific Ry. at Prince George.

Major Ewart, formerly of the 8th Battalion Canadian Railway Troops, in France, is reported to have been appointed to make a survey of the country north of Quesnel, with a view of securing a route for the line, which will avoid some difficult country.

Part of the original project of the P.G.E.R. was the continuation of the line from Prince George to the Peace River country, and the effecting of a junction at the British Columbia-Alberta boundary, with the Edmonton, Dunvegan and British Columbia Ry. A deputation from the Peace River country waited on the British Columbia Government recently to urge progress and the Premier promised consideration. (June, pg. 313).

**Quebec to St. Stephen, N.B.**—D. F. Maxwell, C.E., in a recent interview at Quebec, is reported to have said that a railway from Quebec to St. Stephen, N.B., would be a very valuable branch to the Transcontinental Ry., and would cut the distance from Quebec to an ocean port in half, as compared with the present route from Quebec to St. John. The distance from Quebec to St. John, by the present route, is 577 miles, while from Quebec to St. Stephen it would be 250 miles. A line between these two points would run through a real virgin timber country for 100 miles, and would open up a new and rich country for general settlement. The route was gone over at one time by A. L. Light, C.E., and J. G. Scott, Quebec, is reported to be also familiar with the country through which the line would pass. The port at the end of the line would be St. Croix harbor, which it is claimed that the largest ships could use. Starting at St. Croix harbor, the line would run through St. Stephen, passing through Princeton, Me., back to the St. Croix River, and lakes to Mattawankeag, and along the valley of the Penobscot River to Melensocket, and on to the Etchemin River, to St. Malachie, Dorchester County, Que., where connection could be made with the Transcontinental Ry.

J. G. Scott is reported to have said that the surveys for this line were made in 1882, before the line via Sherbrooke and Lake Megantic was built. That line was only 90 miles shorter between Montreal and Halifax than via the Intercolonial Ry., and it goes over a summit of 1,700 ft., while the suggested Quebec-St. Stephen line would have a summit of about 1,200 ft., with a maximum gradient of 0.4%. The National Transcontinental Ry. would be used from Quebec to Frampton, 52 miles.

**St. John and Quebec Ry.**—The Dominion Parliament has extended to Dec. 21, 1921, the time within which the section of the line from the present northerly terminus at Centerville to Andover,

N.B., may be built, at the Minister of Railways direction. The Minister is given power to extend the subsidy agreement with the Dominion Government to the same date, and the agreement with the New Brunswick Government for the operation of the line as a part of the Intercolonial Ry. on the basis of a division of the gross receipts in the proportion of 60% to the Dominion and 40% to New Brunswick. The New Brunswick Legislature has also passed an act providing for the extension of time, etc.

We are officially advised that the section of the line from the present southerly terminus to Westfield where a junction is effected with the C.P.R., will be ready for operation by Aug. 1. Ballasting and other work is in progress. The Premier and other representatives of the New Brunswick Government left Fredericton, June 6, to inspect the line. A press report of June 6, states that a train left Centerville, June 5, and travelled over the line via Westville and on to St. John. (June, pg. 314).

**Western Dominion Ry.**—The Dominion Parliament has extended for two years the time within which this company may commence its projected railway from the International boundary in Range 23, west 4th meridian, via Cardston, and Pincher Creek to Lundbreck on the C.P.R. Crowsnest line, thence to Calgary and Edmonton, Alta., and Fort St. John, B.C., with branches into the Southern Alberta coal fields. (Feb., pg. 80).

### New Conditions for Extension of Railway Charters.

In connection with the several acts passed by the Dominion Parliament at its current session, granting extensions of time for construction, an additional provision has been inserted at the Minister of Railway's instance. The practice has hitherto been to extend the time for beginning of construction for two years, and the time of completion for five years. The new provision is that the company shall within two years after the passing of the act proceed with the construction and complete and put in operation 25 miles of the authorized railway, and shall continue to construct and complete and put in operation to the satisfaction of the Minister, not less than 25 miles of the railway, or the equivalent thereof, during each year thereafter, until the whole of the railway is completed. The section also provides that if the company fails to carry out the requirements specified, the powers of construction granted to it shall cease.

**The Shedden Forwarding Co., Ltd.**, has been granted supplementary letters patent, decreasing its capital stock from \$1,500,000 to \$1,125,000, the decrease being effected by repaying to shareholders \$25 on each of 7,000 share allotted, and by reducing to the war value of \$75 each, 8,000 unallotted shares, so that the existing 1,500 shares now of the par value of \$100 each, shall be reduced to the par value of \$75 each. The company is to add to its name the words, "and reduced" for one month from May 22, 1919.

**Rails for G.T.R.**—The Algoma Steel Corporation rolled 12,060 tons of 100 lb. A.R.A. section steel rails for the G.T.R. recently, shipments being made to Allandale, Ont., for distribution. This completed a nolder order which was suspended during the war.

## Canadian Pacific Railway Construction, Betterments, Etc.

**New Brunswick District**—A press report states that the company is about to call for tenders for paving with granite blocks, 2,500 square yards at its freight terminals, Mill St., St. John, N.B.

**Manitoba District**—Tenders were received to June 18 for the construction of a standard no. 3 station at Hargrave, Ont., piers for bridge 3.1, La Riviere Subdivision, Ont., for floor for stock yards at Fort William, Ont., and for the erection of a coaling plant at Raith, Ont.

**The Manitoba and North Western Ry. Co.**, a C.P.R. subsidiary, has been authorized by the Dominion Parliament to build a line from its Shell River Branch, in Tp. 21, Range 28, west of 1st meridian, generally northerly to Tp. 23, Range 28, west 1st meridian. Work is to be started within two years, and completed within five years, and to provide for construction, the company may issue securities for \$40,000 a mile.

**Saskatchewan District**—President Beatty is reported to have stated in Saskatoon, June 6, on his recent trip, that the company will build a line from Lanigan through Watson and Melfort, to Tp. 57, Range 17, west 2nd meridian, north of the Carrot River, and that construction will be gone on with this year from the Lanigan end, and that construction will also be started from Rosetown south to the Saskatchewan River, thence easterly. The company is said to be investigating with a view to early construction, the route of a line from Hawarden into Saskatoon. Hawarden is a station on the Moose Jaw northwesterly branch, almost directly south of Saskatoon. The President is further reported to have said that construction will be started shortly on a line from Milden, on the Moose Jaw northwesterly line to Empress, on the Swift Current northwesterly line.

We are officially advised that the company proposes to build a line from Vidora or Govanlock, Sask., to Assiniboia, Sask., and that a start will be made from the western end, during this year. In all probability, the work will be started from Vidora, but this has not been definitely decided. As soon as the route map is approved by the Board of Railway Commissioners, tenders will be asked for the work on 50 miles. This is one of the lines mentioned in the resolution passed at the company's recent annual meeting.

**Moose Jaw Station**—President Beatty is reported to have said, in an interview at Moose Jaw, Sask., May 30, that a new station to cost at least \$250,000 will be built there. We are officially advised that competitive plans have been asked for from architects at Moose Jaw and Winnipeg. The new building will be directly north of the present station and will be of stone. The main street frontage, and part of the gardens will be occupied by the building, the northern extremity of which will reach almost to Manitoba St. The present baggage and express rooms will be allowed to stand, but at a later date a west wing will be added to the station to replace them. The plans provide for a change to a subway entrance to the tracks if this is desirable later, but the construction will first be made for an entrance similar to the one now in use.

D. C. Coleman, Vice President, Western

Lines, is reported to have stated that the question of building an hotel at Moose Jaw, will have to stand over until the cost of building had returned to a more normal level.

**Alberta District**—President Beatty is reported to have stated at Lethbridge recently, that the only construction definitely settled on for Alberta, is the Acme-Empress line.

A press report of June 11, states that a contract has been let to Stewart and Welch, Vancouver, B.C., for building of a line from Acme to Drumheller, Alta. The line will, it is reported, involve considerable heavy construction. This is the line referred to in the company's annual report as an extension of the Langdon north branch from Acme, Alta., to the projected extension of the Swift Current Northwesterly Branch near Empress, 132 miles. Such a line would pass through the Drumheller coal fields. (June, pg. 319).

### Traffic Orders by Board of Railway Commissioners.

#### Supplement 12, to Canadian Freight Classification.

General order 265. Re application of Canadian Freight Association, on behalf of railway companies subject to the board's jurisdiction, under section 321 of the Railway Act, for approval of proposed Supplement 12 to Canadian Freight Classification 16, containing certain increased, reduced, and additional ratings; notice having been given by the railway companies in The Canada Gazette as required by sec. 321 of the Railway Act, and to the mercantile organizations enumerated in general order 153, Nov. 4, 1915, and the proposed changes having been considered at a conference of representatives of the Grand Trunk, Canadian Pacific, and Canadian National Railways, the Canadian Manufacturers' Association, and the Montreal and Toronto Boards of Trade, held at Montreal, Apr. 9, 1919, when various objections filed with the board were considered, the proposed changes were agreed to, modified, or eliminated; and upon the consideration of what has been filed, and upon the report and recommendation of the board's Chief Traffic Officer, it is ordered that the proposed supplement 12, as finally revised and submitted for approval by the Canadian Freight Association's chairman, by letter, dated May 28, 1919, be approved.

#### Eastern British Columbia Ry.'s Tariff.

28,420. June 11. Re application of Eastern British Columbia Ry., for approval of its standard mileage freight tariff C.R.C., 73; upon reading what has been filed in support of the application, and upon the report of the board's traffic department, it is ordered that the said tariff, cancelling C.R.C., no 16, be approved; the said tariff, together with a reference to this order, to be published in at least two consecutive weekly issues of the Canada Gazette.

#### Commodity Rates on Ferro Silicon.

28,427. June 11. Re application of Montreal Board of Trade for disallowance, and of Canadian Manufacturers' Association for suspension of proposed cancellation of commodity rates on ferro-silicon from Welland and Thorold, Ont., and Shawinigan Falls, Que., the said pro-

posed cancellation having been suspended by order 27,841, Nov. 7, 1918; upon hearing the matter at Toronto and Montreal on Jan. 15 and 16, 1919, respectively, in the presence of counsel and representatives for the Canadian Pacific, Grand Trunk, and the Canadian National Railways, and the Canadian Manufacturers' Association at the Toronto sittings; counsel for the C.P.R. only appearing at the hearing in Montreal, the case was adjourned to be reinstated for hearing at the request of the parties; no application for a rehearing having been made on behalf of the Montreal Board of Trade, and the Canadian Manufacturers' Association having withdrawn its application for suspension; it is ordered that order 27,841, made herein, be rescinded.

#### Classification of Dr. Rusk's Chick Food.

28,436. June 12. Re application of the Taylor Milling and Elevator Co., Lethbridge, Alta., complaining against the classification of Dr. Rusk's chick food, when shipped in mixed cars of flour and feed; upon hearing the application at Lethbridge, Feb. 24, 1919, in the presence of counsel for the C.P.R., the applicant being represented at the hearing, and what was alleged; and upon reading what has been filed in support of the application, and on behalf of the Canadian Freight Association, and the report of the board's Chief Traffic Officer, and its appearing that the C.P.R., by item 87A of Supplement 10, effective May 6, 1919, to its commodity tariff C.R.C., no. w. 2,397, has established its 4th class rates from Lethbridge to all its stations in Alberta, Saskatchewan, and British Columbia on poultry food, removing in part the applicant's objections to the classification complained against; it is ordered that the C.P.R. file forthwith a further supplement to its tariff C.R.C. no. w. 2,397, adding to the said item 87A of Supplement 20, the 8th class rating for carload shipments of not less than 30,000 lb. of the items of poultry food therein enumerated; and it is further ordered that the application for the privilege of including less than carload lots of poultry food with grain products at the carload rates, provided for the latter, bulk-ing the whole to make up the minimum weight required for grain products, be refused.

#### American Railroad Association and Railway Stores.

The American Railroad Association has created an additional section to be known as section 6, to consider and report upon all questions affecting the purchasing, selling, storing and distribution of materials and supplies, and kindred subjects. The section will include the Railway Storekeepers' Association's former activities. H. S. Burr, Superintendent of Stores, Erie Rd., is the chairman of the committee, which includes E. N. Bender, General Purchasing Agent, C.P.R., and E. J. McVeigh, General Storekeeper, G.T.R., Montreal.

**British Railway Earnings, Etc.**, for 1918—A London, Eng., cable of June 16, referring to the Board of Trade report on British railways for 1918, states that the total revenues in 1918 increased to more than \$820,300,000, compared with \$550,000,000 in 1913, while total expenses in 1918 were about \$606,600,000, compared with \$347,000,000 in 1913. Operating rates are shown to have increased from 63.3% in 1913 to 73.9% in 1918. One item of particular interest in the statement was the increase in passenger receipts. They were approximately \$250,000,000 in 1913, and in 1918 were about \$322,500,000.

## Birthdays of Transportation Men in July.

Many happy returns of the day to:

A. A. Allen, Vice President, Holden Co., Ltd., Montreal, formerly Master Mechanic, Timiskaming & Northern Ontario Ry., born at Grafton, Ont., July 7, 1870.

J. H. Black, ex-Superintendent, Timiskaming & Northern Ontario Ry., now at Toronto, born near Smiths Falls, Ont., July 8, 1874.

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

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

G. C. Conn, ex-Freight Traffic Manager, Pere Marquette Ry., Detroit, Mich., now General Traffic Manager, Buick Motor Co., Flint, Mich., born at Woburn, Mass., July 1, 1867.

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

S. E. Dewey, General Eastern Freight Agent, G.T.R., New York, born at Beckenham, Kent, Eng., July 4, 1879.

A. H. Eager, Mechanical Superintendent, Western Lines, Canadian National Rys., Winnipeg, born at Waterloo, Que., July 15, 1868.

F. C. Foy, Passenger Agent, New York Central Rd., Utica, N.Y., born at Toronto, July 5, 1881.

F. E. Hartshorn, Assistant Superintendent, Montreal Division, Quebec District, Canadian National Rys., Joliette, Que., born at West Stewartstown, N.H., July 21, 1877.

S. J. Hungerford, Assistant Vice President, Canadian National Rys., Toronto, born at Bedford, Que., July 16, 1872.

C. W. Johnston, Assistant General Passenger Agent, G.T.R., Montreal, born at Actonvale, Que., July 27, 1879.

M. Kelly, Resident Engineer, Farnham Division, Quebec District, C.P.R., Farnham, born at Thamesville, Ont., July 6, 1878.

T. King, Superintendent, Detroit Division, Grand Trunk Western Lines Rd., Detroit, Mich., born at Dunbarton, Ont., July 18, 1869.

A. E. Lock, Superintendent Car Service, Toronto, Hamilton & Buffalo Ry., Hamilton, Ont., born at Albany, N.Y., July 14, 1879.

G. A. McNicholl, Assistant General Freight and Passenger Agent, Grand Trunk Pacific Ry., Prince Rupert, B.C., born at Montreal, July 31, 1876.

H. D. Mackenzie, Master Mechanic, Canadian National Rys., Edmundston, N.B., born at Churchville, N.S., July 22, 1864.

M. H. MacLeod, Vice President, Operation, Maintenance and Construction, Canadian National Rys., Toronto, born in Skye, Inverness-shire, Scotland, July 13, 1857.

J. M. Macrae, Assistant General Freight Agent, Canadian National Rys., Winnipeg, born at Stornoway, Scotland, July 31, 1884.

W. G. Manders, Assistant Freight Traffic Manager, Canadian National Rys., Winnipeg, born at Owen Sound, Ont., July 24, 1876.

Neil Marple, General Foreman, Michigan Central Rd., St. Thomas, Ont., born in McKillop Tp., Ont., July 1, 1860.

J. E. Morazain, General Superintendent, Quebec District, Canadian National

Rys., Quebec, born at Wheatland, Que., July 31, 1875.

P. C. Perry, Assistant Resident Engineer, Grand Trunk Pacific Ry., Regina, Sask., born at Fort William, Ont., July 27, 1889.

R. E. Perry, Assistant General Freight Agent, Canadian National Rys., Montreal, born at Drayton, Ont., July 5, 1876.

J. E. Quick, ex-General Baggage Agent, G.T.R., Toronto, now at Port Huron, Mich., born at Richmond, Ontario Co., N.Y., July 10, 1851.

G. G. Ruel, Counsel, Canadian National Rys., Toronto, born at St. John, N.B., July 5, 1866.

C. Steeves, General Boiler Inspector, Eastern Lines, Canadian National Rys., Moncton, N.B., born at Hopewell Cape, N.B., July 6, 1874.

George Stephen, Freight Traffic Manager, Canadian National Rys., Toronto, born at Montreal, July 5, 1876.

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

M. M. Todd, Vice President and Treasurer, Grand River Ry. and Lake Erie & Northern Ry., Galt, Ont., born there, July 22, 1891.

H. B. Walkem, Assistant Engineer, C.P.R., Vancouver, B.C., born at Montreal, July 31, 1858.

G. A. Walton, General Passenger Agent, Western Lines, C.P.R., Winnipeg, born at Montreal, July 17, 1881.

R. H. Webster, Commercial Agent, G.T.R., Moncton, N.B., born at Pictou, N.S., July 2, 1885.

## Canadian Pacific Railway Honor Roll 43.

Armstrong, James Henry	Agent	Lemberg	Wounded
Astbury, Charles	Painter	Winnipeg	Wounded
Bareham, Arthur	Wiper	Moose Jaw	Wounded
Birkhead, George J.	Sectionman	Inglewood	Killed in action
Bogeya, George	Car cleaner	Toronto	Wounded
Bougie, Joseph	Boilermaker	Kenora	Presumed dead
Clifford, Arthur	Carpenter	Winnipeg	Wounded
Coffey, George	Apprentice	North Bay	Wounded
Costello, Patrick C. L.	Clerk	Calgary	Wounded
Cox, Percy Alexander	Acting agent	Yokohama	Wounded
Dando, Arthur Orchard	Helper	Ogden	Wounded
Disbrey, William	Stower	Regina	Wounded
Emery, Nelson Victor M.	Stenographer	Saskatoon	Died of wounds
Fairbairn, Howard A.	Coalman	Bobcaygeon	Wounded
Foley, Herbert	Foreman	Lethbridge	Wounded
Gardner, Jack	Helper	Glen Yard	Killed in action
Gilchrist, Robert B.	Carpenter	Ogden	Wounded
Harvey, Fred Adam	Trainman	Revelstoke	Wounded
Horsfield, Albert	Air brake tester	Ogden	Shell shock
Ireland, James Henry	Yardman	Winnipeg	Wounded
Kinnear, George Watson	Elevator operator	Calgary	Killed in action
Lingwood, Alfred	Ashpitan	Sault Ste. Marie	Wounded
Loutit, Walter	Brakeman	Kenora	Wounded
McHugh, George Cecil	Porter	Toronto	Wounded
McRitchie, Donald	Clerk	Montreal	Wounded
Macario, Herbert G.	Apprentice	Angus	Wounded
Menzies, Harold A.	Checker	London, Ont.	Wounded
Mongrain, Frederick	Trainman	Kenora	Wounded
Murray, Robert Hamilton	Inspector	Calgary	Wounded
Pallot, Lawrence C.	Clerk	Vancouver	Wounded
Patterson, William	Watchman	Ayr	Wounded
Reid, Philip Burton	Foreman	Bassano	Died of wounds
Reade, William	Car repairer	West Toronto	Wounded
Roy, George Henderson	Clerk	Calgary	Died of wounds
Sargood, Timms Augustus	Locomotive fireman	B.C. District	Wounded
Sharpe, John William S.	Clerk	Montreal	Gassed
Skinner, George Clark	Linen handler	Calgary	Wounded
Smith, William James	Teamster	Strathmore	Believed killed
Spinney, Arthur G.	Car repairer	St. Thomas	Wounded
Stevens, Harry G.	Locomotive fireman	Montreal	Wounded
Stewart, Charles A.	Locomotive fireman	New Brunswick Dist.	Wounded
Sutherland, Walter S.	Transportation student	Toronto	Wounded
Thorndike, Stanley	Brakeman	Manitoba District	Wounded
Tiffen, Harry H.	Clerk	London, Eng.	Wounded
Tweedle, Robert C.	Wiper	East Calgary	Wounded
Ward, John	Porter	Lethbridge	Killed in action
White, Frederick	Helper	London, Ont.	Wounded
Williams, Edward S.	Levelman	Strathmore	Wounded
Wilson, Gordon	Trainman	Minnedosa	Wounded

Shown on honor lists to date: Killed, 904; wounded, 1,951; total, 2,855.

## Canadian Manufacturers Oppose Government Railway Ownership.

The Canadian Manufacturers' Association passed the following resolution at its annual meeting in Toronto recently:—Whereas, the Dominion Government has been compelled to take over and operate two transcontinental railway systems, and whereas, these systems are not yet paying the cost of operation, and deficits incurred by them must be borne by the tax paying public, and whereas, competition is absolutely necessary in order to secure proper and adequate service, be it therefore resolved, that the Canadian Manufacturers' Association places itself on record as being opposed to any further acquisition or operation of railways by the Dominion Government.

**Interswitching at Owen Sound, Ont.**—The city council engaged W. F. Tye, C.E., recently to report on the feasibility of interswitching traffic between the C.P.R. and G.T.R., and also on the possibility of erecting a union station and establishing an electric railway service. The two railway lines are on opposite sides of the Sydenham River, and it is proposed to build a Y crossing the river from the G.T.R. near 10th St., to connect with the C.P.R. on the east side of the river. The estimated cost of this is \$100,549, and it is claimed that a saving of \$4,258 a year would be effected, over the present system of road hauling. The report did not favor the erection of a union station, or an electric railway, stating that a considerable annual loss could be expected.

# Electric Railway Department

## Electric Railway Operating Statistics for Year Ended June 30, 1918.

The figures in the following table are reproduced from statistics issued by the Railways Department at Ottawa. The following abbreviations are used in the names of railways: E., electric; E.R., electric railway; E.S.R., electric street railway; S.R., street railway. The minus mark (—) in the column for net income or deficit, shows that there was a deficit in the operation of the line to the extent of the figures given.

The figures in the first column of figures show the first main track mileage. In addition there are 453.11 miles of second track, making a total of 2,069.47 miles of main line track. An explanation of errors made in previous returns issued by the Railways Department will be found under "Notes to Electric Railway Statistics, on another page of this issue.

Name of Railway	1st Main track mileage	Gross earnings from operation	Miscellaneous income	Operating expenses	Taxes funded debt, etc.	Net income or loss	Total car mileage	Fare passengers carried	Freight carried tons
Berlin and Waterloo S.R. (Now Kitchener and Waterloo S.R.)	3.28	\$ 57,926	\$ 163	\$ 37,529	\$ 7,585	\$ 12,975	\$ 199,334	1,315,037	.....
Berlin and Northern Ry.	3.15	8,159	.....	7,909	3,121	—2,870	35,254	161,266	.....
Berlin, Waterloo, Wellesley & L. Huron Ry. (Operated as Grand River Ry.)	17.81	221,339	1,960	165,341	31,663	26,295	299,569	1,294,337	176,949
Brandon Municipal Ry. (1)	10.31	.....	.....	.....	.....	.....	.....	.....	.....
Brantford and Hamilton Ry.	23.19	207,233	.....	119,071	94,766	—6,605	374,463	711,848	5,337
Brantford Municipal Ry.	14.61	111,301	.....	81,361	1,653	28,285	401,859	1,909,750	82
British Columbia E.R.	244.22	3,218,697	1,148,953	2,708,513	941,087	718,049	13,069,050	52,853,373	365,426
Calais S.R. (2)	7.00	41,926	.....	33,021	6,072	2,833	183,960	748,697	.....
Calgary Municipal Ry.	55.50	612,029	16,542	424,558	112,383	91,630	2,912,502	14,519,256	8,945
Canadian Resources Development	1.75	95	.....	942	.....	—847	6,388	1,913	.....
Cape Breton E.R.	30.59	286,902	116,435	203,460	120,720	79,175	720,355	5,466,012	.....
Chatham, Wallaceburg & Lake Erie Ry.	38.05	130,585	.....	97,590	39,736	—6,742	348,650	258,776	97,250
Cornwall E.R.	4.00	35,263	25	38,184	1,218	—4,113	227,255	440,851	89,733
Edmonton Radial Ry.	31.09	499,023	.....	360,370	236,966	—98,213	1,862,699	10,214,019	200
Fort William S.R.	19.88	147,988	.....	107,485	86,205	—45,703	730,107	3,430,129	.....
Guelph Radial Ry.	8.03	50,149	2,565	41,280	.....	11,434	220,350	1,125,552	23,712
Halifax Tramways Co. (Now Nova Scotia Tramways and Power Co.)	12.29	421,692	202,378	275,423	188,280	160,366	1,371,352	9,537,172	.....
Hamilton and Dundas E.R.	6.98	83,746	.....	57,891	6,240	19,613	161,181	1,002,355	352
Hamilton, Grimsby & Beamsville E.R.	22.60	152,022	.....	135,048	15,287	1,687	413,519	739,386	40,921
Hamilton S.R.	17.40	787,429	.....	549,204	105,022	133,202	2,754,918	18,303,824	.....
Hamilton Radial Ry.	22.86	173,489	.....	169,250	56,608	—52,369	501,867	1,167,273	47,746
Hull Electric Co.	15.67	207,244	32,990	147,802	87,289	5,143	854,215	3,278,032	7,270
International Transit Co.	4.30	140,771	1,711	87,402	9,777	45,302	261,528	2,258,563	.....
Kingston, Portsmouth & Cataraqui E.R.	7.00	49,809	503	42,517	4,976	2,819	199,680	1,049,697	.....
Lake Erie and Northern Ry.	51.00	211,237	.....	154,974	115,612	—59,350	412,772	440,508	64,802
Lethbridge Municipal Ry.	7.00	54,144	.....	47,246	26,911	—20,013	259,983	1,086,813	.....
Levis County Ry.	11.75	96,732	.....	113,306	16,783	—33,356	438,521	1,964,291	2,130
London S.R.	27.48	442,713	.....	345,161	37,918	59,633	1,913,047	11,987,965	.....
London & Lake Erie Ry. and Transportation Co. (3)	29.75	.....	.....	.....	.....	.....	.....	.....	.....
London & Port Stanley Ry.	24.50	368,914	.....	255,670	75,983	37,260	833,567	842,641	614,351
Moncton Tramways, Elec. and Gas. Co.	4.47	15,215	.....	22,117	.....	—6,901	79,792	351,698	.....
Montreal Tramways Co. (4)	124.26	.....	.....	.....	.....	.....	.....	.....	.....
Montreal and Southern Counties Ry.	52.20	303,216	174	316,530	72,989	—86,178	909,348	2,263,702	12,467
Moose Jaw E.R.	9.00	107,182	.....	85,685	4,072	17,423	458,226	2,414,341	.....
Nelson S.R.	2.13	14,596	.....	13,626	3,807	—2,838	60,750	332,234	.....
Niagara Falls Park and River Ry.	11.91	113,514	7,504	90,377	36,970	—6,329	274,328	1,155,160	.....
Niagara, St. Catharines & Toronto Ry.	61.58	766,422	.....	569,960	88,094	108,367	1,362,084	5,788,656	429,703
Niagara, Welland & Lake Erie Ry.	1.87	31,606	470	17,716	3,597	15,762	84,566	680,515	.....
Nipissing Central Ry.	15.37	97,426	212	83,552	10,287	3,798	253,864	1,179,920	.....
Oshawa Ry.	9.00	172,990	1,912	99,316	6,730	68,856	84,706	307,112	227,064
Ottawa Electric Ry.	28.11	1,294,187	.....	760,955	123,991	409,239	4,998,041	29,347,692	.....
Peterborough Radial Ry.	6.55	74,864	.....	62,074	12,238	651	433,782	1,575,652	.....
Port Arthur Civic Ry.	12.43	144,746	.....	108,234	70,825	—34,312	641,992	3,626,722	.....
Quebec Ry., Light and Power Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Citadel Division	16.75	545,546	.....	363,727	2,289	170,530	2,138,959	12,671,372	.....
Montmorency Division	28.60	208,914	.....	183,643	.....	25,270	438,704	1,781,609	.....
Regina Municipal Ry.	25.34	244,013	.....	207,630	96,722	—60,339	933,423	5,167,522	32,636
Sandwich, Windsor and Amherst-burg Ry.	41.37	331,419	31,564	222,744	57,975	82,234	1,102,308	6,544,570	.....
Sarnia S.R.	8.25	68,954	.....	59,311	5,452	4,190	209,196	1,254,647	156,581
Saskatoon Municipal Ry.	12.63	208,098	.....	156,843	39,650	11,604	752,100	4,111,042	.....
St. Thomas S.R.	6.25	20,497	.....	20,706	.....	208	.....	441,620	.....
Schomberg and Aurora Ry.	14.40	17,892	.....	18,675	29,394	—30,178	61,642	39,109	12,532
Shawinigan Falls Terminal Ry.	3.75	61,365	.....	50,233	12,145	—1,013	.....	.....	.....
Sherbrooke Ry. and Power Co.	9.00	65,280	67,928	61,007	68,523	3,679	408,797	1,481,892	.....
Suburban Rapid Transit Co.	17.26	110,439	32,918	110,206	38,916	—5,765	826,624	2,625,703	844
Sudbury-Copper Cliff Suburban E.R.	9.00	41,523	26	32,046	5,486	4,018	128,256	506,818	.....
Sudbury Traction Co.	7.10	86,004	.....	60,466	22,338	3,199	390,347	1,578,601	.....
Three Rivers Traction Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Toronto Ry.	61.86	6,511,303	86,885	4,124,059	1,577,093	897,035	20,676,608	164,142,462	.....

