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Should the Brake Power on Freight Cars be Increased.

By T. Clegg, Assistant Air-Brake Instructor
C. P. R., Winnipeg.

Ever since air brakes came into general use on railways, the average well-informed air brakeman has ever had before him the question, "What is the proper percentage of brake power for a freight car." This question is not so easily answered as may at first appear, for, if we enquire deeply into the subject we find there are many things to consider before we can arrive at a decisive answer and then the answer is not always unanimous.

During the past few years there have been tests made of practically everything that could be tested in regard to braking power for railway rolling stock, yet we find on most railways a braking power on the average freight car that falls below that efficiency which the service demands. This is not the fault of the air brake apparatus, for this has been brought to such a state of efficiency that, if properly maintained, it would seem almost impossible to improve it, but it is in the distribution of the power this brake is capable of developing, that the most serious inefficiency occurs. It is a remarkable fact that we do not stop the average freight train in any less distance today than we did 20 years ago. That the brake power on the average freight car today is too low cannot very well be disputed but we have got so accustomed to it that we manage to get along fairly well, but if it can be improved, even in a small degree, we need every bit of it.

Very often the engineer's mode of procedure in stopping a long loaded freight train is to shut off steam a considerable distance from the expected stopping place and let the momentum of the train decrease to some extent, then make practically a full set service brake and wait for the eventual stopping of the train, which may or may not be at the intended place, this depending on conditions and the judgment he has used in making the stop, and after making this application the engineer is left without any margin of brake power, therefore it is very apparent that if a freight train of 2,000 tons is travelling 30 miles an hour it will take considerable time and distance to bring it to a successful service stop, and we cannot regard this as an ideal method of stopping the train. It is possible to improve these conditions to some extent, and it is the purpose of this paper to provide some data in regard to freight car brakes, and to show to some extent what use we are making of our air brakes, and what use it is possible to make of them.

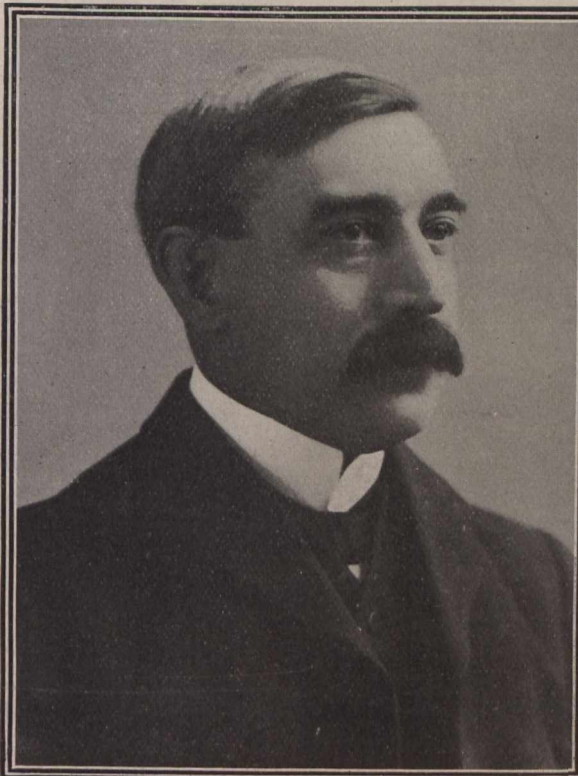
The average freight car is braked to 70% of its light weight, based on the emergency application of the brakes with a train-pipe pressure of 70 lbs. per sq. in. and a brake piston travel of 8 ins. There has been a tendency recently on some roads to increase this brake power to some extent and this is most assuredly a step in the right direction. There is no doubt it is a mistake to base the brake power on the emergency application, because emergency applications are only properly made in a case of absolute necessity to prevent as far as

that the brake power with a full set service brake falls below 10%, which fact in itself is sufficient to justify some enquiry into the problem with the object in view of increasing the brake power if at all possible. In order to show the theoretical and actual brake power on freight cars, the table on the next page has been arranged, which though not elaborate, will help to show approximately the relation that exists between the different brake power bases and the striking difference between the theoretical and actual brake power with various applications.

Having now shown approximately, the theoretical and actual brake power, I will proceed to find the cause of the difference. Elaborate tests made by W. H. Marshall, M.E., and issued by the Westinghouse Air Brake Co., in bulletin 6015, show that the friction of the brake piston packing-leather causes a loss of 9.5% of the total cylinder value when that cylinder contains a pressure of 40 lbs. per sq. in., also that the brake piston release spring causes a loss of 8% of the cylinder value when the piston travel is 8 inches. This seems that 17.5% of the cylinder value is lost right in the brake cylinder, which on the car we are considering, would mean a total loss of 12.5% of the total brake power, which basis of loss has been used in compiling the table. The effect of this in road service is as follows: Suppose we have a train of 50 loaded cars and we make a full service application of the brakes to stop the train, what is the percentage of brake power? This application would brake the cars to (theoretically) 58.3% of their light weight. The load will reduce the percentage to 21.5, subtract from that the 12.5% lost by reason of cylinder value and behold the brake power is only 9%.

If this train was braked on the 80% in service plan the braking power would be 17% under the same application. We must now take into consideration other losses that may further reduce the above 9%. These losses might be insufficient train-pipe and auxiliary reservoir pressure, leaky brake cylinders or piston packing leather, excessive piston travel, too light reductions in making applications on long trains, friction of foundation gear, occasional brakes cut out, and so on; all of which, if present, will do their share to diminish the actual brake power.

Suppose the train consist of light cars then under the 70% in emergency plan the brake power would be about 45.8, and under the 80% in service plan, the brake power would be about 67.5% not taking into consideration the minor losses. This will show that if we braked the 80% in full service plan, we appear to be well within the limits for the reasonable prevention of slid flat



Alfred Price
General Superintendent Alberta Division Canadian Pacific Railway.

possible, damage to life and property by stopping as quickly as possible a moving train. Ordinarily the brake is used in service applications and for that reason alone the correct base of the brake power should be the full set service brake. On cars that are based on the 70% in emergency plan the brake power falls below what is the general supposition. In actual practice it means as a rule that the brake power is not 50% when the brake is set in full service on a light car, because of the many losses that occur between the pressure per square inch in the brake cylinder and the pressure of the brake shoe on the wheel and often we find if a car is loaded to its capacity

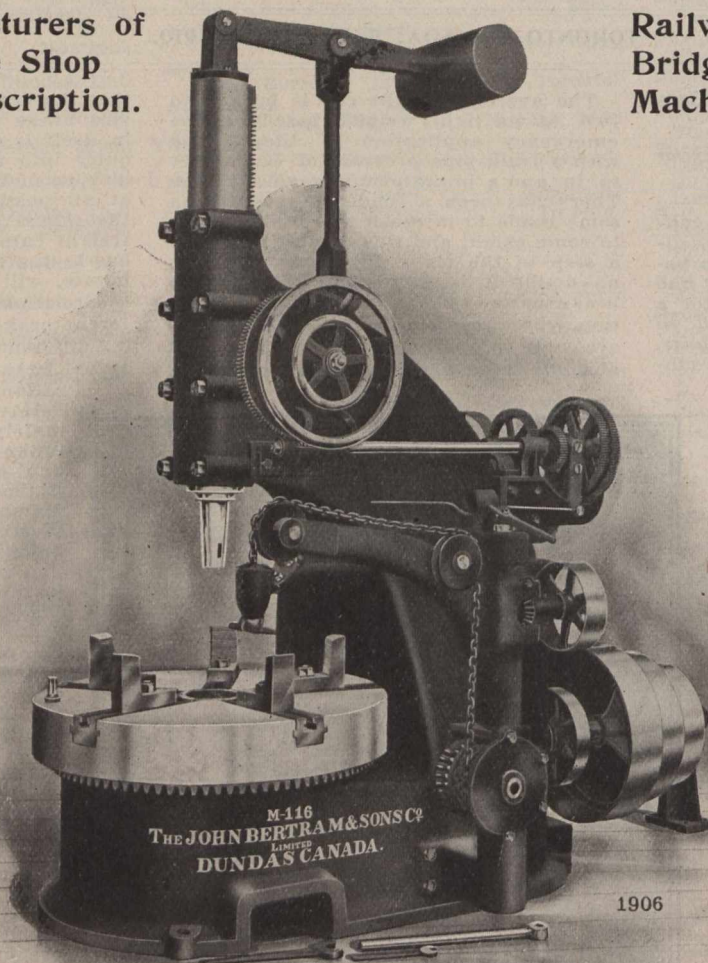


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wheels, but since cars are used mostly under load it is to that phase of the subject that our attention should chiefly be directed.

With a train braked on the 70% in emergency plan, at a certain speed the train could be stopped in 300 ft. with a full service application, whereas if the train was braked on the 80% in full service plan it would be stopped in approximately 160 ft. therefore it is very evident this plan of braking would effect a considerable difference to the stopping power of a freight train.

The above statements are not intended to suggest that we would make full service applications all the time, but to show what it is possible to do when desired. There is no doubt that higher braking power offered some difficulty on long trains with the old style (F 36) triple valves, because they took too long to apply at the rear of the train, and if the brakes were applied heavily at the head end before they applied to any appreciable extent at the rear, a severe run-in was liable to be the result, which of course, is liable to damage draft gear and lading, but since the advent of the type K triple valve this defect has been practically overcome, so that we now have no reasonable excuse to offer for continuing to use as low brake power as has been in general use in the past.

Something should be said in regard to the possibility of slid flat wheels with increased brake power, but this phase of the subject is so extensive that it would require a separate paper to deal with it adequately. Suffice it to say that it is not the increased brake power that is the immediate cause of skidded wheels. The most prolific cause of skid flat wheels is the inequality of braking power coupled with various conditions and variations in manipulation of the brake, as an instance, supposing there is a car on the train with the brake cut out and the one ahead of it has the brake operating, when the brake is applied the tendency is for the unbraked car to bump into the braked car and in this action temporarily relieves the adhesion between the wheel and the rail, the shoe grabs the wheel, and there is a skidded wheel, but the cause of it was not the braked car, the fault being the unbraked car. There are a great many other causes of slid flat wheels, but they are too extensive for this paper, still it may be interesting to mention that a car would have to be braked to about 500% of its light weight to skid the wheels if that car was travelling at the rate of 60 miles an hour where 20% might, under certain conditions skid a wheel at say four miles an hour, therefore it is very plain that speed is a very important factor in skidded wheel consideration. Where the increased braking power has been used in any class of service it has usually shown a tendency to reduce the number of slid flat wheels. But just so long as the weight of freight cars is varied without corresponding variation of the brake power, just so long will we have the skidded wheel trouble and although it is necessary to

keep the brake power within reasonable limits there does not seem any valid reason why the brake power should not be materially increased, as the benefits to be derived far exceed the deirments to be encountered.

It is possible that freight car wheels, will require more attention in regard to being kept in line and perfectly round; for if any wheel becomes wobbly, it has a greater tendency to skid than one running true. In further consideration of increased brake power it is necessary to ascertain how this can be accomplished. On the car we have used as our example we could not brake it at 80% in full service with an 8 in. brake cylinder, because this would mean that we would have to multiply the brake cylinder value over 11 times, and with a piston travel of 8 ins. the shoe clearance would be only .7 in. and to overcome this we should use a 10 in. brake cylinder, which would mean a multiplication of the brake cylinder value of 7 times, which is

A Construction Manager's Opinion.

Chas. R. Scoles, General Manager of the New Canadian Co., Ltd., which is building the Atlantic, Quebec & Western Ry., writes from New Carlisle, Que.:-

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within the recommended practice, and would give a shoe clearance of 1.14 ins. The increase cannot be had by increasing the train-line pressure, as no matter how much it is increased, a 10 or 15 lbs. reduction of the train-pipe pressure would only result in the same brake cylinder pressure as from 70 lbs. and it would be only at such times that the brake neared the equalizing point, that an increased brake power would occur. Also this method would be detrimental, because it would increase the liability of hose bursting, increased train-pipe leakage, set a higher pressure for the pump to work against, increase the liability of triple valves working undesired quick action, all these without any beneficial results, other than we can obtain from the brake cylinder and foundation gear. If we consider for a moment how much the increased brake power is going to facilitate the handling of our freight trains, it will leave no doubt in our minds that we can materially increase

the earning power of our freight car brakes without inconvenience.

We would not purchase a locomotive with a tractive power of 30,000 lbs. and then use it all the time hauling trains of 400 or 500 tons on level divisions without some reasonable excuse for so doing, yet railway companies often buy the very best of air brake apparatus but fail to get all out of it they reasonably can. The next part to consider is, whether we should jump from the old style of brake power to the top notch of the new increased brake power (whatever we decide that top notch is going to be) in one jump, for some reasons it would perhaps be advisable to do this in stages, but if we look back at our past and present practice we find that it is quite common to run trains, with occasional brakes cut out, and that without very serious results, then this being the case there does not seem any valid reason why we cannot go to the decided top notch in one operation, because the percentage of difference would not be so great.

It is necessary for everyone who has anything to do with freight car brakes, to give some thought to the plea for a higher braking power, so that our engineers can handle our loaded freight trains with more assured confidence. We all know that the hole made in railway dividends by liability damages is very considerable and more efficient braking power will do a great deal to curtail this expense.

After what has been explained in this paper, it would appear incomplete without containing some recommendation, therefore, after considering the various powers and their effects, and road conditions, and all other forces bearing on the subject I would recommend that the braking power for freight cars be based on the full service application of the brake, with a train-pipe pressure of 70 lbs. per sq. in., and a brake travel of 8 ins., and that the theoretical brake power be not less than 75% of the light weight of the car, and that the increased brake power be obtained by proper cylindering of car so that the cylinder value will not be in any case multiplied more than 9 times. Furthermore, I will say that it is essential that all interested in the application of brake power to railway stock should regard the air brake as a most important factor in the earning of railroad dividends, and not simply a safety device for the protection of life and property.

The foregoing paper was written for presentation before the Western Canada Railway Club.

L. H. Wheaton, Division Engineer National Transcontinental Ry., Moncton, N.B., in writing recently says:-"I have been so busy since coming here over a year ago, that I must have overlooked renewing my subscription to the Railway and Marine World. I now wish to get in touch again with railway matters generally and am dropping some United States periodicals to take yours, which is the best."

BASE OF BRAKE POWER	LIGHT WEIGHT OF CAR 35,000 LBS.				CAPACITY 60,000 LBS.				TOTAL LOADED WEIGHT 95,000 LBS.											
	Percentage of Brake Power with 10 lbs. service reduction		Percentage of Brake Power with 15 lbs. service reduction		Percentage of Brake Power with full service reduction		Percentage of Brake Power with emergency application													
	Brake Cyl. Pressure	Theoretical	Actual	Brake Cyl. Pressure	Theoretical	Actual	Brake Cyl. Pressure	Theoretical	Actual	Brake Cyl. Pressure	Theoretical	Actual								
70 per cent. in Emergency ...	20 lbs.	23.3	8.6	10.8	0.6	38 lbs.	44.3	16.3	31.8	3.8	50 lbs.	58.3	21.5	45.8	9.0	60 lbs.	70.0	25.8	57.5	14.3
7 per cent. in Emergency ...	20 lbs.	25.0	9.2	12.5	0.8	38 lbs.	47.5	17.5	35.0	5.0	50 lbs.	62.5	23.0	50.0	10.5	60 lbs.	75.0	27.6	62.5	15.1
80 per cent. in Emergency ...	20 lbs.	26.7	9.8	14.2	0.85	38 lbs.	50.7	18.7	38.2	6.2	50 lbs.	66.7	24.6	54.2	12.1	60 lbs.	80.0	29.5	67.5	17.0
85 per cent. in Emergency ...	20 lbs.	28.3	10.4	15.8	0.88	38 lbs.	53.8	19.8	41.3	7.3	50 lbs.	70.8	26.0	58.3	13.5	60 lbs.	85.0	31.3	72.5	18.8
65 per cent. in Full Service ...	20 lbs.	26.0	9.6	13.5	0.83	38 lbs.	49.5	18.7	37.0	6.2	50 lbs.	65.0	24.0	52.5	11.5	60 lbs.	78.0	28.7	65.5	16.2
70 per cent. in Full Service ...	20 lbs.	28.0	10.3	15.5	0.87	38 lbs.	53.2	19.5	40.7	7.0	50 lbs.	70.0	25.8	57.5	13.3	60 lbs.	84.0	31.0	71.5	18.3
75 per cent. in Full Service ...	20 lbs.	30.0	11.0	17.5	0.97	38 lbs.	57.0	21.0	44.5	8.5	50 lbs.	75.0	27.6	62.5	15.2	60 lbs.	90.0	33.1	77.5	20.6
80 per cent. in Full Service ...	20 lbs.	32.0	11.8	19.5	0.99	38 lbs.	60.8	22.4	48.3	9.9	50 lbs.	80.0	29.4	67.5	16.9	60 lbs.	96.0	35.4	83.5	22.9

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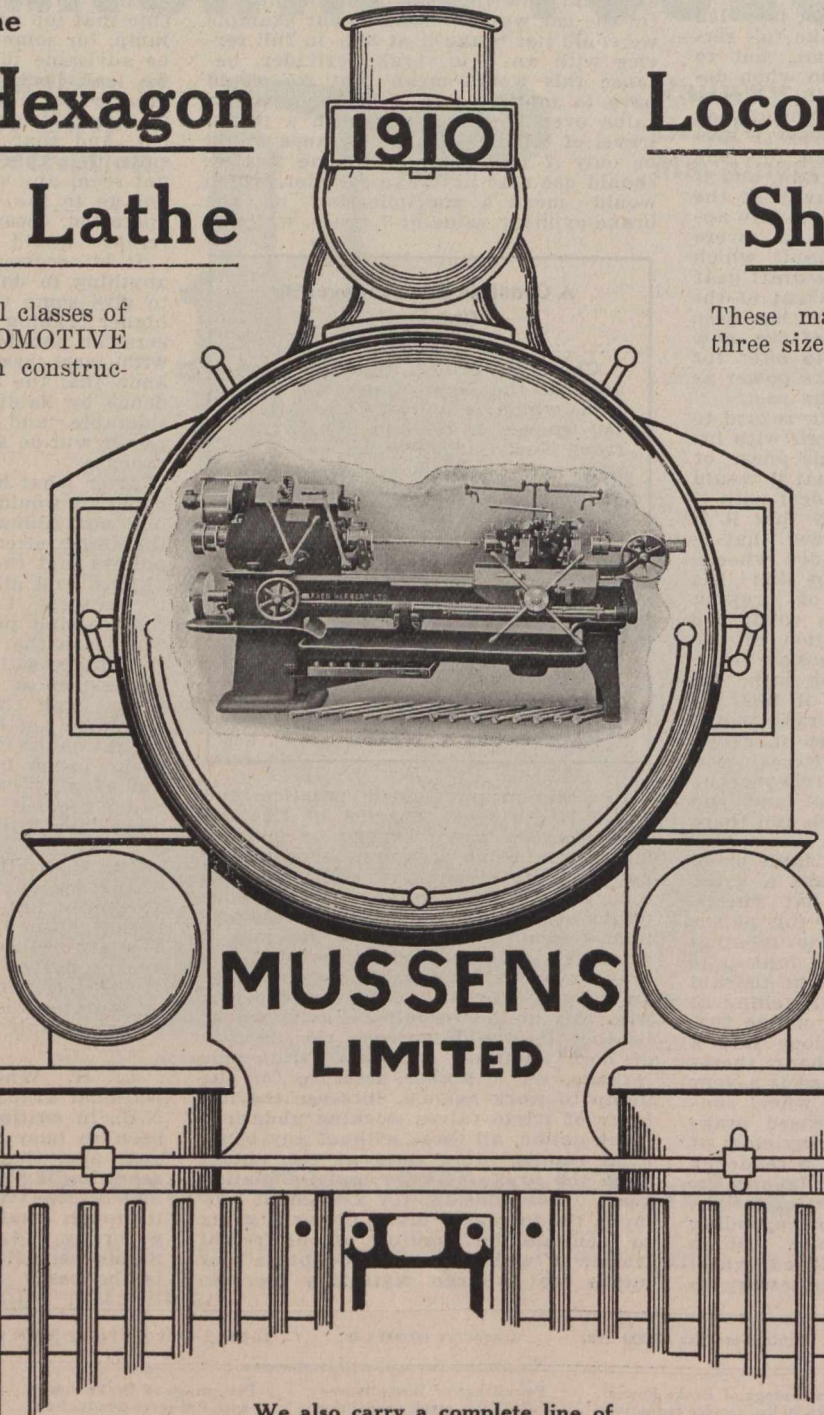
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By H. H. Vaughan, Assistant to the Vice President Canadian Pacific Railway.

(CONTINUED FROM AUGUST ISSUE.)

BOILER STAYING is either of the gusset plate type in figs. 1 and 5, or the rod type indicated in figs. 3 and 4, detail of the usual design of rod staying being shown in fig. 12. Administrations replying, indicate on the whole, a preference for rod staying, and those having experience with both styles, prefer the rod stays to the gusset plates. The rods are both cheaper to instal and easier to repair, the strain on the stay can be more accurately adjusted, and any defects which may occur more easily detected. The gusset plates have been found in some cases to loosen and crack with age, and should such cracks occur through the rivet holes in the gusset plates they are hidden, and can only be detected by a most careful inspection. These defects are probably caused by the gusset plates not being applied in such a way as to ensure the rivets being strained to an equal amount, but as this is difficult in practice, there seems to be no doubt that the rod staying is actually preferable, both on account of its being possible to cause it to bear its proper portion of strain and the greater ease with which it can be inspected and maintained.

FIRE-BOX STAYING.—The administrations using the round top fire-box construction employ almost universally the direct radial stay for fire-box crown stays, with the exception of the first few rows, which are usually sling stays of various types. A number of rows of sling stays varies with different administrations, but, while some use two or three rows, usually the first four front rows are of this construction. The majority of administrations use button headed stays screwed into the fire-box sheet from the inside of the fire-box for the six or eight centre rows of radial stays. This general arrangement is shown in fig. 13, which shows eight rows of button headed stays in the centre, and ordinary radial stays for the rows on either side. Fig. 14 shows the form of buttonhead usually used on the central rows of stays, the part next the fire-box sheet being recessed near the centre, so as to force the head of the stay to bear tightly against the sheet on its outer edges, in order to allow of it being more easily caulked and kept tight. This construction has largely superseded the rivetted head stay, and the type common in Belpaire boilers in which a nut is used underneath the fire-box crown sheet in order to provide greater strength than is given by the ordinary rivet head.

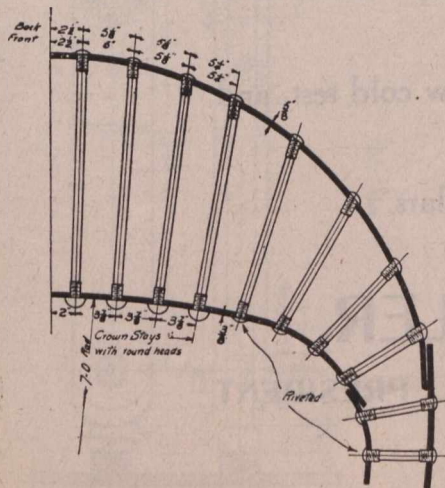


Fig 13

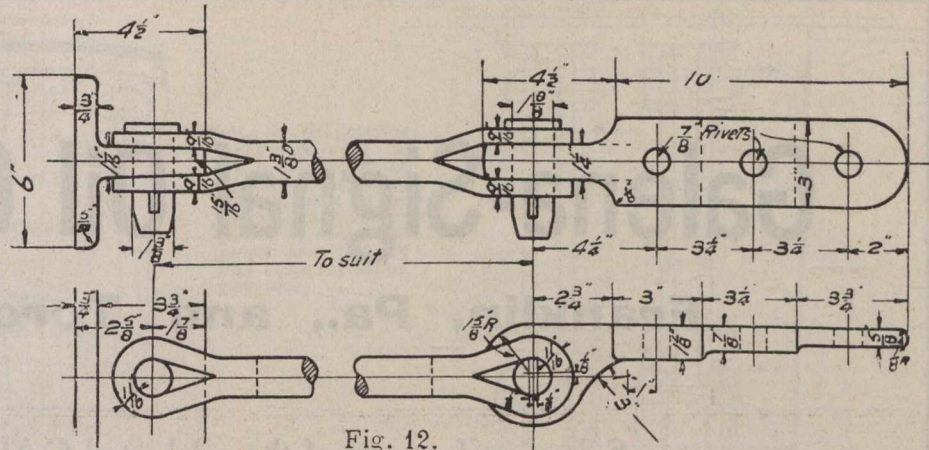


Fig. 12.

The form of sling or expansion stays in use for the front rows of staybolts are shown in figs. 15, 16 and 17. Fig. 15 shows a T-iron sling stay which is in very general use. Figs. 16 and 17 show sling stays employing an eye bolt on the portions rivetted into the fire-box crown sheet and outside fire-box sheet, which are respectively connected by two bars or welded rods forming a link between the top and bottom bolts. A type of expansion stay has also recently been introduced which simply consists of a flexible staybolt rivetted into the fire-box crown sheet. In some cases these designs are modified to permit the use of a button head on the side underneath the fire-box crown sheet, or nuts are used in order to furnish additional strength. The button head construction has about twice the strength of the ordinary rivet head stay when heated to a dull red heat and it has been found that when the crown sheet becomes overheated through an absence of water, that, if the centre rows of stays are of the button head or nut construction throughout, they do not give way until the crown sheet is heated to such a high temperature, that, when failure finally occurs, the sheet is liable to be forced down from end to end. Such an explosion is serious and has torn the boiler apart from the frames and caused serious damage. By using rivetted heads for the front four rows, which are in modern boilers, with sloping top fire-boxes, the highest part of the fire-box and in a location which is overheated before the remainder of the crown sheet is uncovered, these rows will give way before the button heads or nutted stays supporting the remainder of the sheet are overheated sufficiently to seriously affect their strength. They thus act to a certain extent in the same way as a fusible plug and by allowing the steam and water to escape into the fire-box and put out the fire, prevent serious damage occurring.

The universal use of sling or expansion stays for the front rows is largely due to their having been found to reduce the tendency of the flue sheet to crack along the root of the upper flange. Considerable upward movement has been found to occur in the crown sheet of the fire-box with reference to the outer fire-box sheet as the boiler is being heated. No upward movement could of course occur when the crown sheet is exposed to the boiler pressure, as it is not of sufficient strength to sustain this pressure without the load being taken by the stays, but while the water in the boiler is being heated, the pressure on the crown sheet is comparatively small, while the inside fire-box and the outer sheets of the boiler may not be of the same temperature, and if the connections are rigid and relative movement is not permitted, the crown sheet and flue sheet may be forced to bend.

