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GENERAL INDEX

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PIECE WORK PRICE SETTING AT THE C.P.R. ANGUS SHOPS.

By FRÉDÉRIK H. MOODY.

Scientific management—what does it mean? This is a question constantly recurring in every line of endeavor, modern conditions of keen competition making it absolutely imperative that production costs be reduced to a minimum. Judging by the number of times the subject has been broached to the writer on the occasion of his visits to different shops in both Canada and the United States, the question is becoming one of most vital importance, holding the attention of both management and employe—both looking upon it from a different angle, and, in a great many cases, both have the wrong angular viewpoint, attempting to establish a line of reasoning from a single instance instead of from a chain of established facts.

Railway shops are among the most interested of the many investigators of the principles of scientific management. For several years the C.P.R. management, which has always been well in the van in experimental work, had been trying to improve its methods of shop production, the attempts being entirely by its own local men, and consequently savoring of the systems previously in use at the shops. It was, therefore, decided that it would be advisable to bring in experts to analyse conditions and prescribe the necessary remedies for rectifying conditions.

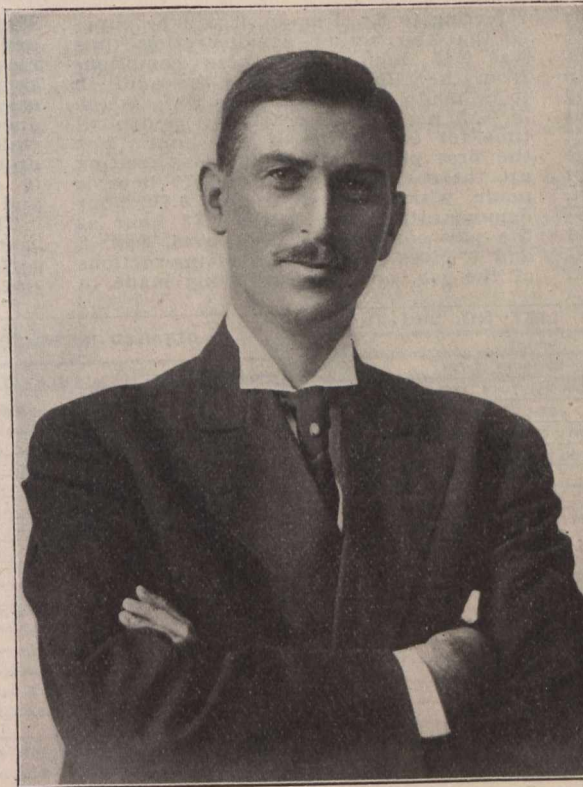
In June, 1909, Dodge, Day and Zimmerman, of Philadelphia, Pa., a firm of "industrial doctors" or contracting engineers, were called in to make a report on the plant, their particular duties being to analyse the plant and its equipment and make suggestions where conditions might be advantageously improved. This firm requisitioned the services of H. L. Gantt, industrial engineer, who made a report on the plant. His suggestions, however, were more general than particular, striking at the underlying principles rather than at concrete examples of where work might be improved. Among his suggestions were recommendations for an adherence to standard forms for cutting tools and a partial rearrangement of the shops with respect to the installation of a schedule system for the directing of the product through the plant and a reorganization of the piece work department.

Following the completion of Dodge, Day and Zimmerman's report, Mr. Gantt's services were retained by the C.P.R. for upwards of a year in the capacity of a consulting engineer. The most important of the suggestions he offered during this period was that of adapting the Taylor system of instruction cards for piece work pricing. This suggestion was followed, with the exception that the system in its entirety was not introduced, various modifications being made to meet the local conditions existing at the works. These conditions are necessarily different from any for

which the Taylor system was originally planned, as in such a plant as the Angus shops, not only is new work handled, but also a lot of repair work, and work that will never be duplicated or produced in large quantities.

THE SYSTEM.

The system, as originally introduced, has been still further modified from time to time with the idea of bringing it more nearly to a state of perfection. With the guidance of Warren B. Hood, General Shop Inspector, under whose direction this piece work rate setting comes, and by whose efforts the system has been made to prosper, most satisfactory results have been obtained.



J. M. R. Fairbairn,
Assistant Chief Engineer, Canadian Pacific Railway
Eastern Lines.

As demonstrative of the operation of the system, consider a specific case. One of the department foremen desires to have a piece-work price set for the operation of drilling the cylinder and casing stud holes in the front cylinder cover. The foreman fills in the blank shown in fig. 1, which is addressed to the Chief Piece Work Inspector, this form giving date, name of part, details of necessary operations, list number, drawing number, classes of engines on which this same operation is necessary, machine number, engine number (if special piece), number of pieces, store order, material, operator's name and rate, and remarks. This latter usually calls for two

separate prices, the price for the first piece, which includes setting up the machine, and a price for all subsequent pieces.

In the locomotive machine shop there are two shop demonstrators whose duty it is to set the price. It is at this point that the system differs essentially from many methods of setting piece-work prices, actual practice under normal conditions being those selected for a basis of computing the price allowance. This is in marked contradistinction to arbitrary, theoretical price-setting as followed in many places.

To one of these shop demonstrators, the foreman's requisition for piece-work price is given by the shop inspector. As will be noted on the requisition form, fig. 1, the foreman states the machine on which he desires the piece to be produced, and the mechanic to operate that machine. This is all the information on which the shop demonstrator has to work. Following the receipt of his notification, an actual demonstration on this piece is performed on the machine defined, the operator doing the work himself. The duty of the shop demonstrator is to bring in any refinements of operation that will increase the rapidity of production. He works with the men, but does not do the work for them.

The machine being in readiness, the shop demonstrator observes the operator set up the machine for the necessary operation. During this setting up, the shop demonstrator makes such suggestions as his experience dictates. The time of this operation is kept. The time of setting up the piece preparatory to drilling is noted, as is also the time of drilling the holes. Meanwhile, the shop demonstrator makes suggestions relative to the tool to use, feed, and spindle speed the operator being required to follow the instructions given. As previously mentioned, all the actual work is performed by the operator, the shop demonstrator merely making suggestions and timing. Several such tests are made, the duration of the different operations being noted in each case. These notations are made on an instruction card somewhat similar to the one, the front and reverse sides of which are shown in figs. 3 and 4. In the card as made up in the shop the sketch and data are roughly pencilled in.

Referring to fig. 4, it will be noted that the actual operating time, exclusive of preparations, is 27 minutes, or 0.45 hour. This being for one man only, gives a time of 0.45 man-hours per piece. The total time, including time of preparing machine, is 42 minutes, or 0.70 hour. These are actual times.

It stands to reason, however, that an operator could not keep up this demonstration speed for 10 hours every day, as this period is actual operating time, under normally good conditions, no allowance being made for the usual run

of minor mishaps. Where a mishap does occur while a job is being performed, that demonstration is not considered; only good performances are kept for price setting. This basis is taken so as to produce an absolutely fair basis of computation.

The question of making an equitable allowance for minor casualties absorbed the attention of the organizers of this system for some time after its institution. At first, a straight 25% of the actual demonstrations operating time was added to give the pay equivalent al-

period working at the original demonstration rate. The difference gave the basis for making the allowances. These tests, being made for a great number of cases covering all conditions, gave sufficient points from which straight line allowance curves could be plotted, the abscissas representing operations per hour and the ordinates, percentage allowances. Parallel diagonal lines on this field represent pieces per hour. These curves give a ready means of computing for nearly all conditions.

Coming back to the case in hand, and

at any one of the small machine shops at the roundhouses throughout the system—printed copies are made up in batches of 25, 50 or 100, as desired, for widespread distribution. An apprentice makes all the necessary sketches for the zinc cuts, this having the advantage of giving the apprentice good draughting experience.

These instruction cards, as they are called, form the basis of the piece-work system. They are preserved as a permanent record for all future reference purposes. The advantages of having

CANADIAN PACIFIC RAILWAY COMPANY.
ANGUS LOCOMOTIVE SHOPS
PIECE WORK PRICE REQUEST

Mr. Hood 19 2.24.10

PIECE WORK AND SHOP METHODS OFFICE

Name of part Front cylinder cover
Operation Drill cyl & casing stud holes

List No. 28 L 461 Drawing No. 28 L 7
Classes all 20" to 24" dia Machine Dr 31
Engine No. _____ No. of pieces 10
Store Order No. _____ Man's Name Fatin
Material C. S. Man's Rate 19¢
Remarks (1st piece and all after first)

Signed [Signature]
Foreman

Fig. 1. Piece Work Request Slip.

SHOP SCHEDULE NO. 28 L 18-82

SCHEDULE PROOF

Name Cover front cylinder Price 1.19 Per Man's Rate

List No. 28 L 461 Man's Rate 1.19

Classes all 20" to 24" dia Equiv. Hrs. _____

Material C. S. Machine B.P.G.

Operation Drill cylinder and casing stud holes

1st piece .18
all after first .13

Date 1/27/10 Check _____
Foreman's Signature [Signature]

SKETCH

Fig. 2. Reverse Side of Piece Work Request Slip.

lowance, or actual time allowed the operator to produce the piece, this 25% being the allowance for all casualties. It was found after the system had been operating some little time, that this did not give a fair basis of reimbursement for lost time. For some operations it was too great an allowance, but in the majority of cases this amount was not sufficiently large. For the most part, the allowance has had to be increased.

This introduced a more complicated condition—the scheduling of different allowances for different classes of work.

referring to fig. 3 again, it will be noticed that the actual demonstration time was 0.45 hour. For these conditions from the allowance curves the addition to be made was found to be 30%, which is 0.13 hour, or a total pay equivalent time for each piece of 0.58 hour. For the first piece, which includes setting up, the same allowance of 0.13 hour is made, which, added to the 0.70 hour demonstration time, gives 0.83 hour as the pay equivalent. This card, figs. 3 and 4, gives all the detailed instructions of the job, no reference being made to

such a collection of instruction cards are manifold. What is probably the most important function from a repair shop standpoint, is the fact that the exact period of time required to produce being known, the locomotive on which repairs are being made can be promised with a much greater certainty of delivery on the scheduled date, and confusion is largely eliminated.

This system has a further advantage in encouraging the foremen to better performances in their respective departments, each foreman being held respon-

INSTRUCTION CARD LIST NO. 28 L 461

DRAWING No. 28 L 7.

NAME FRONT CYLINDER COVER,

CLASS CYL. DIA. 20" TO 24" INCLUSIVE.

SCHEDULE No. 28 L 18-82 ISSUE A

OPERATION DRILL CYLINDER AND CASING STUD HOLES.

OPERATION No. 2 MATERIAL C. I.

MACHINE BERTRAM RADIAL DRILL No. 31.

TOOL STEEL EXTRA HIGH SPEED

No. of Pieces 1

TIME 0.45. Man-Hours Per Piece

No. of Men 1 DATE 3-17-10.

PAY EQUIVALENT FOR

FIRST PIECE 0.83 HRS

EACH ADDITIONAL PIECE 0.58 HRS

NOTE.—DIMENSIONS ON SKETCH MUST NOT BE USED IN MACHINING. USE STANDARD DRAWING.

Fig. 3. Instruction Card for the Piece Operated On.

DETAILED INSTRUCTIONS		Tool Used	Diam. of Drill	Feed in Inches Per Min.	Spindle Speed	Minutes Allowed	
PREPARE MACHINE FOR 1st. PIECE, GET DRILLS AND JIG.							15.0
1. SET UP AND CLAMP JIG							4.0
2. SET DRILL							1.0
3. DRILL 17 CYLINDER STUD HOLES							17.0
4. CHANGE DRILL							1.0
5. DRILL CASING STUD HOLE							1.0
6. REMOVE							3.0
TOTAL MINUTES						27.0	
TOTAL HOURS PER PIECE						.45	

B. D. ANGUS SHOP C. P. R.

Fig. 4. Reverse Side of Instruction Card.

It was realized that an operator's dexterity and skilfulness on a job increased in proportion to the way in which the number of pieces and number of operations increased. Consequently, more allowance had to be made for the failure of the human factor under long-continued periods of working. Hence, as the number of operations per hour increased, a greater allowance was given to the actual time to determine the rate on which to set the pay.

The method of determining these differences for all conditions is most interesting and instructive, but is too elaborate a scheme to be considered in detail. Briefly, actual test conditions were experimented upon, the actual production for a ten-hour day being compared with that figured for a similar

price, all calculations being based on time, making a permanent record for future reference.

INSTRUCTION CARDS.

Up to this point, however, the card, figs. 3 and 4, is in rough pencil form with freehand sketch, as left by the shop demonstrator. When filled in to this point it is handed over to the general shop inspector. If the piece should be a cylinder or similar job that could only be machined at the Angus or Winnipeg shops, only three or four type-written copies would be made up for distribution to the interested foremen and superintendents at these two points. Where the piece to be machined is small, such as the cylinder cover under consideration—a piece that might be made

sible for all irregularities that occur in the carrying out of the schedule. It has been found an excellent incentive towards increased production.

From the workman's standpoint it is a system to be commended. It is not a slave-driving system like many piece-work plans, but, instead, co-operates with the man, showing him how to produce the maximum possible output, with a minimum of labor. It is for this reason that the positions of shop demonstrators are maintained. These men, experts in machine shop production, know how any machine can be made to operate to the best advantage, selecting the best tools for the purpose, as noted on the shop instruction sheet, and at the same time giving the man suggestions that will enable him to increase his out-

put. It will be noticed that the system is aimed more at working the machines to their best advantage with a resulting saving in the exertion of the workman, and his consequent improved condition to maintain his efficiency throughout the full day. Where a man fails to keep up to the standard set, the foreman knows at once that something must be wrong with the manner in which the operations are being performed, and therefore requisitions the services of the

ducting the time of setting up, etc., incidental to the first piece. These piece work price cards, like the shop instruction sheets, are filed for checking the men's time slips.

This, briefly, is the piece work price setting system in operation at the C.P.R. Angus shops. It is a system to be highly commended, and reflects credit on the organizers. To many it may appear theoretical and unpractical, and to some of the men in the shop it will

of hydraulic pipe, built up as indicated. Cupped leather packing on the piston attached to the lower end of rod A maintains a tight joint when air is introduced under the piston through the pipe on one side. The lower support is on the piece of jointed pipe C. A set of these pieces is kept in stock for use on jobs requiring different lengths between flooring and surface to be rivetted.

The tool is carried on a cross arm D in a crosshead slide arrangement. This

4-4-11-17833			
EAST MACHINE SHOP SCHEDULE No. 28L 18			
Name	Cover, front cylinder,	Price	.18 Per 1
List No.	28L 461.	Gang or Man	Rate, .21
Classes	All 20" to 24" dia inclusive.		
Material	C. I.	Machine	D.R. 31.
Operation	Drill cylinder and casing stud holes.		
NOTE:- First piece only.			
Date	4/3/11. 5/10.	Approved	S. L. S.
	P. W. I.		A. S. M. P.

Fig. 5. Piece Work Card for the First Piece.

4-4-11-17833			
EAST MACHINE:SHOP SCHEDULE No. 28L 82			
Name	Cover, front cylinder,	Price	.13 Per 1
List No.	28L 461.	Gang or Man	Rate, .21
Classes	All 20" to 24" dia inclusive.		
Material	C. I.	Machine	D.R. 31.
Operation	Drill cylinder and casing stud holes.		
NOTE:- All pieces after first.			
Date	4/12/11. 3/11.	Approved	S. L. S.
	P. W. I.		A. S. M. P.

Fig. 6. Piece Work Card for All after First Piece.

shop demonstrator to watch the operator and discover wherein the fault lies. The shop demonstrator can thus make the necessary suggestions to bring the article being produced up to the standard predetermined time period. It can thus be seen that the system is in the best interests of both employer and employe.

As mentioned, standard tools are employed, these tools being noted on the shop instruction cards. The shapes of tools are those laid down by Frederick W. Taylor in Dec., 1906, in the wonderful paper "On the Art of Cutting Metals," presented as his address when retiring from the presidency of the American Society of Mechanical Engineers. Tools best adapted for all conditions were treated by him in that address, the tools being designated by various combinations of letters. These tools were the result of years of experimental work on metal working at the plant of the Bethlehem Steel Co., of which he was Chief Engineer. A specialty of this work is being developed by the Tabor Mfg. Co., Philadelphia. At the Angus shops, cast iron models of the tools have been made up for distribution to the different tool grinders who put the tools in shape for the workmen. Standard tools are thus available at all times, making duplication of original operating conditions readily possible.

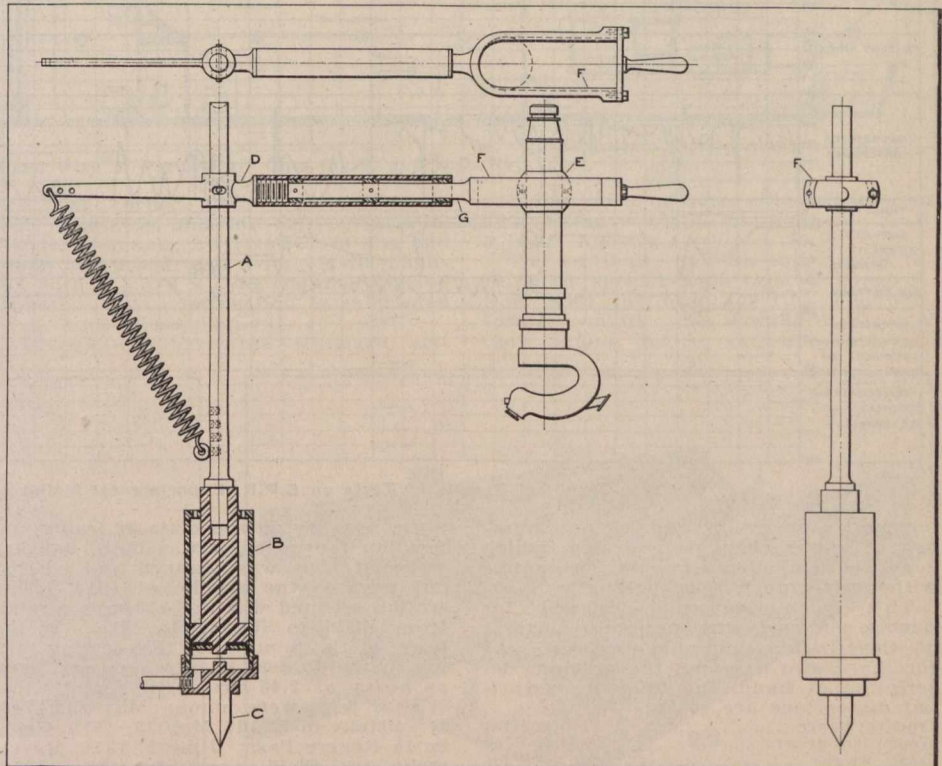
After the shop demonstrators have set their figure for the piece for which the original piece work price request slip, fig. 1, had been issued, the essential information regarding the results of the price setting performance is jotted down on the reverse side of the piece work request slip, as in fig. 2. This, on being checked by the shop demonstrator, is returned to the foreman, requesting the piece work price, for his signature, thereby signifying that he considers the price set and conditions to be quite equitable.

PIECE WORK PRICE CARDS.

After the shop instruction sheets have been made up the piece work price setter adds his contribution to the steps of the system by making out price cards such as those shown in figs. 5 and 6. Both cards refer to the same piece, the one in fig. 5 referring to the first piece of a batch only, while that in fig. 6 is based on the time required after de-

possibly savor too much of anti-unionism, but "the proof of the pudding is in the eating," and as the "eating" in this case has proved manifestly pleasant, it would appear to be a material advance on the majority of systems of price setting.

is made up of a ball piece E attached to the tool and which is constrained to move in the correspondingly formed ways F, allowing a wide latitude of positions for the tool in operation. In order that the movement may be even freer, the guide carrying part C of the arm is



Pneumatic Tool Holder used by Pere Marquette Rd.

Pneumatic Tool Holder Used by the Pere Marquette Rd.

For the convenient handling of the pneumatic hammer in awkward places and also for use in general, the tool holder shown in the accompanying illustration, was designed. The stand consists of a rod A, cupped at its upper end to fit over a rivet head, and having a small air cylinder B at the lower end. The shell of this cylinder is constructed

slidably connected in a piece of piping as indicated, thereby permitting a radial movement of several inches. A slotted pin connection between upright and cross arm, leaves the latter free to swing through a small arc as desired.

J. D. Altimas, Car Accountant, C.P.R., Montreal, read a paper on Car Accounting at the regular monthly meeting of the Canadian Accountants Association in Montreal, Nov. 13.

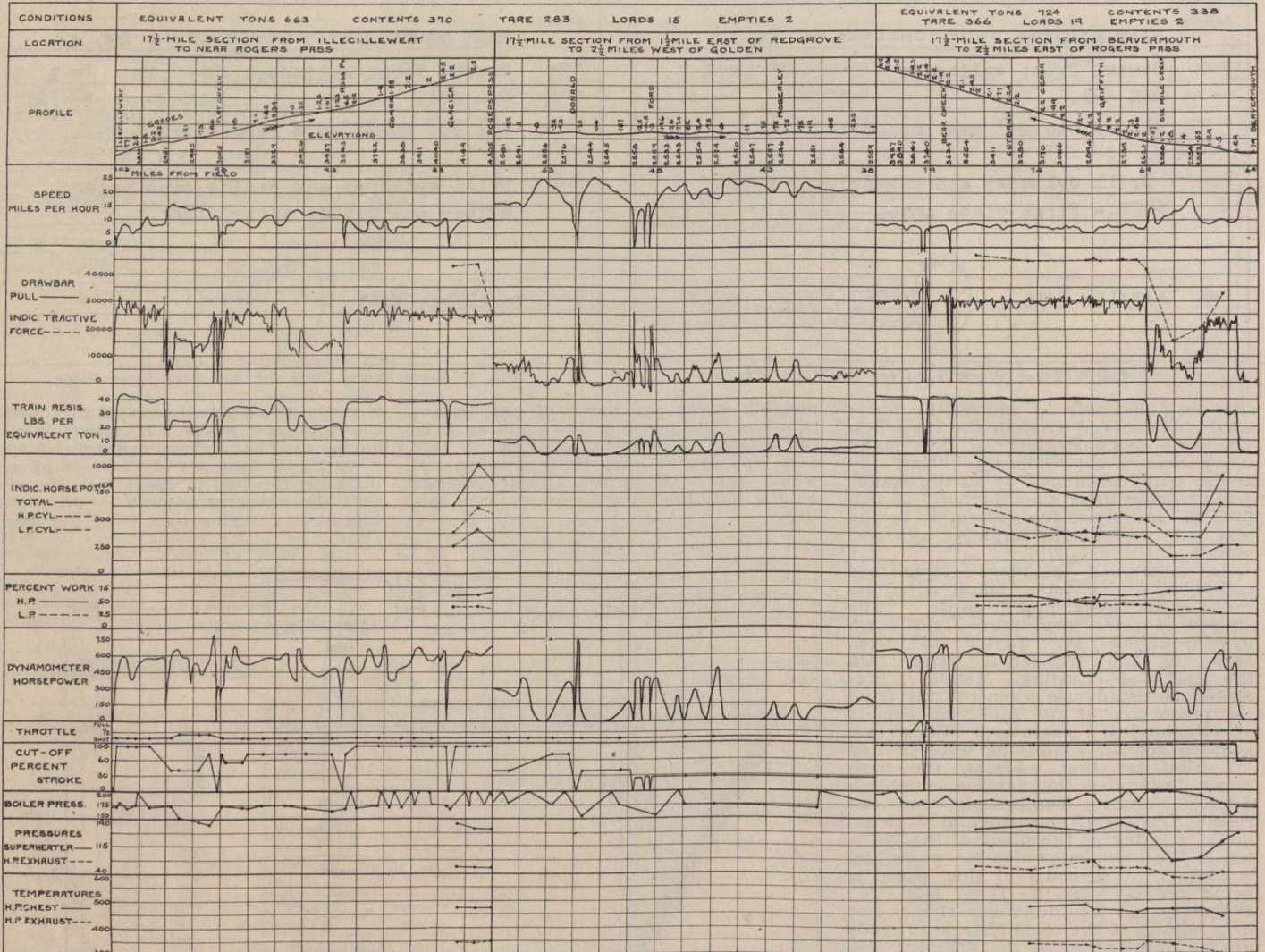
Tests of C.P.R. Experimental Mallet Locomotive.

In the Aug., 1909, issue of The Railway and Marine World, a brief description of the experimental Mallet locomotive 1950, then being constructed by the C.P.R. at its Angus Shops, was given. A complete, detailed description, accompanied by the results of a series of tests, was contained in the Apr., 1910, number. These tests covered all phases of the

and feed water heater. The steam generating section and feed water heater are similar in construction, with an intervening box structure for downward projecting superheater tubes, the hot gases passing in succession through the three sections to the smoke box.

The original tests referred to in the previously published article were made between Hochelaga, Angus, and Mile End, in Montreal, where there is a maximum gradient of 1.5. To test the locomotive more fully under actual operat-

The 17½-mile section, representing a heavy gradient, all the way, is chosen as representing the operation of the locomotive under conditions for which it was designed. The next section from a mile and a half east of Redgrove to 2½ miles west of Golden is a practically level stretch. These two runs afford a very interesting comparison. On the gradient, of course, the highest tractive effort is developed with a resulting decrease in speed. Just the reverse is the case on the level, where a very low



Graphical Results of Tests on C.P.R. Experimental Mallet Locomotive 1950.

locomotive operation, and led to a number of minor changes in design, which could be embodied in that locomotive without too much re-modelling.

This locomotive was designed for pusher service in the mountain portions of the British Columbia Division, and for those who have not the previous description at hand, the following principal dimensions are given:—

- Tractive power 57,400 lbs.
- Weight on drivers 262,000 lbs.
- Total weight 262,000 lbs.
- Weight of locomotive and tender 391,000 lbs.
- Wheel base of each engine 10 ft. 4 ins.
- Total engine wheel base 35 ft. 2 ins.
- H. P. cylinders 23¼ x 26 ins.
- L. P. cylinders 34 x 26 ins.

Briefly, the principal difference between this and the usual type of Mallet locomotive lies in the fact that the cylinders of the front truck are at the rear, bringing high and low pressure cylinders into close proximity. Leading and trailing pilot wheels are dispensed with. The boiler barrel is divided into three principal sections; steam generating section, superheater

ing conditions on the class of traffic and location for which it was built, another series of tests was planned and carried out towards the middle of 1910. The section selected was the 130-mile stretch from Field to Revelstoke, B.C., in the heart of the mountains, this section taking in the Rogers Pass, where gradients as heavy as 2.45 are to be found.

Four tests were made: May 28, 1910, Revelstoke to Field; May 29, 1910, Golden to Rogers Pass; June 1, 1910, Revelstoke to Field; and June 2, 1910, Beaver-mouth to Rogers Pass. Of these first two tests, representative sections have been selected and are shown in the accompanying charts, where the results of the tests covering the more salient observations are embodied in readily understood curves.

On the May 28 test, from Revelstoke to Golden, the locomotive was operating with the following load: equivalent tons, 663; contents, 370; tare, 283; loaded cars, 15; and empties, 2. The first two sections shown in the chart are taken from the stretch under these conditions.

tractive effort is produced with a much higher speed.

The third section, from near Beaver-mouth to 2½ miles east of Rogers Pass, was taken on a run in the opposite direction, the second day of the tests, May 29, 1910. The conditions were: equivalent tons, 724; contents, 338; tare, 366; loaded cars, 19; and empties, 2. Like the first section, it represents a heavy gradient and demonstrates the qualities of the locomotive under such conditions.

In the original tests, it was found that the high and low pressure cylinders did not do equal work, so, in order to equalize the power, the diameter of the low cylinder was increased, making the ratio of cylinders 2.38. The wisdom of this is demonstrated in these present tests where it will be noticed that under grade load the work is very evenly divided.

Many interesting facts may be derived from a study of this series of curves. Unfortunately, lack of space precludes the possibility of giving all the tests, or even one complete test, but it is be-

lieved the best are shown in the three sections selected, which represent a distance of over 50 miles, or about half the length of run of the longer tests.

No observations were taken on the down grades on the run, as they are all so steep as to make the application of power unnecessary, it being possible to coast all the way.

Steel-Frame Parlor-Cafe Cars for Temiskaming and Northern Ontario Railway.

To meet the demand for more equipment of the "extra fare" class, the T. and N.O.R. Commission ordered from the Canadian Car and Foundry Co., in Aug., 1910, as mentioned in our rolling stock notes at the time, three parlor-cafe cars of the latest design. One of the finished cars and a floor plan are shown in figs. 1 and 2 respectively. They have been given the names of Sesekinika, Wasaksina and Tetapaga, and were delivered a short time ago.

These cars embody some interesting departures from the practice followed in the past by builders of passenger cars in Canada, as the trucks, deck and framing of the superstructures are made up of structural shapes. A general idea of this construction is given by the illustration, fig. 3, of the car skeleton before being sheathed.

The cars have the following principal dimensions: length over end sills, 70 ft. 3 1/2 ins.; length over platform, 80 ft.

x 1/2 ins. top and bottom cover plates having cast-steel connecting webs at the outer end. These diaphragms, with cross ties, hold the centre and side sills together as a solid unit.

The superstructure framing has a plate girder 35 ins. deep placed inside of posts, consisting of a 34 x 3-16 web

shown, is composed almost exclusively of structural shapes, and is of a very solid construction. The pedestals are special, and are steel castings containing 3-coil 8 x 12 1/2 ins. springs. The elliptic bolster springs are 36 in. centres, and contain 9 ply. Triple high-speed brakes are equipped, attached to a spe-

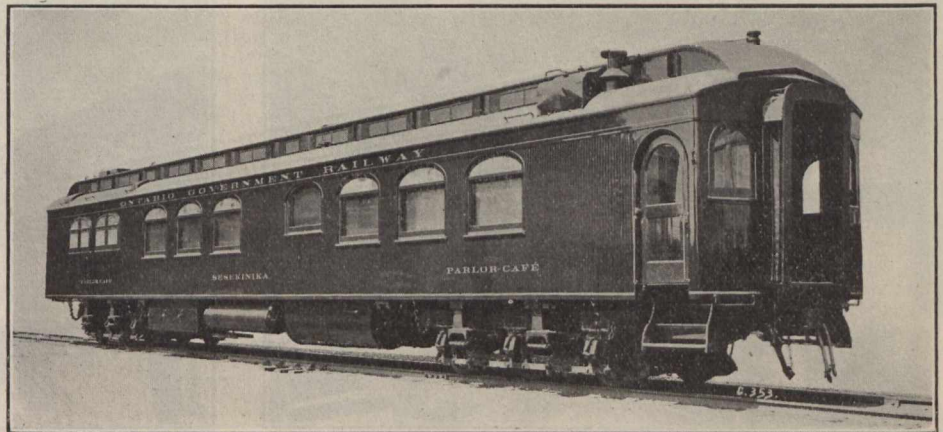


Fig. 1. One of the Steel-Frame Parlor Cafe Cars for T. and N.O. Ry.

cial channel brake beam holding steel-backed, unflanged brake shoes. The posts are 5 x 3 x 5-16 and 3 x 3 x 5-16 angles located as indicated. These are rivetted both to side sill and plate gir-

der. The corner posts consist of 6-in. 8-lb. channels, and the end posts, 4-in. 7 1/4-lb. channels, all rivetted to the end plate, composed of a 4-in. 7 1/4-lb. channel with a 3 x 3 x 5-16 channel rivetted thereto. This construction is calculated to be anti-telescoping.

CAR BODY.—The flooring is of double 3/4-in. yellow pine covered with 5/8-in. dark red Terrano. Beneath this a 2 1/4-in. course of mineral wool supported on a

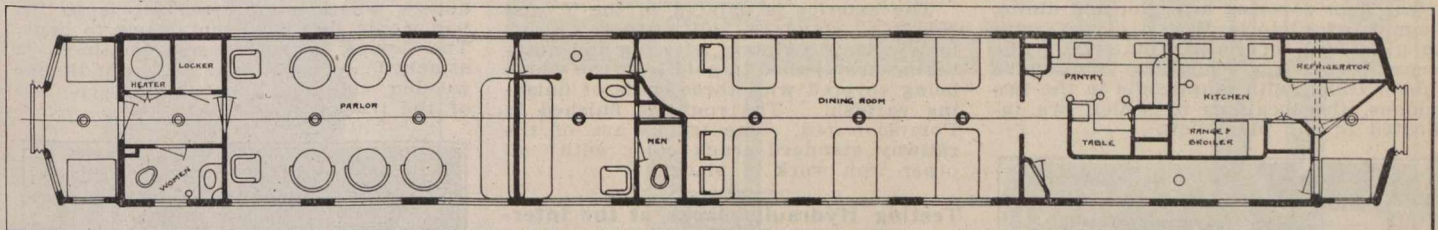


Fig. 2. Floor Plan of Parlor-Cafe Cars for T. and N.O. Ry.

3 1/2 ins.; width over side frame, 9 ft. 9 5/8 in.; width over eaves, 10 ft. 1 5/8 ins.; height over roof boards, 14 ft. 1 in.; and centre to centre of trucks, 51 ft. 10 ins.

STEEL BODY FRAME.—The centre sill of the underframe is composed of two 18-in. 44-lb. channels 77 ft. long, spaced

er. The corner posts consist of 6-in. 8-lb. channels, and the end posts, 4-in. 7 1/4-lb. channels, all rivetted to the end plate, composed of a 4-in. 7 1/4-lb. channel with a 3 x 3 x 5-16 channel rivetted thereto. This construction is calculated to be anti-telescoping.

TRUCKS.—Pennsylvania standard six-

red-pine flooring acts as floor insulation. The eiling, except in kitchen, is of 3-16-in. Agasote.

The vestibules at both ends are of the Pullman special wide type C construction, with the usual detail. The platforms contain the Standard Coupler Co.'s buffing device, and have attached

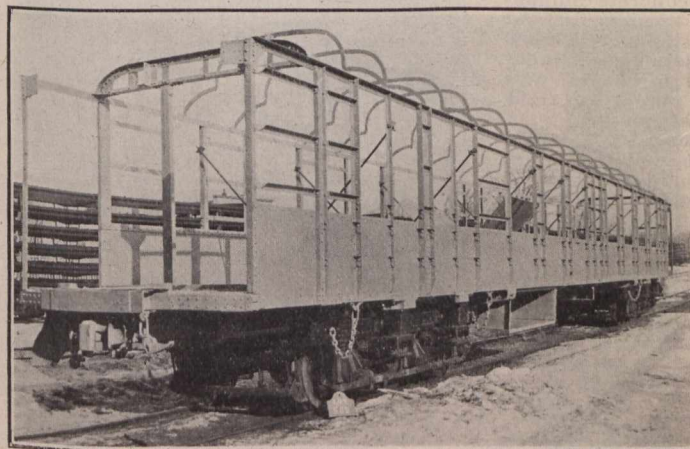


Fig. 3. Steel Body and Superstructure.

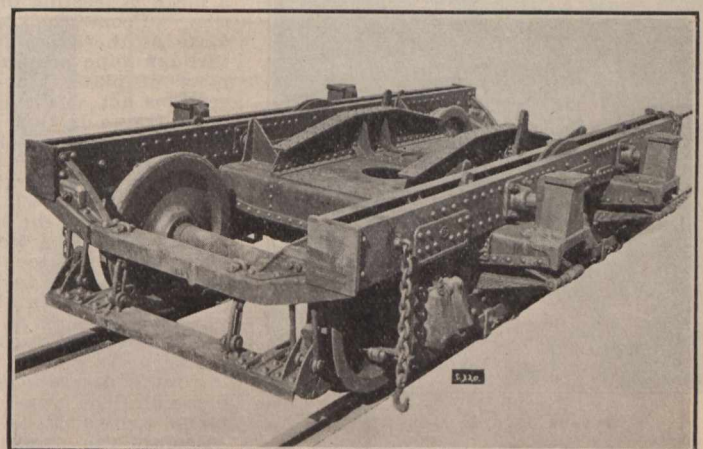


Fig. 4. Pennsylvania Standard All-steel Truck.

16 ins. apart, back to back, with 24 x 1/2 in. top and bottom cover plates extending the full length. Each side sill is composed of a 5 x 3 1/2 x 9-16 rolled angle. The cross ties are composed of 6-in. 86-lb. rolled channels.

Located 33 ft. apart, there are two deep diaphragms, each built up of two flanged steel web plates 3/8-in. thick, spaced 8 1/2 ins. back to back, with 15

wheel all-steel trucks, with a capacity of 80,000 lbs., are used, the construction being pretty clearly shown in fig. 4. These trucks have a wheel base of 11 ft. The wheels are 36 ins. diam., Schoen rolled steel, mounted on open hearth axles having 5 x 9 journals. The journal boxes are M.C.B. standard, with Harrison dust guards.

The Pennsylvania all-steel truck as

friction draft gear with 2-coil 8 x 8 draft springs with a drawbar height of 35 ins.

An artistic arrangement of the parlor has been obtained in this car as shown in fig. 5. There are 6 revolving chairs, 2 wicker chairs, and 1 sofa in this part, upholstered in green plush. The sofa has a locker beneath. The revolving chairs are each provided with a foot rest and have every convenience tending

towards comfort. The parlor is 17 ft. long.

The smoking room, 7 ft. long, is provided with a sofa and a wicker chair, both upholstered in Spanish leather. This sofa also has a locker beneath. Off this room is the men's lavatory.

heating is from a Gold Car Heating Co.'s combination steam and hot water heater with a Frumveller heater having four rows of extra heavy 1¼-in. pipe, the lowest one 2 ins. from the floor.

The inside finish of the car body is in plain and figured mahogany; pantry,

The mechanics find this device very convenient, not only for testing the jack's capacity, but also for use when testing the packing and joints of the jack. Any load within the capacity of the jack (and of the stand) can be very simply applied, and as readily released.

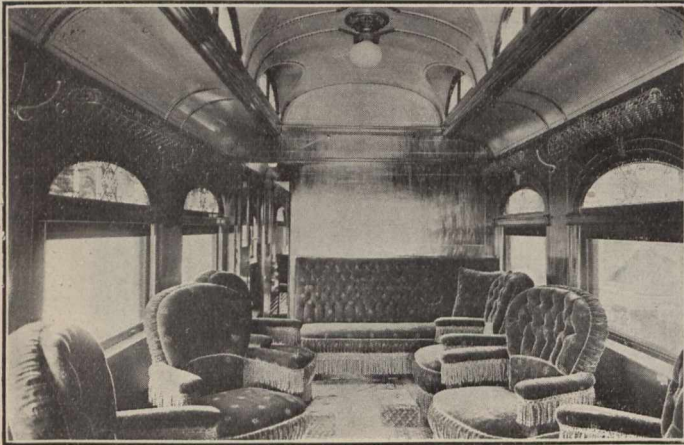


Fig. 5. Interior of Parlor.

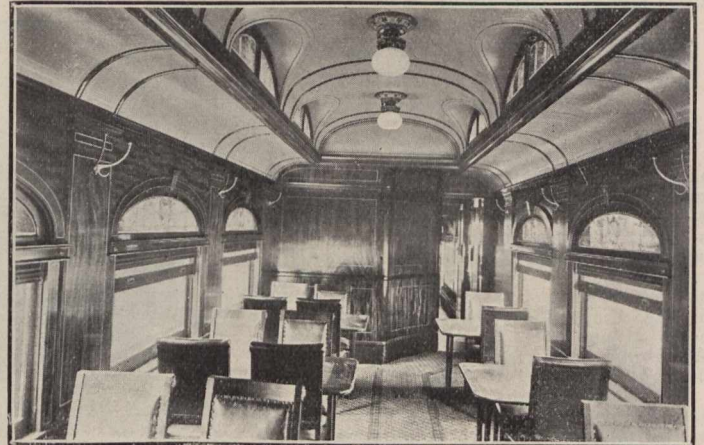


Fig. 6. Interior of Dining Room.

The dining room, shown in fig. 6, has a length of 20 ft., and is arranged with 3 double and single tables with 18 leather upholstered mahogany chairs. These three rooms have a seating capacity of 35, 12 in parlor, 5 in smoking room and 18 in dining room.

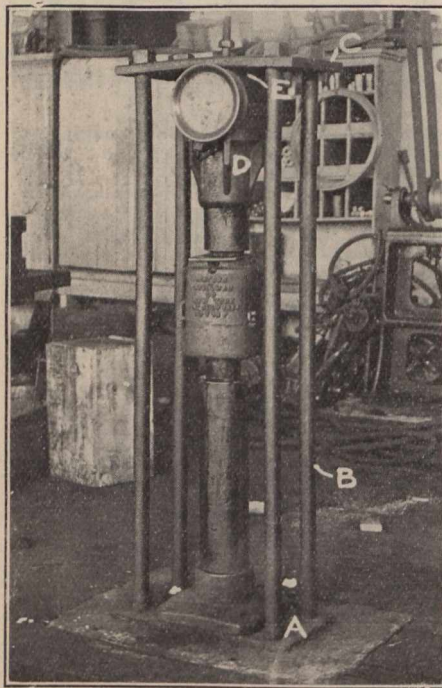
The floor covering in parlor and dining room is of Victoria Wilton carpet, with an aisle strip of similar material. The passage-ways and smoking room have rubber tiling, with mosaic tile in the two saloons, the locations of which are indicated in the plan view.

plain mahogany; kitchen, birch-stained mahogany; vestibule, birch-stained mahogany, with mahogany doors and sash; and wainscoting, mahogany veneered. The trimmings throughout are of statuary bronze. A sufficient number of basket racks and coat hooks are provided.

The exterior is painted in the T. and N.O.R.'s standard olive-green coach body color. Striping, lettering and numbering are applied in gold leaf, the whole being covered with three coats of finishing varnish. The roof is finished in Pompeian red. The trucks are of the railway standard truck color with all other iron work in black.

Saw for Cutting Packing Rings at C.P.R. West Toronto Roundhouse.

The accompanying illustration shows a device at the C.P.R. West Toronto roundhouse that the majority of roundhouses where compressed air is to be had would find it advantageous to copy. The device, which is self-contained, is attached to one of the roundhouse wooden columns, located between two of the tracks.



Hydraulic Jack Testing Device.

The kitchen, 8 ft. long, is well-equipped with coal range having hot water tank, charcoal boiler, air-pressure water system, copper sink, six canisters, and three Bohm system refrigerators, one in kitchen, and two in pantry. The kitchen floor is covered with sheet copper.

Lighting is obtained from Pintsch gas lamps, of which there are 6 centre, 3 desk, 6 bracket, and 2 vestibule. The

Testing Hydraulic Jacks at the Intercolonial Railway Shops.

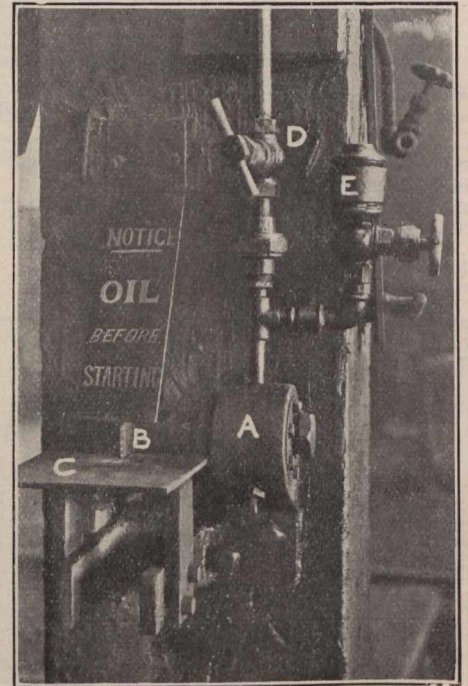
In the testing department of the I.R.C. locomotive shops at Moncton, N.B., a simple but useful and effective rig has been made for testing the standard hydraulic jacks of the type commonly found around metal working shops.

The jack to be tested, shown in the accompanying illustration, is placed on a plate A resting on a concrete foundation. From the four corners of the plate A, there are four bolts B passed through pipe sections, joining a similar piece of plate C at the top. The pipe sections act as distance pieces. A rigid, open frame is thus obtained.

Passing through the top plate C, there is a loose bolt holding up a small hydraulic press D, the plunger of which hangs downwards. Between the base of this press, and the upper plate C of the stand, there is a heavy coiled spring E of square bar stock, tending always to keep the press in its lowest position, making a resilient backing, and at the same time acting as a means for forcing home the jack plunger after its test.

The press cylinder has a pipe connection with pressure gauge attached as indicated. The area of the press plunger being known, it is a simple matter to calculate the pressure being exerted by the jack, which is placed in the position indicated, and the plunger forced upward in the usual manner.

A handy improvement to this rig would be to calibrate the gauge to record directly the total pressure on the press plunger, which is the weight being lifted by the jack. This is easily done, as the total pressure is a factor of the pressure per square inch, indicated by the gauge.



Saw for Cutting Packing Rings.

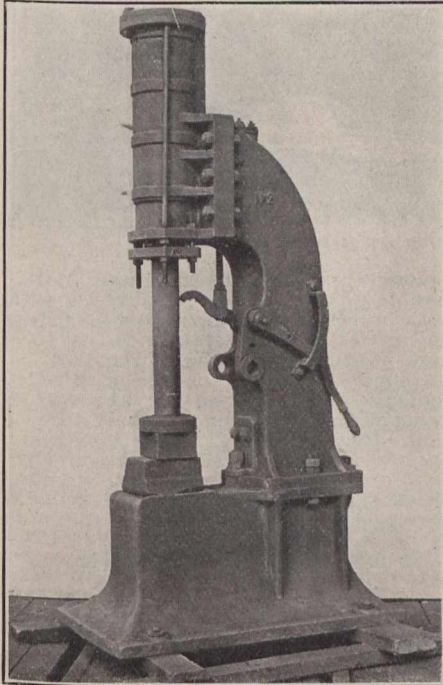
A small rotary air motor A, with projecting shaft, has a saw cutter B attached as indicated. In front of this cutter, with its surface slightly lower than the air-motor centre line, there is a small table C, slotted to receive the cutter. Attached to the post above there is a saw guard to ward off the flying chips thrown out by the rapidly revolving cutter, for the motor rotates at a very high speed.

Air is piped to the motor from above, controlled by the valve D. The device is oiled the desired amount by the oil cup E, connected to the air pipe through an elbow connection, in which is a valve. The air, passing the oil cup opening at a high velocity, creates a vacuum, drawing in the oil, regulating by the valve below by the oil cup.

The piston or valve packing rings to be saved are kept in stock, as they come from the moulds uncut. They are placed on the table, and a light pressure up against the saw cuts the ring through.

An Historical Steam Hammer.

The steam hammer shown in the accompanying illustration is interesting, not from its present value which is



Historical Steam Hammer.

small, but from its historical connection. The writer came across it in the Intercolonial Ry. shops at Moncton, N.B., where it had been sent for repairs.

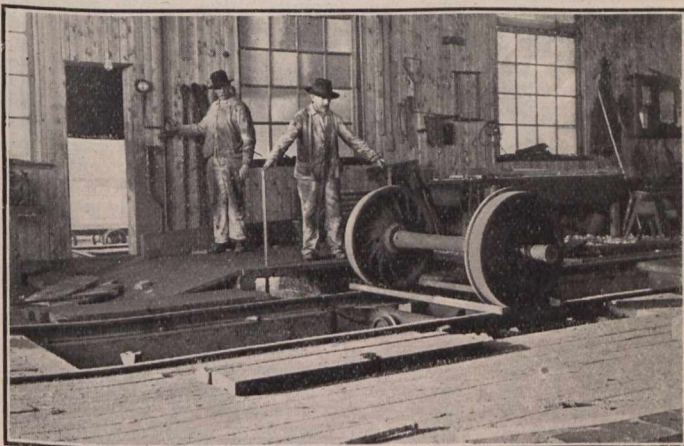


Fig. 2. Drop Pit Installation at St. John, N.B.

This ancient piece of machinery was manufactured by the Moir Co. of Halifax, N.S., about 34 years ago, for the I.R.C., being installed in the railway shops there. It has a 5-in. cylinder and an 18-in. stroke, with a weight of falling parts of about 175 lbs., and has a 7-in. square die block. The height over all is 7 1/2 ft. and the floor space is 24 by 36 ins. This hammer was in service at the

Halifax shops up to a little more than a year ago, when, on the removal of the shops to a new location, it was shipped to Moncton for general repairs before being placed in service in the new shops. However, it was not considered worth the cost of repair so will doubtless come to the usual end of all tools, on the scrap heap.

What impressed the writer most forcibly was the marked similarity between present-day construction on small steam hammers, and construction as it existed upwards of 35 years ago. In almost all details, it compares very favorably with present-day practice in the construction of hammers of similar proportions. A review of the past develops some remarkable instances of the slight progress made in certain lines of construction.

Car-wheel Drop Pit on the Intercolonial Railway.

Many and varied are the kinds of drop pits to be found around locomotive and car repair shops and roundhouses.

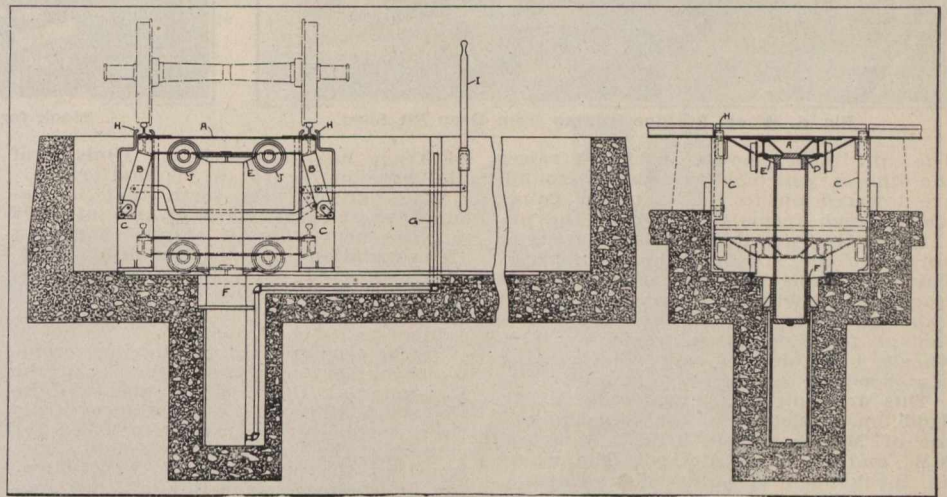


Fig. 1. Carwheel Drop Pit on the Intercolonial Ry.

One of the latest has been installed at the I.R.C. at St. John, N.B.

Fig. 1 clearly shows the arrangement and workings of the mechanism connected with the drop pit. A table, A, built up of plate and structural shapes with end castings, carries short pieces of track, forming a unit of the through

merely a loose connection with no attaching bolts.

The actuating air cylinder is of sufficient length to give the required drop into the pit, this drop depending on the use to which the pit is to be put, and is necessarily larger in a roundhouse. The upper end, F, of the cylinder has three packing rings forming a good working joint. Air is introduced to the lower face of the plunger through a control valve on the pipe G. The normal position of the plunger is in its lowest position with the head E resting on the upper face of the cylinder.

To operate, air is introduced under the plunger, lifting it into contact with the lower surface of the table, raising the latter the amount permissible by the stop block H. Levers I, one on each side of the table, when thrown to the right, with the table in its uppermost position, draw out the struts B into their recesses. Releasing the air gently lowers the table into the pit, the plunger drawing away from the table when it reaches the bottom.

The table is in reality a small car with four wheels, J. Rails laid in the pit at right angles to the upper tracks, form a runway for the little car with its load. The car then being run to the left, clearing the locomotive or car on the upper track, may have its load, consisting of a pair of wheels, raised for repair

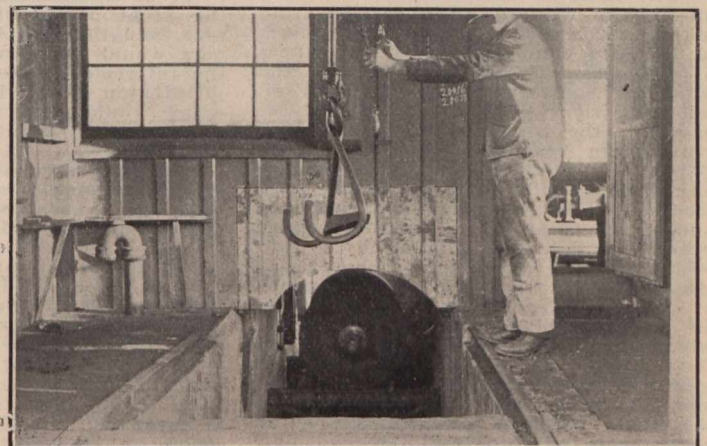


Fig. 3. Passage from Drop Pit, with Air Hoist.

track in the shop or roundhouse. This table is supported by four pinned struts B, one at each corner. These struts are pin-connected to pit castings C, into which they may be swung clear of the wheel table.

The lower face of the wheel table, at D, is recessed to receive a projection on the face of the head casting, E, on the end of a long air plunger. This is

purposes, or to have another pair replace them.

Figs. 2, 3 and 4 show the mechanism as applied to a pit in the I.R.C. car repair shops at St. John, N.B. In fig. 2, the workman at the wall is ready to turn on the air to lift the table against its stops while the workman to the right draws out the supporting struts from under the table. The little car when

lowered runs into the passageway over which the workmen are standing. This picture does not give a very good idea of its use, its greatest value being demonstrated when used under a car or locomotive.

The little car containing the pair of wheels passes through the aforementioned passageway into the lean to fig. 3 shown through the open door in fig. 2.

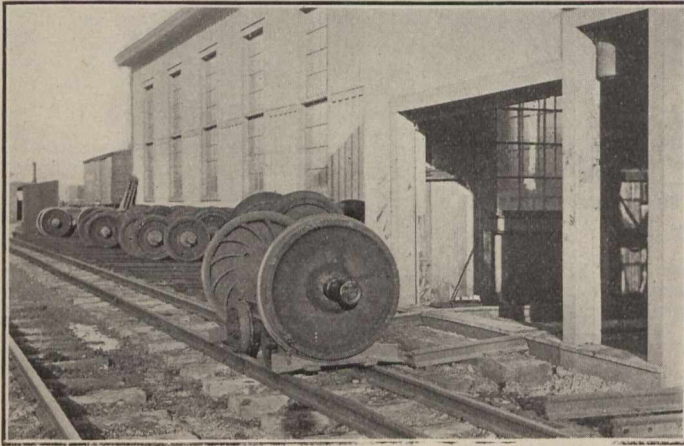


Fig. 4. Wheel Storage leading from Drop Pit Shed.

The air hoist shown in fig. 3 raises the wheels, which when twisted around, are lowered on to the standard gauge track which forms the edge of the pit.

From this point the wheels are run out on to the little car shown in fig. 4. This car runs along a narrow gauge track, with wheel storage tracks at right angles to it, making it very convenient for storing or replacing new wheels, both old and new wheels being kept separate and easy to get at.

This drop pit was invented by W. U. Appleton, Assistant to the Superintendent of Motive Power, I.R.C., Moncton, N.B., and by G. E. McCoy. The wheel pit mechanism is patented in Canada, no. 132,430, and in the United States, no. 1,002,797.