(Continued on page 386).

Electric Railway Operating Statistics for Year Ended June 30, 1918. (Continued from page 385).

Name of Railway	1st Main track mileage	Gross earnings from operation	Miscellaneous income	Operating expenses	Taxes funded debt, etc.	Net income or loss	Total car mileage	Fare passengers carried	Freight carried tons
Toronto and York Radial Ry.....	72.17	710,253	.....	529,141	147,435	33,675	1,594,849	7,464,032	44,502
Toronto Civic Ry. ....	10.26	306,921	.....	270,005	87,891	-50,975	1,460,204	18,232,979	.....
Toronto Suburban Ry. (5).....	19.54	277,412	856	224,212	137,459	-83,403	649,572	4,119,109	4,002
Windsor, Essex and Lake Shore Rapid Ry. ....	36.17	158,643	.....	121,237	59,383	-21,977	373,961	549,057	26,858
Winnipeg Electric Ry.....	63.26	2,180,298	520,235	1,569,537	840,855	300,140	10,154,286	56,065,534	.....
Winnipeg, Selkirk and Lake Winnipeg Ry. ....	38.48	145,166	26,176	101,076	43,895	26,371	435,403	1,181,083	5,189
Yarmouth E.R. ....	3.00	45,397	78	16,709	13,901	14,864	90,660	246,955	.....
	1,616.36	\$24,299,889	\$2,311,176	\$17,535,974	\$6,150,074	\$3,645,624	84,435,323	487,365,456	2,497,530

For additional mileage figures obtained by Canadian Railway and Marine World, see under "Notes to Electric Railway Statistics."  
 Less deficits ..... -720,606  
 Total net income..... \$2,925,017

Notes to Electric Railway Statistics.

The following notes refer to the statistical table on page —.

(1) The Brandon (Man.) Municipal Ry., has not reported its earnings for the year.

(2) The Calais S.R. is the line reported in previous years as the St. Stephen S.R. of New Brunswick, Calais being the contiguous town in Maine, where the line is owned and from which it is operated.

(3) The London and Lake Erie Ry., and Transportation Co. ceased operations, Oct. 15, 1918, and the lines being dismantled. No report of its earnings has been made since 1916.

(4) The mileage given in the table for the Montreal Tramways Co. is that reported by the Railways Department as at June 30, 1915, but the company's first track at June 30, 1918 was 132.50 miles. In recent years the Railways Department's statistical report has contained figures of receipts and expenditures taken from the company's annual report. They are omitted from the table this year, and the company's annual report is published in a different form than formerly, and the information formerly given is therefore not now available. The company does not report to the Railways Department.

(5) The mileage given for the Toronto Suburban Ry., 19.54, is palpably incorrect, as the company during the greater part of 1917-1918 had more than double that mileage in operation—the extension from Lambton to Guelph also being itself 46.3 miles long.

In addition to the mileage given in the table, the Edmonton Interurban Ry., which has not been operated for a couple of years, owns 8.19 miles of track.

The New Brunswick Power Co., St. John, N.B., is omitted from the Railways Department's table as it does not make reports to the department.

The Pictou County Electric Co. is omitted from the Railways Department's table as it does not report to the department.

**Errors in Railways Department's Statistics**—When the Railways Department's statistics for 1916-1917 were issued, it was apparent that mileage figures given for electric railways were incorrect. As an example, the Winnipeg Electric Railway was shown as having 110.20 miles of first main track, and no second main track. Canadian Railway and Marine World called the attention of the Railways Department's Comptroller of Statistics to this and to some other similar errors in regard to other companies, in consequence of which he said he would

issue a special circular to the companies so the figures for 1917-18 may be considered more reliable than those for previous years. The following table shows the figures published by the Railways Department for 1916-1917 respectively.

	1916-1917	1917-1918
Length of 1st main track.....	1743.54	1616.36 miles
Length of 2nd main track....	345.72	453.11 "
Total length of main track....	2089.26	2069.47 "

In referring to this matter the Railways Department's report says "There was not an actual reduction of first track mileage in 1918. There was merely an accurate statement of second track mileage, following special correspondence with units which had been making incorrect returns, the immediate effect of which was to reduce the first track mileage. The mileage of all tracks remain practically unchanged."

**Mileage Actually Operated**—The following additional figures of first main track mileage operated have been obtained by Canadian Railway and Marine World to supplement those given by the Railways Department:—

	Additional miles
Montreal Tramways Co.....	8.24
New Brunswick Power Co.....	13.15
Pictou County Electric Co.....	9.10
Woodstock, Thames Valley and Ingersoll Ry. ....	11.50
	46.99
Mileage given by Railways Department	1616.36
To be first main track mileage operation .....	1663.35

British Columbia Electric Ry. Men's Strike.

Platform and shop men of the B.C. Electric Ry.'s Vancouver and North Vancouver city systems ceased work on June 5 in a sympathetic strike, outbreaks of which have spread with revolutionary aspects throughout Western Canada. The union men took a ballot May 31 and registered three to one against the sympathetic strike. The Vancouver Trades and Labor Council held a mass meeting of all unions on June 2 and in spite of a majority of the unions of the city being against the strike and, it is believed, a majority of union men being of the same opinion, this council called the unions of the city to walk out on a general strike, the street railway men and electrical workers included. The street railway men individually were strongly opposed to the strike. The issue was not a local one. It was well known by that time that the general strike in Winnipeg and throughout the west was engineered by the so-called "one big union" with the intention of over-

throwing the government and precipitating a revolution.

The strike began in Vancouver June 9 at 11 a.m. The street railway men decided to hold a mass meeting the following night. In the meantime, strikers are alleged to have intimidated car men with threats of violence if they did not stop work. It is felt certain that this was the cause of the street railway men at the subsequent mass meeting voting two to one in favor of a strike. On that occasion, only two thirds of the men who had previously voted against the strike voted the same way, the others presumably having gone over to the other side.

A Vancouver correspondent writing us on June 7, said:—"Transportation is being provided by means of jitneys and private automobiles. The Vancouver City Council repealed the bylaw prohibiting jitneys for the time being, much to the anger of the strikers. Cars on all interurban lines are still being operated. Central Park and Burnaby Lake lines are operating to their connections with city lines, the men attached to the New Westminster Trades and Labor Council, which has registered against a sympathetic strike. New Westminster city system is also operating. The Fraser Valley and Lulu Island interurban lines are also operating, the trainmen being attached to the Brotherhood of Railway Trainmen, which is not countenancing the sympathetic strike. Electrical workers have voted to strike, but only line-men have gone out. Substation operators are still at work."

A press report of June 19, stated that the employes still continued on strike, and that no action had been taken by the heads of the union in favor of a return to work.

Service at Cost Favored in Manitoba.

The St. Boniface, Man., Board of Trade, passed a resolution recently expressing the opinion that fares should be fixed on a basis of the cost of street railway service, plus a reasonable return on the value of the property used and useful in the public service, such return to be fixed by the Manitoba Public Utilities Commission.

The Winnipeg Electric Ry., which operates in St. Boniface, favors the adoption of the service at cost plan.

The Levis County Ry. has bought 12 standard safety cars, specially fitted for the local climate, from the American Car Co., St. Louis, Mo.

## The Electric Railways' Present Disastrous Position.

By Prof. L. A. Herdt, D.Sc., E.E., Vice Chairman, Montreal Tramways Commission.

Electric railway transportation stands face to face today with the greatest crisis in its history. This crisis is not due to some new competitor bidding for the first place as a common carrier; the electric railway is, and will be for some time the most economical urban and suburban carrier; jitneys, busses and others will not succeed against it. The crisis is a financial one and the problem of today concerns the method of saving an industry whose entire economic basis has been undermined.

In 1918, 4,900 miles of electric railways, more than one-tenth of the total mileage in the United States, went into receivership, representing a value of more than \$500,000,000, and 750 miles of electric railways abandoned their service, representing a value of \$80,000,000. A great many electric railway properties have grown weary from hope long deferred and are considering dismantlement at present day scrap prices rather than prolonged existence as losing ventures.

Brooklyn Rapid Transit, with 755 miles of track and an funded debt of \$120,000,000 and \$75,500,000 of outstanding stock is in the hands of a receiver. A fare of 8c is in effect, and has so far proven insufficient to pay the cost of service. The Pittsburg Ry., operating 605 miles of track is in the hands of a receiver. Hundreds of others could be cited. Roads which before the war were considered the strongest financially in the country cannot any longer withstand the economic conditions which face them.

The suggestion is sometimes made to the effect that the companies should carry on their own burdens by borrowing money, if the street car operations are now unprofitable. Let anyone go out and attempt to borrow money on an afflicted company's credit. Credit only comes from prosperity.

The whole structure of the franchise relationship between the electric railway and the various communities has broken under the strain of war. The rapid increase in the cost of everything which is used in operating street railways, the extraordinary demands of labor for high wages, made necessary by the rise in the cost of living, the alarming decrease in the purchasing power of the dollar, has brought the electric railways face to face with bankruptcy. The fundamental fact exists that under the present costs of material and labor, the majority of the street and interurban railways are furnishing, in response to the demand of the public, a service which costs more than they collect in fares.

Electric railway fares or rates are in the majority of cases regulated by law, or are established by existing franchises. With fixed fares, fixed 25 or 30 years ago, no avenue of automatic escape from rising costs lays open to the electric railway industry. In fact, the electric railways have staggered for years under inadequate rates, so that in the majority of cases, their credit has been destroyed, service impaired, equipment deteriorated to the brink of destruction.

The electric railways (not in Montreal alone), but everywhere, are asking for higher fares. These appeals have been met by a storm of rebuke. The public seems to be willing to permit this great

industry to stagger on under the burdens thrown upon it, with inadequate relief in the way of increased rates, while exposed to the full brunt of the extraordinary increases in cost of labor and material. The public must be brought to realize that its interest in the electric railways of the country is greater than that of the stockholders or bond holders. The electric railways must be placed in a position to continue to discharge their essential service.

The public condemns the street car company without a hearing. Why? What is this due to? I believe that the unfairness of the public is due to the public's blissful ignorance. The public knows nothing about the street car company's troubles, because the street car company does not make a confidant of the public. Public utilities, like some other big interests, rush into print only when some calamity is about to befall them. They make some sort of plea. The public, which is the plaintiff, stands by its guns. It doesn't realize the good that the defendant has done, because it has heard only the bad. The public, someone has said, is the fairest being on earth, but it must be talked to, it must be told the facts.

A community with adequate and efficient street car service is busy, growing and prosperous, while the city, large or small, which has inadequate local transportation is dull, dead or dying. Efficient local transportation, adequate to the needs and welfare of the community is imperative. The public utility, tied by contract and franchise, with heavy financial obligations, and with definite essential responsibilities, must work constantly and continuously to fulfil its obligations—it is tied down hand and foot over long periods of time, and is held down at best to small financial returns, yet the public calls the company impertinent and worse, if it asks for a nominal increase for its products. Food has increased 100%; shelter 20%; clothing 90%—it is paid. But a public utility asks 20%—this is impertinence carried to its limit.

It is plainly evident that whether the public shall decide to operate the street railways, whether it assumes greater control over them, or whether it allows them to remain in the hands of private investors, the unit of their fares, the price at which their product is sold, must be sufficient to operate the roads. The fares should be restored to the level which prevailed in past years. The ticket dropped in our fare boxes today bears an impress "5 cents," but as compared with the 5c of a few years ago, it is 2½c and no more. The street railway franchise, or the statute or agreement calling for the 5c unit called not for an impress or a coin, but for a certain value of purchasing power. The equivalent of the 5c coin in the decade 1890 to 1900 purchasing power is the 10c fare. The purchasing power of the dollar has declined at least 50% since the early nineties. In other words, the 50c of that period bought what it requires \$1 for today. The decreasing purchasing power of the dollar is not a product of the war alone. The war but gave it an additional, although a mighty, impetus. The various little things that we used to pay 5c for are now up with an advance of 2 to 4c—

4c articles are now 6c, and 2c little things are now 4c. If we get right down to the cent, the newspaper that used to sell for 1c is now selling for 2c, an increase of 100%. This is all fair and just, it appears, but street car fares must remain where they are—any increase will not be tolerated.

Does the public pay high prices for electric transportation service? No—decidedly no. A tabulation of the income accounts of 388 electric railways, representing more than 63% of the electric railway mileage of the United States and Canada, shows a falling off in net income of 82% in 1918 compared with the corresponding period of 1917. Many companies are facing actual operating deficits in spite of increased fares and increases in gross receipts. In any other business the manager provides for increased costs by advancing his selling price. The electric railway company with fixed fares cannot do this; only when on the brink of destruction will the community admit that there is a justification for the readjustment of rates, and even then the increased fares have in a majority of cases caused a falling off in traffic and resulted in little, if any, actual increase in gross revenue.

Is there a remedy for the conditions facing public utilities today? Let us see how the cost of street railway service is made up. Cost of electric transportation service is made up of three main items:—

1. Cost of operation, including platform wages (motormen and conductors), power for cars, heating and lighting and taxes.
2. Maintenance and renewals of the system as a whole.
3. Fixed charges, i.e., interest on the moneys invested in the system, including city rental for use of streets.

In the City of Montreal, for the period from July 1 to Dec. 1, 1918, the operating expenses per revenue passenger were in round figures 2.6, or 58% of the revenue. For maintenance and renewals, 75c or ¾c per revenue passenger was spent, that is 3.35c or 75% of the revenue was disbursed for operating expenses, maintenance and renewals. For this same period the average return per revenue passenger was 4.45c. Of this remaining 1.1c average return per revenue passenger, 1c in round figures is required to meet the company's financial obligations, that is, to meet the interest on the bonds and debentures, leaving 0.1c or a little over one-tenth of a cent per revenue passenger to meet the city rental and shareholders' dividend. In other words, in the last six months of 1918, 75% of the fare collected was paid out by the company for operating, maintenance and taxes; of the remaining 25%, 23% went to interest on bonds, mortgages and debentures; the remaining 2% goes to the city, the balance, if any, to the shareholders.

Of the total revenue in 1918, not less than 38% went to labor and 37% to material. In 1918, over \$3,000,000 was paid in wages; less than one-tenth of this was paid to shareholders. An increase of 10% in wages would therefore wipe out all dividend payments for one year.

The Montreal Tramways in the year ended June 30, 1914, just prior to the war, spent in operating expenses, including maintenance and renewals, 58.89% of its revenue. In 1918, as stated above,

the operating expenses, including maintenance and renewals, amounted to 75% of the revenue. It may also be stated that the expenditure for maintenance and renewals was below the average spent in previous years. Increased wages and increased cost of materials are responsible for this large increase in operating cost. Municipal ownership is urged by many as a panacea. One year of public ownership of railways in the U.S. has proved the absolute danger of such control. It should be borne in mind that whether the public operate the street railways under public ownership, or whether they are operated by officials—the servants of private investors—the unit of the fares, that is, the price at which the product is sold (in this case transportation), must be such as will be sufficient to meet the total operating costs.

The management of an electric railway is not as blind as to refuse an extension of facilities or an improved service if it is likely to bring an increase in revenues, but it costs money to run cars and certain revenues must be obtained to keep the cars running. The real cost of service per passenger depends on the length of time that he occupies space on a car and hence the traffic conditions of high cost are: Slow average speed and long average ride.

If we divide the company's passenger revenue per annum by the number of revenue passengers per annum we obtain the average return per revenue passenger. With fixed fares, this return per revenue passenger is constant. In Montreal, the return per revenue passenger before the increase of fares, was on an average, 4.1c; it is now 4.8c, an increase slightly less than 0.7c per passenger or, an increase of 18% over the previous rate of fares. For every revenue passenger carried the company now receives 4.8c, irrespective of the distance travelled by the passenger. The dweller in Notre-Dame de Grace, or Ahuntsic, or Cartier-ville who rides 5, 6 or 10 miles, pays no more than the dweller in Hochelaga, or St. George or St. Denis Wards, who rides only half a mile to destination.

I have stated previously that the real cost of service to a passenger depends on the length of time that he occupies a space on a car, and hence the traffic conditions of high cost of service are: Slow speed and long average ride; the largest item of expenditure is labor as it absorbs from 38 to 40% of the total revenue.

The labor charge amounts to a fixed quantity per hour that a car is in operation, that is, the labor charge is not proportionate to the distance travelled by the car, that is, to the mileage, but the higher the average speed of the car, the lower will be the labor cost for a given distance travelled by the car. Economy demands the largest possible car mileage in proportion to car hours and this makes the speed at which cars are operated very important. Every effort must be made to increase the average speed. Not only does a high speed make the service attractive, but it also makes possible lower prices. It is the speed and cheapness of operation which makes 5c rapid transit in subways and elevated roads possible.

The previous discussion has pointed out that to provide proper service the earnings per passenger must be sufficient to allow a liberal allowance for operating expenses per passenger, that is, an adequate car mileage per annum varying

with the total number of passengers must be provided. Funds must also be provided for the proper maintenance and repair of the tracks and equipment. Annual fixed charges of the capital invested in the system must also be paid.

Under the new contract, the Montreal Tramways system is operated under a service at cost plan whereby the fare is automatically adjusted to meet the cost of service, including in this cost a fair return to capital invested in the enterprise. The new tramways contract embodies primarily the control of the fares, that is, the control of the fares in order to prevent unreasonable profits to the company from exploitation of the need of the public for tramways service. The cost of service principle is embodied in this contract.

The principle of controlling the fare in order to prevent such exploitation, or in other words, imposing a limit to the company's profits, involves in equity the provision also of means to guarantee to the company a minimum fair return on its investment. As the chances of excessive profits are removed, so the chances of loss must be minimized. It is clear, therefore, that at any time the fare must be sufficient on the average to pay for the cost of operation and proper maintenance of the system, with such other legitimate charges against revenue as may be agreed on, including a fair minimum profit on the invested capital of the company. This return is a preferred charge on the company's revenue after paying for the operation and proper maintenance of the system. If a guaranteed return is provided, the company must allow of a measure of outside control on such deductions from revenue as have priority over this return on the capital invested. It follows, that the various items of the cost of service must externally controlled.

In order to provide service to the public, the Montreal contract provides continuous control of the car service. This necessitates the provision of sufficient cars to carry the traffic under average conditions and special provision for rush hour conditions. It is impossible to formulate clauses in a contract to provide for control of his nature; a controlling body must be empowered to order such changes as from time to time may become desirable after careful study of the traffic requirements. Apart from rush hour conditions the service bears a simple relation to the average number of passengers per car mile, carried per annum, that is, the density factor. The cost of operation and maintenance are passenger varies almost inversely as this density factor. Thus a high value of this factor results in a low cost per passenger, but the cars will be crowded. At present, when the base costs of operation and maintenance are high, it is necessary to allow a high value for this ratio, in order to keep the cost per passenger within reasonable bounds. This limit is imposed by the average fare per passenger collected. With a decrease in base costs it may be desirable to reduce this factor, giving improved service at the same maximum cost and fare.

After all the charges have been paid, viz: operating expenses, maintenance and renewals, fixed charges, city rentals, the remaining surplus is to be divided in the proportion of 20% to the company, 30% to the city and 50% to a special fund devoted to the reduction of fares. The sum total of this fund is used as the in-

dicator of the adequacy of the fare charged to meet the charges of the company. If this fund becomes depleted, due to drafts to make up shortage in the contingent reserve fund, it will be evident that the succeeding year's operation would show a further drain of reserve which would not be replenished from the tolls reduction fund. All the charges against income would not be fully guaranteed for the succeeding year and since such guarantee is a primary condition of the contract, it will be necessary to revise the fare schedules to replenish the contingent reserve fund. At any time when, owing to there being a large balance to the credit of the tolls reduction fund, the same being sufficient to make up the estimated decrease in gross earnings at a lower fare for a period of several years, it is provided that the controlling body may order a reduction of fare. This method of obtaining a readjustment of fares, being based on the total of a fund to which, when any surplus exists, money is added each year, prevents the possibility of postponing a reduction of fare by excessive expenditure undertaken to reduce the annual surplus. In this respect the scheme of the proposed contract is different from any that have been in use.

It will be seen from the above discussion that the permanent controlling body is necessary. It is obvious that outside control, as above provided for, is in the interest of the travelling public. Since the city shares in the profits and responsibilities of the tramways system, it is a partner in the enterprise. It is desirable, therefore, that such controlling body should be independent of the City of Montreal and of the Montreal Tramways Co., and should be an entirely independent body.

The agreement provides for a proper return on the fair value of the property and guarantees efficient service to the community. On such a basis the matter of fares readily adjusts itself and such questions as the extension of service into unproductive territory, increase of service, and other questions that have caused irritation in the past, will present themselves for consideration in an entirely new aspect. All unnecessary burdens and additional burdens imposed upon the electric railways must inevitably and logically be reflected sooner or later, either in the rate of fare, or in the impairment of the service rendered. The familiar protests against the crowding of cars, antiquated equipment, infrequent service, poor service, transfer privileges, etc., will now come back to the car riders themselves and the remedy is obvious. The people of Montreal or any other city can ride in discomfort or in luxury according to the bill which they are willing to pay.

The foregoing paper was read before the Montreal Publicity Association recently.

**The Detroit Wages and Fare Situation**—Employes of the Detroit, Mich., United Rys., returned to work June 12, after having been on strike from June 7 to enforce a demand for an advance of wages. The plan of settlement involves the increase of wages to 50c an hour for the first 3 months; 55c an hour for the next 9 months, and 65c an hour thereafter, to date from May 16, with the abolition of the 5c fare, and the 8 for 25c workmen's tickets, from June 21. The fare to be charged as fixed by the city council is 5c.

## The Winnipeg Sympathetic Strike and the Winnipeg Electric Railway.

A correspondent wrote Canadian Railway and Marine World from Winnipeg, June 15, as follows:—

At the time of writing, June 15, Winnipeg has been in the throes of a general strike for just over 4 weeks. This strike, which affects 35,000 workers, was aimed at depriving this city, of 200,000 people, of its public utilities and necessities of life, and is very generally acclaimed to be an attempt on the part of radical leaders who control the local trades and labor council, to establish Bolshevism and the rule of the soviet here. That the strike has extended over so long a period, is due to the very wholehearted manner in which the citizens have banded together, in an effort to defeat what even ministers of the crown have described as a revolutionary attempt to overturn proper governmental authority and to supplant sane progressive trades unionism with the "one big union" idea, which is akin to the I.W.W. and Bolshevik movements in other countries.

A dispute between metal trades employers and employes was seized upon by the trades and labor council as the *casus belli*. The metal trades employers, while prepared to negotiate schedules with committees of their own employes, or international representatives of the latter, refused to recognize the metal trades council, a combination of unions, including several with which the metal trades employers had no dealings with whatever and nothing to discuss. The metal trades council, which is composed of very radical socialists, insists on being recognized as the official negotiating body for all metal trades workers. The employers, however, refused to recognize any extraneous body. In spite of the fact that the employers were prepared to negotiate with unions or committees of their own employes the metal trades council received the support of the trades and labor council, on the plea that the employers refused to recognize the principle of collective bargaining, and in order to force the employers to accept the definition of collective bargaining, as drawn up by the metal trades council, a general sympathetic strike of all unions, including firemen and policemen, associated with the trades and labor council was called. A vote of the unions was taken first and 8,000 voted in favor of the strike, as against only a few hundred opposed. Misrepresenting this as a majority vote of all workers, the general strike went into effect on May 15, and 35,000 workers became idle. Before the strike, and since, strenuous efforts have been made by provincial and Dominion authorities to effect a settlement. The strike leaders, holding that they could not arbitrate a principle, which in this case is collective bargaining, refused to refer the dispute to arbitration.

Printing pressmen, stereotypers and locomotive firemen, locomotive men and trainmen were also called out. For a week Winnipeg was without a daily newspaper, but the international organizations of these various unions refused to countenance a sympathetic strike, and the local unions which did strike, have in consequence been punished. The newspapers have now got their full staffs, while the train service has not suffered

much interference. Incensed at the attempt to deprive the city of fire and police protection, transportation, water, light, milk and bread, etc., the citizens banded together into a "Committee of One Thousand" and issued the edict that before a settlement of the metal trades dispute is made the question of the sympathetic strike must be settled once and for all. Volunteer forces were organized to man the police and fire brigades, the light and water plants, and the milk plants and bakeries. Having thus successfully nullified the attempt of the strike committee to reduce the city to starvation, the citizens expressed determination that the sympathetic strike weapon, as it applies to various utilities, shall not be resorted to every time there is a dispute between a private employer and his employes. Permanent staffs for the fire, police, and other utility departments have to sign a "loyalty" oath before being taken on, in which they declare they will not become members of any union affiliated with an outside body, and that they will not participate in sympathetic strikes.

One of the principal sufferers in connection with the strike has been the Winnipeg Electric Ry. Co., which operates light, power, gas and transportation utilities. Fortunately the company was able to keep its light, power and gas plants in full service, but the transportation utility has been completely tied up since May 15. The 1,700 motormen, conductors, and shop employes, struck in sympathy with the metal trades employes and not through any dispute with the company. At the time the strike was called a board of conciliation was engaged in arbitrating the demands of motormen and conductors for 70c an hour (maximum) and an 8-hour day. Several sessions of this board had been held, but A. Scoble, business agent of the street railwaymen's union, had told the board that no matter what its decision was, unless the demands of the men were met they would go out on strike. The union refused to name a representative on the board, and refused to put in its case. Three days before the sympathetic strike was called, the street railwaymen were asked, by their union officials, to vote on the question: "Are you in favor of a strike to enforce your demands?" No reference was made to conciliation, and the result of the vote was 97% in favor of a strike. No vote, however, was taken on the sympathetic strike issue, but the men responded to the trades and labor council's call and went out on strike on the morning of May 15. Meantime the board of conciliation investigating the men's demands had suspended until the strike is over.

No action was taken with regard to resuming street car service until June 9, when the city council passed a resolution requesting the company to resume operation immediately. Several conferences were held between officials of the company and the city with regard to the provision of police protection. In response to the city council's demand, A. W. McLimont, Vice President and General Manager of the company published an advertisement in all local papers asking the men to report for work at their respective barns on June 12 at 8 a.m. This advertisement closed with the following appeal: "I wish to convey to you

men my personal feeling that you are not now aiding the cause for which the general strike was called by continuing to deprive the people of Winnipeg of transportation. On the contrary, you are injuring your personal standing in the community and getting the authorities and the public alike down upon the Winnipeg Electric Railway Co.'s employes. Remaining on strike now only results in seriously injuring the company which employs you and depriving it of revenue it must have to conduct its business, and provide the wherewithal to pay your wages, in order that you in turn may support your families and yourselves."

On June 11 members of the street railwaymen's union held a meeting to consider this new development, and after discussion they decided unanimously to remain out on strike in sympathy with the other workers. Strong pickets were placed at the respective barns, the following morning, and only two employes reported for duty. Resumption of service, of course, was impossible.

In a letter to Mr. McLimont, the president of the street railwaymen's union, after giving the result of the meeting, said: "We regret that we are unable to comply with your request that we appear for work at 8 o'clock on Thursday morning to operate cars. We would be very pleased to do so if the question that caused the suspension was eliminated, but instead of it being eliminated, other complications have been added that make in our opinion operation of cars a serious mistake at this time. We are hopeful, with your co-operation, that the time of operation will be extended until the matters in dispute are satisfactorily adjusted to all concerned. We appreciate the spirit in which your letter is couched and we hope that in the very near future we will be able to resume our former positions, and continue our past amicable relationship, and we would request that you use your good offices with the many other influential interests that are working, with the object in view of restoring to our fair city that spirit of good fellowship and brotherly love that should permeate every man and woman that has the welfare of the community at heart. Try with us to again establish the spirit: 'Do to others as we would have them do to us.'"

At a city council meeting on June 14 the question of permitting jitneys to ply the streets just so long as the street car service might be tied up, was discussed. The City Solicitor suggested that the council might ask the Winnipeg Electric Ry. Co. to waive the agreement with the city prohibiting jitneys for the time being. Some of the aldermen, however, argued that the company had broken its agreement through not providing street car service when requested by the council, and was, therefore, out of court. After discussion the City Solicitor asked for time to study the question, before making a statement as to what rights the city had to permit jitneys to run under the circumstances.