The ordinary crown bar construction

supported from the sides or ends of the fire-box is practically obsolete on new construction. A modification of this arrangement is shown in fig. 2 and in detail in fig. 18. This arrangement is used on the Union Pacific Rd. boilers, and is standard on the Harriman lines. It will be noticed that the front crown stay angle irons are connected to the sides of the boilers by links which provide the necessary staying to prevent the sides of the outer fire-box moving outwards under boiler pressure. Behind these horizontal stay rods are provided for the same purpose, and this arrangement thus closely resembles the Belpaire method of staying, with the exception that flat surfaces are not used, and crown bar construction is used in place of the staying of the Belpaire type. In fig. 18 the construction of the crown sheet stays is shown, from which it will be seen that the stays have a taper fit in the crown sheet, while the head of the stay is pressed tight against the sheet, a collar being used between the crown bar and the sheet in order to keep it in place. This construction is not a usual one in the U. S., although the administrations using it control a large number of locomotives. The administrations using radial stays combined with various designs of expansion stays for the front rows, report that their use is satisfactory and that they are preferable to crown stays which have of course been in extensive use on boilers of an older type. The Buenos Ayres and Rosario Ry. reports that it has both in use, but prefers the crown staying construction as with radial stays, cracking occurs along the top flange of the flue sheet, whereas with crown stays it does not. The general preference for radial stays in the U.S. must be ascribed to its being possible to keep the crown sheet free from scale with this form of staying whereas with the crown bar arrangement it is practically impossible to do so unless the water used is exceedingly good.

INSIDE FIRE-BOXES in the U.S. are universally of steel, and with very few exceptions the crown sheet, side sheet and back sheet are 5/8 inch in thickness. A few of the administrations use 7-16 or

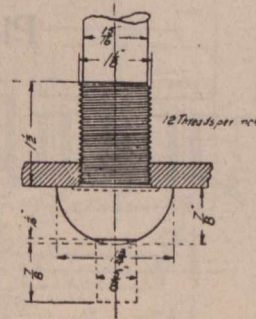


Fig. 14

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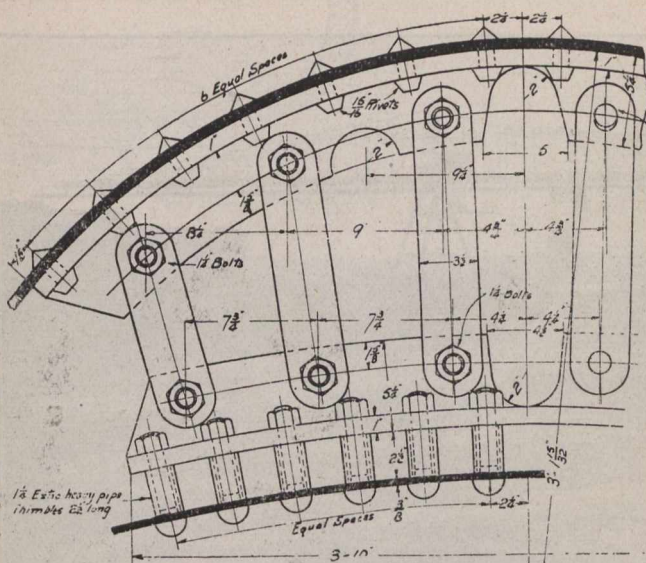
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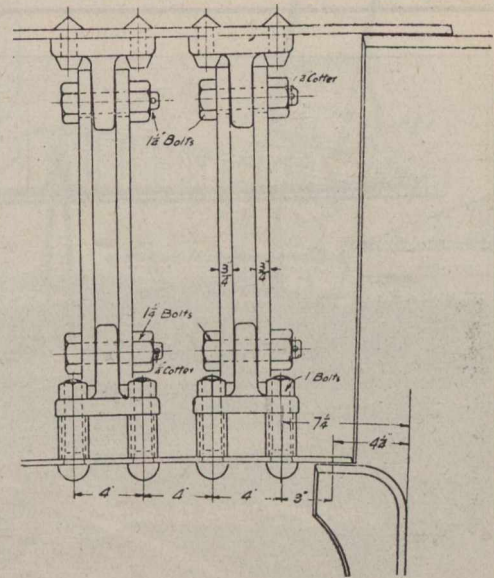


Fig. 15.

1/2 inch crown sheets, but their number is small, and the use of 3/8 inch for these sheets may be stated to be almost universal. Side sheets are occasionally 5-16 inch in thickness, and some of the administrations using this thickness prefer it to 3/8 inch, and state that less trouble is experienced with the thinner sheet. The same remarks apply to the back sheet of fire-box, but in both cases it may be stated that the use of 3/8 inch plate is almost universal. The tube sheets are almost universally 1/2 inch in thickness, although in some cases 3/8 inch sheets are used for pressures above 180 pounds. The majority of administrations replying have made no increase in the thickness of their fire-box sheets for pressures of from 180 to 200 lbs., and report that no change is necessary. The Buenos Ayres and Rosario Ry. using a copper fire-box reports the use of 1/2 inch copper sheets for the crown, back and side sheets, and 3/8 inch or 1 inch for flue sheets, but they have made no difference in the case of boilers carrying higher pressures. The design of inside fire-box is shown in the various illustrations and calls for no special reference. The seams are invariably single rivetted lap seams, rivets being usually 3/4 inch in diameter and 1 7/8 in. to 2 in. pitch. The lap of the seam is

made as small as possible and is usually 2 in., although in some cases 2 1/4 in. is used. This seam is shown in fig. 19. While not universal, the practice of reducing the thickness of the flue sheet at the seam is adopted by a number of administrations. In some cases the thickness of the back sheet at the seam is similarly reduced. This arrangement

the last few years, in which the radius of the flange is about 2 ins. at the upper portion of the tube sheet, and is gradually reduced to about 3/4 in. at the sides where little trouble is experienced. The increase of this radius to 2 ins. from 3/4 in. which was previously used is stated by many administrations to have given good results. Two administrations, however, which have used it report that it gives more trouble from cracking than the smaller radius. Opinion is divided on this question, but it is stated that on the whole the increase in the size of this radius has not overcome the difficulty, which is quite a serious one, as a number of sheets crack around the root of the upper flange. The use of a larger radius at this point has necessitated a slight reduction in the number of tubes which can be placed in any boiler, and if it is not found to be advantageous its use will be abandoned. There is not, however, sufficient experience at present to state definitely whether or not this detail of design should be followed.

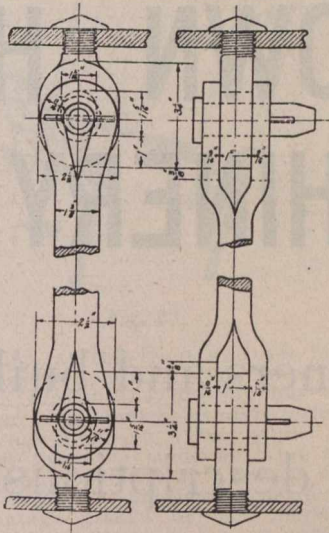


Fig. 17.

FIRE-BOX DOOR.—Fire door openings are usually oval in form, 13 by 18 ins. to 16 by 20 ins. in size. Some administrations use two doors on wide fire-boxes using bituminous coal. The most common form of connection between the back sheet of the fire-box and the outside back sheet of the boiler is shown in figs. 1, 2 and 3. The inside fire-box sheet is flanged outwardly, the outside sheet being flanged inwardly to meet it, forming a single rivetted lap joint. Another form in common use is shown in fig. 22, in which both sheets are flanged outwardly, and a collar is used to connect the inner and outer sheets. This type of joint is somewhat easier to construct than the other, and is reported to give very good satisfaction. A modification is shown in fig. 23, in which the construction shown in fig. 22, is modified by using a solid ring between the

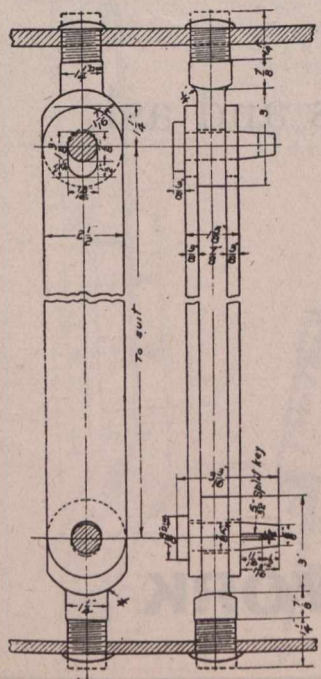


Fig. 16.

is shown in fig. 20 and it will be seen that the rivets are countersunk in the seam and the thickness of the metal exposed to the fire is reduced as much as possible. Some administrations reduce the seam in this manner from the bottom of the fire-box for from 12 to 24 ins., while others do so for the entire length of the seam. The administrations using this practice report that it has considerably reduced the difficulty previously experienced with plates cracking from the rivet holes to the outer edge of the seam and it may be regarded as good practice. Its necessity is evidently affected by the quality of the water used. Where good water is used cone head rivets and full thickness plates are found to give but little trouble, but where the water is bad and there is a tendency for the edges of the seam to become overheated, the reduction in the thickness of the plate appears to prevent to a large extent this deterioration and formation of cracks. Reference has been made to cracking of flue sheet along the corner of the upper flange. Fig. 21 illustrates the design that has been commonly used for

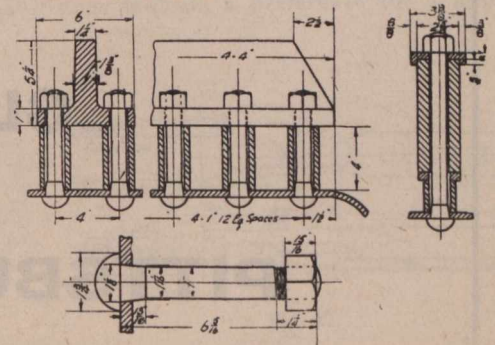
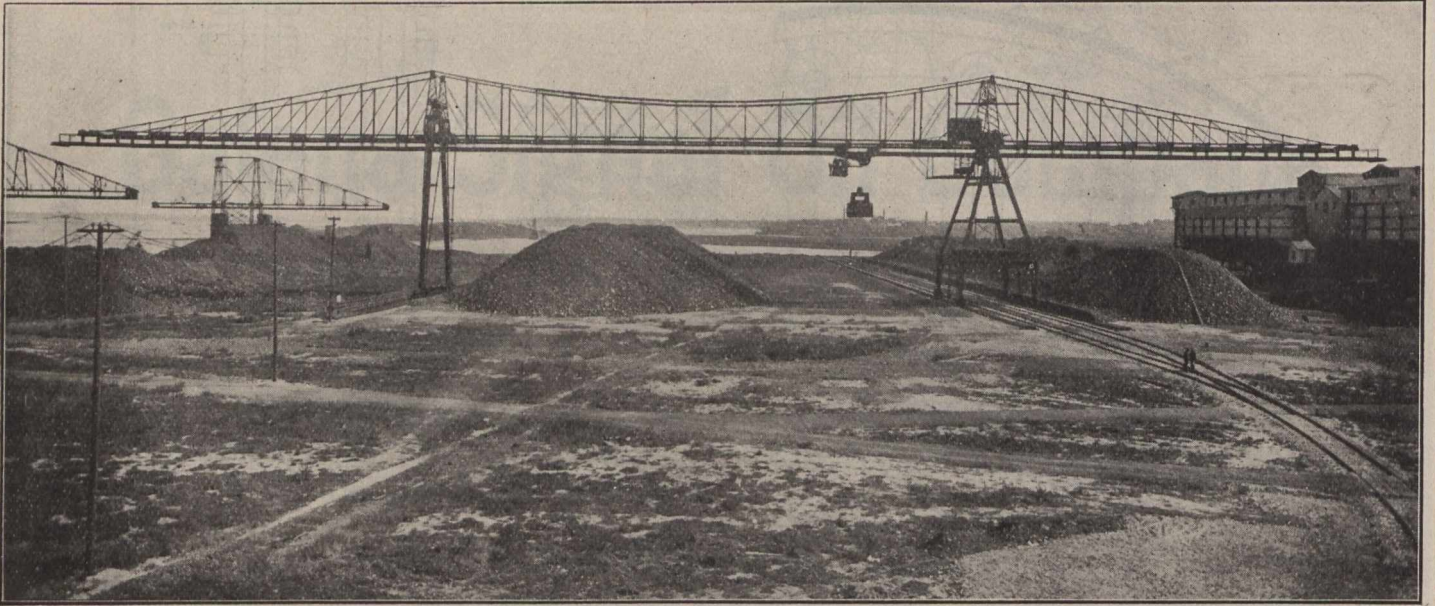


Fig. 18.



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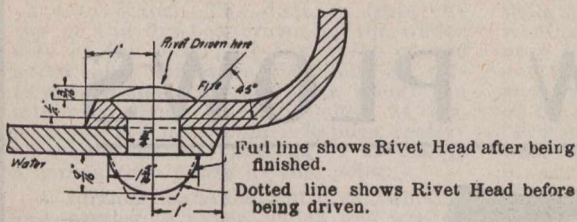


Fig. 19.

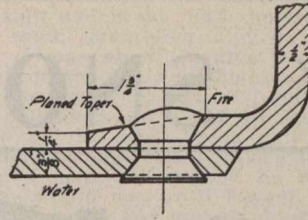


Fig. 20.

collar and outside sheet. This type of door is only reported by one administration, and is not in general use. A patented connection is used by several administrations and is illustrated in fig. 24. The form in which the sheets are flanged is stated to give greater flexibility and avoid the cracking of the sheets in the corners of the flanges. The same result is obtained by spacing the staybolts between the back sheets of the inner and outer fire-box at a rather greater distance from the door opening than usual. On the Buenos Ayres and Rosario Ry. the inner and outer sheets are connected up by a solid ring of the type common in European practice. This method is not, however, used in the U.S. where the arrangement shown in figs. 1, 2 and 3, is the most general, and that used in fig. 22 the usual alternative arrangement.

FIRE-BOX BARREL STAYS.—Stays from the fire-box tube sheet to the barrel of the boiler are commonly of the type shown in figs. 25, 26 and 27, the former being the most common. In fig. 25 a threaded stay is used which is rivetted over in the fire-box sheets. Fig. 26, shows a design in which bolts are used in place of threaded staybolts to connect the brace and the fire-box sheet. In fig. 27 the bolt threaded in to the fire-box sheet is flexibly connected to the bracket. The Pennsylvania Rd. does not use this type of stay, but by referring to fig. 3, it will be seen that the fire-box tube sheet and the throat sheet of the fire-box are formed in such a way that stays of this description are not required. By an ingenious design the tube sheet is flanged to a curved surface and the throat sheet formed to correspond. While this arrangement is evidently satisfactory it is not as easy to construct from a builder's standpoint, as the ordinary design of throat sheet

with flat surfaces and is therefore not generally adopted.

THE WATER SPACES between the inner and outer fire-boxes have been considerably in-

creased during the past few years. Instead of water spaces at mud ring of 3½ to 4 ins., at the front of the fire-box and 3 to 3½ ins. at the side and back a number of administrations now use 5 in. water spaces at front, sides and back, while the use of

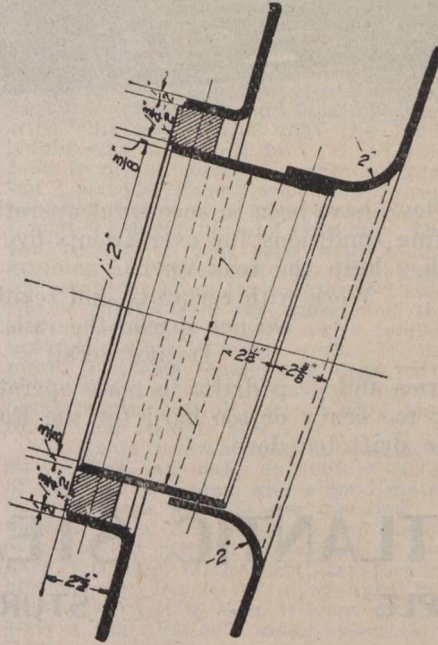


Fig. 23.

5 ins. at the front and 4½ ins. at the sides is common. The water space at the top of the fire-box has also been increased, many administrations using a minimum of 6 ins. while in others this figure is made as large as 6½ to 7½ and even 8 ins. There is no definite information obtainable as to the advantage gained by this increased spacing, but there is a very general opinion that better circulation is obtained and that a decided improvement is obtained in the life of staybolts and fire-box sheets. South American administrations replying, report water spaces of 2½ to 3 ins., but this evidently refers to boilers of a smaller capacity than is common in the U.S. While the larger water spacing increases to a certain extent the weight of the boiler, as previously mentioned where large spaces are used, the barrel of the boiler is tapered so as to reduce the increase of weight to as great an extent as possible. The

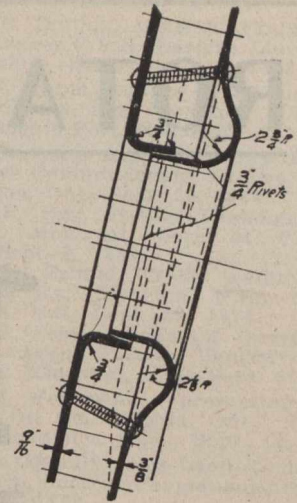


Fig. 24.

spaces between the tubes and the sides and bottom of barrel show a considerable variation in the different designs. This also is a dimension that affects the weight of the boiler but replies received from the various administrations would indicate that it is not generally regarded as important: with the exception of

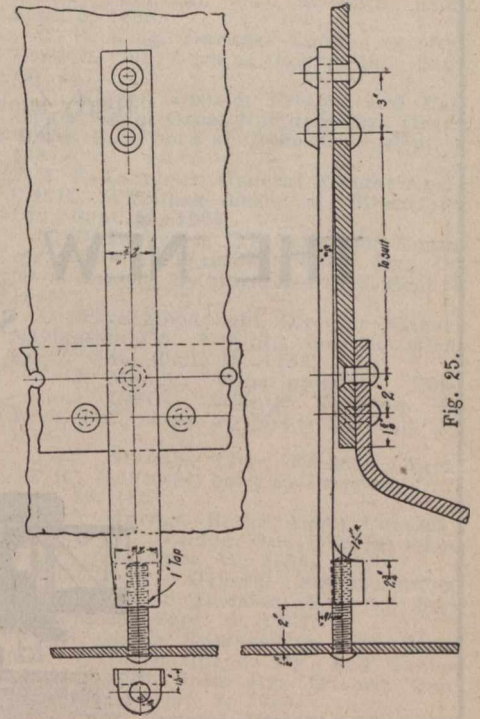


Fig. 25.

a few isolated cases the minimum dimension between the tubes and the side of the boiler which has been permitted is 2 ins., between the tubes and the bottom of the boiler 2½ to 3 ins. These would appear to be satisfactory minimum dimensions, but some administrations indicate a preference for a space

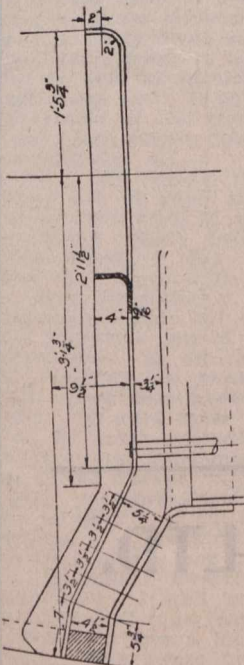


Fig. 21.

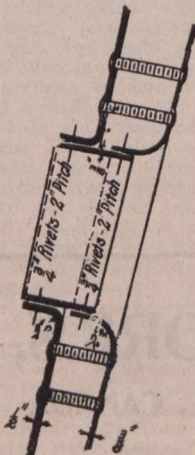


Fig. 22.

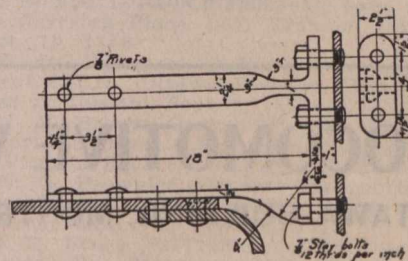


Fig. 26.

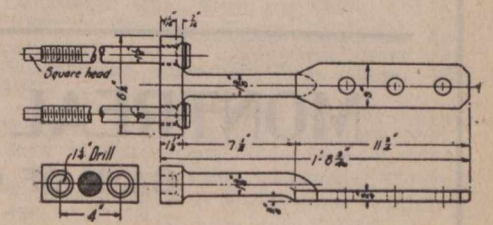
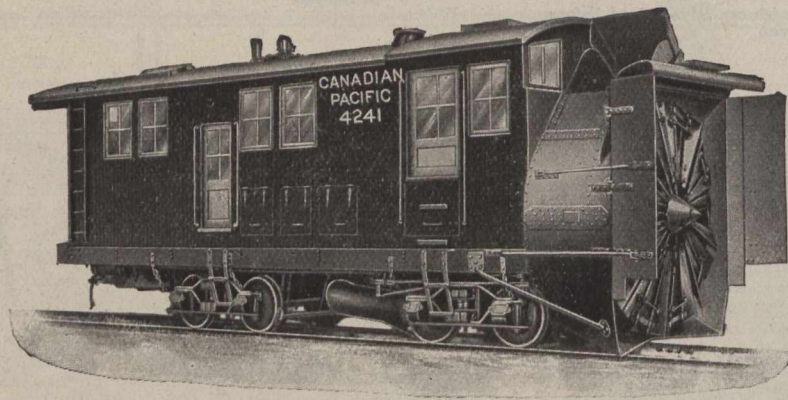


Fig. 27.

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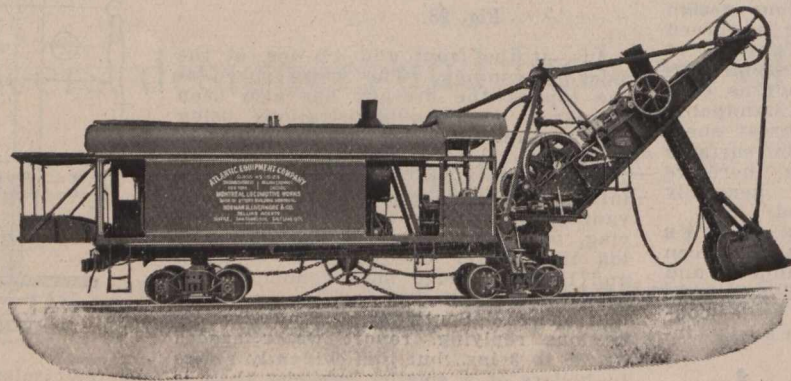
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of 4 to 5 ins. The distance from the top of the fire-box crown to the under side of the outer fire-box sheet of the boiler also varies considerably on different engines, 18 ins. being about the minimum figure allowed, while 24 ins. is about the maximum. Replies received would indicate that 20 to 22 ins. is a satisfactory figure at this point.

A further instalment of this valuable and interesting paper, which was written by Mr. Vaughan, for presentation at the International Railway Congress Association's meeting at Berne, Switzerland, in July, will be published in our next issue.

Tools and Formers.

By Arthur Stockall, Foreman Blacksmith, Intercolonial Railway Shops, Moncton, N. B.

So much has been said on this subject that it seems hard to say anything more, but every year calls for new efforts in this direction and I suppose it will be so always, as there is continually a demand for more economy in tools and speed in manufacturing, and this requires that tools and formers be constantly changed in shape so as to reduce breakage in material, cost of tools and time in making a given piece of work. Therefore, in the designing of tools there are three things that should be borne in mind: to be easy on material, easy on tools and easy to handle. In the carrying out of these things lies the true success in handling our work; for I think that it is better to have two simple tools to make one piece of work, than one complicated and expensive tool, with the danger of breaking the material in the end.

The formers for the bulldozer, I think, can be made cheaper and more conveniently with cast iron, reinforced with hardened steel at the places where friction will take place, so that instead of wearing out the casting, the steel will take the strain and when this is worn out it can be removed and a new piece put in. In other formers, or in fact wherever possible, the roller tool should be used as the best means to save material and power.

Then there is a tool that can be used to make a lot of work, such as freight car steps, carrier irons for passenger cars, glands and all such work where a double bend is required, or a good square corner is needed. I mean a tool with a hinge made so that it will move back far enough to allow the iron to be put in and far enough apart to let the ram come down to square up the crown or middle of the work, thus making a good clean square job that no one need be ashamed of.

As I said before, these tools may be made out of good clean castings reinforced with steel at wearing points and machined where necessary and by a little foresight they may be made so that one former, with a liner put in, can be used for different articles of almost the same shape, but of a different size; this will save cost of tools and cheapen production. In all cases where cutting or punching hot material is required high speed self hardening steel is the stuff. It costs more to put it in, but does its work splendidly and it is a relief to the burdened foreman and a joy to the worker, with no more running water, no more burning and peeling of die, or punch, or cutter, and consequent bending and breaking of tools with the machine on the hog half the time, with the toolmaker swearing and workman grumbling. I well remember my own experience of four years ago in this line. I was punching a lot of steel follower plates. They were pretty hard and of course the usual trouble was intensified by this. If we used water to cool the

tools, they split and broke, and the man wading in mud, grumbling and doing very little. I was about to give it up and fall back on the drill; but high speed steel came into my head, and off I started for the toolmaker and stated my case. "I won't do it," he said; "it is only a waste of time and material." "Let's try it, anyway," I said. "I won't" he replied, and he would not, until I went to the Master Mechanic and got his doubtful consent, and at last the tools were made and put in, and the difficulty was gone. High speed steel is undoubtedly the stuff for this kind of work and pays 100% every time.

I used to think that mild steel was good enough for bolt headings, etc., and I tried it thoroughly, but it was not satisfactory. It would burn up in spite of all I could do. "Caseharden it," said my bolt maker. This I did, with the result that almost always the block would warp or bulge out in the middle and in grinding this out the casehardening would be all gone and my labor went for nothing. Then I heard a man say cast iron chills are fine, and cheap. I tried this and found that the blocks would chip and split in two. Chilled tools in my opinion are a waste of time; but I consider good clean cast iron tools superior to any of the other above mentioned for durability and economy. They can be put in and used with a little grinding and when used up can be sold for scrap for more than scrap soft steel. But, I think, from my experience, that self hardening or a good water tempering steel is best for this work. It costs more, but lasts longer and does better work while it does last, and for machine forgings of all sorts a good hard, tough cast steel is best.

For steam hammer tools nothing is too good. You can make an endless variety of things under them and a good material for these tools is the question. A dense grained cast steel top and bottom of about .30 carbon; for wedges a good hard soft steel is the best; for forming blocks, cast iron with a wrought iron band around it to keep it from splitting, gives a tool that will make almost anything.

The foregoing paper was read before the Master Blacksmiths' Association in Chicago recently.

September Birthdays.

Many happy returns of the day to:—
G. W. Alexander, Local Treasurer G.T.R. Western Lines, Detroit, Mich., born at Lightcliff, Yorks, Eng., Sept. 10, 1859.

W. B. Bamford, General Freight Agent Atlantic Division, C.P.R., St. John, N.B., born at Belleville, Ont., Sept. 10, 1863.

W. D. Barclay, General Manager Canadian Northern Quebec Ry., Quebec and Lake St. John Ry., Halifax and Southwestern Ry., and Inverness Ry. and Coal Co., Quebec, Que., born at Campbellton, N.B., Sept. 23, 1852.

G. T. Bell, Assistant Passenger Traffic Manager G.T.R. and G.T.P.R., Montreal, born there, Sept. 7, 1861.

W. H. Biggar, K.C., General Counsel G.T.R. and G.T.P.R., Montreal, born at the Carrying Place, near Trenton, Ont., Sept. 19, 1852.