Grain Rates on the Intercolonial Railroad.

Under date of May 19, 1910, the Board of Railway Commissioners, on the application of the Montreal Board of Trade, passed the following order:—

"The rates of the G.T.R. and C.P.R. on ex-lake western grain carried from lake or river ports to points on the lines of the said companies in the provinces of Ontario and Quebec, shall be the same for equivalent distances from all lake and river ports at which facilities exist for the transshipment of the said grain from vessels to cars, between Depot Harbor and Montreal, inclusive, and shall include the cost of like services at all such ports of transshipment and at all points of destination, whenever the said cost is included in the rate or rates at one or more port or ports of transshipment, or at one or more point or points of destination; and to points off the lines of the said companies to which points joint rates are made by the addition of "arbitraries," the said arbitraries shall be the same on shipments from all the said ports of transshipment. On such grain transhipped at ports west of Montreal, destined to points east of Montreal to which points through rates are based on arbitraries, the western portion of the said rates shall be based on St. Henri mileage in the case of the G.T.R. and on Outremont mileage in the case of the C.P.R. The G.T.R. and C.P.R. shall give effect to this order by publishing and filing special tariffs to take effect not later than June 13."

Some time since the Montreal Board of Trade requested the Government

Railways Managing Board to apply the rates ordered by the Board of Railway Commissioners on grain ex-lake from Montreal to points in the Province of Quebec east of Levis, and which are in force on the Intercolonial Ry. as far east as Levis on account of competitive reasons. The Government Railways Managing Board having declined to grant the request, the Montreal Board

of Trade has petitioned the Minister of Railways in regard to the matter.

The petition sets forth that Parliament passed the Railway Act of 1906 for the protection of shippers and for the regulation of rates and other matters connected with railway transportation, and that practically all railways in Canada, excepting the Intercolonial, are subject to its conditions.

In the case of a shipper having a complaint against a railway other than the Intercolonial, there is an appeal to the Board of Railway Commissioners from the decision of the management of the company, the Commissioners being governed by the provisions of the Railway Act in their consideration of the complaint, while in the case of a complaint against the Intercolonial there is no appeal from the decision of the Managing Board of the Canadian Government Railways, which Board is not bound by the Act considered necessary by Parliament to safeguard the rights of the public in their dealings with railways generally.

The Intercolonial discriminates in favor of Maritime Province shippers, to the great detriment of Montreal shippers, and the best interests of all shippers would be more properly served if the Intercolonial were placed under the jurisdiction of the Railway Commission, which would result in rates being maintained on an equitable basis all over that railway.

The Intercolonial has a great number of private special rates to which the public have no access, and were the Intercolonial governed by the Railway Act these rates would have to be filed with the Railway Commission and posted at each Intercolonial Ry. office for the information of the public and thus shippers would know exactly what rates are being charged.

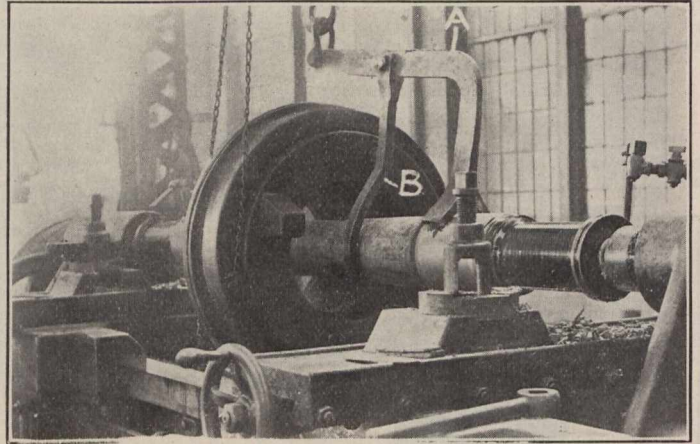
The Intercolonial is in competition with the C.P.R. to points such as St. John, N.B., and it seems to be an anomaly that the C.P.R. should be governed by the Railway Commissioners and the Intercolonial be free from such control.

Were the Intercolonial governed by the Railway Act, the Minister and the railway officials would be relieved from the political pressure for preferential treatment as to rates, etc., to which they are now liable.

The petition concludes by urging that the Intercolonial be placed under the Board of Railway Commissioners' jurisdiction.

Hook for Lifting Axles from Lathe at C.P.R. Angus Shops.

Of all the jobs that are constantly recurring in railway shop routine work, there are probably few that, in proportion to size, are as awkward to handle as the placing and removing of an axle in an axle lathe. The drive being im-



Hook for Lifting Axles from Axle Lathe.

mediately over the centre makes it impossible to lift the axle out directly with chain or other securing means placed at the centre or point of balance. A two-stage shifting operation is required.

A simple hook for remedying this defect has been devised at the C.P.R. Angus shops, in the tender wheel department, of which J. A. Hope is assistant foreman. As shown in the accompanying illustration, the device consists simply of a bent forked hook A, having a hooked arm B pin-connected at the middle of the horizontal portion of A. The horizontal section is made of such length that the hook and forked arm will clear the centre or drawing part of the axle lathe, gripping the axle in the manner indicated.

This hook device is quite a time saver, as the time of setting up and taking down an axle is very materially reduced by it.

C.P.R. Scholarships at McGill University

Sir Thos. G. Shaughnessy, President, C.P.R., has issued a circular stating that two free scholarships, covering four years' tuition in the Faculty of Applied Science of McGill University, are offered, subject to competitive examination, to apprentices and other employes enrolled on the company's permanent staff and under 21 years of age, and to minor sons of employes. The competitive examination, which will be the regular entrance matriculation examination, will be held at the University, Montreal, and at other centres throughout Canada, in June. The candidates making the highest average and complying with the requirements of admission will be awarded the scholarships and have the option of taking a course in any department of the Faculty of Applied Science. Scholarships will be renewed from year to year, to cover a period not exceeding four years, if, at the close of each session, the holder thereof is entitled, under the rules, to full standing in the next higher year.

Applications for certificates entitling eligible persons to enter the competition should be addressed to C. H. Buell, office of Vice President McNicoll, Montreal.

The Canadian Northern Ontario Ry. has adopted the 24 hour system for its working time tables, but the Passenger Department will continue to use a.m. and p.m. time on its folders.

Ten-Wheel Locomotives for Duluth, Winnipeg and Pacific Railway.

The Duluth, Winnipeg and Pacific Ry., a subsidiary of the Canadian Northern Ry., has recently received from the Baldwin Locomotive Works, Philadelphia, five passenger locomotives, which are equipped with fire-tube superheaters. They are of the ten-wheel type, and exert a tractive force of 28,800 lbs. The ratio of adhesion is 4.57. Although not exceptionally large for their type, they represent a highly efficient class of power, and the application of superheaters should materially increase their capacity.

The boiler is of the wagon-top type, with a long fire-box placed above the frames. The mud ring is of forged iron, and is sloped toward the front. This arrangement provides a deep throat, the distance from the top of the grates to the bottom row of tubes being 26 3/4 ins. The flexible staybolts number 218; they are applied in the sides, throat and back, and are placed principally in the outside rows. The crown staying is radial, and the four centre rows of bolts are provided, under the crown sheet, with pressed steel nuts and copper gaskets.

The frames are of steel, with single front rails. They are braced transversely by the guide yoke, the valve motion bearer, a broad steel tie immediately ahead of the main pedestals, and a tie under the front end of the fire-box. The front bumper and back foot plate are of cast steel. Because of the location of the fire-box, the equalization is arranged with yokes over the main and rear driving boxes and half elliptic springs between adjacent axles. At the rear, the frames are supported on full elliptic springs.

The tender is carried on two four-wheeled trucks, which have cast steel bolsters and steel-tired wheels. The frame is composed of 13-in. channels. The tank has a water bottom, and is fitted with steel coal gates. It has a capacity for 6,000 gals. of water and 10 tons of fuel.

The principal dimensions are appended:—

Cylinders	.....	22 x 26 ins.
Valves	.....	Balanced piston
Boiler, type	.....	Wagon top
Boiler, material	.....	Steel
Boiler, diameter	.....	.66 ins.
Boiler, thickness of sheets	.....	%, 11-16, 3/4 ins.
Boiler, working pressure	.....	170 lbs.
Boiler, fuel	.....	Soft coal
Boiler, staying	.....	Radial

Tenders, wheels, diameter	.....	33 ins.
Tender, journals	.....	5 1/2 x 10 ins.
Tender, tank capacity	.....	6,000 gals.
Tender, fuel	.....	10 tons
Engine equipped with fire tube superheater.		
Superheating surface	.....	462 sq. ft.

Birthdays of Transportation Men in January.

Many happy returns of the day to:—
W. U. Appleton, Assistant to Superintendent of Motive Power, Intercolonial Ry., Moncton, N.B., born there, Jan. 29, 1878.

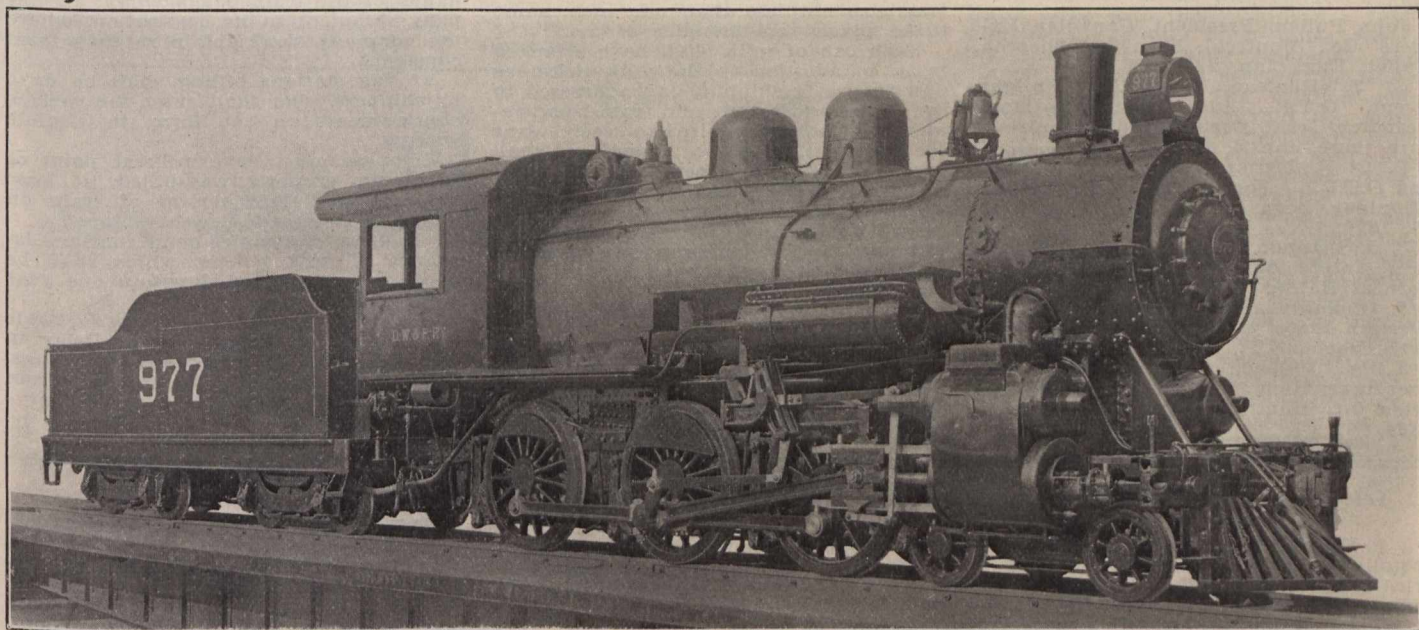
A. H. Bears, Master of Bridges and Buildings, C.P.R., Saskatoon, Sask., born at Charlottetown, P.E.I., Jan. 6, 1857.

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

R. H. Bell, Commercial Agent, Canadian Northern Ry., Pittsburgh, Pa., born at Toronto, Jan. 13, 1865.

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

W. H. Burr, Traffic Manager, Dominion and Western Express Cos., Toronto, born at Bloomington, Ill., Jan. 19, 1864.



Ten-wheeled Locomotive for Duluth, Winnipeg and Pacific Railway.

The fire-door opening is formed by flanging both sheets outward, and uniting them with a sleeve.

The superheater is of the top-header type, with 1 1/2-in. pipes; and the elements are placed in 24 tubes, each 5 3/8 ins. in diameter. Considering each square foot of superheating surface as equivalent in value to 1 1/2 sq. ft. of evaporating surface, the total equivalent heating surface of the boiler is 2,613 sq. ft., or 229 sq. ft. per cubic foot of cylinder volume.

The superheated steam is conveyed from the header to the steam chests through pipes which pass through the side walls of the smoke-box. The steam thus reaches the cylinders in the most direct manner possible. The distribution is controlled by 12-in. piston valves, arranged for inside admission and set with a constant lead of 1/4 in. The cylinders are bushed, and the piston and valve rods have front extensions. A five-feed lubricator is placed in the cab, and separate leads are run to each cylinder and steam chest, while the fifth lead is run to the two air pumps. The valve gear is of the Walschaerts type. Castellated nuts are used on the motion work, crank pins and crosshead pins.

Firebox, material	.....	Steel
Firebox, length	.....	113 1/8 ins.
Firebox, width	.....	40 1/4 ins.
Firebox, depth, front	.....	.79 ins.
Firebox, depth, back	.....	.70 ins.
Firebox, thickness of sheets, sides	.....	3/8 in.
Firebox, thickness of sheets, back	.....	3/8 in.
Firebox, thickness of sheets crown	.....	3/8 in.
Firebox, thickness of sheets, tube	.....	1/2 in.
Water space, front	.....	.4 ins.
Water space, sides	.....	.4 ins.
Water space, back	.....	.3 1/2 ins.
Tubes, diameter	.....	5% and 2 ins.
Tubes, material	.....	Steel
Tubes, thickness	.....	5% ins. 9 W.G.
Tubes, thickness	.....	2 ins. 11 W.G.
Tubes, number	.....	24 5% ins., 189 2 ins.
Tubes, length	.....	13 ft. 2 1/4 ins.
Heating surface, firebox	.....	183 sq. ft.
Heating surface tubes	.....	1,737 sq. ft.
Heating surface, total	.....	1,920 sq. ft.
Heating surface, grate area	.....	31.6 sq. ft.
Driving wheels, diameter, outside	.....	.63 ins.
Driving wheels, diameter, centre	.....	.56 ins.
Driving wheels, journals	.....	.9 x 11 ins.
Engine truck wheels, diameter	.....	.30 ins.
Engine truck wheels, journals	.....	5 1/2 x 12 ins.
Wheel base, driving	.....	.14 ft. 6 ins.
Wheel base, rigid	.....	.14 ft. 6 ins.
Wheel base, total, engine	.....	.24 ft. 10 ins.
Wheel base, total, engine and tender	.....	.57 ft. 7 1/2 ins.
Weight on driving wheels	.....	131,850 lbs.
Weight, on truck	.....	44,450 lbs.
Weight, total, engine	.....	176,300 lbs.
Weight, total, engine and tender, about	.....	295,000 lbs.
Tender, wheels, number	.....	8

W. A. Cowan, Assistant to Assistant Chief Engineer, C.P.R. Eastern Lines, Montreal, born at Galt, Ont., Jan. 22, 1877.

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

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

Sir Sandford Fleming, K.C.M.G., director, C.P.R., born at Kirkcaldy, Scotland, Jan. 7, 1827.

W. H. Gougen, Locomotive Foreman, C.P.R., Cartier, Ont., born at Point Alexander, Ont., Jan. 16, 1872.

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

H. V. Harris, ex-General Manager, Midland Ry. of Nova Scotia, now of Montreal, born at Devonport, Eng., Jan. 16, 1857.

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

Carl Howe, Manager, New York Central Fast Freight Lines, Chicago, Ill.,

born at Berrien Springs, Mich., Jan. 11, 1870.

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

W. J. Hunter, Division Freight Agent, G.T.P.R., and Commercial Agent, G.T.R., Winnipeg, born at Toronto, Jan. 10, 1864.

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

James Kent, Manager, C.P.R. Telegraphs, Montreal, born Jan. 15, 1854.

A. Lichtenhein, Galena Signal Oil Co., New York, born there, Jan. 15, 1855.

A. J. McGee, Secretary-Treasurer, Temiskaming and Northern Ontario Ry., Toronto, born at Lachine, Que., Jan. 24, 1876.

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

W. Phillips, General Freight Agent, Canadian Northern Ry. Eastern Lines, Toronto, born there, Jan. 31, 1870.

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

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

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

B. G. F. Rutley, ticket agent, C.N.R. and G.T.P.R., Fort Garry Union Station, Winnipeg, born at Chatham, Ont., Jan. 25, 1879.

S. J. Shannon, Comptroller and Treasurer, Intercolonial Ry., Moncton, N.B., born at Halifax, N.S., Jan. 18, 1865.

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

J. A. Villeneuve, Comptroller and Treasurer, Richelieu and Ontario Navigation Co., Montreal, born there, Jan. 4, 1864.

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

F. J. Watson, Assistant General Freight Agent, G.T.R., Montreal, born at Toronto, Jan. 12, 1866.

G. H. Webster, C.E., Vancouver, B.C., born at Creemore, Ont., Jan. 31, 1858.

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

A. Wilcox, General Superintendent, Western Division, C.N.R., Edmonton, Alta., born at Kincardine, Ont., Jan. 2, 1865.

Regulations for Transportation of Milk.

The Board of Railway Commissioners, on the application of the Montreal Milk Shippers' Association, has passed the following order, 15413, which has already gone into effect:—

That milk be transported in baggage cars upon the following conditions:—

All cans must have name or initials of owner on cover or shoulder, in stencilled (not painted) letters, size not less than one inch.

All cans must bear name of shipping station in stencilled (not painted) letters, size not less than one inch, same to be placed on shoulder of can.

Each can of milk shall have attached to it, in addition to the milk ticket as now in use, a shipping tag addressed to consignee, and agents and train baggage-men shall not be required to receive cans for shipment; unless so tagged, and shall not be required to accept cans for shipment not properly and legibly stencilled.

Covers of cans must be securely attached to cans to prevent spilling or pilferage of contents, and where possible they shall be wired on and sealed with lead seals.

All cans shall be loaded by shippers at shipping point.

Empty cans shall be returned by the railway company to the shipping point without other charges than payment of original tolls. Where the number of empty cans is 20 or less, unloading at

shipping point shall be done by employees of railway company. Where the number of cans is more than 20 and less than 40 shippers shall provide one man at shipping point for assisting in unloading. Where number of cans is 40 or more, shippers shall provide two men for assisting in unloading; provided that shippers shall not be required to attend at shipping point to assist in unloading at more than one train each day. In event of trains being delayed more than 30 minutes beyond schedule time of arrival, all empty cans shall be unloaded by employees of railway company.

On and after Sept., 1912, railway companies shall not be required to accept for transportation any cans of less capacity than eight gallons, whether containing milk or empty.

On and after Sept., 1912, milk shipments shall be handled on memorandum forms, and receipts shall be taken from consignee. This will be supplemental to ticket system now in effect, the railway company providing necessary shipping forms to all milk shipping stations. At stations where companies have regular agents, such agents shall fill in the form respecting number of cans to be shipped, from information supplied by shippers. Such memorandum shall then, in the hands of the train baggage-man, accompany shipment to its destination, where the company shall obtain receipts from consignee.

At flag stations billing shall be done by shippers, who shall enter the various consignments on one form, in legible writing.

Shippers must have milk at point of shipment, properly way-billed, at least 15 minutes before arrival of train on which it is intended to be shipped.

Railway companies shall continue issuance of milk tickets, which shall be good only if presented within one year from date of issue.

Railway companies shall not be liable for loss of, or damage to, or delay in any shipment of milk or empty cans, unless same be caused by or result from negligence of the company, or its servants or agents.

Freight Rate From the East to the Prairie Provinces.

The Supreme Court of Canada, on Dec. 6 dismissed the appeal of the Canadian Northern and Northern Pacific Railway Companies vs. the Regina Board of Trade, the subject of the appeal being the Board of Railway Commissioners' order 12520, of Dec. 10, 1910. The Regina Board of Trade applied under secs. 314 and 339 of the Railway Act, for a reduction in rates in classes 1 to 10 on goods shipped from Eastern Canada to Regina. The Board of Railway Commissioners ordered that the C.P.R. and C.N.R. publish and file new freight tariffs, to take effect not later than April 1, 1911, removing the discrimination at present existing in the tariffs to points in Manitoba, Saskatchewan and Alberta, from Fort William, Port Arthur and points east thereof, in favor of Winnipeg and other points in Manitoba, and against points west thereof, by reducing the rates from Fort William, Port Arthur and points east thereof, to Regina and Moose Jaw and other points west of the said favored points. The Supreme Court's judgment confirms this order.

On a similar application by the Edmonton Board of Trade the Chief Commissioner decided, Dec. 21, 1910, that the order made in the Regina case should apply.

Anglo-Canadian Contractors, Ltd., has been incorporated under the Dominion Companies Act, with \$250,000 capital and office at Toronto, to carry on a railway, marine and general contracting business.

Telephone Train Dispatching Circuits on the Canadian Pacific Railway.

Following are particulars of the various telephone train dispatching circuits installed on the C.P.R. up to date, for which we are indebted to W. J. Camp, Electrical Engineer, C.P.R. Telegraph Department. It is expected that additional circuits will be installed after the appropriations for 1912 have been made:—

Terminal Points	Dispatchers' Location.	Miles Ckt.	No. in use.	Selectors spare.	Kind of Equipment.	Date put in service.
St. John-Vancouver	St. John	90	17	3	Gill and N. E.	Aug. 27, 1911
Vancouver-Megantic	Brownville Jct.	216	26	3	" "	" "
Megantic-Farnham	Farnham	132	20	4	" Kellogg	March 31, 1911
Newport-Montreal	"	120	23	4	" N. E.	June 2, 1908
Quebec-Montreal	Montreal	174	29	0	" "	May 14, 1911
Brockville-Ottawa and Chalk River	Smiths Falls	172	27	3	" "	Sept. 17, 1911
Smiths Falls-Havelock	Havelock	109	14	1	" "	July 16, 1911
Havelock-Toronto	Toronto	101	18	0	" "	" "
Toronto-London	London	115	22	2	" "	March 1, 1911
St. Thomas-Pt. Burwell	"	227	36	2	" "	June 1, 1911
St. Marys-Windsor	"	132	30	2	" "	Oct. 15, 1911
Toronto-Muskoka	Toronto	312	29	7	" "	Dec. 27, 1910
Muskoka-S. Ste. Marie	Sudbury	232	27	4	" "	" "
Chalk River-Cartier	"	47	0	0	4 Bidg. Magnetos	Feb. 1, 1911
Mattawa-Timiskaming	Orders relayed at Mattawa	269	19	3	Gill and N. E.	Oct. 1, 1910
Cartier-White River	White River	251	17	5	" "	Sept. 1, 1909
White River-Fort William	"	133	23	3	" "	Aug. 17, 1909
Winnipeg-Brandon	Winnipeg	132	14	6	" "	Nov. 5, 1910
Brandon-Broadview	Brandon	135	18	4	Sandwich & Kellogg	Oct. 20, 1910
Broadview-Moosejaw	Moosejaw	111	15	5	Gill and N. E.	Nov. 27, 1910
Moosejaw-Swift Current	"	147	14	6	" Kellogg	Oct. 1, 1909
S. Current-Medicine Hat	Medicine Hat	180	18	3	" "	" 1911
Medicine Hat-Calgary	"	136	16	3	" "	" 1911
Calgary-Field	Calgary	130	20	2	" "	Oct. 26, 1911
Field-Revelstoke	Revelstoke	129	15	3	" "	" 1911
Revelstoke-Kamloops	"					
Total		3932	512	78		
	Bridging sets		4			

* Under construction.

† May be combined in one circuit.

516 Stations.

A circuit has also been installed on the branch line from Kentville to Kingsport, N.S., 14 miles, which is a portion of the Dominion Atlantic Ry. now under C.P.R. control.

Schemes of Erection Proposed for the Quebec Bridge.

In our last four issues we gave the schemes of erection proposed by the St. Lawrence Bridge Co., the British Empire Bridge Co., the Pennsylvania Steel Co., and Maschinenfabrik Augsburg-Nuernberg A.G., the latter for the Board of Engineers' design only. Following is the Maschinenfabrik Augsburg-Nuernberg A.G., bidder's design:—

The design proposed has a single-intersection web-system, similar to the board's design, but the web triangles are considerably larger. The lengths of the several arms of the bridge are somewhat different, but the main span is unchanged. The design was made with the intention of floating in the suspended span.

On account of the long panels the floorbeams are very heavy. To facilitate manufacture and erection, they are built as box-girders, the two webs being shipped separately and connected after erection by a cover plate. In order to limit as much as possible the use of secondary members and also to facilitate certain parts of the erection, eye-bars are used to only small extent in the design. The top chords and main tension members are built-up riveted members. Each main pier is provided with a

While the shoe is being put in place, the temporary falsework at points 6 and 7 is raised and posts 6, 7 and 8 erected along with the sway bracing of the bridge. The crane trestle for the anchor arm and its two travelling cranes are placed on top of the group of posts 6, 7 and 8, which with its permanent and temporary bracing acts as a tower. After the cranes have erected the missing parts of the main trusses and the flooring between 6, 7 and 8, the crane trestle is brought to its second position on the posts 6 and 7 in order to make way for the cantilever-arm crane trestle and cranes. These cranes then build panel by panel the main trusses, bracing and floor of the bridge up to the anchor pier on one side and the end of the cantilever arm on the other, employing during the operation such temporary members as are required.

All material for erection is lifted on to the bridge from scows. The hoisting is done by a crane travelling on the floor of the bridge, having a capacity of 200,000 lbs. This crane can then transport the material to any point on the bridge where it is required. The runway tracks of this crane always project beyond the last panel erected in order to serve the overhead cranes to the best advantage.

each having a capacity of 1,322,000 lbs. and a lift of about 3 ft., operating a frame connected to the above mentioned cross beams. A safety device holds the cross beams in place step by step as it is raised, thus providing against any accident. When the lifting has been completed the wire hangers are fitted to their bearings and the suspended span, previously lifted a little too high, is lowered to its permanent position.

Telephone Train Dispatching on the Algoma Central and Hudson Bay Railway

This line has been dispatching trains by telephone since 1902, using on the Main Line Division the Bell 1000 ohm magneto type wall instruments and on the Michipicoten Division the New State 80 ohm series instruments.

Last spring the construction of a metallic circuit of no. 12 new British standard hard drawn copper wire was commenced. When completed the line will extend from Sault Ste. Marie, north to Hobon, 195 miles, with connection at Hawk Lake with the Michipicoten Division metallic circuit of 36 miles, covering the Michipicoten, Josephine and Magpie branches and serving the Helen and Magpie mines. The existing pole lines were practically rebuilt last summer and new lines have been built from Pangissin, 68 miles north of Sault Ste. Marie, to mileage 107, and from Josephine Mine Jct. mileage 107 to 125. The gap of 18 miles is now being closed and it is hoped to secure communication between Sault Ste. Marie and Michipicoten Harbor early in January.

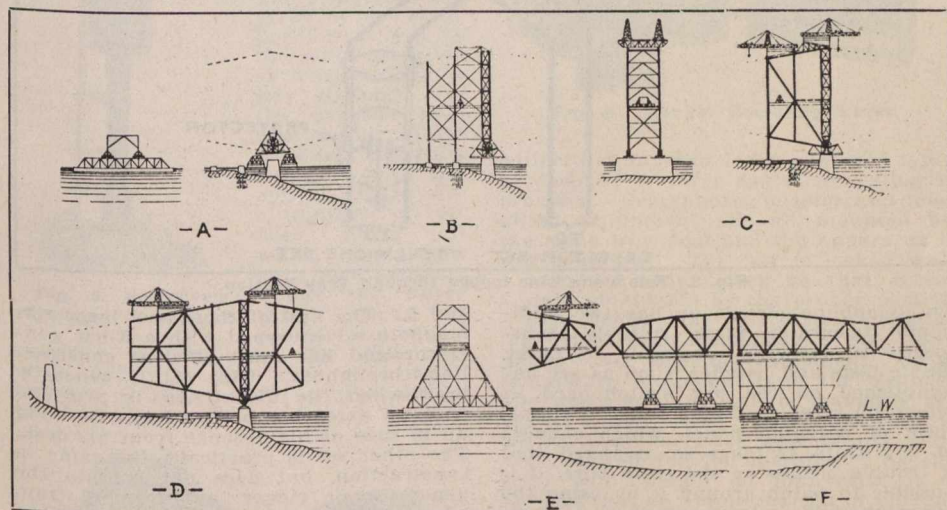
The Hawk Lake-Hobon extension of some 30 miles will be built next spring and further extension of the system north of the C.P.R. proceeded with. A portion of the new dispatching telephone apparatus will be installed this winter and the installation, with the exception of the Hobon extension, will be completed early next spring. This will give a dispatching circuit of 190 miles for the present and 220 miles on completion of the Hobon extension.

The line has been constructed on a substantial standard specification and the equipment installed is the last word in up-to-date telephone apparatus. It is furnished by the Northern Electric and Manufacturing Co., Montreal, and consists of their dispatcher's telephone equipment, chest transmitter, head receiver, etc., and their selector equipment for calling stations. For stations at which agents are maintained the office is provided with their 1020 B transmitter arm and head receiver, and station selector set. Flag stations are provided with a 1317 W type wall telephone. Portable telephone sets with line poles are provided for use of train crews.

The system when completed will admit of the dispatchers communicating with one or more stations simultaneously, allow of the sending of time over the wire, and also the transmission of company's and commercial business.

Between Sault Ste. Marie and Searchmont, 30 miles, an iron metallic circuit is provided for commercial business and a ground circuit extends from Searchmont to mileage 79. On the Michipicoten branch an iron metallic circuit between Michipicoten Harbor and Helen Mine, 11½ miles, cares for commercial business and an iron ground circuit from Helen Mine to Grassett on the C.P.R. cares for commercial business between the mines and the outside.

We are indebted for the foregoing to G. A. Montgomery, Superintendent A.C. and H. B. Ry., at whose request it was prepared by C. Fitzsimon, Superintendent Telephone Construction.



Maschinenfabrik Augsburg-Nuernberg A.G. Bidder's Design.

special pedestal of cast steel providing a central transmission of load on the pier and permitting of free deflection of the bridge. The pedestals are set on the riveted steel grillages sunk into the masonry piers to provide a uniform distribution of load. The centre span is suspended from the cantilever arms by means of cables, just as proposed for the board's design.

The plan shows several stages in the erection, and illustrates the general method proposed. Both arms are to be cantilevered out from the main piers and the stability of the work ensured by temporary supports under the anchor arm. In this case, however, travelling cranes are operated on the top chords, two on each anchor arm and two on each cantilever arm at the same time. These cranes have 82-ft. booms and are arranged so as to be able to be moved crosswise on a crane trestle which itself can move longitudinally on the upper chords of the bridge. All cranes as well as the crane trestles are operated by means of electrically-driven winches. Each of the cranes has a maximum lifting capacity of 120,000 lbs. at the extreme end of its boom and a capacity of 200,000 lbs. within a closer area.

The erection of the main bridge starts with the laying down of the shoes. These shoes are designed to be floated in place and to be set on previously prepared bearings as the tide goes down.

The suspended span would be erected on high falsework as for the board's design. The span is supported at each panel-point, by a truss on the falsework, the whole carried on four pontoons each 295 ft. long and 49 ft. 3 ins. wide. When the suspended span has been completely erected on the floating scaffolding, it is towed to the bridge site. After its arrival there it is accurately held in position by means of wire cables and winches placed on the river banks.

To facilitate the operation of coupling up the suspended span to the cantilever, as well as to avoid blocking traffic on the river any longer than absolutely necessary, a special supporting and lifting device is provided at the ends of the cantilever arm. This temporary support is made of cross beams suspended from the end posts of the cantilever arms by means of hinged tension members. At high tide these supports, previously swung back in a slanting position towards the piers to allow the suspended span to be floated into its closely approximate final position, are allowed to swing back to their normal position, the cross beams passing under the ends of the bottom chord of the suspended span at its four corners. As the tide goes out the bridge comes to rest on these temporary supports and the falsework floats clear. The suspended span is then adjusted to its final position by means of 16 hydraulic jacks located on the upper

Telephone Train Dispatching.

By A. Dwight Smith.

[This is the fifth of the series of articles on this subject, the previous ones having been published in our issues of Sept., Oct., Nov. and Dec., 1911.]

In addition to the regular telephone equipment in everyday use on train dispatching circuits, conditions to be met with are such that various types of auxiliary apparatus are also required. The most troublesome of all auxiliary ap-

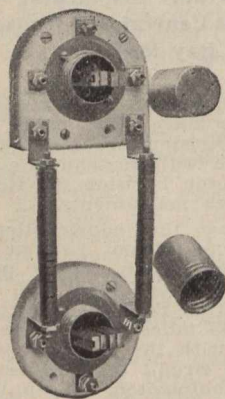


Figure 1. Telephone Protector.

paratus are the protective devices. It is fairly safe to say that no perfectly satisfactory protector has yet been developed by anyone. It has not been because of the lack of thought nor engineering ability, but because two irreconcilable conditions exist in telephone protection, and so far have rendered the problem unsolvable. The protector (fig. 1) must guard the apparatus from low voltage crosses, such as lighting and power wires, as well as from lightning. It must therefore operate at a low potential. When built with this in view,

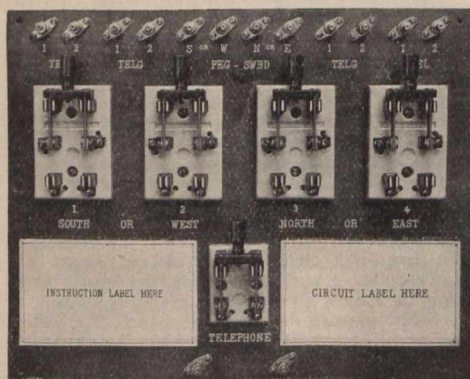


Fig. 2. Knife Switch Test Panel.

the ground plate is in all cases so near the live plates that the spark-gap between is easily crossed by foreign matter, carbon dust, metal, or whatever material the plates are made of. This, of course, grounds the line permanently and renders it inoperative from noise, if there are any telegraph or power circuits in close proximity. If the plates are placed at a greater distance apart, the operating voltage is much higher, and the apparatus is not, therefore, protected as it should be. It has not been possible to solve this protection as yet, but since the railway's main object is to give service and they cannot stand for continued interruption to it from grounds on the protectors, it seems probable they will dispense with so much protection and take a chance of having the apparatus burned out occasionally rather than interrupt service so frequently from grounds.

Protectors which place permanent high resistance grounds on the line are, of course, useless for telephone purposes on account of the noise they bring into the circuit, aside from other disadvantages such as slowness in dissipating a charge.

If a road is equipped with more than

in one direction and then in the other, and finding thus where the trouble is. In case of trouble in the station apparatus, that station can be cut off the line by the third switch, leaving the circuit cut straight through.

A portable train set, as used on wreck and regular trains, is shown in figs. 4

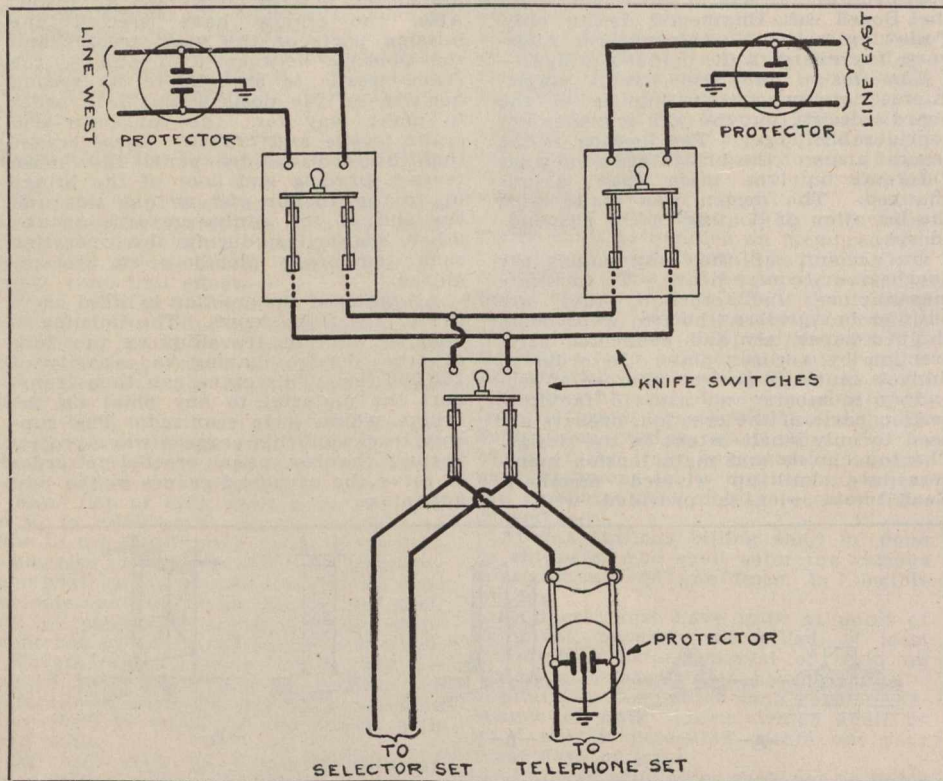


Fig. 3. Telephone Line looped through Way Station.

one telephone circuit or has two additional telegraph wires suitably transposed, it is very desirable to make simple tests and patches, such as are accomplished on the peg switchboard in telegraph service. Fig. 3 shows a simple form of patching panel, which consists of five knife switches so arranged that if trouble occurs on the train wire, it is possible to patch around it by using the other available wires, and thus continuing the service until the cause of the trouble is removed.

When there is only one circuit installed along the road and no provision

and 5. The first of these is a large size magneto set equipped with a 5-bar generator and has most efficient construction throughout. This set is generally used when the dispatcher is provided with an extension bell and can be rung up in case of his absence from his desk. The other set is practically the same in construction, but does not contain the generator or ringer, as on most train wires the dispatcher is continually on the circuit and no signalling device is necessary. The Canadian Pacific Ry. has approximately 750 of these sets in use. It is equipped with a head receiver so that the train conductor can have free

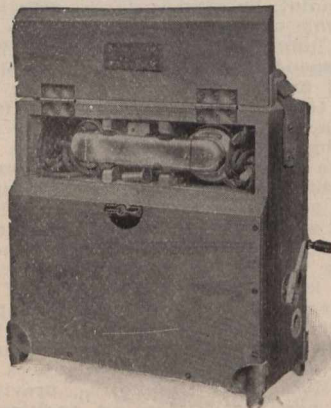


Fig. 4. Magneto Portable Train Telephone Set.

has been made for altering existing telegraph circuits, it is merely looped through three knife switches at each way station. Fig 3 illustrates this. With this simple arrangement, it is possible for the dispatcher to locate trouble between any two stations by successive tests down the line; opening the circuit

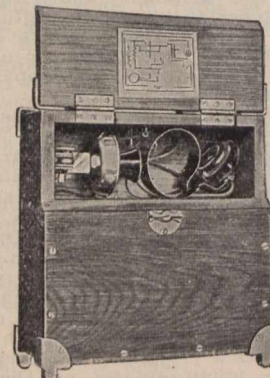


Fig. 5. N.3a Portable Telephone Set.

use of both hands to copy his messages. To connect a portable set to the wire, a line pole is used, generally in three sections, and equipped with 100 ft. of flexible cord. A portable set is a wonder-worker for efficient train service, as communication can be immediately established between a distant point and headquarters.

Since the development of the telephone for train dispatching, the need has been felt for signalling equipment which could be used and operated in connection with the telephone train wire, that is, instead of having a selector on a telephone circuit ring a bell at a way station, it was required that it throw a semaphore arm. On steam roads it is used exclusively for train order work, in other words, it is employed as an auxiliary to a regular dispatching circuit. When used in this way, it will secure a still further saving than is now effected by the telephone.

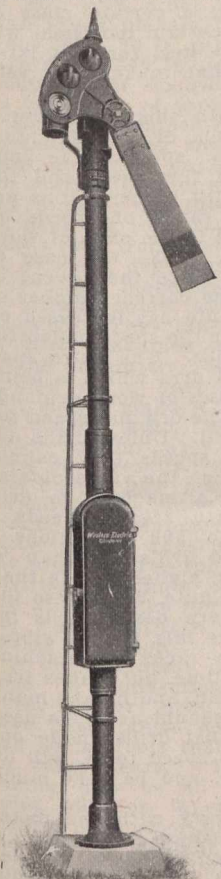


Fig. 6. Selectively Operated Semaphore.

A train order semaphore can be installed at any point desired along the right of way. The dispatcher can throw it to "stop" position at will by the same operation as when calling a way station. On the average railway equipped for handling train movements by telephone, there are a number of offices along it which have to be kept open 24 hours a day and where three tricks of operators must necessarily be employed for this purpose, merely to take care of a small number of trains. Of course, during the busy hours, it is necessary to have

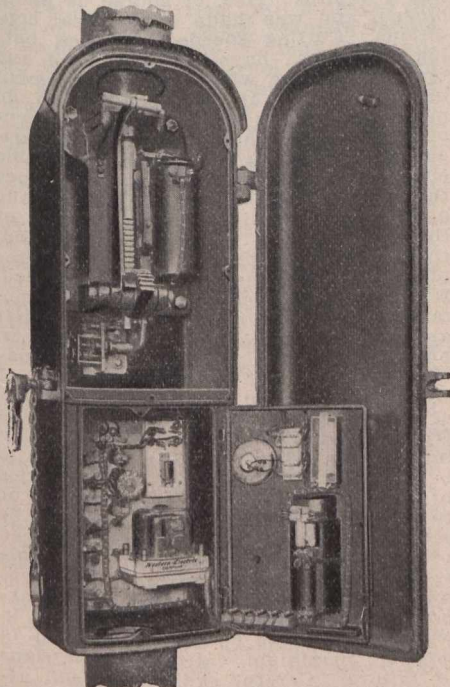


Fig. 7. Telephone and Selector Equipment.

an operator on duty at the station, but at night or during very light load periods, there are numerous cases where he could be dispensed with altogether,

provided the dispatcher had some means of reaching the trains.

Fig. 6 shows the semaphore complete. It is of standard make and is furnished

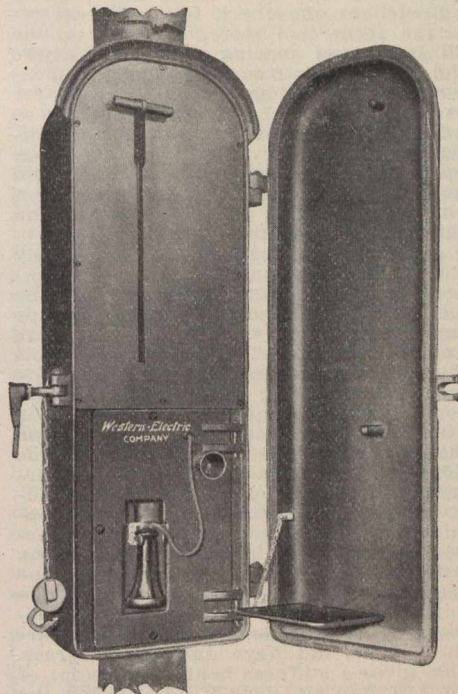


Fig. 8. Manual Restoring Lever.

with either upper or lower quadrant types as desired. A three spectacle casting is provided. Semaphore, selector and telephone equipment are all mounted on the same iron post and the apparatus is self contained. The box is locked with a standard switch lock so that access is only obtainable by the proper parties.

Fig. 7 shows the pole casting containing signalling mechanism, the telephone and selector equipment. The semaphore equipment is of the electrically operated type and is manually restored. The relay operating this is normally de-energized and 10 dry cells are required for its operation. As the relay will operate on four cells, it is obvious that an ample margin of current is allowed. The signalling mechanism proper is contained in the compartment at the top of the casting; the only part of this which appears on the surface of the inside door is the handle of the restoring lever. The selectors and terminals are readily accessible for maintenance purposes.

Fig. 8 shows the apparatus casting with the inside cover open. In this illustration will be seen the arrangement of the selector and terminal apparatus. The signalling mechanism is shown above together with the manually operated lever and the gears by means of which the semaphore blades are restored to "clear" position. All equipment is bridged across the telephone line, and any piece of apparatus can be removed without affecting the circuit. As many semaphores as desired can be installed either on a new line or on present existing circuits.

The flexibility of a railway telephone system for handling train movements and commercial messages is obvious from the foregoing. When these features are added to the many other advantages of the personal method of communication, it is small wonder that the telephone is advancing into its new field with rapid strides.

F. H. Frobert, Roundhouse Foreman, Intercolonial Ry., St. John, N.B., in remitting his renewal subscription, says: "I find the Railway and Marine World very valuable in my position."

Canadian Car and Foundry Co.'s Annual Report.

The report for the year ended Sept. 30, 1911, shows profits of \$1,007,137.58, which after deducting 7% dividend on preference stock, \$385,000, leaves a surplus of \$622,137.58. Out of this a common stock dividend of 4% has since been declared, leaving a surplus of \$467,137.58 out of the year's earnings, being about \$23,000 greater than for the previous years.

The gross sales for the year were over \$12,500,000, being a considerable increase over the previous year; however, the serious trade depression in the United States, particularly in car equipment lines, necessitated a reduction in the percentage of profit on sales, as U.S. manufacturers in many cases sought business at bare manufacturing cost, or less, in order to maintain their organizations. A large proportion of the materials entering into car construction have to be imported into Canada and the freight and duties payable on such materials largely offset the protection afforded by the duties on finished products.

At the close of the fiscal year the unfilled orders on the books amounted to over \$5,000,000.00. On Nov. 20 they amounted to approximately \$10,000,000.00; and while, on account of the depression in the U.S., much of this business has been taken at rock bottom prices, it should practically ensure continuous operations at capacity for 1912 and a large saving in running expenses.

The increasing general prosperity of Canada, coupled with the demands of the railways for the company's products, easily make manifest the fact that the manufacturing facilities must be increased. This was particularly the case in respect to passenger car equipment and also by the increasing demand for freight cars of steel or steel underframed construction. The directors authorized extensions to the passenger car departments at Amherst and Turcot (Montreal); a new steel freight car department added to the Turcot works, an addition to the steel car plant at the Dominion works, and an extension to the malleable iron foundry at Amherst. These improvements are now all under way and steel underframed cars are being built at the Turcot works. The total cost, upon completion, will be approximately \$350,000. The directors believe that this expenditure will be fully justified by results and will enable the company to more fully meet the railway requirements at all times.

Shortly after the organization of the company, it became apparent that facilities would have to be arranged for the production of steel castings which are entering more and more largely into the products. Early in 1911 it was found possible to secure the properties of the Montreal Steel Works, Ltd., and the Ontario Iron & Steel Co., Ltd., of Welland, Ont., the former being the largest producers of steel castings in Canada, the latter having both a steel foundry and a rolling mill. The Montreal Steel Works had also commenced the erection of a modern steel casting plant in Montreal in addition to its existing facilities. After careful consideration the directors deemed it wise to secure these properties and the Canadian Steel Foundries, Ltd., was formed for that purpose.

It was found advisable to make extensive improvements at the Welland plant. The new plant at Montreal will not be fully completed and ready for operation until the spring of 1912.

The directors were re-elected. The principal officers for the current year are:—N. Curry, President; W. W. Butler, Vice President; V. G. Curry, Second Vice President.

Efficient Shop Operation.

By E. T. Spidy Assistant to General Locomotive Foreman, C. P. R. Winnipeg.

In this paper I propose to bring out some of the various points that go to make an efficiently operated shop, and to make a few notes on each. Not very long ago the whole business of shop efficiency was considered part of the foreman's duties and it is mainly due to the demand for increased output that the shop engineer is now a recognized necessity to relieve the foreman of that part of his work relating to machinery upkeep, tools, and general improvements. The foreman is the man on whom the responsibility of the individual shop rests. He is the hub, as it were and the smooth working of all the minor wheels depends on his ability as an organizer, and on the amount of co-operative effort he receives. The first point I would draw your attention to is shop organization. By shop organization I mean the plan of control by means of which the whole work of a plant is divided and sub-divided among foremen and chargehands, that the responsibility for any particular detail can be instantly located. The organization of any shop is governed by its size, the class of work handled, and the conditions met with, peculiar to itself. Obviously no definite rules can be laid down. A shop may be organized to specialize as much as possible, or specializing might be impracticable. For example, take a locomotive erecting shop, in one shop we see that the gang boss has the entire erecting of an engine to look after from stripping to finishing, while in another shop we see the chargehand concerned with the general erecting alone, while a special gang strips the engine, another gang is responsible for shoe and wedge work, another for motion, and so on, that the whole work is in the hands of men who become specialists at their work. In a small shop the amount of specializing that can be carried on these lines is minimized, but even here, we see in some shops that a certain man always does the same job on an engine and so becomes a specialist on that particular job.

In manufacturing shops operated on a modern piecework or bonus system the introduction of functional foremen has proved successful. These functional foremen are additional, and they are responsible for certain functions of the shop that can be better handled by men who become experts, than by the regular foremen. In a piecework shop specializing becomes a necessity, it enables the keeping of more accurate records. By dividing the work among specialists each man becomes independent of the rest, for he alone gets all the benefit of his increased efforts, whereas when the whole gang work together, the whole gang have to carry the slow men, and this is the cause of much dissatisfaction. Good shop organization has each man's duties very clearly defined. This clear defining of every man's duties is essential to economic operation.

A point I would make special reference to is standardization. Just how far standardization should be carried into a shop is hard to say, but it is one of the items that brings down costs, so is well worth considering. Hand and machine tools should be standardized as far as possible, as also should be the method of handling the same. All tools required should be handed to the men from a central distributing room situated as near the centre of the shop as possible. Machine tools should be forged in the smithy-shop and taken to the tool room, where they are ground ready for hardening. The toolroom itself should be equipped with a hardening furnace for machine tools, and an oven for hardening taps, dies, reamers, etc., that require

careful treatment. Tools such as taps, reamers, jigs, etc., should all be checked against the man receiving same. A system of giving each man so many checks when he enters the service and making him deliver one check for each tool received from tool store, keeps a tab on all tools, and placing the check where the tool came from simplifies the location of the tool, should it be called for by anyone else. All tools should be called in periodically that their condition may be observed and to keep stock up to date. All pneumatic tools should be brought in regularly for inspection and oiling, and if suspended in benzine they will be also thoroughly cleaned.

Machine tools should, as previously stated, all be ground in the tool department by a man kept especially for the job. Lathe tools have a definite shape and all angles of lip and clearance are fixed to a standard. For roughing tools the clearance angle, that is the angle behind the cutting edge, is six degrees. Some English standards reduce this a little, but six degrees is the standard on this continent. The back slope and side slope are respectively eight and 14 degrees. These angles are accepted standards, they represent part of results obtained by experiment and modern practice on heavy duty machines. Boring mills do not have a tool of the same height as lathes and the back and side slopes are usually reduced a few degrees. Planer tools reduce on the clearance angle and have only two degrees. This gives a stiffness behind the point of the tool and supports it on entering the metal, and also reduces the tendency to chatter. All tools used on machines, whether they are roughing, finishing, knife, or parting tools, can be handled better by a separate department such as the tool room, than by individual workmen.

The reason for the many shapes of tools found in a shop, not systematically handling the same, is that instead of being the result of each man's experience, it is merely the result of custom, the difference between which is very obvious. The same applies to the tool smith. It used to be bad policy to fall out with the man who hardened your tools, anybody who has ever worked under that system knows why, however, with the smith fully acquainted with the methods of treating the many different kinds of steel he is called on to do in these days, it is reasonable that if he does his work in quantities at one time, instead of one of this, and one of that, while somebody waits on him, he will turn out better and more work and get more satisfaction out of it as well.

Driving wheel lathe tools are all special shaped tools, however they should all go through the same process in handling. Considerable saving is claimed by the Montreal Locomotive Works on large finishing tools by welding a piece of high speed steel into a billet steel shank. The cost of such tools is very small compared with solid high speed tools of the necessary heavy section. The same process was tried at the C.P.R. shops in Montreal. Whether it was the hard tires or not I do not know, but I believe the success met with was not convincing enough for it to be adopted as a standard. Some smaller special tools, however, are high speed steel tipped right along. High speed steel used for tools used only occasionally represents capital tied up. If you can use your odd ends to tip special tools you are certainly getting better interest on your outlay.

While on the subject of machine tools, the question of standardization of tool steel comes up. This is a difficult matter to decide, especially as each steel maker claims that his is the best. No one wants inferior tool steel, so the only thing to do is to experiment ourselves

with our own particular classes of material and determine what best suits us. Although it may be impossible to adopt a standard steel for all work, it can be found better on a certain class of done so far that a certain tool steel will work. High speed steel forms a large expenditure item that makes this very desirable.

In connection with this work comes the efficient operation of the individual machines. Machine speeds have gone up during the past few years and the tendency is to go still higher. It is necessary to have a range of speeds on each machine suited to the class of work to be operated on. Take the case of drilling machines. Since the advent of high speed drills, the correct number of revolutions per minute has increased on an average 75% over the speed called for by carbon twist drills. The extra high speed or flat twisted drill which is being used on certain classes of work demands a speed 130% over the original speed for the same size of drill. Unless drills are run at the proper speeds they cannot work efficiently and so the value obtained is minimized. A machine to drill holes from ½ in. to 2½ in. needs a capacity from 50 to 500 revolutions a minute. High speed drills less than ½ in. diameter call for higher speeds than 500 revolutions a minute, but unless the machine is of modern design it is inadvisable to go above this, for the vibration set up not only racks the machine to pieces in a short time, but makes true holes difficult to obtain, and breaks many drills. Twist drills should never be used in cored holes, for flat drills, made out of odd ends of high speed tools, will do the work far better, and be very much less expensive.

Feeds for drills vary with the metal drilled. Taking medium cast iron, a basis for a high speed drill is .01 in. per revolution, per inch diameter of drill, this, however, cannot be considered more than a guide. Records given at the Master Mechanics' Convention this year in Atlantic City show that feeds of one-tenth of an inch per revolution at 578 revolutions per minute were obtained in cast iron billets with a 1¼ ins. drill removing metal at the rate of 70.55 cub. ins. a minute. This, of course, is phenomenal and was made under ideal conditions. Cutting speeds on lathes, boring mills, etc., have also increased and tend to increase with each improvement in tool steels. It is impossible to do more than make an average statement of what speeds should be used on various metals, owing to the many variable elements to be considered that influence the same. The size of the tool and the quality of the tool steel, the capacity of the machine, the material operated on, the depth of cut taken and the feed employed all influence the cutting speed. It must be granted that there are certain combinations of these elements that are better suited to each job than others, but to determine the correct combination to remove a certain amount of stock in the most efficient manner necessitates a detail study of the machine from a power standpoint and also an intimate knowledge of each condition to be met. It is considered best practice to remove the necessary metal in one or two cuts, according to the amount to be removed, and to use the heaviest feed practicable in connection with available speeds. The size of the tool is set to some degree by the machine and in experimenting with tools up to 1¼ in. in width they should be figured to stand 30 minutes maximum cutting before signs of failure. Careful experiment will afford much information on the relations between these elements and will give some accurate idea of what can be expected from each tool. Modern lathes, 6 in. centres, require 5 h.p. to drive, while a 24 in. centre lathe needs 30 to

40 h.p. to keep going, the latter power being necessary with two tools in operation. Stroke machine speeds have risen in line with other machines. Modern high speed planers have cutting speeds from 30 to 90 ft. per minute with a return speed 200 ft. per minute. The development of electrical reversing gear is an indication of progress.