As the Winnipeg Electric Ry.'s passenger revenue averaged about \$10,000 a day previous to the strike, its loss has, of course, been very heavy.

Owing to the fact that on June 12 only two out of the whole of the men on strike reported for work, no attempt was made to operate any cars. The element seemed

to join with the strikers in preventing the cars running, for on June 14, the city was visited by a severe cyclonic storm, which did very considerable damage to the electric railways and power transmission lines, etc., it being reported that on the Winnipeg, Selkirk and Lake Winnipeg Ry. alone, there were eight miles of poles demolished. Owing to the effects of the storm no attempt was made to run the cars until June 18, when 13 cars were put in operation early in the morning. The power was soon afterwards mysteriously shut off, and later on turned on again. It was reported June 18 that cars would be operated on the Portage Ave. route only in the meantime. Subsequent report stated that additional men were returning to duty, that additional lines were being restarted, and that it was hoped before very long to restore a full service. On June 25 it was announced that the sympathetic strike had been called off unconditionally and that normal electric car service would be restarted at once.

**Quebec Railway, Light & Power Co. Orders Double Truck Cars.**

The Quebec Railway, Light & Power Co. has ordered 10 double truck steel cars for its city street railway division, the same to be fully equipped and ready to operate, and to be numbered 610 to 619, both inclusive. Five have been ordered from Ottawa Car Manufacturing Co. and 5 from Preston Car & Coach Co. Following are the principal particulars:

- Seating capacity ..... about 42 persons
- Weight (car body only) ..... about 15,000 lb.
- Weight (car complete) ..... about 36,000 lb.
- Length of body ..... 29 ft. 83 in.
- Length of front vestibule ..... 4 ft. 6 in.
- Length of rear vestibule ..... 6 ft. 0 in.
- Width over all (not to exceed) ..... 8 ft. 0 in.
- Width at roof (not to exceed) ..... 7 ft. 8 in.
- Projections of bumpers ..... 0 ft. 6 in.
- Length over all (not to exceed) ..... 41 ft. 2 in.
- Bolster centers ..... 18 ft. 0 in.
- Interior trim ..... mahogany finish
- Headlining ..... agasote
- Roof ..... single arch
- Air brakes ..... Westinghouse S.M.E.
- Hand brakes ..... Peacock
- Axles ..... 4 1/2 in. diam.
- Car trimmings ..... Ottawa Car Co.
- Cables ..... "
- Control ..... single end Westinghouse K-35-D
- Curtain fixtures ..... Nat. L. W. Co.
- Curtain material ..... Fabrikoid
- Fenders ..... H.B. life guard
- Gear ratio ..... 15-69-5 in. face
- Gears ..... Nuttal b.f.
- Heaters ..... Con. Car Heating Co.
- Headlights ..... Crouse Hinds
- Journal boxes ..... Brill
- Motors ..... 4 Westinghouse no. 533, 40 h.p. each
- Motors ..... outside hung
- Seats ..... 8 crossed, 4 on each side, center of car
- Seats ..... 1 crossed, front end at iron stanchions
- Seats ..... 4 longitudinal, 2 front end, 2 rear end crossed seats
- Seating material ..... rattan
- Trucks ..... improved short wheel base for outside hung motors. Brill 76-E-2
- Wheels ..... rolled steel, 33 in. diam., 2 1/2 in. tread, 5/8 in. flange
- Ventilators ..... 6 utility honeycomb
- Faraday high voltage car signal system.
- Fare boxes (Coleman large stand and no. 4 type).
- Motorman and conductors' seats.
- Perry Hartman's standard double roller bearing side-bearings, and ball center bearings.
- Sand-boxes, foot gongs, p.a.y.e. stand,
- Trolley poles, high grade steel tube, Nuttal trolley base 11.
- Lighting fixtures same as Montreal Tramways Co., 1550 class cars.

Construction underframe and carbody to be of similar design to that of Montreal Tramways Co., 1550 class cars, eliminating folding steps and doors feature on rear vestibule end. Front vestibule to be short, and equipper with folding door and step, with operating lever convenient to motorman. There to be no bulkhead at front end of car, but 2 iron pipe stanchions and a panel installed up

to the height of the belt rail, also a long cross seat to be installed across the front end of car to seat 3 persons. Rear vestibule to be circular at end, and equipped with heavy bronce p.a.y.e. rails, no doors on entrance or exit to platform. There are to be 11 double sash windows in each side of car body, top sash to be stationery, and bottom sash made to raise, to open. Roof to be of arch type, with 3 honeycomb ventilators at each side. Bulk head at rear end, with one sliding door at exit side, and one folding door at entrance side.

Car to be equipped in accordance with specifications with seats bumpers, drawbars, curtains, grabhandles, p.a.y.e. rails, folding step at front vestibule, push buttons, buzzers, signal bells, alarm gongs, hand straps, ventilators, brakes, track sanders and other minor fittings and appliances found on cars of this type generally. Six iron pipe guard rods with fittings to be put on windows on devil strip side of car body 3 in. apart. Also a 3-rod brass window guard on vestibule windows and seats for the motorman and conductor.

The specifications cover the construction of car bodies, equipments, trucks, special fittings and appliances mentioned therein, cars to be furnished ready for operation. Minor details suggested by the purchaser during the construction of the cars to be carried out without

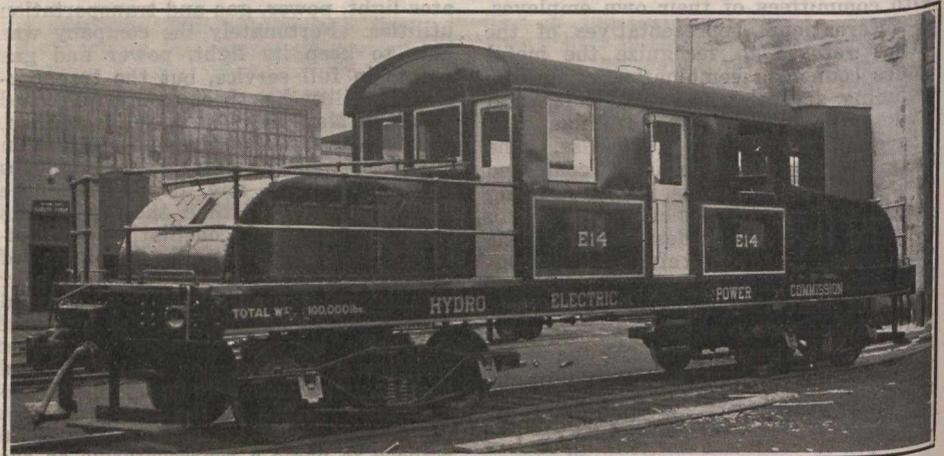
the loan, so that on a \$2,000 property, the company will provide \$1,800, and the employe \$200. The company's legal and other departments give their services free in carrying out the plans.

**American Electric Railway Association Convention**—Owing to war conditions this association did not hold a convention in 1917 or 1918, but it will revive its annual convention this year, and that of its affiliated associations, viz: American Electric Railway Accountants' Association, American Electric Railway Engineering Association, American Electric Railway Claims Association and American Electric Railway Transportation & Traffic Association. The convention will be held at Atlantic City, N.J., from Oct. 6 to 10, both inclusive, and there will be an electric railway appliance exposition on Young's Million Dollar Pier, where the associations' meetings will also be held.

**Electric Railway Finance, Meetings, Etc.**

**British Columbia Ry. and allied companies:—**

	Apr., 1919	Apr., 1918	10 mons. to Apr. 30, 1919	10 mons. to Apr. 30, 1918
Gross .....	\$631,988	\$515,417	\$6,022,107	\$5,010,688
Expenses.....	458,674	385,420	4,449,003	3,848,184
Net .....	173,314	129,997	1,573,104	1,162,504



Electric locomotive for Hydro Electric Power Commission of Ontario's Niagara Power Development Construction Railway.

extra charge, providing such suggestions are made in time not to interfere with the construction.

**British Columbia Electric Ry.'s Housing Plans.**

As a practical instance of what may be done by a company for the benefit of its employes in the way of enabling them to own their own homes, the project recently put in operation by the British Columbia Electric Ry. is of interest. The company made a start with its office employes, and to assist them in buying or building houses, set aside recently \$50,000 to be loaned at 6% repayable in instalments. The details of the plan, which were worked out by a committee of the Office Employees' Association, fix the maximum amount to be loaned to any one employe at \$2,500, and the repayment term at 12 years. Over 80 applications, totalling \$160,000, were received, and the committee selected 25 of the applicants. The first cases handled are purchases of houses already built. The applicant is required to provide cash or security equal to 10% of

The gross and net for Apr., 1919 include \$16,185, representing 1c out of every 6c fare collected in Vancouver, and held in suspense under the Public Utilities Act, pending the commission's decision.

**Cape Breton Electric Co.:—**

	Apr., 1919	Apr., 1918	4 mons. to Apr. 30, 1919	4 mons. to Apr. 30, 1918
Gross .....	\$46,455.82	\$37,674.04	\$184,534.25	\$154,913.56
Expenses .....	33,316.47	27,985.85	136,732.30	120,365.48
Net .....	13,139.35	9,688.19	47,801.95	34,548.08

**Regina Municipal Ry.**—A Regina, Sask., paper says:—"During May the street railway deficit took a jump from \$9,152 to \$17,324. In other words the deficit for May was nearly as great as that of the four preceding months." Superintendent Houston is reported to have pointed out that cheques for back pay for the increase of wages granted by the council were paid in May. He estimates that the increase will amount to \$11,000 or \$12,000 a year, so that \$5,000 of the increased deficit would be accounted for in this way. This added to the normal increase in the deficit for the month at the first four months of the year would

practically make up the difference of the deficits.

**Sandwich, Windsor and Amherstburg Ry.**—It was reported May 30 that negotiations were in progress for the purchase by the Hydro Electric Power Commission of Ontario of the lines in Canada, owned by the Detroit United Rys. and operated by the Sandwich, Windsor and Amherstburg Ry. A subsequent statement was to the effect that the negotiations had been broken off owing to the decision of the municipalities to submit bylaws authorizing the company to charge increased rates in order to pay its employes higher wages on a scale agreed upon. The bylaws will, it is said, be voted upon by the ratepayers of the City of Windsor, the Town of Walkerville, and the municipality of Sandwich, on July 5.

**Toronto Ry.**—At a recent meeting of the Toronto board of control, the mayor moved that a bylaw be submitted to the ratepayers at the election in Jan., 1920, authorizing the provision of \$5,000,000 to prepare the way for the taking over of the Toronto Ry. by the city in 1921. The matter was referred to the city council's transportation committee.

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

	4 mons to		4 mons. to	
	Apr., 1919	Apr., 1918	Apr. 30, 1919	Apr. 30, 1918
Gross	\$1,051,960	\$1,065,766	\$4,257,882	\$4,229,490
Expenses	578,597	565,938	2,476,143	2,285,928
Net	473,363	500,728	1,781,739	1,943,562

**Winnipeg Electric Ry. and allied companies:**—Net earnings after operation April were \$94,570.69, and after deducting fixed charges, \$34,284.97.

**Montreal & Southern Counties Ry. Franchise Renewed.**

The Montreal City Administrative Commission on June 3, passed a bylaw extending the Montreal and Southern Counties Ry.'s franchise for 10 years from June 15, 1918. The company's track in the city is 2,697 ft. long, and for the use of the streets on which it is laid the company is to pay a rental of \$1,400 a mile, plus the cost of sprinkling, and cleaning streets, the removal of snow, and certain repairs to pavements. The total of these items is to be revised every three years, the cost for the first period under the new franchise being, at the rate of \$4,167.40 a year. The company may be called upon to put its power conductors underground; it must lay track on any lines authorized under the franchise by Nov. 1 of this year; it may take up passengers with their baggage, as well as freight and parcels, at its terminal station, but it must not operate a local service within the city limits. (May, 1918, pg. 211).

**Toronto Street Car Questions.**

The Toronto Bureau of Municipal Research asked the following questions recently:

Should the citizens at large be compelled to make good annually, through the tax rate, the deficit created by the operation of city-owned utilities?

What percentage of the passengers carried on the civic car lines reside outside the city limits?

Why should the citizens of Toronto furnish transportation at a loss to these people who are not even taxpayers?

If the basis of municipal ownership is

service at cost, why not charge the cost of service to those who receive same?

Should not the civic car lines be put on a better revenue-producing basis so that our civic officials may have a fair chance to demonstrate their ability to handle civic transportation?

Does not the annual deficit from the operation of the civic car lines provide one of the most potent and damaging arguments urged against municipal ownership? Is not this argument being used today?

If the city were to charge the present rate of fares on the proposed North Yonge St. and Mount Pleasant lines, by what amount would the annual deficit be increased.

Are the real advantages to the community of encouraging people to live outside the area served by the Toronto Ry. of importance enough at this critical time to counterbalance the dangers of operation by deficit (to be made up from general taxation)?

Do the citizens wish the present policy of fares below cost continued?

**Mainly About Electric Railway People.**

**T. Ahearn**, President, Ottawa Electric Ry., entertained his fellow directors of the Bell Telephone Co. at luncheon, at the County Club, near Ottawa, recently, after they had held a directors' meeting in Ottawa.

**Miss E. M. Carr**, daughter of C. E. A. Carr, of the C. E. A. Carr Co., railway supplies, etc., Toronto, and formerly General Manager, Quebec Ry., Light, Heat & Power Co., was married recently at Toronto, to E. M. V. Fielding of Niagara Falls.

**Mrs. G. R. G. Conway**, wife of the General Manager, Mexican Light & Power Co., and one of her children, is visiting Scotland for a few months; Mr. Conway and their other two children remaining in Mexico.

**Lorne C. Webster**, President, Quebec Ry., Light, Heat & Power Co., has been elected a director of the Merchants Bank of Canada.

**G. Gordon Gale**, Vice President and General Manager, Hull Electric Co., and Mrs. Gale, are spending the summer at their country house at Aylmer, Que.

**Sir Wm. Mackenzie**, President Toronto Ry., left Toronto, June 14, for England, expecting to return about the end of July.

**Mrs. Henry Smith**, who died in London, Ont., June 10, was the widow of a former Superintendent of the London St. Ry., in the old horse car days, previous to its electrification in 1895, and for some time afterwards, and who died in 1905.

**Jurisdiction Over Grand River Railway Co.**

The Grand River Railway Co. applied to the Dominion Parliament, at its recent session, to repeal sec. 3, chap. 47, Dominion Statutes of 1904. An act respecting the Berlin, Waterloo, Wellesley & Lake Huron Railway Co. which provided as follows:

"The acquisition by purchase or lease by the company, of the line of either, or both, of the street railway companies mentioned in sec. 2 of this act (viz: Galt,

Preston & Hespeler St. Ry. Co. and Preston & Berlin St. Co.) which have been incorporated by charter of the Province of Ontario, or any agreement for amalgamation by the company with either or both of the said street railway companies shall not make such line or lines of street railway companies shall not make such line or lines of street railways or any extension or extensions thereof hereafter constructed under such charter or charters subject to the Railway Act, 1903, or works for the general advantage of Canada, but they shall be and remain subject to the legislation and control of the Province of Ontario."

The bill has passed both houses of parliament and now only requires the Governor General's assent.

**Electric Railway Notes.**

The Hamilton St. Ry. at the city council's request, inaugurated near side stops on June 1, instead of stopping on the far side of crossings as theretofore. The Toronto Ry. is reported to be ordering electrical and other equipment for 50 cars to be built in its own shops.

The Weston, Ont., Town Counsel is reported to be considering taking steps to compel the Toronto Suburban Ry. to put on a 10 minute service between Keele St., West Toronto, and Weston, in accordance with a recent order by the Ontario Railway and Municipal Board.

The British Columbia Electric Ry. had one of its cars damaged recently in a collision with a Great Northern Ry. train at Georgia St. crossing, Vancouver. In an action in a B.C. court, the B.C.E.R. has been awarded \$593 damages; the judge holding that if the emergency signals had been given by the train foreman the accident would not have happened.

The Cape Breton Electric Co. is reported to have begun June 1 to sell metal tickets for use on its cars. These tickets can be purchased singly or in any reasonable quantity, and are to be used on all lines exclusively, except on the Sydney and Glace Bay interurban line, where the requisite coins may also be used in payment of fares. The metal tickets sell for 6c each.

The Montreal Tramways Co. was on June 8, directed by a Quebec court, to pay \$192 with costs to W. Cochram, as damages for injuries received while a passenger on one of the company's cars. The car on which he was travelling was so crowded that he had to stand on the lower step of the car platform. While crossing the elevated bridge near Blue Bonnets, he was struck by a guard or cantilever of the bridge. The court held that the company was not only responsible for the overcrowding of the car, but for the placing of the guard at the bridge at a point too near passing cars.

Three passengers on a Montreal Tramways Co.'s car on Oct. 10, 1915, engaged in a quarrel, which resulted in a Mrs. McDonald, who was also a passenger, receiving some injuries. Her husband, P. McDonald, sued the company for damages, and a court awarded \$1,000 therefor. The company thereupon entered an action against John Couti, N. and E. Beaugard, the three passengers who engaged in the disturbance, to recover the amount of the damages and costs awarded McDonald. Justice Greenshield decided, June 21, in the company's favor and gave judgment against the men jointly and severally for \$1,000 and costs.

## Electric Railway Projects, Construction, Betterments, Etc.

**Calgary Municipal Ry.**—We were officially advised June 18, that there is under construction about a mile of single track line in the city, all the material for which is on hand. This material is being removed from the line built to serve the military camp on the Sarcee Indian Reserve, which is no longer required. The labor is to be paid for out of revenue account. This is apparently an extension of the center street line, which was under discussion in Jan.

At a recent city council meeting, the proposal for the extension of the Killarney St. line was held over pending the giving of a written opinion by the City Solicitor as to how the two-thirds council vote to reject the commissioners' recommendations affected capital expenditures. The commissioners recommendation was for the extension of the line from 17th Ave. and 29th St., south to 23rd Ave., 1,700 ft., turning east on 23rd Ave. and back to 17th Ave. or 28th St., but the council decided that the line be carried to 25th Ave., 1,200 ft. (June, pg. 324).

**Guelph Radial Ry.**—A press report states that the Guelph, Ont., city council proposes to issue bonds to provide funds for the construction of an extension from Hespeler St. north to Mount Forest St.

**The International Transit Co.** is, we are officially advised, relaying with 85 lb. rails between 6,300 and 6,400 ft. of track on Main St., Sault Ste. Marie, Ont., and will also lay a second track alongside as well as renewing the present sidings. The joints will be electrically welded. The company has bought 70 tons of 85 lb. rails from the Algoma Steel Corporation, and 4,500 cedar ties. This work is being done in advance of city permanent paving. A. E. Pickering is General Manager. (June, pg. 324).

**The Lethbridge Municipal Ry.** is, we are officially advised, putting in new ties on three miles of track.

**Lunenburg Electric Ry.**—The Nova Scotia Legislature has amended the company's act of incorporation, principally by granting an extension of time within which the projected lines may be built. The company was incorporated in 1911 to build an electric railway within the municipalities of Lunenburg and Chester. W. Duff, clerk of Lunenburg municipality, was one of the original incorporators.

**Montreal Tramways Co.**—We are officially advised that the company either has in hand, or proposes to carry on, construction on the following extensions and renewals during the current year: Extensions—St. Patrick St. and Monk Boulevard to Allard St., 2.20 miles; Cote des Neiges Road, from Westmount Boulevard, to Queen Mary Road, 1.50 miles. Relaying with 115 lb. rails the following: St. Lawrence from Ontario to Craig, one mile; St. Denis St., Ontario to St. Catherine, half a mile; St. James St., Place d'Armes to McGill St., quarter of a mile; Notre Dame St., Berri to La-croix St., one-fifth of a mile; Notre Dame St., Craig to Frontenac, 0.8 mile; St. Lawrence, Mount Royal to Bernard, 1.80 miles; Amherst, Craig to Ontario, 1.20 miles; St. Catherine St., Laurier to Bellingham, 1.70 miles; St. Catherine St., various renewals, 3 miles. The company also proposes to rebuild certain other parts of its tracks, using the same

rails, and also renewing a number of small intersections. The company also proposes to put up an addition to its Youville substation, to make various renewals to car barns, and to rebuild and strengthen bridge and viaduct on one of its outside lines. W. F. Graves is Chief Engineer, Montreal.

At a meeting of the city council, June 9, the following resolution was proposed by Alderman Elie, but consideration of it was deferred to a future meeting:—"Whereas the needs of traffic require a more efficient tramway service than the Montreal Tramways Co. can possibly give under present circumstances; whereas, whatever may be the number of cars placed at the disposal of the public by the company, congestion cannot be avoided, the number of lines not being sufficient and the service being delayed, owing to the fact that the tramways of several lines have to run on the same streets, as is the case in the vicinity of Place d'Armes; whereas the construction of underground tramway lines would be, in the council's opinion an efficient remedy for the present state of things; Be it resolved, that the administrative commission be requested to consider the advisability of including in the amendments to the charter which may be submitted at the next session of the legislature, a clause amending the tramway contract, or to adopt any other measure so as to provide for the establishment of an underground tramway service with the shortest possible delay." (June, pg., 324).

**Nova Scotia Tramways and Power Co.**—Special meetings of the holders of the company's preferred and common stock were called to be held at Halifax, June 24, to authorize the issue of \$2,000,000 of unsecured 3-year notes, one-half of which are to be put on the market as soon as approved by the Nova Scotia Public Utilities Commission. The proceeds of the proposed issue are to be utilized for the purchase of additional cars and other equipment, and for improvements and repairs.

**Ottawa Electric Ry.**—At a meeting of the Ottawa Board of Control, May 28, the question of the construction of a loop around Cobourg, Murray, Charlotte and St. Patrick Sts., came up for consideration. A press report says the company's proposal to build the loop with a guarantee that it would replace any pavement damaged or torn up, and would maintain a proper service, was recommended to the council for approval. (Sept., 1918, pg. 403).

**Quebec Ry., Light and Power Co.**—The Quebec City Council accepted tenders recently for paving Beauport Road, provision being made for a double track electric railway in the center of the roadway, and for the paving of the western side of Charlesbourg Road, the street railway tracks occupying the western side. Subsequently the matter was discussed with a view of having the location of the railway changed on Beauport Road from the center to the side, and to make a boulevard along the center of both roads. A press report of June 11, stated that the paving contracts had been held up, pending a settlement of the matter. (June, pg. 324).

We are officially advised that the company is building about a mile of track

on Beauport Road, from the Canadian Northern Ry. tracks to the city limits.

**Toronto Civic Ry.**—Works Commissioner Harris, in a report to the Toronto civic works committee, recently reported against any immediate construction of the proposed Mount Pleasant Road civic car line. The estimated cost of building of such a line from Yonge St. to the city limit with bridges, etc., of a permanent character, is \$2,224,164. Other estimates showing the cost of the line with partly permanent construction were also submitted. The committee decided, June 12, not to take any action in regard to the construction of the line until the question of acquiring the portion of the Toronto and York Radial Ry.'s Metropolitan Division on Yonge St., within the city limits has been settled. The residents of the Mount Pleasant area, which the line would serve, held a meeting June 12 and called upon the city council to pass a bylaw, authorizing the construction of the line.

**Toronto Eastern Ry.**—As stated in Canadian Railway and Marine World for June, pg. 322, President Hanna, of the Canadian National Rys., which now holds this company's charter, announced that it was intended this year to electrify the line from Bowmanville easterly to Pickering, on which track has been laid, and that it was intended to proceed with the construction of the line easterly to Toronto as soon as possible. On June 24 we were advised that no steps had been taken to go on with the work indicated above, on account of negotiations being in progress for the sale of the charter, property, etc., to the Hydro Electric Power Commission of Ontario.

### London and Lake Erie Ry. and Transportation Co.'s Line Being Dismantled.

We were officially advised, June 6, that the whole of the rails on the line between London and Port Stanley, had been lifted and sold; 2,000 tons being sold to A. G. Kidston and Co., Montreal, through Jno. J. Gartshore, Toronto, who is taking the balance of the rails, some 800 tons, and selling them to various parties. The power has been shut off at St. Thomas, and the company is taking down the overhead work.

A steel bridge at London, Ont., has been sold to the London City Council, but otherwise none of the real estate or buildings has been sold.

A St. Thomas press dispatch of June 11, states that a special committee of the City Council had arranged to buy the company's car barns, freight house, substation and other real and personal estate in the city, for \$25,000, subject to the ratepayers' approval, payment to be made in 20-year city debentures. The despatch says the property to be acquired includes the tracks within the city, and the spur connecting with the Michigan Central Rd., together with the overhead work of the same; and the car barns, substation, freight house and other buildings on Talbot St. E. The company claims that this property cost \$50,000 and could not be duplicated for \$75,000. The city will use the newly acquired property in connection with the St. Thomas Municipal Ry.

# Marine Department

## The Minister of Marine on Dominion Government's Shipbuilding Programme.

In moving an amendment to the budget resolutions in the House of Commons, June 9, A. R. McMaster, M.P., for Brome, Que., criticized the government's shipbuilding programme. In replying, Hon. C. C. Ballantyne said: "I agree with one point Mr. McMaster made, and that is the necessity of Canada expanding her trade and reaching out for foreign markets. Now is the opportune time for this country to do this. But I was amazed to hear him say that he is opposed to the government's shipbuilding programme, that he considers it a waste of public money. I take sharp issue with him on that ground; I do not consider the policy a waste of public money. I am the minister responsible for recommending to the government the policy of creating a Canadian merchant marine. I think that policy is sound, the government is of the same opinion, and I believe the large majority of the people of Canada also think so. The gentleman overlooks the fact that a large transcontinental railway, such as the government owns and operates at present would be in a sad plight if it did not have ships to complete its transportation chain. The gentleman apparently does not understand that Canada is in need of shipping very badly at the present time. Lloyd Harris, when he was overseas as chairman of the trade commission, sent me a cablegram to that effect from London. He also stated in the press when he returned that the problem before Canada at present is one of shipping. If the government had every one of the 45 merchant ships for which it has planned with a total tonnage of 264,000 tons, in service at present, we could use every one of them and more. Every day I have people coming to me begging for tonnage. And still the gentleman states that the government shipbuilding programme is an unwise policy and involves practically a reckless expenditure. No one finds fault with good old England, which is still supreme as far as her mercantile fleet is concerned, for looking after her own commercial interests first; and she would be the first to applaud one of her overseas dominions for following her example and looking after our own interests with the same keenness that the mother country herself does. What is the United Kingdom doing at present with regard to shipping coming to Canadian ports? She declares that 70% of the available cargo space is reserved for the British Minister of Shipping. I would like the house to take note of this: only 30% of the available cargo space is left for the products that Canada wishes to export. That amount is totally inadequate. In addition to that handicap, our trade commission found, when it visited the United Kingdom, and other European countries, that discriminating freight rates exist against Canada.

"Canada has been for years handicapped in her export trade, and would be in the future also if it were not for the fact that we are building our own merchant marine. It works out like this, that

if the United Kingdom has products to ship to South Africa, we will say, Canada, without ships, cannot compete with the mother country, because she gives such a favorable rate from the United Kingdom to South Africa. But now that we have our own merchant marine, D. B. Hanna, who has charge of the ships, intends to meet the competitive rates of the old country in order that the manufactured products of Canada can be put on the markets of the other overseas dominions and then on the foreign markets on an equality with the mother country as far as freight rates go. Would it therefore be an unwise expenditure for Canada to build up a mercantile marine?

"As I said before, we first of all required our mercantile marine to work in conjunction with our railway system. We hope to see Canadian merchant ships carrying cargoes to all parts of the world and bringing back raw materials required by Canadian manufacturers. I hope in the very near future, as I am sure all the people of Canada do, to see our splendid merchant ships running to Australia and to New Zealand—excellent markets are available there—also to the Orient, from Vancouver; and to South America, the West Indies, South Africa and the United Kingdom.

"There is another point that I would like to drive home. The millions of dollars that the government is putting into ships is expected to come back again into Canada's exchequer. When a year ago I introduced in this house our merchant marine policy I stated that while the rates of freight would probably go down—as they have done since the armistice was signed—that owing to the great loss in the world's tonnage as a result of the enemy's submarine warfare, the rates would still remain sufficiently high to reduce the cost of these ships that we are building, if not to entirely wipe off their initial cost. I am very pleased to say that the nine ships we have in service at present are earning very good gross profits, and I believe that within a year, or at least not more than a year, the initial cost of each one of those ships will be entirely wiped off. The other ships as they are ready to go into service from time to time, are going to make good gross profits, and net profits also, so that the money really is only being put out at the present time temporarily and will again return to the public exchequer. Therefore, I am at a loss to understand the member for Brome being so opposed to the government's shipbuilding programme. I am very glad that so many members on his side of the house have given their unqualified consent to our policy, and I do not believe that he has very much of a following in his opposition to it.