E. R. Bremner, ex-Division Freight Agent G.T.R., Ottawa Division, Ottawa, born at Toronto, Sept. 9, 1875.

M. H. Brown, General Freight Agent Ontario Division C.P.R., Toronto, born at Victoria Square, Ont., Sept. 2, 1866.

W. G. Brownlee, General Transportation Manager G.T.R., Montreal, born at Lawrenceville, Ill., Sept. 9, 1858.

J. R. Bruce, ex-Traffic Auditor Intercolonial Ry., Moncton, N.B., born at Portsoy, Banffshire, Scotland, Sept. 23, 1848.

W. B. Bulling, Assistant Freight Traffic Manager C.P.R. Eastern Lines, Montreal, born there, Sept. 16, 1858.

C. F. Burns, Auditor of Disbursements Intercolonial Ry., Moncton, N.B., born at Clements Port, N.S., Sept. 10, 1854.

A. D. Cartwright, Secretary Board of Railway Commissioners, Ottawa, born at Kingston, Ont., Sept. 20, 1864.

W. F. Egg, ex-City Passenger Agent C.P.R., Montreal, born at Plymouth, Eng., Sept. 7, 1859.

W. H. Estano, Traffic Auditor Intercolonial Ry., Moncton, N.B., born at Halifax, N.S., Sept. 29, 1874.

C. B. Foster, Assistant General Passenger Agent C.P.R., Vancouver, B.C., born at Kingston, N.B., Sept. 30, 1871.

J. P. Ferguson, representing Galena Signal Oil Co., Ottawa, Ont., born at Drummondville, Que., Sept. 12, 1856.

L. A. Hamilton, ex-Land Commissioner C.P.R., born at Penetanguishene, Ont., Sept. 30, 1852.

D. W. Hatch, Travelling Agent Atcheson, Topeka and Santa Fe Ry., Montreal, born at Bedford, Que., Sept. 1, 1841.

J. E. Hutcheson, Superintendent and Purchasing Agent Ottawa Electric Ry., born at Brockville, Ont., Sept. 15, 1858.

J. F. Kane, ex-Fuel Agent C.P.R. Western Division, Calgary, Alta., born at Toronto, Sept. 8, 1884.

W. H. Kelson, ex-General Storekeeper C.P.R., Montreal, born at Bath, Eng., Sept. 5, 1850.

C. B. King, Manager London St. Ry., London, Ont., born at Galena, Ind., Sept. 12, 1871.

V. Kistler, District Freight and Passenger Agent Great Northern Ry., Grand Forks, B.C., born at Clyde, Ohio, Sept. 4, 1881.

R. E. Larmour, General Freight Agent C.P.R., Winnipeg, born at Brantford, Ont., Sept. 26, 1868.

H. D. Lumsden, C.E., ex-Chief Engineer National Transcontinental Ry., Ottawa, born at Belhaire, Scotland, Sept. 7, 1844.

J. Bruce Macdonald, Director Niagara Navigation Co., Toronto, born at Glengarry, Ont., Sept. 19, 1850.

F. J. Mahon, Superintendent Telegraphs C.P.R. Atlantic Division, St. John, N.B., born at Montreal, Sept. 18, 1865.

J. F. Mundle, City Freight Agent C.P.R., Montreal, born at Prescott, Ont., Sept. 20, 1857.

B. S. Murray, Route Agent Canadian Express Co., London, Ont., born at Glenwood, N.Y., Sept. 17, 1856.

J. Osborne, General Superintendent C.P.R. Ontario Division, Toronto, born at Montreal, Sept. 19, 1861.

S. S. Oliver, Engineering Dept. Canadian Northern Quebec Ry., and Quebec and Lake St. John Ry., Quebec, Que., born there, Sept. 9, 1858.

J. Paul, General Freight Agent Niagara, St. Catharines and Toronto Ry., born in Euphrasia tp., Grey Co., Ont., Sept. 13, 1858.

R. P. Perry, C.P.R. Ticket Agent, Bracebridge, Ont., born at Whitby, Ont., Sept. 2, 1850.

C. S. Richardson, District Freight Agent C.P.R., Buffalo, N.Y., born at New York City, Sept. 26, 1870.

W. D. Robb, Superintendent of Motive Power G.T.R., Montreal, born at Longueuil, Que., Sept. 21, 1857.

W. H. Rosevear, ex-General Car Accountant G.T.R., Montreal, born at Wadebridge, Cornwall, Eng., Sept. 26, 1837.

E. W. Taylor, General Freight Agent Reid Newfoundland Co., St. John's, Nfld., born at Carbonear, Nfld., Sept. 8, 1870.

W. Whyte, Vice President C.P.R., Winnipeg, born at Charleston, Scotland, Sept. 15, 1843.

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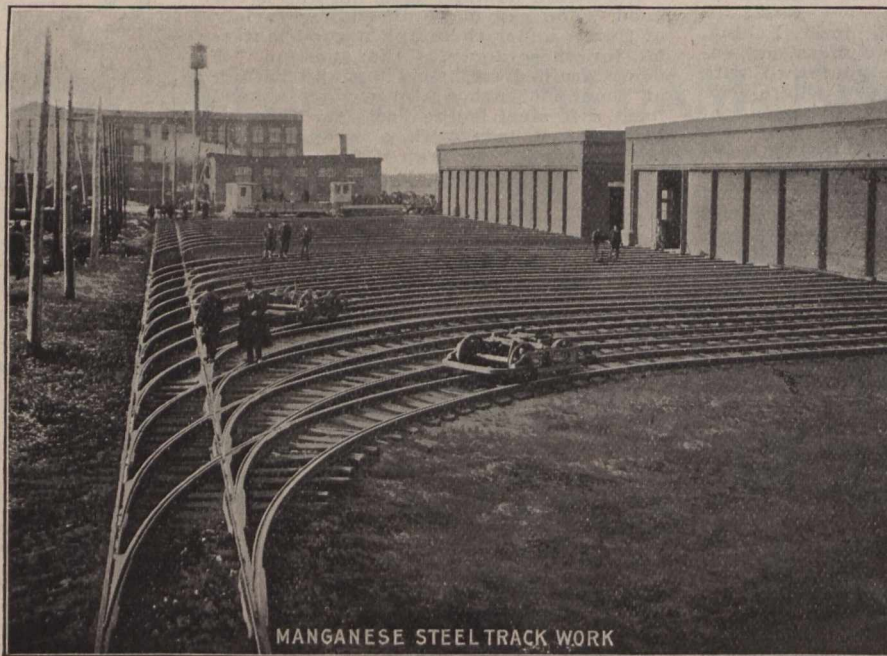
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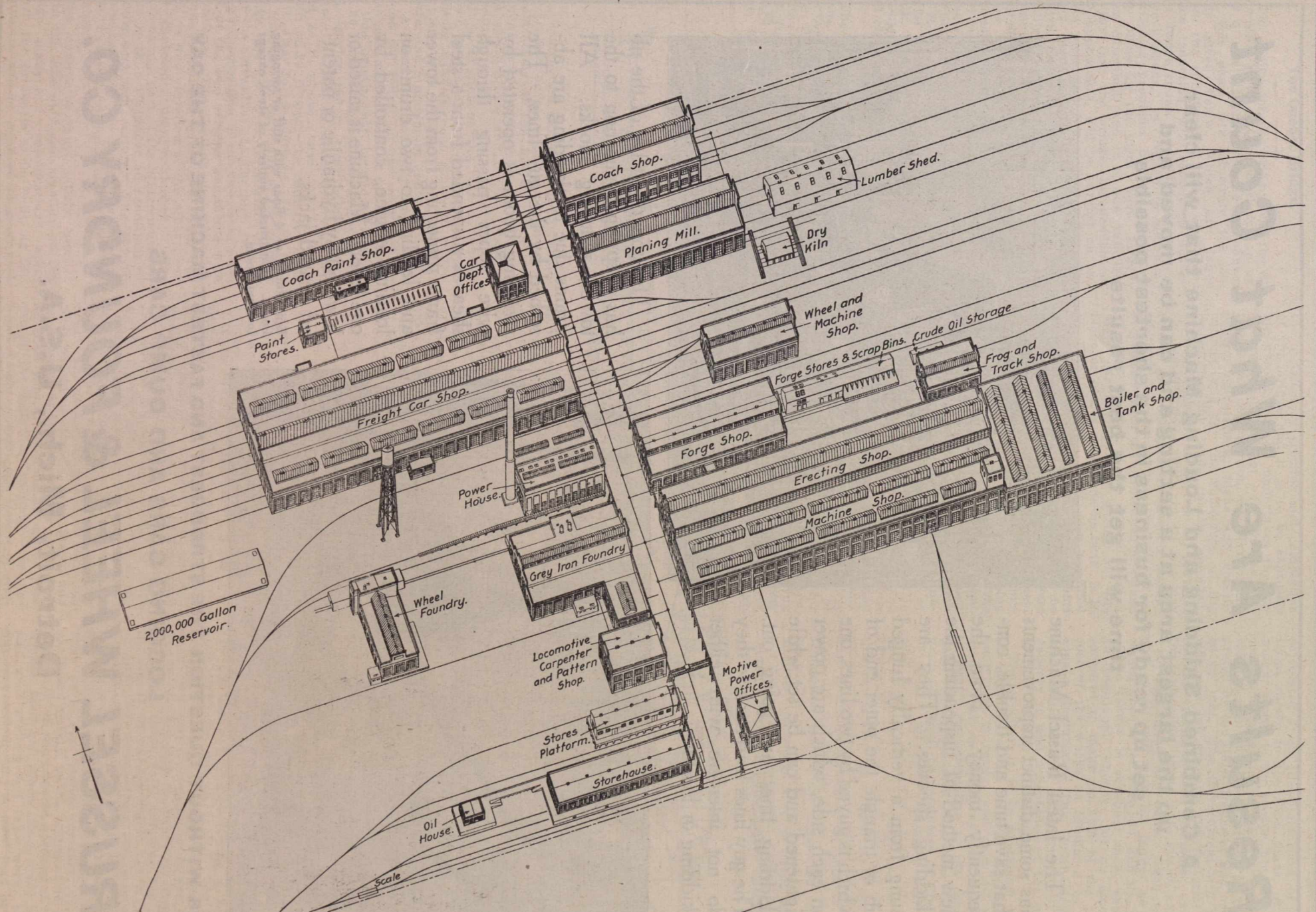
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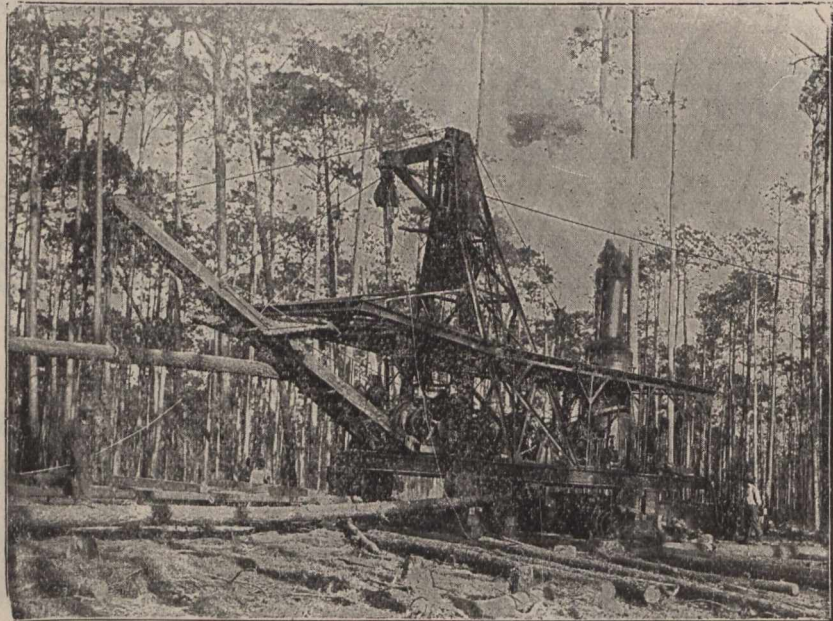


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The Quebec Bridge.

The design for the bridge over the St. Lawrence river at Quebec, shown on pg. 189 of our March issue, and reproduced on this page, will illustrate the details given below, which are taken from the specifications upon which the firms tendering will base their prices. The design shows the bridge without approach spans, in regard to which no particular problems had to be solved. The plans for the piers have already been described, and it is now sufficient to say that the bridge, independent of the approaches, will be carried on two main piers and two anchor piers. The main piers will be 1,758 ft. centre to centre, and will rise to 128 ft. The cantilever arms will extend 586 ft. on either side of each main pier, being anchored at the shore ends to the anchor piers. The ends of the two cantilevers extending over the navigable channel will be connected by straight work of 14 panels 586 ft. long. Each arm of the cantilevers will also consist of 14 panels 41 ft. 10 9-32 in. each. The bridge is to be 88 ft. wide, arranged with sidewalk, highway and electric railway, double track steam railway, highway and electric railway, sidewalk.

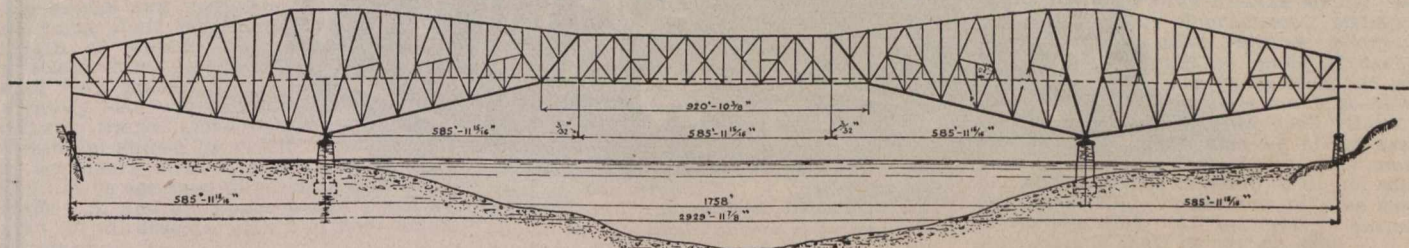
THE SPECIFICATIONS.

The superstructure is to consist of six spans, starting from the north shore as follows:—one deck span 91 ft.; one deck span 96 ft.; one shore arm 586 ft.; one main span 1,758 ft.; one shore arm 586 ft.; one deck span 115 ft. The board submits a plan for the superstructure, but in addition to tendering on

the satisfactory erection and completion of the bridge and it is to be expressly understood that he undertakes the entire responsibility not only for the materials and construction, but also for the design, calculations, plans and specifications, and for the sufficiency of the bridge for the loads therein specified. The enforcement of any, or all parts of the specifications shall not in any way relieve the contractor from such responsibility. The tender must be strictly in accordance with the printed form, signed by every member of the firm, if sent in by a partnership; and setting out the place or places where the material is to be manufactured. It is also specified that all Canadian and foreign customs duties on material and plant shall be paid by the contractor. The tenders must state a price per lb. for the steel in the superstructure erected and painted complete, the suspended span being erected on the cantilever principle, the price to be based upon the use of basic open hearth steel, except for cables, which shall be made of acid open hearth steel; an alternate price per lb. for material and work using acid instead of basic open hearth steel; a lump sum in addition if the suspended span is floated into position; a lump sum for concrete, concrete slabs with reinforcing bars, and other material used for the roadway floors, the laying and banding of electric railway rails, and the furnishing of guard angles, with screws and bolts for the railway floor according to the plans. In the event of the contractor offering to modify the board's plans by changing the length and depth of the cantilever or shore arms or the length and design

calculated from the dimensions of material shown in the shop plans, or the weight stated in the tender, plus any increases in quantities of material not provided for in the specifications as interpreted by the Chief Engineer and ordered by him. The Government will provide and lay all rails and material for railway tracks above stringers except the expansion joints and guard angles with the screws and bolts. Each tenderer must send with his tender an accepted cheque for \$500,000, and the firm whose tender is accepted must deposit an additional cheque for an amount sufficient to make up 15% of the total cost of the works as estimated by the Chief Engineer. The total deposit made shall be held as security until the delivery to and acceptance of the work by the Minister of Railways.

The erection is to be proceeded with on each side of the river as soon as the main pier is ready, and shall be proceeded with as rapidly as possible so as to secure its completion at the earliest date. It is assumed that the north main pier shall be completed by Nov. 1, 1910, and all other masonry work by Nov. 1, 1911, and while the contractor has to guarantee the completion of the bridge by a date which he will fix on this assumption, the Department on the recommendation of the Chief Engineer may grant an extension of time if the piers are not completed as assumed, or otherwise. Before the completed works are delivered to and accepted by the Minister, the bridge is to be tested under live load. If a suspension design is accepted suitable supplementary specifications will be provided.



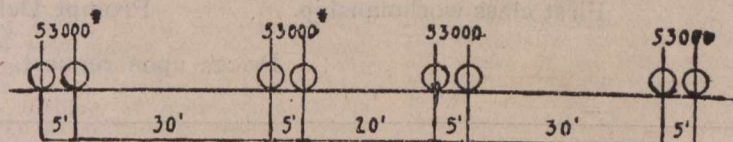
this, contractors will be allowed to submit tenders on plans of their own or on modifications of the board's plans, but all tenders are to be subject to the general specifications and to the following conditions:—(1) The superstructure shall be erected on the two main piers shown in the plan. (2) The main span shall be 1,758 ft. long, centre to centre, of piers, with trusses 88 ft. centre to centre, and a maximum depth of 290 ft.; (3) A clear head room for vessels must extend for 600 ft. at the centre of the main span and no part of the steel work, for that length, shall be under elevation 251.30, with the maximum loading specified, leaving 150 ft. clear above high water; (4) A clear head-room must extend 23 ft. above base of rail for a width of 29 ft. over the railway tracks, 14 ft. clear for a width of 18½ ft. over the roadway on each side of the railway tracks, and 7 ft. clear for a width of 5 ft. over the sidewalks; (5) The plan (no. 1) shows the position of the two main piers and of the two existing abutments with elevations. The position and elevation of the two main piers are fixed; the position and elevation of the other piers and abutments may be varied. The grade on any part of the bridge must not be more than 1% under all conditions of loading and temperature. The 600 ft. at the centre of the main span shall be level under dead load except for the camber.

The contractor must satisfy himself as to the efficiency and stability of the design, plans and specifications upon which the bridge is to be built, as the contractor will be required to guarantee

of the suspended span, or if the mode of erection he uses decreases the quantities of materials as shown on the plans exhibited, his tender must show the amount of weight saved, and a proof of such statement must be submitted. The contractor will be paid for the number of pounds of steel remaining in the bridge after all erection material has been removed, but in case such weight exceeds the calculated weight based on the dimensions of material shown on the shop plans plus 2%, he shall be paid for the calculated weight plus 2%, the weight

LOADS AND STRESSES.

The loads and stresses for which the bridge or some of its parts will be calculated, are as follows:—(a) Train load, Cooper's class E 50, on one or two tracks; (b) Train load, Cooper's class E 75, on one or two tracks; (c) A highway and sidewalk load one or two roadways of 40 lbs. per sq. ft., or 920 lbs. per lin. ft. of each roadway; (d) A highway and sidewalk load of 100 lbs. per sq. ft., or 4,600 lbs. per lin. ft. of bridge; (e) Street car load; two 53 ton cars each 60 ft. long and 12 ft. wide on each track;

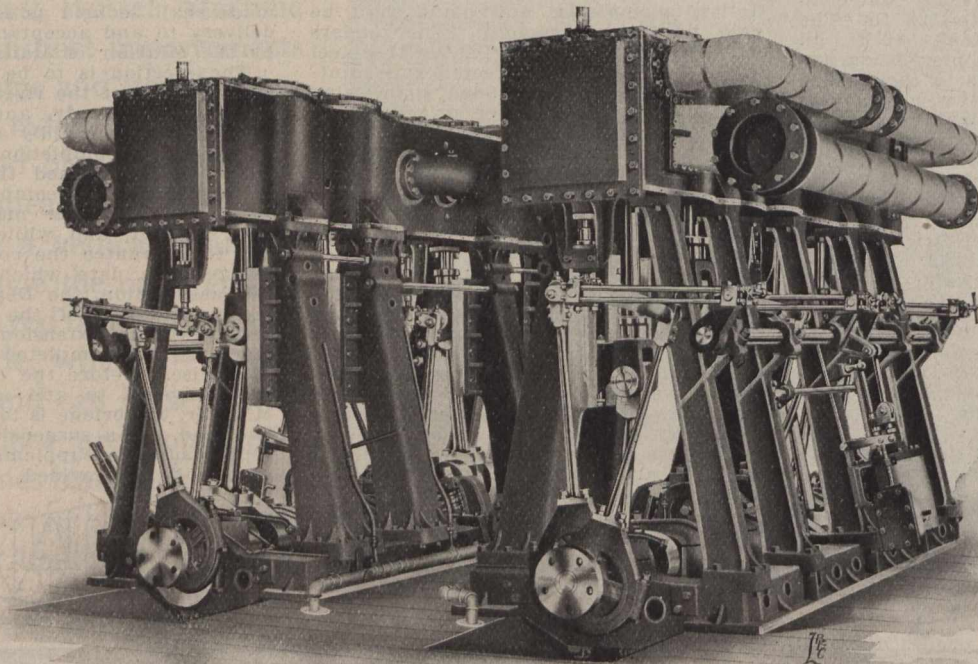


of paint not being included in such calculated weights.

If the contractor tenders on plans prepared by himself the tenders must state prices as above, and in the case of cantilever design also a price per lb. for any additional nickel steel, or carbon steel ordered by the Chief Engineer; and, in the case of a suspension bridge, a price per lb. for any additional material in the anchorage, in the towers, the side spans or other stiffening trusses, or the cables that may be ordered by the Chief Engineer. The contractor is also to state the total weight of steel for each design and each mode of erection tendered on, and shall be paid at schedule prices for lowest of the following weights:—the finished weight of steel, the weight of steel

(f) On roadway a concentrated load of 24,000 lbs. on two axles, 10 ft. centres; (g) On highway and sidewalks, a snow load of 30 lbs. per sq. ft., or 1,500 lbs. per lin. ft. of bridge; (h) On highway; dead load above I-beams of 23,000 lbs. per lin. ft. for each roadway; (i) Track-load; ties, guard rails weighing 670 lbs. per lin. ft. of railway track; (j) Weight of steel floor (floorbeams, stringers and I-beams—distributed load); (k) Weight of steel-work as erected not included in h, i and j, but including travellers and false work, etc., during erection; (l) A wind load normal to the bridge of 30 lbs. per sq. ft. on the exposed surface of two trusses, floor and fence (fixed load) and also on travellers and false work, etc., during erection; (m) A wind load of 30

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lbs. per sq. ft. on part above fence of a train 14 ft. high (moving load); (n) A wind load equal to $\frac{1}{2}(1+m)$; (o) A wind load nearly parallel to bridge of 30 lbs. per sq. ft. on the projected area of the steel-work and of two trains 14 ft. high on a vertical plane normal to wind, or on travellers, false work, etc., during erection; (p) Stresses due to a traction load of 750 lbs. per lin. ft. on one track; (q) Stresses due to a variation of temperature of 150 deg. Fahr.; (r) Stresses due to a difference of temperature of 50 deg. between steel work and masonry; (s) Stresses due to a difference of temperature of 25 deg. between the bottom chords of trusses when free motion is not allowed; (t) Stresses due to a difference of temperature of 25 deg. between the outer web exposed to the sun and the other webs of compression members. The trains on the two tracks shall be assumed to have engines headed in the same direction, and whenever two separate loads give the maximum strains in any member, two trains shall be assumed on each track with length of train and position of engines giving the maximum. All the co-existing loads and stresses and the deformation shall determine the section of the different members with the following restrictions: Load b will be used to determine the dimension of the masonry and anchorage and also of the connection of suspended span to cantilever arms and of any members subject to reversal of stresses under live load; and will also be used to establish the outline of the bridge so that the deflection due to the load will always leave the clear height as specified. Load c will be used for trusses, main cables and anchorages only. Loads d, e and f will be used for floorbeams and stringers, and members receiving their maximum strain from a length of moving load covering two panels or less. Loads l, m and o will be used with railway tracks loaded and no highway load. Load n will be used with railway tracks and roadways loaded. Strains produced by t will be considered as secondary strains, and loads s and t will not be assumed to co-exist with wind loads l, m and o. Loads h and i will be used for all designs, plan 2 of floor being standard.

UNIT STRAINS AND PROPORTION OF PARTS.

All parts of the structure shall be proportioned so that the sum of the maximum strains produced by the loads specified shall not exceed the following amounts in lbs. per sq. in. for carbon steel, when a=Live load strains for loads as specified; b=Dead load strains (including snow); c=All co-existing maximum strains together, except secondary strains; d=All co-existing maximum strains, including secondary strains.

Tension members in main trusses—

a	b	c	d
10,000	20,000	20,000	22,000

Suspenders or any members liable to sudden loading—

a	b	c	d
7,000	14,000	14,000	15,400

Wire suspenders—

a	b	c	d
22,500	45,000	45,000	49,500

Railway stringers—

a	b	c	d
8,000	16,000	16,000	17,600

Floorbeams and highway stringers—

a	b	c	d
9,000	18,000	18,000	19,800

Compression members in main trusses—

a	b
10,000—40 l-r	20,000—80 l-r
c	d
20,000—80 l-r	22,000—88 l-r

No compression member built of carbon steel shall, however, be strained more than 15,200 lbs. per sq. in., not including secondary strains.

Laterals and sway bracing. Take both systems in calculation of strains, disregarding reversal of strains.

For compression	16,000—70 l-r
Rivets—	
Floorbeams and stringers	Bearing. 12,000 lbs. Shear. 6,000 lbs.
Truss members; live+dead	15,000 " 7,500 "
Truss members; all co-existing maximum strains	20,000 " 10,000 "
Laterals and sway bracing	20,000 " 10,000 "

For field rivets reduce above by 10%. Pins. For values of a=10,000 in tension or over, or 10,000—40 l-r in compression, and corresponding values of b, c and d, used in calculating the connected member

Bearing.	Fibre Stress.
20,000 lbs.	24,000 lbs.

For smaller values of a, reduce in proportion. Nickel steel. Increase units given for carbon steel as follows:

Tension	40%
Compression and Pins	25%

No compression member built of nickel steel shall, however, be strained to more than 19,000 lbs. per sq. in., not including secondary strains.

Units for determining sections. The units giving the maximum section shall be used for proportioning the different members.

Unit strains in suspension bridges—

Cables	55,000 lbs.
Carbon steel, tension	16,000 "
Carbon steel, compression	16,000—70 l-r

Increase units by 10% where secondary strains are included.

Pressure on masonry—

Maximum pressure on bed plates per sq. in.	800 lbs.
Maximum pressure on concrete per sq. ft.	33,000 lbs.

Anchorage masonry. For cantilever designs, anchor piers shall show a coefficient of safety of two.

For anchorages of suspension bridges a co-efficient of safety is to be assumed of $1\frac{1}{2}$ against both uplift and sliding.

The co-efficient of friction of masonry on rock is to be taken at 50%, but no part of the rock shall be taken as resisting the anchorage strain, as the mass of masonry only will be taken into account.