Milling machines are a great asset in a manufacturing shop, especially where any amount of duplicate work is done. An average cutting speed is about 70 ft. per minute, but this, of course, is dependent on the stock being removed. Feeds vary from 1/2 in. per minute to 20 in. or more, dependent on the work also.

Grinding machines are now an asset to railway shops, and are almost indispensable. They take work roughed out in other machines and finish it quickly and accurately. Grinding is in reality milling on a finer scale. Motion pins and shafts make a cheaper and better job than a lathe. A wheel 25 ins. diameter running at 5,000 ft. per minute gives good results. At the C.P.R. Montreal shops, new piston rods are rough turned in the lathe only, the body is ground to size removing 1-32 in. of diameter with a wheel running at 5,000 ft. per minute. The rod is rotated at 20 revolutions a minute, while the traverse of the wheel on the rod is 38 inches a minute. This entirely dispenses with the rolling operation.

A large amount of taper reaming is done in connection with locomotive work, but very little advantage seems to have been taken, so far, towards getting better tools than have been in use for many years. The straight fluted reamer may be all right for parallel holes, but for taper holes the spiral reamer is superior to all others, long or short. The straight fluted reamer has to take a cut its whole length at one time by a drag or scrape process. The cutting action here is weak, for the length of the shaving prevents little more than a scrape being taken. The eccentric fluted reamer has an advantage of not chattering and is superior to the ordinary equal fluted reamer, but with a spiral reamer we have a shearing action by means of which a cut is started at one point and carried until it leaves the edge of the tool. Spiral reamers should be made left handed, so that the tendency is to draw itself from the hole, and not into the hole. This left handed spiral will also, by the same tendency, clear itself of the chips, and will not clog nearly so much as the straight fluted reamer. The benefit of the spiral reamer is also shown in the fact that the power required to drive it is much less than with the straight fluted type of the same size. If these are made of high speed steel they will do better service still. Although they are most costly to make the saving will warrant the expenditure easily.

Milling cutters come in the same class as reamers. The practice of using inserted toothed milling cutters for the larger sizes is almost universal. Billet steel makes an ideal centre and the blades should be made from old high speed machine tools forged to proper dimensions and machined to fit the grooves in the body. The grooves in the body are cut at an angle to the axis, so as to approximate the ideal as nearly as possible, the ideal being of course the spiral. The blades are fitted and lightly caulked in place, and then turned over the top to requisite diameter, to be afterwards removed and hardened, and then replaced and ground. The straight blade cutter, however, has a disadvantage, not met with in a spiral milling cutter, which is rather difficult to overcome. It will be seen that the clearance lip in front of the cutting edge touches the work at varying angles throughout the length of the blade, so that if the blade is set that its centre has the correct

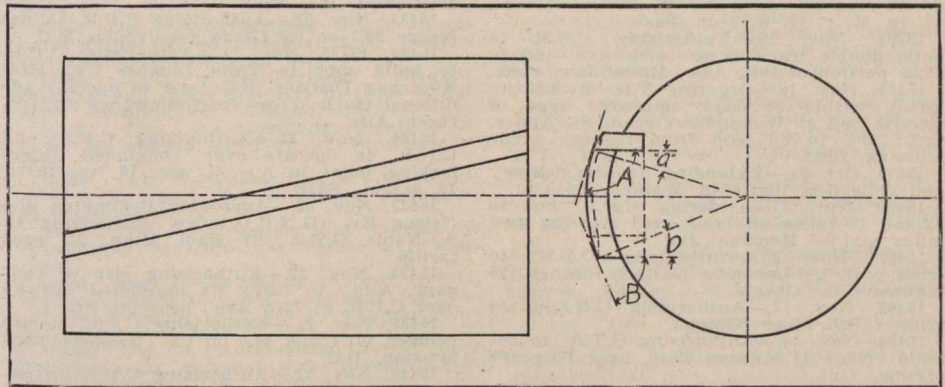
clearance lip, one end will have excessive lip, and the other a minus lip that results in a drag action at that end of the cutter. This also produces uneven strains which not only tend to loosen the blades, but which puts the whole cutter out of action just as soon as the weakest portion, which is where the scraping takes place, becomes dull. It is possible to set the blades back from the axis that there is always a cutting lip, but then the excessive lip at the other end is increased. Not much attention has been paid to this point until recently. A shop I am acquainted with now mills the entire face of the blade that projects from the body. This obviates the evil entirely and makes the tool an equivalent of a solid spiral milled cutter. The practice of making solid plain milling cutters entirely of billet steel is an economic one where the metal to be removed is of even character and not very hard, and is to be recommended, especially on new work of a straightforward nature. These tools are made precisely the same as any other cutters with spiral flutes, but are casehardened as deeply as possible. Axle steel or any high carbon steel will make admirable cutters if case-hardened properly.

The standardization of shop methods is a question that has not been very seriously considered in railway shops.

for repairs are ordered out by a certain date, in consequence of which every detail is scheduled to be repaired and replaced on the engine to conform with this date. This scheduling of work is comparable to the scheduling of trains, the dispatcher knows the location of all his trains and when they are due at the next point, accordingly he moves everything to ensure continual running and to avoid confusion. With this basis in our shop similar control is obtained.

To have an efficiently operated shop it is necessary to maintain a high standard of repair on every machine. Belts must not be neglected and a system should be employed to enable the belt man to be located at all times. The class of hoist each man has at his command is of importance, and wherever practicable individual hoist service is to be recommended. Jigs, labor saving devices, or ideas should be encouraged and advantage should be taken of the kinks put forward in our technical journals to reduce shop expense.

The foregoing is only the material side of the question of shop efficiency. It needs the co-operation of the whole staff to get results, and it has no place for a man who does not take a lively interest in every detail intended for the benefit of his shop. The co-operative effort of every workman is desirable. The object



Angles A and B show how angle between milled surface and front edge of cutter varies at each end of blade. Angle A is actual clearance lip at one end. Angle B is the minus lip that causes scraping.

until very recently. It is an essential feature in shops run on a scientific basis with piece work or bonus system in vogue. No one would argue that there is not a best method of doing a job, and if a means is secured whereby it is possible to find the best method and to maintain it, there is no room for doubt that considerable saving is effected. With new work the standardization of methods can be accomplished without very great difficulty, but even with repair work considerable can be done in merely definitely establishing the method of repair and the route the work is to take through the shop. The cost of getting the necessary records for this purpose is more or less high, because it entails a scientific investigation of each move by the operator and the condition under which he works. Just as a scientist, who, in order to solve any complex problems analyses each and every detail of the case very minutely, so must the same principle be applied to each operation performed in the shop, that details, insignificant in themselves, may be brought to light and studied as to whether they are essential to the job or not, and if they are, that they are being performed as efficiently as possible. This investigation obviously necessitates a man trained in the work, for it is beyond the foreman entirely to spend the time or to get the information requisite. The handling of material from shop to shop, and from machine to machine is also now brought down to a science. By a schedule system, locomotives shopped

in view is to bring the conditions affecting the shop to a point as unvarying as possible. So that the greatest advantage is taken of modern facilities, and the abuse of the same is minimized. In short, to use the words of a well known efficiency engineer, "Our object is to get the right job done on the right machine, in the right manner, by the right man and at the right time." When we achieve this we shall have an efficiently operated shop as far as the human element can make it.

The foregoing paper was read before the Western Canada Railway Club recently.

Railway Lands Patented.—Letters patent were issued during Oct., 1911, in respect of railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acres.
Canadian Northern Ry.	12.38
Canadian Pacific Ry.	361.59
Grand Trunk Pacific Ry.	219.65
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	639.00
Total	1232.62

A. J. Shapter, engine tester, G.T.R., Montreal, writes:—"I am well pleased with The Railway and Marine World."

The prize of \$1,000, recently offered by Sir Thomas G. Shaughnessy, President, C.P.R., for the best sample of wheat grown on the continent, has been won by S. Wheeler, Roathan, Sask. The alternative exhibit was by W. I. Macleod, Alta.

Orders by the Board of Railway Commissioners.

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

The dates given of orders, immediately following the numbers, are those on which the hearing took place and not those on which the orders were issued. In many cases orders are not issued for a considerable time after the dates assigned to them.

15390. Nov. 16.—Authorizing B.C. Public Works Department to build highway crossing over Shuswap and Okanagan Ry. (C.P.R.) at Grindrod station.

15391. Nov. 15.—General order re cartage limits at cartage points.

15392. Nov. 15.—Authorizing V.V. & E. Ry. to cross C.P.R., Vancouver Power Co.'s line, and highway, and also authorizing two overhead and one grade crossing of highways in New Westminster District, B.C.

15393. Nov. 15.—Approving location and plans of G.T.R. station at Maxville, Ont.

15394. Nov. 14.—Ordering G.N.R. to build spur to W. H. Haight's premises, Pipers Siding, B.C., and to file tariffs on fertilizer from Vancouver and New Westminster to said spur. This order is given in full on another page.

15395. Nov. 16.—Approving G.T.R. bylaw authorizing J. E. Dalrymple, Vice President, C. A. Hayes, F. T. M. and H. C. Martin, G.F.A., to issue tariffs of freight tolls.

15396. Nov. 16.—Authorizing G.T.P.R. to divert road in n.e. ¼ sec. 26 and s.e. ¼ sec. 35, tp. 35, r. 14, w. 3 m., Sask.

15397. Nov. 16.—Authorizing C.P.R. to build double track across 17th Ave. and to close portion of 18th Ave., Moose Jaw, Sask.

15398. Nov. 16.—Ordering T.H. & B.R. to install within 90 days, improved type of electric bell at Wellandport road, St. Annes, Ont., 20% to be paid from railway grade crossing fund.

15399. Oct. 24.—Extending express delivery and collection limits in Walkerville, Ont.

15400. Nov. 17.—Ordering C.P.R. not to exceed 10 miles an hour over crossing two miles east of Montreal Jct.

15401. Nov. 15.—Authorizing C.P.R. to cross with its Lacombe Easterly branch, 25 highways in Alberta.

15402. Nov. 17.—Authorizing C.N.O.R. to cross C.P.R. near Nipigon.

15403. Nov. 14.—Authorizing G.T.R. to rebuild bridge at mileage 59.40, near Palgrave station, Ont.

15404, 15405. Nov. 16.—Authorizing G.T.P. Branch Lines Co. to cross and divert highway at mileage 112, Sask., and to divert road on its Regina-Boundary branch.

15406. Nov. 17.—Authorizing Kettle Valley Ry. to build bridge at first crossing of Kettle River, north of Midway, B.C.

15407. Nov. 18.—Authorizing G.T.R. to build spur into Harris Coal Co.'s premises, Coxwell and Rhodes Aves., Toronto.

15408. Nov. 17.—Authorizing Midland Ry. of Manitoba (G.N.R.) to cross C.P.R. spurs in Winnipeg at five points.

15409. Nov. 18.—Approving detail plans of abutment and wing wall of Church St. subway, Mimico, Ont.

15410. Nov. 16.—Authorizing Ottawa Electric Co. to erect wires across C.P.R. on Carruthers Ave.

15411. Nov. 17.—Ordering Dominion Ex. Co. to restore as special tariff its Standard Tariff C.R.C. 15 from 26 to 170 miles in effect prior to Oct. 15, 1911, and define more clearly the points between which it shall apply on complaint of W. J. Guest Fish Co., Winnipeg, re increased rates on fresh fish, Gimli to Winnipeg.

15412. Nov. 20.—Ordering C.N.R. to complete by June 1, 1912, suitable stock yard accommodation at Englefeld, Sask.

15413. Sept. 26.—Stating conditions under which milk cans may be shipped in baggage cars after Oct 1. This order is given in full on another page.

15414. Nov. 21.—Approving revised location of G.T.P.R. station at Cans, sec. 9, tp. 22, r. 5, w. 2 m.

15415. Nov. 20.—Authorizing C.N.R. to cross public road on its Swift Current extension, Sask.

15416. Nov. 15.—Authorizing C.P.R. to build spur into W. C. Edwards Co.'s premises, Nepean tp., Ont.

15417. Nov. 21.—Approving detail plans of subway under C.P.R. at 11th Ave., Moose Jaw, Sask.

15418. Nov. 22.—Authorizing C.N.O.R. to divert Otter Creek and build bridge over it, in South Elmsley tp., mileage 50.1 from Ottawa.

15419. Nov. 20.—Authorizing C.N.O.R. to

divert Opinicon Road by overhead bridge, Loughborough tp.

15420. Nov. 20.—Authorizing G.T.P. Branch Lines Co. to cross and divert highway mileage 108.6 to 108.9, Prince Albert branch, Sask.

15421. Nov. 20.—Authorizing G.T.R. to operate over C.P.R. at Nipissing Jct., Ont., to a connection with T. & N.O.R., watchmen to be employed day and night, pending completion of interlocking plant.

15422, 15423. Nov. 21, 22.—Authorizing C.P.R. to expropriate certain lands for extension of yards, construction of machine shops, roundhouse, etc., at West Toronto, and land required for double track, at Perth, Ont.

15424 to 15426. Nov. 22.—Authorizing G.T.P. Branch Lines Co. to divert road at mileage 22.2 Battleford branch to cross two highways on its Biggar-Calgary branch at mileage 80.8 and 85, and to cross six highways with its Cutknife branch.

15427. Nov. 22.—Approving revised location of G.T.P.R. station at Clavet, sec. 9, tp. 53, r. 3, w. 3 m.

15428. Nov. 21.—Authorizing G.T.R. to build two additional tracks across road allowance 25, con. 1, Himsworth tp., Ont., and to connect with Trout Creek logging spur.

15429, 15430. Nov. 21.—Approving revised location of C.N.O.R. Sudbury-Port Arthur line in Nipigon tp., mileage 68.58 to 69.53 and through unsurveyed territory, mileage 19.52 to 203.24 from Sudbury Jct.

15431. Nov. 21.—Authorizing C.N.R. to open for traffic part of its Maryfield extension from Radville to Bengough, Sask., 45 miles.

15432. Nov. 22.—Authorizing C.N.R. to cross public road on its Prince Albert-Battleford line, Sask.

15433. Nov. 21.—Authorizing C.P.R. to use bridge 32.7 on its Lardo subdivision, B.C.

15434, 15435. Nov. 21.—Authorizing C.P.R. to build spur to Yahk Lumber Co., East Kootenay District, B.C., and to operate additional track across road allowance at Hillcrest, Alta.

15436. Nov. 22.—Authorizing C.P.R. and C.N.R. to operate over completed interlocking plant in n.e. ¼ sec. 18, tp. 16, r. 13, w.p.m., Sask.

15437. Nov. 22.—Approving Bedlington and Nelson Ry. (G.N.R.) bylaw authorizing H. A. Noble, G.P.A., St. Paul, Minn., to issue tariffs.

15438. Nov. 22.—Authorizing city of Calgary, Alta., to carry its municipal railway over C.P.R. at 12th Ave., near 6th St.

15439. Nov. 21.—Authorizing C.P.R. to use bridges 101.1 and 84.6 on its Thompson subdivision, B.C.

15440. Nov. 21.—Authorizing C.P.R. to expropriate lands for new building and yard room, near Aroostook Jct. on New Brunswick Ry.

15441. Nov. 22.—Rescinding order 15251 Sept. 14, re C.P.R. train service at Moosomin, Sask.

15442, 15443. Nov. 22.—Authorizing C.P.R. to build spur for Standard White Lime Co., from Ingersoll subdivision at mileage 5.28, West Oxford, tp., Ont., and to build spur for Leitch Collieries at Passburg, Alta.

15444. Nov. 22.—Authorizing C.N.R. and C.P.R. to operate trains, without coming to a stop, over interlocker at Stettler, Alta.

15445. Nov. 22.—Approving revised location of Algoma Eastern Ry. and diversion of trunk road at mileage 34.75, with approval of Ontario Government.

15446. Nov. 22.—Authorizing Alberta Central Ry. to cross highway at mileage 10.10.

15447. Nov. 20.—Rescinding par. 1 of order 11812, Sept. 19, 1910, re expropriation by G.T.P.R. of M. Keilty's land, Edmonton, Alta.

15448. Nov. 7.—Ordering Napierville Jct. Ry. to build station at Delson Jct., Que., within two months with leave to occupy G.T.R. and C.P.R. lands which may be necessary to serve travelling public.

15449. Sept. 15.—Authorizing Winnipeg Electric Ry. to cross C.P.R. Selkirk branch on Selkirk Ave. and McPhillips St., interlocking plant to be installed.

15450. Nov. 21.—Ordering G.T.R. to build foot subway at Wilson and Norfolk Sts., Guelph, Ont., cost to be paid by city, and any dispute to be referred to the Board.

15451. Nov. 7.—Ordering C.P.R. to protect G.T.R. crossing, north of Woodstock, Ont., by interlocker.

15452. Nov. 24.—Rescinding order 15221, Oct. 27, re interlocker to be installed at Pages, Ont., by C.P.R. and G.T.R.

15453. Nov. 20.—Authorizing C.N.R. to cross with its Vegreville line 12 highways in Alberta.

15454. Nov. 18.—Authorizing C.N.O.R. to build across farm road and creek on lot 20, con. 2, Camden tp.

15455. Nov. 24.—Approving location and plans of C.P.R. station at London Yard, Ont.

15456. Nov. 22.—Ordering Atlantic, Quebec and Western Ry. to provide undercrossing for A. Shannon, Breche a Manon, Que.

15457. Nov. 25.—Relieving C.P.R. from further protection of crossing, 1¼ miles north of Brigham Jct., Que.

15458. Nov. 25.—Authorizing C.P.R. to build double track across highway near 1st Ave., Port Arthur, Ont.

15459. Nov. 25.—Approving Alberta Central Ry. location, mileage 194.6 to 220, east from Red Deer.

15460 to 15462. Nov. 25.—Authorizing James Bay and Eastern (C.N.R.) to cross three public roads in Demeules and Ouitchouan tps., Que.

15463. Nov. 25.—Ordering C.N.R. to complete draining cattle pass on Y at Ochre River, Man., before June 1, 1912, under penalty of \$10 a day.

15464. Nov. 24.—Relieving G.T.R. from further protection of crossing west of Burlington Jct., Ont.

15465. Nov. 24.—Substituting word "construct" for "reconstruct" in order 15116, Oct. 11, re bridge at Bull River Bridge on Kootenay Central Ry., B.C.

15466, 15467. Nov. 23.—Authorizing C.P.R. to build spur for Sovereign Lime Works, near Angus station, Montreal, and extend spurs for Manitoba Glass Mfg. Co. on s.e. ¼ sec. 36, tp. 12, r. 7, e.p.m.

15468 to 15470. Nov. 23.—Authorizing C.P.R. to build spur for city of Calgary, Alta., across road allowance and city's existing spur; also spurs for Gordon Nail Co., Calgary, Alta., and Austin and Nicholson, in tp. 37, Algoma District, near Brunel station, Ont.

15471. Nov. 25.—Authorizing C.P.R. to build double track across C.N.R. in Carberry, Man., at mileage 105.6 Brandon subdivision.

15472. Nov. 23.—Re C.P.R. switching rates at Prescott, Ont. This order is given in full on another page.

15473. Nov. 17.—Dismissing application of Canadian Freight Association for approval of proposed local freight tariff of charges for use of refrigerator cars west of Port Arthur.

15474. Nov. 25.—Suspending, sine die, tariffs of C.N.R. and Ottawa and New York Ry., re baggage of excess size until all parties can be heard.

15475. Nov. 24.—Ordering C.P.R. on or before Apr. 1, 1912, to maintain permanent station agent at Winnipeg Beach, Man.

15476, 15477. Nov. 27.—Authorizing Alberta Central Ry. to build bridges across Red Deer River at mileage 5.93 and North Saskatchewan River at Rocky Mountain House, mileage 61.5.

15478 to 15480. Nov. 27.—Authorizing C.P.R. to rebuild bridges 43.3 over Upper Lachine Road, Farnham subdivision near Rockfield, Que., and 18.8 and 19.1, Ottawa subdivision.

15481. Nov. 25.—Approving C.N.O.R. revised location at Stonehouse Lake, Storrington tp., mileage 174.67 to 175.35 from Toronto.

15482. Oct. 12.—Authorizing C.N.O.R. to build across public road between cons. 7 and 8, Georgina tp.

15483, 15484. Nov. 27.—Approving location of C.N.O.R. station grounds at mileage 174.5, Storrington tp., and at Chaffey's Locks, South Crosby tp.

15485. Nov. 27.—Authorizing C.N.O.R. to build spur to rolling mills across Bay St., Belleville.

15486. Nov. 27.—Authorizing G.T.P.R. to build across and divert highway in n.w. ¼ sec. 5, tp. 25, r. 10, w. 2 m., Sask.

15487, 15488. Nov. 27.—Relieving G.T.R. from further protection at crossings of Beach Road in East Hamilton, and at Pikes Side Road, 1¼ miles west of Strathroy station, Ont.

15489 to 15492. Nov. 25, 28.—Authorizing C.P.R. to build spurs for W. J. Riley, n.e. ¼ sec. 28, tp. 12, r. 9, e.p.m., mileage 20.1 Lac du Bonnet Branch, Man., Ontario and Manitoba Flour Mills, McKim tp., Stobie Branch near Sudbury, Ont.; amending order 15389, Nov. 14, re spur to Martin Lenour Co.'s premises, St. Boniface, Man., and authorizing spur for National Brick Co., La Prairie, Que.

15493. Nov. 27.—Rescinding order 11264, July 18, 1910, re extending Brownlie St., Morse, Sask., over C.P.R., and authorizing C.P.R. to open and build Main St., over its line there.

15494, 15495. Nov. 27.—Approving change in location of C.P.R. station at St. Basil, N.B., and approving location of station at Westmount, Que.

15496. Nov. 28.—Authorizing C.N.O.R. to cross under C.P.R. at Smiths Falls.

15497, 15498. Nov. 27, 28.—Authorizing C.P.R. to build spurs for Imperial Oil Co., Wetaskiwin, and to ballast pit at Elcan, Alta.

15499 to 15505. Nov. 28.—Extending to June 1, 1912, time within which telegraph and telephone companies may charge tolls as

- they were immediately previous to July 13, 1906.
15506. Nov. 28.—Relieving G.T.R. from further protection at crossing in Victoriaville Que.
15507. Nov. 28.—Ordering G.T.R. not later than Apr. 20, 1912, to build joint crossing between farms of J. A. Riddell and H. Dix, Williamsburgh tp., Ont.
- 15508, 15509. Nov. 27.—Ordering C.N.Q.R. to install gates at Joliette St. by July 1, 1912, 20% to be paid from railway grade crossing fund, and gates at Aylwin St., Montreal.
- 15510, 15511. Nov. 28, 20.—Authorizing G.T.P.R. to cross and divert highway at mileage 39.6 and 92.4, Sask.
15512. Nov. 29.—Correcting plan approved by order 12342, Nov. 21, 1910, in connection with centre line of G.T.P.R. Regina-Moose-Jaw branch.
15513. Nov. 30.—Authorizing G.T.P. Branch Lines Co. to cross and divert road at mileage 33, Sask.
15514. Nov. 30.—Authorizing G.T.R. to expropriate certain lands on east side of Elgin St. and north of Robert St., Hamilton, Ont.
- 15515, 15516. Nov. 30, 29.—Relieving G.T.R. from further protection at crossings in lot 11, Tecumseh tp., and about 2½ miles north of Cookstown, Ont.
15517. Nov. 30.—Authorizing C.P.R. to use bridges at mileage 65.7 and 87.2, Edmonton subdivision, Alta.
15518. Nov. 29.—Authorizing C.P.R. to build its Wilkie-Anglia branch across four highways in Saskatchewan.
15519. Nov. 30.—Authorizing C.N.R. to cross public road on its Prince Albert-Battleford line, Sask.
15520. Nov. 30.—Authorizing C.P.R. to cross with its Kerrobert Northeastly branch, two highways at mileage 0.41 to 0.98.
15521. Nov. 27.—Ordering C.N.Q.R. to complete installation of gates at Nicolet St., Montreal, by July 1, 1912, 20% to be paid from railway grade crossing fund and 30% by the city.
15522. Nov. 29.—Authorizing C.N.R. to open for traffic its line from Warden to Drumeller, 63 miles.
15523. Nov. 29.—Authorizing C.N.R. to operate under Queen St. bridge, Toronto, until viaduct plans are settled.
15524. Nov. 29.—Authorizing Saskatchewan Public Works Department to build highway across C.P.R. between secs. 3 and 4, tp. 18, r. 32, w.p.m.
15525. Nov. 27.—Authorizing city of Sherbrooke, Que., to extend Meadow St. under G.T.R.
15526. Nov. 29.—Dismissing C.P.R. application to rescind order 605, July 25, 1905, re interswitching at London, Ont.
15527. Nov. 27.—Ordering C.N.Q.R., before Jan. 1, 1912, to submit plan for station in Maisonneuve, Que., station to be completed when Board directs.
15528. Nov. 30.—Authorizing C.N.O.R. to build bridge over Rideau canal at Chafey's Locks.
15529. Nov. 29.—Authorizing city of Calgary, Alta., to build subway under C.P.R. at 9th Ave. east, between 15th and 17th Aves. east, 60% to be paid by city, and 40% by company.
15530. Dec. 1.—Amending order 14605, Aug. 17, which authorized Calgary and Edmonton Ry. to carry its main line over Edmonton, Yukon and Pacific Ry. in Edmonton, Alta., by a bridge, substituting Edmonton, Yukon and Pacific Ry. for applicant company.
15531. Dec. 1.—Amending order 15480, Nov. 27, by substituting rebuild for build.
- 15532, 15533. Dec. 1.—Approving revised location of C.N.O.R. Sudbury-Port Arthur line in Dorion tp., mileage 48.8 to 50.5 from Port Arthur; and at Pearl station, MacTavish tp., mileage 534.72 to 535.01 from Sudbury.
15534. Dec. 1.—Approving G.T.P.R. revised location from south line of sec. 3, tp. 52, r. 24, to west line of sec. 34, tp. 47, r. 28, w. 5 m., mileage 55.15 to 93.92.
15535. Dec. 1.—Authorizing G.T.P. Branch Lines Co. to cross with its Cutknife branch highways from s.e. ¼ sec. 36, tp. 43, to s.e. ¼ sec. 2, tp. 44, r. 17, w. 3 m., mileage 1.13 to 3, West Saskatchewan District.
15536. Dec. 1.—Authorizing city of Winnipeg to extend Sargent Ave. across C.P.R. Pembina branch.
15537. Dec. 1.—Amending order 15479, Nov. 27, by substituting rebuild for build.
15538. Sept. 14.—Naming express delivery and collection limits for Yorkton, Sask.
15539. Nov. 30.—Approving supplement 7 to Express Classification for Canada 2, in connection with order 15288, to take effect not later than Jan. 1, 1912.
15540. Nov. 25.—Ordering G.T.R. to amend Special Tariff on coal and coke from Rouses Point, N.Y., not later than Jan. 15, 1912 so as not to exceed certain rates.
15541. Dec. 1.—Authorizing C.P.R. to build two spurs for Canadian Copper Co., Copper Cliff, Ont.
15542. Nov. 27.—Approving amended plan for protection where G.T.R. crosses Montreal, Park and Island Ry. near Turcot, Que.
15543. Nov. 27.—General order 12542, Dec. 9, 1910, re blau-gas, by striking out subsec. c, par. 1.
15544. Dec. 4.—Authorizing C.N.O.R. to cross C.P.R. for construction purposes only, at east side of Rideau River, near Ottawa, watchman to be appointed by C.P.R. and paid by C.N.O.R.
15545. Dec. 4.—Amending order 15344, Oct. 31, which approved standard plans for pile and frame trestles for C.N.R. eastern lines, by substituting Montreal-Port Arthur line for eastern lines.
15546. Dec. 2.—Ordering that \$5,000 be paid out of railway grade crossing fund towards cost of building subway under C.N.R. at 23rd St., Saskatoon, Sask.
15547. Dec. 1.—Authorizing G.T.R. to build spur into Twin Lake Lumber Co.'s premises, Parry Sound District, Ont.
15548. Dec. 2.—Authorizing C.P.R. to build bridge 1.43 over Kettle River, on Granby Smelter spur, B.C.
15549. Dec. 2.—Authorizing C.P.R. to build spur for Western Supply and Equipment Co., Calgary, Alta.
- 15550, 15551. Dec. 2, Nov. 30.—Authorizing C.N.O.R. to carry public road over its tracks on a structure at station 1131-3, Nipigon, Ont., and to cross creek at station 41-51, lot 22, Camden tp.
15552. Dec. 4.—Authorizing C.P.R. to build spur for G. R. Marnoch, Lethbridge, Alta.
15553. Dec. 1.—Authorizing C.P.R. to cross with its Quill Lakes branch, 29 highways in Manitoba.
15554. Dec. 4.—Authorizing G.T.R. to rebuild bridge 1, at milepost 8.06, District 30, Hawkesbury branch, Ont.
15555. Dec. 4.—Authorizing Niagara, Welland and Lake Erie Ry. to cross G.T.R. spur on Muir St., Welland, Ont.
15556. Dec. 2.—Approving location of C.N.O.R. station grounds at St. Hermas, Que.
15557. Dec. 4.—Authorizing C.P.R. to use bridges 21.7 and 22.5 on Moose Jaw subdivision, Sask.
15558. Dec. 5.—Ordering that flagman be maintained by C.P.R. at Talbot St., Winnipeg.
15559. Dec. 4.—Extending to Nov. 1, 1912, the time allowed under judgment for free return of empty packages by express companies prior to Mar. 1, 1911.
15560. Dec. 4.—Authorizing Noisy River Telephone Co. to erect wires across G.T.R. in Nottawasaga tp., Ont.
- 15561, 15562. Dec. 5.—Authorizing C.N.R. to cross with its Halboro branch five highways in Manitoba and Saskatchewan, and to cross with its proposed second track, Pembina highway, Fort Rouge, Winnipeg.
15563. Dec. 4.—Approving plan of Spanish River Pulp and Paper Mills, Ltd., for tunnel under Algoma Eastern Ry. at Espanola, Ont.
15564. Dec. 6.—Authorizing C.P.R. to cross with its Regina, Saskatoon and North Saskatchewan branch, 22 highways and road diversion mileage 25.88 to 56.28, Sask.
15565. Dec. 6.—Authorizing G.T.P. Branch Lines Co. to operate spur from its Toffield-Calgary branch into Calgary Collieries, Ltd.
15566. Dec. 6.—Authorizing C.P.R. to build spur into Jewell Lumber Co.'s premises, East Kootenay District, B.C.
15567. Dec. 6.—Authorizing C.N.R. to cross public road on its Prince Albert-Battleford line.
15568. Dec. 6.—Authorizing C.N. Pacific Ry. to cross under Esquimalt and Nanaimo Ry. near Parson's Bridge, B.C., and rescinding order 12695, Jan. 5, which authorized similarly.
- 15569, 15570. Dec. 6.—Authorizing C.P.R. to build spurs for Taylor Lumber Co., near Kimberley, B.C., and Rock Creek Lumber Co., East Kootenay District, B.C.
15571. Dec. 6.—Authorizing C.N.Q.R. to cross Montreal St., at Pius IX. Ave., Maisonneuve, Que., and to move derailed 14 ft. farther south.
15572. Dec. 7.—Ordering G.T.P.R. in addition to requirements of order of Sept. 9, to stop trains for passengers at King St., Entwistle, Alta., freight to be handled at sawmill siding, and to build highway north-erly along Queens Ave. to Main St. and along Main St. to Second St. as shown on Station survey plans of Mar. 10 and Apr. 1, under penalty of \$100 a day in default.
15573. Dec. 6.—Authorizing C.P.R. to build spur for Robinson & Lequime Lumber Co., Osyoos division, Yale District, B.C.
- 15574, 15575. Dec. 7, 6.—Authorizing C.P.R. to cross and divert highway on its Estevan-Forward branch at mileage 4.183 and cross highway with its Swift Current branch at mileage 21.82, Sask.
15576. Dec. 6.—Approving C.N.R. plan of standard portable depot to be erected at Mountain, B.C.
15577. Dec. 6.—Authorizing C.P.R. to build bridge 108.6 on its Cascade subdivision, B.C.
15578. Dec. 9.—Recommending to Governor-in-council sanction of the lease between South Ontario Pacific Ry. Co. and C.P.R.
15579. Dec. 6.—Extending until Jan. 1, 1912, time within which G.N.R. rates be filed in accordance with order 15394, Nov. 14, re ashes for fertilizing purposes for W. H. Haight, Pipers Siding, B.C.
15580. Dec. 7.—Authorizing T.H. & B.R. to operate construction and freight trains across G.T.R. and Hamilton Radial Ry. pending installation of protection at spur to Craselli Chemical Co. authorized by order 15294, Nov. 7.
15581. Dec. 7.—Authorizing Cymri municipality to build road across C.P.R. one mile west of Halbrite, Sask.
15582. Dec. 11.—Amending order 15201, Oct. 11, to provide that M.C.R. gates at bridge St., Tilbury, Ont., be operated day and night.
15583. Dec. 9.—Amending order 15185, Oct. 20, re C.P.R. spurs by substituting Owen Sound for Sydenham tp.
- 15584.—Dec. 11.—Authorizing Essex Terminal Ry. to use crossing at Windsor, Ont., with M.C.R. for construction purposes only for 60 days.
15585. Dec. 5.—Extending time for completion by G.T.R. of interswitching track at Ingersoll, Ont., to June 15, 1912, cost to be divided equally between G.T.R. and C.P.R., track scales to be furnished by town of Ingersoll and installed by C.P.R. in front of Ingersoll Nut Co.'s premises.
15586. Dec. 9.—Authorizing Esquimalt and Nanaimo Ry. to open for traffic its line from Cameron Lake, mileage 107.6 to Alberni mileage 135.
15587. Nov. 27.—Dismissing T. R. Smith's application for better train service from St. Lawrence and Adirondack Ry. (N.Y.C. & H. Rd.) between Highlands and Montreal, Que.
15588. Dec. 7.—Authorizing C.N.O.R. to build bridge across highway between lots 28 and 29, con. 4, station 1768.05, Darlington tp.
15589. Dec. 12.—Approving revised location of G.T.P. Branch Lines Co. Cutknife branch, mileage 1.13 to 3.0 West Saskatoon District.
15590. Dec. 13.—Approving correction in G.T.P.R. location of Moose Jaw northeasterly branch as approved by order 14005, June 20, 1911.
- 15591 to 15594. Dec. 13, 12.—Authorizing C.P.R. to rebuild trestle at bridge 5.1, Brandon subdivision, Man., to use bridges at mileage 79.1, 113.5, Cascade subdivision, B.C., 15.3 and 36.6 Cranbrook subdivision, B.C., and at 64.4, 131.7, 132.3 Esquimalt and Nanaimo Ry.

Passenger Rate Meetings at Detroit.

The Niagara Frontier Summer Rate Committee will hold its annual meeting at the Hotel Cadillac, Detroit, Mich. The representatives will meet on Jan. 17 and 18, at 9 a.m., and arrange details as far as possible, and their report will be submitted to the general meeting on July 19, at 11 a.m.

The Great Lakes and St. Lawrence River Rate Committee will meet at the same place on Jan. 19, immediately after the adjournment of the Niagara Frontier Summer Rate Committee's meeting.

The International Water Lines Passenger Association will meet at the same place on Jan. 18, at 4 p.m.

During Oct., 1911, 18 employes were killed and 38 were injured in the course of their work in the operation of Canadian railways, and six were killed and 11 injured in connection with railway construction. In the former case six deaths were due to being run over, four to collisions, three to being struck by trains, two to being crushed between cars, and one each to a derailment, to an explosion and to falling material; and in the latter, two deaths were due to premature explosions, two to suffocation in a cave-in, and one each to being run over, and to being struck by a train.

The Canadian Pacific Railway Terminal at Victoria Harbor.

By G. G. Ommaney, Resident Engineer, Canadian Pacific Railway.

The C.P.R.'s new Victoria Harbor terminal on the southern shore of Georgian Bay, now practically completed, is designed to be the eastern lake terminus of the new grain route of that system. This route has as its objective a reduction of mileage to the eastern distributing points, as compared with that of the present route by way of Owen Sound and Toronto. Shortening of the distance is effected both by a more direct steamship line from the western ports and by the construction of a new railway connecting Victoria Harbor with Montreal by way of Peterborough, so as to eliminate the southerly deviation to Toronto. Connection with the latter city will be maintained, however, on the Sudbury-Kleinberg branch by way of Coldwater Junction. A further considerable advantage over the old route will be gained in the greater trainloads made possible by the easier curves and gradients on the new road, which will nowhere exceed 4 deg. and 0.4 per cent. respectively.

THE SLIP AND GRAIN ELEVATOR.

The construction of the Victoria Harbor terminal embraces a slip 600 ft. wide and 25 ft. deep, flanked by parallel wharves, 3,000 ft. long on the one side and 3,600 on the other. The slip is approached by an entrance channel about half a mile long, the entire channel and slip having been formed by the removal of some 3,000,000 cu. yds. of soft material and 200,000 cu. yds. of rock by dredging. The location provides perfect shelter to vessels in all kinds of weather. This dredging has been carried out under Government supervision, the contractor, since the inception of the work in 1908, having been the Canadian Dredge and Construction Co., with whom was associated up to 1910 the Owen Sound Dredging Co. The dredging plant has consisted, during the most of the time, of three large dipper dredges, handling from 2,000 to 5,000 cu. yds. per day, with attendant hopper scows and a large rock-drilling plant. The output of this dredging plant while working in rock has been from 400 to 600 cu. yds. per day.

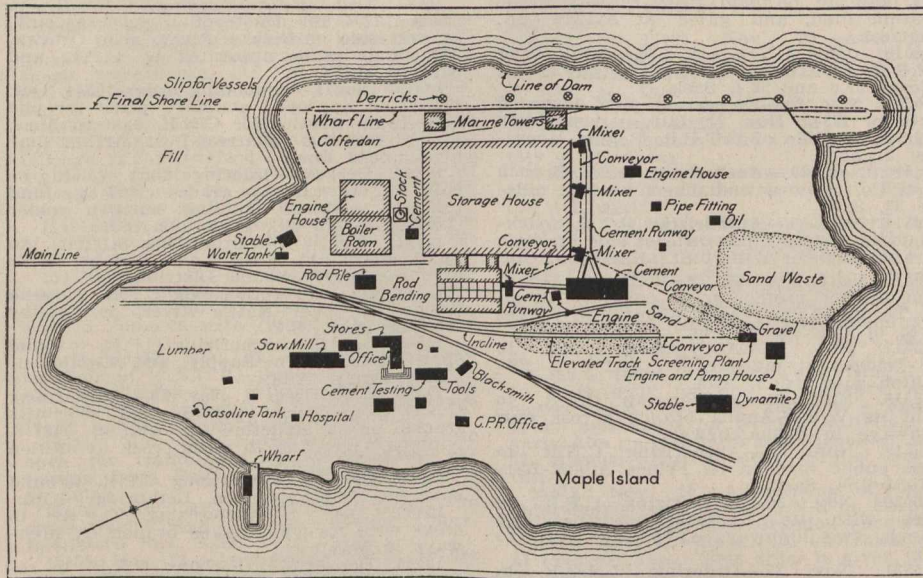
On the east side of the slip there has been constructed a 2,000,000 bush. grain elevator, unloading from vessels by means of two movable marine towers, each having a leg capacity on the dip of 20,000 bush. per hour. The grain can be elevated and distributed to any

place, about three-quarters of a mile long, before construction could be started. This trestle was subsequently filled from trains. Work on the elevator started in May, 1909, and the plant was handling grain in the fall of 1910.

METHOD OF BUILDING THE ELEVATOR.
About 30,000 cu. yds. of concrete were

raised as the work proceeded, by means of screw jacks operating on threaded rods extending the full height of the bin walls. The work was thus continuous, the actual time of construction of the full height of 80 ft. of the bin walls being somewhere less than six weeks.

The two movable marine towers, the



Layout of Elevator, etc., on Maple Island.

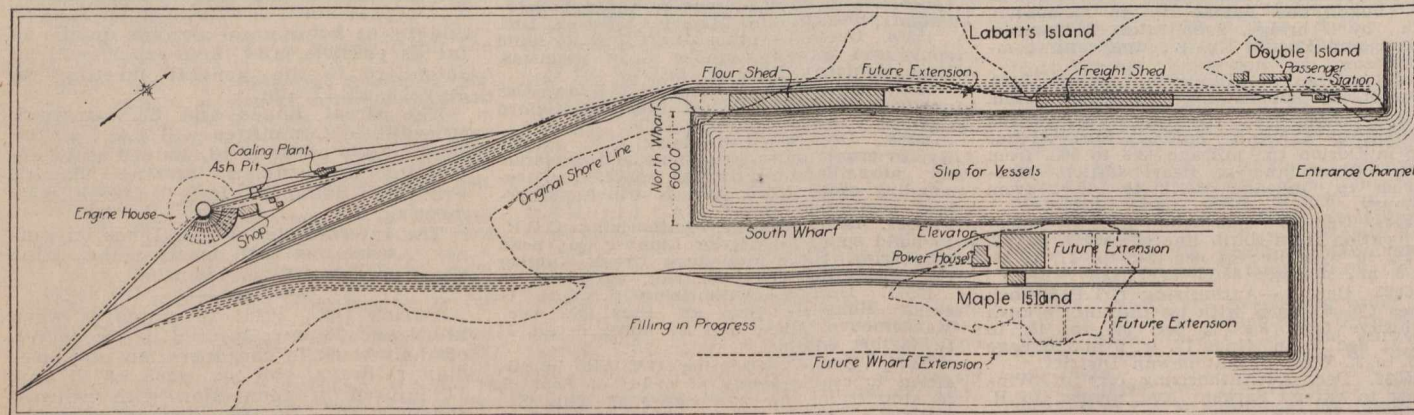
placed in the construction of this elevator and the wharf in front of it, the latter being 800 ft. long. Material for concrete was brought in by train, unloaded from centre-dump Hart cars into a belt conveyor, which carried it to a screening and washing plant. This plant was furnished with stone and sand storage bins, from which the material could be delivered to any one of four pairs of feeding bins located immediately over the concrete mixers. The mixers dumped into hoist buckets, which elevated the concrete to any required height, whence it was conveyed by buggies to the forms, the haul nowhere exceeding 200 ft., except in the case of the wharf. This method of handling the material proved remarkably successful, the only trouble encountered being due to the installation of canvas conveyor belting at the commencement of work, which proved unable to withstand the excessive wear and tear, and was replaced during the progress of the work by rubber belting.

All of the storage units of the ele-

cupola of the working house and the remainder of the superstructure of the elevator are of structural steel.

The power installation for the elevator consists of two 500 k.w. turbo-generators, developing 3-phase, 60 cycle, 600-volt alternating current. Steam is derived from four Babcock and Wilcox water-tube boilers of 250 h.p., fitted with automatic chain grate stokers. The various conveyors and elevators are run by line shafts operated by individual motors.

The wharf in front of the elevator has a gravity section concrete wall, 800 ft. long, founded on the limestone rock. It was constructed in a trench excavated dry behind an earth cofferdam built from the material removed from the foundations. The original depth of water on the site of the dam was only 2 or 3 ft. The situation was favorable for this form of construction, and the leakage was all taken care of by two 4 in. centrifugal pumps. Foundation level of the wharf was 26 ft. below the water level.



General Plan of Terminals showing Present Structures and Proposed Extensions.

part of the storage house or to the working house, after weighing, whence it can be loaded into cars which are automatically fed through the track sheds by car pullers.

The site of the elevator was formerly an island, which had to be connected with the mainland by means of a trestle,

the elevator consist of concrete bins having 8 in. walls reinforced with continuous spiral 3/4 in. steel rods. The joints are connected in each case by means of hooks and a link, a wedge being inserted for tightening. Forms were erected over the whole area of the bins to a height of 3 ft., and were simultaneously

FREIGHT AND FLOUR SHEDS.

On the west side of the main terminal slip a flour shed 800 by 89 ft. wide has been erected, and a freight shed 704 by 71 ft. The flour shed is constructed of steel columns and roof girders, with continuous sliding doors on both wharf and track sides. Concrete end walls and

fire walls are provided, and the flooring is of 2 in. pine. The floor is at car-door level on the track side, and the wharf is 4 ft. above water level.

The freight shed is a timber structure having two loading tracks running through it on either side of an 11 ft. trucking platform. Continuous sliding doors open on the wharf, the level of which is 4 ft. above water level. Track doors are provided at the entrance end. A concrete fire wall is in the middle, and office accommodation in one end.

The whole of the site of these sheds was filled with sand dumped from trains after the wharf had been built, and piles were driven for the foundation, all of them being cut off below water level. The wharves at the front of the sheds were constructed of cribs, with concrete tops above water level, each crib unit being 108 ft. long 24 ft. high and 24 ft. wide at the base. The front and cross walls of the cribs were composed of 2 in. hemlock securely nailed with $4\frac{1}{2}$ in. nails, the whole being built on the wooden bin principle. These walls rested on timber sills. Flotation of the lumber was overcome by means of long vertical $1\frac{1}{2}$ in. rods connecting timbers spanning the crib walls at various levels. The crib was divided into pockets, every alternate pocket having a solid 2 in. floor to contain the filling necessary for sinking it into place.

METHODS OF PLACING WHARF CRIBS.

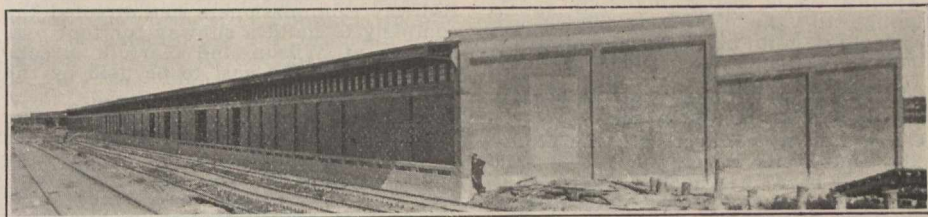
The operation of building cribs was continued during both winter and summer. In the summer the sills for a crib were first built on a raft, from which the crib was readily launched when the walls had reached a height inconvenient for further construction. By placing the sills on well greased pine skids on the raft, the launching could be readily effected without the use of mechanical power. Sand filling for the cribs was deposited along the shore by trains, and was wheeled out by barrows along floating runways. About 100 cu. yds. was required to insure the stability of each crib before back filling could be started.

In the winter the site for a crib was first cut out of the heavy ice, which is

tion was started. The time taken to build and sink one crib averaged nine days. The filling consisted entirely of sand, which was supplied by train filling after the crib had been sunk into its final position.

In addition to the principal structures mentioned, the C.P.R. is building a

first hundred miles ran through a deep swamp and so on. In consequence of these representations, the Government decided not to allow the work to go on until there had been an investigation. There will be no further delay in construction than is absolutely necessary to check up the surveys.



Flour Shed at Victoria Harbor, Ont.

roundhouse, turntable, coaling plant, ice house, general offices, stores, passenger station and other buildings. All the necessary filling and grading of the large terminal yard has been done by trains.

The design of the elevator and its power plant, and details for the $1\frac{1}{2}$ miles of wharves, were prepared by the John S. Metcalf Co., Ltd., Montreal, which was also the contractor for the flour and freight sheds and the wharf construction. The flour and freight sheds were designed by the C.P.R. engineering department, the building details being worked out by the contractor. The writer was resident engineer in charge of construction.—Engineering Record.

Since the foregoing was put in type the name of Victoria Harbor has been changed to Port McNicoll in honor of D. McNicoll, Vice President, C.P.R.

The Railway to Hudson Bay.

A resolution was passed by the House of Commons, Dec. 4, directing a return giving all papers, correspondence and orders-in-council in connection with the awarding of the contract for the building of the railway to Hudson Bay, and of all orders suspending work on the same. The Minister of Railways said

Ottawa press reports Dec. 14 state that the Dominion Government has under consideration a proposition for the extension of the projected line westward from Pas Mission, the present starting point of the line, westerly through Melfort to Saskatoon, Sask. The Chief Engineer in charge of the work at Winnipeg, J. Armstrong, has been in Ottawa, conferring with the Minister of Railways in connection with the entire project.

Further reports from Ottawa state that the result of the hydrographic survey of the waters of Hudson Bay, made by the steamer Stanley, are now under consideration, and it is reported that the survey shows that vessels of special construction will be necessary to navigate the bay, owing to the prevalence of ice, and that Fort Churchill will provide a better harbor than Port Nelson, notwithstanding the fact that the entrance is narrow. The water is very shallow at Port Nelson, in fact only 24 ft. was found, with the shore out of sight. (Dec., 1911, pg. 1129.)

Oil Burning Locomotives for the C.P.R.

As stated in previous issues, crude oil is to be used for fuel for C.P.R. locomotives between Field and Kamloops, B.C., and tanks of 200,000 galls. capacity are to be built at seven places in that territory. We are now officially advised that 76 locomotives are to be converted to oil burners as follows:—

41 class N-3, cylinders $23\frac{1}{2}$ by 32 ins., driving wheels 63 in. diameter.

16 class D-9, cylinders 21 by 30 ins., driving wheels 63 ins. diameter.

6 class R-1 Mallet compounds, cylinders 23 and 32 by 26 ins., driving wheels 58 ins. diameter.

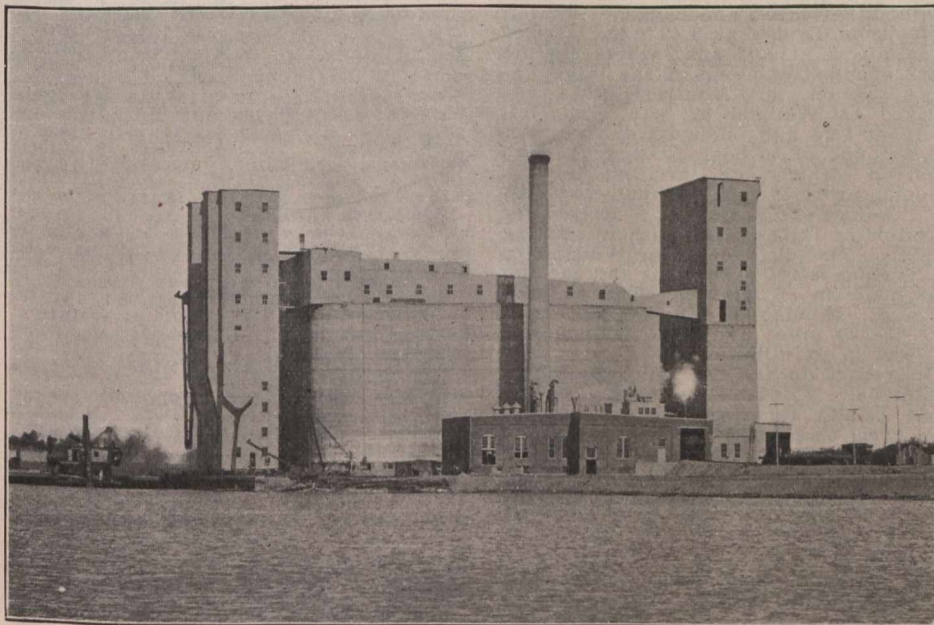
13 small locomotives of various classes.

The mechanical department is getting information as to the types of oil burners in use on other lines before deciding on what type will be adopted. The oil burning equipment and oil tanks will probably be built at the Angus shops, Montreal, and shipped to the west for application to the locomotives.

It is not contemplated at present to build any new locomotives specially for burning oil, but it is possible that five now under construction by the Montreal Locomotive Works may be changed over for oil burning.

The Halifax and South Western Ry. has been ordered to pay \$1,950 damages for loss of a house and barn by fire, due to sparks from a locomotive setting fire to dried grass, etc., along its right of way.

The Quebec branch of the Canadian Society of Civil Engineers at its annual meeting, Dec. 6, elected W. D. Baillairge, Chairman, and A. Amos, Secretary for the current year. Various questions affecting navigable rivers were discussed, and the meeting concluded with a social entertainment.



Canadian Pacific Railway Elevator at Victoria Harbor, Ont.

often 27 in. thick at Victoria Harbor, and the hole then allowed to freeze thick enough to bear the weight of the sills. These were laid out on the thin ice and the building of the walls was continued.

The work of dredging on the crib sites was very carefully done, and close soundings taken before any construc-

tion there was no change in policy in reference to the building of the line, and the Government would fulfil the promises made in respect to it when in opposition. Representations had been made to the Department that the line did not start from the right point, that the surveys were not correct, that the

Grand Trunk Railway Construction, Betterments, Etc.

New England Plans.—The Providence, R.I., city council has passed an ordinance granting the Southern New England Ry. the right to lay tracks along the west side of Providence River.

Application is being made by E. H. Fitzhugh to the Vermont Legislature for a charter to build a railway from Barre to Williamstown, under the title of the Barre Granite Ry. The matter will come before the Public Service Commission Jan. 8. It is proposed that the new railway connect with the Montpelier and Wells River Rd. It is said Barre will be made the headquarters of the new road if the project materializes.

The question of the union railway station at Burlington, Vt., came before the Public Service Commission Dec. 5, but its decision has not been announced.

General Betterments.—During the past year the G.T.R. is reported to have completed the following betterments: overhead bridges at Brighton, Oshawa, Scarborough, Groveton, Grimsby, Mallorytown and Palmerston, Ont.; subways, East Brighton, Vt., Pownal and Cobourg, Ont.; new stations at Cobourg, Guelph, Sarnia Junction, Brule Lake, Thorndale, Wyebridge, Hepworth, Maxville, Dublin, Ont., and Beloeil, Chaudiere Jct., and Beauharnois, Que.; new freight sheds at Cobourg, Paris, Junction, Glencoe and Bowmanville, Ont., and West Detroit, Mich., also a fruit shed at Detroit, Mich. large locomotive house at Tiffin, Ont. Coal chutes at Ottawa, Ont., and Elsdon, Ill. Y.M.C.A. buildings at Port Huron, Mich., and Elsdon, Ill.