"We hear again and again that England, Scotland or Ireland can build ships cheaper than Canada; and, if the United Kingdom cannot build ships cheaper, then that Australia can do so. When I brought down my estimates I took the precaution to be well posted on shipbuilding costs, and I have a further supplementary esti-

mate to bring down. I stated at that time, and I reiterate now, that all the yards in the United Kingdom are filled up with orders for shipbuilding on what is known as "cost and line." No one can get a fixed price per ton for a finished ship such as the Canadian Government is getting here, and their prices range anywhere from £28 to £33 a ton. I have the prices and the estimated cost on time and line for ships that are being built in the yards of the old country, i.e., cargo ships just the same as the Canadian Government is building, of 8,000 and 5,000 tons. I have not yet asked for prices until the supplementary estimate is approved by parliament, but I have good reason to believe that this government and the people of Canada will be able to have similar ships built in our Canadian ports at just as low a price as they can be built for in England, Ireland and Scotland—built just as well, and a better type of ship."

### Shortage of Tonnage for Maritime Provinces Coal Shipments.

In reply to a question in the House of Commons, June 16, the Minister of Marine stated that the High Commissioner in London, Eng., has been requested by cable to urge on the British Ministry of Shipping, the necessity for the release of requisitioned steamships, and additional representations were being made through the Secretary for the Colonies. The government, he stated, was aware of the difficulty being experienced in delivering Nova Scotia coal at Montreal, owing to lack of tonnage. The majority of the steamships used in the coaling trade are registered in Great Britain, and are, practically, under the British Ministry of Shipping's control.

A London, Eng., press cablegram of June 15, says:—"Sir John Anderson, Secretary of the British Shipping Control, emphatically denies alleged discrimination against Canadian coal interests with respect to the release of tonnage. He says:—"We are concerned with ships, not charterers. We steer a perfectly straight course. Our only possible guiding rule is the public interest. We are bound to work to schedule. Certain ships are arriving, and certain work needs to be done, and the most suitable ships are allocated. It is like a game of chess. If we allowed our moves to be affected by individual interests we should lose the game. If we were guided by our own personal convenience we should long ago have released these ships, because extraordinarily powerful influences have been brought to bear. We do not lack sympathy with the charterers, but are bound to place the public interest first. You may rest assured these ships will be released at the earliest possible moment."

The Marine Navigation Co. of Canada's barque Inversnaid, registered at Montreal, official no. 99,639, has had her name changed to Garthsnaid.

## Specifications for Machinery for 8,100 ton d. w. Steamships for Canadian Government Merchant Marine Ltd.

Of the 45 steel cargo steamships which the Marine Department has ordered, to be operated by Canadian Govt. Merchant Marine Ltd., 16 are to be of 8,100 tons d.w. each, representing a total dead weight carrying capacity of nearly 130,000 gross tons. These orders have been placed as follows: Canadian Vickers Ltd., Montreal, 6; J. Coughlan & Sons, Vancouver, 4; Halifax Shipyards Ltd., Halifax, N.S., 2; Prince Rupert Drydock & Engineering Co., Prince Rupert, B.C., 2; Victoria Machinery Depot Ltd., Victoria, B.C., 2. Canadian Vickers Ltd., launched the first of these steamships, Canadian Pioneer, at Montreal, Dec. 3, 1918, the second, Canadian Ranger April 19, 1919, and the third, Canadian Seigneur, May 7, 1919. They have laid keels for five others. Halifax Shipyards Limited has laid keels for two, and J. Coughlan & Sons have also laid keels for two. Following are the specifications for the machinery of the s.s. Canadian Pioneer, the first of the 8,100 ton ships built:—

1. **General Description.**—The propelling machinery to consist of one set of inverted, vertical, direct acting, triple expansion, surface condensing engines, having 3 cylinders working on separate cranks placed at angles of 120 degrees with each other, supplied with steam from 3 multitubular boilers, at a working pressure of 180 lb. a sq. in. The machinery and boilers to be Lloyd's and Canadian requirements and inspection.

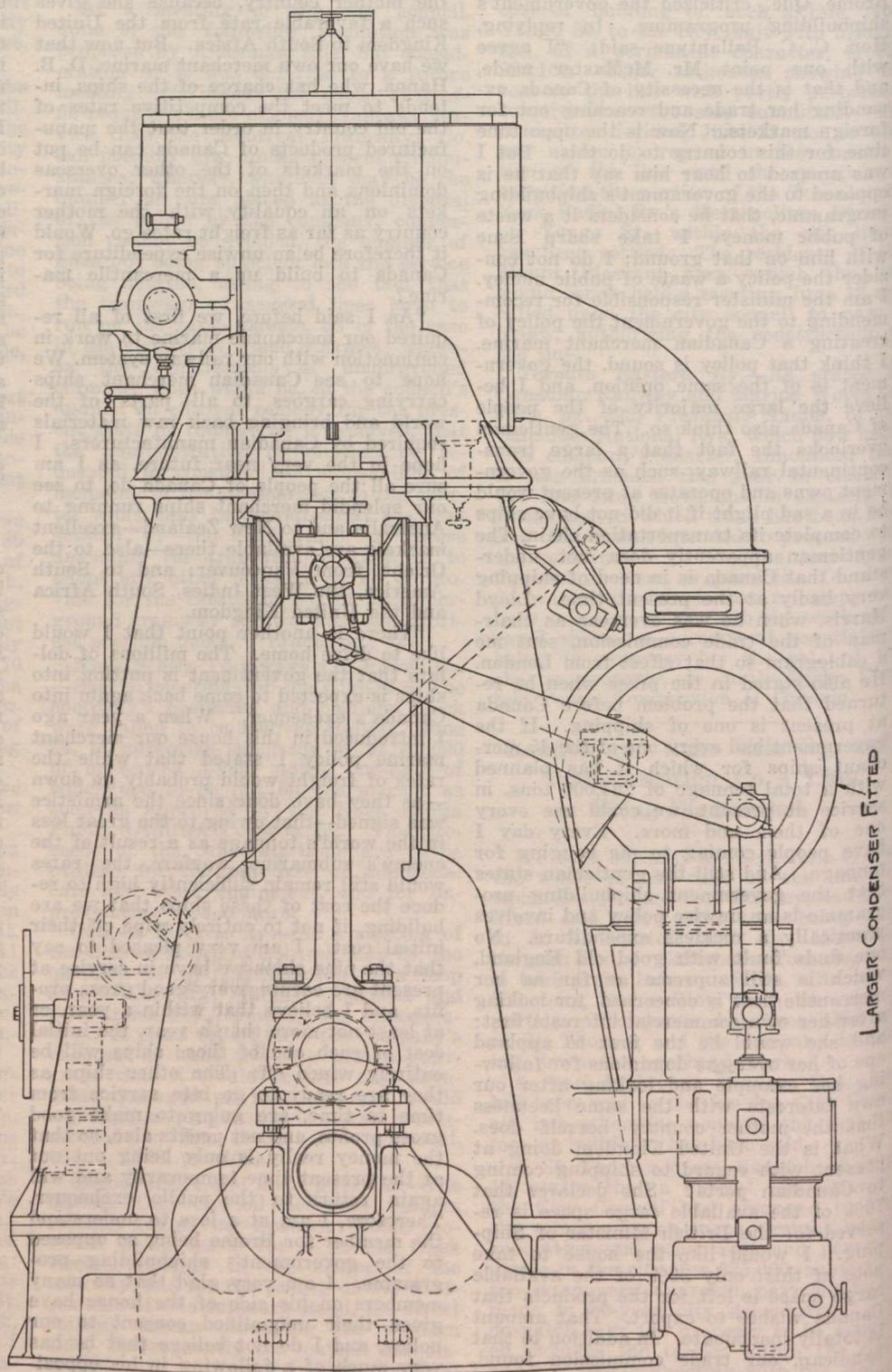
2. **Cylinders.**—To be cast of hard, tough, close grained iron and smoothly bored, fitted together and of the following dimensions: High pressure cylinder 27 in. diar.; intermediate pressure cylinder 44 in. diar.; low pressure cylinder 73 in. diar.; stroke of each 48 in. diar. H.p. cylinder to have hard cast iron liner. The piston valve chambers of h.p. and l.p. cylinders to have separate liners of hard cast iron. Stuffing boxes for i.p. and l.p. piston rods and valve rods to have brass neck rings, and cast iron glands bushed with brass. Gland studs to have double nuts and split pins. Escape valves with hoods to be fitted to i.p. and l.p. steam chests, and to top and bottom of h.p. and i.p. cylinders, and bottom of l.p. cylinders. Drains to be provided for the cylinders, and steam chests arranged to drain through pipes, the h.p. cylinder to the bilge, and the m.p. and l.p. cylinders to the condenser. Drains from m.p. and l.p. casings to be led to the hot well. Indicator cocks and pipes to be fitted to each cylinder, and levers for working the indicators to be fitted to the columns and crossheads. The sides of the h.p. cylinder and steam chest to be clad with silicate cotton or magnesia blocks, and the m.p. and l.p. with felt, the whole of the cladding to be neatly covered with sheet steel, secured with button headed screws to ribs or snugs cast on the cylinders.

3. **Cylinder and Steam Chest Covers.**—The cylinder chests are to be of cast iron, strongly ribbed, to be turned on flanges, and to be corrugated on top. Holes for eyebolts and starting screws to be bored and tapped. Steam chest covers to be corrugated on top, and to be made sufficiently strong by deep ribs cast on the under side. Eyebolts to be supplied for all cylinder and steam chest covers

to suit the lifting gear.

4. A Steam Stop Valve of Cockburn-MacNicol, or other approved type, to be fitted on the h.p. steam chest, with a rod and wheel leading to a starting platform, convenient to quadrant for starting lev-

strong internal ribs. The core holes to be in the top, and the plugs firmly screwed into them, with red lead, each plug being fitted with a set screw to prevent slacking back. The junk rings are to be secured by collar studs, screw-



Engine arrangement, steamship Canadian Pioneer.

ers. Valve chest to be of cast iron, with valve, valve seat, and gland of brass. The control valve also to be fitted with gear, led to lever in quadrant for convenience in handling engines.

5. **The Pistons** to be of hard, close grained cast iron, of box form, having

ed into the pistons, and split pins fitted to prevent nuts slacking back. H.p. and l.p. to be fitted with Ramsbottom rings and l.p. of Lockwood and Carlisle or other approved packing.

6. **Packing Rods** to be of forged steel, and secured to pistons by a coned end

and nut, to have detachable crosshead, fitted with shoes of hard cast iron, fitted on ahead side and astern with white metal for working on the guide bars. H.p. piston rod to have U.S. metallic packing.

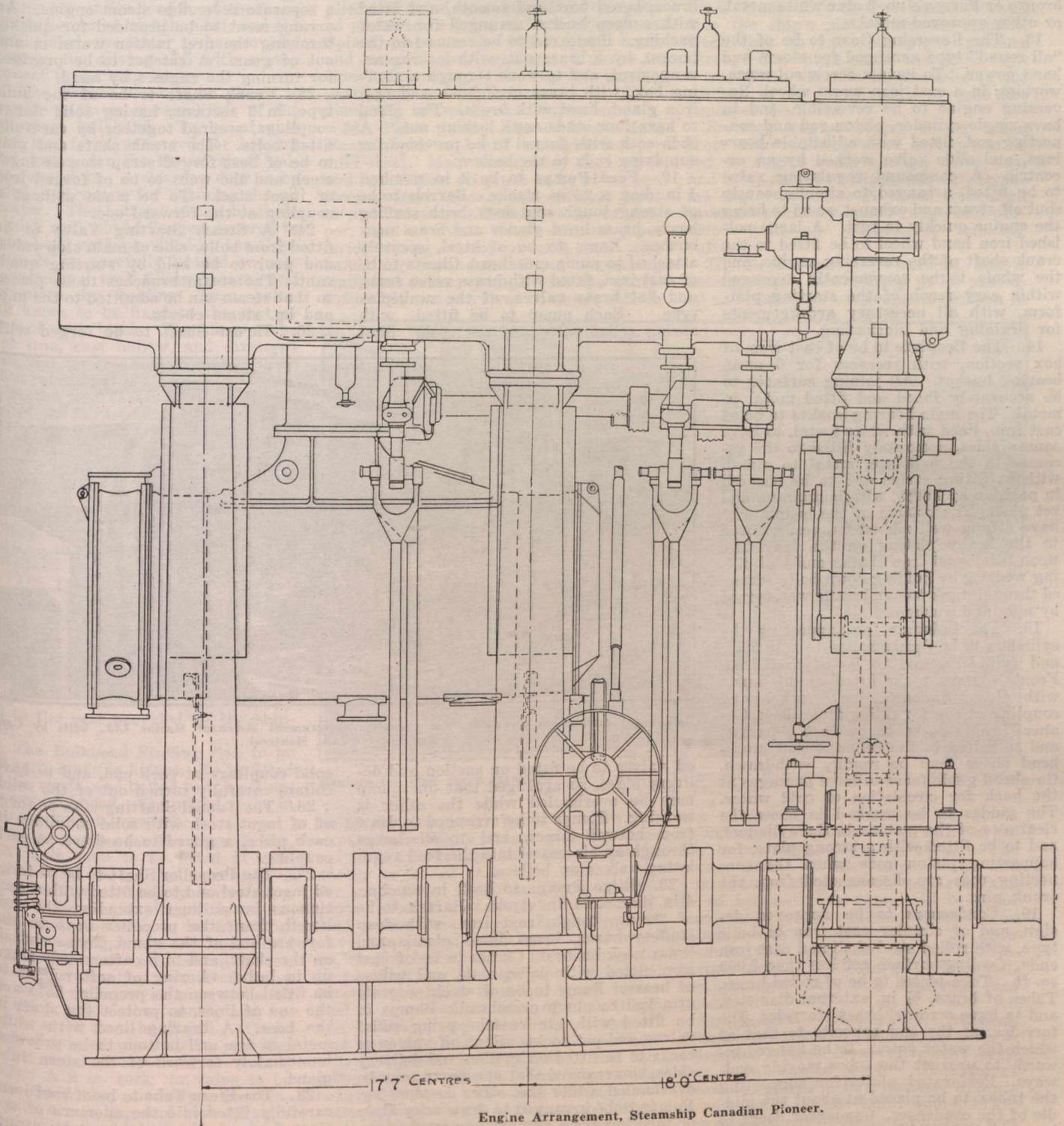
7. **Guide Bars** to be bolted to columns. Fitted with oil boxes at bottom, combs and pipes to lubricate each of the working parts. Water circulation to be arranged at the back of the go-ahead guides.

inside edges. I.p. valve to be a piston valve, piston valves to be fitted with rings. The l.p. valve to be a double ported slide valve, truly faced to the cylinder face, and kept in place by 2 guides, one on each side of the center line. Springs to be provided at the back of the valve to prevent it being thrown off its face.

10. **Slide Rods** to be of ingot steel, with solid forged eye at bottom, and fitted with adjustable brass bush. Valves to be secured to spindles, by large wash-

11. **Reversing Links** to be of double bar type, with pins for the eccentric rods and drag links shrunk into the bars. Sliding blocks to be of ingot steel, with adjustable brass bearings top and bottom.

**Eccentric Rods** to be of best forged steel; each rod to have a T end forged on bottom to take the eccentric strap, and a forked end forged on top to take two adjustable brass bearings for the pins on the reversing links.



8. **Connecting Rods** to be of forged steel at bottom, and double nuts at top. The spindles to be guided at the lower end by a cast iron guide bracket with adjustable bearings. The bottom end to be fitted with cast steel bearing, lined with white metal, and secured by bolts, nuts, and steel set pins.

The h.p. and m.p. valve to be provided for l.p. valve. H.p. piston to be provided for l.p. valve. H.p. rod to have U.S. metallic packing.

**Eccentric Straps** to be of steel, lined with white metal. To be secured in the cast iron domes lined with brass. Balance iron, securely keyed to the crank shaft. **Eccentric Troughs** of galvanized plate to be fitted under eccentrics.

Engine Arrangement, Steamship Canadian Pioneer.

**Drag Links** to be fitted with adjustable brass bushes at each end.

**Wyper Levers** to be securely keyed to the shaft, and each lever arranged with a slot and screw adjustment, to enable the cut-off in each cylinder to be altered independently. The variations in the cut-off to be marked on the levers.

**Wyper Shaft** to be of forged iron or steel, and provided with adjustable bearings.

12. **The White Metal** throughout the machinery to be Stone's navy white bronze or Parson's no. 2 star white metal, or other approved metal.

13. **The Reversing Gear** to be of the "all round" type arranged for steam and hand power. To have a screw cut worm, working in a cast iron worm wheel. Reversing engine to be reversible, and to have single cylinder, piston rod and connecting rod, fitted with adjustable bearings, and slide valve worked by an eccentric. A compound regulating valve to be fitted, arranged to simultaneously shut off steam and exhaust, so as to bring the engine quickly to rest. A large polished iron hand wheel to be fitted to the crank shaft of the reversing engine, and the whole to be conveniently arranged within easy reach of the starting platform, with all necessary arrangements for draining and lubricating.

14. **The Bedplate** to be of cast iron, of box section, with recesses for 6 main bearing bushes. All joining surfaces to be accurately faced and fitted metal to metal. The main bearing bushes to be of cast iron, lined with white metal, to have square sides, accurately fitted to the recesses in the bedplate, metal to metal, without fitting strips and to be secured in position by keeps, with bolts, nuts and set pins. The bottom of the bedplate to have strong well ribbed flanges, secured to the heavy plating on the tank top, upon fitted cast iron chocks and teak filling wedges, by holding down bolts screwed through tank top and made waterproof by nuts and washers.

15. **The Columns** for supporting the cylinders to be firmly bolted to sole plate and cylinders, and to be of cast iron. Front columns to be fitted as oil tanks, with cleaning doors, lock cocks, and coupling at top for filling from deck. Go-ahead guide faces to be cast separate, and so bolted to the columns that cross-head shoes may be readily withdrawn. Go-ahead guide faces to have passages at the back for circulation of cold water. The guides to be marked to show the clearance of the pistons in the cylinders, and to be fitted with a strong plate, for supporting piston rods when the connecting rods are disconnected from the crank pins.

16. **Condensers** to be approved design, and of circular cast iron or built type, with rolled steel shell and cast iron ends. Cooling surface not less than 3,000 sq. ft. Tube plates to be of rolled brass. Tubes of brass,  $\frac{3}{4}$  in. external diameter, and to have screwed brass ferrules. The ferrules, at the end opposite to that at which the water enters, to be flanged inward to prevent the tubes moving endways. Perforated plate, for supporting the tubes, to be placed at about the middle of the condenser. Condenser doors to have snugs for lifting, cast on. All bolts in contact with sea water to be of brass. Plate to be fitted in bottom of condenser. Division of condenser to be arranged so that water shall pass twice through it. A manhole for internal examinations to be provided. A supplementary feed cock to be fitted.

17. **Circulating Pump** to be of centrifugal type, driven direct by a vertical enclosed forced lubrication engine by Goldie and McCulloch Co., or other approved maker. Pump to have cast iron case, gunmetal impeller and bronze spindle, pipes 12 in. bore.

18. **The Air Pump** to be Edwards type, 24 in. dia. x 24 in. stroke, single acting. Valves to be of multiplex type, with brass guards, and seats of ample area, brass studs, brass nuts, and locking arrangement. Pump liner to be of brass, bored true and smooth, and fitted with a deep bucket arranged for water packing. Pump rod to be secured to the bucket, by a brass nut, with locking arrangement, and to work through a stuffing box, with brass neck bush and cast iron gland, lined with brass. The gland to have four studs, with locking nut. A soda cock with funnel to be provided for supplying soda to the boilers.

19. **Feed Pumps** to be 2 in number, 4 in. dia. x 24 in. stroke. Barrels to be of strong tough cast iron, with stuffing boxes, brass lined glands and brass neck bushes. Rams to be of steel, securely attached to pump crosshead. Chests to be of cast iron, fitted with brass valve seats, and flat brass valves, of the multiplex type. Each pump to be fitted with spring relief valve and pet cock. Shut

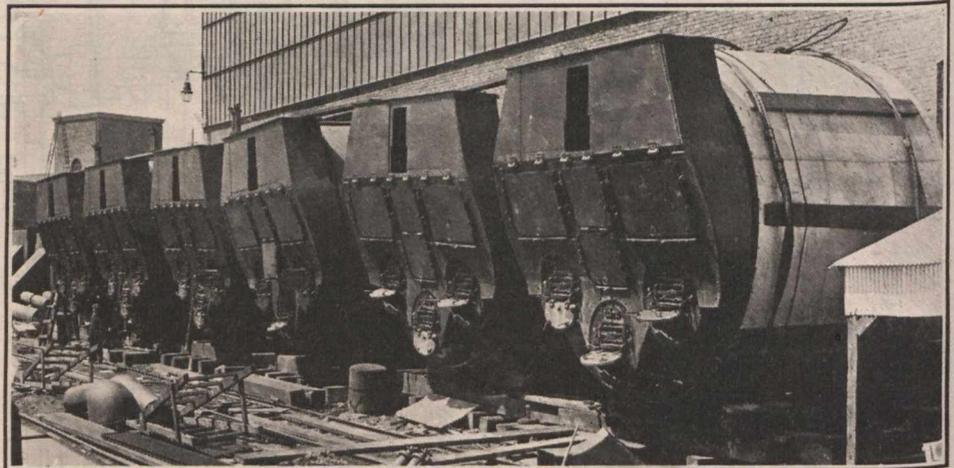
forged iron or steel. The center gudgeon to work in 2 adjustable bearings of brass. The links to be fitted with adjustable bearings of brass at each end, secured by double nuts and split pins. One feed and one bilge pump to be at each end of crosshead.

22. **Turning Gear**.—A turning gear of cast iron to be securely keyed to the after end of the crank shaft, and to have geared into it a screw cut worm, fitted on the shaft of a second motion wheel having a worm arranged to be turned by a separate reversible steam engine. An arrangement to be provided for quickly throwing the first motion worm in and out of gear. A ratchet to be provided for turning the engines by hand.

23. **Crank Shaft** to be of the built type, in 3 sections, having solid flange couplings, secured together by carefully fitted bolts. The crank shaft and pins to be of best forged scrap iron or ingot steel, and the webs to be of forged iron or ingot steel. To be made without a coupling at the forward end.

24. **A Steam Starting Valve** to be fitted from boiler side of main stop valve, and gear to be held by starting quadrant. The steam branches to be placed so that steam can be admitted to the m.p. and l.p. steam chests.

25. **Thrust Shaft** to be forged with



Boilers for steel cargo steamships for Canadian Government Merchant Marine Ltd., built by Canadian Vickers Ltd., Montreal.

off valves to be fitted on suction and delivery sides, so arranged that one pump may be overhauled while the other is working. Pumps to be arranged to draw from hotwell direct, and to discharge through an air vessel into the feed regulating valves on boilers.

20. **Bilge Pumps** to be 2 in number, 4 in. dia. x 24 in. stroke. Barrels to be of strong, tough, cast iron, with deep stuffing boxes, brass lined glands and brass neck bushes. Chests to be of cast iron, fitted with valve seats and valves of brass. Rams to be of steel, securely attached to pump crosshead. Pumps to be fitted with air vessel, spring relief valves and pet cocks. Shut off valves or cocks to be fitted on suction and delivery sides, so arranged that one pump may be overhauled while the other is working. Pumps to be arranged to draw separately or together from any compartment of the vessel and to discharge overboard. One of the pumps to be arranged to draw from the sea and to discharge to deck when required.

21. **Pump Gear**.—The air, feed, and bilge pumps to be worked from the engine crosshead by levers and links. The levers to be of the single plate stype, of

solid couplings at each end, and to have collars carefully turned out of the solid.

26. **The Tunnel Shafting** is to be forged of ingot steel, with solid couplings in each piece, a guard to be fitted at each coupling.

27. **The Propeller Shaft** to be of forged ingot steel and to be fitted with a continuous brass liner extending the full length from the propeller boss to the forward end of the gland. To be shrunk on the shaft, and to be afterwards trued up in lathe. A ring of soft rubber to be fitted between the propeller boss and the end of liner, to protect the shaft in the boss. A bearing lined with white metal in top and bottom to be provided immediately forward of the stern tube gland.

28. **The Stern Tube** to be of cast iron, carefully fitted into the aperture of the stern frame, and secured to it by a nut, and the forward end to have a flange jointed to the peak bulkhead and secured by bolts and nuts. The after end to be fitted with a brass bush, lined with lignum vitae strips, arranged with channels. The forward end to be fitted with a brass neck bush and cast iron gland. The gland studs to be of brass, two of them being

long enough to allow the stuffing boxes to be packed without the gland leaving the studs. A cock, connected by a pipe to the inside of the stern tube, to be fitted to the forward side of the peak bulkhead, for running water on to the top of the gland.

29. **The Propeller** to be of bronze, having 4 blades secured to the boss, with steel studs fitted with capnuts. C.i. boss to be secured to the propeller shaft, on a carefully fitted taper, by a nut and a key extending the entire length of the boss. The propeller to be righthanded, and the nut lefthanded, the latter to be provided with snugs for driving and with a stop to prevent it slacking back.

30. **The Thrust Block** to be placed in the engine room in a recess aft of the engine room bulkhead. To be of cast iron, of box form, arranged for holding oil and water, for the thrust shaft collars to revolve in. A cleaning door to be provided, and means for draining the oil and water. The bottom of the block to have thick well ribbed flanges, secured to a strong built seat, provided by the shipbuilders, to be carefully bedded on cast iron chocks and teak filling wedges and held in place by holding down bolts. Strong knees to be fixed to the seat at the end of each block. The shoes to be of cast iron, cast hollow, and arranged for internal water circulation, and lined on both ahead and astern sides with white metal, and carefully fitted to the collars of the thrust shaft. Each of the shoes to be provided with an oil box with a hinged lid. Two bolts of forged iron or steel to be fitted, one on each side of the block, with a series of double brass nuts arranged so that each of the shoes may be independently adjusted for wear. A bearing to be provided at each end of the block, to take the weight of the thrust shaft.

31. **The Tunnel Shaft Bearings** to be of cast iron, lined with white metal, and provided with shell covers, having an oil box on top, divided so as to keep oil and water separate. The bearings to have a trough cast on each side, under the shaft, to prevent the oil running to waste. To be bedded on hardwood and securely bolted to the seat provided by the shipbuilders.

32. **The Bulkhead Stuffing Box** to be of cast iron, made in halves. To be fitted round the shaft, and bolted to the aft engine room bulkhead. The gland to be in two pieces bolted together.

33. **Water Service for Bearings Guides, etc.**—A main pipe to be fitted at convenient height above the bearings, a valve to be fitted to supply water from the sea. A telescopic pipe, with universal joint and stopcock, to be fitted for each main bearing, and cocks and pipes for supplying water to the ahead guides. A wrought iron pipe, connected to a branch on the main service pipe, to be led to the after end of the tunnel, and arranged to serve as a hand rail. Cocks and swivel jointed pipes to be provided for thrust shoes and each of the tunnel bearings. A 2 in. cock or valve to be fitted to the donkey discharge, and provided with a coupling and hose of sufficient length to reach all the engine bearings, including thrust.

34. **Lubricators** to be provided for all the working parts. Four cast iron oil boxes with a hinged lid, to be fitted on the top of each main bearing keep, each box having syphon pipes. Oil boxes with syphon pipes to be provided for supplying oil to the top and bottom ends of the connecting rods. A sight feed imper-

meator to be secured to the engine room casing, with a copper pipe leading to the h.p. steam chest.

35. **Engine Room Grating Platforms and Ladders.**—The top platform and middle oiling platforms to be steel rung gratings, with stanchions and hand rails. The main entrance ladder to have steel sides, neatly fluted cast iron steps and steel hand rails. The engine room floor to be of wood, supported on wooden bearers from the floors of the ship, and supplied and fitted by shipbuilders. Chequered plates to be fitted at front of engines. Splash plates to be fitted round crank and eccentric pits, and guard plates at sides of gratings, in way of moving parts. A wood platform to be fitted along the tunnel by the shipbuilders.