In case of dispute before and after the contract is awarded, the assumptions to be made and modes of calculation to be used, shall be the ones made and used in the preparing of the plans exhibited, and the results of which are shown in the strain sheets and plans exhibited. The decision of the Chief Engineer on any such question shall be final. The strains in statically indeterminate structures shall be calculated from their elastic deformations and all assumptions made and formulae used for the calculations must be given in strain sheets submitted with tenders. All bending strains produced by the weight of the member itself and by loads applied on the member shall be considered as primary strains. All members shall be proportioned so that the greatest fibre strain due to this bending and axial strain together will not exceed the allowed units for the axial tension or compression in that member. All strains produced owing to the deformation of the steel work under any and all loads, either by the absence of pins at the joints or by the friction on pins opposing the turning of members shall be considered as secondary strains. Members subject to alternate tension and compression shall be proportioned for either stresses. Rivets in connections and splices in all cases shall be proportioned for the sum of both stresses. Material in connections and splices shall be proportioned to resist the larger stress plus 25% of the smaller stress. In no case shall the section be less than the section of the member. In calculating the net area of tension members, the rivet holes shall be taken $\frac{1}{8}$ in. larger than the nominal diameter of rivets before driving. Pin-connected riveted tension members shall have a net section through the end pin hole at least 33% in excess of the net section of the body of the member and the net section back of the pin hole parallel with the axis of

the member, shall not be less than 80% of the net section of the body of the member. The section through the intermediate pin holes shall be increased over that of the member by the section cut out by the pin hole. The laticing for compression members shall be calculated by assuming the value of K l-r in the column formula $Uk=U-K l-r$ to be the maximum bending strain in the column produced by its compression. It shall also be assumed that the column will bend in a parabola. If the weight of the member produces additional shear, this must be added. The same column formula used in proportioning the section of the member shall be used for its lattice bars. When the value of l-r for the parts of struts connected by lattice bars is more than the value of l-r for the whole strut, the former value shall be used in the calculation of the value of the strut. Plate girders shall be proportioned by their moment of inertia. The gross section of the compression flange shall not be less than the gross section of the tension flange, and the width of the flange shall not be less than 1-12 of the distance between its side supports. The flanges of plate girders shall be connected to the web with a sufficient number of rivets to transfer the total shear at any point in a distance equal to the depth of the girder at that point, and in addition any load applied directly on the flange. The wheel loads where the ties rest on the flanges shall be assumed to be distributed over three ties. Stiffeners shall be riveted to the web as shown in the plans exhibited. Minimum radius of gyration of compression members shall be 1-100 of the length of member for trusses, and 1-120 for lateral and sway bracing struts. Approach spans, floorbeams, stringers, buckle plates, hand railings, stairways and all rivets shall be made of carbon steel. In case the main part of any member of the trusses is made of nickel steel, all the details and connections of such member shall also be nickel steel. In case the main part of any other member of the bridge is made of nickel steel, the details and connections may be made of carbon steel. All material in suspension designs shall be carbon steel.

The next section of the specifications deals with details of design, and provides that all parts of the structure be accessible for inspection, cleaning, painting and repairs; that drain holes be provided for all parts which will hold water; that the main members be so designed that the neutral axis will be as near as practicable in the centre of the section, and the neutral axes of intersecting main members of trusses shall meet at a common point, and for other details necessary for a work of this magnitude. Provision is to be made for the expansion produced by a variation of temperature of 150 deg. Fahr. Provision is also to be made for the inspection and handling of the material to be used in the bridge at all stages of its manufacture; for its shipment from the manufacturing plant to the place of erection, and for the false work to be used in the erection.

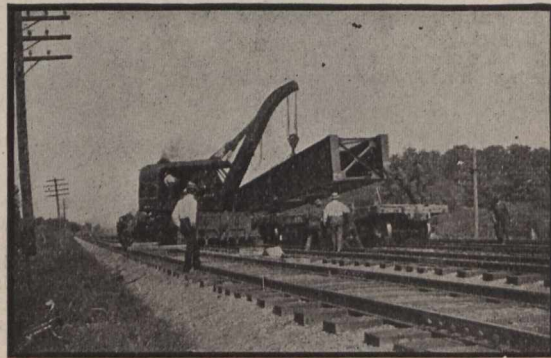
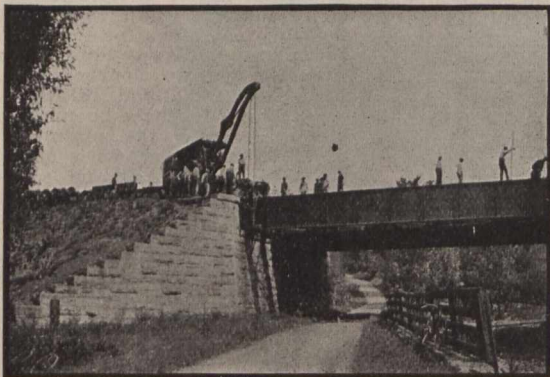
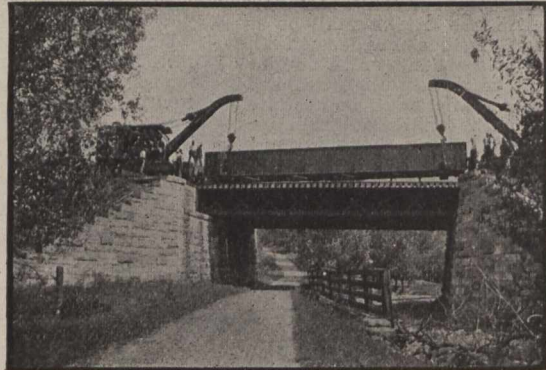
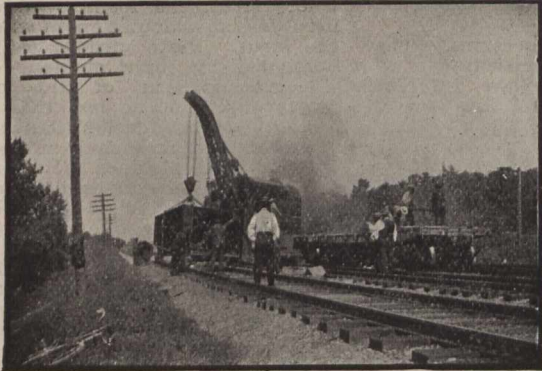
MATERIALS.

It is specified that all structural steel shall be made in an open hearth furnace. During the reduction of the steel in the furnace, decarbonization below 0.12% of carbon will not be allowed, and no stock used in the furnace shall contain more than 0.10% of phosphorus nor more than 0.07% of sulphur. The ladle tests of steel as usually taken shall not contain more than the following proportions of the elements named:—

	Acid.	Basic.
Phosphorus	0.06%	0.04%
Sulphur	0.04%	0.04%
Manganese	0.60%	0.60%
Silicon	0.10%	0.10%

The ladle test of the carbon rivet steel shall not contain more than 0.35% of

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phosphorus, nor more than 0.03% of sulphur. Specimens cut from the finished material shall show the following physical properties:—

Material.	Ult. strength lbs. per sq. in.	Minimum yield point lbs. per sq. in.	Minimum Elongation % in 8 in.	Minimum reduction % of area.
Shapes and plates.....	62,000 to 70,000	35,000	1,500,000 ultimate	44 %
Rivets.....	48,000, to 56,000	28,000	1,500,000 ultimate	50 %

Specimens cut from plates, bars, and shapes 2 in. wide shall bend cold 180 deg. round a rod of a diameter equal to the thickness of the specimen, when at or above a red heat, 180 deg. flat. Specimens cut from rivet rods shall bend 180 deg. flat when cold or, at or above red heat. A test piece 2 in. long when heated to a bright cherry red shall flatten longitudinally under the hammer to ¼ in. thick, without cracking on the edges. Full sized sections of I bar material as rolled without annealing shall bend cold about a rod of diameter equal to twice the thickness of the bar.

All nickel steel shall be made in an open hearth furnace and shall be rolled in the same manner as specified for rolled carbon steel with the addition of nickel. The ladle test shall contain not less than 3.25% of pure nickel, and not more than the same proportion of phosphorus, sulphur, manganese and silicon as mentioned in the tests for carbon steel. The physical requirements for plates and shapes in the finished material must meet the following physical requirements:—

Ultimate strength, 83,000 to 95,000 lbs. per sq. in.
Yield point, 55,000 lbs. per sq. in., minimum.
1,600,000

Elongation % in 8 in., _____ minimum.
ultimate

Reduction in area, 40% minimum.
Nickel steel for pins in the finished material must meet the following physical requirements:—

Ultimate strength, 90,000 to 100,000 lbs. per sq. in.
Yield point, 55,000 lbs. per sq. in. minimum.
1,500,000

Elongation % in 8 in., _____ minimum.
ultimate

Reduction of area, 35% minimum.

Specimens of nickel steel not less than 2 in. wide shall bend cold 180 deg. around a rod of diameter equal to twice the thickness of the specimen without sign of fracture.

Steel for castings shall be made in an open hearth furnace; at least one-third of all stock used for steel castings shall be pig iron, and where scrap is used, it shall be of a kind and quality satisfactory to the Chief Engineer. During the reduction of the steel in the furnace, it shall not be decarburized below 0.10%. The ladle test for castings shall not contain more than 0.04% of phosphorus for basic steel, and 0.06% of phosphorus, 0.05% of sulphur, 0.75% of manganese and 0.35% of silicon for acid steel. The physical tests taken on coupons on the annealed castings shall show an ultimate strength of not less than 65,000 lbs. per sq. in., an elastic limit of at least 35,000 lbs. per sq. in., and an elongation of not less than 20% in 2 in. They shall bend without cracking 120 deg. around a rod twice the thickness of the test piece.

All steel for wire for the cables, suspenders and hand ropes shall be made throughout in an open hearth furnace lined with silica. The wire for serving the cables shall be made of Norway iron of a quality to be approved by the Chief Engineer. The melting stock used for wire steel shall consist of pig iron to the extent of not less than 45% of the total charge, together with other suitable melting stock. None of the pig iron and none of the other melting stock shall contain more than 0.03% of phosphorus or 0.03% of sulphur. The recarburization of steel is essential and

the addition of manganese and carbon shall be accomplished by the use of ferro-manganese or spiegeleisen only, and shall be performed carefully, in a

manner most likely, in the opinion of the Engineer, to give good results. During the reduction of the steel in the open-hearth furnace, it shall not be decarburized below 0.20%. The ladle tests of the steel shall conform to the following chemical requirements:—Carbon, not to exceed 0.85%; Manganese, not to exceed 0.55%; Silicon, not to exceed 0.20% Phosphorus, not to exceed 0.04%; Sulphur, not to exceed 0.35%; Copper, not to exceed 0.02%.

The wire for cables, hand ropes and suspenders shall have an ultimate strength of not less than 215,000 lbs. per sq. in. before galvanizing, and an elongation of not less than 2% in 12 in. of observed length, the stretch to be measured while the specimen is in the testing machine. The bright wire shall be capable of coiling cold around a rod 1½ times its own diameter without sign of fracture. The cable wire before galvanizing shall not vary in gauge more than 3-1000 of an inch. It shall be drawn on large-sized blocks, and finished in single lengths of not less than 3,000 ft., and shall be drawn as straight as possible without any kinks or sharp bends. After galvanizing, the steel wire shall have an ultimate strength of not less than 200,000 lbs. per sq. in. of gross section.

The other provisions of the specifications govern the making of the tests of the material, and of the parts of the bridge as manufactured, and before being erected; the painting, and the concrete and asphalt to be used in the flooring of the highways.

Tell Tales for Bridges, Tunnels, Etc.

The Board of Railway Commissioners passed the following order 11267, July 19: Re accident on Jan. 15, 1910, on the C.P.R. at snow shed 18, 1¼ miles west of Rogers Pass station, B.C. Upon an investigation by an Inspector of the Board into the cause of the accident and upon the report and recommendation of the Board's Chief Operating Officer, it is ordered that wherever a line of steam railway or any branch or portion of such railway, operated by a railway company subject to the legislative authority of the Parliament of Canada, passes through, or under, any tunnel, snowshed, bridge, or other structure, in which the perpendicular height between the base of rail and the lowest portion of the tunnel, snowshed, bridge or other structure, is less than 22½ ft., as required by the provisions of the Railway Act, the railway company shall, prior to Jan. 1, 1911, erect a suitable tell tale at each side of, and not less than 100 ft. distant from every such tunnel, snowshed, bridge or other structure. Order 10591, May 9, is rescinded.

The Acme Construction Co., Ltd., has been incorporated under the Ontario Companies Act, with a capital of \$40,000, and office at Berlin, to construct and equip railways and all other works, and to deal in railway and builders' supplies. The provisional directors are F. J. Todd, J. H. Wood, and W. J. Moody, Berlin.

Quebec Public Utilities Commission.

In the case of Mercier vs. The Quebec & Lake St. John Co., the Commission has given the following judgment:—The applicant states that he has been a wood merchant at Quebec, for a number of years, that he is in the habit of shipping large quantities of wood over the Q. & L.S.J. Ry.; that the railway only carries the wood twice a week, thereby causing car congestion; that as a consequence the applicant is unable to unload his cars in the 48 hours allowed for such purpose; that the railway obliges him to pay \$1 per car, per day, after the said delay of 48 hours; that this charge is onerous and as a consequence the applicant has been obliged to curtail his business. The applicant asks for an order granting him 72 hours free time after delivery to discharge his cars. It appears that the relations between the applicant and the railway in respect of the matters complained of are governed by the Car Service Association's rules which have been adopted with the Railway Commission's approval after conference with both carriers and shippers, and should not be interfered with without grave cause therefor. Considering that these rules do not appear to have been fairly applied to the applicant's case, and that upon the suggestion of this Commission the railway has agreed to refund the demurrage of \$10 paid by applicant, and to give him fair and liberal treatment under the rules in the future, in which the President of the Association, present concurred. Considering that the applicant has recourse to the Commission at any time should the foregoing arrangement not be fully observed, the arrangement is approved and no extension of time is presently granted.

The Railway Library, 1909.—Under this title S. Thompson, Manager of the Bureau of Railway News and Statistics, Chicago, has brought together a collection of noteworthy chapters, addresses, and papers relating to railways, which have been written or delivered by prominent railway men during the year. There are 17 papers and addresses, or chapters from books, covering such subjects as the pre-railway era in America, the railway situation of today, railways and the Pacific north west, the diminished purchasing power of railway earnings, railroads and the public, railroad problems of today, railway nationalization, and concerning advances in railway rates. The editor contributes an introduction and the statistics of American railways for 1909. The summary of railway mileage in the U.S. contained in the statistics shows 221,132 miles, against 216,460 in 1908, and included are 1,343 miles of lines in Canada operated by U.S. lines in 1909, against 1,273 operated in 1908. The volume is issued by the Gunthorpe Warren Printing Co., Chicago, Ill.

Transportation Building, Montreal.—With respect to the press reports that a transportation building is to be erected in Montreal, and that the principal railway and steamship companies had already taken space in it, we are advised that, so far as the G.T.R. and its affiliated lines and companies are concerned the report is incorrect. A building company has made a proposition to the G.T.R. Passenger Department for the establishment of a ticket office on the ground floor of the proposed building, to be occupied by the City Ticket Agent and his staff, such occupancy to be, in all probability, jointly with other railways entering Montreal.

J. McCraw, General Agent, Central Vermont Ky., New London, Conn., writes:—"I take pleasure in enclosing renewal subscription to your valuable and interesting magazine, the Railway and Marine World."

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Acadia Coal Co.—The Nova Scotia Legislature has amended this company's act of incorporation, passed in 1865, by authorizing the issue of \$2,000,000 first and second preference stock, the latter to be exchanged for ordinary stock. The company has power to construct railways in connection with its collieries. (April, 1908, pg. 275.)

Alberta and Great Waterways Ry.—B. R. Clarke, brother of the President, is reported to have stated recently that the company had not made default in the payment of interest on the \$7,500,000 of bonds. The money was in hand but the company was prevented from paying it over by the political situation in the province. The interest due July 1 was paid by the province, which held the funds produced by the sale of the bonds, and the company was ready to reimburse the Government the moment it was permitted to do so.

Some further litigation is likely to arise out of the formation of the company, G. H. Henwood having been given permission to issue a writ against W. R. Clarke, the President. Henwood is solicitor for A. Hawes, of Toronto, who also has an action against the company. (Aug., pg. 627.)

Alberta Central Ry.—The company has entered an objection with the Department of Railways, to the approval of the Canadian Northern Ry.'s plans for the line from south of Stettler, Alta., to Rocky Mountain House, on the ground that it parallels the line which the A. C. Ry. has entered into a contract to build under the act granting aid to certain railways, from Red Deer to Rocky Mountain House.

A recent press report states that a number of men with 25 teams were set to work recently, between the bend of the Red Deer River, and Red Deer, and that it was proposed to add to the construction forces as fast as possible. J. T. Moore, Red Deer, Alta., is principally interested in the line. (June, pg. 447.)

During the visit of the Dominion Premier and the Minister of Railways, to Red Deer, Aug. 11, the first rails were laid, the visitors driving the first spikes. Local reports state that the line has been surveyed for 200 miles to the south-east, and for 25 miles west of Rocky Mountain House.

Atlantic and Lake Superior Ry.—See Atlantic, Quebec and Western Ry.

Atlantic, Quebec and Western Ry.—Construction is being proceeded with and during July the steel work has been placed across the Big and Little Pabos Rivers, and track is laid and ballasted as far as Grand River, Que. From that point to Gaspé, work is being actively pushed and it is expected that the grading and trestle work and most, if not all, of the bridge work will be completed by the end of the season.

When we were advised, July 30, the Atlantic and Lake Superior Ry. was still being operated as a separate line, but trains were being run through from Matapédia to Newport on the Atlantic, Quebec and Western Ry., the officials in charge of the line are, Atlantic and Lake Superior Ry.: General Manager, C. R. Scoles; Roadmaster, B. Robinson. Atlantic, Quebec and Western Ry.: General Manager, A. Lemieux, Montreal; Superintendent, F. C. Bouvier; Auditor, J. S. Gordon; Chief Engineer, W. L. Browne. New Canadian Co., (operating the A., Q. and W. Ry., until completion): Managing Director, C. B. K. Carpenter, Montreal; General Manager in charge of construction, C. R. Scoles; Accountant, W. H. Giroux. Except where otherwise stated, the headquarters of these officials are at New Carlisle, Que.

The A. and L. S. Ry. has, since the above was written, been transferred to the Quebec Oriental Ry., which is a provincial company, the charter of which is held by the Atlantic, Quebec and Western Ry. (June, pg. 447.)

Behring Strait Tunnel.—Cable dispatches from Paris, France, Aug. 9, state that a corporation is being formed for the construction of a tunnel under Behring Strait. The plans are said to provide for utilizing two small islands in the straits as ventilating towers, thus dividing the tunnel into three sections of about 10 miles each. F. Deloncle, formerly of the French diplomatic service, and J. Delobel, a capitalist, are mentioned as being interested, along with an unnamed retired president of a U. S. railway.

British Columbia and Alaska Ry.—J. Walkenstein, President, had an interview recently with the B.C. Premier, in which the question of the immediate construction of the line was discussed. The line which it is proposed to build will extend from Vancouver, via Lytton and Fort George to the northern boundary of the province. It is also proposed to build a line under other charters from Telegraph Creek to Skagway, Alaska, connecting with the north and south line. The right of way of this east and west line has been located and it is expected that construction will be started this year. A reconnaissance survey of the Vancouver-Fort George section of the north and south line has been completed by L. M. Rice of Seattle. In a subsequent interview the president said arrangements had been completed in London, Eng., for the financing of construction, the estimated cost of which was \$25,000 a mile. H. Villard, Jr., son of H. Villard, who was prominent in the building of the Northern Pacific Ry, is also interested in the company. (Aug. pg. 627.)

Burrard Inlet Tunnel and Bridge Co.—The municipality of North Vancouver District, B.C., passed a by-law July 25, to purchase \$250,000 of shares in the company, and to pay for the stock by debentures. The agreement with the corporation provides that the company shall erect a bridge across the second narrows of Burrard Inlet from the Burnaby municipality and North Hastings to North Vancouver and suitable railway works to give connection with railways on the south shore, for the opening up and development of the north shore of Burrard Inlet. The company agrees that the erection of the bridge shall be proceeded with within 10 months after the bylaw has been assented to by the Lieut.-Governor, and to have it and at least four miles of connecting railways completed within three years. The reeve of the municipality for the time being is to be a director of the company. The ratepayers of North Vancouver voted on similar bylaws Aug. 13, the amount of shares to be taken being \$100,000. (June pg. 447.)

Detroit River Tunnel.—While the first train went through the tunnel under the Detroit River, between Detroit, Mich., and Windsor, Ont., July 22, the first passenger train, drawn by an electric locomotive went through July 27. The train carried U. S. and Canadian officials of the Michigan Central Rd., which owns the tunnel.

Dominion Atlantic Ry.—The Nova Scotia Legislature has guaranteed the principal and interest on the second debenture stock not exceeding £190,000. Money raised by the sale of the stock shall be applied subject to an agreement with the Government and it is understood that it will be used for the construction of a line to be known as the North Mountain Division. The Legislature also passed an act providing means for the payment by the Kent county municipality of the amount expended, or

to be expended, on the purchase of land for track and station purposes and terminals. The lands to be taken shall not exceed ten acres for terminal purposes, and for station purposes, 1,000 ft. in length by 200 ft. wide. The line is to be built by June 1, 1912. (June, pg. 447.)

Graham Island.—Under instructions from the B. C. Government, C. L. McCammon, C.E., has made an examination of Graham Island, the principal island of the Queen Charlotte Island group, for the purpose of reporting upon certain proposals which have been made to the Government for the construction of railways there.

J. G. Johnson has paid fees on three areas of coal land totalling 43,520 acres for a Vancouver syndicate, in the vicinity of Sandstone Point, Masset Inlet and Naden Harbor; the Western Steel Co. is reported to have purchased 25,800 acres of coal lands in the vicinity of Naden Harbor and Parry Passage, and a Seattle, Wash., syndicate has also holdings on the island. (See Queen Charlotte Island Ry., May, pg. 353; Graham Island Ry., May, pg. 351, and Island Valley Ry., May, pg. 351.)

Great Northern Mining and Ry. Co.—This is the title by which the Great Northern Mining Co., a company incorporated under the Nova Scotia Companies Act will in future be known. The act passed last session of the Nova Scotia Legislature also provides that the company may build a railway from the Great Northern Plaster Works, Belle Marche, Cheticamp, northwesterly for about three miles to Eastern Harbor, with such spur lines as may be necessary for its works, and to connect with lines already built or to be built. (June, pg. 449.)

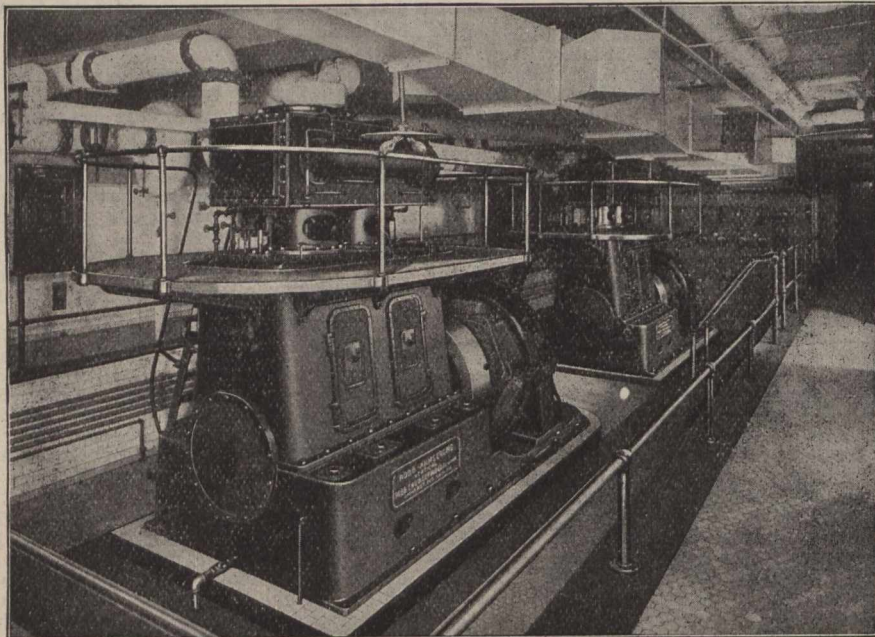
Halifax and Eastern Ry.—We are advised that Griffiths & Co., London, Eng., have the general contract for building the line. This firm has just completed building the Chilean-Andean Ry., in South America, and N. Griffiths, on completing an inspection of that line, which he was reported to be making July 30, will come to Halifax to take charge of the construction. Tenders for sub-contracts will, it is expected, be asked for shortly. It is quite possible, we are advised, that considerable construction will be done before the winter sets in. The company's securities have all been underwritten in England.

The company is reported to have leased the property at the corner of Portland and Water Sts., Dartmouth, as headquarters for its engineering staff. The engineers are working from Dartmouth over the route as laid down in the route maps filed with the Department of Railways at Ottawa, and it is expected they will have completed their work early in Sept. A. W. Kirkpatrick, of Kingston, Ont., went to Halifax, July 29, as consulting engineer to finally pass upon the plans as they are prepared by the staff. An application has been made to the Department of Railways for a contract under the act granting aid to certain railways, which provides for subsidies for the routes adopted. (Aug. pg. 627.)

Application has been made to the Department of Marine by the company's representatives for permission to purchase the naval property at Tufts Cove, about three miles from the Dartmouth ferry. A survey has been made at this point for a bridge across the narrows to give direct connection with Halifax. The town council has passed a bylaw granting the \$50,000 bonus and other privileges asked for by the company, and this was submitted for approval to the ratepayers, Aug. 22.

A. K. Kirkpatrick, professor of Engineering, Queen's College, Kingston, Ont., consulting engineer, stated Aug. 12, that plans were being prepared and other work was being done in the of-

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— OFFICE AND WORK —

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ices at Dartmouth, in order that local contractors would be able to submit tenders for portions of the work. A beginning, he added, would undoubtedly be made by Sept. 1. W. A. Hendry is Chief Engineer in charge of surveys.

Halifax and South Western Ry.—In a recent interview at Halifax, W. Mackenzie said there was nothing new in regard to the line. Ore trains were being run almost daily over the Victoria Beach section from the iron ore mines at Torbrook to the shipping pier at Port Wade. He had just returned from an inspection over the line, including the branch to the Torbrook mines. (June, pg. 449.)

Hudson Bay and Pacific Ry.—The Chief Engineer received a letter from the Managing Director of the H. B. and P. Development Co., London Eng., Aug. 2, confirming a cable to the effect that the board authorized the statement that construction would be started on the line from Prince Albert, Sask., toward Hudson Bay during August. The letter added that the line would be built from Prince Albert to Fort Churchill, and the work completed with the least possible delay. A press dispatch, Aug. 2, says the route is laid out ready for the construction gangs for 85 miles from Prince Albert, and that further mileage is being located. A later dispatch said the General Manager, H. Spicer, was expected in Prince Albert by the end of August to initiate construction work, and that all arrangements had been completed for the grading for a considerable mileage, and for the laying of about 20 miles of steel this year. (Aug. pg. 627.)