Richelieu River Bridge.—The G.T.R. is renewing the bridge across the Richelieu River, near Lacolle, Que., formerly part of the Canada Atlantic Ry. The existing draw span is a steel structure 186 ft. over all, and is to be replaced by a new steel swing 250 ft. over all, having a capacity of E-50, loading. The new bridge will afford two channels of 97 ft. each, in the clear. The present pivot pier is octagonal in shape, and is of concrete on a grided flooring resting upon piles. This pier is to be replaced by a new one, square in shape, and enlarged to meet the new conditions. The pier will be built solid from the river bed up. The rest piers at present are of concrete, supported on piles, but they are to be taken down and replaced by new concrete piers enlarged to meet the special circumstances. The present approaches to the draw on either side are composed of pile bents for an aggregate length of 850 ft. This pile work is to be replaced by 12 deck plate girders resting on new concrete piers, which will be placed 60 ft. apart, centre to centre. The rail level at the bridge is to be raised 3½ ft. to accommodate the new superstructure. The John S. Metcalf Co., Ltd., Montreal, has the contract for the substructure, at a cost of about \$140,000. The superstructure is to be built and erected by the Dominion Bridge Co. This work is under the supervision of H. R. Safford, Chief Engineer of the G.T.R. system.

Winter Warehouse at Montreal.—The G.T.R., which has rented the Donaldson shed at the wharf for the winter, is reported to have laid a track along the revetment wall, to facilitate the handling of freight thereto.

Humber Bridge.—One of the abutments of the newly built bridge over the Humber River, a part of the Toronto Lake Shore improvement showed signs of settlement after having been completed, and traffic was suspended. The abutment was temporarily reinforced, and traffic was resumed Nov. 23, on the northern tracks. There has been no further sign of settling, and the engineers believe that a solid bottom has

been found by all parts of the abutment. The total settlement was about four inches.

Hamilton.—The Board of Railway Commissioners has authorized the company to expropriate certain lands in Hamilton, Ont., on the east side of Elgin St., and north of Robert St.

Guelph Subways, etc.—The Board of Railway Commissioners has directed the company to build a subway for foot passengers at Wilson and Norfolk streets, Guelph, Ont., the cost to be paid by the city.

Stratford Station and Yards.—The Stratford, Ont., city council has under consideration plans showing the location and the details of the proposed new station, and rearrangement of the yards. The city is asked to approve the plans before they are submitted to the Board of Railway Commissioners. The foundations of the new station building have been laid.

London Improvements.—A manufacturing firm in London, Ont., is reported to have been notified by the G.T.R. that the site of its factory may be required for the projected improvements in that city, and that its lease, which expires within two years, cannot be renewed. Other firms occupying G.T.R. property are reported to have received similar intimations.

Bay City, Mich.—U.S. press reports state that the company has secured the last of the property needed at Bay City, Mich., for its proposed terminal station and yards. The new work, it is stated, will cost about \$1,000,000.

A Record Run on the Michigan Central Railroad.

W. C. Brown, President, and other officials travelled on a special train from Suspension Bridge, N.Y., to Windsor, Ont., on Nov. 9, making what is believed to be a record run. We were unable to obtain the official record in time for our last issue, but it is not too late to be of great interest now.

The train, which consisted of three modern official cars and one modern combination coach and baggage car, left Suspension Bridge at 8.49 a.m., arrived at Montrose at 9.02 a.m., where engines were changed and one of the large Pacifics put on, left Montrose 9.05 a.m., arrived at Welland at 9.18 a.m., left there at 9.23 a.m., delayed five minutes on account of a boat passing through Welland drawbridge, arrived at St. Thomas at 10.49 a.m. without stop, left St. Thomas 10.51½ a.m., arrived at Windsor at 12.23½ p.m. without making a stop. The distance from Welland to St. Thomas is 100 9-10 miles and the run was made in 86 minutes. The distance from St. Thomas to Windsor station is 109 62-100 miles and this distance was covered in 92 minutes.

In regard to the foregoing an officer writes us:—"Considering the size of the train, I think this is the fastest run that has ever been made between Welland and Windsor and that it will be found equal to, if not better than, long distance fast runs on other railways for similar distances, in view of the fact that it was necessary to change engines at St. Thomas."

Press reports in England, which state that the Dominion Ex. Co. is now operating over the Canadian Northern line, are apt to be somewhat misleading. The facts are, that the Canadian Northern Ex. Co. is not at present soliciting business in Great Britain, and that the Canadian Northern Ex. Co. and the Dominion Ex. Co., are operating jointly on the Royal Line, owned by the Canadian Northern Steamships, Ltd.

Canadian Northern Railway Earnings, Expenses, Etc.

Gross earnings, working expenses, net profits, increase or decreases, compared with those for 1910-11, from July 1, 1911:—

Earnings.	Expenses.	Net	
		Earnings.	Net Increase
July \$1,475,900	\$1,114,300	\$361,600	\$13,400
Aug. 1,420,600	1,105,900	314,700	51,700
Sept. 1,576,400	1,157,000	419,400	38,200
Oct. 2,028,900	1,348,500	680,400	99,900
\$5,501,800	\$4,725,700	\$1,776,100	\$203,200
Inc. 1,276,000	1,072,800	203,200	.....

Approximate earnings for November, \$2,001,500, and for two weeks ended December 14, 1911, \$885,400, against \$1,565,400 and \$621,100 for same periods 1910.

The mileage operated during October 1911, was 3,731 against 3,304 during October 1910.

Canadian Pacific Railway Earnings, Expenses, Etc.

Gross earnings, working expenses, net profits, increases or decreases, compared with those for 1910-11, from July 1, 1911:—

Earnings.	Expenses.	Net	
		Profits.	Net Increase
July \$9,661,818.14	\$5,958,789.81	\$3,703,028.33	\$218,408.74
Aug. 10,421,904.42	6,346,333.41	4,075,571.01	383,898.68
Sept. 10,049,084.97	6,131,638.17	3,917,446.80	5,847.16
Oct. 11,207,991.99	6,526,387.24	4,681,604.75	175,944.23
\$41,340,799.52	\$24,963,648.63	\$16,377,150.89	\$784,098.81
Inc. 3,671,669.09	2,857,570.28	784,098.81	.....

Approximate earnings for November, \$9,292,000, and for two weeks ended December 14, \$5,000,000, against \$8,543,000 and \$5,000,000 for same periods 1910.

The mileage operated was increased during November to 10,809.

Grand Trunk Railway Earnings, Expenses, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R., for Oct., as compared with those for Oct., 1910:—

GRAND TRUNK RAILWAY.			
		1911.	1910.
Gross earnings	.....	\$3,455,265	\$3,251,700
Expenses	.....	2,542,870	2,331,300
Net earnings	.....	\$ 912,395	\$ 920,400
CANADA ATLANTIC RAILWAY.			
		1911.	1910.
Gross earnings	.....	\$ 206,488	\$ 203,800
Expenses	.....	177,268	157,800
Net earnings	.....	\$ 29,220	\$ 46,000
GRAND TRUNK WESTERN RAILWAY.			
		1911.	1910.
Gross earnings	.....	\$ 581,478	\$ 542,500
Expenses	.....	444,631	464,300
Net earnings	.....	\$ 136,847	\$ 78,200
DETROIT GRAND HAVEN AND MILWAUKEE RY.			
		1911.	1910.
Gross earnings	.....	\$ 228,403	\$ 201,900
Expenses	.....	168,989	150,300
Net earnings	.....	\$ 59,414	\$ 51,600
Approximate earnings for Nov.	.....	\$4,101,244,	
and for two weeks ended Dec. 14,	.....	\$1,822,778,	
against \$3,845,640 and \$1,664,288	.....	for same periods 1910.	

TRAFFIC RECEIPTS OF THE SYSTEM.			
Aggregate from July 1 to Nov. 30, 1911:—		1911.	1910.
Grand Trunk Ry.	.....	\$3,482,803	\$3,095,556
Canada Atlantic Ry.	.....	194,324	173,608
Grand Trunk Western Ry.	.....	575,197	501,754
Detroit, Grand Haven and Milwaukee Ry.	.....	210,634	178,103
Totals	.....	\$4,462,958	\$3,949,021

The Windsor, Ont., court of revision has confirmed an assessment of \$2,500,000 upon the section of the Detroit Tunnel owned by the Michigan Central Rd., situated in Canada.

Running Rights on the T. and N.O. Ry.—Application is being made to the Dominion Parliament to confirm an agreement made Dec. 1, 1911, between the G.T.R. and the Temiskaming and Northern Ontario Ry. Commission providing for the joint use of the T. and N.O.R. between North Bay and Cochrane, Ont., and authorizing the G.T.R. to operate its trains over the T. and N.O.R. from near Nipissing Jct. to North Bay.

RAILWAY DEVELOPMENT.

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta Central Ry.—The Board of Railway Commissioners has authorized the building of a bridge over the Red Deer River at mileage 5.93, and across the North Saskatchewan River at Rocky Mountain House, mileage 61.5. It has also approved location plans for the line from mileage 194.6 to 220 from Red Deer. (Dec., 1911, pg. 1137.)

Alberta Pacific Ry.—The Alberta Legislature is being asked to extend the time for the building of the line authorized by chap. 48 of the statutes of the second session of 1910. Boyle, Parlee and Co., Edmonton, Alta., are solicitors for applicants. (Sept., 1911, pg. 853.) 1911, pg. 853.)

Algoma Central and Hudson Bay Ry.—The Minister of Railways has approved a revision of the route map of the extension from mileage 83.80 to the junction with the National Transcontinental Ry.

Algoma Eastern Ry.—Application is being made to the Dominion Parliament for an extension of time within which the line from Meaford to Owen Sound may be built, and also for the building of various branch lines connecting the line from Sudbury to Little Current (completed or under construction) with Owen Sound, to Lake Timagami, to Lake Superior between Michipicoten Harbor and Batchawana Bay; from Bowell tp. to McLennan tp.; to the C.P.R. near Onaping or Cartier stations, and from Drury or Hyman tp. to Sudbury.

The Board of Railway Commissioners has approved revised location plan for a portion of this line, and, subject to the approval of the Ontario Government, the diversion of the trunk road at mileage 34.75.

During 1911, the company laid track as follows:—Espanola village northerly to Spanish River, 4.60 miles, and from Espanola village southerly to mileage 50.50 from Sudbury 1.50 miles. It has under contract an extension from Crean Hill to Little Current, on Manitoulin Island, 61.77 miles. This is covered by two contracts, both of which are held by the Superior Contracting Co., Espanola, Ont. The work on the mainland is reported to be pretty well finished, with the exception of a rock cut north of Whitefish. The grading is completed to Goat Island, across which the line is being located. Soundings are being made of the channel between Goat Island and Little Current in order to determine the exact location of the bridge. Bridge work is being proceeded with at the crossing of the Spanish River, and at the crossing of the C.P.R. at Nairn Centre. (Oct., 1911, pg. 935.)

Athabasca Valley Ry.—Application is being made to the Alberta Legislature to incorporate a company with this title to build a line from near Independence, on the Edmonton, Dunvegan and British Columbia Ry.'s projected line, or from near Edmonton, northwesterly to Fort Assiniboine, on the Athabasca River. C. A. Grant, Edmonton, Alta., is solicitor for applicants.

Press reports from Edmonton state the J. D. McArthur interests, which recently acquired the Edmonton, Dunvegan and British Columbia Ry. charter, are behind this project, and that the provisional directors will include J. D. McArthur, J. K. McLellan, R. A. Hazleton, D. W. Campbell, and W. P. McDougall, all of Winnipeg. (See also Edmonton, Dunvegan and British Columbia Ry.)

Atlantic Quebec and Western Ry.—We are advised that tracklaying has been completed, and that its total mileage from New Carlisle to Gaspé, Que., is 102.5. During 1911 track was laid

from Barachois to Douglstown, 20.5 miles, thus connecting up work previously done. (Dec., 1911, pg. 1137.)

British Columbia and Alaska Ry.—The British Columbia Legislature is being asked to amend sec. 3, chap. 56, of the statutes of 1910, by changing the location of one of the lines authorized. This is to be accomplished by striking out all the words after Columbia in line 10, and substituting the proposed new location; from Fort George northeasterly via Fort McLeod to the Parsnip River, thence to Peace River, to Finlay River, through Sifton Pass, and down the Stikine River to Telegraph Creek; with branch lines through the Pine or Peace River passes to the eastern boundary of British Columbia; or in the alternative by way of Lytton and Teslin Lake; and a line from some point on the main line to Vancouver. An extension of line for the building of the previously authorized lines is also asked. Robertson and Heisterman, Victoria, are the solicitors. (Nov., 1911, pg. 1035. See British Columbia and Dawson Ry. and B.C. Ry. and Development Co., Sept., 1911, pg. 858.)

British Columbia and Dawson Ry.—The Dominion Parliament is being asked to authorize the company to build branch lines following the same routes as those which the B.C. and Alaska Ry. is applying to the B.C. Legislature for authority to build. The only additional information contained in the B.C. and D. Ry. application is that the starting point of the line to Vancouver will be between Ashcroft and the entrance of Big Creek into the Fraser River. (July, 1911, pg. 645. See British Columbia and Alaska Ry. and B.C. Ry. and Development Co., Sept., 1911, pg. 858.)

Burrard Inlet Tunnel and Bridge Co.—E. Cruttwell, the British engineer representing Sir J. W. Barry, Consulting Engineer for the municipalities interested in the building of this bridge, left Vancouver, B.C., for Ottawa, recently, to consult with the Department of Railways on the plans. The principal question involved is that of the draw span, which it is thought will be one of 250 ft. in order to provide adequate accommodation for vessels. The completed plans are expected early in the New Year.

The report of E. Cruttwell, the English consulting engineer, was laid before the directors, Dec. 11, and a resolution adopting the plan providing for a bridge accommodating a single track steam railway, a double track electric railway, with roadway and sidewalks, was passed. The plan also showed the approaches with a double track steam railway. The estimated cost of the structure was put at \$2,125,000. The directors were told that after a consultation with the engineers of the Department of Railways at Ottawa, Mr. Cruttwell was informed that the Government would consent to the opening span being reduced to 200 ft. wide. Copies of the report are being sent to the municipalities interested, with a request that they consider the desirability of providing increased subsidies to meet the extra cost of the bridge—the original estimate having been \$1,250,000. On Dec. 14 the directors waited on the Provincial Government, and the Premier promised favorable consideration to the request for increased assistance, but advised the company to make sure that the plan adopted would provide amply for the future. The Dominion Government will also be asked for an increased subsidy, the one at present available being in favor of the Vancouver, Westminster and Yukon Ry. Co., which is associated with the B.I.T. and B. Co. (Dec., 1911, pg. 1137.)

Cumberland Ry. and Coal Co.—A. Dick, General Sales Agent of the Dominion Coal Co., which now owns the C.R. and C. Co., is reported to have stat-

ed, Dec. 4, that if the Dominion Government will extend the Intercolonial Ry. to the waterfront at Wallace, N.S., about three miles, the company will expend about \$250,000 in establishing wharves, etc., there. This would enable the company to have direct access to the St. Lawrence River as its own railway runs from Springhill on the I.R.C. to the Bay of Fundy. The people of Wallace are reported to have offered to provide a right-of-way for the branch line.

Delaware and Hudson Co.—The Board of Railway Commissioners has ordered the Napierville Jct. Ry., one of the company's lines in Canada, to build a station at Delson Jct., Que., at once, with leave to occupy lands belonging to the G.T.R. and the C.P.R., which may be necessary. (Oct., 1911, pg. 935.)

Dominion Atlantic Ry.—We are advised that it is not likely the construction of the projected North Mountain Branch will be started until sometime late this year or until 1913. The proposed branch will start at Centreville, on the Cornwallis Valley branch, and will run westerly to Weston, N.S., between 14 and 15 miles. The location plans of the first five miles from Centreville to Lakeville have been approved by the Board of Railway Commissioners, and the remaining mileage is under survey. (Dec., 1911, pg. 1137.)

Edmonton, Dunvegan and British Columbia Ry.—The Minister of Railways has approved the route map of this projected railway from Edmonton to Dunvegan, Alta., via Lesser Slave Lake. The route for the entrance into Edmonton has not yet been presented for approval. (See Edmonton to Peace River, Oct., 1911, pg. 925; see also Athabasca Valley River.)

A press report states that a contract has been let to G. H. Webster for grading on this projected line from Edmonton, towards Dunvegan, and the Peace River country. It is further reported that the location surveys for the first 40 miles northwesterly from Edmonton have been completed.

Halifax and Eastern Ry.—Negotiations are reported to be in progress for the purchase by the Dominion Government of about a quarter of a mile of water frontage from the Intercolonial Ry. at Dartmouth, N.S., to the ferry, for terminal purposes for the H. and E.R. The price of the properties included in the area is said to be about \$100,000. The construction of the H. and E.R. was authorized by the Dominion Parliament, and contracts were let by the late Government for building it. (See Intercolonial Ry., Nov., 1911, pg. 1035.)

High River, Saskatchewan, and Hudson Bay Ry.—The municipal council of High River, Sask., passed a resolution, Dec. 7, asking the Provincial Government to guarantee the company's bonds for \$13,000 a mile. (Nov., 1911, pg. 1035.)

Intercolonial Ry.—Press reports recently stated that a new branch line had been opened for traffic from Ferrona Jct. to Sunny Brae, N.S. We are officially advised that no new branch line has been opened, but that the Dominion Government has bought and is operating its trains over the line between Ferrona Jct. and Sunny Brae, which was formerly owned and operated by the Nova Scotia Steel and Coal Co.

A very full description of the new deep water terminal at Halifax, with plans, etc., will be found in the Marine Department on later pages of this issue.

Replying to questions in the House of Commons, Nov. 29, the Minister of Railways said the contract for the building of the new branch of the I.R.C. from Sunny Brae to Guysboro and from Guysboro and County Harbor to Melrose, had been awarded by order-in-

council dated Oct. 2 to the Nova Scotia Construction Co. The estimated cost of construction on schedule prices was \$1,057,122.19. The contract for the building of the branch from Dartmouth to Deans Settlement, to connect with the first mentioned line, was awarded by order-in-council dated Oct. 2 to M. P. and J. T. Davis, Ottawa, the estimated cost of construction on schedule prices being \$1,940,277.98. The contract for this branch had not been signed. On Nov. 30 the Minister stated that the question of going on with the construction of the Guysboro branch was under consideration. For the proposed spur line at Hampton, N.B., only one tender was received, and this had not been dealt with. It was not the Government's intention to proceed with the building of this spur at present. Offers had been received for the building of the branch line from Estende to Baddeck, in Cape Breton, but no contract has been let, and the Minister of Railways informed the House of Commons, Nov. 30, that it was not intended to proceed with the building of the line at present.

The Minister of Railways informed the House of Commons, Dec. 7, that P. S. Archibald, M. Can. Soc. C.E., Chief Engineer of the I.R.C. up to 1896, had been engaged by the department to report on the proposed branch lines above referred to.

Tenders were received to Dec. 26 for the building of a brick freight shed at Truro, N.S. (Dec., 1911, pg. 1137.)

Essex Terminal Ry.—The Board of Railway Commissioners has authorized the company to use for construction purposes only for 60 days from Dec. 11, 1911, its crossing of the Michigan Central Rd. at Windsor, Ont. (Dec., 1911, pg. 1137.)

Joliette and Lake Manuan Colonization Ry.—The British Canadian Construction Co., which is reported to have entered into a contract for the building of this railway from Joliette to Lake Manuan, Que., has its head office at Ottawa. We have ascertained that construction is in progress about 12 miles out from Joliette. —O'Reilly, of Ottawa, representing the contractors, and that —Sims, St. Felix de Valais, Que., is also on the work. Some time ago the engineer in charge of surveys, etc., was J. N. Paton, who came from England to take charge. (Dec., 1911, pg. 1139.)

Kaslo and Slocan Ry.—We are advised that a portion of this line, formerly owned by the Great Northern Ry. (U.S.A.) has been operated since Sept. 15 by its new owners, under the original title. The mileage operated extends from Kaslo to Sproule, B.C., 15 miles. Beyond Sproule a fire destroyed the bridges and did considerable damage to the track. The company has not yet decided as to the restoration of the destroyed mileage. (Nov., 1911, pg. 1035.)

Kettle Valley Lines.—Application is being made to the Dominion Parliament to authorize the building of a branch from Vernon, southerly and southeasterly to Penticton, B.C., and to extend the time within which the company may build lines previously authorized.

Press reports state that surveys are being made along Five Mile Creek in the Similkameen Valley for an alternative route. From the mouth of Five Mile Creek, the survey will extend along the Similkameen River to East Princeton, Princeton, Coalmount, then through the Otter Valley to the head of the Coldwater River, to which point steel has been laid from Merritt.

During 1911 the company laid track on the following sections under construction from Midway to the Fraser River, B.C.; from Midway to Westbridge, 25 miles, and from Merritt to Coldwater Summit, 30 miles. The line between Westbridge and Coldwater Summit is being built by L. M. Rice and Co., whose construction headquarters are at Penticton, B.C.

The Spokane and British Columbia Ry., which is the title of a charter held by the company in the U.S., has under survey a line from Republic, the present southerly terminus of the line, to Spokane, Wash., 140 miles. (Dec., 1911, pg. 1139.)

Knee Hill Ry.—Application is being made to the Alberta Legislature for an extension of time for the building of the railway authorized by chap. 27 of the statutes of 1907; making certain changes in the provisional directors, authorizing an extension easterly to the Red Deer River, near the mouth of Knee Hill Creek, Three Hills Creek or Rosebud Creek, and to Calgary; and authorizing the company to enter into agreements with any other railway to be constructed to or across the Red Deer River. It is also proposed to change the name to the Calgary, Carbon and Red Deer Ry. Co. Duncan, Stuart and Warner, Calgary, are the solicitors. (See Calgary and Knee Hill Ry., Aug., 1909, pg. 573.)

Ladysmith Lumber Co.—We are advised that the logging railway which is being used by the Vancouver-Nanaimo Coal Mines Co., is the one built by the Ladysmith Lumber Co., under the charter of which company any extensions will be built.

The L.L. Co. was incorporated by the British Columbia Legislature in 1908, with power to build and operate for twelve years a line from 500 miles north of the Comox wagon road on the Esquimalt and Nanaimo Ry. to the old East Wellington right of way and northwesterly for two miles beyond the Government gazetted wagon road in the Mountain district, with branch lines. (See Vancouver and Nanaimo Coal Mines Co., Dec., 1911, pg. 1141.)

London and Port Stanley Ry.—It is said that the Lake Erie Coal Co. has under consideration plans for submission to the London, Ont., city council, which owns the L. and P.S. Ry., for electrifying the line. The proposition is that the company shall electrify the line, receiving in return the right of running freight trains, the city operating passenger cars. The city would also have the right of granting running rights over the line to other companies. It is said that the proposition will come up for discussion at the annual meeting. (Dec., 1911, pg. 1139.)

Lotbiniere and Megantic Ry.—See Quebec Eastern Ry.

Michigan Central Rd.—The cantilever bridge across the Niagara River, which is owned by the Niagara River Bridge Co., a subsidiary of the M.C.R., was opened in 1883, and is 910 ft. long, with a span of 47.0 ft. between the towers, and is 200 ft. above the level of the river. It is used exclusively for railway traffic. For some months past considerable work has been done in the way of building piers, etc., at the approaches on both sides of the river, and press reports state that all this has been done in preparation for the building of a new bridge. The same reports further state that the plans for the superstructure have been prepared, and that it is expected work will be started upon it during the current year or early in 1913. On July 3, 1911, we were officially advised that press reports to the effect that the company contemplated replacing the bridge were incorrect, as it was in good condition. (Dec., 1911, pg. 1139.)

An officer at Detroit, Mich., wrote us Dec. 20:—"We know nothing regarding the building of a new bridge at Niagara Falls, or the replacing of the present bridge. We have under construction, however, the replacing of approaches, with new bridges across streets, with cement walls and embankment between streets."

Minneapolis and St. Louis Rd.—Iowa Central Ry.—An issue of \$10,000,000 of

additional stock by these merged companies has been authorized by the State of Iowa. An official is quoted as stating that the line will be extended north from Minneapolis to Winnipeg, and south from Centerville, Iowa, to a connection with the Missouri, Kansas and Texas Ry. W. G. Bierd, Vice President, is quoted as stating that the I. C. Ry. would be taken over by the M. and St. L. Rd. at the next meeting of the directors; that the financing for the amalgamated companies had been arranged, but the routes of the projected extensions had not yet been determined, that the company had made its investigations of the territory through which the lines would go, but their ideas had not yet been worked out. (Dec., 1911, pg. 1139.)

Minneapolis, St. Paul and Sault Ste. Marie Ry.—Track was laid during 1911 from Frederic to Boylston Jct., Wis., 73.1 miles, and nine miles south of Superior, Wis.

The plans for the proposed terminal in Chicago, Ill., to be built by the Central Terminal Co., and leased to the M., St. P. and S.S.M. Ry., are under consideration by the city authorities, as some questions concerning streets are involved.

The North Arm Bridge and Ry. Co. is asking the Dominion Parliament for authority to build a railway and general traffic bridge across the north arm of Burrard Inlet, from Turtle's Head to lot 575 north of White Rock Island, with a line of 10 miles to connect with the C.P.R. and existing and projected lines entering Vancouver, as well as a line on the north shore of the inlet to Vancouver, or to connect with any railway built or to be built on the north shore. The provisional directors are:—E. C. Cartwright, A. G. Langley, P. M. Smith, Vancouver; W. H. Langley, Victoria, B.C.

Residents of North Vancouver, B.C., passed a resolution, Nov. 25, asking the public authorities interested to oppose the application to the Dominion Parliament for power to build 10 miles of railway and a bridge across the north arm of Burrard Inlet, so as to connect the C.P.R. and other railways with North Vancouver. W. H. Langley, representing the promoters, said the project was in no way connected with the C.P.R., but several landowners along the route suggested for the line, stated that they had been informed the C.P.R. was at the back of the project. (Dec., 1911, pg. 1139.)

North Eastern Ry.—Application is being made to the Quebec Legislature to change the name to the North Ry. Co. and to give power to build the following lines in addition to those authorized by chap. 24 of the statutes of 1907; a branch to connect Ville Marie with the C.P.R. at Rapide de l'Orignal; one or more branches from near Lake Timiskaming to Lake Metagami, thence following the Nottaway River as far as Rupert's Bay or James Bay; a railway from Montreal to a junction with the National Transcontinental Ry., and thence to James Bay. L. A. Cannon, Quebec, is solicitor for applicants.

Montreal press reports state that M. J. O'Brien is interested in the building of this line, and that all the arrangements for starting construction early in the new year have been completed. (Sept., 1909, pg. 651.)

Northern Territorial Ry.—The Dominion Parliament is being asked to incorporate a company with this title to build a railway from Fort Churchill, on Hudson Bay, westerly to Lake Woolaston, Sask., to the south shore of Lake Athabasca, Alta., north of the Peace River Block, through the Rocky Mountains, to the Pacific coast at Port Eslington or the Portland Canal, with a branch from near the crossing of the Athabasca River via Fort McMurray

and Lac la Biche to Edmonton, Alta. Bishop, Pratt and Delavault, Edmonton, Alta., are solicitors for applicants.

Nova Scotia Steel and Coal Co.'s Ry.—We are officially advised that the company has sold its railway extending from Ferrona Jct. to Sunny Brae, U.S., to the Dominion Government for \$100,000, and that the line is now being operated as a branch of the Intercolonial Ry. (See Intercolonial Ry.)

Ottawa, Brockville and St. Lawrence Ry.—Application is being made for an extension of time for the building of the line authorized by chap. 71 of the Dominion statutes of 1900. N. Belanger, Ottawa, is Secretary of the company. (May, 1910, pg. 353.)

Pacific and Atlantic Ry.—The Dominion Parliament is being asked to extend the time within which the company may build the lines referred to in sec. 1, chap. 138, of the statutes of 1906. T. Gibson, Toronto, is solicitor for applicants. (April, 1910, pg. 271.)

Pacific and Peace River Ry.—The Minister of Railways has approved the route map of this projected railway from Bella Coola or Dean's Channel, B.C., to Dunvegan, Alta. (Mar., 1911, pg. 207.)

The route map approved by the Minister of Railways is for a line from about 60 miles east of Kamsquot Bay on the Pacific Coast, to Dunvegan, Alta.

Portland Canal, B.C.—Pacific coast press reports state that the Guggenheim interests have acquired a controlling interest in a large number of mines in the Portland Canal district of British Columbia, and that plans for their development, including the building of a railway, are under consideration.

Prince Edward Island Ry.—The Minister of Railways stated in the House of Commons, Dec. 4, that a contract had been let to T. Campbell, Charlottetown, P.E.I., for building a branch line from O'Leary's station to West Point, at an approximate cost on schedule price of \$72,706. The Government directed the stoppage of work in order that the Minister might enquire into the matter. (Oct., 1911, pg. 937.)

Quebec and Saguenay Ry.—It is reported that about 43% of the grading on the line under construction from St. Joachim to Murray Bay, Que., has been completed, and that it was expected that the line will be ready for operating by Sept. The directors are said to have under consideration plans for the extension of the line from Murray Bay to the Saguenay River. (Dec., 1911, pg. 1139.)

During 1911 track was laid on 7.5 miles, from mileage 56.5 to 64. We are advised that 34 miles of grading has been completed from St. Joachim to mileage 56.5, and that it is ready for track laying. Surveys are being made for an extension from mileage 64 to the outlet of Lake St. John at Grand Discharge, 80 miles. A. H. N. Bruce is Chief Engineer.

Quebec Central Ry.—The Quebec Public Utilities Commission has approved plans for the building of a 126 ft. deck lattice girder span, over the St. Francis River at Sherbrooke, Que. The contract for the superstructure has been let to the Dominion Bridge Co., Montreal. (Dec., 1911, pg. 1139.)

Quebec Eastern Ry.—Application is being made to the Quebec Legislature to authorize the company to absorb the Lotbiniere and Megantic Ry. Co., to increase the capital stock by adding the amount of the outstanding capital of the L. and M.R. Co., and to renew and validate all the powers conferred upon the Q.E.R. Co. and the L. and M.R. Co., to grant the company additional powers in regard to the issue of bonds or debentures; to declare that the company shall not be subject to article 6645 of the Re-

vised Statutes of Quebec, but that it shall have an extension of time for the building of its lines; and to provide that upon the amalgamation of the two companies the L. and M.R. Co. shall cease as a separate corporation. (Dec., 1911, pg. 1139.)

St. Charles and Huron Ry.—The Quebec Legislature is being asked to incorporate a company with this title, to build a railway from St. Ambroise de la Jeune-Lorette, on the Quebec and Lake St. John Ry., northerly for about eight miles to the Huron River in the parish of St. Edmond de Stoneham, Que. L. A. Cannon, Quebec, is solicitor for applicants.

St. John Valley Ry.—Some matters in connection with the final agreement with the Dominion Government for the building of this projected railway from St. John, along the river valley, were considered by the New Brunswick Government, Nov. 30. It was stated that the Dominion Government has decided to build certain bridges, which are estimated to cost \$1,250,000. The Premier of New Brunswick is quoted as saying that construction will be started in the spring. (Dec., 1911, pg. 1141.)

St. John Valley Ry.—Press dispatches from Fredericton, N.B., Dec. 12, state that the contract for the building of this projected railway was signed that day. The contract has been entered into between the Provincial Government and the St. John and Quebec Ry. Co., being signed on behalf of that company by A. R. Gould, of Presquid, Que., President, and J. V. Thomas, Secretary, with F. J. Lasman, New York, representing the financial interests associated with the company. The contract calls for the construction of a first class trunk line from Grand Falls to St. John, 208 miles, which is to be completed by Nov. 1, 1915, the section from Fredericton to Gagetown and from Fredericton to Centreville by Nov. 1, 1913. When completed the line is to be operated by the Intercolonial Ry., the S.J. and Q.R. Co. receiving 40% of the gross earnings. The province guarantees the bonds for the line up to \$25,000 a mile, while the Dominion Government also provides a subsidy upon the usual terms, and will build certain of the heaviest bridges.

In connection with this line, the end of the company located in the United States has a charter authorizing the purchase of a section of the C.P.R. in the vicinity of Aroostook Jct., and the building of a line to connect with the St. John Valley Ry. A. R. Gould is also President of this company, and R. Thompson, its Chief Engineer, has been in St. John, N.B., since Dec. 2, arranging for the starting of work in Canada. (Dec., 1911, pg. 141.)

Salisbury and Albert Ry.—The section of this line from Hillsboro to Albert, N.B., was re-opened for traffic, Dec. 4. (Dec., 1911, pg. 1141.)

South-East Kootenay Ry.—The British Columbia Legislature is being asked to extend the time within which the company may build the line authorized by chap. 63 of the statutes of 1906. Lenie and Clarke, Victoria, B.C., are solicitors for applicants. (Aug., 1906, pg. 457.)

Sydney and Louisburg Ry.—Track was laid on 2.5 miles of new line during 1911 from Morine station to Birch Grove, N.S. An extension of a branch from Summit to Waterford Lake, one mile, is under construction, and extensions to colliery 17 and colliery 20, each one mile, are projected. (Oct., 1911, pg. 937.)

Temiskaming and Northern Ontario Ry.—During 1911 the new track laid included the following:—North Bay Jct. to Nipissing Jct., 3.53 miles; Porcupine branch, Iroquois Falls to Timmins town-site, 33.71 miles. There has been under survey a route for a projected line from

the main line to Elk Lake, about 30 miles. The Chairman of the Commission is reported to have stated in Toronto Dec. 7 that construction will be started on the new branch as early as possible in the spring. (Dec., 1911, pg. 1141.)

J. L. Englehart, Chairman of the Commission, returned to Toronto from a trip of inspection over the line Dec. 18. He is reported as having said that satisfactory progress was being made with the building of the extension of the Porcupine branch. Tracklaying was expected to start a few days after he left, and the extension should be completed early in Jan. The surveys in the Elk Lake country were being continued. We were advised, Dec. 20, that instrumental surveys for the extension of the line to Elk Lake were being completed, and that as soon as the reports are received by the Commissioners, location will not alone be made, but active efforts will be put in force for an early completion.

Vancouver and Peace River Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build a railway from Vancouver, B.C., to the Fraser River in the vicinity of Lillooet, thence to Fort George, across the Parsnip River, through the Pine River Pass to Coalbrook in the Dominion Reserve Block, thence southeasterly to the Grand Prairie, Alta., on to Dunvegan, Peace River Crossing, and Fort Vermillion to Vermillion Chutes on the Peace River, with a branch from the middle branch of the South Pine River to Hudson's Hope on the Peace River. Abbott, Hart and Harg, Vancouver, are solicitors for applicants. (Sept., 1911, pg. 855.)

Application is being made to the British Columbia Legislature to incorporate a company to build a railway to be operated by any description of motive power, from Vancouver northeasterly to the Fraser River, near Lillooet, on to Fort George, northerly across the Parsnip River, through Pine Pass to Coalbrook in the Dominion Reserve Block, thence easterly to Swan Lake on the eastern boundary of the province, with a branch northerly from near Hudson's Hope to the eastern boundary of the province. Abbott and Hart McHarg, with Burns and Walkem, are jointly solicitors for the applicants.

Vancouver Underground Railway.—The British Columbia Legislature is being asked to incorporate a company to build a railway to be operated by any description of motive power, within a radius of seven miles from the corner of Hastings and Main streets, Vancouver, together with the necessary approaches, and to connect with the surface lines of railways and tramways, together with all powers and privileges usually given to railway companies. McEvoy, Whiteside and Buddle, Vancouver, are solicitors for applicants.

Victoria Harbor Railway.—The Victoria, B.C., city council had under consideration, Nov. 27, a report from the City Engineer on the plans for a railway along the city's harbor front. The plans show a main line from the outer wharf to a point on Selkirk water about midway between Garbally Road and Bridge St., with spur lines connecting with all railway lines entering the city. There are, says the City Engineer, no engineering difficulties in the way of construction so far as the city is concerned. It would be necessary for the city to pass a bylaw as to street crossings and street ends. At a previous meeting some objections were made by the council, and new detailed plans were made to meet them. The council will finally consider the plans after a vote of the ratepayers has been taken.

Application is being made to the British Columbia Legislature to extend the

time within which the projected railway may be built.

Victoria reports state that the company is entirely local, having a capital of \$1,000,000, of which \$250,000 has been subscribed by leading business men in the city.

Winnipeg City Power Line.—The city board of control has under consideration tenders for the supply of 100 tons of relaying rails, 56 and 60 lbs., for delivery at Lac du Bonnet, Man. (Dec., 1911, pg. 1141.)

The Postmaster General on the Quebec Bridge.

Speaking at Quebec, Dec. 10, Postmaster General Pelletier said:—The contract for the substructure was given long ago to M. P. and J. T. Davis for \$3,350,000, and the work is well under way. The contract for the superstructure was signed on Apr. 4 last for \$8,650,000. The apparent contractor is the St. Lawrence Bridge Co., but there is another company associated with it. The date for the completion of the work is five years. I have had long interviews with the company's engineer, and he says that we may expect for certain reasons that the time will have to be extended at least one year more, which shows that whereas the Transcontinental Ry. will be practically finished within two years, the bridge cannot be ready before six years. The contractors are building an immense plant at Montreal for the erection of their bridge.

The contract as awarded has shut out tramway and vehicle transportation, and the late Government decided that in consequence of that change, which I understand was an indispensable condition, the province and city of Quebec should be refunded the amount which they had subscribed. I suppose it is too late now to change that, and we had better let the city and province get back their money. However, I understand that with a slight change tramway communications can yet be secured. On the whole, the bridge question will stand as a most improvident piece of statesmanship. The legacy of the late Government in this respect is as follows: \$3,350,000 for the substructure, \$8,650,000 for the superstructure, for a rather narrow bridge, and \$6,000,000 already sunk and wasted, which makes a total of \$18,000,000 for a bridge to be ready four or five years after the Transcontinental Ry. has been completed, and Quebec sidetracked in the interval, except inasmuch as we can provide for car transportation as they do at Detroit.

Duluth, South Shore and Atlantic Ry.—During 1911 the company built and laid track on 12.60 miles of spur lines, as follows: Soo Jct. to Hunter's Mill, Mich., 4.72 miles; Trout Creek to Woods, Mich., 5.50 miles; Basco to Woods, Mich., 1.33 miles; Ewen to Jensen's Mill, Mich., 0.92 mile; Derauson to Woods, Mich., 0.13 mile. (Dec., 1911, pg. 1131.)

The Grain Growers Export Co., Ltd., has been incorporated under the Dominion Companies Act with \$250,000 capital and office at Winnipeg, to deal in grain, and in connection therewith to own and operate vessels and other means of transportation, grain elevators, etc. The incorporators are W. G. Hall, J. Wright, W. H. Trueman, W. H. Hollands, T. W. Robinson, and E. Smith, Winnipeg.

The Macdonald Contracting Co. has been incorporated under the Ontario Companies Act with a capital of \$40,000 and office in Toronto, to carry on a general contracting business. The provisional directors include:—W. R. Macdonald and F. M. Macdonald, sons of the late Randolph Macdonald.

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place and not those on which the orders were issued.

BINDER TWINE RATES FROM WELLAND.

15286. March 15, 1910.—Re application of the Plymouth Cordage Co., of Welland, for an adjustment and reduction of freight rates on cordage and raw material to and from Welland, and for a re-hearing of the case, heard at Toronto. April 28, 1909, which was disposed of by order 7897, August 10, 1909.

It is ordered that the rates of the Grand Trunk Ry. and the Michigan Central Rd. to be charged on binder twine for harvesters, in bales or boxes, in carloads of the minimum weight of 30,000 lbs. per car of not over 36½ ft. inside length (subject to rule 1 (b) of Canadian Classification), from Welland, to points in Canada on their respective lines, and on the lines of other companies, the same being in either case within the territories covered by the current commodity tariffs on binder twine from Welland of the said companies respectively, shall not exceed the following to the same points, namely—the commodity rates on binder twine from Welland in effect at the date of this order: the 5th class rates from Welland; the rates on binder twine current from Auburn, via the Niagara frontier, less 2 cents per 100 lbs. The said companies shall comply with this order by publishing and filing special and joint tariffs to take effect not later than Dec. 15, 1911. The Wabash Rd. shall comply with this order in so far as it relates to shipments to points on the lines of its connections in Canada.

OIL RATES, ILLINOIS TO TORONTO.

15297. Nov. 9.—Re application of the Canadian Pacific Ry., under section 56 of the Railway Act, for leave to appeal to the Supreme Court of Canada, from order 14386, May 16, 1911, made upon the application of the British American Oil Co., and declaring the legal rate chargeable on carload shipments of crude oil from Stoy, Ill., to Toronto, Ont., was the fifth class joint through rate in effect at the time the shipments moved, and in accordance with Official Classification 29 and subsequent issues thereof. It is ordered that the C.P.R. be granted leave to appeal to the Supreme Court on the following question of law:—"What was the legal effect, if any, of the supplements filed by the Indianapolis Southern Rd., effective respectively Oct. 18, 1907, and May 14, 1908, on the joint through rate established by that company on oil from Stoy, Ill., to Toronto, Ont., on Jan. 20, 1907?"

COAL RATES TO STRATHCONA.

15332. Sept. 12, 1911.—Re application of Interprovincial Coal Company of Strathcona, Alta., for order directing that freight rate on coal from Clover Bar to Strathcona, Alta., over the Grand Trunk Pacific, the Canadian Northern, and the Canadian Pacific Railways, be changed from \$27 per car to 40 cents per ton, or such rate as the Board may think reasonable. Upon hearing the application and reading the answers filed on behalf of the railway companies; and upon the report of the Chief Traffic Officer of the Board that the Canadian Northern Ry. has reduced its rate to 40 cents per ton, which includes the C.P.R.'s terminal switch at Strathcona, making the through rate 70 cents per ton or \$21 per car of 30 tons. It is ordered that the application be dismissed.

CONSTRUCTION OF SIDING—FERTILIZER RATES.

15394. Nov. 14, 1911.—Re application of W. H. Haight, of Pipers Siding, B.C., under sec. 226 of the Railway Act, for

an order directing the Great Northern Ry. to construct, maintain and operate a spur, or siding, to applicant's property near Pipers Siding and to provide lower rates on shipments of fertilizer from Vancouver and New Westminster to the said siding. It is ordered that the railway company shall construct, maintain and operate a spur, or branch line, to the applicant's property, the applicant to deposit in a chartered bank such sum of money as the parties may agree shall be necessary to defray the expenses of constructing and completing the spur. In the event of their failure to agree, the Board will fix the amount to be paid into the bank. The railway company shall repay or refund to the applicant one-half of the tolls charged by the company in respect of the carriage of traffic for the applicant over the said spur, or branch line, until the aggregate amount paid by the applicant in the construction and completion of the spur shall have been repaid to him; the applicant, or the railway company, shall file a plan, with profile and book of reference, showing the proposed location of the spur; and publication of notice of the application may be dispensed with.

The railway company shall publish and file, not later than Dec. 1, 1911, at Ottawa, a commodity rate of 3 cents per 100 lbs. on ashes for fertilizing purposes, minimum weight, 40,000 lbs. per carload; 2½ cents per 100 lbs. on horse manure, minimum weight, 30,000 lbs. per carload; and 2½ cents per 100 lbs. on other stable manure, minimum weight, 40,000 lbs. per carload—from Vancouver and New Westminster to the said siding.

Order 15579 Dec. 6, 1911, extended the time for publishing and printing the rates directed in order 15394 to Jan. 1, 1912.

COAL SWITCHING CHARGES AT PRESCOTT.

15472. Nov. 23.—Re application of certain coal dealers of Prescott, Ont., complaining that the charge by the C.P.R. of 20 cents a ton for shunting coal in its yards when received from the New York Central & Hudson River Rd., is excessive; and applying for an order directing the railway company to reduce its charge for such service. It is ordered that the C.P.R. Company within 30 days reinstate the rate shown in its tariff, C.R.C. no. E 1234, effective Sept. 1, 1908, of 15 cents a net ton, minimum \$3 a car.

COAL RATES FROM ROUSE'S POINT.

15540. Nov. 25.—Re application of Canadian Retail Coal Association, complaining that rate charged by the G.T.R. on shipments of coal from Rouses Point and Massena Springs to Alexandria is excessive and discriminatory as compared with the rate charged from these points to Ottawa. It is ordered that the G.T.R.'s special tariff on coal and coke from Rouses Point, N.Y., be amended so as not to exceed the following rates per ton of 2,240 lbs. to the designated stations, the rates to be made effective not later than Jan. 15, 1912, viz.:—

To Ste. Justine, Que., anthracite, 85c.; bituminous, 75c.

To Glen Robertson, Ont., anthracite, 90c.; bituminous, 80c.

To Dalkeith, Ont., anthracite, 90c.; bituminous, 80c.

To Vankleek Hill, Ont., anthracite, 95c.; bituminous, 85c.

To Alexandria, Ont., anthracite, 90c.; bituminous, 80c.

To Greenfield, Ont., anthracite, 95c.; bituminous, 85c.

To Maxville, Ont., anthracite, 95c.; bituminous, 85c.

The Alberta Legislature has under consideration a measure providing for the creation of a Department of Railways and Telephones.

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ADVERTISING COPY must reach the publishers
by the 10th of the month preceding the date of
publication, if proof is required, or by the 15th
if proof is not required.

TORONTO, CANADA JANUARY, 1912.

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Changes in Location of Matter.

Beginning with this issue the alpha-
betical list of advertisers, which has
heretofore been published on this page
in the centre of the paper, appears on
the last page of the paper, which is
more convenient for quick reference.

The Purchasing Agents' Guide to the
manufacturers of and dealers in steam
and electric railway, marine, express,
telegraph and contractors' supplies ap-
pears on pages immediately preceding
the alphabetical list of advertisers.

Telephone Train Dispatching on
the C.P.R.

As illustrative of the absurd charac-
ter of much of the information about
railway matters published in the daily
press may be quoted a dispatch from
St. John, N.B., of Dec. 7, to which wide
publicity was given, stating that the
telephone train dispatching which had
been in use on the C.P.R., had been
abandoned, and that the telegraph sys-
tem of dispatching has been returned to,
"the telegraph system having been
found unsatisfactory. There was abso-
lutely no foundation whatever for the
dispatch referred to. The system of
telephone train dispatching on the
C.P.R. has proved entirely satisfactory
to the Operating Department, and will
doubtless be considerably extended to
other parts of the system during the
current year.

An officer of the company writes us as
follows: "The telephone dispatching on
the Atlantic Division has been a com-
plete success in every respect. It was
so good that we were enabled to dis-
pense with one dispatching office for the
summer months and handle all the main
line dispatching on this division from
one office. The business, however, is too
heavy to continue this during the win-
ter months and we are reopening the
dispatching office at St. John. The tele-
phone line was adjusted to work from
Brownville Jct. to St. John, and while
it was being readjusted, so that we could
work it from St. John to McAdam Jct.,
it was necessary to use the telegraph be-
tween these two points for a couple of
days until the change in the telephone
system was made."

Dates of Railway Commissioners' Orders.

The dates given on the orders issued
by the Board of Railway Commissioners
are not those of the days on which the
orders are actually issued, but are the
dates on which the cases were heard.
For example, order 15286, respecting
binder twine rates from Welland, Ont.,
is dated Mar. 15, 1910, that being the
date on which the case was heard at Ot-
tawa, but the order was not issued until
Nov. 8, 1911.

It would undoubtedly be much better
for the orders to be dated the actual
days of issue. A reference to the date
of the hearing might be appended, if
thought desirable, but the most im-
portant date is that of the issue of the
order, as that is when it generally goes
into effect.

It is misleading to have an order
which did not go into effect until Nov.
8, 1911, dated Mar. 15, 1910.

When the Board started issuing orders
they were not numbered at all. We
suggested that the orders be given con-
secutive numbers, and the suggestion
was acted on. We hope our present
suggestion will also meet with approval.

The city of Edmonton is applying to
the Alberta Legislature for confirmation
of a bylaw granting exemption from
taxation, with certain other privileges to
the Grand Trunk Pacific Development
Co. A similar act is being applied for
by the G.T.P.D. Co.

Transportation Conventions in 1912.

Mar. 17.—American Association of
Railroad Superintendents, Chicago, Ill.

Mar. 19-21.—American Railway En-
gineering Association, Chicago, Ill.

May 12.—Railway Industrial Associa-
tion, Kansas City, Mo.

May 14-17.—Master Boiler Makers'
Association, Pittsburgh, Pa.

May 15.—Freight Claim Association,
Buffalo, N.Y.

May 22.—Association of Railway Claim
Agents, Los Angeles, Cal.

June 12-14.—Master Car Builders'
Association, Atlantic City, N.J.

June 16-18.—Wood Preservers' Asso-
ciation, Chicago, Ill.

June 17-19.—American Railway Mas-
ter Mechanics' Association, Atlantic
City, N.J.

June 18.—Train Dispatchers' Associa-
tion of America, Louisville, Ky.

June 18-21.—American Association of
Freight Agents, Chicago, Ill.

June 24.—Association of Railway Tele-
graph Superintendents, New York City.

June 26.—Association of American
Railway Accounting Officers, Quebec,
Que.

Aug.—Travelling Engineers Associa-
tion.

Sept.—Master Car and Locomotive
Painters' Association of United States
and Canada.

Sept. 10.—Roadmasters' and Mainte-
nance of Way Association, Buffalo, N.Y.

Oct.—American Railway Bridge and
Building Association, Baltimore, Md.

Nov. 6-10.—Association of Railway
Electrical Engineers, Chicago, Ill.

Nov. 15.—American Railway Associa-
tion, Chicago, Ill.

Dec. 12-13.—Association of Transpor-
tation and Car Accounting Officers,
Louisville, Ky.

Railway and Allied Associations,
Clubs, Etc.

The names of persons given below are
those of the secretaries.

CANADIAN CAR SERVICE BUREAU, J. E.
Duval, 401 St. Nicholas Building, Mont-
real.

CANADIAN FREIGHT ASSOCIATION, T
Marshall, Union Station, Toronto.

CANADIAN FREIGHT ASSOCIATION, (West
ern Lines), W. E. Campbell, 101 Bon
Accord Building, Winnipeg.

CANADIAN RAILWAY CLUB, J. Powell,
St. Lambert, Que. Meetings at Montreal
2nd Tuesday each month, 8.30 p.m., ex-
cept June, July and August.

CANADIAN SOCIETY OF CIVIL ENGINEERS,
C. H. McLeod, 413 Dorchester St., west,
Montreal.

CANADIAN STREET RAILWAY ASSOCIA-
TION, Acton Burrows, 70 Bond Street,
Toronto.

CANADIAN TICKET AGENTS' ASSOCIATION,
E. de la Hooke, London, Ont.

CENTRAL RAILWAY AND ENGINEERING
Club of Canada, C. L. Worth, 409 Union
Station, Toronto. Meetings at Toronto
3rd Tuesday each month, except June,
July and August.

EASTERN CANADIAN PASSENGER AS-
sociation, G. H. Webster, 54 Beaver Hall
Hill, Montreal.

ENGINEERS' CLUB OF MONTREAL, R. W.
H. Smith, 9 Beaver Hall Square, Mont-
real.

ENGINEERS' CLUB OF TORONTO, R. B.
Wolsey, 94 King St. west, Toronto.

QUEBEC TRANSPORTATION CLUB, J. S.
Blanchet, Quebec.

WESTERN CANADA RAILWAY CLUB, W.
H. Rosevear, 25 1/2 Princess St., Winni-
peg. Meetings at Winnipeg 2nd Monday
each month, except June, July and Au-
gust.

Mainly About Transportation People

Sir Wm. Whyte has been elected President of the St. Andrew's Society of Winnipeg.

Sir Wm. Whyte has been re-elected a director of the St. Charles Country Club, Winnipeg.

Hugh Sutherland, Executive Agent, Canadian Northern Ry., Winnipeg, and Mrs. Sutherland, expect to sail Jan. 20 for Egypt.

U. Barthe, formerly Secretary of the Quebec Bridge Co., has been appointed collector of succession taxes for the district of Quebec.

W. Cuthbert, Montreal, is reported to be retiring from the G.T.R. after having been 37 years in the service, latterly as Fuel and Tie Agent.

D. C. Dawson, District Traffic Superintendent, Western Union Telegraph Co., St. John, N.B., is taking an extended holiday for rest and change.

C. C. LeBree, of the Canadian North-Eastern Ry. freight and passenger department, Stewart, B.C., arrived in Toronto, Dec. 15, for a holiday.

Jos. Bishop, who died at Crysler, Ont., recently, was father of W. J. Bishop, of the National Transcontinental Railway survey staff at Cochrane, Ont.

Col. Alex. Bertram, of the John Bertram and Sons Co., Ltd., has been re-elected on the executive committee of the St. John's Ambulance Association.

R. Cummings, stationmaster at Truro, N.S., completed his fortieth year of service with the Intercolonial Ry. and its predecessor, the Nova Scotia Ry., Dec. 1.

J. McKibbin, a C.P.R. brakeman, was, Dec. 6, presented with the Royal Humane Society's bronze medal, for saving life at Parkdale, Ont., June 7, 1911.

Mrs. J. Mallon, who died in Toronto recently, was the mother of Mrs. J. J. Scully, wife of the C.P.R. General Superintendent at Moose Jaw, Sask.

H. H. Vaughan, assistant to the Vice President, C.P.R., accompanied by Mrs. Vaughan, returned to Montreal from England, by way of New York, early in December.

F. W. Morse, formerly of the G.T.R. and G.T. Pacific Ry., and now Vice President and General Manager, Chicago and Alton Rd., was in Montreal recently.

G. T. Pettigrew was presented with a diamond scarf pin by the business men of Stratford, Ont., on his recent removal to Montreal, as G.T.R. Division Freight Agent.

J. L. Englehart, Chairman, Temiskaming and Northern Ontario Ry. Commission, addressed the Canadian Club at Hamilton, Ont., Dec. 7, on the Land of Timiskaming.

J. S. Leighton, jr., who recently resigned the position of Claims Agent for the Intercolonial Ry., has been appointed Managing Editor of the Sentinel, Woodstock, N.B.

C. N. Armstrong, who was the principal promoter of the old Atlantic and Lake Superior Ry. project, and Mrs. Armstrong, returned to Montreal, from England, recently.

J. D. Cogger was presented with a gold watch by the G.T.R. and Intercolonial Ry. freight offices staffs at Montreal, in which he was chief clerk, on his leaving the service, Dec. 7.

R. W. Leonard, Chairman, National Transcontinental Ry. Commission, has offered to erect a tower with a chime of bells for Grace Church, Brantford, Ont., in memory of his parents.

Dr. Milton Hersey, Consulting Chemist, C.P.R., Montreal, is reported to have given \$1,000 for the improvement of the Kingston, Ont., School of Mines chemical department industrial laboratory.

Julius Kruttschnitt, Vice President and director of Maintenance and Operation of the Harriman lines, has moved his residence from Chicago to New York City, which is now his headquarters.

E. D. Nash, for a number of years Assistant Superintendent of the Southern Division of the Central Vermont Ry., at New London, Conn., died in Panama recently, following an operation for stomach trouble.

P. C. Caron, station master, Bonaventure station, Montreal, died there suddenly, Dec. 3. He had been in the G.T.R. service for 36 years, and for the past 12 years had been station agent at Bonaventure.

C. R. Moore, who was recently appointed chief clerk to Vice President Kelley, G.T.R., Montreal, has been presented with a gold watch by his former associates in the G.T.R. Superintendent's office, Toronto.