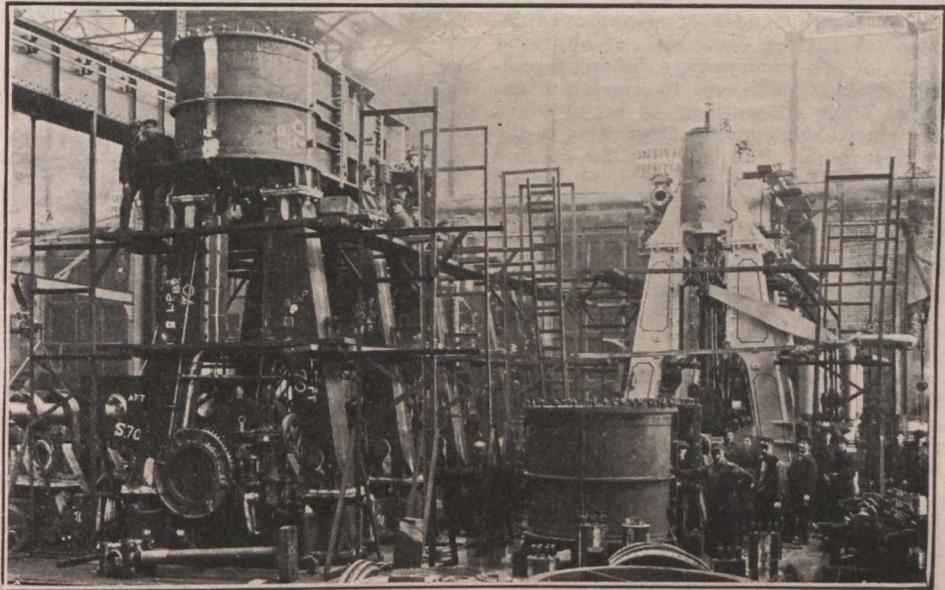
36. **Pipes and Connections.**—Main steam pipes to be of wrought iron or mild steel. Main and donkey feed pipes and boiler blow off pipes to be of copper, steel or iron. Steam and exhaust pipes to and from each donkey to be of copper, steel or iron. Winch exhaust pipes inside casing to be of cast iron with bands for expansion. Pipes connecting main and donkey pumps with the distribution boxes and valves on ship's side to

of these valves to be secured to a strong cast iron box on the ship's side, provided with a suitable strum. Discharge valves to be of cast iron, with brass valves, valve seats and spindles, the valves being arranged to lift by pressure of water from the inside or by hand.

**Sea Cocks** on ship's side to be of brass, and fitted with lock guards and keys. Suction cocks to be fitted with strums. Blow off cocks to be fitted with compound glands. To be secured by brass nuts and brass studs with conical heads screwed into the ship's plate from the outside. Each cock to have a spigot passing through the ship's plate, and fitted with a washer on the outside, the holes in the washer to be countersunk to take the heads of the studs.

Steering engine steam to be taken from main reducing valve, exhaust to be fed to engine room change valve box, and independent of winch exhaust. Dynamo engine steam to be taken from high pressure auxiliary steam range and provided with an independent reducing valve.

37. **Feed Donkey.**—A vertical, double acting, single feed donkey to be provided and placed in a convenient position in



Engines for steel cargo steamships for Canadian Government Merchant Marine Ltd., being erected by Canadian Vickers Ltd., Montreal.

be of cast iron, with bands to allow for expansion. Waste steam pipe up funnel to be of wrought iron, lengths inside casing to be of cast iron, with bands for expansion. Bilge and tank suction pipes to be of cast iron, with bands of lead where necessary. Lead pipes to have iron rings behind flanges and bolted, no plumber's joints. Strum boxes to be provided for the bilge pipes. The area through the holes in strum boxes to be well in excess of the area of pipe. Bilge and ballast distribution boxes to be of cast iron, to be bolted to the bulkheads or otherwise conveniently placed to suit the pumping arrangement. The bilge valve boxes to be fitted with brass valves, valve seats and spindles. A plate to be fitted to the hand wheel of each valve, with the name of the suction clearly shown upon it. Bilge connections to be entirely independent of the ballast, and so arranged that it will be impossible to run water from the sea into the bilges.

**Main Injection and Tank Filling Valves** to be of cast iron, fitted with brass valve, and valve seat and wrought iron bridge on cover, with screw for spindle. Each

the engine room. Diameter of steam cylinder, 9½ in.; diameter of water cylinder, 7 in.; stroke of pump, 18 in. The pump liner, bucket, valve seats and guards to be of gunmetal. The valves to be of bronze. The pump rod to be of manganese bronze. Steam cylinder to be covered with planished steel. To draw from hotwell, condenser, sea and double-bottom tanks. To discharge to main boilers, through main and auxiliary feed lines.

38. **General Donkey.**—A vertical, double acting, single donkey, to be provided and placed in a convenient position in the engine room. Diameter of steam cylinder, 9½ in.; diameter of water cylinder, 7 in.; stroke of pump, 18 in. The pump liner, bucket, valve seats, and guards to be of gunmetal. The valves to be of bronze. The pump rod to be of manganese bronze. Steam cylinder to be covered with planished steel. To draw from sea, double bottom tanks, hotwell and bottom of boilers. To discharge to boilers, auxiliary condenser, wash deck pipe and sanitary tank, overboard.

39. **Ballast Donkey.**—A vertical,

double acting, single ballast donkey, to be provided and placed in a convenient position in the engine room. Diameter of steam cylinder, 10½ in.; diameter of water cylinder, 14 in.; stroke of pump, 24 in. The pump liner, bucket, valve seats, and guards to be of gunmetal. The pump rod to be of bronze, and the valves of rubber. Steam cylinder to be cleaded with composition and covered with planished steel. To draw from ballast tanks, sea, main bilge suction pipes, direct suction from engine room bilge. To discharge overboard, to e.r. hose, to main and auxiliary condensers, to ballast tanks.

40. **An Evaporator** to be provided, capable of supplying 25 tons of fresh water per 24 hours.

41. **Hotwell and Feed Filter** of approved design. The feed water to be filtered in a compartment of the hotwell, after it has left the air pump, and before it is taken by the feed pumps. The filtering material to be contained in an easily removable case, so that it may be renewed when required.

42. **Feed Water Heater** of approved design. Feed water to be heated in surface heater situated between feed pump and boiler.

43. **Winch Condenser** of approved design. A surface condenser, of approved make, of non-vacuum type, having a cooling surface sufficient to condense exhaust from all winches, to be provided and placed in a convenient position in the engine room. The body to be of cast iron, with door at each end, and hand holes where necessary. Tubes to be of solid drawn brass, tube plates of rolled brass, secured by brass studs and nuts and fitted with screwed ferrules. Supplementary feed and drain cock on water end to be provided. All auxiliaries to be of a make to be approved by the Marine Department.

45. **Steam Whistle** to be secured to forward side of funnel, and connected by a pipe to the main boilers, to have a spring valve and lever with cord led to bridge.

46. **Pressure Gauges.**—One steam gauge for each boiler to be fitted in the stokehold. One steam gauge in connection with all main boilers, one steam gauge for m.p. steam chest, one compound gauge for l.p. steam chest, and one vacuum gauge for condenser, to be arranged in a group and placed in a conspicuous position in the engine room, convenient to the starting platform. A steam pressure gauge to be provided for each reducing valve.

47. **Painting.**—Main engines and donkey engines, to be rubbed down with oil. Boilers, smokeboxes, funnel, etc., to have one coat of oil paint in works, the one coat on board vessel. Funnel to be painted with funnel paint.

48. **Main Boilers.**—Number in ship, 3; diameter, 15½ ft.; length, 11½ ft.; working pressure, 180 lb. per sq. in.

49. **Forced Draft.**—Air to be supplied by one 87 in. fan, driven by one single cylinder engine of James Howden & Co's., or other approved make.

50. **Plates** to be of Siemens-Martin mild steel. Edges to be planed and caulked, both inside and outside. To be flanged where necessary, and no angles to be used except where required to strengthen surfaces.

The shell plates to have longitudinal joints, with double butt, straps, treble riveted, the circumferential joints to be lapped and double riveted.

51. **Furnace.**—Each boiler to have 3

corrugated furnaces, 46 in. least internal diameter, flanged at the back ends to take the tube plates, and carefully fitted to the front end plates which are to be flanged to receive them. Each furnace to be fitted with a separate combustion chamber. Furnaces to be made withdrawable on the Gourlay-Stephen principle.

52. **Tubes** to be 3 in. external diameter, of solid drawn steel. Stay tubes to be screwed into both front and back tube plates. All tube holes to be carefully bored and plain tubes expanded at both ends. Retarders to be fitted in tubes.

53. **Stays.**—The boiler end plates to be stayed by round steel bars, secured by nuts both inside and outside. Combustion chamber stays to have continuous thread and to be tightly screwed into the combustion chamber plates and back and or circumferential plates. The tops of the combustion chambers to be fitted with girder stays. All flat surfaces are to be thoroughly and efficiently stayed, without unduly interfering with accessibility to all parts of the boiler.

54. **Manholes.**—Suitable manholes to be provided, the plates being flanged inward, or otherwise compensated for strength. To be provided with doors of mild steel, held in place by strong dogs and bolts.

55. **Testing.**—The boilers to be tested by hydraulic pressure, before leaving the works to 360 lb. per sq. in., to the satisfaction of the surveyors.

56. **Boiler Covering.**—The boilers to be covered with non-conducting mattresses or slabs, secured by steel wire. The covering to be carried down to about 5 in. from the top of the boiler seats, terminating with an angle fastened to the boiler, to which the wires are to be secured. The back of the boiler to be covered with mattresses or slabs all over. The covering on top and in way of foot traffic to be covered with sheet steel. The bottom of the boilers to be covered with same material.

57. **Boiler Seating.**—The boilers to be carefully bedded to the seats provided by the shipbuilders, and to be thoroughly secured in place at the bottom by knees at each end, and at the sides by strong stays secured to the seats.

58. **Smoke Box** to be firmly secured to the front of the boilers, the back of the box, above the tubes, being kept clear of the boiler end. Air heater to be arranged in smokebox. The smokebox to be constructed of double plates. The doors to be constructed in the same way, and in addition each door to have a baffle plate on the inside, and to be provided with all necessary hinges, catches and rings. The necessary chains and pulleys for opening and securing the doors when cleaning the tubes to be provided.

59. **Uptakes** to be constructed of double plates, with an air space between them. Strong plates, secured to the top of the boilers, to be arranged as struts, to take the weight of the uptake and funnel. Separate damper for each boiler to be fitted in uptake.

60. **Funnel.**—To be of single type and oval in section. An air casing to be provided on the top of the boiler hatch, covered by a neatly shaped cape riveted to the funnel. Pulleys to be provided at the top of the funnel, and all necessary studs and rings fitted for the stays supplied by the shipbuilders.

61. **Furnace Fittings.**—Fronts to be of cast iron arranged for forced draft. To be James Howden & Co's. or other approved make. Each furnace to be com-

plete with dead plate, fire bars, and bearers of cast iron.

62. **Boiler Mountings.**—The following to be provided for each boiler:—

1 double safety valve with casing gear led to engine room, and drain pipe to tank in stokehold; main steam stop valve of cast iron, gunmetal fitted; steam stop valve for winches and auxiliary engines; main feed check valve, with renewable gunmetal seat and internal pipe; donkey feed check valve, with renewable gunmetal seat and internal pipe; bottom blow-off valve with internal pipe; scum valve with internal pipe; set of asbestos packed gauge glass fittings; set of asbestos packed test cocks; asbestos packed salinometer cock; asbestos packed pressure gauge cock. Main and donkey check valves to have screw down valve between check valve and boiler, and arranged to be operated from lower platform.

63. **Ash Valve and Hose.**—One ash valve, with screw nozzle for hose, to be provided and conveniently placed in stokehold, with connection to sea. A suitable length of hose pipe to be supplied, with director and coupling.

64. **Ventilators.**—Two 30 in. diameter ventilators to be fitted in fidley, each fitted with a pulley for steam hoist and one with a hand ash hoisting gear. To have large moveable cowls, carried well above deck erections and having turning gear to work from fidley. To be provided with all necessary doors, chains and hooks, and the insides to be fitted with guides for ash buckets. Two derrick posts, of 24 in. diam., to be extended down into wings of stokehold, and to be fitted with large moveable cowls having turning gear to work from deck. Two ventilators, with movable cowls, to be fitted at engine room skylight, for engine room.

65. **Ash Hoist.**—One double cylinder steam ash hoist, of approved make, to be provided and fitted fidley, with swivel pulley and wire rope to work in either ventilator.

66. **Stokehold Gratings Ladders and Floors.**—Rung gratings, ladders, and hand rails to be provided where necessary. Fidley gratings to be provided, with storm covers of steel plate. Stokehold floor to be of chequered steel plate. To rest on wood planks, supported by wood bearers, fitted by the shipbuilders. A row of cast iron floor plates, ¾ in. thick, to be provided at the front of the boilers.

67. **Spare Gear.**—2 connecting rod top end bolts and nuts; 2 connecting rod bottom end bolts and nuts; 2 main bearing bolts and nuts; 3 crank shaft coupling bolts and nuts; 3 tunnel shaft coupling bolts and nuts; 3 tunnel shaft coupling bolts and nuts; 1 feed pump suction valve; 1 feed pump discharge valve; 1 bilge pump suction valve; 1 bilge pump discharge valve; 3 main feed check valves; 3 donkey feed check valves; 24 bolts and nuts, assorted; 6 cylinder cover studs and nuts; 6 steam chest covers studs and nuts; 12 junk ring studs and nuts; 5 bars round iron, ¾ in., ½ in., ⅝ in. and 1 in. each, about 15 ft. long; 3 bars flat iron, 1 in. x ¼ in. 1½ in. x ¼ in., 2½ in. by ½ in., each about 15 ft. long; 2 propeller blades; 1 h.p. piston valve (solid cast iron); 18 ordinary boiler tubes; 6 boiler stay tubes; 24 main condenser tubes; 12 auxiliary condenser tubes; 50 condenser ferrules; 1 set fire bars for one boiler; 1 cwt. white metal. 1 cwt. rivets, 2 plates. A suitable amount of spare gear to be supplied for

forced draft installation and engine room auxiliaries.

**68. Tools and Outfit.**—Overhauling gear. 1 strong beam, running fore and aft in engine room, securely fastened at the ends to casing by strong brackets. To be provided with a runner and all necessary tackle for lifting covers of cylinders and slide valves; 1 pair 3 sheaf blocks; 1 pair 2 sheaf blocks; 2 manilla falls for blocks, 25 ft. drift each; 1 three-ton differential block and chain, 12 ft. drift; 1 beam grab; 1 set of eyebolts for pistons, cylinder covers, valve spindles; 1 screw jack, 2 in. screw.

A complete set of spanners for all nuts in connection with machinery and boilers, with suitable rack fixed in engine room; 1 shifting spanner, about 15 in.; 1 shifting spanner, about 8 in.

**Oil Tanks.** 1 tank, to contain 100 gallons engine oil; 1 tank, to contain 40 gallons cylinder oil; 1 tank to contain 40 gallons colza oil; 1 tank to contain 40 gallons paraffin oil; each tank to be fitted with a lock cock and drip tray. Pipe to be arranged for filling tanks from deck, with hose connection to tanks. 1 daily supply tank with lock cock and drip tray; 1 tank to contain 1 cwt. tallow; 1 tank to contain 2 cwt. soda; 1 gall. oil measure, tin; 1 quart oil can tin; 5 oil feeders,  $\frac{3}{4}$  pin, with spring; 1 swabbing pot, tin; 1 oil filler, tin; 1 syringe; 1 tallow kettle and stand.

**Lamps, etc.** 2 globe lamps; 3 engine lamps; 2 boiler water space lamps; 4 hand lamps, with screw top and chain; 1 pair lamp scissors.

**Engineers' Tools, etc.** 3 chipping hammers; 1 sledge hammer; 1 flogging hammer; 1 lead hammer, 7 lbs.; 1 copper hammer, 5 lbs.; 6 chipping chisels, assorted; 6 files, assorted; 3 file handles; 2 valve scrapers; 1 half round valve scraper; 6 drills, assorted; 1 ratchet and brace, about 18 in.; 1 ratchet knee; 1 ratchet clamp, 6 in. gap; 1 drilling post; 6 steel wedges, assorted; 3 steel drifts, assorted; 1 set boiler caulking tools; 1 set taps and dies,  $\frac{1}{4}$  in. to  $1\frac{1}{4}$  in. in case, 3 taps to each size; 1 bow saw and 3 blades; 1 grindstone and trough; 1 vise bench, with 6 in. staple vise, portable; 1 vise bench, with 6 in. staple vise, fixed in engine room; 1 pair lead vise grips; 1 pair copper vise grips; 1 hand vise; 1 pair cutting pliers, 7 in.; 1 pair calipers, inside, 12 in., and one pair outside, 12 in.; 1 set square, 12 in. blade; 1 pair compasses; 1 hand brace for condenser tube packing; 4 gland packing screws, assorted; 6 gland packing sticks, assorted; 1 gland packing knife.

**Joiners' Tools.** 1 hatchet; 1 screw driver, about 14 in.; 1 auger, to suit oil cock; 1 cross cut saw; 1 chisel,  $1\frac{1}{2}$  in.; 1 gouge, inside 1 in.; 1 gouge, outside  $\frac{5}{8}$  in.; 1 oil stone; 1 gouge slij.

**Plumbers' Tools.** 1 soldering bolt; 2 lb. soft solder;  $\frac{1}{2}$  pint spirits of salts; 1 pair tin shears; 1 melting pot; 1 ladle.

**Smiths' Tools.** 1 bellows hearth, 24 in.; 1 anvil and hardy; 3 pairs tongs, assorted; 6 smiths' tools, assorted.

**Painters' Tools.** 2 paint brushes; 2 sash tools; 1 varnish brush; 2 paint pots.

**Stokehold Outfit.** 4 ash buckets; 2 water buckets, galvanized; 1 drinking can; 1 coal measure; 1 coal hammer, with iron shaft; 6 firing shovels; 6 trimming shovels; 2 long rakes; 2 short rakes; 1 rake, extra long, for back end; 1 rake for smokebox; 2 long slices; 2 short slices; 4 wire tube brushes; 2 handles for brushes; 2 tube scrapers; 6 scaling hammers; 6 scaling tools; 6 boiler tube

stoppers, screw and washer; 6 patent tube stoppers; 1 tube expander.

**Cleaning Utensils.** 4 coir brooms and handles; 2 hand brushes, steel; 4 scrubbing brushes; 1 dusting brush.

**Sundries.** 1 clock; 1 copper salinometer and case; 1 copper dipper; 1 thermometer, for hot water. Any article specified twice to be supplied only once.

**69. General Conditions.**—The engines and boilers generally to be of suitable material and workmanship, in accordance with the foregoing specification, and to be guaranteed against all breakages arising from proved imperfect workmanship or bad materials, which may be discovered, and of which notice has been given, within 6 months of the completion of the engines. The engine builders not to be responsible beyond the repairing or replacing of such breakages at their works. The engineers of the ship during the time the engine builders are responsible for the engines to be approved by them and to be paid by the owners of the ship, the usual and customary wages, and if displaced, the responsibility of the engine builders under this clause to cease. The chief engineer to commence his duties at least 14 days previous to trial trip. The engine builders not to be liable for the detention of the ship, or consequential damages, accidents caused by the carelessness of the engineers in charge, whether appointed by them or not, or expenses of any description attendant thereon under any circumstances whatever. Before delivery, the machinery to be tried at moorings and afterwards at sea, the builders finding engine room crew, coal, oil, tallow, etc., for all purposes. If on trial any defects are observable the same to be made good by the builders.

**70. Plans of engines, boilers, piping arrangement, and pumping arrangement** to be submitted for approval before work is put in hand. Complete pipe and pumping arrangements (mounted on cloth), in tin case to go with the vessel.

### Welland Ship Canal Construction.

The Minister of Railways and Canals, Hon. J. D. Reid, during discussion on a vote of \$35,000,000 for Welland Ship Canal construction in the House of Commons, June 5, stated that in order to build the canal between Lake Ontario and Lake Erie, the work was divided into 8 sections. Contracts have been awarded for 4 of these sections, chiefly consisting of lock work, which takes twice as long as other construction work. The intention is to commence the other sections when the lock work is about half through, so that it will be completed at the same time. Apart from the lock work the other work is somewhat like dredging and will have to be completed when prices are fairly reasonable. The prices of material and labor are so high at present that the work should not be proceeded with too rapidly, and it is only to give employment that it is now being gone on with. The depth of the canal is being made 25 or 30 ft., which is greater than the present depth of the St. Lawrence canals, so that a vessel can go to Kingston or Prescott, but it cannot go on to Montreal because there is only a depth of 14 ft. in the St. Lawrence canals. The original Welland Canal had a depth of 9 ft., which was later deepened to 12 ft. and later again changed to the present depth.

There are 63 engineers engaged on

the work of whom 57 are returned soldiers. On May 2, 11,099 men of all classes of labor were engaged and of these, 228 were returned soldiers, 681 were skilled laborers and of the latter, 219 were returned soldiers.

### Legislation re Pilotage and Harbor Masters.

Following is the full text of an act to amend the Canada Shipping Act, as passed by the House of Commons, June 5:—

1. Section 432 of the Canada Shipping Act, Revised Statutes of Canada, 1906, chapter 113, is repealed and the following is substituted therefor:—

"432. Notwithstanding anything in this part, the Governor in council may, when it appears to him to be in the interest of navigation, appoint the Minister to be the pilotage authority for any pilotage district, or for any part thereof; and the said Minister shall thereupon supersede the then existing pilotage authority for that district or part of a district: provided that nothing in this part shall authorize the Minister to sit as a tribunal for the trial of offences of which pilots may be accused before the pilotage authority; but such Minister may, in any case not provided for by part x of this act, designate a tribunal or officer to try any such offence."

2. Paragraph (h) of section 862 of the said act is repealed, and the following paragraphs are added at the end of the said section:—

"(h) for every ship over 700 tons and not over 1000 tons register, \$5;

"(i) for every ship over 1000 tons register, \$7."

3. Section 865 of the said act is repealed and the following is substituted therefor:—

"865. The salary or remuneration of each harbor master shall from time to time be fixed by the Governor in council, but shall not exceed the rate of \$1,200 per annum, and shall be subject to the conditions hereinafter contained."

The Dominion Government's s.s. *Lady Evelyn* was sold recently to the St. Lawrence Shipping & Trading Co. for \$40,000, of which \$30,000 has been paid, the balance being held pending settlement of a claim that complete equipment was not delivered with the vessel. The *Lady Evelyn* was built at Trnmore, Eng., in 1901 for the West Cornwall Steamship Co., and purchased by the Dominion Government in 1907 for use as a mail tender at Rimouski, Que. She is a steel twin screw steamer of 83 tons gross, 39 tons register. Her dimensions are: Length, 189 ft.; breadth, 26.1 ft.; depth on hold, 9.5 ft.; draft, 8 $\frac{1}{2}$  ft. She has triple expansion engines, with cylinders 16, 24 and 38 in. diam., by 24 in. stroke and is supplied with steam by 2 return tubular boilers at 160 lb., and one ton of coal an hour. She can steam 14 to 15 knots, and with forced draft can make 16 knots. The hull is divided by 5 watertight bulk heads, and she has 2 decks, the promenade deck being 139 ft. long. She is equipped with complete electric light plant, wireless telegraph, steering gear, etc.

**Sorel Shipbuilding and Dry Dock Co.** Ltd. has been incorporated under the Dominion Companies Act, with \$350,000 authorized capital and office at Sorel, Que., to carry on shipbuilding and ship repairing.

**Canadian Pacific Railway Steamships and Canadian Registry.**

London, Eng., Press Cablegram, June 12.—What it is hoped may prove the foundation of a Canadian mercantile marine is the application by the Canadian Pacific Ry. for the transfer of its ships to Canadian registry. The rumor of such a step has been current in shipping circles for some time. Sir George McL. Brown admitted to your correspondent that he had heard of it, and it is understood the company has laid its case before the government. What it desires is the same privileges under Canadian registry as it at present enjoys under English registry, and there appears no reason why it should not be able to receive them. G. M. Bosworth, chairman of the Canadian Pacific Ocean Services Ltd., has sailed for Canada to discuss the matter with the company's head office.

Canada, if it is ever to attain its status as a great nation, must develop its shipping facilities and ultimately a merchant marine of its own. If the C.P.R. takes the first step, it is hoped others will follow. It is, of course, the only purely Canadian company involved and if any of the other steamship concerns decided to follow suit a division of their fleets between English and Canadian registry would be necessary. However, there are all sorts of possibilities in the shipping world, and the organization of a new company which aims to handle Canadian trade is not the least of them. Among the advantages which would accrue to the C.P.R. under Canadian registry would be better control of their shipping space, 50% of which is still used by the British Ministry of Shipping.

We were officially advised June 17 that the C.P.R. Co. had not then made application for the transfer of its ships to Canadian registry.

**Demountable Wooden Ships to Be Built in British Columbia.**

A cargo of timber which is to be built in British Columbia in the form of a ship will be self propelled, and will it is claimed be unsinkable. The craft will be something unique in the annals of marine architecture. The cargo will be

the ship and the ship will be the cargo. The ship will consist, when completed, of about 5,000,000 board ft. of timber in the form of great sticks of Douglas fir, hemlock, and cedar from B.C. forests. Within the framework the timber will be laid in three tiers, with cross beams, and on top will be the main deck with fore-castle and poop and room accommodation for officers and crew. Crude oil motor engines, driving twin screws, will supplement the sails. The length of the craft will be 250 ft., the beam 60 ft. and the depth 36 ft., with a displacement of about 9,500 tons. Her maiden voyage from British Columbia to England will be her last for she will be broken up to supply much needed timber. The vessel will be not merely a raft, but a demountable wooden structure of approximately ship shape form.

Vickers Ltd., London, Eng., are interested in the project and it is said that several of the ships will be built. The Furber Lumber Co. has been formed for the purpose of building them, being named after Percy N. Furber, President Oil Fields of Mexico Co., New York. J. H. Price, Price Shipbuilding Co., Seattle, Wash., has undertaken the construction.

We were advised June 14 that arrangements were being made to start building the first ship and that Mr. Furber would leave New York, June 16, for British Columbia in connection therewith.

**The War Beryl-Beaujeu Collision.**

A wreck commissioner's enquiry was held at Quebec, Que., May 27, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Capt. C. Lapierre and A. Hope, as nautical assessors, into the causes which led to the collision of Canadian Pacific Ocean Services' s.s. War Beryl and the Marine Department's dredge Beaujeu, while the latter was anchored in the St. Thomas Channel, River St. Lawrence, May 21. The court found that the master of the War Beryl erred in being absent from the bridge when the vessel was being navigated in such a narrow channel, but having regard to the straightforward evidence which he gave, and his long and successful career, the court cautioned him to be more careful in future, and to bear in mind that whether he can be

useful or not, or whether his vessel is in charge of a competent pilot and officers, whilst navigating narrow waters, he is expected to be at his post. The first officer, by his evidence, gave the impression that he did not exercise all the judgment expected of him, and his action in ringing the telegraph, stop, instead of, slow, as ordered by the pilot, he thinking that it would be more expeditious in such a crucial moment, caused the court to caution him only, to be more watchful in future. His error was all a question of seamanship and judgment, and not a matter of local knowledge. The certificates of the master, Capt. R. McKillop, and the first officer, H. A. More, were returned to them.

With regard to Pilot Delisle, the court stated that it could not use the same leniency as to the master and first officer. He attempted, unsuccessfully, to lead the court astray as to his motive for the order, slow. He erred gravely in judgment in maintaining such a speed, under the impression that the light which appeared dim was that of an overtaken vessel, and in view of the notice he had read the night before that buoys had been placed to indicate dredging operations, he should have been on the alert for the possible presence of the dredge in the area defined in the notice. Owing to the evidence that the War Beryl's movements were neutralized by the cable or wire of the dredge Beaujeu, the court felt that it could not be so severe as it otherwise would have been, and therefore suspended his license from May 28 to Oct. 1.

As to the master of the dredge Beaujeu, the court found that he should have had an officer on duty as well as a watchman, but as this did not contribute to the casualty, it is regarded as a lack of discipline, for which the master was severely reprimanded. The court considered that the dredge invited collision by remaining so close to the middle of the channel when not operating, merely to avoid trouble in raising the anchors, as stated. In view of the fact that there were no written orders given to the master of the dredge for his guidance, and that there exists, to a great extent, a difference between the responsibility of a master of an ordinary ship and the master of a vessel engaged in such special work as the Beaujeu, the master, Capt. Bourget, could not, in this instance, be criticized for his vessel's position.

Capt. A. Hope, one of the nautical assessors, dissented from the judgment in general, holding that the responsibility for the collision rested entirely on the dredge Beaujeu, on the ground that no measures whatever were taken by the master to ensure the safety of his vessel in case of accident.

**Aids to Navigation on the Skagway Route**—The Minister of Marine, in reply to a question as to negotiations with the U.S. Government, respecting the provision of aids to navigation on the Vancouver-Skagway route, following the loss of the C.P.R. s.s. Princess Sophia in Oct., 1918, stated in the House of Commons recently, that no negotiations were in progress. The loss of the vessel occurred on a part of the coast which is under U.S. control, and over which Canada has no jurisdiction. The Canadian coast line extends northward to the entrance to the Portland Canal, near Port Simpson, follows the Portland Canal to its head, and thence proceeds inland in a northwesterly direction.