Intercolonial Ry.—The Nova Scotia Legislature has amended Chap. 98, of 1909, respecting the cost incurred by North Sydney for the extension of the Intercolonial Ry., to that town, by extending the time in which the town may borrow the money for such purpose, from 1½ to 2½ years.

Tenders are under consideration for the erection of a lumber store at Moncton, N. B.

We are advised that work has been started by Morrison & Clark, on the Chatham-Nelson cut off in New Brunswick. — Torrance is engineer in charge.

Tenders have been called for the rebuilding of the roundhouse, repair shops and station recently destroyed by fire at Campbellton, N. B. The Government has set aside \$250,000 for the work. (Aug. pg. 629.)

International Ry. of New Brunswick.—A contract has been entered into under the act granting aid to certain railways, respecting the building of 3.50 miles of the line which the subsidy voted by the Dominion Parliament in 1908 did not cover.

The Van Buren-St. Leonard's International Bridge Commission will receive tenders to Sept. 9 for the building of a highway bridge over the St. John River between St. Leonard's, N.B., and Van Buren, Me. The bridge will be 762 ft. long between back walls, and about 2,200 cubic yards of masonry will be required for the substructure, which has to be completed by Dec. 1, and is to be sufficient to carry a superstructure intended for carrying the tracks of a steam railway, as provided for in the terms of the subsidies voted by the Dominion Parliament and by the State of Maine. At present it is only designed to put up a superstructure to carry ordinary highway traffic, and this is to be completed by April 1, 1911. This is the bridge which it is expected will be used by the International Ry. of New Brunswick, now being completed between Campbellton and St. Leonard's, to make connection with U. S. railway systems at Van Buren, Me. (June, pg. 449.)

Inverness Ry. and Coal Co.—The Nova Scotia Legislature has authorized Inverness county to extend the time within which the railway, for which the country

voted a subsidy, may be constructed. (June, pg. 449.)

Joliette and Lake Manuan Colonization Ry.—Route maps have been approved by the Department of Railways, for the projected railway for 108 miles from Joliette to Lake Manuan, Que. A plan was also filed with the Board of Railway Commissioners Aug. 3, showing a line from Joliette to Weymontachene, on the National Transcontinental Ry. The route as far as Lake Manuan has been approved by the company's engineers, and the location surveys for the first 10 miles completed. (Aug. pg. 631.)

Kettle Valley Lines.—Work was started towards the end of July at Merritt, B.C., on the extension of the line up the Coldwater Valley, the contract for the building of which has been let to Macdonnell, Gzowski & Co., Vancouver. Chief Engineer McCullough and — Coley have charge of the survey which is reported to be well forward. The line follows the east bank of the river as far as possible, but in order to secure the lowest possible gradient, several bridges will be necessary. The section under construction will be about 30 miles long. A sub-contract is reported let for the first 10 miles to A. V. McDonald, and P. Gorman, and Jas Macdonnell says the rest of the line will be put in hand as fast as possible. President J. J. Warren and Chief Engineer McCullough met the Penticton council recently. The President stated the company desired to obtain the right to cross certain streets in the town, a grant of foreshore from Winnipeg St. to Penticton Creek, and a flat rate for taxation for 20 years. It was proposed to make Penticton a divisional point, and 15 acres would be purchased for a roundhouse and machine shops. The plans laid before the council by the Chief Engineer showed that the line would follow the lake and come to Trout Creek, where probably a spur would be built to the lake. From West Point the line would begin to climb westward. After some discussion it was decided that a by-law would be submitted to the ratepayers fixing the taxation at \$250 a year. The line between Midway and Merritt, President Warren stated, in an interview at Merritt, July 29, would be completed and in operation within 18 months. (Aug. pg. 629.)

Little Nation Ry.—The Quebec Legislature has approved the change of location of the projected line from that mentioned in sec. 7, chap. 86, Ed. VII., to:—From between Thurso and Montello on the Ottawa River to Cheneville, and northerly to Lake Nomingue, near the C.P.R.; from near Cheneville to Arundel, connecting with the Canadian Northern Ry., and northerly crossing Kiamika tp. and along the du Lievre basin to the G.T.P.R. It is provided that in the basin of the Lievre River that the line shall not be built more than a mile from the present Roman Catholic churches in Kiamika, Campbell and Pope tps. The company is also given an extension of time within which it may construct its railway. (June, pg. 451.)

Mabou Coal and Ry. Co.—The names of W. M. Fraser, Halifax, and R. P. Fraser, Pictou, N. S., have been substituted for those of W. P. Deppe and C. P. Garvie as provisional directors by the Nova Scotia Legislature. The company was also granted an extension of time within which it may build its authorized lines. (June, pg. 451.)

Manitoba and Keewatin Ry.—An agreement dated June 15, between the company and the Trust and Guarantee Co., has been deposited in the office of the Secretary of State at Ottawa.

Manitoulin and North Shore Ry.—We are advised that the extension from Gertrude Mines to Crean Hill, Ont., was

opened for traffic July 20. (Aug., pg. 629.)

Maritime Coal and Ry. Co.—The Nova Scotia Legislature has repealed sub-sec. G of section 2, chap. 153 of 1903-04, and substituted another which authorizes the company to build a line from Chignecto Mines to Maccan River on the headwaters of the Bay of Fundy, and from Chignecto Mines to the Maccan River, to Cold Spring Head or other point on the Northumberland Strait, to be operated by electricity or steam. (June, pg. 451.)

Michigan Central Rd.—Work has been started upon the erection of a bridge at the crossing of the Welland Canal. The bridge will be 350 ft. long and will leave a clear width of 150 ft. over the canal. The piers upon which the bridge will be built will be 55 ft. deep, which will allow the canal to be deepened to 35 ft. The swing span of the bridge will be operated by electricity. (July, pg. 549.)

Montreal and Toronto Underground Lines and Terminals.—Representatives of the International Bond and Share Co. of New York have submitted offers to the city councils of Toronto and Montreal for the construction of underground railways and terminals in those cities. A. P. Gillies, C.E., who was engaged on the construction of the terminals at Tacoma, Wash., and Cincinnati, Ohio, stated in Montreal recently that all the company wanted was franchises from the cities, and it would provide all the terminal facilities required in either city.

Northern New Brunswick and Seaboard Ry.—In a recent interview, J. J. Drummond of the Canada Iron Corporation, stated that he expected the line from the Nipisiguit iron ore mines to the Intercolonial Ry. would be opened for traffic by the end of August, and that shipments of ore would be made immediately thereafter from the company's ore handling plant at Newcastle, N. B. (Aug. pg. 629.)

Pincher Creek, Cardston and Montana Ry.—Press reports from Pincher Creek, Alta., Aug. 1, stated that J. A. Taylor of New York, and others interested in this projected railway have opened an office in the town, and that a survey party is engaged locating a line to the International boundary. A contract is reported let for certain construction work to J. A. McGuire, which is to be started forthwith.

A later press dispatch states that two additional survey parties have been placed in the field, and that the whole of the survey work is being supervised by — Fine, of Philadelphia, Pa. (Aug., pg. 629, and Aug., 1909, pg. 575.)

Port Moody, Indian River and Northern Ry.—See C.P.R. Betterments, Construction, etc. (Aug., pg. 631.)

Portland Canal Short Line Ry.—At a public dinner at Stewart, B.C., July 25, D. D. Mann said he had often been asked why he was building this railway. It was because there was an ocean port at one end of it, and a mining country at the other—an ideal transportation proposition. In addition to that, over in the Naas River Valley, there was a good farming country, with an abundant supply of coal, which it was hoped to reach with this railway in the near future. Whether the line would go through the Bear River pass or not he was not prepared to say, but the reports with regard to the pass were very favorable, and on his return he intended to send engineers to investigate the pass. He hoped to be able to build through it, and on the east to connect with all the great railway lines that reached the Atlantic coast, and also those north to Yukon and to Alaska. In conclusion he said:—"I have spent the last 30 years of my life in pushing back the fringe of civilization west and north. During that time I have been a pioneer in near-

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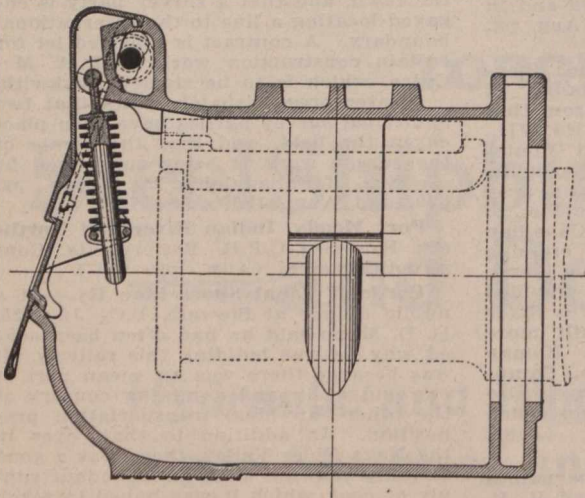
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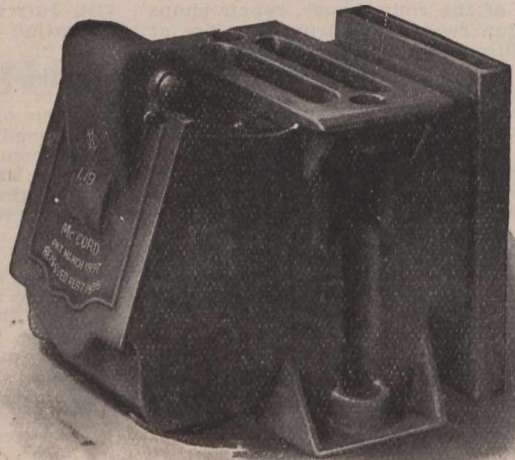
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ly every sense of the word. When I reached Winnipeg at Christmas, 1879, it was in advance of railway construction. With my own hands I prepared the railway ties which carried the first locomotive over the C.P.R., into that city. Now I have come to the Pacific Coast to help you pioneers to push the fringe of civilization eastward, and I assure you that we hope to do it." (Aug., pg. 629.)

Quebec Oriental Ry.—See Atlantic, Quebec and Western Ry.

Queen's Central Ry.—The provisional directors of this company, incorporated by the Nova Scotia Legislature are: J. G. Morton, F. S. L. Ford, Milton, N. S.; R. Barthing, Liverpool, N. S. It is authorized to build a line from Brooklyn, in Queen's County, along Liverpool harbor and river to Milton, and thence in a northerly direction to the Halifax and South Western Ry., between Pleasant River and Caledonia, to be operated either by steam or electricity. (June, pg. 451.)

Reid Newfoundland Co.—There were 2,100 men engaged in building the Bonavista Branch when W. D. Reid, President, recently made a trip of inspection over it. He was able to travel in his private car over the first 20 miles of the branch, and he inspected the rest of the route. There is a good deal of heavy rock work to be done, but it is expected to have it fully completed by the end of the year. (Aug. pg. 631.)

Temiskaming and Northern Ontario Ry.—Col. Matheson, Ontario Treasurer, on his recent return to Toronto, after an inspection of the T. and N. O. Ry., expressed his satisfaction with the line and its operation. The location was being changed in one or two places, and a bad curve at mileage 61 is to be cut out altogether at an early date. The question of the opening of the Kerr Lake branch is under consideration.

The commissioners having decided not to build a line into the Porcupine district at present, the local people have taken the matter up, and after some negotiations with the Ontario Government, a special charter for the operation of a line is to be given to A. Ferland, C. A. Richardson, W. C. Chambers, A. J. Burdette and W. A. Gordon. The branch is to start from Matheson westward to the Timagami country, and will be constructed as a standard gauge line, steam being employed as a motive power, unless electricity should be available. Survey parties were sent out to locate a route Aug. 1.

The line will be about 35 miles long, and, according to present reports, will have easy gradients. Construction is to be completed by Jan. 1911. It is to be built as a feeder to the T. and N. O. Ry., and no traffic is to be diverted to the G. T. P. R. (Aug. pg. 631.)

Toronto, Hamilton and Buffalo Ry.—We are advised that Hamilton officials are not aware of any project for the construction of a passenger station in that city in which the T. H. and B. Ry. is interested. This statement has reference to recent press reports that a project was under consideration for the erection of a large joint terminal in the city. (Aug., pg. 631.)

Toronto Industrial Spurs.—Tenders will be received by the Toronto board of control to Sept. 6, for the supply of 20,800 ft. of relaying rails, 400 oak and 4,800 cedar ties, for the spur line which the city proposes to build to the Ashbridges Bay district of Toronto.

Vancouver, Westminster and Yukon Ry.—The company has been notified by the B.C. Government that when it is ready to proceed with construction, and has sufficient funds to complete its undertaking, the Government will deal with the proposal to grant it the assurance of facilities of approach to the proposed bridge over the second narrows in Vancouver harbor. (May, pg. 355.)

The Value of Accuracy as defined by a General Manager.

G. J. Bury, General Manager of the 6,443 miles of lines which comprise the Canadian Pacific Railway's vast system from Fort William on the east to Vancouver Island on the west, has risen to his present position by sheer force of ability and hard work. Starting his railway career as a stenographer for that master mind of Canadian railways, Wm. C. Van Horne, in the eighties, and traveling with him over the whole system as it rapidly grew, he received an initial training such as falls to the lot of few young men, and with his powers of absorption, he took full advantage of it. In his first titled position, acting Superintendent of Dining, Sleeping and Parlor Car Service, he "made good," and rapidly earned promotion which placed him as Assistant Superintendent at Chalk River. In succession, he became Superintendent, first at North Bay, then at Fort William, and afterwards at Cranbrook, P.C. Returning east, he was appointed Assistant General Superintendent of the Lake Superior Division, then General Superintendent of the same division. The next move took him back west to Winnipeg, as General Superintendent of the Central Division. Then he was appointed Assistant General Manager of the Western Lines, and later General Manager of the same. Mr. Bury has been a subscriber to the Railway and Marine World since its inception, and is therefore in a position to speak authoritatively of it. Following is a letter he addressed to our Managing Director recently:—

Winnipeg, Aug. 3, 1910.

Dear Mr. Burrows,—The curse of our age is inaccuracy, or rather superficiality. In the business world, nine men who come before you have only skimmed the surface of their subject. They are like the busy little bee which fits from flower to flower, sucking the fragrance from each, never taking any thought of the roots. The tenth man has his case prepared, and he does not insult your intelligence by half truths and much verbiage; he charms it by sound argument deduced from well verified premises. Because the Railway and Marine World, like the tenth man, is always accurate, always concise, and always decisive, I esteem it.

I trust every young railway officer will learn from it the example of thoroughness and practicability and to be succinct.

Yours faithfully,

G. J. BURY.

The accuracy of the Railway and Marine World's information, attained by the expenditure of much time and money in organizing a thorough system of gathering official railway news and data, is its most valuable asset. The testimony to the value of this feature, which comes to us almost daily from subscribers among every class of railway officials from Newfoundland, from every Province of the Dominion, and right through to the Yukon, is ample compensation for the cost which such accuracy entails. During the years that passed before such a system could be perfected, we said little in these columns about it, recognizing the advisability of not going duck shooting with a brass

band. Now that the system has been perfectly established, we feel we may dwell on it a little without being accused of egotism.

Mr. Bury expresses the hope that young railway officers will learn from our columns the lesson of thoroughness and practicability, and it is doubtless owing to such a desire on the part of very many of them, that our circulation is not confined to railway officials, but embraces a large number of clerks and other young men, who, in order to merit promotion, wish to keep thoroughly posted on every phase of Canadian railway work, to study the problems with which the various departments have to cope and who know that they can only do so through the columns of Canada's only railway paper.

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 Canadian Westinghouse Co. has recently issued circulars 1017, describing the Westinghouse Potential Regulators, and 1155, relating to the series arc lighting system with Cooper-Hewitt rectifier.

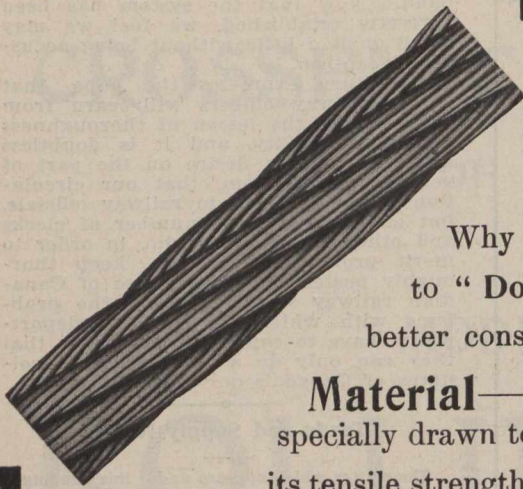
The Commercial Acetylene Co.'s booklet H, describes in detail, the company's Standard locomotive headlight equipment, with illustrations of the various types. The car lighting equipment is fully described in booklet C. Both pamphlets will be supplied on application.

The Brown Hoisting Machinery Co., Cleveland, O., has issued a catalogue of its modern ore and coal handling machinery, consisting of a series of fine illustrations of recent installations. The designs of the machinery and the methods adopted, are brought into strong relief, when compared with the means utilized about 20 years ago, of which a number of illustrations are also given. The catalogue contains no detailed description of the machinery, which will be given, by the company, to those interested.

The Montreal Steel Works, Ltd., which some time ago purchased property at Longue Pointe, east of Montreal, to be used for an extension of its plant, has decided, owing to the increased demand for its products being now beyond its capacity, to build a new plant, which, when completed, will have a capacity of 20,000 tons a year. It is proposed to provide \$1,000,000 by the issue of bonds in this connection, and the company estimates that when the new works are completed and organized it will be able to increase its total net profit to not less than \$300,000 a year. To defray the cost of land, buildings, etc., in the immediate future, \$750,000 will be required, and it is proposed to issue bonds for that amount as soon as possible, and for a further \$250,000 later on.

Railway Subsidy Contract.—The Department of Railways has entered into a contract with the International Ry. of New Brunswick under the act granting aid to certain railways for the building of 3.50 miles of line not covered by the subsidy voted by the Dominion Parliament in 1908.

A survey party is working from St. John, N.B., in connection with the geodetic survey of Canada. Two other parties are in the field, one in northern Ontario and the third in Manitoba.



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G. T. BELL, Asst. Pass. Traffic Manager, MONTREAL.

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C.P.R. Betterments, Construction, Etc.

St. Andrews, N.B., Hotel.—It is reported that arrangements are being made for the addition of another large concrete wing to the Algonquin Hotel, St. Andrews, N.B.

Brownville, Me.—In the course of a fire in Brownville, Me., July 28, the company's repair shops were destroyed.

St. Maurice Valley Ry.—The extension of the St. M. V. Ry. from Shawinigan to Grand Mere, Que., about seven miles, has been completed. The line was turned over to the operating department Aug. 14, and a regular train service run through from Three Rivers. This gives Grand Mere a direct connection over the C.P.R. with Montreal and Quebec, in addition to the service over the Canadian Northern Quebec Ry.

Place Viger Station and Hotel.—A property known as lot 105 in St. James ward, Montreal, just east of Place Viger station was reported Aug. 5, as having been sold to the C.P.R. for \$20,000.

Windsor St. Station, Montreal.—Contracts have been let to the Dominion Bridge Co. for the steel work, and to the C. E. Deakin for the masonry and general work on the annex to the Windsor St. station, Montreal. The work is to be completed by Nov., 1911. The estimated cost covered by these contracts is about \$1,250,000. The contract let to the Bishop Construction Co. for certain other work in connection with the building has been completed.

Ottawa Entrance.—In connection with the company's project for rearranging its lines in Ottawa, including the construction of a tunnel on a section of the Rideau Canal, which is now under consideration, a suggestion has been made somewhat modifying the proposal, as originally submitted, but making it possible to run the Toronto-Montreal trains through the city instead of as now making Smiths Falls the point at which Ottawa passengers leave and join the Toronto-Montreal trains.

The company has secured options on certain properties adjoining its Sussex St. yards, the purchase price being fixed at \$125,000. It is understood that these properties are being acquired for yard extension.

Georgian Bay and Seaboard Ry.—The question of the entrance of this C.P.R. line from Victoria Harbor into Peterboro, Ont., is being discussed between the company's officials and the council. The company's plans show that four streets will be closed and a subway constructed. As the result of a conference it was decided to amend the plans so that only Chamberlin St. would be closed, and the subway built at the corner of Romaine St. and Monaghan road. The company also agreed to give the city a right of way to the river, but an agreement could not be reached as to the price to be paid by the company for the water front land west of the present C.P.R. spur line. The committee of the council asks \$15,000, and the company offers \$6,000, which would represent the cost of filling it in.

Toronto Viaduct-Yonge St. Bridge.—The Imperial Privy Council has granted special leave to the C.P.R. to appeal against the orders of the Board of Railway Commissioners as to the building of a viaduct along the water front in Toronto, and a bridge to carry Yonge St. over the tracks at the foot of Yonge St.

Toronto Westerly Second Track.—Some gangs of men have been started grading westerly from Lambton station to the Humber River, south of the existing track, and an engineering party is at work taking levels and putting in stakes for a second track from the west bank of the river to Islington, where the

newly completed line to Mimico starts. The existing second track from Toronto ends east of Lambton station.

Islington-Mimico Line.—Tracklaying has been completed on this short branch line connecting the Toronto-Windsor line with the G.T.R. at Mimico.

St. Thomas to Port Stanley, Ont.—A suggestion has been made that the city council of St. Thomas, which has a charter to build an electric railway to Port Stanley, make an arrangement with the C.P.R. for building the line. The idea is that the city will run a passenger service over it in connection with the street railway, the C.P.R. operating the freight trains.

A London, Ont., report states that the C.P.R. has been making enquiries with a view of obtaining running rights over the London and Port Stanley Ry., owned by the city of London, and operated under lease by the Pere Marquette Rd. The reason for this move is said to be that Port Burwell harbor is not easy of navigation owing to quicksands, and that constant dredging is necessary to keep it open. The C.P.R. operates a car ferry service between Conneaut, Ohio, and Port Burwell, for the coal traffic, which, if the proposal is carried out, would be transferred to Port Stanley.

Lake Superior Division.—Considerable work is being done this season in the way of general improvements upon this division. New rails are being put in, the track rebalasted, trestle bridges are being filled in, and other bridges are being rebuilt.

Winnipeg-Brandon Second Track.—We are advised that it has been arranged that the contractor for the second track work between Winnipeg and Portage la Prairie, Man., is to continue the building beyond the latter point towards Brandon. No limit has been fixed as to the point he will reach this season. It is not the intention to lay any steel beyond Portage la Prairie this year.

Brandon Southeasterly.—The Department of Railways has approved a route map showing a line from Brandon, Man., southeasterly to tp. 6, range 10, w.p.m., 83 miles.

Osborne, Southwesterly.—The route map has been approved by the Department of Railways for a line from Osborne, Man., southwesterly to tp. 6, range 6, w.p.m., 41.9 miles.

Weyburn-Lethbridge Line.—Replying to a request from the Lethbridge board of trade that grading on this line be started from the Lethbridge end to meet the gang working westerly, Vice President Whyte stated recently that he was not favorable to the idea. It was stated in the request that farmers in the district were willing to give a free right of way if the line were completed this year. The owners of 67 quarter-sections along the line had signed the offer to give this right of way through their land.

Branch to Aldersyde.—Vice President Whyte recently wrote the Lethbridge board of trade stating that it had been decided to complete the grading of the line from Carmangay to Aldersyde, Alta., this season. A contract was subsequently let to Foley, Welch and Stewart for the work on the 26 miles between the two points. A station is being built at Carmangay.

Strathcona-Edmonton Bridge.—The contract for the erection of the substructure of and the approaches to the bridge to be built across the Saskatchewan River between Strathcona and Edmonton, Alta., has been let to J. Gunn & Co., Winnipeg. Work is to be started at once.

Crow's Nest Pass Line.—The 70 lb. steel rails on this line between Fernie and Galloway, the starting point of the Kootenay Central Ry., are being replac-

ed by 85 lb. ones. In connection with this work the sharp curves are being cut out, and the gradients are being reduced.

Revelstoke-Big Bend, etc.—In connection with press reports that the company is having a survey made in the Beavermouth district for a line along the Columbia River around the Big Bend to Revelstoke, B.C., we are advised that it has men looking over the country in the vicinity of its lines studying settlements and the necessity for providing railway service.

Kamloops, B.C.—The company has acquired about a mile of water front property in Kamloops, at a reported cost of \$100,000. It is stated that the object of the purchase is to provide a new right of way, the company's line at present running along the principal business street. A considerable amount of work is being done in the way of enlarging and improving the yard facilities.

Port Moody, B.C.—We are advised that the line under construction at Port Moody, B.C., is a spur for the C.P.R., about 3.50 miles long, from the main line to the north arm of Burrard Inlet. The contractors are Macdonnell, Gzowski & Co., Vancouver, and P. M. Smith is engineer in charge of construction. The Port Moody, Indian River and Northern Ry., which was at first reported to be interested, has nothing to do with the line. That company is owned locally, C. T. Dunbar and associates, who are large land owners in the vicinity, being in control. Nothing has been done, nor will be done, we are advised, with this charter, the C.P.R. having secured a prior location.

Hotel Construction.—A large amount of building work is being done on the C.P.R. hotels in Western Canada during the current season. A new wing to the Empress Hotel at Victoria, B.C., is expected to be completed by Oct. 1. At the Vancouver Hotel, a wing containing 60 bedrooms, with 50 bathrooms, a banquet hall and ballroom, is expected to be completed about Sept. 1. At Lake House an addition of 100 rooms will be started as soon as the hotel is closed for the tourist season. At Banff work has been started on an extension to contain 50 rooms, and a large swimming pool will be constructed. At Sicamous Jct., an extension of 40 bedrooms, with 20 bathrooms, has been completed, and a new hotel of 50 rooms, with 30 bathrooms, is under construction at Proctor.

Esquimalt and Nanaimo Ry.—We are advised that nothing has yet been done in connection with the proposed Cowichan Lake Branch.

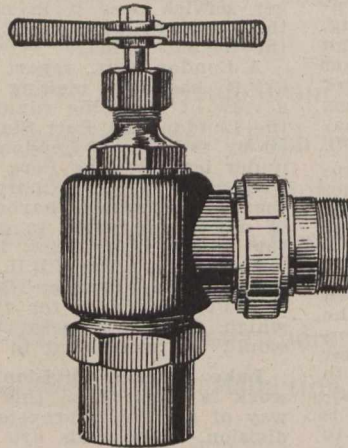
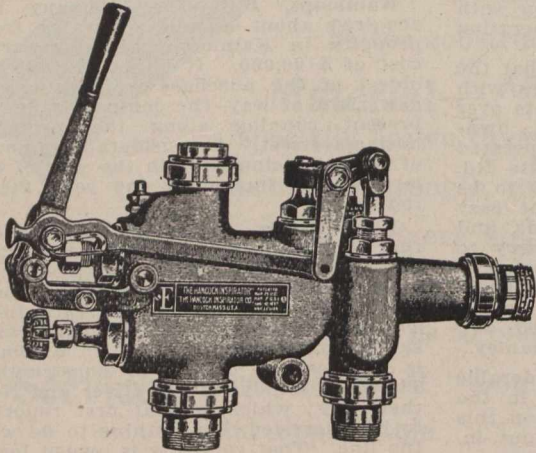
The Canadian Coal Corporation of New Brunswick, Ltd., has been incorporated under the N.B. Companies Act, with a capital of \$299,000, and head office at Salmon Harbor, to take over the property and assets of the Canadian Coal Corporation, (incorporated in the State of Maine; to develop coal and other properties, and in connection therewith to construct and operate railways, by steam, electricity or other motive power; to erect telegraph and telephone lines, and to own and operate steam and other vessels for the conveyance of passengers and freight. The provisional directors are F. P. Shaw, St. John; T. Beckwith, Providence, R.I.; C. Rosenthal, Boston, Mass.; W. G. Lotze, New Haven, Conn.; T. T. Hazlewood, New York City.