S. James, who died at Hamilton, Ont., recently, was for a number of years private secretary to James Stinson, of Chicago, Ill., who was associated with the promotion of railway enterprises in Hamilton many years ago.

W. S. Kemp, who has just retired from active service on the Elgin Joliet and Eastern Ry., was over 20 years ago Assistant Superintendent and Divisional Superintendent Great Northern Ry., St. Paul and Manitoba Division.

F. Rawlings, President, Guarantee Co. of North America, who died in Montreal, Dec. 12, was a director of the Montreal Telegraph Co. One of his daughters is married to A. P. S. Glasco, of the G.T.R. engineering staff, Hamilton, Ont.

F. Cooper was presented with a gold chain and locket by the heads of the C.P.R. departments in London, Ont., on his transfer from the position of Resident Engineer there to that of Resident Engineer, District 2, at Montreal.

W. B. McKenzie, Chief Engineer, Canadian Government Railways, addressed a meeting of the Central Farmers' Institute at Charlottetown, P.E.I., on "Good Roads," recently, as representing A. W. Campbell, Deputy Minister of Railways.

H. Lennox, K.C., M.P. for South Simcoe, Ont., has been elected chairman of the House of Commons Committee on Railways and Canals for the current year. R. Blain, M.P. for Peel, Ont., is chairman of the Committee on Forests and Waterways.

F. F. Gibbs, who has been appointed Chief Grain Inspector, Western Division, at Winnipeg, was entertained by the Fort William, Ont., board of trade recently, on his leaving the position of Grain Inspector there, which he had held for a number of years.

A. M. Grantham, formerly Purchasing Agent and Superintendent of Construction, Toronto Ry., and J. Brooks, have bought the hardware business of the Canada Glass Mantles and Tiles, Ltd., Toronto, and will carry on the same as the Canada Hardware, Ltd.

Sir Wm. Van Horne, R. B. Van Horne, G. M. Rosworth, W. Shaughnessy, and W. R. McInnes, are among the incorporators of the Canadian Sardine Co., which has been formed under the Dominion Companies Act to operate a sardine packing plant at Chamicook, near St. Andrews, N.B.

D. O. L'Esperance, who was elected recently M.P. for Montmagny, Que., was entertained at dinner in Quebec city recently by the International Order of Railway Telegraphers, of which he is a member. He was in the Intercolonial Ry. service from Oct., 1885, to April, 1902.

O. M. Lang, General Superintendent, Central New England Ry., a subsidiary of the New York, New Haven and

Hartford Rd., who died at Hartford, Conn., Dec. 15, of typhoid, was born at London, Ont., July 28, 1872. He entered railway service in the United States in 1890, with the Chicago, Burlington and Quincy Rd.

Sir William Mackenzie, President, Canadian Northern Ry., and D. B. Hanna, Third Vice President, sailed from Halifax, N.S., for Bristol, by the s.s. Royal George, Dec. 13. Sir William will spend Christmas with Lady Mackenzie and some of their family in Paris. Mr. Hanna expects to sail from England on his return Jan. 10.

J. B. Elliott was presented with a couch and a chair by the C.P.R. locomotive engineers running in and out of Ottawa, on the occasion of his recent retirement from active service as Master Mechanic at Montreal. He began work as a boy with the old Brockville and Ottawa Ry., and remained with that company and its successors for 46 years.

Sir Donald D. Mann, who underwent an operation on Oct. 30, had sufficiently recovered to spend a short time at his office Dec. 12. On Dec. 14 he left Toronto for San Francisco in his private car Athabasca, accompanied by Lady Mann, their son, Miss Nesbitt, of Woodstock, and his secretary. He will probably spend most of January in California.

F. E. Snow, who died in Detroit, Mich., Dec. 1, where he was interested in electric railway building, was in early life employed by the Great Western Ry. and the Wabash Rd., and was General Passenger Agent of the Canada Southern Ry. when it was taken over by the Michigan Central Rd. One of his sons, M. B. Snow, is Assistant General Superintendent Michigan Central Rd.

A. W. Carpenter, carrying on business as the Charing Cross Bank, London, Eng., which closed its doors Oct. 17, 1910, has been sentenced to two years imprisonment for fraud and false pretences in connection with the bank's business. The bank was financing the Atlantic, Quebec and Western Ry., the Gaspé harbor development, and some industrial concerns in the Gaspé peninsula, Que.

James Edward, who has been appointed Commercial Agent, G.T.R., Moncton, N.B., entered G.T.R. service Sept. 1, 1883, since when he has been, 1885, telegraph operator at Omemeé Jet., Ont., and other points; 1885 to 1892, station agent at Lakefield, Ont., and other points; 1892 to 1903, Agent, Great Eastern Fast Freight Line and Contracting Freight Agent, G.T.R., Montreal; 1903 to 1904, Traveling Freight Agent, Montreal, and 1904 to Nov. 29, 1911, Traveling Freight Agent, Moncton, N.B.

Benjamin Douglas, M. Am. Soc. C.E., for many years Bridge Engineer of the Michigan Central Rd., and more recently Tunnel Engineer for the Detroit River Tunnel Co., was killed recently by a fall from a bridge near Cavoere, Brazil. He was born in Detroit, Mich., in 1859, and graduated from the University of Michigan in 1882. In 1885 he became Bridge Engineer of the Michigan Central Rd., which position he held until 1905, when he was appointed Tunnel Engineer on the construction of the Detroit River tunnel. Since 1910 he carried on a private consulting practice, with office in Detroit.

A. M. Sutherland, who recently resigned the position of Assistant Superintendent, Western Division, Duluth, South Shore and Atlantic Ry., Thormaston, Mich., to go into farming, was born at Hartford, Conn., Apr. 2, 1844, and entered railway service in 1861, since when he has been, to 1865, track laborer, G.T.R.; 1865 to 1867, mining; 1867 to 1870, section foreman, Chicago and North Western Ry.; 1870 to 1872,

locomotive fireman, and 1872 to 1881, locomotive driver, same road; 1881 to 1889 Roadmaster, same road; 1889 to Dec., 1911, Assistant Superintendent, D.S.S. and A.R., Thormaston, Mich.

W. W. Walker, who has been appointed Vice President and General Manager, Duluth, South Shore and Atlantic Ry. and Mineral Range Rd., Duluth, Minn., was born at St. Catharines, Ont., June 3, 1868. He began railway work in 1883 with the G.T.R., and in 1884 entered the service of the Queen and Crescent Route, where he was to 1887 in the traffic department. From 1887 to 1888 he was in the Chicago and North Western Ry. claim department, and from Oct., 1888, to Feb., 1890, was rate clerk and chief clerk, Great Northern Ry. He was appointed Travelling Freight Agent, D.S.S. and A.R., Nov., 1890, Assistant General Freight Agent, 1897, and from July, 1901, to Dec. 1, 1911, was General Freight Agent at Duluth, Minn.

Duncan MacPherson, M. Can. Soc. C.E., and a member of its council, who has been appointed Assistant to the Chairman, National Transcontinental Railway Commission, was born at Bath, Ont., Feb. 2, 1858, and entered railway service, Nov., 1880, since when he has been, to Feb., 1881, rodman on Canada Central Ry. surveys on the extension west of Pembroke, Ont.; Feb., 1881, on the incorporation of the C.P.R., when the Canada Central Ry. was taken over, to Aug., 1882, rodman on revision of location and construction, leveller, transitman and engineer in charge of a section of final location and construction of the C.P.R.; Aug., 1882 to 1886, Assistant Engineer of about 400 miles of line, then constituting the C.P.R. Eastern Division; 1886 to July, 1905, Division Engineer in charge of maintenance of way, track, bridges, buildings, etc., Eastern Division, and construction of branch lines; Aug., 1905, to Dec., 1911, Assistant Chief Engineer, National Transcontinental Ry. He graduated from the Royal Military College, Kingston, Ont., in 1880, being first in engineering.

C. W. Houston, who has been appointed Superintendent, Duluth, Rainy Lake and Winnipeg Ry., Virginia, Minn., was born at Hardwick, Vt., Jan. 15, 1858, and entered railway service June, 1875, since when he has been, to Oct., 1883, consecutively, telegraph operator, agent, brakeman, fireman and conductor on the Portland and Ogdensburg Ry., Chicago, Milwaukee and St. Paul Ry., Minneapolis and St. Louis Rd., and Burlington, Cedar Rapids and Northern Ry.; Oct., 1883, to Sept., 1891, dispatcher, B.C.R. and N. Ry.; Sept., 1891, to July, 1904, consecutively, dispatcher, Chief Dispatcher and Trainmaster, Northern Pacific Ry.; Sept. to Dec. 31, 1904, dispatcher, Great Northern Ry.; Apr., 1905, to Mar., 1907, dispatcher and Trainmaster, El Paso and Southwestern Rd.; Mar., 1907, to Dec., 1909, consecutively, dispatcher, conductor and Trainmaster, Mexican Central Ry.; Jan. to Nov., 1910, dispatcher and Chief Dispatcher, Frisco Lines; Nov., 1910, to Feb., 1911, rule instructor, Canadian Northern Ry.; Feb. to Dec., 1911, Chief Dispatcher, Duluth, Rainy Lake and Winnipeg Ry.

M. B. Murphy, Superintendent, District 2, Canadian Northern Ry., Winnipeg, whose portrait appears on this page, was born at Napa, Cal., Sept. 11, 1866, and entered railway service, Jan. 24, 1880, since when he has been, to Jan., 1895, successively, operator, agent, brakeman, conductor, yardmaster, dispatcher, chief dispatcher, and connected with the construction department in charge of construction of the Nantasket Branch, Union Pacific Rd.; Jan., 1895, to Mar., 1898, county clerk, Carbon county, Wyo., and subsequently en-

rolling and engrossing clerk in charge of the compilation of the session laws of the fourth Legislature of Wyoming; Mar. to July, 1898, dispatcher, Union Pacific Rd.; July to Nov., 1898, in charge of locomotive performance statistics, Chicago, St. Paul, Minneapolis and Omaha Ry., Itasca, Wis.; Nov., 1898, to Jan. 16, 1899, operator and dispatcher, Eastern Minnesota Ry. West Superior, Wis.; Jan. 16, 1899, to July 31, 1900, dispatcher and Chief Dispatcher, Northern Pacific Ry., Staples, Minn., and Glendive, Mont.; July 31 to Nov., 1900, Chief Dispatcher, Union Pacific Rd., Green River, Wyo.; Nov., 1900, to Jan., 1903, Chief Dispatcher, Denver and Rio Grande Rd., Minturn, Colo.; Jan., 1903, to Sept. 20, 1906, Chief Dispatcher and Trainmaster, El Paso and Northeastern Rd., Alamogordo, New Mexico; Sept. 20, 1906, to Jan. 1, 1910, Trainmaster, Mexican Central Ry., Chihuahua, Mexico; Jan. 1 to Apr., 1910, General Yardmaster, Omaha, South Omaha and Council Bluffs terminals, Chicago and Great Western Ry.; May 1, 1910, to Feb. 27, 1911, Trainmaster, District 2, Canadian Northern Ry., Winnipeg, and during



M. B. Murphy,
Superintendent, District 2, Canadian
Northern Ry., Winnipeg.

Aug. and Sept., 1910, acting Superintendent, C.N.R., at Winnipeg; Feb. 27 to Nov., 1911, Superintendent, Duluth, Rainy Lake and Winnipeg Ry., Virginia, Minn.

The Central Railway and Engineering Club of Canada held its annual meeting in Toronto Dec. 19. J. Bannon, chief engineer of the heating plant, etc., in the Toronto City Hall, was elected President; A. Taylor, foreman, boiler shop, Polson Iron Works, First Vice President, and E. Logan, foreman, G.T.R. shops, Toronto, Second Vice President. Of the seven members of the executive committee elected, only one is in railway service, namely, W. C. Sealy, General Foreman, G.T.R., Toronto. The club donated \$120 to various charities.

T. H. Watson, Manager, Canada Bolt and Nut Co.'s Branch Steel Co. of Canada, Ltd., has resigned, and has been elected Vice President and Managing Director of the Spanish River Pulp and Paper Mills, Ltd. He will continue to have his headquarters in Toronto.

Northern Railway Lines in Canada

Fort William, Ont.—At a civic dinner, Dec. 1, A. Vickers stated that plans were being prepared by another railway company for bringing its lines into Fort William, from the United States. Survey parties had been in the field between Fort William and the International boundary, and it was likely that something would be heard of the project officially early in the year. It is said that the G.N.R. is the company referred to.

Midland Ry. of Manitoba—Midland Great Northern Ry.—The company expected to have eight miles of tracks on its line into Winnipeg laid by Dec. 31.

As a matter of fact a direct train service into the company's own freight terminals in Winnipeg was put in operation Dec. 4, though the line was not then fully completed, as the track had not been laid down quite to the sheds. The line is expected to be fully completed by the end of Jan., with the exception of the steel bridge over the Assiniboine River. This bridge will have a 240 ft. draw span, and two other spans, one of 105 ft. and one of 60 ft., the steel for which has been delivered. The temporary bridge erected for construction purposes will be used until the steel bridge is completed.

Moose Jaw, Sask.—A press report states that engineers and other officials of the company have been in Moose Jaw for some little time looking into the question of a line into that place.

Nelson and Fort Sheppard Ry.—Press reports state that the Northern Pacific Ry. has begun a freight service into Nelson, B.C. C. W. Breckenridge, one of the company's traveling freight and passenger agents, was at Nelson, Dec. 7, and stated that the N.P.R. had running rights over the G.N.R. lines from Spokane to Nelson and Rossland.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—The construction work for 1911 included the laying of 12 miles of track from Princeton to Coalmount, B.C., and we were recently officially advised that it was expected to have six miles of track laid on the coast section of the line from Abbotsford westerly to Kilgard, B.C., by Dec. 31.

The final revision survey for the line across Hope Mountains was completed Dec. 6 by W. W. Auburn and M. A. Butler. In an interview, Dec. 14, J. H. Kennedy, Chief Engineer, is reported as having said that the uncompleted gap between Tulameen and the Hope Mountains, 76 miles, could be finished within two years. The reports and surveys now completed would be forwarded to St. Paul for approval. The line will follow the Coquihalla River, with a maximum gradient of 2.2%. There will be 14 short tunnels and one of over 1,000 ft. in length. (Dec., 1911, pg. 1129.)

Dominion Railway Subsidies.—A contract, under the act granting aid towards the building of certain railways, was entered into Nov. 11, 1911, between the Dominion Government and the Orford Mountain Ry. for the building of an extension from Mansonville, Que., to the International boundary, 3.12 miles. This line was built some time since.

The New York Central and Hudson River Rd. Co. has issued a circular to the holders of its \$110,000,000 3½% collateral trust bonds, which were given in exchange for stock of the Lake Shore and Michigan Southern and Michigan Central roads, asking their consent to merge either or both roads with the parent company.

The Minister of the Interior is credited with stating in Winnipeg, Dec. 23, that J. D. McArthur will be authorized to go on at once with his contract for the first section of the railway from the Pas Mission, Sask., towards Hudson Bay.

Canadian Pacific Railway Construction, Betterments, Etc.

Halifax, N.S., to Moncton, N.B.—Local press reports in Halifax, N.S., state that engineers have gone over the route of a line to connect Halifax with Moncton, N.B., by means of extensions of the Dominion Atlantic Ry. The route gone over is stated to have included the Stewiacke Valley, between Amherst and Truro, and it is said that it is possible to secure a gradient equal to that of the National Transcontinental Ry. for the entire distance.

Aroostook Jct., N.B.—The Board of Railway Commissioners has authorized the C.P.R. to expropriate certain lands near the line at Aroostook Jct., N.B., for the erection of new buildings.

Weston-Lambton Branch.—We are officially advised that it is likely a line will be built in the near future for connecting the Toronto-Windsor line and the Toronto-Sudbury line. A route has been surveyed for this line, starting from near Islington, on the Toronto-Windsor line, northerly to near Weston, about 4.5 mile. Application is being made to the Board of Railway Commissioners for approval of the route.

Orford Mountain Ry.—The extension from Mansonville, Que., to the International boundary, 3.12 miles, for which a contract, under the act granting aid to certain railways, was entered into with the Dominion Government, Nov. 11, has already been built, and it is being operated as part of the C.P.R. system.

Campbellford, Lake Ontario and Western Ry.—Plans are being prepared for filing with the Board of Railway Commissioners for this projected railway. The plans will show a route starting from the Montreal-Toronto line at Glen Tay, to which point the second track work from Montreal is being completed, and proceeding southwesterly to Belleville, and along the lake shore, rejoining the Montreal-Toronto line near Leaside Jct. It was reported that the plans had been filed Dec. 4, but J. W. Leonard, assistant to the Vice President, Eastern Lines, was reported as stating, Dec. 8, that some points on the route had not been finally decided upon, and that the plans would not be filed for about a month. A map showing the route of the line through Belleville has, however, been filed in the Registry office there.

Georgian Bay and Seaboard Ry.—A freight service was placed in operation on this newly completed line early in Dec., and it is expected that a passenger service will be arranged for early in the new year. The line from Victoria Harbor to Coldwater Jct., on the Toronto-Brantford line, has been operated for nearly two years. From Coldwater Jct. the line passes easterly and southerly via Orillia and Lindsay, to Bethany Jct., on the Montreal-Toronto line. It has a total length of 81 miles. The wharves, grain elevators and terminal facilities are on the shores of Victoria Harbor, where a new town is springing up, to which the name of Port McNicoll has been given.

Toronto Office Building.—The office building being erected on the corner of Yonge and King Streets, an illustration of which is given on this page, will be 16 stories. It will have a frontage of 120 ft. on Yonge St., and of 75 ft. on King St. West. It will be of steel construction, with granite columns 30 ft. high on both frontages, above which the building will be of semi-glazed terracotta. The two lower floors will be wide open to the daylight, the walls being formed of large sheets of glass framed in steel. The entire construction will be fireproof, the floors being of concrete. The double doorway on the ground floor

gives a diagonal passage between the two streets. The ground floor will be used by the company, including ticket offices for the railway, the lake and ocean steamships, and the telegraph offices, and the second floor will be used by the District Passenger Agent and his staff. The other floors will be let as offices, the top storey, which will be 18 ft. high, will be devoted to the C.P.R. telegraph operating department.

South Ontario Pacific Ry.—The Board of Railway Commissioners has recommended the Governor-in-council to approve the lease of the S.O.P. Ry. to the C.P.R. This line is under construction from Guelph Jct. to Hamilton, Ont.

Owen Sound Elevators.—The C.P.R. elevators A and B, at Owen Sound, Ont., were destroyed by fire, with their contents, Dec. 11. The loss is given approximately as \$1,000,000, of which



Canadian Pacific Railway Office Building, King and Yonge Streets, Toronto.

about half is for grain. Elevator A was built in 1884, and B in 1897. In connection with the latter elevator, a bonus of \$40,000 and other concessions were granted by the town, and it is stated that under the agreement the C.P.R. will either have to rebuild elevator B, or refund the greater portion of the bonus. The whole property was covered by insurance, and J. Richardson and Sons, Kingston, who owned most of the grain, have purchased the grain salvage.

Collingwood Southern Ry.—Representatives of the Collingwood Board of Trade waited on D. McNicoll, Vice President, C.P.R., at Montreal, recently to discuss the question of the building of a line into Collingwood, Ont. They subsequently reported that the C.P.R. management had the proposition under consideration. Such a line would cost \$800,000, on which cost the company asked

a net revenue of 5%. M. H. Brown, Division Freight Agent, C.P.R., was in Collingwood Dec. 9, collecting information as to the possible traffic.

It is suggested that the line connect with the Toronto-Sudbury line near Baxter. The C.S. Ry. Co. was incorporated in the C.P.R. interests some years ago to build such a connection.

Fort William Coal Handling Plant.—An additional coal handling plant is to be built at Fort William, Ont. Press reports state that the estimated cost is \$500,000. The plant will, it is said, involve the building of a bridge, two car dumping unloaders, coal conveyor cars, and trestle. The plant, it is stated, will be operated by electricity. The Wellman-Seaver-Morgan Co., Cleveland, Ohio, have the contract.

Winnipeg Terminals.—In connection with the reports as to the laying out of new freight terminals some miles out of Winnipeg. We understand that a comprehensive scheme for providing additional facilities is under contemplation. Nothing, however, has been decided, either as to location, or the area of the yards.

Regina to International Boundary.—It is not the present intention to build a line from Regina, Sask., to the International boundary, as stated in press reports.

Asquith to Battleford, Sask.—A press dispatch, Dec. 15, states that it is the company's intention to build a line from near Asquith to Battleford, Sask., and thence across the river to North Battleford.

Swift Current to Bassano.—Press reports state that plans have been approved for a line from Swift Current, Sask., to Bassano, Alta.; that construction is in progress, and that when completed it will form the main route for east and west traffic, instead of the present route via Medicine Hat. A branch line has been built from Swift Current northwesterly for 45 miles, and we understand that it may be projected on to a point on the Calgary section. This branch is built to a 0.4 gradient, so that if completed certain traffic might be routed over it, as it would be an easier line than the present one. If the line is completed through it will be only three or four miles shorter, instead of between 40 and 50 miles, as press reports state, than the present route.

Strathcona - Edmonton High Level Bridge.—Reports from Strathcona, Alta., state that it will take over 1,000 cars to transport the steel for the superstructure of the high level bridge on the line to connect Strathcona and Edmonton. There are, it is said, 400 carloads of material on the way, in addition to about 100 which had been unloaded to Dec. 8. The contractors have done considerable preparatory work, and it was expected that everything would be ready so that erection of the superstructure could be started Jan. 1, and proceed without any interruption.

F. W. Peters, Assistant to the Vice President, Winnipeg, is reported as having informed the Edmonton city council, Dec. 4, that it was expected to have the bridge completed by the end of 1912. Other bridges on the line connecting the two towns were expected to be completed in the spring.

Edmonton Terminals, etc.—The Edmonton city council, it is reported, expects to receive plans early in the new year, showing the layout of yards at North St., the plans of the station building, and for an office building on Jasper Ave.

Sedgewick Southerly.—Application is being made to the Dominion Parliament for authority to build a line from Sedgewick, on the Hardisty subdivision, southerly to tp. 40 or 41, range 12 or 13, west of the 4th meridian, Alta.

Calgary Shops.—S. E. Junkin, Vice President of Westinghouse, Church, Kerr Co., New York, was in Winnipeg, Dec. 12, in consultation with George Bury, Vice President and General Manager, C.P.R. In a subsequent interview Mr. Junkin is reported as having said that his firm had prepared plans for the preliminary layout of the shops at Calgary, Alta. The railway company had evinced a broad, generous policy in connection with the enterprise, and the shops would be the most nearly perfect of any railway shops on the continent. Every provision would be made for the prompt handling of the work, and for the convenience of the workmen. What his company would have to do in the future in connection with the building of the shops, would depend wholly on the wishes of the C.P.R.

Winnipeg papers, Dec. 15, stated it was announced that morning, that the contract for building the shops had been let to the Westinghouse, Church, Kerr Co. The plans, it is said, provide for the erection of a boiler house, locomotive shop, general stores building, power house, two freight car shops, two passenger car shops, pattern shop, foundry, planing mill, wheel and tender shop, electrical shop, besides a number of smaller buildings.

We were officially advised, by telegraph, Dec. 23, that a contract had been let to Westinghouse, Church, Kerr Co.

Kootenay Central Ry.—We are officially advised that a contract has been let to Foley Bros., Welch and Stewart for grading from Fort Steele to Skook-umsbuck, B.C., 21 miles.

Coquitlam, B.C., Shops, Yards, etc.—F. F. Busted, General Superintendent, in a recent interview, is reported to have said that the company was badly in need of additional yard and other space in Vancouver and vicinity, and that the clearing and construction work at Coquitlam would be rushed as fast as possible. M. P. Cotton and Co., Vancouver, were reported to have several groups of men at work clearing the site Dec. 8.

C.P.R. Hotels.—G. M. Bosworth, Vice President, whose jurisdiction was recently extended to include the hotel system, completed a trip of inspection over the line to Vancouver, B.C., Dec. 15. The work at present being carried out on the hotels includes a new kitchen annex at the Algonquin, St. Andrews, N.B.; the enlargement of the Place Viger, Montreal; the enlargement of the Royal Alexandra, Winnipeg, and the enlargement of the Hotel Empress at Victoria. A permit has been applied for for the building of a new wing for the Hotel Vancouver, in Vancouver, and work has been started on a new hotel in Calgary, Alta.

The plan for the Calgary hotel shows that it will be 13 stories, rising to a height of 169 ft., and will have a frontage of 228 ft. and a depth of 164 ft. At first the hotel will be completed only as far as it is desired to open it for business as early as possible. The building is beautifully laid out, and, it is expected, will afford ample accommodation for years to come. The frame will be of steel with reinforced concrete floors and concrete foundations. The plans show terra cotta partitions. The building will be faced with cut stone and brick. The main roof will be used as a promenade. The main entrance is in the centre of the building, and the vestibule leads directly to the main office. To the west of the office is a large drawing room, and off this is a large dining room extending the whole depth of the building. There are also two large rotundas and a cafe on the ground floor. On the first floor there is a large banquet hall and ballroom; there will be about 400 bedrooms. Peter Lyall and Sons, of Montreal, have the contract for the

foundations. The contract for the superstructure is not let. Mr. Bosworth, during his trip west investigated the possibility of establishing houses at various points for the company's employes.

Port Moody-North Vancouver.—Press reports state that C.P.R. engineers are making a survey for an extension of the Port Moody line to Seymour Creek and North Vancouver, B.C.

Vancouver Improvements.—George Bury, Vice President and General Manager, arrived in Vancouver Dec. 6, on his first official trip of inspection over the western lines since his recent promotion. He stated that the object of his visit was to obtain all possible information so as to discuss future work of betterments, etc., with the President. The new station would be built on the site of the present station, and he expected that work would be started early in the spring. A portion of the yards at Coquitlam would be completed by the end of this year.

Esquimalt and Nanaino Ry.—We are officially advised that during 1911 the company laid 26 miles of track on its Alberni extension, viz., from Cameron Lake to Port Alberni. It has under construction a line from McBride Jct. to Union Bay, 34.8 miles, a contract for the clearing of the right of way of which has been let to the Westholme Lumber Co., Victoria, and a branch from Duncan to Cowichan Lake, 16.1 miles, the grading contract for which has been let to Moore and Pethick, Victoria. Negotiations are in progress for securing a right of way for the Westholme branch to Osborne Bay, 3.3 miles.

The formal opening of the line to Alberni was fixed for Dec. 1, but owing to heavy snow storms, the work of finishing up a couple of bridges was delayed, and it was announced that the line would not be opened until Dec. 20. The Inspecting Engineer of the Board of Railway Commissioners made an official trip over it Dec. 7. The service arranged for the winter season is a tri-weekly one.

The Minister of Railways has approved location plans for the extension of the line from Black Creek to Duncan Bay, the construction of which will involve the building of bridges across two considerable rivers. The location plans for 3.25 miles of the line from mileage 47.5 on the main line to Osborne Bay, have been deposited in the Land Registry offices, Victoria, and application is being made to the Board of Railway Commissioners for approval.

Railway Finance, Meetings, Etc.

Acadia Coal Co.—Under the terms of a proposal made in the House of Commons, May 17, 1911, the railway from New Glasgow to Thorburn, U.S., owned by the Acadia Coal Co., and referred to as the Vale Ry., was to have been taken over upon certain terms. The proposal was not adopted. The Minister of Railways stated in the House of Commons, Dec. 7; that the Government did not intend to reintroduce the resolution, and had discontinued the passenger service which was being given under the agreement. (Sept., 1910, pg. 969.)

Alberta Ry. and Irrigation Co.—Notice has been given that the company will, on Jan. 1, pay off its 5% debenture stock outstanding at that date. The transfer books were finally closed Dec. 4.

Algoma Central and Hudson Bay Ry.—There has been listed on the London, Eng., Stock Exchange, an issue of £350,000 of 5% debenture stock.

Brockville, Westport and Northwestern Ry.—The whole of this company's property, including the line from Brockville to Westport, Ont., 45 miles, with the rolling stock and other equipment,

etc., was sold under a court order in Toronto, Dec. 11, to R. P. Ormsby, Assistant Secretary, Canadian Northern Ry., for \$250,000. Mackenzie, Mann and Co. have for some time held \$442,000 of bonds out of a total issue of \$450,000, and had a claim of about \$50,000 for accrued interest, but they were unable to locate the holder of the other \$8,000 of bonds, so that a sale of the property became necessary to give them a title to the property. Mackenzie, Mann and Co. also held over 90% of the common and preferred stock.

Calgary and Edmonton Ry.—A special meeting of the shareholders will be held in Montreal, Jan. 16, to create and issue bonds in respect of the extension of its Lacombe branch 125 miles easterly from the end of the 100 miles in respect of which bonds have already been issued; bridge bonds in respect of the branch line from Strathcona to Edmonton, including the high level bridge over the Saskatchewan River and its approaches; and to approve the form of the respective mortgages to be given to secure payment of same.

Canadian Northern Ontario Ry.—Lazard, Bros. and Co. issued a prospectus in London, Eng., Dec. 7, of £7,000,000 3½% first mortgage debenture stock of the C.N.O.R. Co. unconditionally guaranteed as to principal and interest by the Dominion Government, repayable May 19, 1961. The issue price was 93. It is secured by a first mortgage on about 970 miles of railway now under construction. The proceeds are to be used for the construction of the Montreal-Port Arthur line.

Canadian Northern Pacific Ry.—A prospectus was issued in England recently of £1,438,356 first mortgage 4% guaranteed debenture stock, principal and interest unconditionally guaranteed by the British Columbia Government, and is further secured by a first mortgage on the railway between Vancouver and the British Columbia-Alberta boundary and certain other lines. The issue price was 99.

Canadian Pacific Ry.—Shareholders of record Jan. 2 have the right to subscribe for the \$18,000,000 of new capital stock to be issued at \$150 on the basis of one new share for every ten held, the right to subscribe expiring Feb. 13. The payment for the stock is to be made:—20% on or before Feb. 13, 20% on April 12, 20% on June 14, 20% on Aug. 16, and 20% on Oct. 18.

Dominion Atlantic Ry.—Estimated gross earnings for Nov., from passengers, \$47,800; from freight, \$79,700; total, \$127,500.

Grand Trunk Ry.—London, Eng., financial papers state that the recent issue of £1,250,000 of 4% guaranteed stock, issued under the power of the G.T.R. Act of 1909, has been over subscribed.

Kaslo and Slocan Ry.—Following are the officers and directors for the current year:—President, J. Anderson; Vice President, H. Giegerich; Manager, J. L. Retallack; Secretary-Treasurer, W. H. Burgess; other director, O. T. Stone. The company has acquired the line from the Great Northern Ry.

Lake Superior Corporation.—Application has been made to the New York State Exchange to list \$40,000,000 of the capital stock. The company owns the Algoma Central and Hudson Bay Ry., the Algoma Eastern Ry., the electric railways in Sault Ste. Marie, Ontario and Michigan, and a number of steamboats plying on the Great Lakes, in addition to a number of industrial concerns.

Quebec Central Ry.—Gross earnings for Oct., \$120,891.61; expenses, \$78,280.07; net earnings, \$42,611.54, against \$99,773.68 gross earnings; \$65,296.41 expenses; \$34,477.27 net earnings for Oct., 1910. Aggregate gross earnings for four months ended Oct. 31, 1911, \$510,263.07;

expenses, \$323,441.27; net earnings, \$186,821.80, against \$463,867.69 aggregate gross earnings; \$294,593.02 expenses; \$169,274.67 net earnings for same period 1910.

Quebec Central Ry.—In connection with the application to the Quebec Legislature for the confirmation of the lease of the company's line to the C.P.R., the company desires authority to issue stock bearing interest at 3½% redeemable in 50 years, to replace the existing 8% second debenture stock; to issue 5% debenture stock or bonds repayable in 50 years to take the place of the present 7% income bonds, to permit the changing of the par value of its present shares to £1 or multiples thereof; to change the number of directors and the head office of the company.

St. Lawrence and Adirondack Ry.—A dividend at the rate of 4% was declared Dec. 13. This is the first dividend paid since Dec., 1908. There is \$1,615,000 of stock outstanding, all of which is held by the New York Central and Hudson River Rd.

St. Mary's and Western Ontario Ry.—The second mortgage bonds of this company, which is leased to the C.P.R., are held by the municipalities of Embro, East Missouri, and St. Marys, among other holders. The rental paid by the C.P.R. covers the interest of the first mortgage bonds. The C.P.R. holds or controls the capital stock, and has made an offer to retire the second mortgage bonds at 35% of the face value. The St. Marys town council favors accepting the offer and has submitted a by-law to that effect to the taxpayers, but the other two municipalities are not disposed to accept any offer at present.

Temiscouata Ry.—Profit for Oct., 1911, \$2,785, against \$4,897 for Oct., 1910.

Teniskaming and Northern Ontario Ry.—Revenue for Oct., 1911, \$212,318.83; expenditure, \$108,583.65; balance, \$103,735.18; ore royalties, \$889.87; net revenue, \$104,625.05; less hire of equipment, \$3,684.60, and outside operations \$610; net income, \$100,330.45. Total revenue for 12 months ended Oct. 31, \$1,780,964.83; expenditure, \$1,181,998.63; balance, \$598,966.20; ore royalties, \$17,060.56; income from hire of equipment, \$6,283.93; net revenue, \$622,310.69; less hire of equipment, \$25,364.64, and outside operations \$3,793.69; net income, \$593,152.69.

Temiskaming and Northern Ontario Ry.—Sir James Whitney, Premier of Ontario, stated in a speech recently that the G.T.R. is to pay the T. and N.O.R. \$300,000 a year for running rights between North Bay and Cochrane, Ont. The G.T.R. will also pay a proportion of the maintenance expenses.

Wabash Rd.—As the result of a friendly suit, F. A. Delaw, President; G. H. Peryor, Vice President, and W. K. Bexley have been appointed by the U.S. court at St. Louis, Mo., receivers for the company, and W. H. Blodgett, the company's general counsel, was appointed solicitor to the receivers. The General Manager is reported as having stated, Dec. 19, that the receivership will in no way affect the operation of the line. The company jointly operates the G.T.R. Southern Division from the St. Clair River to the Niagara River.

The Board of Railway Commissioners has issued an order requiring that all railway companies subject to its jurisdiction file by Jan. 15 copies of all existing contracts with their cartage agents for the cartage of freight at so-called cartage points, with maps showing the cartage limits, and thereafter file from time to time any new contracts or modifications of existing ones, or of cartage limits.

Railway Rolling Stock Notes.

The Minneapolis, St. Paul and Sault Ste. Marie Ry. has ordered 750 box cars.

The St. Lawrence and Adirondack Ry has ordered a mogul locomotive from the Baldwin Locomotive Co., Philadelphia, Pa.

The Duluth, Winnipeg and Pacific Ry. (C.N.R.) has added 10 refrigerator cars and 20 stock cars to its rolling stock. We have already given details of these.

The Canada Iron Corporation, which controls the Northern New Brunswick and Seaboard Ry., has ordered a double ended snow plough from the Canadian Car and Foundry Co., Montreal.

An unconfirmed press report states that the G.T.R. will spend about \$500,000 in improvements in its mechanical department between now and the spring, and that it will build 30 locomotives, mostly in its Montreal shops.

The Canadian Northern Ry., between Nov. 15 and Dec. 15, ordered 250 box cars and 250 steel underframe flat cars from the Canadian Car and Foundry Co., Montreal, and one rotary snow plough from the Montreal Locomotive Works.

Regarding recent reports to the effect that the Central Vermont Ry. is to place gasoline cars on its West River line, we are officially advised that the matter is under consideration, but is not in a sufficiently advanced state to justify any announcement at present.

The Canadian Northern Ry., between Nov. 15 and Dec. 15, received the following additions to rolling stock: 62 box cars and three sleeping cars from the Canadian Car and Foundry Co., Montreal; 90 box cars from the Crossen Car Co., Cobourg, Ont., and 220 box cars from the Nova Scotia Car Works, Halifax, N.S.

The Intercolonial Ry. has ordered five cabooses to be built at its Moncton shops, and has received five cabooses and 25 platform cars from its Moncton shops; one refrigerator car from the Canadian Car and Foundry Co., five Pacific type locomotives from the Canadian Locomotive Co., and seven box cars, 60,000 lbs. capacity.

The C.P.R., between Nov. 14 and Dec. 14, received the following additions to rolling stock, two double track wooden snow ploughs, six flangers, and two D.10 locomotives from its Angus shops, Montreal; 15 steel single track snow ploughs from the Canadian Car and Foundry Co., Montreal, and one N.3 locomotive from the Canadian Locomotive Co., Kingston, Ont.

The C.P.R., between Nov. 14 and Dec. 14, ordered 2,500 steel frame box cars (mentioned in our last issue), from the Canadian Car and Foundry Co., Montreal; one flanger from its Angus shops, Montreal, and 2,000 steel frame box cars, 90 tank cars and 10 sleeping cars from the United States. Since the last mentioned date it has also ordered 14 steel underframes for Lidgerwood unloaders, from the Canadian Car and Foundry Co., Montreal.

The chief details of the Lidgerwood contractor's flat car which F. H. Hopkins and Co. have ordered from the Canadian Car and Foundry Co., as mentioned in our last issue, are as follows:—
Length over end sills 33 ft.
Width over side sills 9 ft. 8 ins.
Width over flooring 9 ft. 3 ins.
Truck centres 23 ft.
Body bolsters Simplex
Air brakes Westinghouse H.C. 812
Couplers Janney
Truck type Diamond arch bar, 60,000 lbs. capacity

Truck bolsters and brake beams Simplex
Brake shoes Cast iron
Journal boxes Cast iron
Journal bearings M.C.B.

Following are chief details of the five Pacific type locomotives, class G2, which

the C.P.R. is building at its Angus shops, Montreal, as mentioned in our last issue:
Weight on drivers 142,000 lbs.
Total weight of engine 218,000 lbs.
Weight of loaded tender 140,000 lbs.
Tender capacity, water 5,000 imp. gals.
Tender capacity, coal 12 tons
Heating surface, firebox 175 sq. ft.
Heating surface, tubes 2,730 sq. ft.
Heating surface, total 2,905 sq. ft.
Superheater surface 539 sq. ft.
Total all heating surfaces 3,444 sq. ft.
Grate area 45.6 sq. ft.
Cylinders 22½ by 28 ins.
Driving wheels 69 ins.
Brake equipment Westinghouse E. T. 6
Lubricator Detroit No. 22
Valve gear Walschaert
Boiler pressure 200 lbs.
Superheater Vaughan and Horsey

Following are chief details of the 2,500 box cars which the C.P.R. is having built by the Canadian Car and Foundry Co., Montreal, as mentioned in our last issue:—

Length over all 38 ft. 5½ ins.
Truck centres 26 ft. 10 ins.
Extreme width 9 ft. 3½ ins.
Height, top of rail to top of brake wheel 13 ft. 10 ins.
Side door openings 5 ft.
Draft springs M.C.B. Class G
Couplers Simplex cast steel
Air brakes Westinghouse K.C. 812
Trucks C.P.R. standard, 40-ton arch bar with Barber rollers
Wheels Standard cast iron, 33 ins.
Axles M.C.B. steel, 5 by 9 ins.
Journal bearings M.C.B.
Journal boxes McCord
Truck springs C.P.R. standard
Brake beams and bolsters Simplex
Side bearings Susemihl
Journal bearing wedges M.C.B. drop forged
Brake shoes Steel back

Following are chief details of the two six wheel switching locomotives, class U3d, which the C.P.R. is building at its Angus shops, Montreal, as mentioned in our last issue:—

Weight in working order 137,000 lbs.
Weight of tender loaded 90,000 lbs.
Weight of tender light 44,000 lbs.
Tender capacity, water 3,500 imp. gals.
Tender capacity, coal 10 tons
Heating surface, firebox 138 sq. ft.
Heating surface, tubes 1,406 sq. ft.
Heating surface, total 1,544 sq. ft.
Grate area 29 sq. ft.
Boiler tubes, no. and diam. 234 2 ins.
Firebox Radial stayed
Boiler, type Straight top
Boiler pressure 200 lbs.
Driving wheel base 11 ft. 6 ins.
Cylinders, diam. and stroke 18 by 26 ins.
Valves Piston, 11 ins.
Valve gear Walschaert
Driving wheels 52 ins.
Axles, driving 8½ by 10 ins.
Axles, tender 5 by 9 ins.
Brake equipment Westinghouse E.T. 6
Lubricator Detroit No. 22

Following are chief details of the 25 consolidation locomotives which the Grand Trunk Pacific Ry. has ordered from the Canadian Locomotive Co., Kingston, Ont., for delivery about May, as mentioned in previous issues:—

Weight on drivers 184,800 lbs.
Weight on engine loaded 211,200 lbs.
Weight of tender loaded 150,000 lbs.
Total weight, engine and tender 361,200 lbs.
Wheel base, driving 17 ft.
Wheel base, engine, total 25 ft. 9 ins.
Wheel base, engine and tender 57 ft. 3½ ins.
Heating surface, firebox 168.2 sq. ft.
Heating surface, tubes 2,757.1 sq. ft.
Heating surface, total 2,925.3 sq. ft.
Grate area 50.62 sq. ft.
Cylinders, diam. and stroke 23 by 30 ins.
Boiler, type Extended wagon top
Boiler, diam. first course 68¾ ins.
Boiler, dome course 76 ins.
Boiler pressure 180 lbs.
Firebox, wide type 96¾ by 75½ ins.
Driving wheels, diam. 63 ins.
Tender wheels 34 ins.
Tender capacity, water 8,000 U.S. gals.
Tender capacity, coal 10 tons
Tractive power 38,541 lbs.
Superheater Schmidt

The Robb Engineering Co., Amherst, N.S., have been appointed sole Canadian agents for the Parsons turbine built by C. A. Parsons & Co., Newcastle-on-Tyne, Eng., and which is used for driving generators, ventilating fans, etc. In the future the Robb Engineering Co. will manufacture some of the parts.

National Transcontinental Railway Construction, Etc.

We are officially advised that during 1911 track was laid on 280.25 miles, distributed as follows:—New Brunswick, 0.73 mile; Quebec, 155.31 miles; Ontario, 124.21 miles. Following are the chief contractors who are engaged upon the work:—District A, G.T. Pacific Construction Co., Montreal; J. W. McManus Co., Chipman, N.B.; W. Kitchen Co., Grand Falls, N.B.; Lyons and White, Edmundston, N.B. District B—M. P. and J. T. Davis, Quebec; Macdonnell and O'Brien, Montreal; G.T. Pacific Construction Co. District C—Macdonnell and O'Brien; G.T. Pacific Construction Co. District D—G.T. Pacific Construction Co.; E. F. and G. E. Fauquier, Ottawa; M. P. and J. T. Davis. District E—M. P. and J. T. Davis; E. F. and G. E. Fauquier; O'Brien, Fowler and MacDougall Bros., Dryden, Ont. District F—O'Brien, Fowler and MacDougall Bros.; J. D. McArthur, Winnipeg.

New Brunswick papers give details of a trip made over the line from Edmundston to Moncton, by a contractor's train Nov. 30. It is stated that the track was in excellent condition, and that, with the exception of stations and terminals, the line was complete.

The Minister of Railways stated in the House of Commons, Dec. 4, that the commissioners reported as follows:—"The engineers advise that the portion of the line in New Brunswick will be completed by Sept., 1912, and the portion in Quebec from the New Brunswick boundary to the St. Lawrence river will be completed by Sept. 30, 1913."

The Minister stated that the Government had not considered whether it would undertake the operation of the Moncton-Quebec section until the Quebec Bridge is completed.

The House of Commons has directed that a return be brought down giving "copies of all papers, correspondence and orders-in-council in connection with the awarding of the contract for the building of the N.T.R. station at Quebec, and all orders suspending work on the same. A press report states that the Government has under consideration the desirability of abandoning the Champlain market as the site of the station.

The Minister of Railways stated in the House of Commons, Nov. 29, that the question of building a line from the N.T.R. into Montreal to the exclusion of the G.T. Pacific Ry., had not been under consideration by the Government. He also stated that a subsidy had been applied for to aid in the building of the line. Such a subsidy was available, having been voted in 1908, but it had not been promised to the G.T. Pacific Ry. or to any other company.

The Commissioners will receive to Jan. 10 tenders for the supply of 14,468 gross tons of 80-lb. steel rails, and the necessary rail fastenings, and to Jan. 3 for the pipe covering required for the equipment of the locomotive shops at Transcona, Man.

The lift span of the bridge over the Red River, at the foot of Lombard St., Winnipeg, is reported to have been completed. The necessary connections with the line at both ends have yet to be made. (Dec., 1911, pg. 1153.)

Grand Trunk Pacific Railway Construction, Etc.

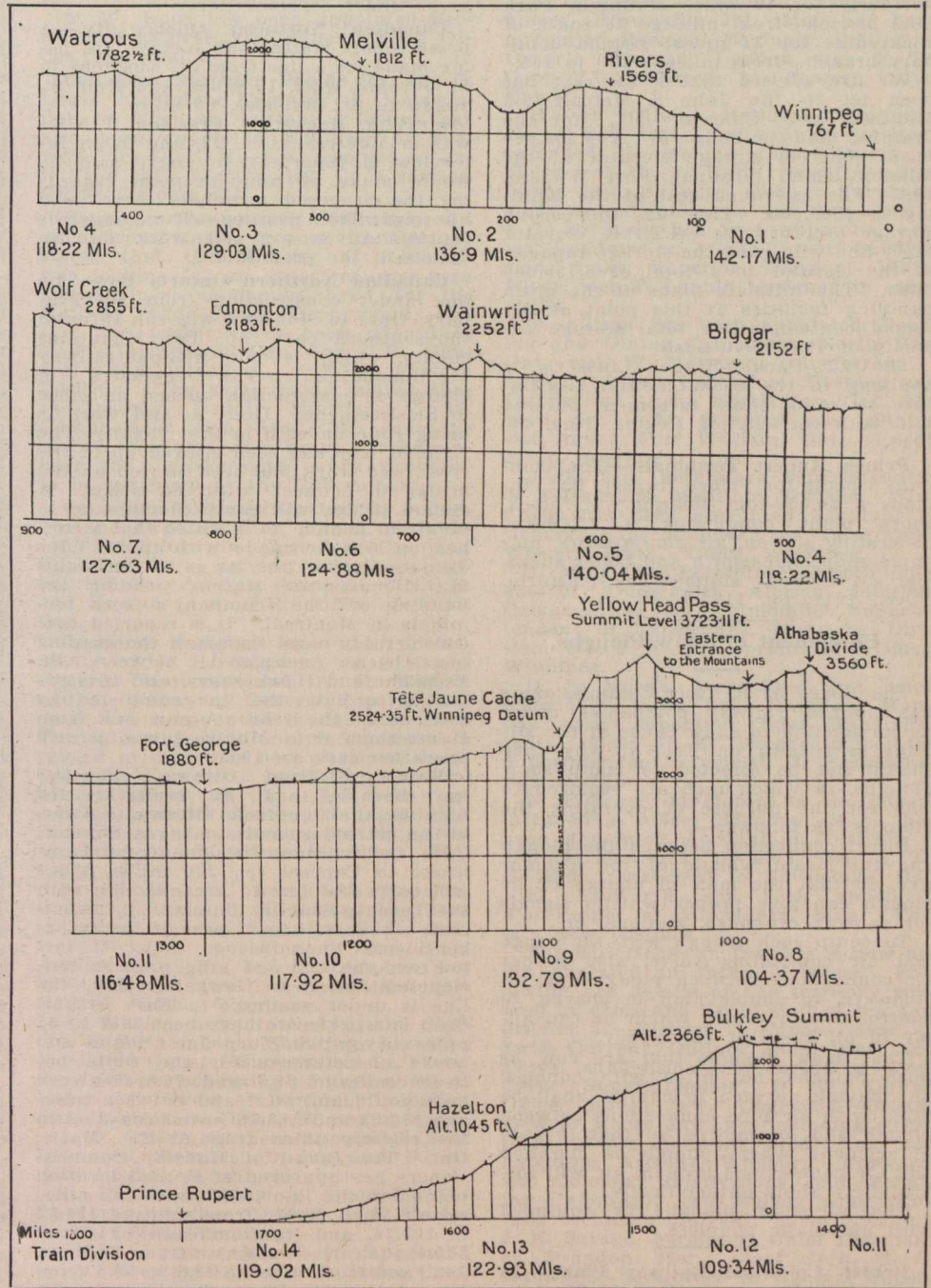
The Dominion Parliament passed through all their stages, Dec. 5, acts extending the time for the construction of the National Transcontinental Railway. Western Division, the building of which, according to the agreement with the G.T. Pacific Ry., was to have been completed Dec. 1, 1911. The time extension is for one year for the Prairie section

and three years for the Mountain section. The act respecting the G.T.P.R. declares that the company has and shall continue to have all the powers originally conferred upon it as regards the uncompleted portions of the line, which are to be completed within such time as may hereafter be fixed by an order-in-council in accordance with the act granting an extension of time for the construction of the National Transcontinental Railway, passed on the same day—Dec. 5.

During 1911 the company laid 254

of Yellowhead Pass, 25 miles; from Tete Jaune Cache to Aldermere, B.C., 425 miles, and from mileage 100 to 235 east of Prince Rupert, 135 miles. These mileages cover the remaining portions of the main line upon which track had not been laid to Dec. 31, 1911. The contracts for this work, three in number, are being carried out by Foley Bros., Welch and Stewart.

Construction was in progress on the following branch lines Dec. 31:—Harte-Brandon branch—from Harte, southwesterly for 25 miles; Regina-Boundary



Profile, Grand Trunk Pacific Railway, Winnipeg to Prince Rupert.

miles of new track, of which 99 miles were on the main line, from Pedley, Alta., to 25 miles west of Yellowhead Pass, B.C., and 155 miles on four branch lines as follows:—Melville-Regina branch—Balcarres to Regina, Sask., 61 miles; Prince Albert branch—Measham to Wakaw, Sask., 42 miles; Calgary branch—Red Deer River southerly for 22 miles; Coal branch—Bickerdike, Alta., for 30 miles southerly.

The work at present under construction and under contract on the main line covers from mileage 55 to 50 west

branch—from Regina for 136 miles southeasterly; Regina-Moose Jaw branch—from Regina to Moose Jaw, 40 miles; Moose Jaw northwesterly—from Moose Jaw northwesterly for 42 miles. Prince Albert branch—from Wakaw to Prince Albert, 45 miles; Battleford branch from Biggar to Battleford, 48 miles; Cutknife branch—from Battleford westerly, 32 miles; Biggar-Calgary branch—from Biggar westerly, 104 miles; Calgary branch—from Perbeck to Calgary, 95 miles; Alberta Coal branch—from mileage 30 to mileage 56 south

of Bickerdike, 26 miles. The several contractors on these branch lines are:—J. D. McArthur Co., Winnipeg; Rigby, Hyland and Plummer, Winnipeg; Phelan and Shirley, Bickerdike, Alta.; J. Dandelin, Battleford, Sask.; Lamereaux and Petersen, Omaha, Neb.; John Gunn and Sons, Winnipeg; Duncan McArthur, Winnipeg.

The following extensions on branch lines were under survey Dec. 31:—Cutknife branch—from mileage 32 west of Battleford to Wainwright, 100 miles; Biggar-Calgary branch—from mileage 104 to 224, west of Biggar; Edson, northerly for 60 miles Mountain Park Coal branch—from mileage 36 south of Bickerdike for 32 miles; Regina boundary branch—from mileage 130 to 155.

We are advised that a contract has been let to the John S. Metcalf Co., Montreal and Chicago, Ill., for the draining and building of a 2,500,000 bush concrete storage elevator at the Mission Island terminal, Fort William, Ont. The estimated cost of the building is \$500,000. This is the second storage unit of the G.T.P.R. elevator there and will bring the storage capacity of the elevator to a total of 5,750,000 bush. The ultimate plans of the grain handling facilities at this point as designed contemplate a total storage capacity of 40,000,000 bush.

The G.T. Pacific Branch Lines Co. is applying to the Saskatchewan Legislature to validate an agreement entered into with the city of Regina, Nov. 30, 1911.

Prince Rupert Terminals.—The company's plans for Prince Rupert, B.C., include a 20,000-ton floating dry dock, shore plant comprising a 1,200-kw. generating station, air compressors, machine shop, blacksmith and boiler shops, and a covered shipbuilding platform. (Dec., 1911, pg. 1153.)

Equipment of Snow Ploughs.

The Board of Railway Commissioners has notified railway companies under its jurisdiction to show cause at the sittings in Ottawa on Feb. 7, why they should not be directed to equip snow ploughs, in which men are required to ride for the purpose of operating the ploughs, as follows:—

Direct connection between the plough and the steam whistle of the locomotive, so that the man in charge of the plough can give proper whistle signals for railway crossings, stations, etc.

To equip each plough with air gauge and air controlling valve, also proper air connections between plough and locomotive, to enable man in charge to control the air brake, which he can apply in all cases of emergency.

That snow ploughs that are run as push ploughs, not fitted with cupolas, and having no men in charge, shall be fitted with air pipe connections between plough and locomotive, so that in case of accident, where plough is derailed and air connections broken, air will immediately apply automatically.

That all snow ploughs be equipped with automatic couplers.

British Columbia Railway Plans.—In a speech at Vancouver, Dec. 14, Premier McBride stated that the Government was considering a policy for the development of railways within the province, which would be laid before the Legislature soon after its opening. One of the subjects under consideration was the line through the centre of the province from Vancouver to Fort George.

Jas. Forrest, who has charge of the Toronto Ry. Co.'s accident department, has nearly recovered from his serious accident, and was able to get out on Dec. 25, when a serious accident occurred near the King St. sheds.

Canadian Northern Railway Construction, Betterments, Etc.

New Brunswick.—Press reports state that Sir Wm. Mackenzie and associates have secured control of 192 square miles in the oil bearing shale districts of New Brunswick. Sir William and G. G. Ruel, of the Canadian Northern Ry. legal department, met the New Brunswick Government, Dec. 1, and are reported to have discussed the development of the property. The question of railway accommodation in these oil fields is stated to be under consideration.

Canadian Northern Quebec Ry.—A press report states that surveys are being made for a line from St. Eustache to St. Jerome, Que., 16 miles, and from St. Justin to St. Stanislas, 60 miles.

Sir Wm. Mackenzie, President, C.N.R., was in Montreal, Dec. 12, and in an interview is reported to have said he would make no announcement regarding the proposed terminals there until his return from Europe. The company's representatives were at work on the details of the proposals.

Canadian Northern Ontario Ry.—The line under construction from Hawkesbury, Ont., to Montreal will run through the southern part of Two Mountains county, which is now without railway accommodation. The engineers in charge of construction opened an office in St. Eustache, Dec. 1, and work is being gone on with in that vicinity. The right of way has been cleared up to the river, and work has been started on the bridge to connect with St. Jesus. A second bridge will carry the line on to Montreal Island. It is stated that a connection will be made with the G.T.R.-Jacques Cartier line, so as to run trains into Bonaventure station, pending the building of the company's own terminals in Montreal. It is reported that considerably more than half the grading has been completed between St. Eustache and Hawkesbury, and it is expected to have the line completed by the end of the year. A new line from Hawkesbury into Montreal was put in operation early in 1911.