**Sault Ste. Marie Canals Traffic.**

The following commerce passed through the Sault Ste. Marie Canals during May, 1919:

ARTICLES.	Eastbound.			
	Can. Canal.	U.S. Canal.	Total.	
Lumber.....m. ft. b. m.	430	28,325	28,755	
Flour.....Barrels	359,990	550,534	910,524	
Wheat.....Bushels	8,277,554	20,818,562	29,096,116	
Grain, other than wheat.....Bushels	2,500,139	6,870,235	9,370,374	
Copper.....Short tons	1,851	2,091	3,942	
Iron Ore.....Short tons	1,059,790	5,562,437	6,622,227	
Pig Iron.....Short tons	35	.....	35	
Stone.....Short tons	4,290	3,450	7,740	
General Merchandise.....Short tons	2,297	11,569	13,866	
Passengers.....Number	441	158	599	
Westbound.				
Coal, soft.....Short tons	26,548	2,213,190	2,239,738	
Coal, hard.....Short tons	.....	248,263	248,263	
Iron Ore.....Short tons	.....	11,665	11,665	
Mfd. Iron and Steel.....Short tons	2,749	25,757	28,506	
Salt.....Short tons	3,604	14,250	17,854	
Oil.....Short tons	.....	44,302	44,302	
Stone.....Short tons	663	14,603	15,266	
General Merchandise.....Short tons	29,389	35,801	65,190	
Passengers.....Number	551	45	596	
Summary.				
Vessel passages.....Number	687	1,957	2,644	
Registered tonnage.....Net	1,292,217	6,856,185	7,648,402	
Freight—				
Eastbound.....Short tons	1,410,426	6,485,116	7,895,542	
Westbound.....Short tons	62,953	2,607,831	2,670,784	
Total Freight.....Short tons	1,473,379	9,092,947	10,566,326	

## General Shipbuilding Matters Throughout Canada.

**Bigelow Bros., Canning, N.S.,** launched the tern schooner *Cape Blomidon* May 29. She is of 408 tons register, classed for 12 years, and is iron kneed throughout, and equipped with hoisting engines. A slight accident marred the launching, but, apparently, no damage was done to the vessel. She is owned by H. McAloney and others, Parrsboro, N.S., and will probably load deals there, for Great Britain.

**Dominion Shipbuilding Co., Toronto,** launched a full sized canal freight steel steamship, *June 14*, for private owners. Following the plan with some of its previous vessels the name of some Canadian General taking part in the war was given, in this case, *General Williams* being the one adopted. She is classed 100 A1, at Lloyds for Transatlantic service. Her dimensions are: Length over all, 261 ft.; breadth moulded, 43½ ft.; depth moulded, 28 ft. 2 in.; d.w. capacity, 4,300 tons. She is equipped with triple expansion engines, 1,400 i.h.p., by John Inglis Co., Toronto.

**Harbor Marine Co. Ltd., Victoria, B.C.,** was incorporated under the British Columbia Companies Act, Mar. 28, 1919, with an authorized capital of \$500,000, the directors being: President, C. J. V. Spratt, President Victoria Machinery Depot Co.; O. C. Bass, J. S. Clark, M.I.N.A., and J. W. Lennox. B. L. Robertson is Secretary-Treasurer. Its yard is on the north side of Victoria harbor, between the Foundation Co.'s lumber yard and the Cholberg shipyard. The Harbor Marine Co. is said to have been organized principally to build two steel cargo steamships of 8,100 tons d.w. each for Canadian Government Merchant Marine Ltd. for which the Victoria Machinery Depot Co. has contracts from the Marine Department, and further information about which is given under "Canadian Government Merchant Marine Ltd., Shipbuilding, Operation, Etc." on another page of this issue.

**Midland Shipbuilding Co., Midland, Ont.,** Midland press dispatch, June 17:—After 10 days of negotiations between the striking iron workers and the company's officials, the plant has closed down. The strike started June 6, when 175 men walked out because the company refused to grant a 44-hour week and an increased scale. Two proposals were made by the company: first, that the men take over the ship now under construction for the British Government and work such hours as they decided upon, the ship to be completed by a named date, the men to receive their present wages in the meantime and a bonus at the appointed date. The other proposal was that the iron work should be completed for a lump sum, to be divided as the employees saw fit. Both offers were refused, and the plant is therefore closed down, affecting 305 men, who were drawing weekly wages totalling \$9,000.

**National Shipbuilding Co., Levis, Que.**—The successful completion of the transformation of the Dominion Government dredge *Galveston* into an ocean freight steamship, was marked by the launching of the s.s. *Pomone* at this company's yard, May 31. Several interesting features in connection with this work were fully described and illustrated in Canadian Railway and Marine World for January.

**New Westminster Construction and Engineering Co., New Westminster, B.C.**—It is reported that this shipyard at Popular Island, which was organized to build wooden steamships for the British Government under orders from the Imperial Munitions Board, will probably close entirely, as the terms under which it was to be taken over from the board do not appear to be satisfactory. The price named by the board was considered by the company to be much too high and it was agreed to submit the matter to arbitration, but nothing further has been done. The company built 4 wooden steamships for the British Government, these being *namer*, *War Comox*, *War Edensaw*, *War Kitimat* and *War Ewen* and it has under construction 3 wooden steamships of 3,200 tons d.w. each for the Belgian Government. The last of these vessels was to be launched during June, after which it was expected the plant would be closed down.

**Polson Iron Works, Ltd., Toronto—G. T. Clarkson,** receiver and liquidator, has issued a statement of this company's affairs, showing assets consisting principally of real estate, buildings, machinery, plant, etc., of \$1,938,993.43, unsecured liabilities, \$1,727,208.58, and a nominal surplus of \$211,784.85. The following is a summary:—

Assets.	
Real estate and buildings.....	\$1,398,668.36
Machinery and plant.....	335,011.39
Patterns and drawings.....	50,000.00
Materials and supplies.....	438,295.30
Accounts receivable.....	9,000.00
Cash on hand.....	1,008.97
	\$2,231,984.02
Less Bank of Nova Scotia claim, secured by first mortgage bonds.....	292,990.59
Nominal equity.....	\$1,938,993.43
Liabilities.	
Preferred .....	\$ 87,938.98
Direct .....	349,269.60
Unsettled claims.....	1,290,000.00
	\$1,727,208.58
Secured claim, Bank of Nova Scotia.....	\$ 292,990.59

The unsettled claims are as follows:—

C. Hannevig, New York, N.Y., and Aalesund Steamship Co., Aalesund, Norway. Advances against costs of construction of steamships 151 and 152, \$568,000. Contractors claim ownership of materials and supplies on hand, to an inventory value of \$312,487.43, which claim is not admitted.

Imperial Munitions Board estimated costs, in excess of contract price, for construction of six steamships for Imperial Government, \$600,000; less amount claimed from board in respect of contracts for boilers, \$13,000, net \$587,000.

Heistein & Sons, Kristiansand, Norway. Damages for delays claimed in respect of delivery of s.s. *Asp*, \$70,000, less deposit as security for fulfilment of contract, \$15,000, net \$55,000. This claim is disputed.

Toronto Harbor Commissioners. Claim for use and occupation of real estate, lease of which has not been executed, and claim for which is disputed, \$67,500.

Sir Henry M. Pellatt, Toronto, claimed as having advanced to company, \$80,000. Claim not admitted, pending investigation.

The Quebec Shipbuilding and Repairing Co. has gone into voluntary liquidation, and Maxham and Co., have been instructed to dispose of the plant, which is located at the Louise Docks, Quebec.

The company was organized prior to the outbreak of war, and built the schooner *M. P. Connolly*, which was lost at sea during the war. The company also built two wooden steamship hulls for the British Government, under orders from the Imperial Munitions Board, viz: *War Quebec* and *War Sorel*, of 3,080 tons d.w. each, and which were launched June 28 and Sept. 7, 1918, respectively.

**St. John Drydock & Shipbuilding Co., St. John, N.B.** In a discussion in the House of Commons recently, it was stated that a large ship repairing plant is to be established in connection with the drydock which this company is building, and we are informed that the plans for this plant provide for an expenditure of at least \$1,125,000, and that the equipment will be a very complete one. We are also advised that the company is still considering the possibility of establishing a large shipbuilding plant in connection, but that nothing definite has been decided on.

**St. Martins Shipbuilding Co., St. Martins, N.B.** The three masted auxiliary powered schooner, *Quaco Queen*, was launched by this company at the end of May for A. F. Bentley and others.

**Wallace Shipyards Ltd., Vancouver, B.C.**—The Public Works Department has awarded a contract to Wallace Shipyards Ltd., for docking, cleaning, painting and overhauling the dredge P.W.D. 305 (King Edward), for \$5,885.

**The Steamship Turbinia**—Canada Steamship Lines s.s. *Turbinia* was offered for sale by public auction in London, Eng., June 17, by C. W. Kellock & Co., on behalf of the owners, as she lay at Southampton. She was built at Hebburn-on-Tyne, Eng., in 1904 for the Turbine Steamship Co., controlled by Hamilton, Ont., interests, and later owned by T. Eaton Co., Toronto, and for several years operated on Lake Ontario in the summer passenger trade. Towards the end of 1911 the vessel was acquired along with others by the Niagara Navigation Co., which later formed a part of Canada Steamship Lines, Ltd. During the period she was operated on Lake Ontario she lost money each year, except the first year, when a profit was shown. In the winter of 1905-06 she was chartered to Canada—Jamaica Steamship Co. and was operated on a day line between Santiago, Cuba, and Kingston, Jamaica. She crossed the Atlantic in the early stages of the war and has since been used carrying troops, etc., between England and France. She is equipped with three compound turbines of the Parsons type, one high pressure in the centre, one low pressure on each side, each operating a shaft carrying one propeller. The engine is about 500 n.h.p. Her dimensions are: length, 250 ft.; breadth, 33.2 ft.; depth, 12.6 ft.; tonnage, 1,064 gross; 603 register. She is equipped with wireless telegraph.

**L'Heureux Lifeboat Launching Co. Ltd.** has been incorporated under the Dominion Companies Act, with \$250,000 authorized capital, and office at Montreal, to build and deal in steam and other vessels, and other means of transportation, and vessel equipment of all kinds. The incorporators are, F. Sidgwick, naval architect; H. S. Mathews, naval transport officer; W. F. Fletcher, engineer and naval architect; T. Hall, engineer; C. E. Gault, L. A. Lavallee and J. L. Bergeron, Montreal; E. M. Dechene and P. Paradis, Quebec, Que.

## Canadian Government Merchant Marine, Ltd., Shipbuilding, Operation, Etc.

**Launchings of Steamships**—Since the launchings of steel cargo steamships for Canadian Government Merchant Marine Ltd., particulars of which were given in Canadian Railway and Marine World for June, the following additional ships have been launched:  
Montreal, May 7, 1919.

Marine Department Contract 25; builder's yard no. 69; s.s. Canadian Seigneur, 8,100 tons d.w., by Canadian Vickers Ltd.,

Marine Department contract 5; builder's yard no. 106; s.s. Canadian Trooper, 4,300 tons d.w., by Wallace Shipyards Ltd., Vancouver, B.C., May 31, 1919.

Marine Department contract 20; builder's yard no. 40; s.s. Canadian Sailor, 3,400 tons d.w., by Port Arthur Shipbuilding Co., Port Arthur, Ont., May 31, 1919.

**Transfer of Steamships to Canadian National Ry.**—The Dominion Government passed the following order in council, June 2.—The committee of the Privy Council have had before them a report, dated May 4, 1919, from the Minister of Marine, stating that he has had under consideration a memorandum from the Deputy Minister, submitting as follows: That contracts have been placed with shipbuilding firms in Canada by the Marine Department for the construction of 45 steamships of a total deadweight tonnage of approximately 263,950 tons, at an average cost of \$199.62 a ton. That four of the vessels so contracted for have been completed and delivered to the department, viz: Canadian Voyageur, 4,300 tons; Canadian Pioneer, 8,100 tons; Canadian Warrior, 3,750 tons; Canadian Ranger, 8,100 tons. That the remainder of the vessels alluded to will be completed and delivered to the department at intervals during the present and next years.

That several plans for the disposition and operation of these vessels have been considered, viz:—(a) By the regular steamship operators on a basis of hire or commission to be agreed upon; (b) by an organization to be formed within the department subject to and under instructions from the Minister; (c) by the Canadian National Ry.; (d) sale to private interests on terms to be agreed upon and subject to the condition that they should be available for Canadian trade so long as any such trade is offering.

That he has been advised that the intention of the government is to have some or all of these vessels operated by the Canadian National Ry. The Minister therefore recommends as follows:—That any or all of the vessels may, on completion and delivery to the Marine Department be transferred to the Canadian National Ry. for operation and maintenance.

That the terms upon which the vessels shall be so transferred shall require repayment to the Consolidated Revenue of Canada by the Canadian National Ry. of the total amount of the cost of each vessel so transferred with interest at 5½% in the manner following:—1st year, 20%; 2nd year, 15%; 3rd, 4th, 5th, 6th and 7th years, 10% each year; 8th, 9th and 10th years, 5% each year. That the title to every vessel transferred to the Canadian National Ry. shall remain in the Minister of Marine on behalf of the government until such time as the total cost of each such vessel with interest as

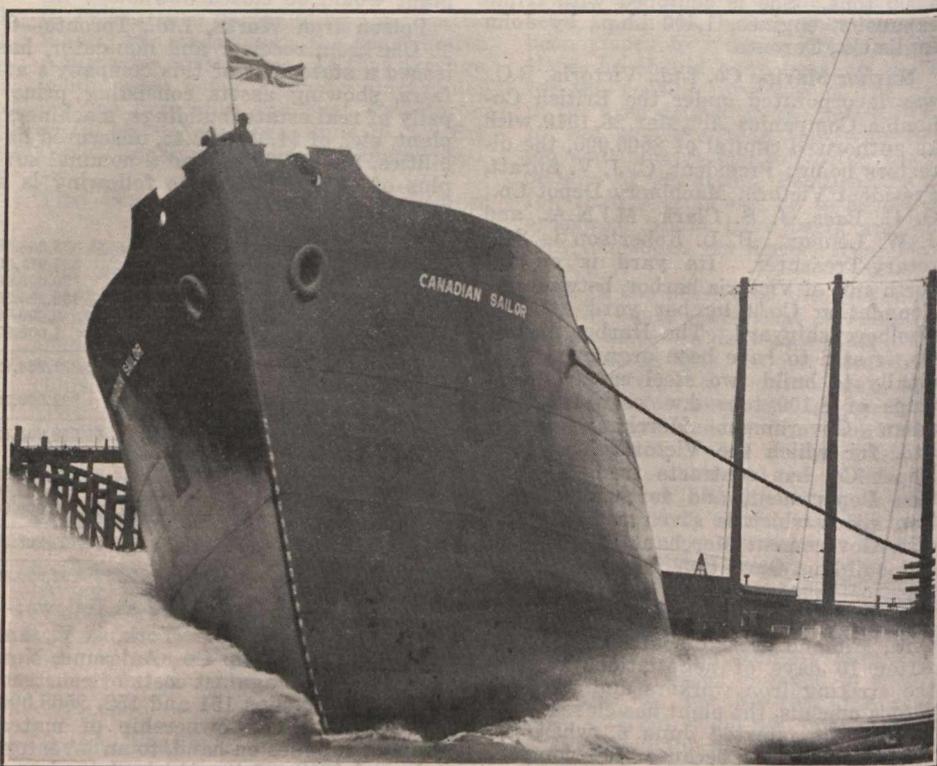
aforsaid is fully paid; thereafter the title to be vested in the Canadian National Ry. The committee concurs in the foregoing recommendations, and submits the same for approval.

**Management of Steamships**—As stated in Canadian Railway and Marine World previously, the management of the steel cargo steamships which have been built, and are being built, under the Marine Department's orders, has been placed in the hands of the Canadian National Ry. Co.'s directors, of which D. B. Hanna is President. Canadian Government Merchant Marine Ltd. was incorporated by Dominion letters patent, Dec. 30, 1918, with an authorized capital of \$1,000,000. At present the company has five directors, all of whom are directors of the Canadian National Rys., as follows, viz: D. B. Hanna, President; A. J. Mitchell, Vice President and Treasurer; Major Graham A. Bell, C.M.

The s.s. Canadian Ranger, 8,100 tons d.w., built for the Marine Department by Canadian Vickers Ltd., Montreal, and launched Apr. 19, was delivered to Canadian Government Merchant Marine Ltd., May 23; sailed from Montreal with cargo June 1 for Liverpool, Eng., and arrived there June 14.

The s.s. Canadian Recruit, 3,750 tons d.w., built by Collingwood Shipbuilding Co., for the Marine Department and launched at Collingwood, Ont., May 3, ran her trial trips June 3, was transferred to Canadian Government Merchant Marine Ltd. and left Collingwood for Toledo, Ohio, to load for Montreal, where she took on a general cargo for Jamaica and Havana.

The s.s. Canadian Warrior, 3,750 tons d.w., was stated in Canadian Railway and Marine World for June to have left Collingwood, Ont., Apr. 30, for Port Huron, Mich., to load coal for Montreal. We



Launching of steel cargo steamship Canadian Sailor, 3,400 tons d.w., for Canadian Government Merchant Marine Ltd., by Port Arthur Shipbuilding Co., at Port Arthur, Ont., May 31, 1919.

G., acting Deputy Minister of Railways; Robt. Hobson and E. R. Wood. Four additional directors will probably be elected in the near future. The Secretary is R. P. Ormsby.

The supervision of the management of the fleet has been delegated to R. C. Vaughan, Assistant to President, Canadian National Rys. R. B. Teakle, formerly Manager of the France-Canada Line at Philadelphia, has been appointed Manager, Canadian Government Merchant Marine Ltd. H. Milburne continues as Superintendent. Thos. Todd, formerly Chief Accountant and Purchasing Agent, Allan Steamship Line, Montreal, and subsequently loaned by the C.P.R. to the Canadian Cheese Commission, has been appointed Auditor, Canadian Government Merchant Marine Ltd. These three officials have their offices at 230 St. James St., Montreal.

were officially advised that she had left for Port Huron and concluded that it was Port Huron, Mich., but have since been advised that she went to Huron, Ohio, where she loaded about 1,200 tons of Pittsburg no. 8 three-quarter coal consigned to Canadian National Rys., Montreal and from there took a general cargo for Barbadoes, Trinidad and Havana.

The Minister of Marine stated in the House of Commons recently, in answer to a question, that the cost of the s.s. Canadian Warrior was \$818,975 delivered.

British American Shipbuilding Co., Welland, Ont., which, as stated previously in Canadian Railway and Marine World, has contracts for 2 steel cargo steamships of 4,350 tons each for Canadian Government Merchant Marine Ltd., and which laid the keel for Marine Department contract 44; builder's yard no. 4; Mar. 29, advised us June 9 that the keel for Marine Department contract 25; builder's yard no. 5; had not been laid,

owing to the yard having been closed since the middle of May, the workmen being on strike.

The Collingwood Shipbuilding Co., Collingwood, Ont., on June 3, ran the trial trips of the s.s. Canadian Recruit, 3,750 tons d.w., built for the Marine Department, June 3, after which she was transferred to Canadian Government Merchant Marine Ltd. and left Collingwood June 7 for Toledo, Ohio, to load coal for Montreal. The company advised us June 20, that it expected to launch the s.s. Canadian Signaller, also 3,750 tons d.w., on June 28.

J. Coughlan & Sons, Vancouver, B.C., who, as stated in Canadian Railway and Marine World for June, laid keels on Apr. 26 and May 3, respectively, for two of the 8,100 ton d.w. steel cargo steamships for Canadian Government Merchant Marine Ltd., advised us June 9 that they were unable to give any idea as to the launching dates, as a general strike was on in Vancouver, which had stopped operations in their yards. For the same reason they were unable to give any idea as to when keels would be laid for the two other similar vessels for the Marine Department.

Halifax Shipyards Ltd., Halifax, N.S., which, as stated previously in Canadian Railway and Marine World, has contracts for 2 steel cargo steamships of 8,100 tons d.w. each, and 2 for 10,500 tons d.w. each, for Canadian Government Merchant Marine Ltd., and which laid the keels of the two 8,100 ton ships, viz: Marine Department contract 21; builder's yard no. 1; s.s. Canadian Mariner, Feb. 24, and Marine Department contract 22; builder's yard no. 2; s.s. Canadian Explorer, Mar. 15, advised us June 6 that the erection of buildings for its plant was completely stopped, owing to a building trades strike; consequently the programme for the building of ships 1 and 2 had been altered, and could not be definitely rearranged until the settlement of the strike and commencement of work. The keels for the two 10,500 ton steamships had not been laid and it could not then be stated when they would be. The company further advised us June 13 that the construction of its buildings was re-started on June 9, the few bricklayers and carpenters who had been on strike having returned to work, on the understanding that their wages would be readjusted, in accordance with the finding of the conciliation board, which was established to arbitrate the difference between the Halifax Shipbuilders' Exchange and the different unions interested.

Harbour Marine Co. Ltd., Victoria, B.C., particulars about the incorporation, officials, etc. of which are given under "General Shipbuilding Notes Throughout Canada," on another page of this issue, is said to have been organized principally to build two steel cargo steamships of 8,100 tons d.w. each, for Canadian Government Merchant Marine Ltd., for which the Victoria Machinery Depot Co. has contracts from the Marine Department. We were officially advised June 10 that neither of the keels had been laid and that no dates for their laying had been fixed, but that the first shipway had been completed, that keel blocks were being placed, that the second shipway was nearly finished, and that the erection of buildings, installing of plant, etc., was being gone on with.

The Port Arthur Shipbuilding Co.,

Port Arthur, Ont., launched, on May 31, the steel cargo steamship Canadian Sailor, 3,400 tons d.w., Marine Department contract 20; builder's yard no. 40; Miss Emmeline Paige, daughter of J. F. Paige, the company's General Manager, performing the christening. The Canadian Sailor is of steel, screw, single deck type, with a straight stem and semi-elliptical stern built on the transverse system with poop, bridge and forecastle; the principal dimensions being: Length over all, 260 ft.; length between perpendiculars, 251 ft.; breadth moulded, 40½ ft.; depth moulded, 23 ft. She is built to British Lloyd's 100 A1 classification, and fitted out in accordance with British Board of Trade Rules. The propelling machinery is placed amidships. The main engine is of the triple expansion vertical inverted type, with cylinders 20½, 34, 56 x 40 in. stroke, developing about 1,500 i.h.p. The auxiliary machinery includes a feed pump evaporator of 15 tons capacity per 24 hours; auxiliary condenser, with attached air and circulating pumps; vertical duplex ballast pump and auxiliary feed pump. A steam ash hoist is located in boiler room. Steam supplied by 2 Scotch boilers, 15 x 11 ft., constructed according to Lloyd's and Canadian Rules, having working pressure of 190 lb.

The Canadian Sailor is the second ship to be launched out of an order for 4 precisely similar steamships, which the company has from the Marine Department; the first, Canadian Trader, having been launched May 5. The keels for the other 2, Canadian Adventurer and Canadian Cadet, were laid Mar. 31.

Port Arthur Shipbuilding Co., Port Arthur, Ont., launched on May 31 the steel cargo steamship Canadian Sailor, 3,400 tons d.w. for Canadian Government Merchant Marine Ltd., Marine Department contract 20; builder's yard no. 40.

Wallace Shipyards Ltd., Vancouver, B.C.—The second of the steel steamships being built for Canadian Government Merchant Marine Ltd., Marine Department contract 5; yard no. 106; Canadian Trooper, 4,300 tons d.w., was launched May 31, and christened by Mrs. R. Pemberton, wife of the overseer of the government steamship building there.

Newfoundland Coastal Service.

In our last issue particulars were given of the acceptance, by the Newfoundland Government, of the tender of Bowring Bros. for two steamship services between St. John's and northern coast ports, and St. John's and southern and western ports. Similar service has been rendered by the firm for the past 15 years, and the tender referred to was for a continuance of the service for a further 10 years, of course at new rates. After the acceptance of the tender there was a change of government, without a contract having been signed, and considerable opposition arose to the concluding of the contract by the new government. In the meantime, Bowring Bros. withdrew their tender, and are reported to have sent in an amended tender at an enhanced price, providing for increases in passenger and freight rates, necessitated by increases in operating expenses. The former contract expired in April, and it has been announced that, pending a settlement of the matter, the government has seized the steamships

Portia and Prospero, under the War Measures Act, and is operating them under the Government Shipping Department, at rates for passengers and freight which the contractors charged under the last contract.

Details of the Different Types of Steamships for Canadian Government Merchant Marine Ltd.

The following are comparative details of the six different types of steamship being built for Canadian Government Merchant Marine Ltd.:

	2,800 ton.	3,400 ton.	3,750 ton.	4,300 ton.	5,100 ton.	8,100 ton.	10,500 ton.
Length, overall.....	270 ft.	260 ft.	260½ ft.	333 ft.	344 ft.	413 ft.	445 ft.
Length, bet. perpendiculars.....	38 ft.	251 ft.	320 ft.	331 ft.	331 ft.	400 ft.	430 ft.
Breadth, moulded.....	20½ ft.	43½ ft.	44 ft.	46½ ft.	46½ ft.	52 ft.	56 ft.
Depth, moulded.....	17¼ ft.	23 ft.	25 ft.	25 ft.	25½ ft.	31 ft.	38 ft.
Draft, loaded.....	17¼ ft.	20 ft.	22 ft.	21 ft.	21 ft.	25 ft.	29 ft.
Type.....	S.d., p.b. & f.c's'le	S.d., p.b. & f.c's'le	Lake, s.d., p.b. & f.c's'le	S.d., p.b. & f.c's'le	S.d., p.b. & f.c's'le	2d., p.b. & f.c's'le	3d., p. & f.c's'le
Engines—Type.....	Tri-compound	Triple expansion	Triple expansion	Triple expansion	Triple expansion	Triple expansion	Triple expansion
Cylinders, diam.....	17½ x 28¾ x 47 ins.	20½ x 34 x 56 ins.	18 x 36 ins.	25 x 41 x 67 ins.	25 x 41 x 68 ins.	27 x 44 x 73 ins.	29½ x 50 x 80 ins.
Stroke.....	33 ins.	40 ins.	36 ins.	45 ins.	45 ins.	48 ins.	54 ins.
Ind. h.p.....	875	1,300	1,200	1,800	2,500	3,000	4,000
Boilers—Type.....	Single ended	Single ended	Single ended	Single ended	Single ended	Single ended.	Single ended
No.....	2	2	2	2	3	3	4
Diam. and length.....	12 x 10½ ft.	15 x 11 ft.	14 x 10½ ft.	15½ x 11½ ft.	14 x 11½ ft.	15½ x 11½ ft.	15½ x 11¾ ft.
Working pressure.....	185 lbs.	190 lbs.	180 lbs.	180 lbs.	180 lbs.	180 lbs.	180 lbs.
Furnaces—No.....	2	6	6	6	9	9	9
Grate surface.....	80 sq. ft.	195 sq. ft.	100 sq. ft.	132 sq. ft.	156 sq. ft.	198 sq. ft.	212 sq. ft.
Heating surface.....	3,000 sq. ft.	4,670 sq. ft.	3,900 sq. ft.	5,162 sq. ft.	7,275 sq. ft.	7,743 sq. ft.	8,000 sq. ft.
Speed.....	8½ knots	9 knots	9 knots	11 knots	11 knots	11 knots	12 knots
Classification.....	Lloyd's	Lloyd's	Brit. Corp.	Lloyd's	Lloyd's	Lloyd's	Lloyd's

### Orders for Steel Cargo Steamships for Canadian Government Merchant Marine Ltd.

The following is a complete list of steel cargo steamships which the Dominion Marine Department has been authorized, by order in council, to place orders for, and which orders are to be carried out. The following contractions are used in the column giving the type of the vessels to be built:—s.d., single deck; 2.d., two deck; 3.d., three deck; lake, lake type; p., poop; b., bridge; f'c's'le, forecastle.