T. McHattie, Superintendent Motive Power and Car Department, Central Vermont Ry., St. Albans, Vt., in sending in his renewal subscription writes:—"As is the usual experience, I find the Railway and Marine World very interesting. I wish you continued success."

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Canadian Northern Ry. Construction, Etc.

In the course of a recent interview in Montreal, President Mackenzie said that during four and a half years the company had done nothing on its main line, but in that time it had built 1,200 miles of branch lines. This policy of keeping the branch lines well along, he said, caused the success of the C.N.R. as a freight carrier on the plains and from Lake Superior westward. There had been already laid this year about 260 miles of track in Alberta and Saskatchewan. In addition to the 60 mile contract on the Pacific section of the line, the company had also let a contract for the construction of 140 miles from Edmonton, and the work would be pushed vigorously from both ends, till the track-layers met somewhere in the Rocky Mountains in about three years time. It might be possible also about the same time to complete the connection between the head waters of Lake Superior and the St. Lawrence River.

Canadian Northern Quebec Ry.—The question of the location of the company's shops in the city will again come up for consideration at the Sept. meeting of the Quebec council.

The branch line from near L'Épiphaine to Rawdon, 5.7 miles, has been completed and will be opened for traffic shortly. It is over 50 years ago that a railway connection was first projected at Rawdon, by the Rawdon and Industry Ry., but until the C.N.Q. Ry. built this branch line nothing was ever accomplished in the way of giving Rawdon railway connection with the outside world.

W. Mackenzie, President, left Montreal Aug. 12, after spending four days there. On Aug. 10 he had a lengthened conference with Sir Thos. G. Shaughnessy, President C.P.R., but what the subject of the conference was has not been made public. Press reports state that it had to do with an arrangement for joint terminal facilities in Montreal and Toronto, and for the settlement of a number of matters upon which the officials of the two companies in different places are not in harmony.

Canadian Northern Ontario Ry.—Work on the first section of the line from Toronto to Ottawa is well advanced as far as Trenton, Ont., to which point the first contract let carries the work. The first bridge in the Don valley, at Leslie St., Toronto, has been completed, and the rails were expected to be laid across it and through the ravine as far as Woodbine Avenue by Aug. 20. About a mile east of Leslie St., is a big cut which will take about a month of steam shovel work to get through. From this point track can be laid on the Dawes road, where the abutments for the superstructure of the overhead bridge have been completed. From there to Scarboro the work is nearly completed, and a good deal of track has been laid easterly from Scarboro. It is expected that the bridge work in York and Scarboro townships will be completed and the track laid early in Oct. The grading has been completed to the town limits of Trenton, and track has been laid along portions of the 100 mile section. The connecting up of these different sections is being proceeded with. The station and other buildings are also in course of erection.

A resolution has been passed by the Peterboro council authorizing Alderman Phalen to act with the Industrial Committee for the purpose of endeavoring to secure the entrance of the C.N.O. Ry. into the city.

H. K. Wicksteed, who has charge of locating the line between Sellwood and Port Arthur, Ont., stated recently that the route was almost all surveyed, and it was altogether likely that construction would be started in the spring. A

Port Arthur dispatch of Aug. 12 stated that three parties of engineers are engaged in the work of completing the location of the line, one having its quarters near Long Lake, the second west of that point, and the third near Sellwood. The question of the entrance to Port Arthur from the east is under consideration by the city council, the plans filed showing a route along the shore of the bay on the lake side of the C.P.R. from the C.N.R. station, through to Bare Point, not being altogether approved of.

The plan, profile and book of reference of the location of the James Bay Ry., now the C.N.O. Ry., through the county of Laval, Que., mileage 38 to 40, Hawkesbury east, has been deposited in the Registry office at Ste. Rose, Que. This is a section of the proposed new short line from Hawkesbury, Ont., to Montreal.

Duluth, Winnipeg and Pacific Ry.—The tenants of the property which the company has acquired in West Duluth were given 10 days notice to vacate June 26. H. T. Hazen, the company's Chief Engineer, said, Aug. 12, that work on the 500 ft. tunnel was to be started at once. Construction camps have been established every four miles along the line between Duluth and Virginia, Minn., and work is being proceeded with rapidly.

Canadian Northern Ry.—A contract for the first section of the new roundhouse at Port Arthur has been let to S. Brown, Winnipeg, who has started work. The foundations will be of piles and concrete, the superstructure of bricks. The capacity of the section to be built will be 10 locomotives, and it is to be completed by Oct. 31.

The excavation for the Pembina St. subway at Winnipeg has been completed, and the cement work is being rapidly gone ahead with. It is expected that the work will be completed by Sept. 30. Application is being made for authority to extend an industrial spur line now terminating between Rosser Ave. and Mulvey Ave., in block 10, D.G.S., 32, St. Boniface, plan 208, across Mulvey Ave. and Fleet Ave., and to extend to the lane between Garwood and Fleet Avenues, Winnipeg. A permit has been granted by the Winnipeg city council for the building of coach shops in the west yard to cost \$42,000, the contractor for the work being the Carter-Halls-Aldinger Co.

The Winnipeg city council, Aug. 6, referred the company's application respecting an elevated line at the north end of Norwood bridge to the City Engineer and City Solicitor for a report. The plans show an elevated structure from where the line leaves the Assiniboine River to an eighth of a mile south easterly. The structure would cross Main St. and Bell Ave., 14½ ft. above the street level, thus permitting street cars to pass underneath.

A Winnipeg dispatch of Aug. 18 says:—"The Canadian Northern Railway was reported today to have completed arrangements with the St. Boniface city council for extensive improvements there within the next two years, including a large roundhouse, storehouses, coal warehouses, freight sheds, the union station to be shared with the G.T.P.R., and a new traffic bridge to be built across the Red River from Winnipeg. The total improvements will cost over \$1,000,000, and the company has signed a bond guaranteeing the completion of the work within two years."

A contract has been let for the erection of a station and hotel building in Brandon, Man., to Thos. Kelly & Sons, Winnipeg. A full description of the building is given on another page.

In reference to the work in progress on the company's Oakland extension, we are advised that the line is being extended to mileage 445, Jas. McRae hav-

ing the contract for the grading. It has not been decided whether the line will be extended northerly to meet the Ochre River branch.

Application has been made by the C.N. Ry. to the Regina, Sask., city council for permission to build joint passenger terminals there with the G.T. Pacific Ry.

R. J. Mackenzie recently completed an inspection of the Shellbrook extension as far as Crooked Lake, Sask. The line right to the lake was expected to be completed Aug. 30.

Work on the line from Vegreville to Calgary, Alta., is being gone on with rapidly. Ballasting is being proceeded with southerly from Camrose, while northerly the station buildings, etc., are being put up. The interlocking plant at the crossing of the C.P.R. at Camrose has been installed. In connection with the entrance of the line into Calgary, M. H. McLeod, General Manager and Chief Engineer, stated July 28, that the company's line would probably be used by the G.T. Pacific Ry., and that there would be a joint station. Negotiations are being carried on with the Calgary city council on the proposal. A Calgary dispatch states that track has been laid for about 50 miles south of Stettler and that the grading on the line should reach that city by the end of Sept. Another dispatch states that contractors are being asked if they will begin work at once on the construction of a line from north of Gleichen or Strathmore, southerly to Lethbridge and Coutts. This is one of the lines for which the Alberta Government has guaranteed the company's bonds.

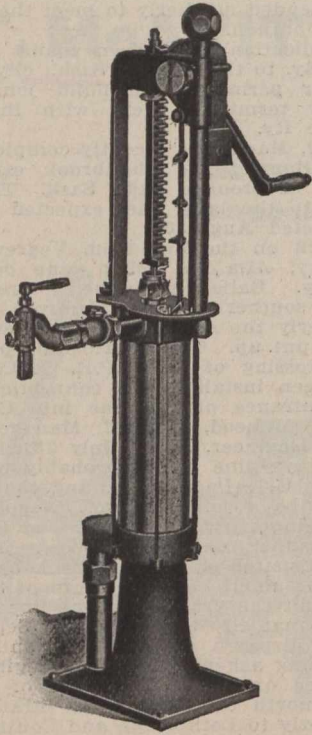
The Department of Railways has approved of a route map showing a line for about 14 miles through tps. 25 and 24, ranges 25 and 27, west of the fourth meridian.

D. D. Mann, Vice President, recently wrote to the Athabasca Landing board of trade to the effect that if it were at all possible the company's line from Edmonton, now terminating at Morinville, 23 miles out, would be completed to the Landing this year. A copy of the letter has been sent to the Edmonton board of trade.

We are advised that the contractors for building the line westerly from St. Albert, north west of Edmonton, to the Pembina River, are McMillan Bros. and Kenny. This contract covers about 140 miles, and is the line referred to by the President in the interview quoted in the first paragraph under this heading.

We are advised that the contract for the grading of the line from near Stettler westerly to the Brazeau coal fields, Alta., has been let to the Northern Construction Co., Winnipeg. The line starts from the Vegreville-Calgary line about six miles south of Stettler and runs westerly to Rocky Mountain House. It is expected to have about 30 miles graded this season. The contractors are reported to have begun work July 25. The plans shows that the line will run westerly through Alix, paralleling the C.P.R. crossing the C.P.R. Calgary-Edmonton line, across part of the experimental farm and Senator Talbot's farm south of the town, then northwesterly to the Brazeau coal fields. The route plans of the line came before the Department of Railways at Ottawa, Aug. 11. A portion of the line was approved, and the company was asked to make enquiries as to the feasibility of locating a route north of Lacombe to Rocky Mountain House, instead of the one for which approval was asked, which parallels the Alberta Central Ry., now under construction from Red Deer. The A.C. Ry. Co. objected to the route asked for being approved.

Canadian Northern Pacific Ry.—Speaking at Kamloops, B.C., Aug. 4, the Provincial Premier said the C.N.P. Ry. had made overtures to the Government



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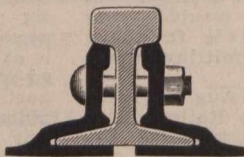
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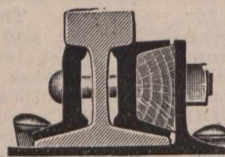
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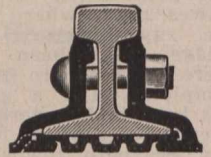
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for aid in building several hundred miles of branch lines in the province. The lines mentioned included branches into the Okanagan and Kootenay countries, and an extension on Vancouver Island to Quatsino Sound. It was essential that branch lines should be built as feeders to the main line. In all probability the question of the building of such lines would be taken up and dealt with at the next session of the Legislature.

A preliminary survey is reported to have been made from near Kamloops into the Okanagan country. The surveyed route follows the old stage route between Kamloops and Okanagan, traversing the Grand Prairie district, Campbell Creek and the Upper Salmon River Valley.

The plans for the main line show that it will pass by Kamloops, some four miles up the North Thompson River Valley. The Kamloops council and other public bodies, having discussed the matter, waited upon the Provincial Premier Aug. 4, to urge him to bring pressure to bear on the company to put the main line on the other side of the river, so that it could be taken into Kamloops. It was suggested that the Government pay two-thirds of the cost of the two bridges necessary, but the Premier said he could not promise that anything in the way suggested would be done.

The C.P.R. has entered an objection to the approval by the Government of the C.N.P.R. plans for seven miles of its line along the Thompson River, and seven miles along the Fraser River, in close proximity to the C.P.R. tracks. G. A. Mountain, Chief Engineer of the Board of Railway Commissioners, met the officials of both companies in Vancouver Aug. 11 to discuss the matter, prior to making an inspection of the two sections of the route. Mr. Mountain will report on the matter to the Board at a meeting to be held in Vancouver Sept. 5.

A New Westminster report, Aug. 8, says that beyond the cutting of the timber and the slashing of the brush no construction work had been done. The clearing work already done extends from almost directly opposite the Western Canada Lumber Mills Co. to west of Bon Accord. Gangs of men were then engaged clearing away the cut brush and getting ready for the grading which was expected to be started in the following week. The right of way has also been slashed from near Liverpool for a considerable distance, and from the Great Northern Ry. right of way to the water's edge. The exact site of the waterfront terminals has not been determined, but it is expected that they will be between Liverpool and Port Kells. D. D. Mann, Vice President, was in New Westminster Aug. 5, and is quoted as having said in an interview that Port Mann would have the largest railway yards on the coast. The townsite will embrace an area of about 2,000 acres. He was just looking over the ground, but Mr. Holt, one of the firm's engineers, would be sent out at once to make the location surveys for the line into New Westminster.

Subcontracts have been let by the Northern Construction Co., which has the general contract for the first 60 miles easterly from New Westminster, as follows:—C. J. Johnson, Seattle, Wash., 20 miles; W. P. Tierney, Nelson, B.C., from Mission east 10 miles; McDonald Bros., Vancouver, B.C., 30 miles. The last two named contractors have had their outfits on the job since July 25, and C. J. Johnson got his out Aug. 8. The engineer in charge of construction is — Swan, at Langley, B.C., with assistants at Mount Lehman, and Port Kells.

In connection with the lines on Vancouver Island Vice President Mann had a lengthened interview with the Provincial Premier at Victoria, Aug. 2, at

which the company's proposals were discussed. The route of the lines to be built under the charter of the Victoria and Barclay Sound Ry. are being laid out, and the question of additional lines, it is expected, will be arranged in time for the meeting of the Legislature. (Aug., pg. 649.)

Toronto Viaduct and Yonge St. Bridge.

The Judicial Committee of the Privy Council has granted the C.P.R. special leave to appeal from the judgments of the Ontario Court of Appeal and the Supreme Court of Canada, in the matters of the orders: (1) To construct a bridge to carry Yonge St., Toronto, over its tracks, and (2) To construct a viaduct to carry its tracks along the Toronto water front, with suitable openings for streets running north and south. The circumstances of the case were described as follows:—Both the C.P.R. and G.T.R. pass through Toronto. The G.T.R. runs along the southerly part of the Esplanade—a highway 100 ft. in width extending from east to west—which was originally constructed parallel to the shore in the waters of the harbor. The C.P.R. was constructed at a later date immediately to the south of the Esplanade on an embankment contiguous and parallel thereto. In 1904 the two railways were ordered by the Railway Committee of the Privy Council of Canada to construct a bridge carrying Yonge St. over both railways, so as to connect it with the wharves which abut on the lake. The estimated cost was about \$500,000. The companies brought actions against the city of Toronto to quash that order, on the ground of want of jurisdiction. The Ontario High Court dismissed those actions, and on appeal the Ontario Court of Appeal affirmed the High Court's decision. The C.P.R. did not appeal against those judgments because the city of Toronto announced its intention of not enforcing the order, but of applying for the adoption of some other scheme. Later on the city applied to the Board of Railway Commissioners (the successors of the Railway Committee) for the elevation of all the railways along the Toronto water front upon a viaduct, with suitable openings for access to the streets running north and south. On June 9, 1909, the Board ordered that the railways should be elevated on that viaduct. The cost was estimated to exceed \$6,000,000. The Supreme Court of Canada in a second suit decided that the Board had jurisdiction to make that order. From these judgments the petitioner applied for special leave to appeal.

For the petitioner, it was stated that not only was there an enormous sum involved, but there were several important questions of law, one being whether special statutes of the Dominion and Provincial Legislatures, which ratified an agreement made in 1892 between Toronto and the C.P.R. and G.T.R., did not operate to oust the jurisdiction of the Board of Railway Commissioners. In granting the petition, Lord Macnaghten said that having regard to the important interests at stake, the committee would do all it could to expedite the hearing.

Railway Lands Patented.—The following railway lands, situated in Manitoba, Saskatchewan, Alberta and British Columbia, were patented, during June:—

	Acres.
Calgary and Edmonton Ry.	4,161.42
Canadian Northern Ry.	20,524.38
Canadian Pacific Ry.	1,793.445
Canadian Pacific Ry. roadbed and station grounds	517.625
Grand Trunk Pacific Ry.	55.16
Manitoba and Northwestern Ry.	162.77
Manitoba and Southeastern Ry.	1,932.12
Qu Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	642.00
Total	29,788.920

Great Northern Ry. Lines in Canada.

Virginia, Minn., to Winnipeg, Man.—Reports are current in Duluth, Minn., that surveys are about to be made for the location of lines to connect up the G.N.R. near Virginia, Minn., with Winnipeg.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—It is expected that a contract will be let shortly for a line from Oroville on the International boundary to Penticton, B.C. The grading of the 18 mile section between Princeton and the Tulameen River, at the approach to the Hope Mountains, is expected to be completed in Oct. Just west of Princeton is a tunnel having a length of 1063 ft. Instructions have been received from St. Paul, Minn., that the gradients across the Hope Mountains must be still further reduced before any further contracts for construction will be given out. The gradient going east from Coquehalla summit and from the same summit west down to Hope, according to last year's surveys are 1% and 2½% respectively. From Princeton to Hope the distance by the route surveyed is 92 miles. The alternative to this long mileage and heavy gradient was an eight mile tunnel, but it does not seem likely that the tunnel will be adopted, as a revision survey is now in progress under J. E. Floyd. This survey party was sent out on the return of A. H. Hogeland, Chief Engineer G.N.R., and J. H. Kennedy, Chief Engineer V., V. & E. Ry. and N. Co., from a trip between Hope and Abbotsford.

Construction is in progress along a stretch of 13 miles from Abbotsford and Sumas River. There are six construction camps with a force of about 350 men. In addition to ordinary equipment the contractors are using three steam shovels and six dinkeys. Tenders for bridge construction were closed recently. The located lines of the V., V. & E. Ry. and the Canadian Northern Ry. from Sumas to Hope, 36 miles, are on the same right of way. In some instances for miles they are less than 15 ft. apart.

The amended plan, profile and book of reference for a line from the east line of section 15, township 16, to the west line of township 26, New Westminster district, a distance of 18.3 miles, certified by the Board of Railway Commissioners for Canada, has been deposited in the Registry office at New Westminster.

Work is in progress in Vancouver on five new tracks in the yards there. (Aug., pg. 623.)

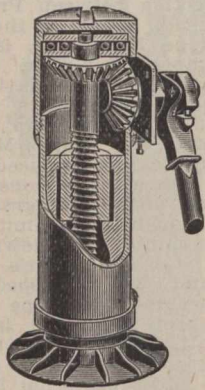
Western Canada Power Co.—The company, as the successor of the Stave Lake Power Co., has secured from the B. C. government some amendments to its charter under the Water Act of 1909. This, however, does not affect its railway construction powers which are derived from a special act of the Dominion Parliament. Two gangs of men are engaged in grading the right of way from Ruskin, B. C., along the Stave River valley, to the power development site about seven miles. The line will be operated by steam until the company is ready to deliver power, when it will be electrified. The construction of the pole line from Ruskin to New Westminster, about 40 miles, is being proceeded with. In New Westminster, the company has leased 100 ft. of water frontage for storage purposes. (Aug. pg. 631.)

Liverpool and Milton Tramway Co.—The Nova Scotia Legislature has fixed the capital of the company at \$250,000, and authorizes it to build a line from Milton via Greenfield and Caledonia to Bear River or other terminal point in Digby or Annapolis county. (May, pg. 351.)

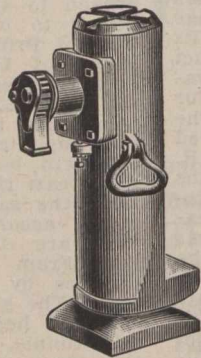
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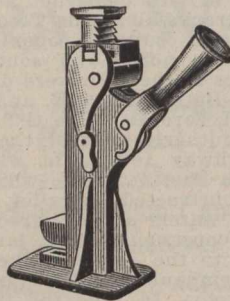
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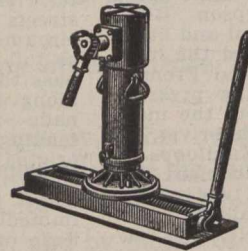
Sectional View



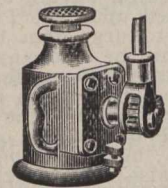
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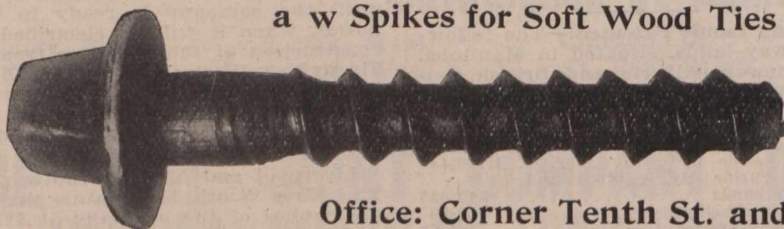
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Orders by the Railway Commissioners.

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 date assigned to them.

11161. July 14.—Authorizing Petrolea Electric Light, Heat, Power and Gas Co., to lay pipe under M.C.R. at Centre St., Petrolea, Ont.

11162. June 27.—Amending order 9726, Feb. 25, authorizing city of Brantford, Ont., to construct bridge on South Market St., by substituting Niagara, St. Catharines and Toronto for Toronto, Niagara and Western in recital and operative parts.

11163. July 13.—Amending order 10169, Dec. 8, 1909, by striking out words, "or in connection with any obligation on the part of the C.P.R. Co. to contribute to the cost of the work," in the preamble.

11164. July 14.—Extending time for construction of overhead bridge by G.T.R. between cons. 1 and 2, King tp., Ont., until Sept. 1.

11165. July 14.—Ordering G.T.R. to establish farm crossing at farm of T. Desilets, St. Celestin parish, Que.

11166. July 14.—Authorizing Orillia tp., Ont., to construct highway crossing over G.T.R. at Severn Bridge station.

11167. July 14.—Dismissing application of L. Lamontagne, St. Malachie, Que., for farm crossing over National Transcontinental Ry.

11168. July 14.—Dismissing application of residents of Norval, Ont., for order directing G.T.R., to stop train No. 9, leaving Toronto at 7 p.m.

11169. July 14.—Extending time for construction of bridge to carry Toronto Ry. and highway over G.T.R., C.P.R., and C.N.R., at Queen St. East, Toronto, until July 1, 1911.

11170. July 16.—Approving Crows Nest Southern Ry., Manitoba Great Northern Ry., and Bedlington and Nelson Ry. Standard Freight Tariffs.

11171. July 15.—Amending order 10419, May 2, by deleting all words after the word "approved" and inserting the following: "Subject, however, to the conditions (a) that if the construction of the said railway involves the crossing of Stave River Road, application to the Board for permission to make such crossing shall first be made and leave obtained; and (b) that wherever the applicant's track or right of way encroaches on said road, the road shall be put in as good condition as before construction commenced, to the Road Superintendent's satisfaction.

11172. July 13.—Authorizing C.N.O.R. to cross G.T.R. near Ottawa.

11173. June 27.—Authorizing C.N.O.R. to cross Victoria St., Colborne, by overhead bridge, the village to close that part of Queen St. east of the right of way.

11174. June 27.—Relieving M.C.R. from maintaining watchman at crossing 0.71 mile east of Woodslee station, Ont.

11175. July 15.—Authorizing city of Toronto to construct two sewers under G.T.R. at Keele St. and Indian Road.

11176. July 15.—Authorizing city of Port Arthur, Ont., to lay sewer under C.P.R. at Clarke St.

11177. July 20.—Authorizing Sherwin-Williams Paint Co., to lay pipe under C.P.R. at Atwater Ave., and St. Patrick St., Montreal.

11178. July 19.—Authorizing Queen City Oil Co., to lay pipe across G.T.R., at Muskoka Wharf, Ont.

11179. July 20.—Authorizing Petrolea Electric Light, Heat, Power and Gas Co., to lay pipe under G.T.R. between lots 12 and 13, Enniskillen tp., Ont.

11180. July 21.—Authorizing town of Maisonneuve, Que., to erect wires across Montreal Terminal Ry. at Bennett Ave.

11181, 11182. July 19.—Authorizing city of London Water Commissioners to erect wires across London and Port Stanley Ry. at Simcoe and Grey Sts.

11183 to 11192. July 19.—Authorizing city of St. Thomas, Ont., to erect wires across G.T.R. at Alma St., across M.C.R. at Metcalf and Railway Sts., across G.N.W. Telegraph Co.'s wires at Alma, Palm, Wellington and Elm Sts., and across London and Port Stanley Ry. at Elm, Wellington and Palm Sts.

11193 to 11197. July 20.—Authorizing city of London Water Commissioners to erect wires across C.P.R. at Adelaide St., across London and Lake Erie Ry. and Transportation Co., at Grand Ave. and Grey St., and across M.C.R. at Bathurst St. at two points.

11199. July 21.—Authorizing Saraguay

Electric and Water Co., to erect wires across C.P.R. on Ontario St. East, Montreal.

11200. July 15.—Authorizing Montreal, Light, Heat and Power Co., to erect wires across G.T.R., at Broadway, Lachine, Que.

11201. July 14.—Authorizing Seymour Power and Electric Co., to erect wires across Bell Telephone Co.'s wires at lot 13, con. 1, Thurlow tp., Ont.

11202. July 21.—Authorizing Seymour Power and Electric Co., to erect wires across G.T.R. at lots 8 and 9, con. 2, Thurlow tp., Ont.

11203 to 11212. July 14.—Authorizing Ontario Hydro-Electric Power Commission to erect wires across Bell Telephone Co.'s and Toronto Power Co.'s wires and G.T.R., in East Flamboro, West Flamboro, Etobicoke, Pelham, Nelson, Toronto, Stamford, Gainsboro tps., and Bay St., Hamilton.

11213. Aug. 19.—Authorizing C.P.R. to cross S.D. 4, lot 325, group 1, Kootenay District, B.C.

11214. July 15.—Approving location of C.P.R. branch line from Estevan to Forward, Sask.

11215. July 19.—Authorizing G.T.R. to build branch line to Laprairie Brick Co.'s premises, Laprairie, Que.

11216. July 19.—Authorizing C.P.R. to build four sidings across Tarte Ave., Foster St., Wallace St., Blair Ave., Daly Ave., Langevin St., and Tupper St., Wardner, B.C.

11217. July 19.—Approving amended agreement between Bell Telephone Co. and Hazeldean Rural Telephone Co., dated Oct. 6, approved by order 8583, Nov. 5, 1909.

11218. July 19.—Relieving C.P.R. from providing further protection at Zorra St. crossing, Beachville, Ont., and rescinding order 11136, July 8.