Westward from Ottawa, contracts have been let to J. P. Mullarkey for building the line from Ottawa to Pembroke, 90 miles, and to Angus Sinclair, C.E., for building the line from Pembroke to Capreol tp., 220 miles. This will carry the line to a connection with the Toronto-Sudbury line, and its extension, which will form part of the trans-continental line.

From the end of the present constructed line near Gowganda Jct., the line is under contract to Port Arthur. Steel is reported to have been laid to 61 miles beyond Sudbury Jct. Plans and books of reference for the route between mileage 68.7 and 76.5; between mileage 79 and 80.8, and between mileage 182.03 and 183.78 have been filed in the registry office at Sault Ste. Marie, Ont. The Board of Railway Commissioners has approved of revised location plans for the line in Nipigon tp., mileage 68.58 to 69.53; from mileage 194.52 to 203.24, and from mileage 534.72 to 535.01 (Pearl station) from Sudbury Jct.; and from mileage 48.8 to 50.5 from Port Arthur, in Dorion tp.

The Board of Railway Commissioners has approved of revised location plans for the Toronto-Ottawa line, in the vicinity of Stonehouse Lake, Storrington tp., mileage 174.67 to 175.35 from Toronto.

The plans for the company's lines in the northwest part of Toronto and out through Lambton have been before the Board of Railway Commissioners. Orders were made as to the provision of subways, and it is said that a new route alongside the C.P.R. will be utilized through Lambton. The company,

through a subsidiary—the Toronto, Niagara and Western Ry. Co.—is reported to be buying right of way in and through Hamilton. Press reports state that the surveys for the westerly extension of the line are being made from Hamilton via Brantford, and London to Sarnia, Ont.

Canadian Northern Ry.—A new coal dock is under construction at Port Arthur, Ont., for the Canadian Northern Coal Dock Co., at a reported cost of \$400,000. The new plant, which will have a capacity of 60,000 tons of hard coal and 250,000 tons of soft coal, will have a frontage of 600 ft. at the head of the docks. The contract was said to have been let to the Barnett-McQueen Co., Dec. 7.

An extension of the Thunder Hill branch to Princeville, Sask., 74 miles, has been opened for traffic. The Board of Railway Commissioners has authorized the opening for traffic of the Maryfield extension from Radville to Bengough, Sask., of 45 miles, and the extension of the branch to Calgary from Warden, mileage 109.5, to Drumeller, mileage 172.63, Alta.

It is reported that some 400 miles of grading was completed in Alberta during 1911. The principal part of the construction has been in the Edmonton district. It was expected to complete by Dec. 31 the line to Athabasca Landing, of which 56 miles was built during the year. The other work done includes 166 miles of grading towards the Yellow-Head Pass; 20 miles of grading on a line in the direction of the Peace River; over 100 miles of grading has been done on the line from Stettler via Red Deer to the Saskatchewan River and over 50 miles between the river and Rocky Mountain House; the line to Calgary has been put in operation as far as Drumeller, while the grading has been pushed for some miles further, and considerable grading has been done on the line between Strathcona and Camrose.

The town of Macleod is applying to the Alberta Legislature for the validation of a bylaw closing certain streets, avenues and lanes crossing the C.N.R. right of way, station grounds and yards, conveying certain lands to the company, and an agreement made in respect to the building of the line in the town.

Canadian Northern Pacific Ry.—M. H. McLeod, General Manager and Chief Engineer, C.N.P.R., was in Vancouver, B.C., Dec. 6. He is reported to have stated that it was proposed that the company's engineers would resume location survey work in the spring in the direction of the Pine River Pass. A route map had already been filed at Ottawa, and the line through northern British Columbia would be built under one of the C.N.R. subsidiary companies' charters. While Stewart, on the Portland Canal, had been spoken of as the probable terminus, nothing had been determined. In connection with the statement it may be mentioned that the Canadian North Eastern Ry. has been built inland from Stewart to Bear River, and C. Hoard, with an engineering party, returned to Victoria at the end of Nov. from a surveying trip along the Naas Valley to Hazelton, B.C.

While on the Pacific Coast, Mr. McLeod made an inspection of the work going on at Port Mann, and also of probable routes between that place and Vancouver. Track has been laid on the line from Port Mann, easterly to Chilliwack, 46 miles, and work will be continued all winter on sections of the line between that point and the eastern boundary of the province, to which point the line is being built from Edmonton, Alta. The working force was increased during Dec., and it is expected it will be still further added to during the winter, as Mr. McLeod stated that it

was the company's desire to have the line completed through by the end of 1913.

We are officially advised that a contract has been arranged with J. A. L. Waddell, Kansas City, Mo., for plans for two bridges across the Fraser River, and four across the Thompson River, and for supervising the erection of the same. Nothing has as yet been decided as to the design of these bridges.

Vancouver Island.—We are officially advised that the contract for the building of the line on Vancouver Island from mileage 60 to 100 has been let to Moore and Pethick, Victoria, B.C. This section will carry the line to the summit just beyond the upper end of Cowichan Lake. The construction is rather heavy, as it is to be built to a maximum gradient of 0.4%. No track has yet been laid on the line out of Victoria. The survey and construction work is now entirely in charge of D. O. Lewis, as District Engineer, G. B. Hughes, heretofore engineer of surveys, having resigned to enter the British Columbia Electric Ry. Co.'s service. (Dec., 1911, pg. 1145.)

Alberta Legislation for Railway Construction.

The Premier informed the Alberta Legislature Dec. 7, that the Government would submit, during the session, a proposition providing for the construction, extending over some years, of the following lines of railway: (1) From Edmonton to Grand Prairie. (2) From Athabasca Landing to Peace River Landing. (3) From Athabasca Landing to the vicinity of Fort McMurray, with a branch line to Lac la Biche. (4) From Edmonton along the north shore of the Saskatchewan River to the eastern boundary of the province near Cold Lake. (5) From Bruderheim, running east and north of the Canadian Northern Ry. main line, to range 5, and then to the southern boundary of the province between ranges 5 and 6. (6) A continuation of the Peace River line, and the line already arranged for between Camrose and Strathcona down to the eastern boundary of the province to meet the line coming up from Winnipeg and Regina, Sask. (7) A line from Strathcona, south of the Saskatchewan River to about 18 miles west of the Calgary and Edmonton Ry., thence south to the neighborhood of Pincher Creek, at an average distance of three townships west of the C. and E. Ry. (8) A line from the Stettler-Brazeau line starting about 18 miles east of the Calgary and Edmonton Ry. and running south to meet the Canadian Northern Ry. line through the Goose Lake district into Calgary, near Swallowvale, north of the C.P.R.

A bill was submitted to the Legislature on the same day, authorizing the borrowing of \$5,000,000, of which \$4,000,000 would be devoted to the extension of railways.

Replying to questions, the Premier said the lines to be aided would be built by the Canadian Northern Ry. and the G.T. Pacific Branch Lines Co. The province had already guaranteed the C.N.R. bonds in respect of 470 miles of line, of which 447 miles had been graded, and on which 284 miles of track had been laid. Passenger and freight services were being operated over 207 miles of the lines so built. The province had paid to the company \$4,073,984 of the proceeds of the guaranteed bonds. The province had guaranteed the G.T. Pacific Branch Lines Co.'s bonds for building 193 miles of line. This mileage had been graded, 104 miles of track had been laid, and trains were being operated over 70 miles. The province had paid out \$1,614,659.80 of the proceeds of the guaranteed bonds.

TRANSPORTATION APPOINTMENTS.

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

Algoma Central and Hudson Bay Ry.—A. H. Chitty, heretofore Assistant Treasurer, has been appointed Treasurer. Office, Sault Ste. Marie, Ont.

Canada and Gulf Terminal Ry.—Rene Dupont, heretofore Secretary-Treasurer, has been appointed Traffic Manager.

F. W. Rous has been appointed Secretary-Treasurer, vice Rene Dupont. Office, Montreal.

Canadian Northern Pacific Ry.—D. O. Lewis, heretofore Engineer of Construction for lines on Vancouver Island, has also been appointed Engineer of Surveys, vice G. B. Hughes, resigned to enter the B.C. Electric Ry. Co.'s service. Office, Victoria, B.C.

Canadian Government Railways.—An unconfirmed press report of Dec. 21 stated that the Minister of Railways was looking for an expert railway man and engineer as deputy head for the Railway and Canal Department, and that the position had been offered to F. P. Gutelius, M. Can. Soc. C.E., General Superintendent, C.P.R. Eastern Division. The same report stated that the present Deputy Minister, A. W. Campbell, M. Can. Soc. C.E., would be placed in charge of a branch to administer the "good roads" work proposed to be taken up by the Government.

Canadian Northern Quebec Ry.—Quebec and Lake St. John Ry.—J. S. Jackson, heretofore in Canadian Car and Foundry Co.'s service, has been appointed General Car Foreman, C.N.Q.R. and Q. and L. St. J.R. Office, Joliette, Que.

Canadian Northern Ry.—The appointments of J. R. Cameron as Assistant General Manager, and A. E. Warren and A. Wilcox as General Superintendents, were announced in our last issue. The following additional information in regard to them has been received since: J. R. Cameron, heretofore General Superintendent all lines, has been appointed Assistant General Manager, with jurisdiction over matters pertaining to operation and maintenance. Office, Winnipeg.

A. E. Warren, heretofore Superintendent, District 2, Winnipeg, has been appointed General Superintendent, Central Division, consisting of line Port Arthur to Regina and to Dauphin, not including the two last mentioned terminals. Office, Winnipeg.

A. Wilcox, heretofore Assistant General Superintendent, Winnipeg, has been appointed General Superintendent, Western Division, consisting of lines north of Regina and west of Dauphin, including those terminals. Office, Edmonton, Alta.

J. M. Grieve has been appointed Chief Inspector, Sleeping, Dining and Parlor Cars. Office, Winnipeg.

D. Robinson has been appointed Inspector, Sleeping, Dining and Parlor Cars. Office, Winnipeg.

S. C. Felgate has been appointed agent, Sleeping, Dining and Parlor Cars, with jurisdiction over Edmonton and Prince Albert, and all employes stationed at or running in and out of Saskatoon. Office, Saskatoon, Sask.

J. R. Miller, heretofore machinist, Winnipeg shops, has been appointed Locomotive Foreman, Radville, Sask.

W. A. Cowan, formerly Resident Engineer at Farnham, Que., has been appointed one of the assistant engineers in the Assistant Chief Engineer's office, Montreal, and not Inspecting Engineer, as stated in our last issue.

Canadian Pacific Ry.—F. W. Cooper, heretofore Resident Engineer, London, Ont., has been appointed Resident En-

gineer, District 2, Eastern Division, including Montreal terminals. Office, Montreal.

F. J. Mahon, heretofore Superintendent of Telegraphs, Atlantic Division, St. John, N.B., has been appointed Superintendent of Telegraphs, Eastern Division, vice J. F. Richardson, transferred. Office, Montreal.

J. Fletcher, heretofore Superintendent of Telegraphs, British Columbia Division, Vancouver, is reported to have been appointed Superintendent of Telegraph Traffic, Montreal.

F. B. Tapley, heretofore Resident Engineer, Brownville Jct., Me., has been appointed Resident Engineer, District 2, Ontario Division, London, vice F. W. Cooper, transferred to Eastern Division.

H. R. Miles, Resident Engineer, North Bay, Ont., has had his territory extended to include that hitherto in charge of H. T. Ruhl, recently transferred from Sudbury, Ont., to Farnham, Que., as announced in our last issue.

C. Erickson has been appointed acting Roadmaster, White River Subdivision, Lake Superior Division, White River, vice T. Lannin, assigned to other duties.

T. Allison has been appointed Sleeping and Dining Car Agent, North Bay, Ont., vice W. Morrison, transferred.

W. Morrison, heretofore Sleeping and Dining Car Agent, North Bay, Ont., has been appointed Sleeping and Dining Car Agent, Fort William, Ont., vice C. Mead, promoted.

J. T. Tait, heretofore Superintendent of Telegraphs, Manitoba Division, Winnipeg, has been appointed Assistant to General Superintendent of Telegraphs, Western Lines. Office, Winnipeg.

J. McMillan, heretofore Superintendent of Telegraphs, Alberta Division, Calgary, has been appointed Superintendent of Telegraphs, Manitoba Division, vice J. T. Tait, promoted. Office, Winnipeg.

G. S. Morris, heretofore first trick dispatcher, main line, Brandon, Man., has been appointed Chief Dispatcher there, vice J. K. Savage, appointed Superintendent, District 2, Saskatchewan Division.

N. Fletcher, heretofore in the Superintendent's office, Brandon, Man., has been appointed Accountant, Districts 3 and 4, Manitoba Division, vice H. H. Godard, transferred to Revelstoke, B.C.

E. Ashworth has been appointed Storekeeper at Minnedosa, Man. This is a new position.

The Saskatchewan Division is now being operated in three divisions. Following are details of the territory covered by each, and list of staff of the new district 2:—District 1—Moose Jaw to Swift Current, Outlook subdivision, and Portal subdivision, not including Weyburn. Superintendent, E. W. DuVal. Office, Moose Jaw. District 2—Broadview to Moose Jaw, not including either place, Moose Mountain subdivision (not including Arcola), Weyburn, Forward, and Colonsay subdivisions (not including Colonsay), and Bulyea subdivision (not including Bulyea). Superintendent, J. K. Savage, heretofore Chief Dispatcher, Brandon, Man.; chief clerk, G. G. Hamilton, heretofore in General Superintendent's office, Moose Jaw; Trainmaster, W. R. Boucher, heretofore Trainmaster, Moose Jaw; Chief Dispatcher, G. T. Coleman, heretofore Assistant Chief Dispatcher, Moose Jaw; District Master Mechanic, W. Webb, heretofore locomotive engineer, Brandon, Man.; Roadmasters, J. Hollonquist, heretofore Roadmaster at Moose Jaw; G. Sandstrom, heretofore Roadmaster at Strassburg; L. Rinstad and T. Roulston; Locomotive Foreman, A. S. McDonald. The offices of all those mentioned, except T. Roulston, who is located at Weyburn, are at Regina. District 3—Wynyard subdivision (not including Bredenbury),

Last Mountain subdivision (not including Neudorf and Lanigan), Saskatoon, Battle River and Kerrobert subdivisions. Superintendent, H. H. Boyd. Office, Saskatoon.

C. H. Zerbach has been appointed Car Foreman, Moose Jaw, Sask., vice A. Cameron, resigned.

V. B. Beardmore has been appointed Storekeeper, Swift Current, Sask., vice W. McGimpsey, resigned.

T. B. MacSwain has been appointed Storekeeper, Kamloops, B.C., vice G. Fitzpatrick, transferred to Sutherland, Sask.

G. Fitzpatrick, heretofore Storekeeper, Kamloops, B.C., has been appointed Storekeeper, Sutherland, Sask., vice G. Burke, resigned.

R. H. Brown has been appointed Night Foreman at Sutherland, Sask., vice J. H. Kepple, who has returned to the Sutherland shops as machinist.

D. Coons, heretofore Inspector of Telegraphs, Manitoba Division, Winnipeg, has been appointed Superintendent of Telegraphs, Alberta Division, vice J. McMillan, transferred to Winnipeg. Office, Calgary.

C. Mead, heretofore Sleeping and Dining Car Agent, Fort William, Ont., has been appointed Assistant Superintendent, same department, vice A. J. Macdonnell. Office, Calgary, Alta.

M. Newlands, heretofore Roadmaster, Red Deer subdivision, Alberta Division, has been appointed Roadmaster, District 3, Alberta Division, vice J. Todd, transferred.

T. Riordan has been appointed Roadmaster, Red Deer subdivision, Alberta Division, vice M. Newlands, transferred.

J. Todd, heretofore Roadmaster, District 3, Alberta Division, has been appointed Roadmaster, Edmonton section, Alberta Division.

T. Bradshaw has been appointed Roadmaster, Calgary Terminals.

D. McTaggart has been appointed Bridge and Building Inspector, Calgary, Alta., vice W. McKinty, transferred.

W. J. Shepherd has been appointed Car Foreman at Revelstoke, B.C., vice G. Donley, transferred.

C. E. Lundell has been appointed Assistant Car Foreman at Revelstoke, B.C., vice J. W. Chesterman, transferred.

F. X. LaPrairie, heretofore Assistant and Wrecking Foreman, Vancouver, B.C., has been appointed Car and Wrecking Foreman at North Bend, B.C. This is a new position.

J. F. Richardson, heretofore Superintendent of Telegraphs, Eastern Division, Montreal, has been appointed Superintendent of Telegraphs, British Columbia Division, vice J. Fletcher, transferred. Office, Vancouver.

Duluth, Rainy Lake and Winnipeg Ry.—C. W. Houston, heretofore Chief Dispatcher at Virginia, Minn., has been appointed Superintendent, vice M. B. Murphy, appointed Superintendent, District 2, C.N.R., Winnipeg, as announced in our last issue. Office, Virginia, Minn.

Duluth, South Shore and Atlantic Ry., Mineral Range Rd.—A. B. Eldredge, heretofore Vice President and General Attorney, has been elected President, vice W. F. Fitch, President and General Manager, resigned. Office, Marquette, Mich.

W. W. Walker, heretofore General Freight Agent, has been appointed Vice President and General Manager, vice A. B. Eldredge, Vice President, elected President. He will have charge of all matters pertaining to operation and traffic. Office, Duluth, Minn. He has also been elected a director, in place of W. R. Baker, Assistant to the President, and Secretary, C.P.R., resigned.

S. R. Lewis, heretofore Assistant General Freight Agent, has been appointed General Freight Agent, vice W. W.

Walker, promoted. Office, Duluth, Minn.

W. D. Johnson, heretofore General Roadmaster, has been appointed Assistant Superintendent, vice A. M. Sutherland, resigned. Office, Thormaston, Mich.

Grand Trunk Pacific Ry.—R. Gardiner, heretofore Locomotive Foreman, Melville, Sask., has been appointed Locomotive Foreman, Transcona, Man., vice A. C. Loudon, resigned on account of ill health.

W. Molson MacPherson, Quebec, President, Molson's Bank, has been elected a director G.T.P.R., in place of Hugh A. Allan, resigned, owing to his now residing in England.

W. Moher, heretofore locomotive driver, has been appointed Road Foreman of Locomotives, Districts 1, 2 and 3 and Melville branches, vice A. McTavish, assigned to other duties.

The following agents have been appointed:—Cabot, Man., A. J. Cushing; Goodeve, Sask., H. A. Phillips; Landis, Sask., R. E. Patterson; Edgerton, Alta., D. M. Davis; Stony Plain, Alta., C. Reagh; Fort Qu'Appelle, Sask., C. W. Kemp.

Grand Trunk Pacific Ry., Grand Trunk Pacific Coast Steamship Co., Grand Trunk Ry.—A. E. McMaster, heretofore Agent, has been appointed General Agent in charge of Passenger and Freight Traffic in western British Columbia, north of Rivers Inlet, including Queen Charlotte Islands. Office, Prince Rupert.

Grand Trunk Ry.—James Edward, heretofore Travelling Freight Agent, Moncton, N.B., has been appointed Commercial Agent, there.

W. R. Germain has been appointed acting station master, Bonaventure station, Montreal, vice P. C. Caron, deceased.

J. D. Scott has been appointed Locomotive Foreman at Turcot, Montreal, vice H. Powers, assigned to other duties.

W. J. Nixon, Trainmaster, District 5, Eastern Division, has had his office moved from Montreal to Brockville, Ont., and his jurisdiction extended to the west semaphore at Brockville.

C. S. Cunningham, heretofore acting Superintendent, Western Division, has been appointed Superintendent, Office, Detroit, Mich.

J. C. Talmage, heretofore Travelling Car Service Agent, Detroit, Mich., has been appointed Trainmaster, Districts 25, 27 and 28, vice F. G. Bement, resigned. Office, Durand, Mich.

The following agents have been appointed:—Oshawa Jct., Ont., H. Barker; Kirkfield, Ont., R. G. Winters; Wyebridge, Ont., J. Mitchell; Sebringville, Ont., W. E. Cusson; Fergus, Ont., C. E. Fleming; Ottawa, Ont., R. O. Kenney. The station at Nipissing Jct. and the outside agency at Valleyfield, Ont., have been closed.

Intercolonial Ry.—W. A. Dube, Superintendent at Levis, Que., has been suspended by the Minister of Railways, pending an investigation into charges of partizanship, etc., that have been made against him. Emile Gelly, advocate, Quebec, who has been appointed to investigate charges of partizanship against Government officials in the province of Quebec, will hear the charges against Mr. Dube.

Jas. A. McDonald, of Halifax, N.S., and E. T. C. Knowles, of St. John, N.B., have been appointed to investigate charges against officials in Nova Scotia and New Brunswick respectively.

Press reports of Dec. 7 stated that J. A. Humble had been appointed Claims Agent, vice J. S. Leighton, but we were officially advised, Dec. 21, that no appointment had then been made.

A press report states that the tracer of lost cars has been suspended pending an enquiry.

Lehigh Valley Rd.—W. J. Hamilton, heretofore City Passenger and Ticket Agent, Niagara Falls, N.Y., has been appointed Canadian Passenger Agent, vice R. S. Lewis, deceased. Office, 8 King St. East, Toronto.

W. B. Prescott has been appointed City Passenger and Ticket Agent, Niagara Falls, N.Y., vice W. J. Hamilton, promoted.

Michigan Central Rd.—R. A. Barrett having been appointed Trainmaster, T. H. and B. Ry., Hamilton, Ont., the position of Assistant Trainmaster, M.C.R., St. Thomas, Ont., has been abolished.

Midland Ry. of Manitoba.—C. E. Defoe, Trainmaster, Northern Pacific Ry., Livingston, Mont., has been appointed Terminal Superintendent, M.R. of M. at Winnipeg. The appointment will go into effect when the G.N.R. service to Winnipeg over the M.R. of M. is put into force.

National Transcontinental Ry.—Duncan MacPherson, M. Can. Soc. C.E., heretofore Assistant Chief Engineer, has been appointed Assistant to the Chairman. Office, Ottawa. We were officially advised Dec. 20 that no appointment had then been made to succeed Mr. MacPherson as Assistant Chief Engineer.

Pere Marquette Rd.—W. L. Kellog, heretofore Superintendent of Motive Power, Cincinnati, Hamilton and Dayton Ry., has been appointed Superintendent of Motive Power, P.M. Rd. Office, Detroit, Mich.

The line has been divided into five divisions, as follows:—Grand Rapids Division, F. Hartenstein, Superintendent, Grand Rapids, Mich.; Saginaw Division, A. R. Merrick, Superintendent, Saginaw, Mich.; Buffalo Division, W. K. Tasker, Superintendent, Port Huron, Mich.; Ionia Division, J. E. Church, Superintendent, Ionia, Mich.; Petoskey Division, W. H. Romoser, Superintendent, Traverse City, Mich.

The Buffalo Division comprises the lines Port Huron to Grindstone City, Palms to Port Hope, Poland to Sandusky, Port Huron to Hoyt, Bad Axe station and yard, Port Huron to Almont, and the ferry service at Port Huron, also the lines in Canada, namely:—Sarnia to Rondeau, Windsor to Walkerville Jct., Walkerville to St. Thomas, London to Port Stanley.

W. Madden, heretofore Division Engineer, Detroit, Mich., has been appointed Division Engineer, Buffalo Division. Office, Port Huron, Mich.

C. F. Weir, heretofore Supervisor of Bridges, St. Thomas, Ont., has been appointed Foreman of Bridges and Buildings, Buffalo Division. Office, Port Huron, Mich.

W. E. Shaffer has been appointed Foreman of Water Service, Buffalo Division. Office, Port Huron, Mich.

E. S. Stuart has been appointed Trainmaster, and F. P. Little, Chief Train Dispatcher, with jurisdiction over the portion of the Buffalo Division west of the Detroit and St. Clair Rivers.

R. M. Johnson has been appointed Trainmaster with charge of line between Grand Rapids and Detroit, including Detroit terminals. Office, Detroit.

Reid Newfoundland Co.—A. Rowsell has been appointed Roadmaster, Bonavista branch.

Toronto, Hamilton and Buffalo Ry.—R. A. Barrett, heretofore Assistant Trainmaster, Michigan Central Rd., St. Thomas, Ont., has been appointed Trainmaster, T. H. and B.R., Hamilton, Ont., vice G. M. Higgerson, heretofore Trainmaster and Chief Dispatcher, who retains the latter position.

White Pass and Yukon Route.—O. L. Dickeson, Vice President and General Manager, left Vancouver, B.C., Dec. 9, for England, and press reports state that he will succeed the late S. H. Graves as President.

Steam Railway Track Laid in 1911.

In response to our request for information of the new track laid during 1911, we have received replies from nearly every railway which has been doing any building during the year, the most important line from which there is no reply being the Canadian Northern Ry., although we have replies from the Canadian Northern Ontario Ry. The table which follows is compiled from the information received. Where the name of a line is preceded by an asterisk the figures are estimated either by the company's staff prior to work being finished for the year, or in our office. It will be noticed that outside of the Canadian Northern, Canadian Pacific, Grand Trunk Pacific and National Transcontinental Railways about 250 miles were built by 14 different companies. From the figures at present available, and which are subject to revision, it would appear that a total of about 1,830 miles of new track were laid in 1911. The figures we published in March last showed the actual mileage laid in 1910 as 1,870.44.

*ALGOMA CENTRAL AND HUDSON BAY Ry.—		Miles.	Miles.
Extensions Ont.	50.00		
ALGOMA EASTERN Ry.—			
Espanola to Spanish River, Ont.	4.60		
Espanola southerly, Ont.	1.50		6.10
ATLANTIC, QUEBEC AND WESTERN Ry.—			
Barachois to Douglastown, Que.	20.50		
BRANDON TRANSFER Ry.—			
Brandon, Man.	1.20		
CANADIAN NORTHERN ONTARIO Ry.—			
Trenton to Deseronto, Ont.	31.00		
Harrowsmith to Sydenham, Ont.	3.00		
Gowanda Jct. to Ruel, Ont.	13.00		47.00
*CANADIAN NORTHERN Ry.—			
Extensions in Manitoba	75.00		
Branch lines in Saskatchewan	185.00		
Vegreville-Calgary branch, Alta.	40.00		
Warden towards Brazeau River, Alta.	50.00		
Main line towards Yellowhead Pass, Alta.	50.00		
Line towards Peace River, Alta.	30.00		
Branch to Athabasca Landing, Alta.	40.00		470.00
CANADIAN NORTHERN PACIFIC Ry.—			
Port Mann to Chilliwack B.C.	46.00		
CANADIAN PACIFIC Ry.—			
*ONTARIO.			
Coldwater Jct. to Bethany Jct.	76.50		
SASKATCHEWAN.			
*Moose Jaw south	35.00		
*Swift Current southwest	45.00		
*Swift Current northwest	35.00		
Wilkie northwest	32.00		
Imperial-Valeport	59.00		
Bulyea south	7.00		
Weyburn westerly	23.80		
Moose Jaw northwest	53.00		
ALBERTA.			
Lethbridge-Aldersyde	56.80		
Castor-Coronation	21.00		
Irricana easterly	47.50		
BRITISH COLUMBIA.			
Jukeson-Fort Steele	9.20		
*Galloway-Waldo	11.00		481.80
ESQUIMALT AND NANAIMO Ry.—			
Cameron Lake to Port Alberni, B.C.	26.00		
GRAND TRUNK Ry.—			
Birch to Tay, Ont.	8.90		
GRAND TRUNK PACIFIC Ry.—			
SASKATCHEWAN.			
Balcarres to Regina	61.00		
Meacham to Wakaw	42.00		
ALBERTA.			
Red Deer southerly	22.00		
Bickerdike southerly	30.00		
Pedley, on main line to B.C. boundary	74.00		
BRITISH COLUMBIA.			
Yellowhead westerly	25.00		254.00
KETTLE VALLEY LINES—			
Midway to Westledge, B.C.	25.00		
Merritt to Coldwater, B.C.	30.00		
			55.00
*MIDLAND Ry. OF MANITOBA—			
From C.N. Ry. to station in Winnipeg	8.00		
NATIONAL TRANSCONTINENTAL Ry.—			
New Brunswick	0.73		
Quebec	153.31		
Ontario	124.21		280.25
QUEBEC AND SAGUENAY Ry.—			
Mileage 56.54 to 64, near Murray Bay ..	7.50		

QUEBEC CENTRAL Ry.—	
Extension to St. Sabine, Que.	1.44
SOUTH ONTARIO PACIFIC Ry.—	
Guelph Jct. to Progression, Ont.	5.90
SYDNEY AND LOUISBURG Ry.—	
Morion to Birch Grove	2.50
TEMISKAMING AND NORTHERN ONTARIO Ry.—	
Iroquois Falls to Timmins	33.71
North Bay Jct. to Nipissing Jct.	3.53
	37.24
VANCOUVER, VICTORIA AND EASTERN Ry.—	
Princeton to Coalmount	12.00
Abbotsford to Kilgard	6.00
	18.00
	1,827.33
Actual track laid in 1910	1,870.44

Orders by the Board of Railway Commissioners.

The following have been issued in addition to those given on pp. 16 and 17.

15595 Dec. 12.—Authorizing Saskatchewan Government to build highway over C.P.R. in s.w. ¼ sec. 30, tp. 15, r 13, w 3 m.

15596 Dec. 9.—Suspending Wabash Rd. tariff 686 re baggage of excess size until parties can be heard.

15597 Dec. 12.—Approving location of C.P.R. station at Lydiatt, Man.

15598, 15599, Dec. 12.—Approving revised location of Dominion Atlantic Ry. from west side of St. George St., Annapolis, N.S., to west side of Allens Creek, 2,790.5 ft., and authorizing rebuilding of Allens Creek bridge.

15600 Dec. 14.—Approving C.N.O.R. plans for undercrossing of C.P.R. at Smiths Falls.

15601 Dec. 14.—Authorizing Esquimalt and Nanaimo Ry. to cross with its Cowichan Lake branch two highways in British Columbia.

15602 Dec. 13.—Authorizing C.N. Pacific Ry. to use crossing of C.P.R. Mission branch for construction purposes only until Feb. 29, 1912, pending installation of interlocker.

15603 Dec. 18.—Approving revised location of C.N.O.R. Montreal-Port Arthur line through Bristol, Clarendon and Litchfield tps., Que., mileage 162 to 176 from Montreal.

15604 Dec. 19.—Ordering C.N.O.R. to install improved type of electric bell at crossing near Brighton.

15605 Dec. 16.—Authorizing C.N.O.R. to build bridge over Blende River, at mileage 23.96 east of Port Arthur.

15606 to 15608 Dec. 18, 19.—Authorizing C.N.R. to cross with its Maryfield line public road between secs. 12 and 11, tp. 5, r. 8, w. 2 m., and with its Swift Current line 10 highways in Saskatchewan.

15609 Dec. 15.—Approving Alberta Central Ry. location from its main line 135.58 miles west of Red Deer to Big Horn Range coal fields, mileage 0 to 28.

15610 Dec. 19.—Authorizing G.T.P.R. to cross highway at mileage 197.2, r. 6, Cas-siar district, B.C.

15611 Dec. 18.—Approving plans of G.T.R. station at Stevensville, District 19, Southern Division.

15612 Dec. 19.—Authorizing C.P.R. to open for traffic its Swift Current to Brooks branch from mileage 0 to 33.

15613 Dec. 19.—Authorizing C.P.R. to operate until June 30, 1912, its Wilkie northwesterly branch from its Pheasant Hills branch, mileage 0 to 27.8 between Wilkie and Cutknife, Sask.

15614 Dec. 16.—Approving revised location of C.P.R. Lauder extension between mileage 32.28 and 54.63, Sask.

15615 Dec. 16.—Authorizing C.P.R. to cross with its Wilkie northwesterly branch, 14 highways between mileage 13.90 and 25.78, Sask.

15616 Dec. 18.—Authorizing C.N.R. to cross with its Maryfield line 16 highways in Saskatchewan.

15617 Dec. 13.—Approving overhead clearances of West Canadian Collieries, Ltd., for C.P.R. siding at Bellevue, Alta.

15618 Dec. 20.—Approving location of C.N.R. Grosse Isle extension, mileage 4.33 to 25.68, w.p.m., Man.

15619 Dec. 19.—Authorizing G.T.P.R. to cross highway at mileage 204.5, r 6, Cas-siar District, B.C.

15620 Dec. 19.—Authorizing G.T.R. to build spur for joint use with C.N.O.R. on Don Esplanade, Toronto.

15621 Dec. 12.—Authorizing C.N.R. to build spur line to Hospital for Insane, North Battleford, Sask.

15622 Dec. 13.—Authorizing Dominion Atlantic Ry. to build spur from its Cornwallis Valley branch to Government Wharf, at Canning, N.S.

15623 to 15625 Dec. 15, 13, 9.—Authorizing C.P.R. to build spurs for Alberta Consolidated Coal Co., near Elcan ballast pit, Anderson and Rosenroll, near Ohaton, Alta., and Wiens and Reimer at Foam Lake, Sask.

15626 Dec. 14.—Authorizing Esquimalt and Nanaimo Ry. to build spur on Vancouver Island, at mileage 47.5, from Victoria to near Crofton at mileage 0.78, Chemainus district, B.C.

15627 Dec. 18.—Recommending to Governor in Council for sanction, lease by C.P.R. of Alberta Ry. and Irrigation Co.

Changes in Baggage Regulations.

Some important changes in baggage regulations will go into effect on July 1, 1912. For some years the transportation companies have had great difficulty in handling extremely large sample and personal trunks, particularly the "innovation" or wardrobe trunk. Some commercial trunks are over 4 ft. square, while the wardrobe trunk is made so that it must stand upright, having bulging sides and top, and some times measuring 70 to 80 ins. in length. This trunk will take up the space of at least four ordinary trunks.

In the baggage car an aisle space must be maintained so that baggage may be handled en route, records taken, etc., and this space must be wide enough to permit of the passage of a fairly large man, or the pulling from the tier of an average sized trunk. Some baggage cars have only a clear width of a little over 100 ins. At a meeting of the Trans-Continental Passenger Association in Chicago in Jan. last it was recommended that for any single piece of baggage (excepting immigrant baggage checked at the port of landing), the greatest dimensions of which exceeded 40 ins., there would be a charge for each additional inch equal to the charge for 10 lbs. of excess baggage, and that any piece of baggage, the greatest dimensions of which exceed 70 ins., would not be accepted for transportation in baggage cars. A strong objection was made by a number of trunk manufacturers and other industrial interests in the United States, and to cooperate with them it was finally decided that commencing July 1, 1912, and until June 30, 1914, for any single piece of baggage (excepting immigrant baggage checked at the port of landing) the greatest dimensions of which exceed 45 ins., there will be an additional charge for each additional inch equal to the charge for 10 lbs. of excess baggage, and that after July 1, 1914, for any piece of baggage of any class (excepting immigrant baggage checked at the port of landing) the greatest dimensions of which exceed 40 ins., there will be an additional charge for each additional inch equal to the charge for 10 lbs. of excess baggage, and that no piece of baggage of any class, the greatest dimensions of which exceed 70 ins., will be accepted for transportation in baggage cars.

The Board of Railway Commissioners has passed an order suspending sine die the Canadian Northern Ry., Ottawa and New York Ry., and Wabash Rd. tariffs for baggage of excess size until all parties can be heard.

Steel Rail Orders.

The Canadian Pacific Ry. has ordered from the Algoma Steel Co. and the Dominion Iron and Steel Co. about 150,000 tons of steel rails.

The Grand Trunk Ry. gave an order some little time since to the Dominion Iron and Steel Co. for 15,000 tons steel rails 100 lbs., and for 11,000 tons 80 lbs. The 100 lb. rails were delivered in Dec. and the 80 lb. ones are to be delivered in Jan. and Feb.

ELECTRIC RAILWAYS

Canadian Street Railway Association.

PRESIDENT, James Anderson, General Manager, Sandwich, Windsor and Amherstburg Ry.; VICE PRESIDENT, P. Dube, Secretary Montreal Tramways Co.; SECRETARY-TREASURER, Acton Burrows, Managing Director, The Railway and Marine World.

ASSOCIATION'S OFFICE, 70 Bond St., Toronto. EXECUTIVE COMMITTEE.—E. P. Coleman, Manager of Railways, Dominion Power and Transmission Co.; H. M. Hopper, General Manager, St. John Ry.; J. E. Hutcheson, Superintendent, Ottawa Electric Ry.; C. B. King, Manager, London St. Ry.; D. McDonald, General Manager, Montreal Tramways Co.; M. N. Todd, President, Galt, Preston and Hespeler St. Ry.

ASSISTANT SECRETARY, Aubrey Acton Burrows, Secretary and Business Manager, The Railway and Marine World.

OFFICIAL ORGAN, THE RAILWAY AND MARINE WORLD.

British Columbia Electric Railway Co's Annual Report.

The report presented at the annual meeting in London, Eng., recently covered the year ended June 30, 1911. Following are extracts:—

Gross receipts increased \$1,323,028 or 43%, and net earnings, including income from investment and subsidiaries, and after charging renewals, increased \$369,521 or 34%.

The following charges were made against the revenue account of the year:—Provision for renewals maintenance, £76,136 0s. 3d. Written off old steam plant, £10,000. Added to capital amortization fund, £2,182 15s. 4d. The net profit for the year, after making the deductions is £281,126 1s. 3d. Add balance brought forward from last year, £5,606 16s. 1d. Total, £286,732 17s. 4d. Out of this balance was paid interest on debentures and debenture stock £82,670 11s. 2d., dividend on 5% cumulative perpetual preference stock £35,000, dividend on preferred ordinary stock £42,000, and 6 months dividend on deferred ordinary stock to Dec. 31, 1910, £32,000, or £191,670 11s. 2d., leaving available for further distribution and reserve £95,062 6s. 2d., out of which the directors recommend payment of a dividend in the deferred ordinary stock of 4% for the half-year ended June 30, making 8% for the year, and absorbing £32,000; transfer to reserve fund £56,472 3s. 6d. and carrying forward to the current year £6,590 2s. 8d.

A large amount of construction work has been carried on during the year, not only in new developments, but in extensions of the existing railway, lighting and power systems. A large terminal station and central offices, necessary to meet the requirements of the business, are in course of construction in Vancouver, and a handsome new station was recently opened in New Westminster.

The growth of the business is indicated by the following figures:—Miles of track in operation—1909, 97.74; 1910, 141.65; 1911, 233.65. Total cars of all classes—1909, 248; 1910, 427; 1911, 647.

The number of passengers carried during the year was 46,541,448, an increase for the year of 12,064,644. A satisfactory feature of the year's business is the growth of the revenue received from the new suburban lines.

During the year great dislocation of traffic and large expense to the company has been caused by the large amount of street paving and improvement that has been undertaken by the cities of Vancouver and Victoria. This has not only adversely affected the company's profit, but has caused much irregularity

in the service and consequently great inconvenience to the public.

Considerable progress has been made with the construction of the dam at Coquitlam, an undertaking which is the largest of its kind in Canada. This dam, when completed, will be 90 ft. high and contain about 554,000 cu. yds. of earth work, and by its means the level of Coquitlam Lake will be raised 60 ft., rendering 54,000 million imperial gallons of water storage available for power purposes. The enlargement of the tunnel between Lake Coquitlam and Lake Buntzen, which has been in progress during the last two years, has been successfully completed. This tunnel, 12,755 ft. long, originally had a cross sectional area of about 81 sq. ft., and has been enlarged to 172 sq. ft., thus increasing its capacity three times. It is now possible to bring up the power at Lake Buntzen to upwards of 70,000 h.p., which will be available to meet the rapid growth of the demand in Vancouver.

There is being installed at the power house a third 10,000 h.p. water wheel, which it is hoped will be ready for operation in Dec., bringing the capacity of the plant there up to 42,000 h.p. Plans are being prepared for a large extension of the power house and the provision of two new 15,000 h.p. turbine units. In addition, the company has in progress an extension of the auxiliary steam plant, which has been provided for temporary breakdowns on the transmission lines, bringing the capacity of the steam plant up to 12,000 h.p.

Plans have now been filed with the Government for the construction of plants for the utilization of the company's water powers at Lillooet and Jones Lake, Chilliwack. The board has a carefully considered scheme for the provision of power to meet the requirements of the company in future years. On Vancouver Island the installation of a water power at Jordan River has been satisfactorily completed, and there should shortly be available a sufficient quantity of power to meet the increasing demands of the city of Victoria, and district.

The company has commenced the construction of a line of about 20 miles from Victoria through the fertile Saanich peninsula, and it is generally expected that this line will considerably augment the growth of the undertaking in Victoria, which, during recent years, has been making rapid strides.

Towards the end of 1910 the directors were asked by the city of Vancouver to consent to a unification of the franchises, under which the company operates its railway business in various parts of the city and suburbs, with a view to facilitating the consolidation of the city and the various separate suburban municipalities which surround it into one great city. The directors consented to enter into an agreement whereby the municipality would have obtained the right to purchase the company's railway lines within the extended limits of the new city in 1934, but in the negotiations that followed, some of the representatives of the city endeavored to introduce restrictions of a general nature to which the directors could not see their way to agree, and, in consequence, no arrangement has been concluded. The company operates its line within the narrow boundaries of the old city under statutory powers and subject to an agreement renewable in 1919 for successive periods of five years, until the city determines to buy the railway property within the old city limits. The price, in the event of dispute, is to be fixed by arbitration. In fixing the pur-

chase price, the arbitrators are to take the then market value of all lands to be taken over, and the value of all improvements, buildings and machinery then made, affixed or erected on the lands, and of the personal property to be taken over, which values shall be arrived at by taking the cost to the company, including the cost of constructing the railway lines and of installing all the plant and machinery, and deducting therefrom a reasonable sum for depreciation. The portion of the company's railway which the city of Vancouver will be entitled to purchase represents 49 miles out of a total of 234 miles operated by the company. Should the city exercise this right the company will retain various lines of entry into the city in perpetuity or for a long period of years. The whole of the remaining lines are operated under franchises extending over periods of not less than 36 years. The company's business has during the last few years developed to such an extent, particularly in the outlying districts, that the receipts from the railway lines within the old city limits are no longer such an important part of the whole receipts of the company as they were, and are steadily becoming a smaller proportion of the whole. The lighting franchises are either perpetual or for a very long period of years.

To prepare for handling a greatly extended and increased volume of business in the future, the directors, after consulting with the General Manager, thought it advisable to engage additional expert assistance, and decided to associate with the management several highly qualified officials to take charge of important departments, now rendered necessary by the magnitude of the business.

The gross receipts for the year were £901,553, net revenue, £302,993; number of passengers, 46,541,448.

The statement of expenditure on appropriations on capital account, amounting in all to \$2,786,529.77, includes the following items:—Rolling stock, \$773,039.59; permanent and double tracking and sundry improvements, \$433,242.09; track extensions, \$365,107.87; power extensions, \$142,378.26; steam plant, \$148,360.00; lands and buildings, \$348,727.57; electrical machinery, \$119,457.18. North Vancouver: Rolling stock, meters, transformers and initial installations, \$38,181.79; railway feeders, \$14,804.14.

Re-winding Coils at Levis County Railway Shops.

A very economical and satisfactory method of utilizing old field coils is used by the Levis County Ry., of which A. K. McCarthy is Manager. The customary practice with old, blown-out coils is to scrap them at the prevalent scrap copper rate of about 10 cts. a pound. This practice was followed by the company until early last year, when the more economical method to be described in this article was devised and put into operation at its shops.

The old coil, discarded for various reasons, the principal ones being blow-outs, is attached to a circular plate mounted on a shaft running in bearings. The insulated wire led off from this, is passed through a little device for keeping the wire taut. This device consists of two old trolley wheels permanently fixed on bearings, with an intermediate wheel adjustable vertically to the line joining the centres of the two fixed wheels. Adjusting puts a bend in the wire of the necessary depth to hold it

taut. A receiving reel is mounted on an iron trestle. Directly attached to the reel shaft there is a large gear meshing, with a pinion on a shaft through the trestle and connected to a handle for drawing the wire into the reel.

The taut wire between tightening attachment and receiving reel is scraped clean of insulation by an operator, another operator at the handle drawing the wire through as required. This operation is performed very quickly.

When the wire is completely cleaned, the containing reel is placed in the position of the reel containing the old wire. The wire, passed through the tightening device, is fed on to a coil form on the receiving arbor shaft. Between the tightening device and receiving form an operator tapes the wire, another operator feeding it on with the handle, as before. A coil as good as the original one is thus obtained at small cost.

Figures obtained from Mr. McCarthy show that big savings result. A coil costing \$20 to replace may be wound complete at a total cost of \$7.50. Considering that the coil if scrapped would sell for \$2 at 10 cts. a pound, a total saving of \$10.50 is obtained, or more than 50% on the cost price. On a road such as the Levis County Ry., the lines of which are very hilly, blow-outs, especially in the springtime, are quite frequent, which under the old system necessitated discarding the whole coil. It

lowering of the side ploughs, while the control wheels towards each end are for the raising and lowering of the sweeper brooms in their curved ways.

There are two traction motors of the Westinghouse 101 B 2 type to each truck, in the usual location under the car. The broom motors, one in each compartment at the ends of the control compartment, and offset as indicated, are Westinghouse 12A. The Westinghouse SMI air compressor is housed in one of the broom motor compartments. The trucks are of the 27-FE-1 type, and the controllers of the K35 type.

The design is entirely new throughout, the frame and superstructure being constructed entirely of steel. This makes a heavy construction, much heavier than strength would demand, but for sweeper service, heavy weight is necessary to keep the machine up to its work. It is calculated to be able to do this satisfactorily.

The sweeper is being built by the Ottawa Car Co. and was designed by its Superintendent, W. K. Jeffrey.

Guelph Radial Railway Co.'s Annual Meeting.

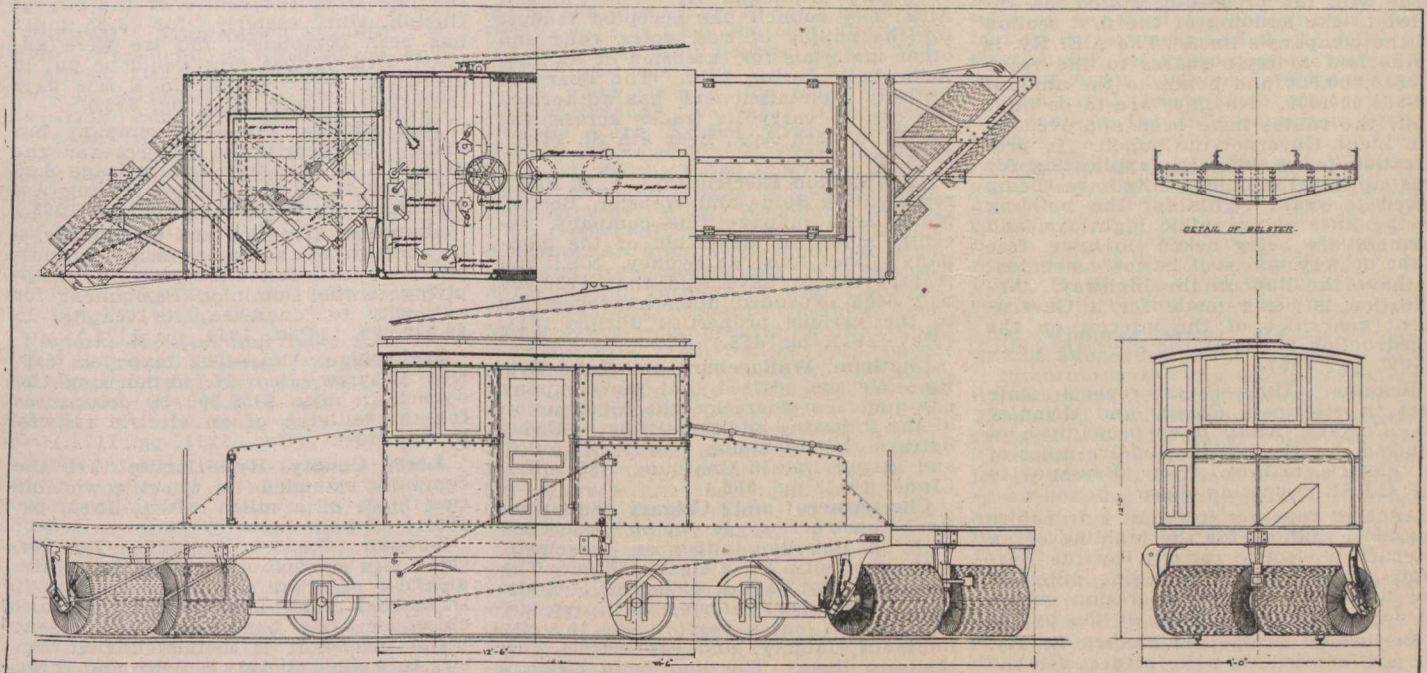
The report for the year ended Sept. 30, 1911, shows a net gain of \$7,749.83, after deducting a maintenance charge of \$7,300. The earnings show an increase of \$3,815.15 over those of the previous year.

Deferred charges—		
Unexpired insurance	\$ 159.13	
Taxes paid in advance	405.71	
		564.84
		<u>\$156,763.68</u>

LIABILITIES.		
Sundry unpaid ac-		
counts, power	\$ 342.57	
Crossing, G.T.R.	30.35	
		\$ 372.92
Capital stock sub-		
scribed	144,000.00	
Capital stock paid up		138,870.00
Surplus profits Oct. 1,		
1910	15,999.35	
Less dividend, \$3,780.00		
1908 taxes paid		
1909-10	2,148.42	
		5,928.48
		10,070.93
Add profits 1910-11...	7 449.83	
		17,520.76
		<u>\$156,763.68</u>

PROFIT AND LOSS ACCOUNT.

RECEIPTS.		
Earnings, passenger	\$31,903.43	
Earnings, freight	959.55	
Advertising	278.00	
Rent	246.71	
Sale of power	153.00	
Rink receipts	378.65	
Park receipts	110.53	
Interest on bank balance	152.67	
		<u>\$34,182.54</u>
EXPENDITURE.		
Official expense and salaries	\$ 1,501.25	
Stationery	233.62	
General expense	90.67	
Insurance	496.20	
Taxes	1,627.67	



All Steel Sweeper for Ottawa Electric Railway.

is estimated that upwards of \$300 was saved last spring alone by the use of this method.

While wage accounts for the road have been materially increased recently, the introduction of a couple of such economical schemes has kept the total expense account nearly constant.

All Steel Sweeper for Ottawa Electric Railway.

An all steel electric sweeper is being built for the Ottawa Electric Ry., three views of which are given in the accompanying illustration. In general appearance, the sweeper closely resembles an electric locomotive of the usual type, having the central cab with the sloping end compartments.

The centrality of control will be noted in particular, all control levers and wheels being within easy reach within the central cab. The centre controlling wheel in the plan is for the raising and

The number of passengers carried during the year was 820,836, an increase of 151,884 over the previous year, and the number of transfers issued was 69,497. Following are details of the balance sheet and profit and loss account:—

ASSETS.	
Cash in bank	\$ 17,731.22
Cash on hand	10.00
	<u>\$ 17,741.22</u>
Accounts receivable	471.37
Real property, book value—	
Line construction	\$111 917.83
St. Patrick Ward extension	20,971.66
Dundas Road bridge	2,502.48
New equipment	192.23
	<u>135,584.20</u>
Supplies on hand—	
Sundry car barn supplies	\$ 1,701.65
Track	24.50
Line rail, etc.	75.00
Power house	145.60
Oil and waste, etc.	178.50
Coal	200.00
Stationery	76.80
	<u>2,402.05</u>

Park expense	1,039.67
Hotel expense and taxes	24.25
Rink expense	209.89
Passenger operating	8,390.83
Freight operating	249.97
Freight charges	49.08
Car barn, maintenance and wages	4,709.68
Power	2 951.97
Battery expenses	10.04
Coal	1,994.07
Oil and waste	99.65
G.T.R. crossing	402.98
Track	1,292.87
Painting	657.83
Line	700.52
	<u>\$26,732.71</u>
Net profit	7,449.83
	<u>\$34,182.54</u>

The Dominion Power and Transmission Co. has ordered three interurban cars, 55 ft. long over all, mounted on Baldwin trucks, with steel tired wheels, equipped with Westinghouse straight air brakes, turtle roofs and Garland ventilators; and three double truck city cars, standard type, from the Preston Car and Coach Co., Preston, Ont.

Electric Railway Projects, Construction, Betterments, Etc.

Alberta Electric Ry.—The Land Traction Co. was incorporated under the Companies Ordinance no. 1417 of the province of Alberta, Sept. 15, with a capital of \$500,000 in two classes of shares, and office at Calgary, with power to enter into agreements for the construction of railways of all kinds, and particularly for the financing and construction of the Alberta Electric Ry. The directors are: Dr. T. H. Blow, G. E. Wood, W. A. Lowry, C. S. Drummond, S. E. Beveridge, John Breckenridge, all of Calgary. C. S. Drummond, the Managing Director, was formerly a director of the British Electric Traction Co., London, Eng., and J. Breckenridge is described as a railway contractor. The secretary of the company is S. C. McGregor. The company has acquired all the charter rights of the A.E. Ry., paying in respect of the same 10,000 B shares of \$25 each, which are to rank for dividend at the rate of 6% after a 5% dividend has been declared on the 10,000 A shares. The company offered for subscription, the list closing Nov. 11, the A shares and 900 bonds of \$500 each bearing 5% interest, redeemable in 30 years by means of a sinking fund of 2% per annum. The proceeds of the issue will, the prospectus stated, be applied to the building of the first section of the company's lines. The A.E. Ry. is authorized to issue shares to the value of \$10,000,000 and bonds to the amount of \$36,000,000. No lines are to be built until the routes have been approved by the Lieut.-Governor-in-Council. In preparation for making the application for this approval municipalities are being asked to grant rights for the building of the lines along public highways, and farmers are being asked to give free right of way where it is not convenient to have the line on the highway. Application is being made for a Government guarantee of the interest on the construction bonds as the lines are built. (Nov., pg. 1067.)

Bassano, Alta.—Press reports state that the Gorman, Clancy and Grindley Co., Calgary, Alta., have been given a contract for the building of five miles of an electric railway from Bassano to the C.P.R. irrigation dam.

Another report states that a franchise has been granted for the building of an interurban electric railway, by the Bassano council, and that eight miles of the line are to be in operation within 90 days after the passing of the bylaw.

Berlin and Bridgeport Electric St. Ry. We are advised that the project for the building of a belt line referred to in our last issue, is not in connection with the B. and B.E. St. Ry., but with the Berlin and Waterloo St. Ry., which is owned by the Berlin town council and operated by commissioners. The project has been under discussion for some time, but no definite progress has been made.

Application is being made to the Ontario Legislature for an act changing the name of B. and B.E.S.R. Co. to the Berlin and Northern Electric Ry. Co., increasing the capital stock to \$400,000, declaring that all existing municipal by-laws relating to the company shall continue in force, and authorizing the building of a line from Bridgeport to Elora and Fergus, Ont.; erecting bridges across the Grand River and its branches as may be necessary; authorizing the company to carry freight over its lines, and giving power to amalgamate with other companies, etc. (Dec., 1911, pg. 1171.)