Contract	Contract date	Builder	Yard no.	Tons d.w.	Price per ton d.w.	Total price	Type	Classification	Speed, knots	Approximate delivery date	Keel laid	Launched	Name
1	Mar. 4, 1918	Canadian Vickers Ltd., Montreal	66	4,300	\$207.	\$ 890,100	S.d., p., b. and f'c's'le.....	Lloyd's	11	Dec. 31, 1918	June 11, 1918	Nov. 23, 1918	Canadian Voyager
2	May 22, 1918	"	67	8,100	180.	1,458,000	2.d., p., b. and f'c's'le.....	"	11	Jan. 31, 1918	July 17, 1918	Dec. 3, 1918	Canadian Pioneer
3	May 18, 1918	Collingwood Shipbuilding Co., Collingwood, Ont.	61	3,750	205.	768,750	Lake, s.d., p., b. and f'c's'le	Brit. Corp.	9	May 1, 1919	.....	Dec. 21, 1918	Canadian Warrior
4	Mar. 15, 1918	Wallace Shipyards Ltd., Vancouver, B.C.	100	4,300	207.	890,100	S.d., p., b. and f'c's'le.....	Lloyd's	11	Mar. 31, 1919	Oct. 1, 1918	Apr. 5, 1919	Canadian Volunteer
5	Nov. 25, 1918	"	106	4,300	217.	933,100	S.d., p., b. and f'c's'le.....	"	11	May 31, 1919	Nov. 15, 1918	May 31, 1919	Canadian Trooper
6	Nov. 25, 1918	"	101	5,100	210.	1,071,000	S.d., p., b. and f'c's'le.....	"	11	July 31, 1919	Apr. 5, 1919	.....	Canadian Aviator
7	Nov. 25, 1918	"	102	5,100	210.	1,071,000	S.d., p., b. and f'c's'le.....	"	11	Sept. 30, 1919	.....	.....	Canadian Scout
10	July 5, 1918	Collingwood Shipbuilding Co., Collingwood, Ont.	62	3,750	205.	768,750	Lake, s.d., p., b. and f'c's'le	Brit. Corp.	9	May 15, 1919	June 3, 1918	May 3, 1919	Canadian Recruit
11	Oct. 17, 1918	"	63	3,750	205.	768,750	Lake, s.d., p., b. and f'c's'le	"	9	July 15, 1919	Jan. 16, 1919	.....	Canadian Signaller
12	Oct. 17, 1918	"	64	3,750	205.	768,750	Lake, s.d., p., b. and f'c's'le	"	9	July 1, 1919	Feb. 10, 1919	.....	Canadian Gunner
13	Aug. 9, 1918	Tidewater Shipbuilders Ltd., Three Rivers, Que.	5	5,100	200.	1,020,000	S.d., p., b. and f'c's'le.....	Lloyd's	11	Aug. 1, 1919	Jan. 8, 1919	.....	Canadian Settler
14	Aug. 9, 1918	"	6	5,100	200.	1,020,000	S.d., p., b. and f'c's'le.....	"	11	Sept. 1, 1919	Jan. 10, 1919	.....	Canadian Rancher
15	Jan. 24, 1919	"	7	5,100	200.	1,020,000	S.d., p., b. and f'c's'le.....	"	11	Nov. 15, 1919	.....	.....	Canadian Fisher
16	Jan. 24, 1919	"	8	5,100	200.	1,020,000	S.d., p., b. and f'c's'le.....	"	11	May 15, 1920	.....	.....	Canadian Forester
17	Sept. 4, 1918	Davie Shipbuilding & Repairing Co., Lauzon, Que.	459	5,100	200.	1,020,000	S.d., p., b. and f'c's'le.....	"	11	Nov. 1, 1919	Mar. 11, 1919	.....	Canadian Trapper
18	Sept. 4, 1918	"	460	5,100	200.	1,020,000	S.d., p., b. and f'c's'le.....	"	11	Nov. 8, 1919	Mar. 28, 1919	.....	Canadian Hunter
19	Sept. 4, 1918	Port Arthur Shipbuilding Co., Port Arthur, Ont.	39	3,400	205.	697,000	Lake, s.d., p., b. and f'c's'le	"	9	June 1, 1919	Dec. 9, 1918	May 5, 1919	Canadian Trader
19a	Mar. 1, 1919	"	41	3,400	210.	714,000	Lake, s.d., p., b. and f'c's'le	"	9	Sept. 30, 1919	Mar. 31, 1919	.....	Canadian Adventurer
20	Sept. 4, 1918	"	40	3,400	205.	697,000	Lake, s.d., p., b. and f'c's'le	"	9	July 1, 1919	Dec. 10, 1918	May 31, 1919	Canadian Sailor
20a	Mar. 1, 1919	"	42	3,400	210.	714,000	Lake, s.d., p., b. and f'c's'le	"	9	Oct. 31, 1919	Mar. 31, 1919	.....	Canadian Cadet
21	Sept. 13, 1918	Halifax Shipyards, Ltd., Halifax, N.S.	1	8,100	195.	1,579,500	2.d., p., b. and f'c's'le.....	"	10	Dec. 19, 1919	Feb. 24, 1919	.....	Canadian Mariner
22	Sept. 13, 1918	"	2	8,100	195.	1,579,500	2.d., p., b. and f'c's'le.....	"	10	Apr. 1920	Mar. 15, 1919	.....	Canadian Explorer
23	Oct. 11, 1918	Canadian Vickers Ltd., Montreal...	73	4,300	215.	924,500	S.d., p., b. and f'c's'le.....	"	11	May 27, 1919	Jan. 22, 1919	.....	Canadian Navigator
24	Oct. 11, 1918	"	68	8,100	188.	1,522,800	2.d., p., b. and f'c's'le.....	"	11	May 1, 1919	Aug. 26, 1918	Apr. 19, 1919	Canadian Ranger
25	Oct. 11, 1918	"	69	8,100	188.	1,522,800	2.d., p., b. and f'c's'le.....	"	11	June 1, 1919	Nov. 30, 1918	May 7, 1919	Canadian Seigneur
26	Oct. 11, 1918	"	70	8,100	188.	1,522,800	2.d., p., b. and f'c's'le.....	"	11	July 1, 1919	Dec. 2, 1918	.....	Canadian Miller
27	Oct. 11, 1918	"	71	8,100	188.	1,522,800	2.d., p., b. and f'c's'le.....	"	11	Aug. 1, 1919	Apr. 23, 1919	.....	Canadian Spinner
28	Oct. 11, 1918	"	72	8,100	188.	1,522,800	2.d., p., b. and f'c's'le.....	"	11	Sept. 1, 1919	May 10, 1919	.....	Canadian Planter
29	Jan. 24, 1918	Victoria Machinery Depot Co., Victoria, B.C.	1	8,100	198.	1,603,800	2.d., p., b. and f'c's'le.....	"	11	Jan. 31, 1920	.....	.....	.....
30	Jan. 24, 1919	"	2	8,100	198.	1,603,800	2.d., p., b. and f'c's'le.....	"	11	Nov. 30, 1920	.....	.....	.....
31	Dec. 11, 1918	Collingwood Shipbuilding Co., Kingston, Ont.	15	3,750	205.	768,750	Lake, s.d., p., b. and f'c's'le	Brit. Corp.	9	Nov. 1, 1919	Apr. 7, 1919	.....	Canadian Beaver
32	Mar. 1, 1919	Port Arthur Shipbuilding Co., Port Arthur, Ont.	43	4,300	215.	935,250	S.d., p., b. and f'c's'le.....	Lloyd's	10 1/2	Nov. 1, 1919	.....	.....	.....
33	Mar. 1, 1919	"	44	4,300	215.	935,250	S.d., p., b. and f'c's'le.....	"	10 1/2	Nov. 15, 1919	.....	.....	.....
34	Nov. 22, 1918	J. Coughlan & Sons, Vancouver, B.C.	11	8,100	198.	1,603,800	2.d., p., b. and f'c's'le.....	"	11	July 31, 1919	Apr. 26, 1919	.....	Canadian Importer
35	Nov. 22, 1918	"	12	8,100	198.	1,603,800	2.d., p., b. and f'c's'le.....	"	11	Aug. 31, 1919	May 3, 1919	.....	Canadian Exporter
36	Nov. 22, 1918	"	13	8,100	198.	1,603,800	2.d., p., b. and f'c's'le.....	"	11	Sept. 30, 1919	.....	.....	Canadian Inventor
37	Nov. 22, 1918	"	14	8,100	198.	1,603,800	2.d., p., b. and f'c's'le.....	"	11	Oct. 31, 1919	.....	.....	Canadian Prospector
38	Dec. 10, 1918	Halifax Shipyards Ltd., Halifax, N.S.	3	10,500	197 1/2	2,073,750	3.d., p., and f'c's'le.....	"	12	Aug. 1, 1920	.....	.....	.....
39	Dec. 10, 1918	"	4	10,500	197 1/2	2,073,750	3.d., p., and f'c's'le.....	"	12	Nov. 1, 1920	.....	.....	.....
40	Mar. 31, 1919	Nova Scotia Steel & Coal Co., New Glasgow, N.S.	5	2,800	210.	588,000	S.d., p., b. and f'c's'le.....	"	8 1/2	Oct. 1919	Mar. 27, 1919	.....	.....
41	Mar. 31, 1919	"	6	2,800	210.	588,000	S.d., p., b. and f'c's'le.....	"	8 1/2	Nov. 1919	Mar. 31, 1919	.....	.....
42	Feb. 21, 1919	Prince Rupert Dry Dock and Engineering Co., Prince Rupert, B.C.	1	8,100	198.	1,603,800	2.d., p., b. and f'c's'le.....	"	11	Feb. 1920	.....	.....	.....
43	Feb. 21, 1919	"	2	8,100	198.	1,603,800	2.d., p., b. and f'c's'le.....	"	11	June 1920	.....	.....	.....
44	Jan. 23, 1919	British American Shipbuilding Co., Welland, Ont.	4	4,350	215.	935,250	S.d., p., b. and f'c's'le.....	Brit. Corp.	10	Nov. 1919	Mar. 29, 1919	.....	.....
45	Jan. 23, 1919	"	5	4,350	215.	935,250	S.d., p., b. and f'c's'le.....	"	10	June 1920	.....	.....	.....
				263,850		\$52,691,450							

**Cargo Steamship Building in Canada for British Government.**

**Engines for s.s. War Fundy, Etc.**—In a description of the wooden cargo s.s. War Fundy, built for the British Government by Grant & Horne, St. John, N.B., which appeared in Canadian Railway and Marine World for May, it was stated that the boilers and engines were installed by the Union Foundry Co., under an Imperial Munition Board's officer's superintendence. We have since been advised that, while the engines were installed by the Union Foundry Co., as stated, they were built by Robb Engineering Works Ltd., Amherst, N.S., which also built 4 other engines of the same size for ships built for the British Government at different points.

**Steamships Launched and Under Construction**—Since the information given in our last issue respecting launchings of steamships under construction in Canada for the British Government, was published, the wooden steamship, s.s. War Moncton, 3,080 tons d.w., was launched, May 29, by Grant and Horne, St. John, N.B. This completes all orders for wooden steamships placed in Canada for the British Government by the Imperial Munitions Board. Orders for 2 steel steamships, from Canadian Allis-Chalmers, Ltd., Bridgeburg, Ont., of 3,500 tons d.w. each, and for which, the

Canadian Allis-Chalmers Ltd. had orders for 4 steel cargo steamships of 3,500 tons each, one of which, the s.s. War Magic, was launched Mar. 3, and another one, the s.s. War Vixen, is being built.

**Grant & Horne, St. John, N.B.**—The s.s. War Moncton was launched at this yard May 29. This is the last of the wooden steamships to be built in Canada for the British Government under orders from the Imperial Munitions Board, and is the second one built by this firm, the first one, the s.s. War Fundy, having been launched in August, 1918. The War Moncton is of the standard type of wooden steamship adopted by the board; full descriptions of which, with equipment, have been given in previous issues.

**Imperial Investigation Board on Maritime Transport, Etc.**

Ottawa press dispatch, June 6—Sir George Perley, High Commissioner for Canada in England, will, on the recommendation of the Minister of Marine, represent Canada on the Imperial Investigation Board to be appointed by the Crown to review questions relating to maritime transport and to the development of the Empire's sea communications.

The board is to consist of an independent chairman appointed by the Crown;

with expert knowledge, to investigate particular problems.

The board is empowered to announce its conclusions publicly or otherwise as it thinks fit. Any published report to be signed by the concerning members of the board, and any dissenting opinion of a member or members to be published at the same time.

**Care to Be Exercised in Lake St. Clair Flats Canal.**

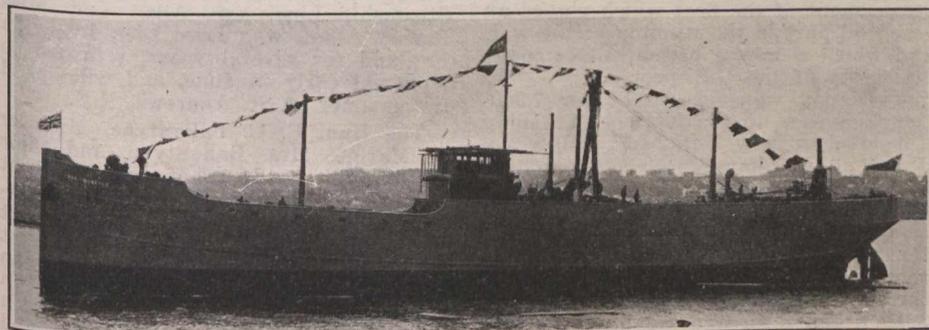
The United States District Engineer, at Sault Ste. Marie, Mich., has issued the following notice to vessel owners:—“The revetment on the channel side of the east dike, Lake St. Clair Flats Canal, has deteriorated markedly in the last two seasons. Several sections have collapsed, the timber work swinging out into the channel. This condition exposes anchorages adjacent to the portions collapsed to undue strain, and the backfilling to the effects of wash incident to the disturbances of water created by passing boats. Suitable repair is anticipated as funds become available and arrangements can be made. Meantime, it is highly desirable, in order to minimize further deterioration, that additional strain and disturbance be avoided as far as practicable. To this end it is requested that your vessel masters be instructed to check speed in passing through the east canal, reducing to about 8 miles an hour when weather conditions are suitable for that speed. It will, of course, be understood that it is not suggested that vessels check in storm, or when conditions to any extent render control uncertain, but only that throughout the variety of conditions encountered speed be reduced in reasonable accord therewith, and solely for the purpose above expressed, that further deterioration of the revetment be minimized.”

**Ships Built in Canada in 1918.**

The Marine Department has issued the following statement, subject to revision, of ships built in Canada during 1918:

Wood—	Sail.	Steam.	Gas.
Number .....	81	43	18
Gross tonnage.....	34,042	86,479	9,757
Net tonnage.....	29,334	54,498	7,856
<b>Steel—</b>			
Number .....		79	
Gross tonnage.....		135,004	
Net tonnage.....		79,325	
<b>Totals.</b>			
Number .....		221	
Gross tonnage.....		265,282	
Net tonnage.....		171,013	
Deadweight tonnage.....		424,451	

**La Cie. Canadienne Trans-Atlantique** Ltee., the incorporation of which was announced in our last issue with \$1,000,000 authorized capital and office at 9 Victoria Square, Montreal, was formed to operate a line of freight steamships between Montreal and Havre, France, and for this purpose is a consolidation of the interests of Canada Steamship Lines, Ltd., and La Cie. Generale Trans-Atlantique of France. It is intended to operate about 6 steamships in the service, 3 of which will be owned by Canada Steamship Lines and 3 by the French company, these companies acting, respectively in Canada, and France, in the interests of the new owners. The President is Pellerin Latouche, Paris, France, and the Vice President and Managing Director is J. W. Norcross, President and Managing Director Canada Steamship Lines, Montreal.



Steamship War Moncton, built for British Government by Grant & Horne, St. John, N.B., launched May 29.

names War Wallaby and War Wombat were selected, have been cancelled by the Imperial Munitions Board. This leaves 7 steel steamships still under construction with a total tonnage of 35,000. The total of steel steamships launched remains at 34 with tonnage of 169,300, and 46 wooden steamships have been launched with total tonnage of 141,680; an aggregate of 80 vessels of 310,980 tons. Following is a list of the steel steamships still under construction.

Builder.	Tons d.w.
British American Shipbuilding Co. Welland, Ont.—	
War Racoon	3,500
Canadian Allis-Chalmers, Ltd., Bridgeburg, Ont.—	
War Vixen	3,500
J. Coughlan & Sons, Vancouver, B.C.—	
War Chariot	8,800
War Company	8,800
Midland Shipbuilding Co., Midland, Ont.—	
War Fury	3,400
Polson Iron Works, Ltd., Toronto, Ont.—	
War Algoma	3,500
War Halton	3,500
7 steel steamships	35,000

Canadian Allis-Chalmers, Ltd., Bridgeburg, Ont.—The Imperial Munitions Board has cancelled orders given this company for 2 steel cargo steamships of 3,500 tons each, viz: builder's yard no. 302, s.s. War Wallaby, and builder's yard no. 303, s.s. War Wombat. Can-

of eight official members nominated by the Colonial Office, India Office, Board of Trade, Dominion of Canada, Commonwealth of Australia, Dominion of New Zealand, Union of South Africa and Dominion of Newfoundland, and of four unofficial members, two experienced in shipping and two experienced in commerce, appointed by the Board of Trade, after consultation with the Dominions. The duties of the board are to be:

To enquire into complaints from persons and bodies interested with regard to ocean freights, facilities and conditions in the interimperial trade, or into any question of a similar nature referred to it by any of the nominating authorities, and to report its conclusions to the governments concerned.

To survey the facilities for maritime transport on such routes as appear to it to be necessary for trade with the Empire, and to make recommendations to the appropriate authority for the co-ordination and improvement of such facilities, whether with regard to the type, size and speed of ships required for particular routes or purposes, the depth of water in locks or channels, the construction of harbor work, or similar matters. For this purpose the board is to appoint, where necessary, in consultation with the appropriate authority, standing or temporary committees, including persons

## The United States Government's Shipbuilding Work, Its Costs, Etc.

E. N. Hurley, Chairman United States Shipping Board, wrote the Chairman of the House of Representatives' appropriations committee, June 4, as follows:

In presenting to you the request of the U.S. Shipping Board for funds, I feel it my duty to give an outline of our shipping problem as a whole. The interrelation of the shipbuilding and ship-operating industries is very close, and the unprecedented conditions which the war has imposed upon both of them cannot safely be adjusted to normal without carefully considered action by the government, at whose call they abandoned the normal limitations of commercial organization and adjusted themselves to the abnormal conditions of war. Moreover, the importance of these two great industries to the prosperity of the U.S. people is so great that the necessity for establishing them upon a healthy commercial basis is widely recognized as a prime matter of national policy.

During the 19 months in which our country was actively engaged in the war, the U.S. Shipping Board Emergency Fleet Corporation, expanded the shipbuilding capacity of the U.S. from an unimportant position among the world's producers of ocean-going tonnage to first place. At the same time it has increased the U.S. overseas merchant fleet from a negligible quantity to second place. Our programme has been moulded, and its closing-out has been planned, with the idea of leading the two industries congress consigned to our administration during the war up to the point at which they may strike out and develop on a commercial basis. The consummation of our efforts is dependent upon and now awaits the action of congress in granting our request for funds, and in directing the manner in which we shall dispose of the government fleet.

Congress has authorized \$3,671,000,000 and appropriated \$2,625,451,000. We shall need all the money which has been appropriated, and in addition we shall require \$673,368,301. However, the total of these two amounts (\$3,298,819,301) is \$372,180,699 less than the amount congress already has authorized us to spend. The shipbuilding programme has been greatly reduced since the signing of the armistice. We have suspended or cancelled contracts for 754 ships, aggregating 3,797,825 tons d.w., which would have cost \$797,564,276 to complete. The cost of cancelling these contracts will be about \$202,853,456, and the saving effected by cancellations will approximate \$594,710,820.

The following is an account of our financial operations to date: Actual expenditures and net commitments for shipyard construction, housing, transportation, etc., \$270,482,975, and it is estimated that the salvage will be \$81,272,700. This means that we shall have to charge off from our shipyard, housing and transportation investment, \$189,210,275, which is 5.6% of the total amount congress has appropriated and is requested to appropriate. On March 31, we had spent in the administration of the home office, the field establishment, and the district offices, \$24,173,000. By July 1, this item will reach \$29,500,000. It will require an additional \$15,500,000 to complete the programme. This makes a total administration outlay of \$45,000,000, or 1.37% of the total

amount congress has appropriated and is requested to appropriate.

The three net expenditures described above total \$437,063,731. The subtraction of this amount from \$3,298,819,301, the total appropriations made and requested, leaves \$2,861,755,570 to be accounted for in ships. For this we have built and expect to build, 2,434 vessels, aggregating 13,885,106 tons d.w. On its face, this ratio of tonnage to monetary outlay would indicate a cost of \$206 a ton d.w. However, the actual cost of the ships to the government is considerably less than this amount, for the following reason. Some shipbuilders have paid into the U.S. Treasury income and excess profit taxes aggregating \$40 a ton d.w. on the vessels they have constructed. Others have paid the equivalent of \$30 a ton. It is estimated that at least \$25 a ton d.w. has been returned to the U.S. Treasury in this manner by all shipbuilders. This \$25 does not include any taxes paid by the hundreds of subcontractors who manufactured the steel, the boilers, the machinery and the many other things which go into the ships; but when multiplied by 13,885,106 tons d.w., it indicates a rebate of \$347,127,650, which, when subtracted from \$2,861,755,570, leaves \$2,514,527,920, or \$180 a ton d.w. as the actual cost to the government of the fleet which played an essential part in the winning of the war, and which is now a permanent commercial asset of the U.S. people.

Yesterday we sold one of our 7,500-ton freighters to the National Shipping Corporation, New York, for \$210 a ton d.w., and we have received from the Skinner & Eddy Shipbuilding Corporation an offer to buy at present construction costs four 8,000-ton freighters which that corporation is building. Today we sold one of our 5,075-ton freighters to the Omega Steamship Co., New York, for \$210 a ton d.w., and we have received from another firm an offer to buy four ships at the same price.

In giving this picture of our finances, I have confined myself to facts and figures. I have made no mention of the unusual conditions under which our work was planned and carried out. However, it is interesting to note that the cost of our steel and machinery was three times its normal cost, and that the wages we paid to labor were based upon double the normal rate. Also, it is interesting to consider in connection with the foregoing figures the fact that we expanded the shipbuilding industry ten-fold in ten months, with high-priced materials, and under the handicap of transportation delays which made the work very costly. In the prosecution of our work, we have made many blunders, and finally, when we were compelled by the signing of the armistice, suddenly to stop and reverse the ponderous machinery we had been driving at full speed, we found ourselves confronted with new problems, through the mazes of which we are happy to report that we can now see our way clearly.

Amount authorized by congress.....	\$3,671,000,000
Appropriated and will expend.....	\$2,625,451,000
Additional appropriation required	673,368,301
	<hr/>
	\$3,298,819,301
Credit for administration (1.37% of total amount appropriated and requested).....	45,000,000
Credit for net cost of shipyard development, housing and trans-	

portation (5.5% of total amount appropriated and requested).....	189,210,275
Credit for cancelling ship contracts	202,853,456
	<hr/>
	\$ 437,063,731
Total appropriation.....	\$3,298,819,301
Credit .....	437,063,731
	<hr/>
	\$2,861,755,570

Money spent and to be spent for construction of 13,885,106 d.w. tons of ships.....	2,861,755,570
Tax paid by shipbuilders (\$25 x 13,885,106 d.w. tons).....	347,127,650
	<hr/>
Net cost of 13,885,106 d.w. tons of ships .....	\$2,514,627,920
Average net cost of ships per d.w. ton .....	180

**Editor's Note**—Mr. Hurley's plan of working out the average net cost of ships per d.w. ton, by deducting from the actual cost the amount paid by shipbuilders, as government taxes, is certainly ingenious, but the result arrived at is worthless for comparison with prices paid by the British and Canadian Governments, which are stated at the actual prices paid to the builders. On the same basis, the ships for the United States Government cost \$206 a ton, if not more.

### Mainly About Marine People.

**Hugh A. Allan**, formerly of the Allan Steamship Line, Mrs. Allan and Miss Rachel Allan, who have been living in England for several years, returned to Montreal early in June, and will spend the summer at St. Andrews, N.B.

**The Hon. C. C. Ballantyne**, Minister of Marine, Mrs. Ballantyne, and their family, will spend part of the summer at the Algonquin Hotel, St. Andrews, N.B.

**J. Richard Clancy**, whose appointment as General Agent for Ontario, Freight Department, Canadian Pacific Ocean Services Ltd., Toronto, was announced in our last issue, entered transportation service in 1883, with the G.T.R., and transferred to the Allan Line Steamship Co. in June, 1884, serving with that company until Apr., 1915, successively as Chief of the Export Department, and Manager at Portland, Me. He entered C.P.R. service in Apr., 1915, as Port Agent at Quebec, Que., in the summer, and at St. John, N.B., in the winter, and in 1918 was appointed Representative, Canadian Pacific Ocean Services Ltd., New York, which position he held at the date of his present appointment.

**Capt. Samuel Crangle**, retired master mariner and shipbuilder, of Toronto, who died at Los Angeles, California, Apr. 12, left an estate valued at \$175,414. Among his bequests was one of \$2,000 to J. H. G. Hagarty, with whom he was formerly associated in the St. Lawrence & Chicago Steam Navigation Co.

**Capt. D. Kenny**, Marine Superintendent, Head Line, Montreal, died there, June 18, aged 60, after a short illness. He was with the Head Line for about 30 years, and was at one time master of one of its steamships.

**W. Grant Morden, M.P.**, of the Canada Steamship Lines, London advisory committee, and Mrs. Morden, have returned to England after spending several weeks in Canada.

**Capt. W. Murphy**, master of the Toronto Ferry Co.'s ferry steamboat Luel-la, died at Toronto, June 4, aged 54.

**P. R. Peel**, New Westminster, B.C.,

has been appointed measuring surveyor of shipping and of accommodation for seamen for that port, vice N. M. Matheson, deceased.

**W. G. Roche**, whose appointment as General Agent, Freight Department, Canadian Pacific Ocean Services Ltd., Chicago, Ill., was announced in our last issue, was born at Montreal, Nov. 3, 1880, and was educated at Detroit University, Detroit. He entered transportation service after leaving school, and served in clerical capacities with the G.T.R. and Pere Marquette Rd. He entered C.P.R. service, as Contracting Freight Agent, at Detroit, Mich., Aug.

Philadelphia, Pa. He was presented with an engraved silver salver by the members of the Canadian Club at Melrose, Mass., recently, on leaving for Montreal.

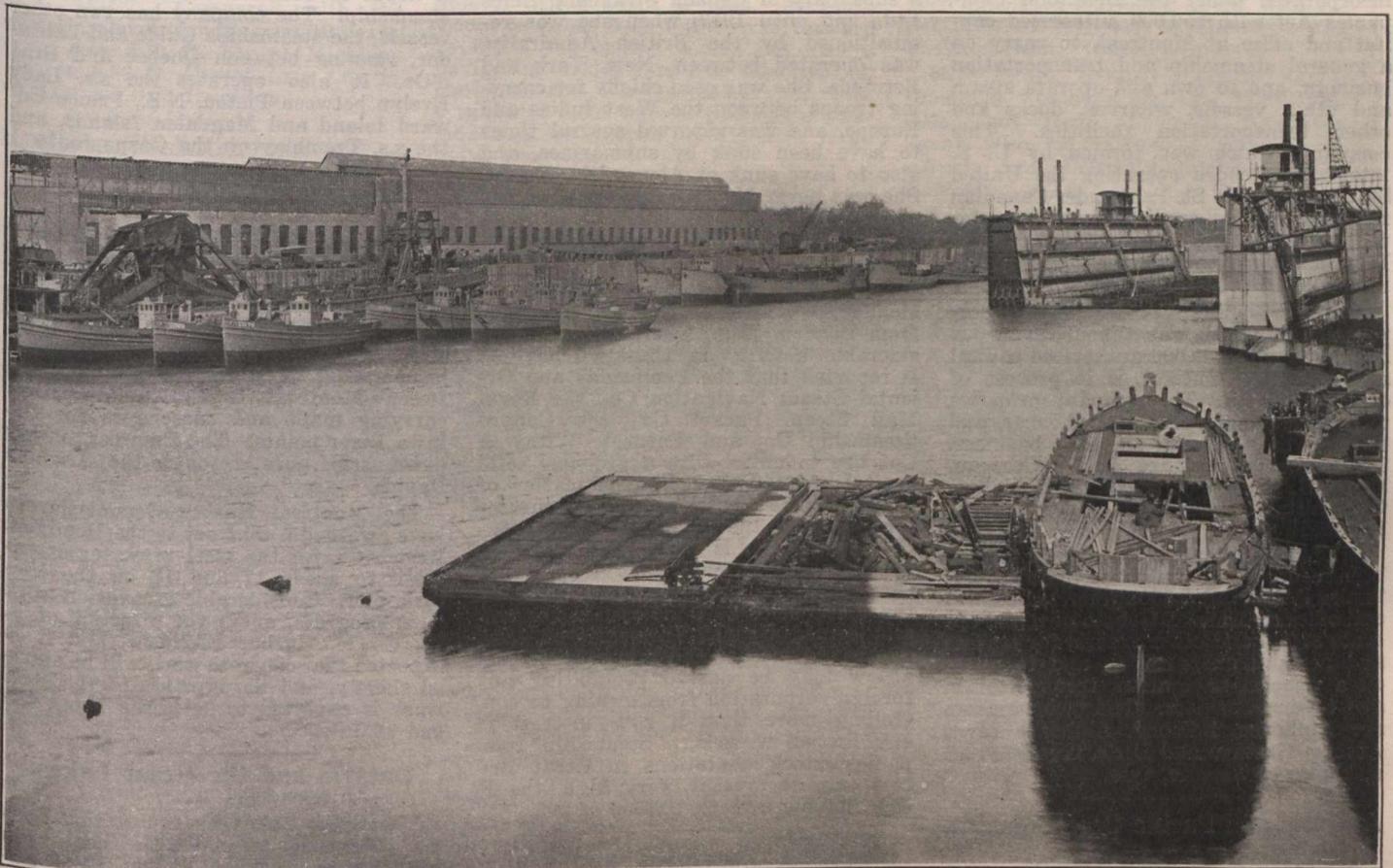
**Lorne C. Webster**, President, Webster Steamship Co., etc., Montreal, has been elected a director of the Merchants Bank of Canada.