11219. July 18.—Rescinding order 8768, Nov. 28, 1909, re C.P.R. crossing at Mackey St., Head tp., Ont.

11220. July 18.—Authorizing city of Fort William, Ont., to build subway under street railway at James St.

11221. July 19.—Authorizing G.T.R., to build passing track across and upon Victoria and Ontario Sts., Colborne, Ont.

11222. July 19.—Approving road diversion of G.T.P.R. in s.w. ¼ sec. 1-53-27, w. 4 m., North Alberta District.

11223. July 19.—Approving C.N.O.R. plan of proposed structure at station 2467, sec. 5, division A, mileage 218.6, Pickering tp.

11224. July 19.—Authorizing C.P.R. to build across and divert highways on its Macleod to Lethbridge revision of its Crows Nest Branch from mileage 0 to 30.7, being from west boundary of sec. 36, tp. 8, r. 22, w. 4 m., to east boundary of sec. 12-9-26, w. 4 m., Alta.

11225. July 20.—Relieving Temiscouata Ry. from providing further protection at crossing at mileage 33, south of St. Louis station, Que.

11226. July 21.—Authorizing G.T.P. Branch Lines Co., to connect its Melville-Yorkton Branch with C.P.R. Northwestern Branch at Yorkton, Sask.

11227. July 21.—Authorizing C.P.R. to build between secs. 8 and 9-15-33, w. p. m., at Wapella, Sask.

11228. July 21.—Authorizing, subject to conditions of agreement between Lethbridge Brewing and Milling Co., et al. and C.P.R., April 11, the building of a spur between n.w. ¼ sec. 29-12-9, w. 4 m. and n.w. ¼ sec. 30-12-5, w. 4 m., Medicine Hat, Alta.

11229. July 21.—Authorizing C.P.R. to build spur across Scarth and Cornwall Sts., Regina, Sask.

11230. July 19.—Authorizing C.N.O.R. to operate trains over crossing of C.P.R. Arcola Branch, without first being brought to a stop.

11231. July 21.—Amending order 11093, June 28, by substituting "Dovercourt" for "Davenport," one of the streets to be crossed, in the recital.

11232. July 19.—Authorizing G.T.R. to build a branch to Western Canada Foundry Co.'s premises, Wingham, Ont.

11233. July 19.—Authorizing G.T.R. to build branch to Imperial Rattan Co.'s premises, Stratford, Ont.

11234. July 19.—Authorizing C.P.R. to build spur for Taylor Lumber Co., in lot 1879, G1, Kootenay District, B.C.

11235, 11236. July 19.—Approving, temporarily, forms of agreements between Bell Telephone Co., and Alnwick Rural Telephone Co., and Bell Telephone Co., and West Williams Rural Telephone Co., June 15 and 23, respectively, for interchange of messages.

11237, 11238. July 15.—Authorizing C.P.R. to build bridge 80.5 over Duck Creek, Sirdar Section, Western Division; and bridge 19.82 over Didgeguash River, New Brunswick Southern Ry.

11239. July 15.—Authorizing city of Fernie, B.C., to erect wires across C.P.R.

11240, 11241. July 15.—Authorizing C.P.R. to build bridge 84.1 over Little Creek, Windsor Section, Ontario Division; and to rebuild

bridge 41.9 over St. Lawrence River, Farnham Section, Que.

11242. July 15.—Approving location of C.P.R. station at Shepard, Alta.

11243. July 15.—Authorizing St. Mary's Wood Specialty Co., to lay drain along C.P.R. spur at St. Mary's, Ont.

11244. July 15.—Approving G.T.R. interlocking plant to be installed at Lynden Jct., Ont.

11245. July 15.—Authorizing C.P.R. to build spur across Blackfoot Trail, and block 5, Calgary, Alta.

11246. July 14.—Authorizing C.P.R. to build branch from spur at western boundary of lot 3, block 67, sec. 15-24-1, w. 5 m.

11247. July 14.—Authorizing C.P.R. to build extension to Port Haney Brick Co.'s spur, lot 398, sec. 17, tp. 12, e.c.m., Haney, B.C.

11248. July 14.—Authorizing C.P.R. to build spur for South Alberta Lumber Co., n.w. ¼ sec. 32-8-21 w. 4 m., Lethbridge, Alta.

11249. July 14.—Relieving Windsor, Essex and Lake Shore Rapid Ry. from providing further protection at con. 6, Sandwich highway, Ont.

11250. July 15.—Relieving Boston and Maine Rd., from providing further protection at crossing at North Derby, Que.

11251. July 15.—Authorizing G.T.R. to build between lots 89 and 90, con. 1, Tiny tp., Ont.

11252. July 15.—Authorizing St. Lawrence and Adirondack Ry. to build side track near Adirondack Jct., Que., across Viau Road and Grand Trunk highway.

11253. July 15.—Approving G.T.P. Branch Lines location from north line of Saskatoon District to Battleford, Sask.

11254, 11255. July 15.—Authorizing G.T.R. to build between lot 13, con. 1, and lot 13, con. 2, and across public road on lot 92, con. 1, Tiny tp., Ont.

11256. July 14.—Authorizing C.P.R. to build spur across lane and lots 18 to 20, block 69, Calgary, Alta.

11257. July 15.—Authorizing C.N.R. to operate trains over G.T.R. crossing near Brooklin, Ont., without first being brought to a stop.

11258. July 15.—Approving C.N.O.R. strain sheets for beam span of bridge over Goforth's Creek, lot 26, con. 4, Whitby tp.

11259. July 20.—Authorizing G.T.R. to build branch from its District 19, Middle Division, to E. D. Smith's premises, across Page St., St. Catharines, Ont.

11260. July 19.—Authorizing C.P.R. to rebuild bridge 0.3 over Yamaska River, St. Guillaume Branch, Eastern Division.

11261. July 19.—Approving C.N.R. location through St. Albert, and tps. 54-55, r. 26-28, w. 4 m., mileage 0 to 15.51, from junction with Morinville Branch, Alta.

11262. July 19.—Relieving C.P.R. from providing further protection and removing speed limit of 10 miles an hour at North Boundary Road crossing east of Streetsville Jct., Ont.

11263. July 21.—Approving C.P.R. Standard Freight Tariff C.R.C. W. 1443, between stations in Saskatchewan and Alberta, west of Canmore excepted, and between these stations and stations in Manitoba and Ontario.

11264. July 18.—Authorizing village of Morse, Sask., to build crossing over C.P.R. by extending Brownlee St.

11265. July 18.—Amending order 10891, June 13, by adding 159 before 167, in line 6 of the recital; and in line 5 of operative part, the words, "(and (d) the location of the applicant's second track from mileage 19 to 74."

11266. July 22.—Relieving C.P.R. from further protection at public road crossing about ¼ mile east of MacGregor, sec. 32-10-11, w. p. m., Man.

11267. July 19.—Re tell tales at tunnels snow sheds, etc. This order is given in full on another page.

11268. July 21.—Authorizing C.N.R. to build across streets in Prince Albert, Sask., and ordering that it shall make compensation to persons for damage sustained.

11269. July 23.—Approving plan of G.T.R. freight and passenger station at Three Rivers, Que.

11270. July 21.—Declaring illegal toll of \$1.50 charged by C.P.R. on marble slab from Montreal to Hamilton.

11271. July 23.—Approving location of C.P.R. station building at Vernon, B.C.

11272. July 20.—Authorizing C.P.R. to build between cons. 1 and 2, lot 7, Etobicoke tp., Ont., and to join G.T.R. main line.

11273. July 15.—Approving G.T.R. track rearrangement at Cobourg, Ont., with the exception of the most northerly spur connecting the east leg of Y.

11274, 11275. July 12-15.—Authorizing C.N.O.R. to cross G.T.R. at Belleville and Cobourg, the latter crossing to be protected by interlocker.

11276. July 19.—Approving C.N.O.R. location through Belleville and Thurlow tp., mileage 133 to 135.

11277. July 18.—Authorizing C.N.O.R. to

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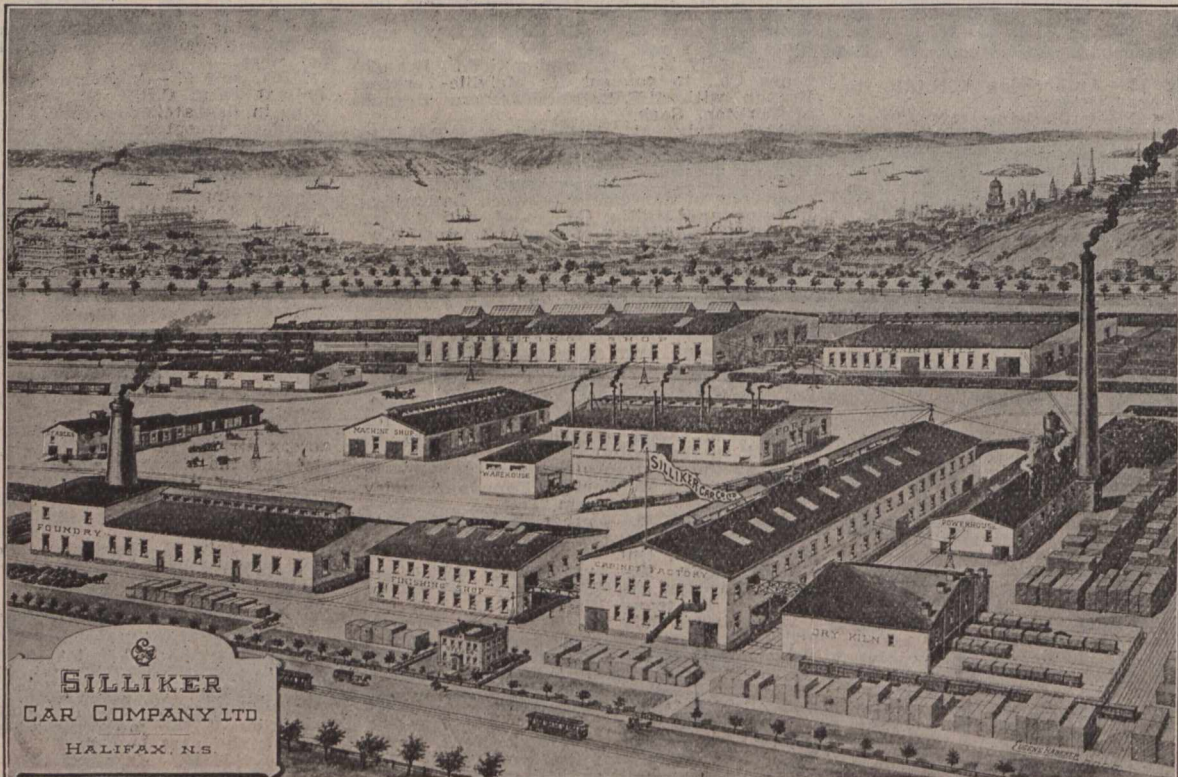
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cross Division St., Colborne.
 11278. July 19.—Authorizing C.N.O.R. to cross G.T.R. overhead, and to build viaduct across Port Hope Creek, Hope tp., and rescinding order 10815, June 9.
 11279. July 26.—Authorizing Ontario Hydro-Electric Power Commission to erect wires across Bell Telephone Co.'s wires at lots 126 and 129, Thorold tp.
 11280 to 11284. July 26.—Authorizing city of London Water Commissioners to erect wires across G.T.R. at five points.
 11285. July 26.—Authorizing W. J. Aikens, Dunnville, Ont., to lay pipe under Hamilton and Brantford Electric Ry., near Cainsville.
 11286. July 26.—Authorizing village of Warwick, Que., to lay pipes under G.T.R. at cadastral lot 153, Tingwick tp.
 11287. July 25.—Authorizing city of Winnipeg, to lay sewer under C.P.R. at Selkirk Ave.
 11288. July 25.—Rescinding order 10999, June 27, cancelling order 9977, March 23; and approving portions of Alberta Central Ry., one mile west and one mile east of Red Deer, Alta.
 11289. July 26.—Extending to Sept. 15, time within which C.P.R. is to improve crossing at con. 7, Millbank, Ont.
 11290. July 26.—Relieving Dominion Atlantic Ry. from providing further protection at first crossing west of Port William station, N.S.
 11291. July 26.—Rescinding order 11020, June 28, approving C.N.R. location through tps. 26-23, r. 24, w. 4-5, in Alta.
 11292. July 26.—Relieving Dominion Atlantic Ry. from providing further protection at crossing two miles west of Weymouth, N.S.
 11293. July 26.—Authorizing C.P.R. to build spur across Railway Ave. and block 32, and across Alberta Ave. and block 33, Camrose, Alta.
 11294. July 22.—Relieving T.H. & B. Ry. from providing further protection at crossing between lots 18 and 19, con. 11, Ancaster tp., Ont.
 11295. July 25.—Authorizing C.P.R. to build between sec. 24-16-4, and sec. 19-16-3, w. 2 m., Percival, Sask.
 11296. July 25.—Authorizing G.T.R. to build spur for Sawyer-Massey Co. across Wentworth St., Hamilton, Ont.
 11297. July 26.—Authorizing G.T.P. Ry. to carry traffic over portion of its line between Winnipeg and Edmonton.
 11298. July 26.—Authorizing G.T.R. to build four branch lines to St. Lawrence Pressed Brick and Terra Cotta Co.'s premises, Laprairie, Que.
 11299. July 26.—Authorizing C.P.R. to build spur to Wilson Paterson Co.'s premises, Montreal.
 11300. July 25.—Authorizing C.N.O.R. to build between lots 12 and 13, con. A, Hamilton tp.
 11301, 11302. July 27.—Approving C.N.R. location from mileage 24 to 37.22 down, and from mileage 15 to 24.7 up, the Fraser River from Yale, B.C.
 11303. July 27.—Authorizing Western Canada Power Co. to build across Whonock Road, near Ruskin, B.C.
 11304. July 27.—Approving location of C.N.O.R. Sudbury-Port Arthur Division through unsurveyed territory in Sudbury Mining Division, mileage 180 to 200 from Sudbury Jct.
 11305. July 25.—Relieving C.P.R. from providing further protection at Martin Street crossing, Milton, Ont.
 11306. July 25.—Approving agreement between Bell Telephone Co. and G. Wright & Co., re interchange of messages.
 11307. July 26.—Authorizing G.T.P. Branch Lines to cross C.N.R. in n. e. ¼ sec. 20-38-26, w. 2 m., at Dana, Sask.
 11308. July 28.—Authorizing C.N.O.R. to carry freight over portion of its line from junction with its main line at Udney, to Atherley, Ont., at speed not exceeding 10 miles an hour.
 11309 to 11311, July 27.—Authorizing Provincial Natural Gas and Fuel Co., to lay pipe under G.T.R. at Dain and Hellams Aves., at two points, Welland, Ont.
 11312. July 28.—Authorizing city of Chatham to lay pipe under P.M.R. on London Road.
 11313. July 28.—Authorizing C.N.O.R. to build between lots 7 and 8, con. 3, Hope tp., and rescinding order 9537, Feb. 14.
 11314. July 28.—Authorizing C.P.R. to build spur for J. Moyses, Winnipeg.
 11315. July 26.—Authorizing C.N.O.R. to build between lots 8 and 9, con. 3, Hope tp.
 11316. July 29.—Disallowing the C.P.R. rate of 16c. per 100 lbs. on grain and grain products from Birtle, etc., to Fort William and Port Arthur, and requiring C.P.R. to restore the rate of 15c. per 100 lbs., to take effect not later than Sept. 1.
 11317. July 29.—Dismissing C.P.R. application for order settling the questions to be

argued upon Appeal to Supreme Court, now pending, from order 10340, Apr. 26.
 11318. July 29.—Authorizing G.T.R. to build spurs to premises of T. F. Firth & Sons, and A. Keith, mimico, Ont.
 11319. July 29.—Ordering Boston & Maine Rd. to install electric bell, within 60 days, at main road crossing, Lennoxville, Que.
 11320. July 29.—Authorizing C.P.R. to build across road allowance on west boundary of s. w. ¼ sec. 18-18-15, w. 2 m., McLean, Sask.
 11321. July 28.—Ordering G.T.R. to install electric bell at crossing between lots 20 and 21, con. 1, Cramahe tp., Ont., within 90 days.
 11322. July 29.—Authorizing C.P.R. to build across road allowance on west boundary of s. w. ¼ sec. 32, tp. 17, r. 7, w. 3 m., Ernfold, Sask.
 11323. July 28.—Authorizing Taber municipality, Alta., to build DeVeber Ave. across C.P.R.
 11324. July 30.—Authorizing C.N.O.R. to build across William, Burnham, Ontario and D'Arcy Sts., and Cottesmore Ave., Cobourg.
 11325. July 28.—Authorizing C.P.R. to use certain bridges in its Chapleau, White River, Nipigon and Schreiber sections, Ont.
 11326. July 26.—Refusing application of Montreal Board of Trade for official classification less-than-carload ratings on rubber goods, but that restriction of first class to "carriage and waggon" in classification 14, be removed and that in the forthcoming supplement 3, this item be changed to read—"tires, solid, in packages, first class."
 11327. Aug. 2.—Rescinding order 10315, Apr. 21, authorizing C.N.O.R. to build subway under public road through lot 3, con. 2, Hope tp.
 11328. Aug. 2.—Approving St. Maurice Valley Ry.'s supplement 1 to Standard Passenger Tariff C.R.C. 1, applying between Shawinigan Falls and Grand Mere, Que.
 11329. Aug. 2.—Amending order 11141, June 27, by inserting "at its own expense" after "authorized" in line 2 of the operative part.
 11330. Aug. 2.—Authorizing city of Fort William, Ont., to build subway for street railway, under C.P.R., G.T.P.R. and C.N.R., at James St., and rescinding order 11220, July 18.
 11331. Aug. 2.—Authorizing province of Alberta to build highway crossing over Calgary and Edmonton Ry. Lacombe branch, at Clive.
 11332. Aug. 2.—Authorizing G.T.P. Branch Lines Co., to cross C.N.R. spur at grade, with its Yonge-Prince Albert branch, at Prince Albert, Sask.
 11333. Aug. 2.—Ordering C.N.O.R. to build suitable farm crossing for J. C. Scripture, at lot 29, con. 1, Cramahe tp.
 11334. Aug. 2.—Approving C.N.O.R. Hawkesbury-Montreal line revised location through Chatham tp., mileage 6.08 to 9.36 from Hawkesbury.
 11335. Aug. 2.—Authorizing C.P.R. to build spur for Cranbrook Electric Light Co., at Cranbrook, B.C.
 11336. Aug. 2.—Authorizing C.P.R. to use bridges on its Woodstock, Gibson and St. John sections, N.B.
 11337. Aug. 2.—Authorizing C.P.R. to build bridge over the Little Bow River, at mileage 28.35-28.57, Lethbridge to Aldersyde branch, Alta.
 11338. Aug. 2.—Authorizing G.T.R. to take, for construction of additional terminal facilities, and round house and shops, at Belleville Jct., certain lands in Thurlov tp., Ont.
 11339. July 30.—Authorizing city of London Water Commissioners to erect wires across C.P.R. at Oxford St.
 11340. July 27.—Authorizing Western Canada Power Co., to cross Heaps Timber Co.'s railway at Ruskin, B.C.
 11341. Aug. 3.—Authorizing C.N.O.R. to build between lots 8 and 9, con. 4, Scarborough tp.
 11342. Aug. 3.—Authorizing C.P.R. to use bridges 0.46; 19.9; 19.3; 19.74; and 33.4, on its Edmondston section, N.B.
 11343. Aug. 3.—Approving Kettle River Valley location from Nicola, Kamloops and Similkameen Ry. at Merritt, 10 miles south-westerly, B.C.
 11344. Aug. 3.—Extending to Sept. 30, time within which C.P.R. is required to complete station at Eganville, Ont., by order 10563, May 10, 1910.
 11345. Aug. 4.—Authorizing C.N.R. to open for traffic portion of its line from Prince Albert to Sheelbrook, Sask., 28½ miles.
 11346. Aug. 4.—Authorizing C.N.O.R. to build between lots 2 and 3, con. 2, Hope tp.
 11347. Aug. 4.—Approving masonry diagrams of bridges on District 20, G.T.R., over G.T.R., mile post 76.02; Avon River; Wharfe Creek; Thames River; and over public road at mile post 154.05, Ont.
 11348. Aug. 3.—Approving C.N.R. location through tps. 5 and 6, r. 19-26, w. 2 m., mileage 147.14 to 203.85., Sask.

11349. Aug. 3.—Approving G.T.P.R. revised location from n. w. ¼ sec. 24.53-17 to s. w. ¼ sec. 2-53-19 w. 5 m., Alta.
 11350. Aug. 4.—Authorizing C.N.O.R. to build between cons. 2 and 3, Hope tp., and rescinding order 10094, Apr. 5.
 11351. Aug. 2.—Authorizing Public Works Department to build highway crossing over C.N.R. in n. e. ¼ sec. 29-19-21, w. 2 m., Sask.
 11352. Aug. 4.—Approving Joliette and Lake Manuan Ry. location from Joliette to Lake Manuan, Que.
 11353. Aug. 4.—Extending for one month from date, time within which C.P.R. was required to install electric bell at Maria St. crossing, Peterboro, Ont., by order 10771, June 4.
 11354. Aug. 3.—Authorizing C.N.O.R. to build between lots 10 and 11, con. A, Haldimand tp.
 11355. Aug. 4.—Rescinding order 11238, July 15, authorizing C.P.R. to construct bridge over Didgeguash River, N.B.
 11356 to 11359. Aug. 4.—Temporarily approving agreements between Bell Telephone Co., and King Telephone Co., Leeds and Frontenac Telephone Co., Mallorytown Independent Telephone Association, and Weedon Telephone Co., respectively, re service.
 11360. Aug. 4.—Authorizing the G.T.R. to build branch to E. Steele's premises, West Hawkesbury tp., Ont.
 11361. Aug. 4.—Approving temporarily, agreement between Bell Telephone Co., and Goderich Rural Telephone Co., re service.
 11362. Aug. 4.—Authorizing Algoma Central Ry. to build a bridge over Montreal River, Ont.
 11363. Aug. 5.—Authorizing province of Saskatchewan to build highway across C.P.R. Wolseley-Reston branch at s. w. ¼ sec. 30-16-9, w. 2 m., Sask.
 11364. Aug. 5.—Approving temporarily, agreement between Bell Telephone Co., and Lanark & Carleton Counties Telephone Co., re service.
 11365. Aug. 5.—Authorizing Volcanic Oil and Gas Co., to lay pipe under Windsor, Essex and Lake Shore Rapids Ry. at Tecumseh Road, Sandwich West, tp., Windsor, Ont.
 11366 to 11369. Aug. 3.—Authorizing city of Toronto to lay pipe under C.P.R. at St. Clair Ave., Van Horne Ave., and Bathurst St., and under G.T.R. at St. Clair Ave.
 11370 to 11371. Aug. 3.—Authorizing Provincial Natural Gas and Fuel Co., to lay pipe under M.C.R. at Hellams Ave., Welland, and between con. 6 and 7, Crowland tp., Ont.
 11372. Aug. 3.—Authorizing city of Toronto to lay pipe under C.P.R. at Ossington Ave.
 11373. July 14.—Authorizing city of Winnipeg to build conduit under C.P.R. at King St.
 11374. Aug. 6.—Ordering C.P.R. to install electric bell at Norman St. crossing, near mileage 2, Kenora Section, Ont., within 90 days.
 11375. Aug. 6.—Authorizing Chatham, Wallaceburg and Lake Erie Ry. to build across Baldoon Road, Bearline and Winterline and along concession road, Dover East tp., Ont.
 11376. Aug. 9.—Authorizing the Niagara St. Catharines and Toronto Ry. to build its Port Colborne extension across Canada Portland Cement Co.'s spur, Humberstone tp., Ont.
 11377. Aug. 9.—Authorizing C.N.O.R. to build bridge over Factory Creek, Hamilton tp.
 11378. Aug. 9.—Authorizing C.P.R. to build bridge 9.1 over Colton Creek, Lake Superior Division, Temiskaming Branch, Ont.
 11379. Aug. 9.—Authorizing C.P.R. to build siding for Hinde and Dauch Paper Co. Parkdale, Ont.
 11380. Aug. 9.—Authorizing C.P.R. to build spur for Consolidated Mining and Smelting Co., near Boundary Falls station, Yale District, B.C.
 11381. Aug. 4.—Authorizing the G.T.R. to build siding with spur into Canadian Crocker-Wheeler Co.'s premises, St. Catharines, Ont.
 11382. Aug. 5.—Relieving Kingston and Pembroke Ry. from keeping a watchman at Montreal St. crossing, Kingston, Ont.
 11383. Aug. 9.—Authorizing Volcanic Oil and Gas Co., to lay pipe under P.M.R. at Tecumseh Road, Walkerville, Ont.
 11384. Aug. 9.—Authorizing town of Wingham, Ont., to lay pipe under G.T.R.
 11385. July 27.—Authorizing Provincial Natural Gas and Fuel Co., to lay pipe under G.T.R. spur line crossing Dain Ave., Humberstone tp., Ont.
 11386. Aug. 6.—Authorizing C.N.O.R. to cross G.T.R. and C.P.R. near Ottawa.

The Quebec Legislature has authorized the city of Sherbrooke to fix the valuation of C.P.R. property in the city at \$50,000, on the passing of a bylaw to that effect by the ratepayers.

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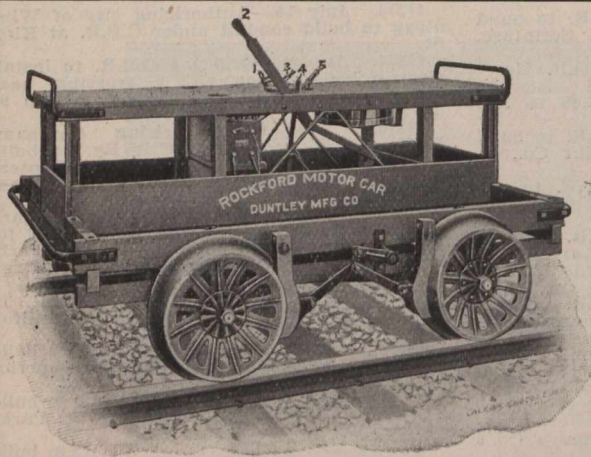
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DUNTLEY MANUFACTURING COMPANY

CHICAGO, ILL., U.S.A.

National Transcontinental Railway.

An Ottawa dispatch of Aug. 12 says, according to reports received at the offices of the Commissioners, the line from Levis, Que., to Moncton, N.B., will be opened for traffic in the spring of 1911. Arrangements, it is said, have already been made in a preliminary way for a car ferry across the St. Lawrence, pending the building of the Quebec Bridge. From the south shore of the St. Lawrence, opposite Quebec, grading has been practically completed all the way to Moncton, and only about 40 miles of track has to be laid to complete the line between these two points. The contractors are busy completing the bridge work, and in ballasting. A temporary trestle is being erected across River Blue, but this will be replaced by a steel bridge next year. The work of providing stations and other buildings will be gone on with during the winter. The principal stations will be St. Hillare, Edmundston, St. Leonards, Grand Falls, Plaster Rock, Nopandogan, McGronev's Jct., Chipman; there will also be a number of way stations and section houses, the division point being at Nopandogan.

We have reason to believe that it will be impossible to open the Moncton-Quebec section in the spring of 1911. From reliable information we have received, we consider it hardly probable that the work in New Brunswick will be entirely completed before the end of 1911, and our information leads us to believe that the work from the New Brunswick boundary to the St. Lawrence River will not be completed before 1912.