Brandon, Man.—As the result of the recent vote in the city of Brandon, favoring the operation of a street car system by private ownership, negotia-

tions were reopened with J. D. McGregor, Dec. 1. He has submitted a draft agreement, which is under consideration by the council's railway committee. Another proposal has been submitted by Donham and Co., New York, covering in addition to a street railway franchise, the supply of water, light, heat and power. (Dec., 1911, pg. 1171.)

British Columbia Electric Ry.—The Vancouver city council is applying to the B.C. Legislature for amendments to the Vancouver Incorporation Act of 1900 by providing, among other things, that \$503,000 a year shall be set aside from 1912 to 1919, inclusive, out of the city's borrowing powers for the purpose of acquiring the company's lines in the city under the terms of clause 34 of the agreement of Oct. 14, 1901. If the lines are not acquired the franchises are not to be extended until a new agreement has been voted on by the ratepayers.

Judgment has been reserved by the Court of Appeal upon the question of the validity of the company's franchise in Point Grey. The company is not directly a party to the action which was brought by certain ratepayers against the council.

The Burnaby municipal council has decided to proceed with an action to test the validity of the company's franchise. (Dec., 1911, pg. 1171.)

Calgary Municipal Ry.—The Calgary, Alta., city council has accepted tenders for the supply of ties, poles, rails and other materials for extension of its lines to be built during 1912. The Board of Railway Commissioners has authorized the city to carry its tracks across the C.P.R. at 12th Ave., near 6th St. (Dec., 1911, pg. 1171.)

Cape Breton Electric Co.—A. S. Pratt, representing Stone and Webster, Boston, Mass., who manage this company, recently made an inspection of the company's lines, etc., at Sydney, N.S., and is reported to have said that \$125,000 had been expended upon improvements to the various properties during 1911. (May, 1911, pg. 453.)

Chatham, Wallaceburg and Lake Erie Ry.—We are advised that the company has under consideration the construction of the following additional lines:—Cedar Springs to Blenheim, Ont., 4.5 miles, and a spur line in Chatham, 1.25 miles. (June, 1911, pg. 555.)

Chestermere and Calgary Suburban Ry.—Construction is being proceeded with on this line, under an agreement with the city of Calgary, Alta. The starting point is not Crescent Heights, as a press report referred to in our last issue stated, but a point inside the city limits of Calgary, and connecting with the city lines. The line from Calgary to Chestermere Lake will be about 17 miles, and is being built by day labor by the company. We are advised that all the heavy grading has been done; and that the pole line has been completed. It is expected to have track laid by April 30, and to have the cars running shortly thereafter.

Application is being made to the Alberta Legislature for an act amending the company's charter in some details, and extending the time within which the lines may be built. (See Calgary to Chestermere, Alta., Dec., 1911, pg. 1171, and C. and C. St. Ry.)

Edmonton Interurban Ry.—The Alberta Legislature is being asked to amend chap. 49 of the statutes of the second session of 1910, by extending the time for the building of the line from the foot of Perron St. in St. Albert, to the boundary of the city of Edmonton. Bishop, Pratt and Delavault, Edmonton, are the solicitors.

Edmonton Radial Ry. - Strathcona Radial Ry.—The estimates under consideration for the extension of lines, im-

provements, additional rolling stock, etc., in Edmonton, Alta., for the current year, amount to \$596,000, distributed as follows:—Extensions of tracks, \$213,700; track improvement, \$107,000; new car barns, \$125,000; rotary converters, \$30,000; fifteen new cars, \$112,000, the balance being set aside for miscellaneous purposes. (Dec., 1911, pg. 1171.)

Galt, Preston and Hespeler St. Ry.—Press reports state that the town council of Galt, Ont., has granted the necessary privileges for a single line extension, with necessary switches and turnout, to serve the new industrial subdivision beyond the water works. (Jan., 1911, pg. 71.)

Greenwood-Phoenix Tramway Co.—It is reported that considerable progress has been made with the boring of the tunnel between Greenwood and Phoenix, B.C., via the Boundary Creek Valley. The distance between the two points is 17,000 ft., and the hill rises above the tunnel at Phoenix to a height of 2,000 ft. The size of the bore is 9 by 8 ft., in which is to be laid a tramway line to be operated by electricity. Up to Nov. 30 it was reported that 3,000 ft. had been bored, and that work was being pushed forward at the rate of 10 ft. a day. The city of Greenwood has voted \$50,000 towards the project. (June, 1911, pg. 555.)

Guelph Radial Ry.—An extension of the line from the centre of the city of Guelph, Ont., easterly for 1.25 miles has been completed, and we were advised, Dec. 7, that cars would be put in operation over it within a few days thereafter. (July, 1911, pg. 683.)

Hull Electric Co.—The company has under consideration a project for the extension of the line from mileage 6.25 for 3,100 ft. to the Ottawa Racing Association's track. (Nov., 1911, pg. 1069.)

Hamilton, Waterloo and Guelph Ry.—In addition to the extension of time already applied for, the company is applying to the Dominion Parliament for authority to increase its capital to \$9,000,000. (Dec., 1911, pg. 1171.)

Lethbridge, Alta.—The taxpayers carried a bylaw, Dec. 11, authorizing the council to raise \$450,000 by debentures for the building of an electric railway in the town. (Dec., 1911, pg. 1171.)

Levis County Ry.—During 1911 the company extended its upper town line two-thirds of a mile. (Dec., 1910, pg. 1069.)

London Street Ry.—The London, Ont., city council is considering the question of what additional mileage it is enabled to have laid under the franchise, on the basis of the present population. It is estimated that the city is entitled to between two and three miles of line. The matter is being discussed with C. B. King, the company's Manager, who told the council at its last meeting that three propositions were under consideration, and that plans would be submitted early in the year. (Dec., 1911, pg. 1711.)

Moncton Tramways, Electricity and Gas Co.—The first cars were run over the newly constructed street railway in Moncton, N.B., Nov. 30, and a regular service was put in operation Dec. 13. This is the second street car line put in operation in the city, the first having been inaugurated in 1896. After a checked career it was abandoned and the rails taken up in 1902. (Dec., 1911, pg. 1171.)

Montreal.—The city council has under consideration a recommendation from the board of control that application be made to the Quebec Legislature for authority to build an underground electric railway system in the city.

Montreal and Southern Counties Ry.—During 1911 the company completed an extension of its tracks from St. Lam-

bert, Que., to the Country Club, 1.25 miles. It has under construction an extension from St. Lambert to Chambly, 14 miles. In addition to this St. Lambert-Chambly line, the company has on its programme, according to statements reported to have been made in an interview by W. B. Powell, General Manager, Dec. 1, several additional lines. One of these will start from Longueuil and will extend through Boucherville to St. Charles, Que., and a branch from St. Lambert to Laprairie. In connection with the first mentioned of these two lines, the land owners in the Boucherville district passed a resolution at a public meeting to give a right-of-way 40 ft. wide, on condition that the company maintain the fences and gates along it. The question of the electrification of the Montreal and Province Line, and its operation as part of the M. and S.C. Ry. is reported to be under consideration.

Press reports further state that plans for the erection of a car barn 205 by 85 ft., an additional power house, workshops and offices are under consideration.

Petitions were presented to the Montreal city council, Nov. 30, in favor of permission being given the company to build additional lines in the city. The controllers desire the company to try and make some arrangement with the Montreal Tramways Co. (Dec., 1911, pg. 1171.)

Montreal Tramways Co.—E. A. Robert, President, is reported as having stated, Dec. 2, that the company would be prepared to lay its plans for extensions and general improvements before the city council at an early date.

The town of Montreal West is applying to the Quebec Legislature for authority to execute a contract with the Montreal Park and Island Ry. Co., its representatives and assigns, and to approve a bylaw naming the Montreal Tramways Co. in the contract in place of the M.P. and I Ry. (See Montreal St. Ry., Oct., 1911, pg. 975.)

Niagara, Welland and Lake Erie Ry.—The Board of Railway Commissioners has authorized the company to carry its line across the G.T.R. spur track on Muir St., Welland, Ont. (June, 1911, pg. 557.)

North Midland Ry.—A bylaw granting the company a bonus of \$25,000, and providing for raising the same by debentures will be submitted to the London, Ont., taxpayers Jan. 1. The bylaw also provides for a right to run cars along certain streets in the city. At the voting in Jan., 1911, a bylaw authorizing the city to guarantee the company's bonds to the amount of \$1,200,000 was passed, provided a suitable agreement was arranged, but it was found to be impossible to arrange terms, and the new bylaw is proposed as a substitute. A suggestion has been made for the erection of a terminal station to be used by all electric railways entering the city, and the council is considering the advisability of building this as a municipal enterprise.

The company proposes first to build a line from London via St. Marys to Stratford. A bylaw granting a bonus of \$5,000 will be voted on Jan. 1, in St. Marys, and Stratford is being asked for a bonus of \$15,000. A. E. Welch, in asking for this latter bonus, told the Stratford council that he had been instructed by the British interests behind the company to obtain all the franchises necessary so that construction might be started at an early date. (Dec., 1911, pg. 1171.)

Oshawa Electric Ry.—During 1911 the company rebuilt 3,800 ft. of track, the work being necessitated by the laying of new pavements by the town. The old steel was relaid, but new switches, new

ties and other new fixtures were used. In addition there have been added 809 ft. of new spurs to industrial concerns. (July, 1911, pg. 683.)

Ottawa Electric Ry.—We are advised that the company has under consideration a project for building an extension from the Bank St. terminus to Ottawa South, one mile.

We are officially advised that the O.E. Ry. is not interested in the proposal to build an electric railway from Ottawa to McGregor Lake. It is said that the promoters are E. Wellingford and Dr. Corno, Ottawa, but that while plans have been outlined, the whole proposal, including the laying out of a summer resort at McGregor Lake, is still under consideration. (Dec., 1911, pg. 1173.)

Ottawa, Smith's Falls and Kingston Ry.—The prospectus filed with the Provincial Secretary, Toronto, sets out that the company was incorporated by the Ontario Legislature Mar. 8, 1911, with a capital of \$1,000,000 and office at Ottawa. The provisional officers and directors are:—Chairman, F. A. Heney, Ottawa; Vice Chairman, E. Kidd, M.P., North Gower, Ont.; Secretary-Treasurer, G. L. Dickenson, Manotick, Ont.; General Manager, U. L. Upson, Ottawa. Other directors—N. P. McGrath, Ottawa; Rev. D'A. T. Clayton, J. C. Graham, Kars, Ont.; J. E. Caldwell, City View, Ont.; J. C. Graham, Kingston, Ont.; Solicitor, F. B. Proctor, Ont. It is intended, according to the prospectus, to start construction as soon as 2,500 shares of the capital stock have been disposed of and 10% thereof paid up.

The plans show a line from Ottawa passing through or near City View, Manotick, Kars, Bridge View, Burritt's Rapids, Andrewsville, Merrickville, Killmarnock, Smiths Falls, Lombardy, Newboyne, Portland, Elgin, Morton, Seeleys Bay, Brewers Mills, Washburn, Joyceville, Cashendall, and Kingston Mills to Kingston. An alternative route has been surveyed from Seelys Bay to Kingston Mills, passing through or near Heeleysville, Sunbury, Mount Cheshire and Maple Lawn. A branch line has also been surveyed from Smiths Falls passing through Perth to Lanark. The construction programme outlined divides the main line into two sections—Ottawa to Smiths Falls, 47 miles, and Smiths Falls to Kingston, about 60 miles. The surveys for the section from Ottawa to Smiths Falls have been completed, and those from Smiths Falls to Kingston have been partially made.

The population to be served on the Ottawa-Smiths Falls section is placed at 106,800, and the estimated cost of construction at \$430,000, or, with the addition of \$21,000 for supervision, engineering and legal expenses, and \$18,000 for two 50-ton locomotives, three freight cars, two combination cars and two coaches, \$469,500. The estimated revenue from this section is placed at \$160,000 and the operating expenses at \$96,096, leaving a surplus of \$64,064 for interest, dividends, etc. The company is authorized to issue bonds for \$30,000 a mile of line constructed. The estimated cost of the Smiths Falls-Kingston section, subject to revision on completion of surveys, is placed at \$934,500, including supervision, etc. No estimate of earnings for this section has been made. (Nov., 1911, pg. 1069.)

Porcupine Rand Belt Electric Ry.—The Ontario Legislature is being asked to incorporate a company with this title to build an electric railway from the eastern boundary of the province in McGarry tp. southerly to Larder City, westerly to Dane tp., and crossing the Temiskaming and Northern Ontario Ry. westerly to Kenogamissee Lake on the Mattagami River, with branch lines as necessary, any or all of which may be connected with the T. and N.O. Ry. or other railways serving the district.

While it is intended to operate the line by electricity, authority is asked to use any other motive power. Corley, Price and Garvey, Toronto, are solicitors for applicants.

Quebec Ry., Light and Power Co.—The Montmorency division has a double track from Quebec to Montmorency Falls, and we are officially advised in connection with the reports that a second track is to be laid at Ste. Anne de Beaupre, that this will depend very largely on what business is offering after the completion of the Quebec and Saguenay Ry., which is under construction from near St. Joachim, on the Montmorency Division, to Murray Bay.

A new double-track line from Beauport to Kent House Park, 3.58 miles, was completed and put in operation during 1911. The work was done by M. Lonergan, Quebec. (Dec., 1911, pg. 1173.)

Regina Municipal Ry.—The work for 1911 was completed Nov. 30, with the opening of the South Railway St. and Lorne St. sections. There are seven miles of line in the city, the first portion of this mileage having been placed in operation July 29.

The construction for 1911 included the laying of 35,280 ft. of 80 lb. steel, with the necessary paving, and 21,000 ft. of 76 lb. steel on unpaved streets, which distance was ballasted. This is practically 10.66 miles of line. The extensions projected for construction during the current year include 2.5 miles of single track on paved streets, and 15.5 miles of single track on unpaved streets. On the paved streets 80 lb. steel will be used, and on the unpaved streets 60 lb. steel.

Ridgeway to Crystal Beach.—Press reports state that arrangements are being made for the building of an electric railway from Ridgeway to Crystal Beach, on Lake Erie, Ont., and that already \$12,000 has been subscribed. G. Pettit, E. W. Near and W. G. Athol are reported to be interested in the project.

St. Thomas Street Ry.—A bylaw will be submitted to the taxpayers, Jan. 1, to authorize the city council to extend the municipal electric railway from St. Thomas to Port Stanley, Ont. The city engineer was instructed to provide estimates as to the cost, so that, if the project is favored, a bylaw may be prepared authorizing the raising of the money not only for building the new line, but for improving the existing line. (May, 1911, pg. 455.)

Saskatoon Electric Ry. and Power Co.—Application is being made to the Saskatchewan Legislature to incorporate a company with this title to build an electric railway within the city and within a distance of 25 miles from the city boundaries, and for the purpose of acquiring H. M. E. Evans' rights in a contract for the building of such a railway, etc. Short, Woods, Biggar and Collisson, Edmonton, Alta., are solicitors for applicants. (See Saskatchewan Power Co., Dec., 1911, pg. 1173.)

Sherbrooke Ry. and Power Co.—Application is being made to the Quebec Legislature to extend the area within which the company may carry on its operations, to confirm certain agreements, and to authorize it to carry on the additional business of a water company, gas company, etc. (Nov., 1911, pg. 1069.)

Sudbury-Copper Cliff, Ont.—A press report states that a franchise has been granted to L. La Forest for the building of an electric railway from Sudbury to Copper Cliff, Ont.

The Sudbury, Copper Cliff and Creighton Electric Ry. Co. was incorporated by the Ontario Legislature in 1903 to build a line between these and adjacent points.

Three Rivers, Que.—Press reports state that it is proposed to start construction upon the projected electric railway in that municipality early in the spring. Construction will be started within the city limits, and the radial lines will be built subsequently. About 5.5 miles of line are to be built by the city council under the authority of the bylaw recently passed. (Nov., 1911, pg. 1071.)

Toronto and York Radial Ry.—While no additional mileage was added during 1911, about half a mile of a double track line was built on a private right-of-way on the Mimico Division, in the vicinity of Mimico Creek, the track along the Lake Shore road being abandoned. (Dec., 1911, pg. 1173.)

Toronto Civic Car Lines.—We are officially advised that the work on the car lines proposed to be built by the city of Toronto up to the present has been of a preliminary character, including some grading. It is not intended to push construction actively until the spring.

The City Engineer laid before the board of control recently a complete plan and report upon a system of subway and surface electric railways prepared by E. L. Cousins, Assistant Engineer in charge of railway and bridge work. The Teraulay-Yonge St. subway, which is to be voted on on Jan. 1, is the central feature of the plan, but as outlined the completed proposal provides for the building of a subway from Keele St., on the Lake Shore road, to the Woodbine, along Queen St., another from Keele St., along Bloor St. to Sherbourne St. to meet an extension of the city car line now under construction on Danforth Ave., with surface car lines connecting the subways along Keele St., Pape Ave., and Coxwell Ave. This latter line would be connected with the Gerrard St. line now under construction. Provision is also made for future extensions in the east along Woodbine Ave. to St. Clair Ave.; on Leslie St., and on Don Mills Road; and on the west along St. Clair Ave. to Jane St., down Jane St. to Bloor St., and along Bloor St. to a junction with the subway. A line from Bloor St. to St. Clair Ave. is planned along Runnymede Ave., and another is proposed from Jane St. to Keele St., along Annette St., while the Keele St. line is to be extended from Bloor St. to St. Clair Ave. The estimated cost for the construction of the whole of these lines is \$25,000,000, including equipment. (Dec., 1911, pg. 1165.)

Winnipeg Electric Ry.—The total mileage of new track laid during 1911, exclusive of second track and sidings, was 10.75 miles, distributed as follows: Donald and Princess Streets to Marion St., Ellen and Sargent avenues to Sutherland Ave., Pembina St. to Sherbrooke St. subway, Stafford St. to Arlington St., Hespeler Ave. to Louise Bridge, McPhillips St. to Kennedy St., Selkirk Ave. to Garry St., and on Higgins Ave.

The rural municipality of Assiniboia is negotiating with the company respecting the erection of a bridge over the Assiniboine River west of the park, while the municipalities of St. Boniface and St. Vital are negotiating with the company for the building of a line along St. Marys road into the open country beyond the boundaries.

Uno-rail System.—A company with this title has been incorporated under the Dominion Companies Act, with a capital of \$100,000 and office in Montreal, to build and operate uno-rail systems, to manufacture and sell cars and all other appliances necessary therefor, and other incidental purposes. The provisional directors are: J. Moller, D. J. Stewart, B. J. Forest, J. B. Johnson, Montreal; J. E. Conlin, Outremont, Que.

The Ontario Railway and Municipal Board and the Toronto Railway.

The Ontario Railway and Municipal Board issued an order recently directed to the Toronto Ry. Co., as follows:—

That the company issue proper and sufficient transfers to enable all passengers to reach their destination by a continuous journey, although cars of a different route may operate over part of the said journey; and that such passengers shall be entitled to perform part of their journey upon the cars of any line operating along the course of such journey; and such passengers shall, upon payment of a fare, be entitled to a transfer from the cars of any such route to any other cars.

That the company operate until further order the full service upon Dundas St. to the end of the line at Keele St., and are hereby prohibited from yielding any of its cars at any point short of the end of the route.

That the company operate until further order, its cars upon the Queen St. line over the Roncesvalles Ave. line as far as Boustead Ave., where such cars may be y-ed and return.

Electric Railway Finance, Meetings, Etc.

Berlin and Bridgeport Electric Ry.—We are advised that a proposition is under consideration by the Commissioners of the Berlin and Waterloo Electric Ry. for the purchase of the B. and B.E. Ry.

It is reported that W. E. Breithaupt, President, has offered to sell the B. and B.E. Ry. to the Berlin council for \$44,000.

Berlin and Waterloo Street Railway.—The commissioners operating the lighting plant and street railway for the town have decided to hand over to the town profits sufficient to reduce the tax rate by a mill. The commissioners propose to pay over to the town about \$1,400 out of the profits of operation of the street railway during 1911, providing the ratepayers carry a bylaw to raise \$7,400 to defray the cost of improving the roadbed last year. During 1911 the B. and W.S.R. carried 794,814 passengers, an increase of 87,122 over 1910. The total receipts for the year were \$38,099.07. After paying operating expenses, maintenance and repairs and general expenses, including debenture principal and interest, a balance of \$190.77 was reported.

British Columbia Electric Ry.—Gross earnings for Oct., 1911, \$490,451; working expenses, \$303,511; net operating earnings, \$186,940; renewal funds, \$37,936; net earnings, \$149,004; approximate income from investments, \$25,000; net income, \$174,004, against \$349,664 gross earnings; \$205,266 working expenses; \$144,398 net operating earnings; \$25,417 renewal funds; \$118,981 net earnings; \$20,000 approximate income from investments; \$138,981 net income for Oct., 1910. Aggregate gross earnings for four months ended Oct. 31, 1911, \$1,789,692; net earnings, \$615,142, against \$1,247,122 gross and \$531,577 net for same period 1910.

The Guelph Radial Ry. has declared a dividend of 4½% on its \$126,000 of stock, which is held by the city of Guelph, Ont.

Halifax Electric Tramway.—Receipts for Nov., \$17,036.85, and for two weeks ended Dec. 14, 1911, \$8,033.32, against \$15,992.85 and \$7,176.41 for same periods 1910.

Montreal St. Ry.—Passenger earnings for Nov., 1911, \$409,396.52; miscellaneous earnings, \$11,079.90; total earnings,

\$420,476.42; operating expenses, \$260,576.06; net earnings, \$159,900.36; city percentage on earnings, \$14,372.90; interest on bonds and loans, \$15,338; rental leased lines, \$607.10; taxes, \$5,000; total charges, \$35,318; surplus, \$124,582.36; expenses per cent. of earnings, 61.97, against \$355,586 passenger earnings; \$10,512.34 miscellaneous earnings; \$366,098.34 total earnings; \$227,441.90 operating expenses; \$138,656.44 net earnings; \$11,692.01 city percentage on earnings; \$15,768.22 interest on bonds and loans; \$552.90 rental leased lines; \$4,000 taxes; \$32,013.13 total charges; \$106,643.31 surplus; 62.13 expenses per cent. of earnings for Nov., 1910. Aggregate total earnings for two months ended Nov. 30, 1911, \$862,869.17; operating expenses, \$492,777.96; net earnings, \$370,091.21; total charges, \$71,014.72; surplus, \$299,076.49; expenses per cent. of earnings, 57.11, against \$752,786 aggregate total earnings; \$433,191.96 operating expenses; \$319,594.04 net earnings; \$64,011.14 total charges; \$225,582.90 surplus; 57.55 expenses per cent. of earnings for same period 1910.

Montreal Tramways Co.—The President is reported as having stated, Dec. 6 that over 85,000 shares out of 100,000 of the Montreal Street Ry. Co. had been exchanged for M.T. Co.'s stock under the reorganization plan.

Nelson St. Ry.—A meeting of shareholders was held at Nelson, B.C., Nov. 25. The financial statement was considered satisfactory. The average receipts per month to Oct. 31 were said to have been \$1,231.94, and the average expenses per month, \$786.34; the net revenue representing 9% upon the capital invested. It is proposed to raise an additional \$12,000 of capital to further improve the line.

Regina Municipal Ry.—Under sec. 6 of the City Act, the city council of Regina closes its financial year, Oct. 31, and the City Treasurer has issued his statement for the ten months ended on that date, including the street railway accounts. The receipts for the period the lines have been in operation were \$14,065.78, of which \$13,805.78 was from passenger traffic and \$260 from advertising. The current expenditure amounted to \$9,690.62, leaving a net revenue of \$4,375.16. The capital expenditure to Oct. 31 was \$455,271.28.

The City Engineer reports that track has been laid on 7.5 miles of street, and regular service is given by six cars. "The results of operation to date have been the payment of all operation charges, interest on the amount invested and a credit to partly cover the sinking fund. The carrying charges and overhead expenses for so small a number of cars running are high and it is considered that by the purchase of a few more cars the net revenue will be increased and an allowance be available for depreciation. An order for six additional cars has been placed to be delivered throughout the winter and spring. Provision has been made in the \$400,000 bylaw whereby any deficit will be met out of the proceeds of city property, but the operation to the present has shown that no great contribution at any time will have to be made from this source, but that the system will be self-supporting."

St. Thomas Street Ry.—A statement was submitted to the city council, Dec. 1, showing the result of the operation of the railway for the eight months ended Nov. 30, during which Alderman Price, chairman of no. 5 committee, has been acting as manager. The statement showed that 341,868 passengers were carried, and that the total receipts were \$12,333.42, in comparison with 279,540 passengers and \$12,118.33 of receipts for the corresponding period in 1910. The cost of operation was \$13,023.73 against \$11,990.52 in the same period of 1910.

Toronto Ry.—Gross earnings for Nov., 1911, \$413,525.44; expenses, \$211,919.18; net earnings, \$201,606.26, against \$365,466.21 gross earnings; \$192,103.82 expenses; \$173,362.39 net earnings for Nov., 1910. Aggregate gross earnings for 11 months ended Nov. 30, 1911, \$4,350,064.62; expenses, \$2,183,021.17; net earnings, \$2,167,043.45, against \$3,941,125.10 aggregate gross earnings; \$2,033,438.42 expenses; \$1,907,686.67 net earnings for same period 1910.

Winnipeg Electric Ry.—Gross earnings for Oct., 1911, \$328,386; expenses, \$158,272; net earnings, \$170,114, against \$304,114 gross earnings; \$151,782 expenses; \$152,332 net earnings for Oct., 1910. Aggregate gross earnings for 10 months ended Oct. 31, 1911, \$3,154,023; net earnings, \$1,603,622, against \$2,602,499 gross and \$1,296,958 net for same period 1910.

Electric Railway Notes.

The Edmonton Radial Ry. has adopted a system of electric signs for its street cars.

The British Columbia Electric Ry. has received one heavy double broom snow sweeper from the Ottawa Car Co.

The Regina Municipal Ry. has received an electric snow sweeper from the Preston Car and Coach Co., Preston, Ont.

The Quebec Ry. Light and Power Co. has been fined at the Recorder's Court for illegally operating freight cars on the city streets.

Jas. Hilton has been appointed Traffic Superintendent, British Columbia Electric Ry., at Vancouver, vice J. B. Rannie, resigned.

The Winnipeg city council has under consideration a bylaw providing for the operation of an all-night car service on the Winnipeg Electric Ry.

The Regina Municipal Ry. has ordered six single truck cars, similar to those recently supplied to the Calgary Municipal Ry., from the Preston Car and Coach Co., Preston, Ont.

A contract for advertising in the Edmonton Radial Ry. cars has been awarded by the city commissioners to John Dewar of Edmonton, Alta.

G. W. Seguin, who died at Ottawa Dec. 6, was cashier of the Ottawa Electric Ry. from 1891 to 1896, when he entered the Hull Electric Co.'s service.

The Toronto and York Radial Ry. has received three double truck, double ended pay-as-you-enter car bodies from the Preston Car and Coach Co., Preston, Ont.

The Winnipeg Electric Ry. does not propose, says Manager Phillips, to retire from the lighting business. "No such move," he adds, "has ever been considered by the officials."

The London and Lake Erie Ry. and Transportation Co. is negotiating with the Hydro-Electric Power Commission for current to operate its line from London to Port Stanley, Ont.

The Montreal St. Ry. Mutual Benefit Association is applying to the Quebec Legislature for authority to change its name, and for additional powers concerning the administration of its affairs.

G. B. Hughes, heretofore Engineer of Surveys for Canadian Northern Pacific Ry. lines on Vancouver Island, Victoria, B.C., has been appointed Engineer of Construction, British Columbia Electric Ry.

The Moose Jaw Electric Ry. has received a heavy double broom sweeper, and two 21 ft. pay-as-you-enter car bodies, mounted on 21-E trucks, 31½ ft. long over all, from the Ottawa Car Co.

The Montreal Tramways Co.'s officers for the current year, as elected recently, are: President, E. A. Robert; Vice President, J. W. McConnell; General Manager, D. McDonald; Secretary, P. Dube.

N. C. Pilcher, whose portrait appears on this page, was appointed Manager, Sherbrooke Ry. and Power Co., Sherbrooke, Que., Sept. 1, 1910, prior to which he was for some time Manager, Port Arthur and Fort William Electric Ry.

The city of Toronto is making application to the Ontario Railway and Municipal Board to compel the Toronto Ry. to put an additional 200 cars into service, and to run all cars to the ends of the respective lines on which they operate.

The Calgary Municipal Ry., in addition to the 12 cars and one sprinkler, which it has on order with the Preston Car and Coach Co., Preston, Ont., as mentioned in our Nov., 1911, issue, has ordered, from the same company, one scenic car.

The British Columbia Electric Ry. has received from the Baldwin Locomo-



N. C. Pilcher, Manager, Sherbrooke Railway and Power Co.

tive Works a freight locomotive, to be used mainly for emergency purposes. It will probably be used as well for hauling heavy loads of logs from the Fraser Valley line.

N. R. Bugg, who was associated with the promotion of the Peoples Ry., was arrested at Berlin, Ont., on a charge arising out of subscriptions to the stock of the company on allegations made by J. Irvine, Feversham, Ont. He was committed for trial to the county court at Owen Sound, Ont., and was admitted to bail.

The Middlesex, Ont., county council passed a resolution Dec. 10, protesting against the granting of charters for the building of radial railways to irresponsible parties, and asking the Dominion Parliament and the Provincial Legislature not to grant any further charters unless the applicants have given sufficient guarantees of good faith and financial responsibility.

H. M. Graham, who appeared recently at Lindsay, Ont., representing himself as an engineer making surveys for a branch of the Toronto Eastern Ry.

from Port Hope to Orillia, Ont., was arrested Nov. 27 on charges of fraud, and was subsequently sentenced by the police magistrate to three years imprisonment. Toronto Eastern Ry. officials informed the police that Graham was not in the company's employ, and that the company had nothing to do with the project he outlined. Graham admitted he was out to make money by accepting sums from landholders to change the route, which he would locate through farmyards and buildings. His liabilities are said to be over \$1,000, including wages, money borrowed and board bills.

The London and Lake Erie Ry. and Transportation Co. has ordered in the United States, two electric cars, equipped with four motors and Baldwin trucks, and also two trailer cars of the same style. They are designed to be as nearly open cars as practicable, the interior panel finish being eliminated, the upright posts and the carlines in the ceiling being exposed. They are to have the new style turtle-back roof and square cornered sash instead of round and elliptical. Increased floor space is provided by omitting the panel work under the window sills, thus allowing the seats to be placed several inches nearer the side, and leaving a wider aisle. They will be equipped with Westinghouse automatic car and air couplers, and are intended specially for excursions between London and Port Stanley on busy days.

An Electric Railway Official's Family Slandered.

Vancouver, B.C., daily papers of Dec. 1, contained the following:—

During the past two months stories have been circulated concerning the family of R. H. Sperling, General Manager of the B.C. Electric Ry. Co., which were slanderous in the extreme. Despite the fact that the story was a barefaced falsehood, its details being such as to cause any person acquainted with Mr. Sperling or his family to promptly deny the tale without further reference, it has been given wide circulation from mouth to mouth.

While friends and acquaintances of Mr. Sperling have steadily denied the story, the manner in which it has been continually circulated has caused him considerable annoyance, although he has daily been at his office and directing the work of his company during the entire period of its circulation.

Believing that the slanderous story was started on its course by parties who intended that the tale should injure his high reputation and prominent standing in Vancouver, Mr. Sperling has issued a notice offering a reward of \$10,000 for information which will lead to the identification and conviction of the person or persons responsible for the slanderous stories.

Fenders or Wheel Guards for Electric Railway Cars.

The Board of Railway Commissioners on Dec. 20 notified all electric railway companies under Dominion jurisdiction to file within 60 days plans showing the system of fenders or wheel guards in use on their equipment.

This action has probably been taken with a view to issuing an order requiring the companies to use certain fenders or wheel guards which may be approved by the Board.

The C.P.R. Telegraph Department has opened offices at Burdette, Noble and Woodhouse, Alta.; Fraser Mills station, B.C.; Bigwood, Mississippi, Walkerville Jct., Ont., and Amulet, Craven, Evesham, Imperial, Primate, Renown, Richardson, Rosetown and Young, Sask.

MARINE DEPARTMENT

Dominion Marine Association.

PRESIDENT, F. Plummer, Toronto; COUNSEL, F. King, Kingston, Ont.

Great Lakes and St. Lawrence River Rate Committee.

CHAIRMAN, E. E. Horsey, Kingston, Ont. SECRETARY, Jas. Morrison, Montreal.

International Water Lines Passenger Association.

PRESIDENT, W. M. Lowrie, New York. SECRETARY, M. R. Nelson, New York.

The Shipping Federation of Canada.

PRESIDENT, A. A. Allan, Montreal; MANAGER, AND SECRETARY, T. Robb, 526 Board of Trade, Montreal.

Ship Masters' Association of Canada.

GRAND MASTER, Capt. J. H. McMaugh, Toronto, Ont.; GRAND SECRETARY-TREASURER, Capt. H. O. Jackson, 376 Huron St., Toronto.

The Intercolonial Railway's New Deep Water Terminal at Halifax.

To such an unexpected extent has the volume of freight passing through the port of Halifax increased of recent years, that the Government Railways Managing Board has been forced to map out a comprehensive plan of extension by which it is hoped to care for the constantly increasing traffic on the Intercolonial Ry. An idea of its rapid growth may be gathered from the fact that last winter's traffic was 100% greater than that of the previous winter, and nearly 140% in excess of the winter before that.

Halifax has two terminal points—one known locally as "Deep Water" and the other as Richmond. The deep water terminal is located quite centrally in the city proper, off Water St., while the Richmond piers are in the town of Richmond, at the northern extremity of Halifax. It is at the deep water terminal that the major portion of the contemplated improvements will be made.

Fig. 1 gives an idea of the nature and scope of the present and prospective piers at the deep water terminal. As indicated, the plan of improvements gives four piers sufficiently large to accommodate steamers of over 700 ft. in length, considerably increasing the capacity of the terminal. One of these piers, no. 2, has been contracted for. New piers 3, 4, and 5, shown dotted, are as yet in prospect. The old piers, nos. 2 to 5 are shown in full.

The majority of the old piers were of small size. Old no. 2 was practically rebuilt 15 years ago, having a second story added six years ago. This was found inadequate for general purposes, as its south side was too short for long steamers, while the north side had a basin too narrow. Old no. 3, recently rebuilt, is still in good shape, and will probably be embodied in the completed scheme, as the plans indicate.

When it was finally decided to develop a comprehensive plan of expansion, John Kennedy, Hon. M. Can. Soc. C.E., consulting engineer, Montreal, was called in, and it was under his directions that the contemplated plan was developed, and is being carried out.

SCOPE OF SCHEME.—As mentioned, the plan of improvements makes provision for four new piers. Pier 2 will be 800 by 235 ft., with freight and passenger shed, of which more will be said hereafter. Pier 3, for freight purposes only, will have the same dimensions as no. 2,

and will be of the same construction. Pier 4 will also be 800 by 235 ft., with a two-storied passenger and freight shed similar to no. 2. Pier 5 is to be somewhat smaller, 650 by 190 ft., and is intended for the use of smaller coastwise steamboats and sailing vessels, as well as for transatlantic steamships. The basin width between piers 2 and 3 will

head further out in the location indicated. The cribwork of this new bulkhead is to be built in cribs or blocks reaching up to about 2 ft. above low water, above which point the cribwork is to be continuous. The facing of this cribwork is to be of squared timber, well fitted so as to be mud-tight. The top of the bulkhead will be finished off

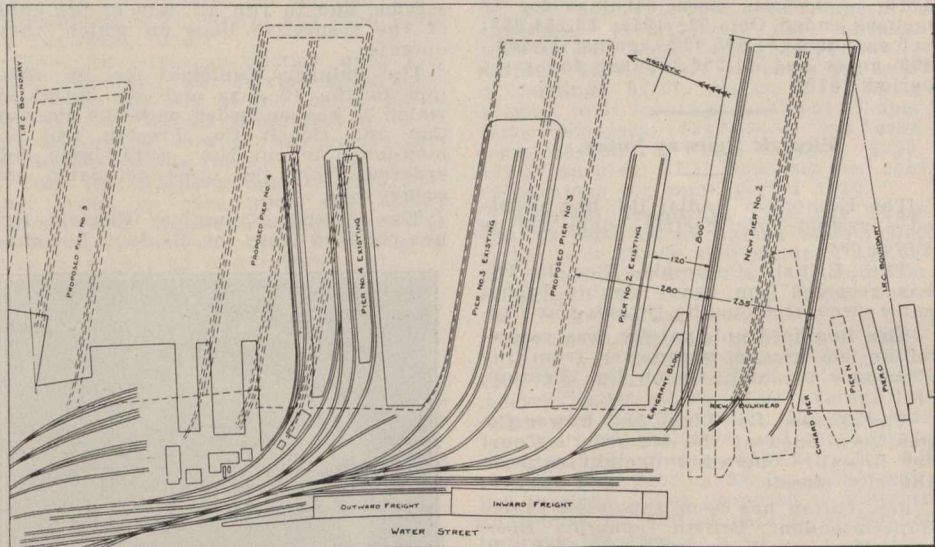


Fig. 1. Deep Water Terminus at Halifax, Showing Old Piers, New Piers and Proposed Piers.

be 280 ft., between 3 and 4, 275 ft.; and between 4 and 5, 250 ft. It is the intention to dredge these basins to a minimum depth of 34 ft. below low water.

PIER 2 is the first one of the series to be designed, and construction is being pushed forward on the work, the contract for the pier itself with shed having been let to the Nova Scotia Con-

struction Co. for \$914,600. This pier is located between the old immigration building and the Cunard pier. As the new pier merely touches the immigration building pier for a short distance, it is being retained, but the Cunard pier, owing to interference, is being completely removed. Necessity requiring the widening of the yard to allow more room on Water St., it was decided to build a new bulk-

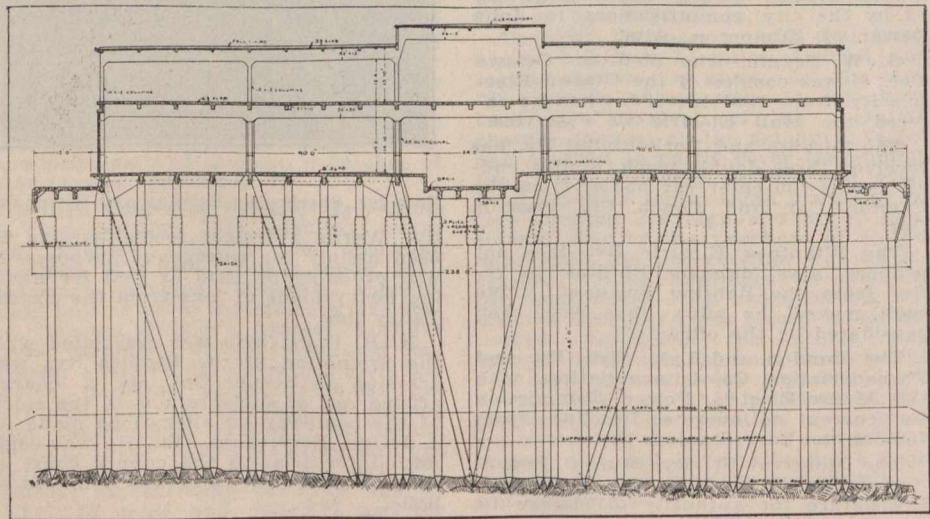


Fig. 2. Cross Section View of New Pier, Showing Construction.

with a coping of squared creosoted pine timbers. In fact, all timbers over 3 ft. above low water are to be creosoted, the proportions being 12 lbs. of creosote per cu. ft. of timber, except for planking, when the amount will be increased to 18 lbs. These proportions are called for in all creosoted members throughout the pier.

The immigration building wharf coming into the field of active operation, it became necessary to strengthen the faces not removed so that they might be protected from the dredging, which will lower the basin bottom to a clear depth of at least 34 ft. all over. The water in the immediate vicinity of the immigration pier is somewhat less, thus requiring the reinforcing. This is to be accomplished by driving sheet piling of

with the free use of freight car doors, both in the building and along the side. The interior tracks are also intended for passenger purposes as well, for loading the immigrant trains.

The upper story of the building, a plan of which is shown in fig. 3, is for passenger purposes exclusively. It is divided into three main divisions—bag-

Excessive Rates for Marine Insurance.

A subscriber in Montreal writes us as follows:—

"The question of marine insurance is one which affects the whole of the importers and exporters of Canada, as the transportation of their products has to

tions officials hope that a fair showing has been made, but there can be no doubt it will require some pressure to convince underwriters that Canadian owners can do very much better than those south of the line.

Stranding of the s.s. Cambodia.

An investigation into the cause of the stranding of the s.s. Cambodia, on Flag island, Aug. 3, was held recently by L. A. Demers, Wreck Commissioner, assisted by Capt. Lohnes and Macdonald, as assessors. Following is a summary of the judgment: The court finds that the Cambodia was stranded owing to careless navigation on the master's part through failure to utilize the chart to ascertain the strength and direction of the currents, and non-usage of the lead in view of his proximity to land and dense fog. The captain, M. A. Oleson, is severely reprimanded. The court holds that the double drowning which resulted, was due to the improper method adopted by the deceased mate, who in lashing the anchor, displayed a lack of judgment, but it is pointed out that the master was indirectly supervising the mate's actions and could have instructed him to adopt a more seamanlike method. The master is therefore warned to pay stricter attention to the actions of his officers and men in future.

Grounding of the Steamboat Corunna.

Following is the judgment of L. A. Demers, Wreck Commissioner, re the grounding of the Canadian Lake Line steamboat Corunna on Welcome Island, near Port Arthur, Ont., Oct. 6, delivered at Montreal, Dec. 6:—

The master is in default for not being, or coming, on deck whenever the mate reported that the vessel's course had not been made good, and for having failed to give definite instructions to the mate regarding courses to be steered from one point to another, and leaving the navigating of the vessel entirely to the mate's judgment. It is also of the opinion that a determined course should have been given from Thunder Cape to Welcome Island, and thence to Port Arthur, and also that it was plainly the master's duty to demand from the owners an additional compass, as the one placed on board could not be considered efficient for all purposes. As it has been stated that the master was sick, and taking that into consideration, the court will show some leniency by suspending his certificate for three months from Nov. 23.

With reference to the mate, the court finds him in default, his navigation having been performed in a careless manner, and it is evident that he never kept a lookout and showed culpable indifference in executing his duties. No effort seems to have been made to determine the vessel's position, and the court has no option but to deal with him severely, and suspends his certificate for one year from Nov. 23.

Owners of vessels should see that their vessels are fully equipped with necessary instruments in order to afford every facility to the masters and officers to navigate. In the present case, the vessel should have had another compass so situated as to afford every facility to take bearings and determine at all times the position of the vessel, as well as the error, if any, due to any cause.

During October, 1911, two employes were killed and three injured in the course of their work in connection with the navigation of Canadian waters. One of the deaths was due to drowning and one to a fall.

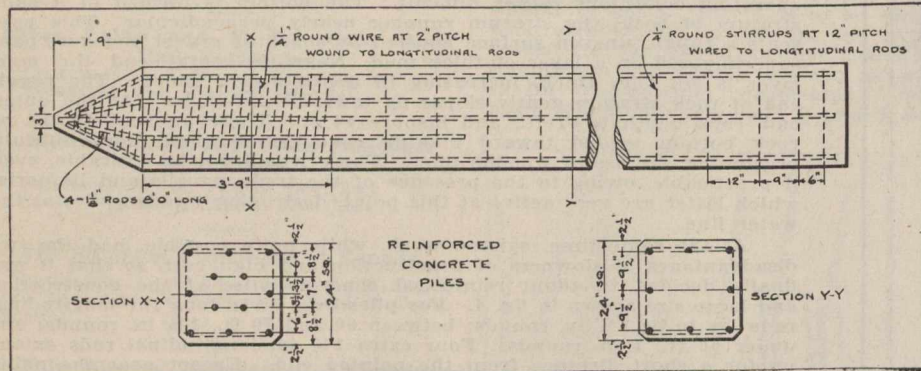


Fig. 4. Construction of Reinforced Concrete Pile used for the Pier Piling.

gage rooms on the north and south sides extending the full length, with the exception of a distance of about 100 ft. at each end, and passenger rooms and offices along the whole length of the central part of the shed and across the full width at each end. The outer wall of each baggage room will have alternate doors and windows at 36 ft. door centres, so that it may receive passengers and baggage from any part of either two short or one long vessels up to the full length of the pier. The Canadian examination quarters are duplicated on the north and south sides of the shed, but the U.S. quarters are single and are approached from the north and south baggage rooms by overhead stairs and passages, so as not to interfere with the passages of the Canadian examination quarters. Near the middle of the length of the building are two suites of first and second class passenger rooms, one suite on each side of the central hall. Each of these has liberal accommodation for about 50 first class and 170 second class passengers. Commodious steerage accommodation is also provided, as shown.

It is intended that the whole of both stories of the shed be lighted by electricity, and that the offices and passenger quarters of both floors be steam heated and supplied with water. It is not intended that the large baggage spaces shall be furnished with heating apparatus, because at the times when they are in most active use, steamers will be alongside, and several of the large doorways of the shed will be open, which would make heating impracticable, but apparatus can be added at any time should experience show it to be necessary.

The adoption of the plans for the deep water terminal improvements means a general shifting of the railway yard arrangements. The rebuilding of the recently constructed freight shed on another site will probably be necessary in order to provide easy approach curves to the new piers. Other equally extensive changes will likely be necessitated to bring about a completely harmonious arrangement.

The Department of Marine has given notice that the Hydrographic Survey and Tidal and Current Survey Branches have been transferred to the Department of Naval Service, and any persons desiring information respecting them should address the Deputy Minister of Naval Service. Communications respecting notices to mariners and aids to navigation should be addressed as heretofore to the Chief Engineer, Marine and Fisheries Department.

pay the insurance both of the steamers and the cargoes. It is well known in business circles that marine insurance to and from Canadian ports is very much higher than to United States ports, but few people appreciate the immense sum that this represents in competition with our United States competitors. Major G. W. Stephens, President of the Montreal Harbor Commissioners, has recently issued a plea for a readjustment of marine insurance rates on the St. Lawrence, which, however, only treats of one phase of the subject. The hulls of all our fleets of regular liners pay about 2% on their total value over similar lines to U.S. ports. The cargoes both east and west contribute at least double the rates charged to the U.S. lines, notwithstanding the fact that during the last 10 years over \$38,000,000 has been expended by the Canadian Government in improving aids to navigation, including lighting, buoying and deepening the channels and entrances to our ports.

"Our inland marine has also suffered through constant advance in rates on hulls. Previous to about 1903 the rate was 3 3/4% for the season, which included the risk of navigation through the canals down to Montreal. This rate has been put up to 6% on the Great Lakes, 7% to Kingston, and 8% to Montreal. The heavy losses on the large U.S. steamers in recent years was the principal cause of the advance, although the large number of casualties to Canadian boats contributed to the heavy losses to underwriters, but I am of opinion that if the Dominion Marine Association took up this matter in a practical way and had their risks insured direct with the companies and not through U.S. channels, they would succeed in gradually reducing these heavy premiums, both on their steamers and cargoes.

"The Department of Marine has already taken evidence on the subject, and several attempts have been made to bring about an improvement, but the trade associations should, in their own interests, support the efforts that have been made and bring the matter before the new Minister of Marine."

In connection with the foregoing it may be said that the Dominion Marine Association came to the same opinion as our correspondent some two years ago, and took definite action. Underwriters are now keeping track of Canadian tonnage enrolled in the Canadian Lake Protective Association in separate records, and, according to the showing made, Canadian vessel owners will, or will not, be entitled to better rates than United States owners. The insurance for 1911 has been done in this way, and the Canadian Lake Protective Associa-

The Regulation of Pleasure Craft in Toronto Bay.

Following is an extract from the judgment of L. A. Demers, Wreck Commissioner, delivered, recently, at Toronto, concurred in by Capt. J. Foote and S. Crangle, in the matter of the running down of a gasoline launch by the steamboat J. T. Clark, Aug. 26, when one life was lost. The court exonerates the master and mate of the J. T. Clark from all blame in this collision. The launch was the vessel which had to keep out of the way, and according to article 23, it was her duty to slacken, stop or reverse. Sufficient warning was given by the Clark. The court cannot too strongly condemn the recklessness, which was shown in the matter by the owner of the launch. The attempt to navigate the boat, especially at night, while minus a most important part of the machinery, is reprehensible in the extreme and the whole responsibility for the casualty rests with the owner of the launch. Though the court is of opinion that pleasure craft must not interfere with the regular commercial traffic of the bay, or any waters yet when vessels, no matter to which class they belong, are in proximity to one another they must adhere strictly to the rules of the road. It further emphasizes the fact that no vessel has the absolute right of way, and that ferry boats and pleasure boats, like any trading vessels, have to deviate from their course when circumstances require and in compliance with the rules of the road. The court recommends that regulations be framed for the operation of pleasure craft on the Toronto Bay, with the object of reducing to a minimum the loss of life which has too frequently occurred in the last few years.

Loss of the s. s. Turret Cape.

Following is the judgment delivered by L. A. Demers, Wreck Commissioner, concurred in by Capt. J. B. Foote and S. Crangle, at Toronto, Dec. 8, re the stranding and subsequent loss of the Canadian Lake and Ocean Navigation Co.'s s.s. Turret Cape, on a shoal two miles southwest of Cove Island in Lake Huron, Nov. 17:—

The master, Capt. Wharry, committed a grave error of judgment in placing his vessel in the bight between Clark Point

and Cove Island. His belief that his ship would have rolled had he shaped a course when off Lyal Island is not acceptable, and it is an impossibility for a navigator to ply on the lakes without meeting at times certain conditions of weather which will cause vessels to labor and roll in a seaway. In view of the fact that the master did not seem to have on his vessel, officers on whom he could rely absolutely to check over with him the work, his courses or bearings, or anything of the kind, the court is inclined to be lenient with him, and as it finds that his error of judgment is not of a culpable nature for not adopting a course which would have been the most seamanlike method of reaching Port Arthur, and failing to take sufficient soundings to determine his position, therefore his certificate will be suspended for three months from Dec. 8, 1911, to Mar. 8, 1912. The court warns him that in case of thick weather, and when hugging the shores, more frequent soundings should be taken. The mate and second mate are exonerated from blame.

Stranding of the s. s. Venture.

An investigation was held recently by Capt. Jas. Gaudin, Agent, Marine Department, Victoria, B.C., assisted by Capt. C. Eddie and Capt. B. Coombe, a Younger Brother of Trinity House, as nautical assessors, into the cause of the stranding of the Boscowitz Steamship Co.'s s.s. Venture in Johnson Strait, Sept. 18, 1911. The judgment is as follows:—

The captain, W. S. Morehouse, committed a grave omission of duty in not issuing specific instructions as to the navigation of the ship rounding Chatham Point, and instructing that a proper and constant lookout be kept. Taking into consideration the recent frequency of shipping casualties on this coast, causing considerable loss of valuable property, such incidents tend to verify an undeserved reputation which it has acquired for dangerous navigation, and also have a baneful effect on the shipping industry of this province. We therefore find that the certificate of competency of the captain be suspended for six calendar months, from Nov. 22, 1911, and recommend that he be permitted to serve as mate of a coasting passenger steamer during the suspension of his certificate. The court also finds

that A. D. Bowly, chief officer, committed a grave error in not calling his master when he found the atmospheric conditions such as would have warranted him in doing so, also in not using the means at his disposal for the safe navigation of the vessel in narrow waters. It finds that no extenuating circumstances exist, and suspends his certificate for four calendar months from Nov. 22, 1911.

The Vancouver Shipmasters' Association recently passed a resolution that the suspensions were too harsh, and that the case had not been heard by men conversant with the northern coast. A committee was appointed to investigate the circumstances.

Vessels Removed from the Register.

The following vessels were removed from the Canadian register during Nov., 1911, for the reasons assigned:—Steam, Active, Montreal, 190 tons, broken up; Advance, Kingston, Ont., 14 tons, broken up; Alfred Wilson, Sarnia, Ont., 22 tons, out of existence; Brace, Hamilton, Ont., 6 tons, out of existence; Clyde, Quebec, Que., 373 tons, broken up; Electra, Charlottetown, P.E.I., 78 tons, wrecked; Flight, Kingston, Ont., 27 tons, out of existence; Frances, Kingston, Ont., 24 tons, out of existence; H. M. Mixer, Kingston, Ont., 9 tons, broken up; Houghton, Montreal, 24 tons, broken up; James, Quebec, Que., 31 tons, broken up; Lorne, Quebec, Que., 4 tons; broken up; Noname, Vancouver, B.C., 77 tons, sunk in collision; Sunburst, Victoria, B.C., 10 tons, burnt. Sailing:—Elva M., Charlottetown, P.E.I., 92 tons, wrecked; J. and L. Irving, Yarmouth, N.B., 80 tons, stranded; O. P. Silver, Lunenburg, N.S., 71 tons, lost; Theresa M. Gray, Halifax, N.S., 30 tons, transferred to Newfoundland.

The Minister of Marine, who is also Minister of the Naval Service, in speaking of the naval policy of the last Government, at Ottawa, recently, stated that nine tenders for the construction of vessels had been received, varying in amount from \$11,000,000 to \$13,000,000, exclusive of armor plating, armament and special supplies. He would not recommend that any of the tenders be accepted, and intimated that the whole question regarding naval policy would be taken up with the British Admiralty.

LIST OF STEAM VESSELS REGISTERED IN CANADA DURING NOVEMBER, 1911.

Name	No.	Where and When Built.	Engines, etc.	Length	Breadth	Depth	Gross Tons	Reg. Tons	Port of Registry	Owners
Gunhild	130,757	Q. M. Harbor, U. S., 1906	Screw 10 1/2 h. p.	61.0	12.7	5.1	27	18	Vancouver, B.C.	C. V. Ericsson, Vancouver, B.C.
Jericho	130,794	North Vancouver, B.C., 1911	" 8 "	67.0	14.5	4.4	44	30	" "	A. G. Balkwill, Vancouver, B.C.
John H. Spratt	130,758	Vancouver, B.C., 1911	" 5 "	53.3	27.5	4.9	110	75	" "	Minister of Public Works for British Columbia
Leonard M.	130,759	Vancouver, B.C., 1911	" 2 "	44.0	9.8	4.1	14	9	" "	L. C. Miles, Vancouver, B.C.
Minnie W.	126,672	Fort William, Ont., 1911	" 11 "	63.0	14.2	8.0	57	34	Port Arthur, Ont.	Thunder Bay Contracting Co., Port Arthur, Ont.
Nahmint	130,791	Steveston, B. C., 1911	" 6 "	67.9	15.5	6.1	45	31	Vancouver, B.C.	Wallace Fisheries, Ltd., Vancouver, B.C.
Neptune	130,633	Port Greville, N. S., 1911	" 19 "	73.4	20.5	10.7	118	80	St. John, N.B.	R. Thomson, et al, St. John, N.B.
Nortonian	130,792	Coquitlam Lake, B.C. 1911.	" 3 "	47.5	12.5	4.6	26	18	Vancouver, B.C.	Vancouver Power Co., Vancouver, B.C.
Quathiaski No 3.	130,793	Steveston, B. C., 1911	" 2 "	42.7	10.8	4.5	16	11	" "	Quathiaski Canning Co., Quathiaski Cove, B.C.
St. J. Deschailions	130,537	St. J. des Chailions, Q., 1910	" 2 "	29.5	6.0	2.2	5	3	Montreal	A. Lemay, St. Jean des Chailions, Que.
Wilma	130,236	Collingwood, Ont., 1911	" 13 1/2 "	75.3	16.4	7.7	55	37	Port Stanley, Ont.	J. A. Macdonald, et al, Port Stanley, Ont.