**Harold Yarrow**, General Manager, Yarrow & Co., Glasgow, Scotland, visited Yarrows Ltd., plant at Victoria, B.C., recently.

**Norman Yarrow**, Manager of Yarrows Ltd., returned to Victoria, B.C., recently, after a short holiday in California.

authorized capital and office at Montreal, to own and operate steam and other vessels, and to carry on a general navigation and transportation business. The company was incorporated by New York interests and it was proposed to transfer the United States steamship *Eldorado* to the Canadian register, but as the Dominion Government refused permission the proposition has been abandoned.

**Harvester Navigation Co. Ltd.** has been incorporated under the Dominion Companies Act, with \$128,000 authorized capital, and office at Sussex, N.B., to own and operate steam and other vessels for the conveyance of passen-



Steel Steam Trawlers and Steam Wooden Drifters, built for British Government, through Canadian Naval Service Department, at Canadian Vickers Ltd., Montreal.

7, 1903, and resigned on his appointment as General Manager, Reading Truck Co., Detroit, Mich., of which company he later became Secretary-Treasurer, and resigned, Oct. 1, 1918. He was appointed Special Representative of the U.S. Labor Department, Oct. 15, 1918, and was appointed to his present position, May 1.

**Capt. Wm. Sprague**, a former master mariner on the Pacific coast, died at Vancouver, B.C., at the end of May, after a long illness, aged 75. He was born in New Brunswick, and was associated with the sea from early boyhood. He is stated to have brought the first vessel loaded with steel rails across the Atlantic, for the Intercolonial Ry.

**Robert B. Teakle**, who has been appointed Manager, Canadian Government Merchant Marine, Ltd., Montreal, was born at Quebec, Que., and entered marine service there with Allan, Rae & Co., and subsequently became local manager of the Allan Line at St. John, N.B., and later at Boston, Mass. Since the taking over of the Allan Line by Canadian Pacific Ocean Services, Ltd., he has been Manager of the France-Canada Line at

### Steamship Companies Incorporated

**Binghamton Steamship Co. Ltd.**, has been incorporated under the Dominion Companies Act, with \$50,000 authorized capital and office at Montreal, to own and operate steam and other vessels, and to carry on a general navigation and transportation business. It was the intention of this company, which was incorporated by United States interests, to transfer the U.S. steamship *Binghamton* to the Canadian register, but as permission for the transfer was refused by the Dominion Government the company is not being organized.

**Donald Shipping Co. Ltd.**, which has been incorporated under the Dominion Companies Act with \$50,000 authorized capital and office at Montreal, is in process of organization. The incorporators are L. P. Crepeau, K.C., S. Hinson, R. Bush, B. Robinson, and A. P. Grigg, all of Montreal.

**Eldorado Steamship Co. (Canada) Ltd.** has been incorporated under the Dominion Companies Act, with \$1,000

gers, mails and merchandise, and to act as shipbuilders and common carriers. M. G. White, Sussex, N.B.; G. W. Smith, E. Taylor, W. A. Keirstead, Apple River, N.S., and J. A. Cleveland, Alma, N.B., are the incorporators.

**Huron Steamship Co. Ltd.**, has been incorporated under the Dominion Companies Act with \$50,000 authorized capital and office at Montreal, to own and operate steam and other vessels, wharves, docks and other transportation facilities, and to carry on a general navigation business. United States interests are concerned, but as the application to the Dominion Government to transfer the U.S. steamship *Huron* to the Canadian register has been refused the company is not being organized.

**The Kingston Navigation Co. Ltd.** has been incorporated under the Ontario Companies Act, with \$40,000 authorized capital and office at Kingston, Ont., to operate vessels and other craft propelled by any means, and to carry passengers and freight by vessel or otherwise. J. M. Campbell, J. A. Carnegie, R. E. Burns, J. T. Bain, and C. J. Bolton, Kingston,

Ont., are the incorporators.

**Minneapolis Steamship Co. Ltd.** has been incorporated under the Dominion Companies Act, with \$50,000 authorized capital stock, and office at Montreal, to own and operate steam and other vessels, and to carry on a general navigation and transportation business. This company was incorporated by New York interests to operate the United States steamship Minneapolis under Canadian registry, but as the application to transfer the vessel was refused by the Dominion Government the organization of the company is not being proceeded with.

**St. Paul Steamship Co. Ltd.** has been incorporated under the Dominion Companies Act with \$50,000 authorized capital and office at Montreal, to carry on a general steamship and transportation business, and to own and operate steam and other vessels, wharves, docks and other transportation facilities. This company, which was formed by U. S. interests, intended operating the United States steamship St. Paul under Canadian registry, but its application to transfer the vessel having been refused by the Dominion Government, the organization is not being proceeded with.

**Tower Shipping Co. Ltd.**, the incorporation of which was announced in our last issue with \$30,000 authorized capital and office at Montreal, is in process of organization. The company proposes to purchase and operate a schooner, and to carry on a general shipping business. The incorporators are L. P. Crepeau, K. C., S. Hinson, R. Bush, B. Robinhon, G. Whittaker and A. P. Grigg, all of Montreal.

**La Cie. de Navigation Tremblay Ltee.** has been incorporated under the Quebec Companies Act with \$99,500 authorized capital and office at Matane, Que., to own and operate steam and other vessels for marine and aerial transportation and to carry on a general navigation, transportation and towing business. The incorporators are Alphonse, Edmond, Alphonse (Jr.), Arthur, Gustave and Ulric Tremblay, all mariners of Matane, Que.

### Atlantic and Pacific Ocean Marine.

Canadian Pacific Ocean Services Ltd. has changed the name of the s.s. Alsatian (Allan Line), to Empress of France, under which name she is now being operated.

It is reported that a French steamship line is preparing to inaugurate a steamship service between France and North American Pacific ports, making calls at Vancouver, Victoria, Tacoma and Seattle.

Canada Steamship Lines, Ltd., has purchased the s.s. Neepawa for the use of the Quebec Steamship Co., one of its subsidiaries. The Neepawa is 390 ft. long on the keel and 47 ft. 4 in. wide. It is said she will be operated in the West Indies trade.

The Union Steamship Co. of New Zealand, operating the mail steamship service between Canada and Australasia, is reported to have ordered a passenger steamship of 14,000 tons in Glasgow, Scotland, for the service, to be operated in conjunction with the s.s. Niagara.

The U.S. ship Brynhilda, of Boston, Mass., has been chartered by I. H. Mathers & Son of New Glasgow, N.S., to load lumber for United Kingdom ports. She is an iron ship of 1,502 gross tons and 1,409 net tons, built at Glasgow, Scotland, in 1885, her dimensions being,

length, 240.5 ft.; breadth, 38 ft.; depth, 21.7 ft.

The Ulster Steamship Co.'s (Head Line) s.s. Ballygally Head, was launched at Belfast, Ireland, recently for the North Atlantic service. It was expected she would make her first trip to Montreal about the end of June. Her dimensions are, length, 400 ft.; breadth, 52 ft.; depth, 31 ft.; tonnage, 5,300 gross, 8,250 d.w.

The s.s. Bermudian, arrived at New York early in June from Kingston, Jamaica, where she had landed colored British troops from Italy. She is owned by the Quebec Steamship Co., a subsidiary of Canada Steamship Lines Ltd., and until 1917, when she was requisitioned by the British Admiralty, was operated between New York and Bermuda. She was used chiefly for carrying troops between the West Indies and Europe, and was reported several times to have been sunk by submarines, and also to have sunk at Alexandria, Egypt. She was never hit by a torpedo, and the sinking at Alexandria, was due to an accident, an ash port having been left open.

Reports as to a large merger of steamship interests continue to come from London, Eng., where there is considerable activity in these circles. It is reported that the Peninsular and Oriental Steam Navigation Co., the Royal Mail Steam Packet Co., the Cunard Steamship Co. and Furness, Withy & Co., are to unite, with a probable total capital of £150,000,000. The matter of taking in the British owned steamships controlled by the International Mercantile Marine Co. is causing considerable interest. It is said that the British Government is arranging an option on the purchase of 80% interest in the vessels owned by the International Mercantile Marine Co., and it is possible that a law may be passed prohibiting any foreign corporation from owning or controlling more than a 20% interest in any British vessels. Steamship companies' stock quotations in Great Britain are, at present, very high, the P. & O. having a market value of 505.

### Maritime Provinces and Newfoundland.

The Dominion Government's s.s. Scotia, registered no. 111,865, and operated by the Railways and Canals Department, has had its name changed to Scotia I.

The harbor bar range lights at the entrance to Richibucto harbor, on the east coast of Northumberland Strait, N.B., have been moved about 1,000 ft. eastward, owing to a change in the channel.

The North Shore Steamboat Co.'s s.s. Bras d'Or, which was launched at Mahone Bay, N.S., during June, is to be operated in the passenger and freight trade through the Bras d'Or Lakes to Mulgrave and Eastern Harbor, N.S. She will have accommodation for about 200 passengers, and for a considerable quantity of freight in addition.

The s.s. Troja, which went ashore on the Old Proprietor Ledge in the Bay of Fundy, Mar. 18, was refloated at the end of May, by the Maritime Wrecking and Salvage Co., Halifax, N.S. Temporary repairs were made to enable her to be taken to Halifax, where she will be overhauler. The Troja, which was built by the Dominion Shipbuilding Co., Toronto,

was en route from Louisburg, N.S., to St. John, N.B. It was not expected that salvage operations would be successful, as the report stated that the decks were buckled, the bottom badly broken, and all the wood work, including the bridge, was smashed.

The Gulf of St. Lawrence Shipping and Trading Co. is reported to have chartered the United States s.s. Cerro Gardo for a direct freight service between Montreal and St. John's, Nfld. For the present the company, which was incorporated recently, will confine itself to the freight business, but expects to enter the passenger business in 1920, when it hopes to obtain a suitable passenger steamship. The company has two other vessels, the steamships Guide and Labrador, running between Quebec and Bras d'Or. It also operates the s.s. Lady Evelyn between Pictou, N.S., Prince Edward Island and Magdalen Islands, and the s.s. Tremblay on the Gaspé route.

### Province of Quebec Marine.

The Dominion Public Works Department will receive tenders to July 2 for repairs and improvements to the pile work wharf at Fort William, Que.

The Central Ry. Co. of Canada, of which F. Stuart Williamson is receiver, is operating its steamboat Empress, between Montreal, Rigaud and Carillon, carrying mails and passengers for Ottawa River points. The Empress, on her down trip, goes through the Lachine Rapids.

The Montreal Harbor Commissioners have awarded a contract to the Dominion Bridge Co. for the steel work for extensions to sheds 17 and 18 on the Victoria pier. Considerable excavation work is in progress, under the direction of F. W. Cowie, Harbor Engineer, and it is expected that concrete work will be started shortly, and the erection of the steel work is expected to be begun about the end of July.

### Ontario and the Great Lakes.

The Great Lakes Transportation Co.'s s.s. Glenisla, laden with coal, ran aground at Jackfish Point, Lake Superior, June 10.

The Dominion Public Works Department received tenders June 24 for renewal work to government wharves 1 and 2 at Midland.

A press report states that Kingston is to be made a national harbor, and terminal at the foot of the lakes, for grain transhipment.

Canada Steamship Lines' s.s. Toronto collided with the dock at Brockville, June 17, breaking up about 100 ft. of the timber work, and damaging one of her paddle wheels.

The Dominion Public Works Department will receive tenders to July 2, for the reconstruction of a portion of the superstructure of the east pier at the eastern entrance to Toronto harbor.

The Windsor, Ont., civic transportation committee is checking the passenger and vehicular traffic carried across the river by the ferry company, in order to prepare an estimate of the revenue, in connection with a proposed increase in rates.

The Montreal Transportation Co.'s barge Burma, when entering Port Dalhousie harbor, May 31, in tow of the company's s.s. Simla, struck the west

pier and tore a hole in her bow. She was taken about 200 ft. into the harbor, where she settled down.

The Canadian Towing and Wrecking Co. has purchased the U.S. steamship Vulcan, which was wrecked at Portage Lake early this year, and abandoned to the underwriters. The price paid is stated to have been \$20,000. It is reported that the vessel will be taken to Port Arthur for overhaul and repair and will be transferred to the Canadian register.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above mean sea level for May as follows:—Superior, 602.25; Michigan and Huron, 581.38; St. Clair, 576.38; Erie, 573.69; Ontario, 247.27. Compared with the average May levels for the past 10 years, Superior was 0.30 ft. above; Michigan and Huron 0.86 ft. above; Erie 1.04 ft. above; Ontario 0.59 ft. above.

### Manitoba, Saskatchewan and Alberta.

The Peace River Tramway and Navigation Co.'s s.s. D. A. Thomas left Peace River Crossing at the end of May, for Hudson's Hope and Fort St. John, thus opening the Peace River navigation season a few days earlier than last year.

### British Columbia and Pacific Coast.

The C.P.R. has placed the s.s. Princess Mary on the Vancouver and Nanaimo route, making six trips a week.

The Dominion Public Works Department will receive tenders to July 15, for repairs to the wharf at Comox, B.C.

The Dominion Public Works Department will receive tenders to July 9 for the construction of a wharf at Naramata, B.C.

The first steamer of the Yukon navigation season to clear from Whitehorse, the Alaska and the Casca, sailed from there, June 10, for Dawson.

The steam yacht Dolaura built in Scotland in 1908 for Jas. Dunsmuir, Victoria, B.C., is reported to have been sold to A. Meeker, Chicago, Ill. She was overhauled by Yarrows, Ltd., Victoria, during June.

The C.P.R. s.s. Princess Maquinna was placed on a special trip, June 10, sailing from Victoria for Port Alice, Quatsino Sound, and by the north end of Vancouver Island to Rivers Inlet, making calls at other ports en route.

The Grand Trunk Pacific Ry. has deposited with the Public Works Department, a description of the site and plans of a car ferry slip and works, which it proposes to build in Prince Rupert harbor, in front of water front block C.

A Victoria press report states that the C.P.R. is unable to make an attempt to save the wrecked s.s. Princess Sophia, which was lost on the Vanderbilt Reef, in the Portland Canal last year, as the disaster having taken place in U.S. waters, the wreck is virtually U.S. property.

The question of a dry dock at the Pacific coast was discussed by the North Vancouver Council June 10, when a report on the location, etc. of the projected dry dock was considered. The idea of two dry docks, one to be built by the Dominion Government, and the other by private capital, is stated to have been abandoned. When a dock is built it will either be undertaken as a government

work or under direct government subsidy. The location it is stated will be decided on the recommendation of a disinterested harbor authority of high standing and practical experience, and it is added that definite action will be taken next autumn.

The Pacific Salvage Co., Victoria, which purchased the sloop Algerine recently from the Dominion Government, is having her remodelled for use as a salvage vessel, at a cost of approximately \$100,000, and she is expected to be ready for operation during July. The name Algerine will be retained. A new main mast, 64 ft. long, has been installed, equipped with 3 derrick booms, each capable of lifting about 40 tons. An additional deck has been built, from forward to abaft the engine room, and also a navigating bridge forward. She is being equipped with wireless telegraphy with a range of 3,000 miles. She has accommodation for a crew of 65, with large living quarters.

### United States Grain Shipments via Montreal.

The following statement by the acting Minister of Trade and Commerce, was made public June 19:—"United States wheat, when arriving above Montreal in transit for export shipment will be permitted by license from the Trade and Commerce Department until further ordered. It is expected that this privilege will terminate about Sept. 1, or at least early enough to ensure the entire elevator capacity on the Great Lakes for Canadian grain when it commences to move forward and, as well, our railway facilities for handling Canadian grain. In a few days regulations will be formulated in respect to such shipments to ensure that shippers must provide tonnage to carry such grain from Canadian seaboard in order to prevent congestion in Canadian elevators. In the meantime, on application from shippers, licenses will be granted by the Trade and Commerce Department."

France and Canada Steamship Co. Ltd., the incorporation of which was announced in our last issue, with \$10,000,000 capital and office at Montreal, was originally incorporated under the Dominion Companies Act in 1915 with \$1,000,000 capital. During the war the company was chiefly engaged in conveying horses between North American ports and France, and chartered a number of vessels. It is allied with the France and Canada Steamship Corporation, of New York. F. R. Mayer, New York, is President; C. Mayer, Paris, France, Vice President, and S. H. McIntosh, New York, is Secretary-Treasurer and Comptroller.

The Central Ry. of Canada, which is in a receiver's hands, is operating the s.s. Empress this year, between Montreal, Rigaud and Carillon. She carries mails for ports on the Ottawa River, and does a passenger business. On her daily return trip to Montreal she shoots the Lachine Rapids, as she has done for several years. The s.s. Empress was built at Ottawa, in 1873, and named Peerless. She was practically rebuilt at Montreal in 1886, and renamed. She is paddle wheel driven by engine of 152 n.h.p. Her dimensions are: length, 185.3 ft.; breadth, 27.6 ft.; depth, 8 ft.; tonnage, 678 gross, 372 net. F. Stuart Williamson, Montreal is receiver.

### Among the Express Companies.

The Canadian Northern Ex. Co., has opened an office at Westree, Ont., and has closed its office at Ostrom, Ont.

N. L. Preston, heretofore agent, Canadian Northern Ex. Co., Winnipeg, has been appointed agent at Edmonton, Alta., vice N. W. Storie, promoted.

J. H. Morrison, who was for a time acting as agent, Canadian Northern Ex. Co., Edmonton, Alta., has resumed his duties as chief clerk there.

W. F. Pillar, former agent, Canadian Northern Ex. Co., Edmonton, Alta., has been appointed travelling agent, with supervision of territory in Manitoba and Saskatchewan. Office, Winnipeg.

N. W. Storie, recently appointed agent, Canadian Northern Ex. Co., Edmonton, Alta., has been appointed travelling agent, with supervision of territory in Alberta and British Columbia. Office, Edmonton, Alta.

Express companies operating in Canada have issued a circular stating that they have adopted the 8-hour day as from June 1. Collection and delivery services will be given between 8 a.m. and 5 p.m., railway time.

A. Stillman, formerly A. Schussler, and in Canadian Ex. Co. service, has been appointed Inspector, lines east of Port Arthur, Ont., Canadian Northern Ex. Co., Toronto. His change of name was effected recently by deed poll.

R. G. Wilson, General Agent, Canadian Express Co., Toronto, who retired recently, under the Pension Fund Rules, after 50 years service, as stated in Canadian Railway and Marine World previously, entered the company's service at St. Marys, Ont., in 1868. In 1873 he was appointed messenger on the Toronto-Montreal route, and in 1882 was transferred as assistant agent at Toronto. He became General Agent at Toronto in 1895, upon the death of John D. Irwin. The employes gave him a well filled purse on his retirement.

### Telegraph, Telephone and Cable Matters.

H. S. Ingram has been appointed Inspector, C.P.R. Telegraphs, Toronto.

C. Stewart has been appointed Traffic Supervisor, Great North Western Telegraph Co., Toronto.

The Great North Western Telegraph Co. has opened offices at Fort Coulonge, Que., and Coldwater, Ont., and has closed its office at Crystal Beach, Ont.

G. C. Vaudrin, Montreal, has been appointed local manager, Great North Western Telegraph Co., Quebec, Que., vice T. Leslie, resigned.

It was stated in the British House of Commons, June 6, that there are 14 cables between Great Britain, Newfoundland and Canada, of which U.S. companies own and control 13, the British Government controlling the other one.

G. D. Perry, General Manager, Great North Western Telegraph Co., was presented with a cabinet of silver, June 12, in celebration of his recent marriage. The presentation was made by W. G. Barber, District Superintendent, Toronto, on behalf of officials and employes.

The Great North Western Telegraph Co. has discontinued its submarine cable

between Port Angeles and Albert Head in the Juan de Fuca Strait, on the Pacific coast, and has laid a new submarine cable across Juan de Fuca Strait from Port Angeles, Wash., to Victoria, B.C., running out from Ediz Hook, Port Angeles, to the shore at the foot of Douglas St., Victoria, about a quarter of a mile off Finlayson Point.

The Board of Railway Commissioners passed general order 266, June 17, as follows:—Re the Railway Act and amending act, 7-8 Edward VII., chap. 61, sec. 4, and the tariffs of telegraph companies; it is ordered that, subject to such order or orders as the board may from time to time issue, all telegraph companies within the legislative authority of the Parliament of Canada be authorized to charge the telegraph tolls published in their respective tariffs filed with the board.

The Postal Telegraph Co. has announced a reduction in cable rates from San Francisco to the Phillipine Islands, China and Japan, dating from Sept. 1. The changes are as follows: To Phillipine Islands, from \$1 to 80c a word; to China, from \$1.10 to 85c a word, and to Japan, from \$1.21 to 83c a word. In the last two mentioned cases, the reduction is contingent on a proportionate reduction in terminal charges by the Chinese and Japanese Governments, to which no objection is anticipated.

### 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.

**Canadian General Electric Co.**—J. J. Ashworth, Secretary and Assistant General Manager, has been elected a director.

**Canadian Locomotive Co.**—Jas. Caruthers, grain merchant, Montreal, and M. J. Haney, Toronto, have been elected directors, succeeding J. J. Harty and Senator H. W. Richardson, deceased.

**The Metal & Thermit Corporation**, New York, has completed what it claims to be the largest marine weld ever recorded, on the cast steel sternframe of the U.S. army transport s.s. Northern Pacific. The section welded was entirely broken through by the severe strain to which the frame was subjected when the transport, laden with homeward bound troops, ran aground on Jan. 2, 1919, in a dense fog, off Fire Island, New York. The sternframe was broken just above the upper rudder lug, in a position where the casting was hollow and almost 2 ft. in diameter. The walls of the casting at this point were about 3 ins. thick. The company states that the weld, which required 1,400 lb. of thermit for the chemical production of the necessary amount of molten steel, and which was made without removing the casting from the ship, obviated the delay and expense which would have been entailed by the only alternative of purchasing an enormous new casting and installing it at a cost probably exceeding \$50,000.

**National Steel Car Co., Hamilton**—In connection with the recent negotiations for the purchase of the National Steel

Car Co.'s plant at Hamilton, Ont., by the American Car and Foundry Co., it is announced that the negotiations have fallen through. Sir John Gibson, President of the company, being reported as saying that the American Car and Foundry Co.'s offer was not considered satisfactory.

### Transportation Conventions in 1919

September.—Master Car and Locomotive Painters' Association of the United States and Canada, Chicago, Ill.  
Sept. 16-19.—Traveling Engineers' Association Chicago, Ill.  
Sept. 16-18.—Roadmasters' and Maintenance of Way Association, Chicago, Ill.  
Oct. 6-10.—American Electric Railway Association, Atlantic City, N.J.  
Oct. 21-23.—American Railway Bridge and Building Association, Cleveland, Ohio.  
Oct. 21-23.—Maintenance of Way and Master Painters' Association, St. Louis, Me.

### Transportation Associations, Clubs, Etc.

The names of persons given below are those of the secretaries unless otherwise stated:

Belleville Railway Men's Educational Club. Meets each Tuesday, 7.30 p.m. F. A. Pingston, Belleville, Ont.  
Canadian Car Service Bureau—W. J. Collins, 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, 305 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 Railway War Board—W. M. Neal, Montreal.

Dominion Marine Association—F. King, Counsel, Kingston, Ont.

Canadian Ticket Agents' Association—E. de la Hooke, London, 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.

Engineering Institute of Canada—F. S. Keith, 176 Mansfield St., Montreal.

Express Traffic Association of Canada—C. N. Ham, Montreal.

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.

Quebec Transportation Club—A. F. Dion, Quebec.

Shipping Federation of Canada—Thos. Robb, Manager, 42 St. Sacramento Street, Montreal.

Toronto Transportation Club—W. A. Gray, 143 Yonge Street, Toronto.

Transportation Club of Vancouver—H. W. Schofield, 556 Church Street, Vancouver, B.C.

**Toronto Harbor Improvements**—Hon. F. B. Carvell, Minister of Public Works, inspected Toronto Harbor and Island, June 7. He was shown the damage being done to the Island's lake front, and the necessity for immediate action to prevent further washing away, and visited the ship channel turning basin; industrial sites on reclaimed land, and Roger Miller & Sons plant for breakwater construction and dredging at the west end. He was afterwards entertained at luncheon at the Royal Canadian Yacht Club, by the mayor, on the city's behalf.

**The British Wrecking and Salvaging Co., Ltd.**, has been incorporated under the Dominion Companies Act, with \$2,000,000 authorized capital, and office at Montreal, to carry on a general wrecking and salvaging business and do marine work of all kinds and to own and operate steam and other vessels.

## Positions Vacant

### WANTED

Freight Traffic Bureau Manager for commercial organization, Vancouver, Canada. Must have knowledge of Canadian and American Freight Classification and be able to prepare cases for presentation to Railway Commission. Apply Secretary, Board of Trade, Vancouver, Canada. Applications must be in before July 20th, 1919.



Department of Railways and Canals, Canada.

### WELLAND SHIP CANAL.

#### NOTICE TO STEAM TUG OWNERS.

SEALED TENDERS, addressed to the undersigned and endorsed "Tender for Tugs," will be received at this office until 12 o'clock noon on Monday, the 7th July, 1919, for two (2) tugs required for the Welland Ship Canal delivered at Port Dalhousie, Ont., and to be of the following dimensions:—

Length—not less than 75 ft., not more than 110 ft.

Beam—not less than 18 ft., not more than 22 ft.

Draught—not less than 9 ft., not more than 10½ ft. aft.

Boiler pressure—not less than 125 lbs.

Engines—fore and aft compound or triple expansion condensing.

Power—250 to 400 indicated H.P.

Steering gear (steam).

Hull—steel.

Tenderers to submit complete specifications and latest Inspection Report on the Boilers, etc., also to state where the tugs can be inspected.

An accepted bank cheque on a chartered bank of Canada for the sum of \$1,000 made payable to the order of the Minister of Railways and Canals, must accompany each tender, which sum will be forfeited if the party tendering declines entering into contract on the basis of his tender.

The cheques thus sent in will be returned to unsuccessful tenderers.

The cheque of the successful tenderer will be held as security, or part security, for the due fulfilment of the contract to be entered into.

The lowest or any tender not necessarily accepted.

By order

J. W. PUGSLEY,  
Secretary.

Department of Railways and Canals,

Ottawa, June 23 1919.



Department of Railways and Canals, Canada.

### WELLAND SHIP CANAL.

#### NEW AND SECOND-HAND MACHINERY.

SEALED TENDERS, addressed to the undersigned and endorsed "Tender for Machinery," will be received at this office until 12 o'clock noon, on Thursday, the 3rd July, 1919, for the following new or second-hand machinery:—

1 only 27-inch by 18-ft. Heavy Duty Lathe.

1 only 68-inch 200-ton Hydraulic Wheel Press.

1 only 18-inch Slotting Machine.

1 only Gap Lathe to swing 48 inches in gap, to take 20 feet between centres; quick change gears; double back geared, and taper attachments.

1 only Extension Bed Lathe to swing 84 inches and take not less than 11 feet 6 inches between centres. Must be a screw cutting lathe.

Tenderers to submit full specifications and details of the machinery quoted on, and in case of second-hand machinery, to state where the same could be inspected.

By order

J. W. PUGSLEY,  
Secretary.

Department of Railways and Canals,

Ottawa, June 23 1919.

**Allied Vessel Losses During the War**—A statement in the British House of Commons shows that the losses of allied nations, in vessels, through enemy action, were as follows: Great Britain, 2,179 vessels, 7,638,020 gross tons; France, 238 vessels, 696,845 gross tons; Italy, 230 vessels, 742,365 gross tons; Japan, 29 vessels, 120,176 gross tons; United States, 80 vessels, 341,512 gross tons.