LIST OF SAILING VESSELS AND BARGES REGISTERED IN CANADA DURING NOVEMBER, 1911.

Name	No.	Where and When Built	Rig	Length	Breadth	Depth	Reg. Tons	Port of Registry	Owners
D. W. No. 1	130,795	New Westminster, B.C., 1911	Screw	104.8	35.0	6.7	209	Vancouver, B.C.	Davidson-Ward Co., Vancouver, B.C.
Daisy Z.	130,731	Little Tancook, N. S., 1911	Schr.	39.6	10.0	5.4	11	Lunenburg, N.S.	S. Zinck, Blandford, N.S.
Dora C.	130,729	" "	"	40.4	10.0	5.6	12	"	H. Cleveland, Blandford, N.S.
Lowell F. Parks.	130,730	La Have, N.S., 1911.	"	104.8	26.0	10.2	99	"	R. Parks, M. O., La Have, N.S.
Lund No. 3	130,760	Lund, B.C., 1911.	Barge	84.8	27.2	6.0	117	Vancouver, B.C.	F. G. Thulin, Lund, B.C.
M. M. Gardner.	130,732	Lunenburg, N.S., 1911.	Schr.	106.8	26.0	10.6	192	Lunenburg, N.S.	W. C. Smith, M. O., Lunenburg, N.S.
M. Robidoux	130,536	Yamaska, Que., 1911.	Sloop	109.4	23.2	6.9	132	Montreal	M. Robidoux, Yamaska, Que.
Miriam G.	769,376	Parish St. Peter, Que., 1874.	Bktn.	102.2	22.5	11.9	154	Sydney, N.S.	Mrs. M. S. Cruickshank, Sydney, N.S.
Oswald	130,583	Tancook, N.S., 1911.	Schr.	45.0	13.6	6.8	20	Halifax, N.S.	G. A. Wooten, Halifax, N.S.
St Gregoire	126,934	Baie St. Paul, Que. 1911.	"	75.3	24.4	6.7	68	Quebec, Que.	T. Harvey, M. O., Baie St. Paul, Que.
W. Baker	130,725	Tancook, N.S., 1906.	"	39.6	9.9	5.2	10	Lunenburg, N.S.	W. Baker, Tancook, N.S.

The St. Lawrence Navigation Season of 1911.

The season of 1911 opened with the arrival of the Canadian Northern Steamships' s.s. Royal George at Montreal, Apr. 27, being about 16 days later than in 1910, and closed Dec. 4 with the departure of the Head Line s.s. Bray Head, for British ports. Reports generally state that in point of tonnage of freight and numbers of passengers, both inward and outward, the season was more successful than any previous one, notwithstanding the fact that it was shorter by 13 days, and that business was to some extent interfered with by the strike in British shipping and railway circles. The customs receipts for the season were \$11,638,763.01, against \$10,833,191.67 for the previous year. Of the 750 ocean going vessels arriving in Montreal, 398 were trans-Atlantic and 352 coasting. During 1910 the total of vessels was 719.

The C.P.R. steamship lines report 18,750 passengers eastbound, and 40,200 westbound, against 15,012 eastbound and 43,599 westbound in 1910. The freight returns of these lines show exports of 332,613 tons, and imports of 178,800 tons, against 331,955 tons exports and 184,804 tons imports in 1910.

The Canadian Northern Steamships, Ltd., reports 6,351 passengers eastbound and 13,204 westbound, against 4,047 eastbound and 9,428 westbound in 1910. Though equipped mainly for passenger trade, the two vessels of this service brought 12,750 tons of freight, and carried eastward 13,500 tons during the season.

The Allan Line reports that it carried 19,330 passengers eastbound and 61,709 westbound, against 14,238 eastbound and 61,688 westbound in 1910. The freight traffic was somewhat less than in 1910, which was a record year for the company.

The White Star-Dominion Line made two round trips less than in 1910, and carried 11,842 passengers more during 1911. The increase was entirely in eastbound traffic, there being a falling off in the westbound traffic.

All the other lines using the route report aggregate increases of traffic, both in passengers and freight. During the 1911 season the Cunard Line inaugurated its service to Canadian ports, with the steamships Albania, Ausonia and Ascania, which it acquired from the Cairn Line.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

118. Nov. 20.—326. General, hydrographic, tidal and current surveys transferred to Department of Naval Service.

119. Nov. 23.—327. New Brunswick, south coast, Bay of Fundy, off Negor point, gas buoy moved to former position. 328. Nova Scotia, Madame island, West Arichat, light established on wharf. 329. Prince Edward Island, north coast, change in position of Darnley point front range lighthouse. 330. Prince Edward Island, north coast, date of removal of bell buoys from their stations for the winter. 331. Newfoundland, east coast, St. Mein bay, St. Anthony harbor, Egg point, new lighthouse, change in character of light.

120. Nov. 28.—332. Quebec, Chaleur bay, Ste. Adelaide de Pabos, light established. 333. Quebec, Gulf of St. Lawrence, Magdalen islands, Alright island, hand fog horn at Pointe Basse wharf. 334. Quebec, Gulf of St. Lawrence, Magdalen islands, Pearl reef, bell buoy established. 335. Quebec, River St. Lawrence, Langlois point, name.

121. Dec. 5.—336. Nova Scotia, Bay of

Fundy, Port Lorne, change in character of light. 337. Nova Scotia, North Atlantic ocean, Sable island, position of wireless telegraph station. 338. Quebec, River St. Lawrence, Bersimis river entrance, buoys placed. 339. Quebec, River St. Lawrence, Lake St. Peter, Riviere du Loup en haut, change in position of 122. Dec. 6.—340. Nova Scotia, south coast, Sambro gas and whistling buoy to be replaced during the winter months by lightship. 341. Quebec, Gulf of St. Lawrence, Anticosti lightship, change in characteristic of light, fog alarm and submarine bell.

123. Dec. 12.—342. Quebec, Lake St. Louis, buoys established between Dowker Island and Pointe Claire light. 343. Quebec, Ottawa River, Lake of Two Mountains, St. Placide, front range lighthouse increased in height. 344. Ontario, Lake Ontario, South Bay point, light discontinued.

124. Dec. 13.—345. Ontario, Georgian Bay, Owen Sound, back range lighthouse burnt down, back light temporarily discontinued. 346. Ontario, Georgian Bay, Thornbury, front light shown from tower, day beacon added to back light mast.

125. Dec. 16.—347. Nova Scotia, south coast, Mars head, off Grampus rock, can buoy replaced by bell buoy. 348. Nova Scotia, Cape Breton island, west coast, Friar Head boat harbor, light established. 349. Nova Scotia, Cape Breton island, west coast, Margrave harbor, front range light improved. 350. Quebec, Riv-

Turbine Steamship for British Columbia Coast Service.

The s.s. Queen Alexandra, which has been purchased by the C.P.R., as mentioned in our Nov., 1911, issue, and which is illustrated on this page, was built in 1902, at Dumbarton, Scotland, and has since been operated in the passenger service on the Clyde, in conjunction with her sister vessel, the King Edward. Her dimensions are: length, 270 ft.; breadth, molded, 32 ft.; depth, to main deck, 11½ ft.; to promenade deck, 18¾ ft. The engine equipment consists of three separate turbines, each driving its own line of shafting, the centre turbine being high pressure, the others low pressure. At the ordinary steaming speed, the centre shaft gives 700 and the other shafts 1,000 a minute. This high velocity renders it necessary to employ a number of screw propellers of comparatively small diameter, rather than one or two of large diameter at the stern, as usual. This vessel has five propellers, one about 4 ft. diam. on the centre line of shafting, and two of 3 ft. diam. on each of the side lines of shafting. Steam is supplied by a double ended cylindrical Scotch boiler at 150 lbs. pressure. In her builders' trials she attained a speed of 21.63 knots an hour.

The Clyde Turbine Steamers Co., Ltd., from which company the C.P.R. has purchased the vessel, reports a minimum of



Turbine Steamboat Queen Alexandra, for C.P.R. British Columbia Coast Service.

er St. Lawrence above Quebec, Pointe a Basile back range light improved.

126. Dec. 22. 351. British Columbia, Strait of Georgia, Ballenas Islands, change in position of lighthouse. 352. British Columbia, Queen Charlotte Islands, Hecate Strait, Moresby Island, Houston Stewart channel, Koya point, name.

127. Dec. 22. 353. Ontario, St. Joseph channel, Bamford island, light discontinued. 354. Ontario, Lake Superior, Caribou island light station, new lighthouse.

repairs to her machinery during the nine years of operating. She was recently sent to the builders' yard for overhauling and some alterations, and while there was damaged by fire. She is expected to leave shortly for the Pacific coast, and on arrival will be placed on the Vancouver-Nanaimo-Comox run.

The Canadian Northern Coal and Ore Docks Co. is reported to have given a contract for the doubling of its coal handling plant at Port Arthur to the Barnett-McQueen Co.

Niagara Navigation Company Acquires Two Other Lines.

The Niagara Navigation Co. issued a circular to its shareholders recently announcing that an opportunity having arisen to purchase the Hamilton Steamboat Co.'s steamboats Modjeska and Macassa, and its wharf property at Hamilton, and the Turbine Steamship Co.'s steamboat Turbinia, and wharf property at Hamilton, the directors considered it advisable to acquire these lines, which can be satisfactorily accommodated at the N.N. Co.'s Yonge St. docks, Toronto. Concentration of management should be an economic gain, and expansion of routes will be an advantage to the N.N. Co. The terms of the purchase provide for part payment in treasury stock and the balance in cash. Funds for the latter purpose will be obtained from money on hand and by the issue of 1,002 additional shares at par, viz., \$100. These shares will be allotted to those who were shareholders at the closing of the books on Dec. 15, and who subscribe for them by Jan. 3, in the proportion of one new share for every seven held on Dec. 15. The purchases include only the properties of the Hamilton Steamboat Co. and the Turbine Steamship Co., viz., the vessels and Hamilton wharves, and not the capital stock. The transfer of the property is to be made on Jan. 3.

The Hamilton Steamboat Co., Ltd., which was promoted by the late T. B. Griffiths and J. B. Griffiths, now Purchasing Agent, Dominion Power and Transmission Co., was incorporated in 1887, the first directors being B. E. Charlton, J. M. Lottridge, G. E. Tuckett, T. B. Griffiths, F. Armstrong, J. Wallace and Seneca Jones. In 1893 the late G. E. Tuckett secured a controlling interest. In 1906 this passed to Æmilius Jarvis, of Toronto, and associates, and in 1909 it was bought by J. C. Eaton, Toronto, who had previously acquired control of the Turbine Steamship Co., whose steamboat, the Turbinia, has been engaged in a losing competition with the Hamilton Steamboat Co.'s vessels. The officers and directors in 1911 were: President, J. C. Eaton; Vice President, R. Y. Eaton; Secretary-Treasurer, J. J. Vaughan; General Manager, W. E. Bishop; other directors, H. McGee, C. Booth and T. A. McCrea. The company has been very successful, and since 1902 has paid regular yearly dividends of 10%. Its capital stock is \$187,000, fully paid up.

The late T. B. Griffiths was General Manager in 1887 and 1888, J. B. Griffiths from 1889 to 1893, and F. Armstrong in 1894 and 1895. M. A. Kerr was Managing Director from 1896 to 1903. W. E. Bishop, who had been ticket agent at Toronto from 1890, when to Hamilton in 1896 as Manager, and was appointed General Manager in 1903, continuing to hold that position. The other officials are: P. J. Pear, Passenger and Freight Agent, Hamilton, and E. J. Callaghan, Toronto Agent.

The first boat operated by the company, the Mazeppa, which it acquired in 1887, and disposed of in 1899, was built at Hamilton in 1884, and ran between Hamilton, Burlington Beach and Burlington. She is screw driven, with engine of 50 n.h.p., and with dimensions: length, 101 ft.; breadth, 20 ft.; depth, 5.7 ft.; tonnage, 146 gross, 87 register. She is now owned by H. Oldfield, Parry Sound, Ont.

The Macassa was built at Port Glasgow, Scotland, in 1888, and rebuilt at Collingwood, Ont., in 1905. She is screw driven, with engine of 95 n.h.p., and with dimensions: length, 178.4 ft.; breadth, 24.1 ft.; depth, 16.3 ft.; tonnage, 529 gross, 234 register. She is valued at \$72,000.

The Modjeska was built at Yoker,

Scotland, in 1889, and is screw driven, with engine of 180 n.h.p., and with dimensions: length, 178 ft.; breadth, 31.1 ft.; depth, 12.3 ft.; tonnage, 678 gross, 461 register. She is valued at \$98,000.

The Hamilton real estate and wharves are valued at about \$27,000.

The Turbine Steamship Co., which was incorporated in Aug., 1903, has a capital of \$150,000. The principal promoters were Hamilton people, the late Timothy Eaton, of Toronto, being also interested. About 1906 the control passed to J. C. Eaton. The officers and directors for 1911 were: President, J. C. Eaton; Vice President, R. Y. Eaton; Secretary-Treasurer, J. J. Vaughan; Manager, J. A. Goodearle; directors, H. McGee and T. A. McCrea. The first manager was G. Ellis, the second W. Wilson, and the third, J. A. Goodearle.

The Turbinia was built at Hebburn-on-Tyne, Eng., in 1904, and arrived at Hamilton, Ont., June 18 of that year. She is equipped with three compound turbines of the Parsons type, one high pressure in the centre, and two low pressure, each operating one shaft carrying one propeller. Her dimensions are: length, 250 ft.; breadth, 33.2 ft.; depth, 12.6 ft.; tonnage, 1,064 gross, 603 register. The engine is of about 500 n.h.p. She is said to have cost about \$210,000. The company's wharves, warehouses, etc., in Hamilton are valued at about \$25,000.

At first the Turbinia ran between Hamilton and Toronto. It is claimed that the first year she cleared about \$20,000; the second year there is said to have been a loss of about \$3,000. The

Hamilton Steamboat Co. reduced its rates and made it impossible for the Turbinia to show a profit. In the winter of 1905-6 she was chartered by the Canada-Jamaica Steamship Co., and operated on a day run between Santiago, Cuba and Kingston, Jamaica, calling at Port Antonio. Debts were incurred which the owners had to settle, and a loss of over \$20,000 is said to have resulted, besides which the vessel was considerably battered about and had to be repaired. In the summer of 1907 she was operated between Toronto, Niagara and Lewiston, but could not successfully compete with the Niagara Navigation Co.'s line. She has also run at different times between Toronto and Lake Ontario ports west of Toronto, but has not been a financial success, being an expensive boat to run, and having, in the opinion of marine men generally, been erratically managed by constant changes of routes, etc.

The combined fleet will be operated under the Niagara Navigation Co.'s name, and will include, in addition to the three vessels purchased as above mentioned, the N.N. Co.'s Cayuga, Chipewa, Corona, Chicora and Ongiara, the latter, operating on the Niagara River only. Plans for a new vessel, which will probably be a little larger than the Cayuga, are being prepared by F. E. Kirby, of Detroit, and a contract is expected to be let in the near future. If possible, the new boat, which will probably be built on Lake Ontario, will be got ready for the season of 1913, though it may not be possible to have her in service before 1914.

SAULT STE. MARIE CANALS TRAFFIC

The following commerce passed through the Sault Ste. Marie Canals for the season 1911:

ARTICLES	CANADIAN CANAL	U. S. CANAL	TOTAL
Copper..... Eastbound..... Short tons	16,511	115,970	132,481
..... Bushels	28,071,171	12,709,988	40,781,159
Building stone..... Short tons	4,137	1,205	5,342
Flour..... Barrels	2,504,686	4,741,684	7,246,370
Iron ore..... Short tons	22,668,088	8,074,389	30,742,477
Pig iron..... " "	6,789	33,306	40,095
Lumber..... " " M. ft. B. M.	28,694	529,819	558,513
Silver ore..... Short tons			
Wheat..... Bushels	80,013,116	17,128,795	97,141,911
General merchandise..... Short tons	39,788	117,886	157,174
Passengers..... Number	16,197	21,761	37,958
Coal, hard..... Westbound..... Short tons	453,470	1,606,739	2,050,209
Coal, soft..... " " " "	3,660,526	9,612,141	13,272,667
Flour..... Barrels	125		125
Grain..... Bushels		1,450	1,450
Manufactured iron..... Short tons	183,189	188,985	372,174
Iron ore..... " "	15,758		15,758
Salt..... Barrels	135,363	525,945	661,308
General merchandise..... Short tons	634,469	594,275	1,228,744
Passengers..... Number	22,983	19,010	41,993
Vessel passages..... Number	6,803	11,870	18,673
Registered tonnage..... Net	19,331,969	22,321,519	41,653,488
Freight—Eastbound..... Short tons	25,987,104	10,442,295	36,429,399
..... Westbound..... " "	4,966,765	12,081,052	17,047,817
Total freight..... " "	30,953,869	22,523,347	53,477,216

COMPARATIVE STATEMENT FOR THE SEASONS OF 1910 AND 1911.

ITEMS.	Season 1911	Season 1910
Vessels:		
Steamers..... Number	15,160	17,674
Sailing..... " "	1,681	1,890
Unregistered..... " "	1,832	1,335
Total..... " "	18,673	20,899
Lockages..... " "	13,292	14,560
Tonnages, Registered..... Net	41,653,488	49,856,123
..... Freight..... " "	53,477,216	62,363,218
Passengers..... Number	79,951	66,933
Coal, hard..... Short tons	2,060,209	1,658,844
..... soft..... " "	13,272,667	11,854,883
Flour..... Barrels	7,246,495	7,576,789
Wheat..... Bushels	97,141,911	86,259,974
Grain..... " "	40,782,609	39,245,485
Manufactured and Pig Iron..... Short tons	412,269	444,669
Salt..... Barrels	661,308	528,610
Copper..... Short tons	132,481	148,070
Iron Ore..... " "	30,731,285	41,608,634
Lumber..... M. ft. B. M.	558,513	603,101
Building Stone..... Short tons	5,342	9,635
General Merchandise..... " "	1,388,918	1,411,549

The Canadian canal was opened April 22, and closed Dec. 13, 1911; season 236 days.
The U. S. canal was opened April 24, and closed Dec. 16, 1911; season 237 days.

Atlantic and Pacific Ocean Marine.

Alfred Holt, founder of the Blue Funnel Line, operating steamships to various parts of the world, including a line to British Columbia ports, died at Liverpool, Eng., recently.

The Donaldson Line s.s. *Almora* is undergoing an overhauling at Glasgow, Scotland, necessitated by the damage caused in heavy weather during November. The December sailing of the *Almora* was taken by the Head Line s.s. *Inishowen Head*.

The Gulf Transport Line s.s. *Inkula*, which is being transferred to the Canadian Mexican route, when the arrangements for the taking over of the Canadian Mexican Pacific Steamship Co., by the Union Steamship Co. are completed, is being transformed into an oil burner.

The Donaldson Line commenced its service between Halifax, N.S., and Glasgow, Scotland, Dec. 2, when the s.s. *Athenia* sailed from St. John for Halifax, afterwards proceeding to Glasgow. In past years the vessels of this line sailed direct from St. John, but in future they will call at Halifax.

The Minister of Trade and Commerce stated in the House of Commons recently that the Government's policy would be to liberally subsidize steamship lines from Canada to the West Indies and South America, and he believed that the negotiations in progress would lead to a much better service to Jamaica and British Guiana.

It is reported in Montreal that the Richelieu and Ontario Navigation Co. is negotiating with the Quebec Steamship Co. with a view to amalgamation. It is stated that the Quebec Steamship Co.'s service would be completely reorganized so as to allow of a direct service being maintained between Montreal, Quebec and Cape Breton.

The Dollar Steamship Lines Ltd., has been incorporated under the British Columbia Companies Act, to take over the Stanley Dollar Steamship Co., the M. S. Dollar Steamship Co., and the Hazel Dollar Steamship Co., all of which are being wound up. The incorporation is in the nature of an amalgamation of companies operating vessels from which the companies took their names, all being on the Canadian register at Victoria, where the company's registered office will be.

The C.P.R. s.s. *Empress of China*, which was wrecked off the Japanese coast, July 26, was floated Dec. 12. She had been abandoned to the underwriters, and the work of floating her was undertaken on their behalf by the London Salvage Association. It is said that repairs will be undertaken, a survey for the purpose of inviting tenders for the work having been made at Uruga, and that the contract will probably be placed with Japanese firms at Kawasaki or another firm at Hong Kong.

The Minister of Trade and Commerce stated in the House of Commons, Dec. 1, that the suggestion that the Government should operate a steamship line between Halifax, N.S., St. John, N.B., the West Indies and British Guiana, as a part of the Intercolonial Ry. system, in preference to paying large subsidies to private companies, was a valuable one. It would, however, be a new departure, and would mean an increase in the Intercolonial Ry.'s already large capital account, and also involve the co-operation of the Railways Department with the Trade and Commerce Department.

It is announced that the Elder Dempster Co., operating steamships between Canada and Gulf of Mexico ports, and South Africa, has been merged with the Union Castle Line and the Royal Mail Steam Packet Co. Since the death of

Sir Alfred Jones, the control of the Elder Dempster Co. has been in the hands of Lord Pirrie, head of Harland and Wolff, shipbuilders, Belfast, Ireland, who is also interested in the other companies named and in the International Mercantile Marine Co., which in turn controls the White Star-Dominion Line, running vessels between England and Canada. By agreement with the C.P.R., on the purchase of the Beaver Line, the Elder Dempster Co. is prohibited from operating between England and Canada.

In dealing with the operation of the Canadian Northern Steamships' Atlantic service, in the C.N.R. annual report, which was given in full in our last issue, Sir W. Mackenzie, President, stated that having regard to the organization necessary to be maintained and the demand for accommodation, which on different sailings could not be met, it was manifest that a further addition to the fleet should be made at an early date. He also said that negotiations were pending, and it was hoped that a satisfactory arrangement would shortly be made, whereby all the business offered to the steamship company could be accepted. Sir William, accompanied by D. B. Hanna, Second Vice President, Canadian Northern Steamships, Ltd., is at present in Europe, and it is likely that the matter will be dealt with during their visit.

The steamship *Nascopie*, which was launched at Wallsend-on-Tyne, Eng., Dec. 7, is being built to the order of Job Bros., Liverpool, and in conjunction with the Hudson's Bay Co. it will be employed in the Newfoundland seal fishery and in the company's work in the Bay, Job Bros. and Co. being the Newfoundland managers. She is 285 ft. long by 43½ ft. beam, and 29¾ ft. deep, fitted with triple expansion engines, with two boilers working under forced draught. She will carry 2,500 tons d.w. on a comparatively small draught, and will have a speed of about 14 knots on trial trip. She is to attain the highest class at Lloyds, is exceptionally heavily built so as to run through ice of considerable thickness, and her fittings for her special trade will be most complete. She will have quarters for nearly 300 sealers, besides the usual accommodation for navigating and engineering staff and crew.

The two steamships which the Allan Line has under construction in Scotland will have a displacement of about 25,000 tons, or 17,000 tons register. The dimensions will be: length, over all, 600 ft.; between perpendiculars, 570 ft.; beam, 72 ft.; depth, molded, 45½ ft. The sterns will be of cruiser form, thus enabling the steering gear to be located under the water line. The machinery consists of four turbines of the Parsons type, arranged in series, these vessels being among the first to have this system. The power will be about 19,000 shaft horse power, giving a speed of about 20 knots an hour. Arrangements are being made so that oil may be used as fuel, as well as coal, should the former be found economically suitable. Passengers will be accommodated on six decks, with capacity for 200 first class, 500 second class, and 1,000 third class passengers. Some of the first class state rooms will have baths attached, and such state rooms will be arranged as single berthed apartments. The social features, in addition to a library, music room, lounge and smoke rooms, will include a gymnasium, verandah, cafe and special card room. The vessels will be heated by electricity, steam or on the thermo-tank system, all three being applied to the first class quarters, the latter two to the second class, and the last to the third class. Anti-rolling tanks will be added to the bilge keels. The cargo capacity will be 3,000 tons, including the refrigerator space of 70,000 cub. ft.

Maritime Provinces and Newfoundland.

Capt. J. M. Allen, who had been engaged in marine life in the Maritime Provinces for a number of years, died at Halifax, N.S., Dec. 11, aged 75.

The Department of Marine has given notice that any of the bell buoys on the north coast of Prince Edward Island will be liable to removal from their stations for the winter at any time after Nov. 1 in each year, without any notice being given.

Hon. H. R. Emmerson, formerly Minister of Railways and Canals, has given notice that he will move in the House of Commons that in connection with an extension of the Intercolonial Ry., a modern steam ferry service be established across the Northumberland Strait for the transfer of cars between the Intercolonial and Prince Edward Island Rys., and that the gauge of the latter railway be changed to standard.

It is reported that the Eastern Steamship Co., operating steamships between St. John, N.B., and Boston, Mass., is to be consolidated with the Metropolitan and Maine Steamship Co., the shareholders of the first named receiving \$3,000,000 in bonds and a similar amount of stock, for their present \$3,000,000 stock. It is also stated that representations have been made to the U.S. President on the subject, who has stated that an investigation will be made into the proposals.

Province of Quebec Marine.

J. A. Kane, who has been connected with the shipping business in Quebec for a number of years, died there recently, after a short illness.

V. Chateauvert, J. B. Letellier and N. Belleau have been appointed members of the Quebec Harbor Commission, in place of J. B. Laliberte, G. Tanguay and R. Larue.

It is reported that an arrangement has been made with the Quebec and Levis Ferry Co. for the operation of a ferry service between Quebec and the Island of Orleans during the winter.

The number of vessels which passed through the Lachine canal during the past season was 5,738, an increase of 157 over the previous season. The vessel tonnage was 3,761,323, and the merchandise tonnage 1,546,239.

The Sincennes-McNaughton Co. will, it is reported, place three additional tugs in service next season. Two of these will be built at Sorel, and the third is stated to be under construction in Glasgow, Scotland, and will be similar to the *Sin-Mac*.

The masters of vessels running into Montreal are forming an association to look after their interests generally. A press report states that nearly all the masters engaged in the local trade have signified their intention of joining, and that Capt. Mondon, of the Richelieu and Ontario Navigation Co., has been elected President for the current year.

The Minister of Marine has introduced a bill to amend the Quebec Harbor Commissioners Act, by providing that the commission shall consist of three members to be appointed by the Government in the same way as the Montreal Harbor Commission. At present the Quebec Commission consists of nine members, five being appointed by the Government, two by the shipping interests, and one each by the Quebec and Levis Boards of Trade.

The United States steamboat *Raleigh*, which was wrecked near Port Colborne recently, and in which disaster three lives were lost, has become a total loss. It is reported that she was not insured.

Ontario and the Great Lakes.

During the past season the Montreal Transportation Co. is reported to have handled 3,000,000 bush. more grain than in any previous season. The greater part was trans-shipped at Kingston.

The St. Lawrence and Chicago Steam Navigation Co. has declared a 5% dividend for 1911, against 3% for 1910. The dividends in previous years were: 1901, 15%; 1902, 26%; 1903, 10%; 1904, 8%; 1905, 6 and 7, 10%; 1908, 7%; 1909, 8%.

The Port Bruce Fish Co.'s steam tug Governor Morton was destroyed by fire near Port Bruce, Dec. 2. She was built at Chicago, Ill., in 1893, and was screw driven by engine of 6 n.h.p. Her dimensions were, length 51.8 ft., breadth 10.4 ft., depth 4.4 ft., tonnage 15 gross, 10 register.

C. A. Magrath, ex-M.P. for Medicine Hat, Alta.; T. C. Casgrain, K.C., of Montreal, and H. A. Powell, K.C., of St. John, N.B., have been appointed members of the Canadian section of the International Deep Waterways Commission, in place of Sir George Gibbons, A. Geoffrion and A. P. Barnhill.

Toronto press reports stated recently that Capt. Jas. McMaugh, of Toronto, had died in California, and this item was reproduced in our last issue. The report was, however, in error. The death which occurred was of Robert, a brother of Capt. Jas. McMaugh, who went to California to attend the funeral.

The George Hall Coal Co., Montreal, has placed orders for two steel steamboats, specially designed for the coal trade between Charlotte, N.Y., and Montreal. They will be 250 ft. long, with a carrying capacity of 2,100 tons on 14 ft. draught, and with a speed of 12 miles an hour. It is anticipated that they will be ready for service by May 1.

Toronto press reports of Dec. 6 stated that the Niagara, St. Catharines and Toronto Navigation Co. had decided to build a sister vessel to the Dalhousie City, for operation by the spring of 1913, to Port Dalhousie. We have been officially advised that although it is probable another vessel will be built sometime in the future, the report as quoted is incorrect.

Plans for improvements in Belleville harbor are being submitted to the Public Works Department. They show the construction of a cement pier 50 ft. wide, from Church St. into the bay, 770 ft. long, at the end of which a dock, 300 by 75 ft., L shaped, will be built with sneds and cold storage railway accommodation. Provision is also made for dredging the harbor to 12 ft.

The Merchants Mutual Line has placed an order for the building of a lake freighter at Port Arthur. The dimensions will be: length, 257 ft.; beam, 48 ft.; depth, 28 ft. She is designed specially for the bulk and package freight trade between the Great Lakes and Montreal, and is expected to be ready for operation some time during next season.

The Thousand Islands Steamboat Co. is having built at Toledo, Ohio, an additional steamboat, specially adapted for the Thousand Islands service. She will be 175 ft. long by 32 ft. beam, screw driven, with a speed of 16 or 17 miles an hour. She will have accommodation for about 1,000 passengers, and is expected to be ready for placing on her route by June 1.

The Peterborough and Lake Simcoe Navigation Co., Ltd., which was incorporated under the Ontario Companies Act, in 1910, with \$250,000 capital, and office at Peterboro, Ont., has assigned to W. Buller, Peterboro. At a recent meeting of creditors it was agreed to adver-

tise the sale of the assets by tender. Bids for the four steamboats, four barges and wharf and warehouse at Ashburnham will be received to Jan. 8.

W. B. Russell, who has the completing of the Newmarket canal in hand, is reported to have stated recently that it was almost finished, the canal having reached to within a quarter of a mile of Holland Landing, being $4\frac{1}{2}$ miles from Newmarket. The work included the building of three locks and the excavation of 900,000 yds. of earth. The cost to date has been stated as \$1,000,000.

In our December, 1911, issue, in referring to the proposed lengthening of the Western Navigation Co.'s s.s. Kaministiquia, we inadvertently gave the dimensions of a tug of the same name registered at Port Arthur. The Western Navigation Co.'s vessel was built at Wallsend, Eng., in 1909, and is registered at Newcastle, Eng. She is of full Welland canal size, equipped with engine of 250 n.h.p., driving a screw, her tonnage being 2,173 gross, 1,401 register.

The bill to amend the Canada Shipping Act, recently introduced into the House of Commons has particular reference to the amendment of sec. 477. It is claimed that that section discriminates against Ontario vessels in the payment of pilotage dues in Montreal harbor, and the object of the bill is to place the Ontario vessels on a parity with other vessels. At the request of the Speaker, who considered it a matter which should be proceeded with by resolution, as affecting trade, the bill was withdrawn.

The United States Lake Survey reports the levels of the Great Lakes in feet above tidewater during November as follows:—Superior, 602.06; Michigan and Huron, 579.36; Erie, 571.13; Ontario, 244.50. As compared with the average November levels for the past ten years, Superior was 0.64 ft. below, Michigan and Huron were 1 ft. below, Erie 0.71 ft. below, and Ontario 1.05 ft. below. It was anticipated that during December, Superior would fall 0.3 ft., Michigan and Huron 0.2 ft., Erie 0.1 ft., and Ontario 0.2 ft.

The vessel which is under construction at Detroit, Mich., for the George Hall Coal Co., for the coal trade between Montreal and Charlotte, N.Y., will be of full canal size, with dimensions as follows: length, 257 ft. breadth, 43 ft.; depth, 21 ft. She will be of girder construction, and equipped with triple expansion engines, with cylinders 18, 29 and 48 ins. diam. by 40 ins. stroke, supplied with steam by two Scotch boilers, 12 ft. diam. by $11\frac{1}{2}$ ft. long, fitted with induced draught, and she will be built under the rules of and classed 100*, in the Great Lakes register.

The Ministers of Marine and Public Works visited Toronto, Dec. 12, for the inspection of the harbor. A list of needed improvements was handed to the Ministers for their consideration, and included the closing of the old western channel, extensions to the present western channel, the widening of the approach, and the deepening of the eastern channel, the protection of the south shore of the island, more effective lights and signals, the general deepening of the harbor, provision of necessary equipment at the western channel and a central life-saving station with equipment and permanent staff for the north shore of Lake Ontario. The Minister of Marine stated that the matter of lights and signals, the only part which came under his jurisdiction, would be dealt with at an early date, and the Minister of Public Works, whose department is concerned with the remainder of the proposals, promised every consideration regarding the proposed improvements.

Manitoba, Saskatchewan and Alberta.

The Saskatchewan River Coal and Navigation Co., Ltd., has been incorporated under the Saskatchewan Companies Act, with \$100,000 capital and office at Prince Albert, to carry on a general coal and navigation business.

The Robert Ackland Co., Ltd., has been incorporated under the Manitoba Companies Act, with \$20,000 capital, and office at Winnipeg, to take over the boatbuilding business at present carried on by R. D. Ackland, to conduct a general shipbuilding business, and to operate passenger and freight vessels.

The report of the engineers recently engaged on survey work on the Saskatchewan River, in charge of L. R. Voligny, and which has been submitted to the Public Works Department, states that the river can be made navigable for shallow draught vessels, running between Prince Albert and the Pas. The estimated cost is \$1,500,000.

The draft bill for the creation of the proposed commission to administer the harbors of Winnipeg and St. Boniface was discussed at a meeting of the committee on wharfage and dockage, at Winnipeg, Dec. 15. It provides for a commission of not less than five members, three being appointed by Winnipeg and two by St. Boniface, for three years. The details are similar to those dealing with the commission's work in connection with Montreal and Toronto harbors.

A deputation of those interested in the navigation of the Red River, recently appointed to interview the Ministers of Public Works and Marine, in their report to the Winnipeg board of trade, Dec. 7, state that instructions have been given to complete as much of the work of improving the Red River channel as possible before the opening of navigation and it was also promised that other matters would be carefully considered. A bill is to be introduced by the Minister of Public Works to create a harbor board for Winnipeg and St. Boniface.

British Columbia and Pacific Coast Marine.

The Crescent Shipping Co., Ltd., has been incorporated under the B.C. Companies Act, with \$50,000 capital and office at Victoria, to own and operate steam and other vessels and to carry on a general freighting business.

The Union Steamship Co. is reported to have taken over the business of the Vancouver Steamship Co. on Howe Sound, including the mail contract. The service will, it is said, be performed by the s.s. Cheslakee in place of the s.s. Tartar.

C. H. Nicholson, Manager, G.T.P. Coast Steamship Co., who returned to Vancouver recently from Victoria and Seattle, is reported to have stated that the local management of the company's dock at Seattle, Wash., has been transferred to F. Waterhouse and Co., whose offices will be there in future.

It is reported that the mail contract between the mainland and the islands has been awarded to the C.P.R., and will be carried out by its coast steamships. It was formerly held by the owners of the wrecked Iroquois, and since that disaster has been continued by a service of gasoline launches.

The repairs on the C.P.R. s.s. Princess Beatrice, necessitated by her grounding on Noble Island at the end of October, have been completed, and in addition she has been thoroughly overhauled. It is stated that she will take the place of the s.s. Tees, which recently ran aground in Kyuquot Sound, or the s.s. Queen City.

Press reports state that the steam yacht Dolaura, owned by Jas. Dunsmuir, director, C.P.R., will probably be purchased by the Dominion Government for the fisheries protection service on the B.C. coast. She was built at Paisley, Scotland, in 1908, and is stated to be on the market for about half her original cost.

The Vancouver Harbor and Dock Extension Co. has announced that work will be commenced about Apr. 1 on the proposed dock construction at Vancouver. C. F. Pretty, President, after a conference with the B.C. Premier, intended leaving for Ottawa to lay the plans and proposals before the Dominion Government.

It is reported that Twohey Bros., who have the contract for grading 100 miles of the Canadian Northern Pacific Ry. along the Thompson River valley, are building a modern light draught river steamboat, to be used in connection with the work. The dimensions will be: length, 135 ft.; beam, 35 ft.; draught, loaded, 3 ft.

Arrangements are being made for the commencement of construction of the B.C. Marine Railway Co.'s dry dock at Esquimalt in the spring. It is stated that it will be largest on the continent, being 1,000 ft. long, 100 ft. wide, 120 ft. wide at the top and 36 ft. deep. The site has been selected at Lang's Cove, adjoining the present shipyards.

The Victoria Lumber and Manufacturing Co.'s steam tug Chemainus was destroyed by fire recently at Vancouver. She was built at Chemainus in 1909, and was screw-driven by engine of 40 n.h.p. Her dimensions were, length 93.4 ft., breadth 22 ft., depth 9.8 ft., tonnage 153 gross, 71 register. She has been raised, and it is stated that she will be repaired and again put into service.

The vessel which the C.P.R. is having built at Victoria for its British Columbia coast service will be 240 ft. long, 38 ft. broad and 17 ft. deep, with accommodation for about 600 tons of freight in addition to passengers. The hull will be of steel throughout and it is expected that she will be launched next fall in time for completion for the spring of 1913. The material is being assembled and the laying of the keel will take place in the spring.

It is reported that the C.P.R. is offering its s.s. Amur for sale, and that her place will be taken by the s.s. Princess Sophia, now under construction at Paisley, Scotland. The Amur was built at Sunderland, Eng., in 1890, and is screw-driven by engine of 150 n.h.p. Her dimensions are, length 216 ft., breadth 28 ft., depth 17.9 ft.; tonnage 907 gross, 570 register. She has been lying at Esquimalt, where she was taken after stranding in the Wrangel narrows last summer.

Material is being assembled at Fraser Mills for the construction of three stern wheel steamboats for operation in the spring between Tete Jaune Cache and Fort George. Two of these vessels are intended for Foley, Welch and Stewart, G.T.P.R. contractors, and the third is for the British Columbia Express Co. The two former will be 140 ft. long with a carrying capacity of 250 tons, and they will be equipped with the machinery from the same owners' two steamboats Conveyor and Operator, which were run last year on the Skeena River. The B.C. Express Co.'s vessel will be 118 ft. long, 25 ft. beam, with a speed of 14 miles an hour.

The C.P.R. s.s. Tees ran aground on a sunken rock in Kyuquot sound, Nov. 29, breaking her propeller blades and bending her rudder post. It is stated that attempts to get into wireless communication with coast stations failed, and that the chief officer and four of the crew who left in an open boat to row to Estevan for aid were lost in the fog, and

were picked up in an exhausted condition, Dec. 2, by the Dominion fisheries tug, William Joliffe, sent out to look for the Tees. Eventually the passengers were transferred to the s.s. Salvor, and the Tees was released and towed to Victoria by the company's tug Nanoose.

The C.P.R. s.s. Princess Sophia, which was launched at Paisley, Scotland, recently, is intended for the Vancouver, Victoria and Queen Charlotte Islands route. She is a single screw vessel, 245 ft. long, 44 ft. beam and 18 ft. deep, specially designed for the coast service. She will be equipped with electric lighting installation, wireless telegraphy and steam heating. Freight will be carried on the main deck, the passenger quarters being arranged on the upper, promenade and bridge decks. The christening ceremony was performed by Miss Piers, daughter of A. Piers, Manager, C.P.R. Steamship Lines, Liverpool, Eng.

The Union Steamship Co.'s s.s. Chelohsin, which will shortly be placed in service on the northern coast route, alternately with the s.s. Venture, now under the same control, has recently been completed at Belfast, Ireland, the hull having been built at Dublin. She is 175 ft. between perpendiculars, with 35 ft. beam, and built under the survey of the British Board of Trade and British Corporation, and specially strengthened for her service. The first class passenger accommodation is on the awning and shade decks. The dining saloon is on the main deck with companion way to the awning deck and has accommodation for 60 passengers. There is a large observation room on the awning deck, communicating with all the other decks. The machinery consist of two sets of balanced crank triple expansion engines, supplied with steam by two large boilers at 185 lbs. pressure. The auxiliary machinery comprises centrifugal, circulating, feed, bilge and sanitary pumps, evaporator, etc. On her trial run before leaving Belfast she attained a speed of 14.29 knots an hour, and 13 knots with 500 tons deadweight, in fairly rough weather.

TRADE AND SUPPLY NOTES.

The matter which appears under this heading is compiled, in most cases, from information supplied by the manufacturers of, or dealers in, the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers to distinctly understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

The Reid Newfoundland Co. has ordered one double-equipped no. 323A motor from the Westinghouse Electric and Manufacturing Co.

The Robb Engineering Co., Amherst, N.S., has recently sold return tubular boilers to A. Fraser, Clementsvale, N.S., and L. Irving, Biltown, N.S., and a heating boiler to Gorman, Clancey and Grindley, Edmonton, Alta.

John Millen and Son., Ltd., Montreal, held their second annual sales convention there, Dec. 11 and 13, which was attended by their salesmen and a number of representatives of companies, etc., for which they are agents, F. D. Lyman, Manager of the Railway Supply Department, being the convention secretary. The convention work included addresses by the representatives above referred to, and the social features included theatre parties, a supper and a bowling contest.

The Canadian Locomotive Co.'s management has not, it is said, decided whether the proposed enlargement of its plant will be made by additions to the

present plant at Kingston, Ont., or by the erection of an additional plant elsewhere. A site has been bought near Montreal, on the south bank of the Lachine canal, as a precautionary measure, in case it should be required, and Hamilton and Welland, Ont., are also being considered. The Kingston city authorities will doubtless do everything possible to hold the business there, and will probably offer a fixed taxation for a number of years, and other inducements.

The Baldwin Locomotive Works, Philadelphia, Pa., has issued record 71 dealing with locomotives built recently for industrial and contractors' service. The booklet gives illustrations and descriptive data of locomotives, suitable for industrial or contractors' service. In work of this character unusual operating conditions are frequently met, and the locomotive must be designed accordingly. Those shown have, in practically every instance, been built to meet special requirements. They cover a wide range in capacity, from light narrow gauge equipment in railway yards or large industrial establishments. In all the designs shown, truck wheels are omitted; and the entire weight of the locomotive (including, in some cases, the weight of fuel and water) is available for adhesion. The number of pairs of driving wheels used in each case, must be sufficient to carry the weight of the locomotive without overloading the track and bridges. The spacing of the wheels must be governed primarily, by the radius of the sharpest curve which the engine is required to traverse. By grouping the wheels compactly, locomotives of the types illustrated can readily be designed to enter the sharp curves and switches usually found on industrial railways. At the same time, maximum hauling capacity is secured by placing the entire weight of the locomotive on the driving wheels.

Toronto Viaduct and Union Station.—

Further consideration has been given by the Board of Railway Commissioners to the plans for the viaduct along the Toronto water front and the proposed Union Station. The railway companies, the City Council and the Board of Trade could not agree on certain portions of the plans under consideration, and the various matters were adjourned until Feb. 8, when the C.P.R. will submit plans for a union station, which may solve the difficulties in the viaduct plans which the other plans are said to have developed.

A Dominion Government vessel is to be placed at the disposal of Prof. Barnes, of McGill University, Montreal, in June, for experiments in the Straits of Belle Isle with an instrument for detecting icebergs, which he has invented.

The Dominion Government has been asked by the Alberta and Great Waterways Ry. to disallow the act passed by the Alberta Legislature early in 1911, cancelling the agreement for the construction of the line.

The Fort Churchill Trading Co., Ltd., has been incorporated under the Dominion Companies Act, with \$100,000 capital and office at Winnipeg, to carry on a general trading and development business, and in connection therewith to operate vessels, wharves, docks, piers, warehouses, elevators, etc.

The Chaleur Bay Lumber Co., Ltd., has been incorporated under the Dominion Companies Act, with a capital of \$200,000 and office at Port Daniel, Que., to acquire the assets of the Port Daniel Lumber Co., to carry on a general lumbering business, and in connection therewith to operate vessels, piers, wharves, etc. The incorporators are,—P. O. Viall, C. R. Taylor, Port Daniel, Que.; L. D. Crear, Rutherford, N.J.; J. W. Vickerman, Cleveland, Ohio, and J. C. McDermott, Wellington, Ohio.

Among the Express Companies.

The Canadian Ex. Co. has been registered under the act respecting foreign corporations, to carry on business in Saskatchewan.

The Adams Ex. Co. is stated to be considering the question of opening an office in Vancouver, B.C., for the handling of import and export freight only.

The Board of Railway Commissioners has approved the standard tariff of maximum mileage tolls between all offices of the Alberta Ry. and Irrigation Co.'s express department.

The Canadian Northern Ex. Co. has resumed service west of Kindersley, Sask., and is receiving shipments for Alsask, Fairmount, Harwell, Marengo, Merid and Pinkham, Sask.

J. D. Chilman, a former employe, and J. Acheson were committed for trial at Hamilton, Ont., Dec. 20, in connection with the recent robbery of about \$8,000 from the Canadian Ex. Co. there.

The Board of Railway Commissioners has extended the delivery and collection limits for express companies in Walkerville, Ont., to include all territory bounded on the north by the Detroit River, on the east by Maisonneville Road and on the south by Edna St.

The Dominion Ex. Co. is suing A. Dini, a steamship agent in Montreal, for \$3,998.59 for money orders supplied to him as its agent. The defence put in by Dini, is that he never sold nor issued any Dominion Ex. Co.'s money orders, nor had anyone any authority to sign his name to such orders.

In connection with the complaint of the town of Montcalmville, Que., before the Quebec Public Utilities Commission, respecting the delivery and collection limits of the Dominion and Canadian Ex. Cos., as mentioned in our last issue, the commission has decided that it has no jurisdiction in the matter, the companies being controlled by the Board of Railway Commissioners.

The British Columbia Ex. Co. is building another steamboat, and will operate it on the Fraser River, between Tete Jaune Cache, at the head of navigation, over the Yellowhead Pass, and Fort George. The company's other vessel is running between Soda Creek and Ashcroft, 200 miles east of Vancouver. A. Hutchison and C. Millar, of Toronto, are President and Manager respectively, and Willis West is Superintendent at Ashcroft, B. C.

The Board of Railway Commissioners passed the following order, 15411, dated Dec. 17, re application of W. J. Guest Fish Co. of Winnipeg, complaining that the Dominion Express Company had increased the rate on fresh fish, exclusive of ice, from Gimli to Winnipeg, from 60 to 80 cents per 100 lbs., and applying for an order directing the company to readjust its fish rates in Manitoba. It is ordered that the Dominion Express Co. forthwith restore, as a special tariff, its so-called Standard Tariff C.R.C. 15, from 26 to 170 miles, inclusive, in effect prior to Oct. 15, 1911, and in so doing, that it define more clearly the points between which the said tariff shall apply.

In accordance with the Board of Railway Commissioners' recent order, as given in our last issue, in connection with interchange business and through waybilling, the express companies have issued instructions to agents, etc., that commencing Jan. 1, shipments forwarded from common or exclusive points destined to offices of other companies in Canada, must be waybilled through to destination. Shipments destined to station shown as star stations in the tariffs, points on railways where there are no agents, and prepaid packages, must be waybilled direct to

such stations. On shipments subject to graduate charges and carried between offices in Canada, one or both of which offices being exclusive, the through charge will be the single graduate based on the combined merchandise rate per 100 lbs. from point of origin to destination, by way of the transfer point named in the transfer tariff, which produces the lowest through charge, with a minimum through charge of 60c except that between points where the combined rates on merchandise are less than \$2 per 100 lbs. the minimum through charge will be the graduated charge under \$2 per 100 lbs., provided that in no case shall the charge on less than 100 lbs. be more than for 100 lbs. at the through rate, nor more than the sum of the local graduated charges. Between common points, where a joint through merchandise rate is in effect, the minimum through charge will be the same as if carried by one company. Agents are instructed that it is important that forwarding offices note on the waybill the transfer point through which the charge is figured, also the 100 lbs. rate of each company to and from the transfer point, the name of the place where the shipment is transferred to or received from another company. Through charges will be pro-rated on the basis of the local merchandise rate of each company. No company, however, will receive less than 10c, except where two or more companies perform service in competition with one company.

Telegraph and Cable Matters.

The Board of Railway Commissioners will sit at Ottawa, Jan. 8, and proceed with the general enquiry into the tariffs of tolls of telegraph companies and the settlement of proper forms for telegraph companies to use.

The Premier stated in the House of Commons recently that the Dominion Government had approved of the proposal to lay a direct cable from Auckland, New Zealand, to Sydney, Australia, and that Canada would pay five-eighths of the deficits arising out of its operation.

The Michigan Central Rd. station agents, telegraph and telephone operators in Canada have applied to the Department of Labor for the appointment of a conciliation board to take up matters connected with their working conditions and rates of pay, with a view to arranging a new schedule.

The Board of Railway Commissioners has extended the time within which the North American Telegraph Co., Bell Telephone Co., White Pass and Yukon Route, Canadian Pacific Telegraph Department, Grand Trunk Pacific Telegraph Co., Canadian Northern Telegraph Co., and Great North Western Telegraph Co. may charge the telegraph and telephone tolls which they were, immediately previous to July 13, 1906, authorized to charge, by 7 and 8, Ed. VII., ch. 61.

C. Bright, a son of the late Sir Charles T. Bright, who laid the first Atlantic cable, recently gave an address before the London, Eng., Chamber of Commerce, in which he advocated the appointment of a commission with overseas representation to investigate the question of Imperial telegraphs. It was eventually decided to make strong representations to the Government to co-operate with the various Dominion Governments, and especially with Canada, for the establishment of an independent and strictly all-British transatlantic cable and land line connecting with the Pacific cable.

The following changes of the C.P.R. telegraph officials are announced:—
F. J. Mahon, heretofore Superinten-

dent, Atlantic Division, St. John, N.B., has been appointed Superintendent, Eastern Division, Montreal, vice J. F. Richardson, transferred.

J. T. Tait, heretofore Superintendent, Manitoba Division, Winnipeg, has been appointed Assistant to the General Superintendent, Western Lines, Winnipeg.

J. McMillan, heretofore Superintendent, Alberta Division, Calgary, has been appointed Superintendent, Manitoba Division, Winnipeg, vice J. T. Tait, promoted.

D. Coons, heretofore Inspector, Manitoba Division, Winnipeg, has been appointed Superintendent, Alberta Division, Calgary, vice J. McMillan, transferred.

J. F. Richardson, heretofore Superintendent, Eastern Division, Montreal, has been appointed Superintendent, British Columbia Division, Vancouver, vice J. Fletcher, reported to have been appointed Superintendent of Traffic, Eastern Division, Montreal.

The P. Lyall and Sons Construction Co. has been incorporated under the Dominion Companies Act with \$3,250,000 capital and office at Montreal, to carry on an engineering, railway and general contracting business. The provisional directors are:—E. Languedoc, E. R. Perkins, A. C. Calder, S. G. Dixon, J. M. Montle, R. Brodeur, W. Taylor, Montreal.



NOTICE TO CONTRACTORS.

Tenders for Rails and Fastenings.

SEALED TENDERS, addressed to the undersigned, and marked on the envelope "Tender for Rails" and "Tender for Rail Fastenings," as the case may be, will be received at the office of the Commissioners of the Transcontinental Railway, Ottawa, Ont., until 12 o'clock noon of the 24th day of January, 1912, for approximately 14,468 gross tons of 80 lb. steel rails and the necessary rail fastenings.

Tenders must be made on the forms supplied by the Commissioners, which, with information with respect to the deliveries required, may be had on application to Mr. Gordon Grant, Chief Engineer, Ottawa, Ont.

Tenders must be signed and sealed by all the parties to the tender and witnessed, and be accompanied by an accepted cheque on a chartered bank of the Dominion of Canada, payable to the order of the Commissioners of the Transcontinental Railway for a sum equal to ten per cent. (10 p.c.) of the amount of the tender.

The right is reserved to reject any or all tenders.

Newspapers inserting this advertisement without authority from the Commissioners will not be paid for it.

By order,
P. E. RYAN,
Secretary.

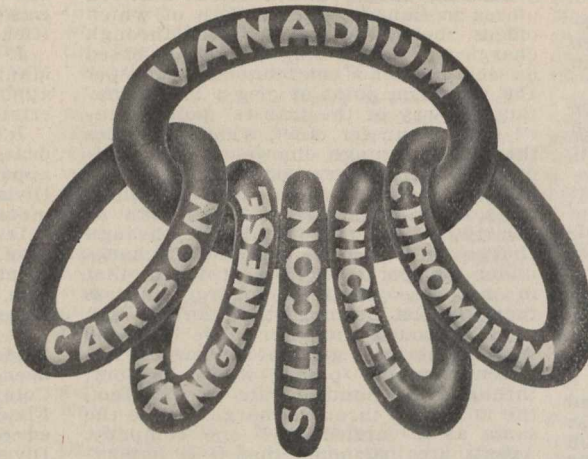
The Commissioners of the
Transcontinental Railway.

Dated at Ottawa, December 13th, 1911.

NOTICE IS HEREBY GIVEN that the Grand Trunk Railway Company of Canada will apply to the Parliament of Canada, at its present Session, for an Act confirming and declaring to be legal and binding the agreement made the 1st day of December, 1911, between the Temiskaming and Northern Ontario Railway Commission and the said Company, providing for the joint use by the parties thereto, upon the terms in said agreement set forth, of the line of railway of the Commission between North Bay and Cochrane, and authorizing the said Company to run and operate its trains over and upon that portion of the line of railway constructed by the Commission from a point at or near Nipissing Junction to North Bay.

Dated at Montreal, this 5th day of December, A.D. 1911.

W. H. BIGGAR,
Solicitor for the Applicant.



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THE MASTER ALLOY

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Anti-fatigue Steel

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Elasticity, Strength, Toughness, Endurance

VANADIUM Steel has been proved to be the best and, ultimately, the cheapest steel for all classes of high duty service, working against shocks, vibrations and fatigue with extraordinary success and endurance. It forges, machines, welds, case-hardens and lends itself to heat treatment as readily as other steels that do not possess its manifold advantages.

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