The Minister of Railways has extended the time for receiving tenders for building the superstructure of the Quebec Bridge to Oct. 1.

The documents transferring the Champlain market property, Quebec, to the N.T.R. Commissioners were signed Aug. 12, and the tenants have to vacate by Oct. 1. The agreement, which calls for the payment of \$100,000 for the property, and the expenditure of \$2,000,000 for buildings, etc., has to be ratified by the Dominion Government.

The line is practically completed from Quebec for 195 miles westerly. The next construction centre is at Cochrane, Ont., and from there track has been laid east to Mistonga, 27 miles. Work is being proceeded with at different points between Mistonga and the end of track west of the St. Maurice River, but the difficulty of getting in supplies has rendered the progress made somewhat slow. Track has been laid from Cochrane westerly for 60 miles, and a construction train service is being operated as far as the Groundling River. The steel bridge over the Frederickhouse River is being completed. The work north of Lake Superior has been concentrated in the hands of O'Brien, Fowler and McDougall Co., who have taken over the interests of other contractors, and are now building a total of 490 miles. Supplies for the work are being taken in over the Sturgeon Lake route. The Ottawa dispatch, already quoted, states that the reports received justify the estimate that the mileage between Quebec and Lake Superior Jct., Ont., will be completed sufficiently to allow trains to be run through by the end of 1912.

An announcement was made at Montreal Aug. 17 that all arrangements had been completed for inaugurating a regular train service over the section of the line from Winnipeg to Lake Superior Jct., Sept. 1, when it was expected that that portion of the line would be handed over by the Dominion Government to the G.T. Pacific Ry. for operation.

GRAND TRUNK PACIFIC RY.

The question of the entrance of the company's lines into St. Boniface, Man., is under consideration, some opposition having developed to the proposal that

the G.T.P.R. should come in over the Canadian Northern Ry. right of way. The plans were referred to the City Engineer for consideration and report.

In an interview at Winnipeg, Aug. 14, President Hays said representatives of Ross and MacFarlane, Architects, Montreal, were in the city preparing plans for an hotel which the company proposed to erect there. The building would be about 200 ft. square; it would contain about 500 rooms, and cost, when completed, about \$2,000,000. It was expected that work would be started on the building as soon as the frost was out of the ground in the spring. The location secured is the corner of Broadway and Fort St., just west of the Manitoba Club.

A bi-weekly train service was inaugurated Aug. 1 to Edson, the first divisional point, 124 miles west from Edmonton, Alta. A site for terminal yards and divisional buildings was approved by Vice President Chamberlin on his visit of inspection July 28. The present plans provide for the laying of about five miles of siding, which will be about one-fifth of the mileage ultimately to be laid. Edson is situated about eight miles west of the crossing of the McLeod River. The next river crossing is at Prairie Creek, about 75 miles west of Edson, and tracklaying is now being proceeded with, and it is expected that it will be completed Oct. 1. The concrete substructure at Prairie Creek has been completed, and everything is ready for the erection of the superstructure, which will be gone on with as soon as the steel can be brought in. Beyond this the next point to be reached is the Athabasca River, at the entrance to the Yellowhead Pass, and it is expected that steel will be laid there by Dec. 1. This will give a completed line for 223 miles west of Edmonton.

From the Prince Rupert end of the line it was reported that 100 miles east would be ready by Aug. 22, so as to enable the Dominion Premier and the Minister of Railways to take a trip over it. At the end of July trains were running to the Grand Rapids, nine miles out, and the bridge over the river there was then nearly completed. From the end of the first 100 miles grading on an additional 140 miles had been nearly completed, and tracklaying is being proceeded with. The line is expected to be completed from Prince Rupert easterly to mileage 240, in the spring of 1911.

The regular through train service from Edmonton, Alta., via the G.T.P.R. to Winnipeg, the National Transcontinental Ry. from Winnipeg to Lake Superior Jct., and thence to Fort William over the G.T.P.R. Fort William branch, was announced to be started Sept. 1.

The question of the entrance of the line into Port Arthur, Ont., was discussed with President Hays Aug. 12, but all he would say was:—"The company made an agreement with Port Arthur, which seems to have ended in a muddle, and this complication has not been cleared up as yet."

The first branch line under construction west of Winnipeg is northerly and southerly from Melville, Sask. Northerly it is in operation to Yorkton, and grading has been completed to Canora, on the Canadian Northern Ry. Southerly the line has been completed and is in operation to Balcarres, on the C.P.R. Kirkella branch, and grading is well forward on the extension to Regina.

The Department of Railways has approved route maps for an extension of the Melville-Regina branch through Regina, Sask., for a distance of about five miles. It is expected to let a contract for this mileage at an early date, and from Regina to the International boundary. The company is negotiating with the city council for an agreement in regard to the location of divisional terminals in the city. A site of over 15

acres has been secured for this purpose by the company.

The next branch starts from Tofield, and was completed in 1909 to Camrose, Alta. This year work has been carried on southerly in the direction of Calgary. The bridge across the Battle River, about seven miles south of Claresholm, has been completed. It is of trestle construction 3,100 ft. long and 115 ft. above high water mark. Track is being laid as far south as Farintosh, where the company has opened up large gravel pits for ballasting. G. H. Webster, the contractor, in an interview at Calgary Aug. 12, said there were over 500 teams on the line, and construction gangs were stretched along the line for nearly 100 miles south of Alix, and to within 50 miles of Calgary; that a big effort would be made to reach Calgary this winter, and that it was intended to build a branch from this line into the C.P.R. irrigation lands, for which plans had been filed.

The third branch line under construction is from Edson, Alta., south easterly into the Brazeau River coal fields. This branch line Vice President Chamberlin said in Winnipeg, Aug. 3, would be about 70 miles, and it was expected would be completed during the winter. The sub-contractors reported to be working on the line are Phalen and Shirley, and D. Baker, the general contractors being Foley, Welch and Stewart.

Two survey parties were sent out Aug. 1 from Kamloops, to do some further work easterly and westerly on the location of the G.T. Pacific branch line to Vancouver. (Aug., pg. 661.)

The Newfoundland Telegraph Dispute.

Judgment was recently delivered by the Judicial Committee of the Privy Council in the appeal of the Reid Newfoundland Co. from the judgment of the Newfoundland Supreme Court, in its case against the Anglo-American Telegraph Co., as follows:—"The Supreme Court restrained the appellant from erecting, maintaining or operating a telegraph line upon its own land for the purposes of the efficient working of its own railway. The result depended on the construction of an agreement dated Aug. 11, 1888, made between the Newfoundland Ry. Co. of the first part; Mr. Evans, receiver and manager of that company, of the second part; and the respondents of the third part. The argument on behalf of the telegraph company (an argument which was accepted by the Colonial Court) was largely based upon the use of the words "exclusive right" in the clause cited. It was not an "exclusive right" of entry, for the railway company remained in possession, and must do so in order to work its railway, which it was under an obligation to do. The exclusive right granted was to enter for the purpose of erecting, maintaining and operating telegraph lines for the business of the telegraph company. In the committee's opinion that exclusive privilege of erecting and working telegraph lines for the business of the telegraph company did not exclude the right of the railway company to erect and work telegraph lines on its own property for the purposes of its railway business. The committee was unable to agree with the view taken by the judges in the Colony, and was of opinion that the railway company was not shown to have exceeded its rights. The judgment and decree of the Colonial Court should be set aside, and the suit dismissed with costs in the Court below. The respondents would pay the costs of this appeal.—Canadian Gazette.

D. A. McLean, a sub-contractor on the G.T.P.R. branch to Regina, Sask., was found dead near Cedoux, Sask., Aug. 2.

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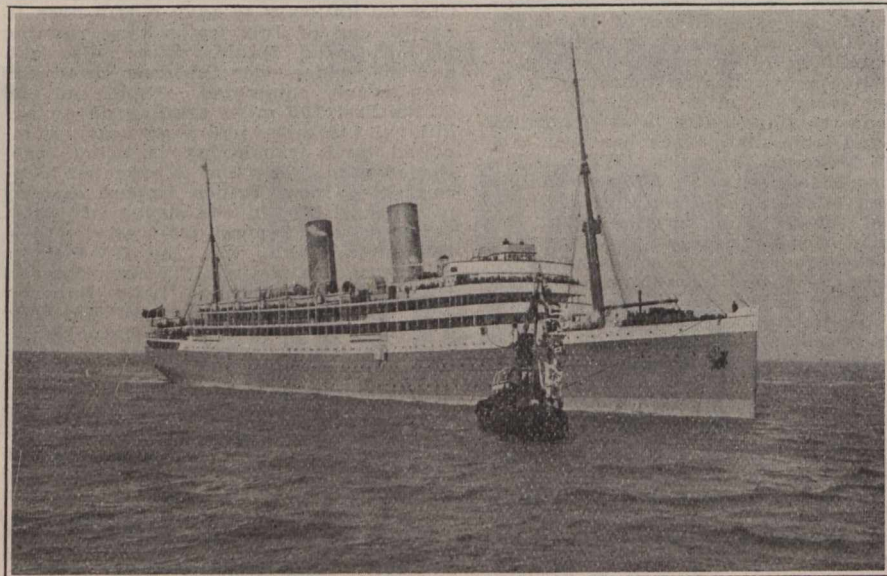
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Triple Screws, 12,000 tons, Marconi
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SAILINGS:

From Bristol.	Steamer.	From Montreal.	From Bristol.	Steamer.	From Montreal.
Thur., July 7	"Royal Edward"	Thur., July 21	Thur., Aug. 18	"Royal George"	Thur., Sept. 1
Thur., July 21	"Royal George"	Thur., Aug. 4	Thur., Sept. 1	"Royal Edward"	Thur., Sept. 15
Thur., Aug. 4	"Royal Edward"	Thur., Aug. 18	Thur. Sept. 15	"Royal George"	Thur., Sept. 29

and fortnightly thereafter.

For full particulars, Rate, Booklets, etc., apply local agent, or Wm. Phillips, Acting Traffic Manager, Canadian Northern Steamships, Limited, Toronto, Canada.

Railway Rolling Stock Notes.

The Ha Ha Bay Ry. has received one Columbia locomotive from the Montreal Locomotive Works.

The Canadian Northern Ry. has ordered 25 cabooses from the Crossen Car Mfg. Co., Cobourg, Ont.

The C.P.R. has ordered one 3 1/2 yd. Atlantic type steam shovel

The Quebec Central Ry. has received two 10-wheel locomotives from the Canadian Locomotive Co., Kingston, Ont.

The G.T.R. has ordered 500 steel underframe box cars, of 60,000 lbs. capacity, from the Silliker Car Co., Halifax, N.S.

The Canadian General Development Co., and the Nova Scotia Construction Co., have each received one steam shovel from the Montreal Locomotive Works.

Kennedy and McDonald, contractors on the National Transcontinental Ry., have purchased three 1910 40-ton Hart convertible ballast cars from the Hart-Otis Car Co., Montreal.

Cavicchi and Pagano, contractors on the National Transcontinental Ry., have ordered 10 flat cars, G.T.P.R. standard, 36 ft. long, 30 tons capacity, from the Canadian Car and Foundry Co., Montreal, through the Canadian Railway and Contractors' Supply Co.

Haney, Quinlan and Robertson, railway contractors, have received two 4-wheeled locomotives; the Belmina Mining Co., and the Maritime Gypsum Co., one 4-wheeled locomotive each, and the Dominion Nickel Copper Co., one mogul locomotive, from the Montreal Locomotive Works.

The Board of Railway Commissioners having authorized the C.P.R. to use natural gas for illuminating its cars, subject to the same regulations which govern the use of Pintsch gas, we are officially advised that the gas will be used in the same way as the Pintsch gas on cars running out of places where there is a supply of natural gas to draw from.

The Canadian Northern Ry., between July 15 and Aug. 15, received the following additions to rolling stock:—250 Hart-Otis cars from the Hart-Otis Car Co., Montreal; 80 flat cars and 14 stock cars from the Crossen Car Mfg. Co., Cobourg, Ont.; 15 box cars and three first class cars, from the Silliker Car Co., Halifax, N.S.; one dining car, 10 box cars, and 50 automobile cars from the Canadian Car and Foundry Co., Montreal.

The C.P.R., between July 13 and Aug. 17, received the following additions to rolling stock: nine wooden box cars, one second class car, three dining cars, 14 refrigerator cars, six first class and smoking cars, two first class suburban cars, two baggage cars, two vans and two D.10 locomotives from its Angus shops, Montreal; 268 steel frame box cars from the Canadian Car and Foundry Co., Montreal, and 12 N.3 locomotives from the Montreal Locomotive Works.

The Maritime Gypsum Co. has ordered one four-wheeled locomotive from the Montreal Locomotive Works, of which the following are the chief details:

Weight in working order 41,000 lbs.
 Wheel base 4' 9"
 Cylinders 11" by 16"
 Driving wheels, diameter 33"
 Boiler, type Straight top
 Boiler pressure 165 lbs.
 Tubes, number and diameter 85; 2"
 Tubes, length 8' 3 3/4"
 Brakes Steam
 Capacity, water 750 gals.

The Belmina Consolidated Asbestos Co. has ordered one four-wheeled locomotive from the Montreal Locomotive Works, of which the following are the chief details:

Weight in working order 24,400 lbs.
 Wheel base 4' 6"
 Cylinders 9" by 14"

Driving wheels, diameter 29"
 Boiler, type Straight top
 Boiler pressure 150 lbs.
 Tubes, number and diameter 56; 1 3/4"
 Tubes, length 7' 5 11-16"
 Brakes Hand
 Capacity, water 325 gals.

Haney, Quinlan and Robertson have ordered four four-wheeled locomotives from the Montreal Locomotive Works, of which the following are the chief details:

Weight in working order 56,000 lbs.
 Wheel base 6' 3"
 Cylinders 13" by 18"
 Driving wheels, diameter 36"
 Boiler, type Straight top
 Boiler, diameter 41 11-16"
 Boiler pressure 165 lbs.
 Tubes, number and diameter 100; 2"
 Tubes, length 10 ft.
 Brakes Steam
 Capacity, water 1,000 gals.

We are officially advised that the five Mallet articulated compound locomotives which the C.P.R. is building at its Angus shops, as mentioned in our last issue, will be slightly different from the one which was fully described and illustrated in our April issue. On the tests then described, it was found that an improvement could be made in the boiler and connection between the two engines. The boiler, therefore, is being made larger in diameter in front, and shorter. The superheater will also be different, and instead of being located in the centre of the boiler barrel, will be in the smokebox, as with the standard type.

Following are the chief details of the four wheel saddle tank locomotive which the Canadian General Development Co., has purchased from the Montreal Locomotive Works:—

Gauge 36"
 Cylinders 11" x 16"
 Driving wheel diar. 33"
 Boiler, diar 37 3/4"
 Boiler pressure 165 lbs.
 Firebox 40 1/2" x 33"
 Tubes, no. and diar. 85—2"
 Tubes, length 8' 3 3/4"
 Wheel base 4' 9"
 Weight in working order 39,000 lbs.
 Heating surface, tubes 367 sq. ft.
 Grate area 9.3 sq. ft.
 Maximum tractive power 8,228 lbs.
 Factor of adhesion 4.74
 Capacity, water 750 gals.
 Capacity, coal 600 lbs.

Following are the chief details of the four Pacific type locomotives which the Temiskaming and Northern Ontario Ry., has ordered from the Canadian Locomotive Co., Kingston, Ont., as mentioned in our July issue:—

Weight on drivers 135,500 lbs.
 Weight, total 202,500 lbs.
 Cylinders 21" x 28"
 Driving wheels, diar. 69"
 Boiler, type Extended wagon top
 Boiler pressure 200 lbs.
 Heating surface, tubes 2,705 sq. ft.
 Heating surface, firebox 162 sq. ft.
 Tubes, no. and diar. 272—2"
 Tubes, length 19' 0"
 Grate area 46 sq. ft.
 Capacity, water 5,500 gals.
 Capacity, coal 10 tons.
 Axles Nova Scotia S. & Co.'s open hearth steel.

Air brakes Westinghouse E.T. 6.
 Brake beams Simplex.
 Brake shoes Steel back.
 Couplers Tower.
 Headlight Pyle National Electric.
 Journal bearings Canadian Bronze Co.
 Springs Montreal Steel Works.
 Steam heat equipment Gold system.

The Quebec Central Ry. has ordered two mogul locomotives from the Canadian Locomotive Co., Kingston, Ont., of which the following are the chief details:—

Weight on drivers 122,000 lbs.
 Weight, total 141,000 lbs.
 Wheel base of engine, rigid 15' 0"
 Wheel base of engine, total 23' 0"
 Wheel base of engine and tender 49' 10 1/2"
 Height 14' 4 3/4"
 Heating surface, firebox 153 sq. ft.
 Heating surface, tubes 1,741 sq. ft.
 Heating surface, total 1,894 sq. ft.
 Driving wheels, diar. 56"
 Driving wheel centres Main cast steel others cast iron
 Driving journals 9" by 12"

Cylinders 20" by 26"
 Boiler, type Radial stayed
 Boiler pressure 200 lbs.
 Tubes, no. and diar. 280 2"
 Tubes, length 12' 6"
 Safety valves Locomotive type, muffled
 Brakes Westinghouse
 Weight of tender, loaded 104,000 lbs.
 Capacity, water 43,000 lbs.
 Capacity, coal 9 1/2 tons
 Tank style U-shaped, with sloping back
 Truck 4-wheel with steel bolster
 Wheels, diar. 33"
 Journals 5" by 9"
 Wheels Centres, w.i.; steel tires
 Brake beams Steel

In our last issue we mentioned that the C.P.R. had ordered 100 automobile cars from the Canadian Car and Foundry Co., Montreal. They will be, generally, the same as the standard 40-ton box car, except that they will be built with the new type of low truck, thus securing increased inside height. They will be equipped with security automobile side doors, giving a clear opening, when both doors are open, of 10 ft. One end of the cars will also be equipped with the C.C. & F. Co.'s design of swinging doors, in such a way that when the doors are open, vehicles of any kind can be unloaded through the end of the car. These doors will give a clear opening of practically the whole width of the car. Following are the chief dimensions, etc.:

Capacity 40 tons
 Length inside 36' 0"
 Width inside 8' 6"
 Height inside, top of floor to under side of carlin 8' 4 3/4"
 Centre to centre of trucks 26' 10"
 Wheels C.P.R. standard
 Axles Steel
 Journal boxes McCord
 Journal bearings Canadian Bronze Co.
 Brake shoes Steel back
 Brake beams and bolsters Simplex
 Couplers Simplex

Following are the chief details of the four Pacific type locomotives, which the Temiskaming and Northern Ontario Ry. is having built by the Canadian Locomotive Co., Kingston, Ont.:

Weight on drivers 135,500 lbs.
 Weight on trailing wheels 34,300 lbs.
 Total weight of engine truck 32,700 lbs.
 Cylinders 21" by 28"
 Driving wheels, diameter 69"
 Trailing wheels, diameter 45"
 Engine truck wheels, diameter 33"
 Tender wheels, diameter 36"
 Driving wheel base 12' 7"
 Wheel base of engine 31' 6"
 Boiler, type Extended wagon top
 Boiler pressure 200 lbs.
 Boiler diameter at waist sheet 63 3/4"
 Boiler diameter at dome course 72 3/4"
 Firebox 95 1/4" by 69 1/4"
 Grate area 46 sq. ft.
 Tubes, number and diameter 272; 2"
 Tubes, length 19' 0"
 Heating surface, tubes 2,705 sq. ft.
 Heating surface, firebox 162 sq. ft.
 Heating surface, total 2,867 sq. ft.
 Capacity, water 5,500 gals.
 Capacity, coal 10 tons
 Valve gear Walschaert
 Valves Piston type
 Axles Nova Scotia Steel & Coal Co.'s
 Springs Steel, Peach & Tozer's steel; Montreal Steel Works make.
 Journal bearings Canadian Bronze Co.
 Steam heating Gold system
 Headlight Pyle National Electric
 Air brakes Westinghouse E.T. 6

The Michigan Central Rd. has ordered eight consolidation, eight Pacific and five six-coupled locomotives from the Montreal Locomotive Works. Following are the chief details in each case:

CONSOLIDATION.
 Weight in working order 239,000 lbs.
 Weight on drivers 214,000 lbs.
 Weight on engine truck 25,000 lbs.
 Wheel base, driving 17' 6"
 Wheel base, engine 26' 5"
 Wheel base, engine and tender 60' 11"
 Valve gear Walschaert
 Cylinders 23" by 32"
 Driving wheels, diameter 63"
 Boiler, type Straight top
 Boiler, diameter at first ring 81 3/4"
 Boiler pressure 200 lbs.
 Tubes, number and diameter 446; 2"
 Tubes, length 15' 0 1/2"
 Air brakes Westinghouse American
 Capacity, water 7,500 gals.
 Capacity, coal 12 tons

PACIFIC TYPE.
 Weight in working order 246,000 lbs.

NOVA SCOTIA STEEL AND COAL CO.

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Railway and Electric Car Axles, Angle Bar, and Tie Plates, Railway Spikes

Tee Rails 12, 18, and 28 lb. per yard

ALL SIZES BAR STEEL FOR CAR-BUILDERS' USE. Spring, Machinery, Tire, Angles, and Merchant Bar Steel. Heavy Forgings of all Descriptions.

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THE ELECTRIC HEADLIGHT

The following letter was received under date of May 8, 1908, from Mr. J. W. Cleary, Travelling Engineer Pyle-National Electric Headlight Co.:

"I learn from _____ the Master Mechanic here, that an engineer running between _____ and _____ discovered a broken rail with the Pyle-National Electric Headlight and made the stop without ditching his train. One or two pairs of wheels got off, but that was a small affair to what it would have been where a foot of the rail was broken off. Also an engineer running east of here found some cars shoved out on the main line. He saw them with the 'Electric' and made the stop without hitting them."

PYLE-NATIONAL ELECTRIC HEADLIGHT CO.

MONADNOCK, CHICAGO

Weight on drivers	151,500 lbs.
Weight on trailer	46,500 lbs.
Weight on engine truck	48,000 lbs.
Wheel base, driving	13' 0"
Wheel base, engine	33' 7 1/2"
Wheel base, engine and tender	63' 11"
Valve gear	Walschaert
Cylinders	22" by 26"
Driving wheels, diameter	75"
Boiler, type	Straight top
Boiler, diameter at first ring	72"
Boiler, pressure	200 lbs.
Tubes, number and diameter	394; 2"
Tubes, length	21' 0"
Air brakes	Westinghouse American
Capacity, water	7,000 gals.
Capacity, coal	12 tons

SIX-WHEEL COUPLED.

Weight in working order	163,000 lbs.
Wheel base, engine	11' 6"
Wheel base, engine and tender	42' 6"
Cylinders	21" by 28"
Driving wheels, diameter	57"
Boiler, type	Straight top
Boiler, diameter at first ring	67 3/8"
Boiler, pressure	180 lbs.
Tubes, number and diameter	308; 2"
Tubes, length	16' 0"
Brakes	Westinghouse American
Capacity, water	5,100 gals.
Capacity, coal	7 1/2 tons

Railway Commissioners' Traffic Orders.

Summaries of other traffic orders are given on another page under "Orders by Railway Commissioners":—

MONTREAL CARTAGE CHARGE.

11270. July 21.—On the application of T. J. Stewart, of Hamilton, Ont., the Assistant Chief Commissioner gave the following judgment:—The complainant purchased a marble slab from B. & S. H. Thompson & Co., Ltd., Montreal, which was shipped to him at Hamilton by C.P.R. freight. The carting for the C.P.R. in Montreal is done by the Dominion Transport Co. under a contract by which the railway company gives the transport company the sole and exclusive right to cart outward freight to the freight sheds of the company, in Montreal, at certain rates therein enumerated, all goods which are to be shipped over the lines of the railway included in classes 1 to 5 inclusive in the Canadian classification, with certain exceptions, with which we are not now concerned. The consignors notified the transport company, whom they knew to be the cartage agents for the C.P.R. The transport company carted the marble slab to the C.P.R. freight shed and charged \$1.50 for the service, which was included in the C.P.R. freight bill and paid by the consignee at Hamilton. The consignee then complained to the board that the charge for cartage was excessive. The Dominion Transport Co. is not under the Board's jurisdiction, and were it not for its contract with the C.P.R. Co. we would have nothing to say in this matter. Subsec. 5 of sec. 314 of the Railway Act, as amended by sec. 11, chap. 61, of the statutes of 1908, is as follows:—No tolls shall be charged by the company or by any person in respect of a railway or any traffic thereon until a bylaw authorizing the preparation and issue of tariffs of such tolls has been approved by the Board, nor, unless otherwise authorized by this Act, until a tariff of such tolls has been filed with and, where such approval is required under this act, approved by, the Board; nor shall any tolls be charged under any tariff or portion thereof disallowed by the Board; nor shall the company charge, levy or collect any toll or money for any service as a common carrier except under the provisions of this act.

And subsec. 30 of sec. 2 of the act as amended by sec. 9 of chap. 61 of the statutes of 1908 provides that "toll or rate means and includes any toll, rate, charge or allowance charged or made either by the company or by any person on behalf or under authority or consent of the company, in connection with the carriage, shipment, transportation, care, handling or delivery of goods, and in-

cludes also any toll, rate, charge or allowance so charged or made for the collection or cartage in respect of goods transported or to be transported." In this case the \$1.50 charged for cartage was under the authority or consent of the company, and therefore was a toll within the meaning of the section of the act just referred to. The company's cartage tariff E 3807, C.R.C. No. E 1305, does not contain any item covering a charge for carting marble slabs in Montreal. In fact the tariff especially excludes marble slabs. Nevertheless the company has in fact collected a toll, within the meaning of the Railway Act, which does not appear in its tariff. This is prohibited by subsec. 5 of sec. 314. I am, therefore, of the opinion that, the railway company had no legal right to collect the \$1.50 toll, and that an order should go declaring that the toll charged was illegal.

GRAIN RATES FROM MANITOBA.

11316. July 29.—Re application of Birtle Agricultural Society, Manitoba, complaining against rate of 16 c. per 100 lbs. charged by C.P.R. on grain and grain products from Birtle and Foxwarren, Man., to Fort William and Port Arthur, Ont., as shown in tariff C.R.C. no. W. 1318, and applying for order directing the railway company to restore the rate of 15 c. per 100 lbs., as formerly charged on such shipments. It is ordered that the said rate of 16 c. per 100 lbs. on grain and grain products shipped from Birtle, Foxwarren, Binscarth, Millwood and Harrowby, Man., to Fort William and Port Arthur, as shown in the said tariff, be disallowed; and the railway company is directed to restore the rate of 15 c. per 100 lbs. on the said shipments from Birtle, Foxwarren, Binscarth, Millwood, and Harrowby, to Fort William and Port Arthur, the said rate to take effect not later than Sept. 1.

RATES ON RUBBER GOODS, ETC.

11326. Re application of Transportation Bureau of Montreal Board of Trade under sec. 315 of the Railway Act, on behalf of Eastern Canadian manufacturers of rubber goods, supported by the Canadian Manufacturers Association, complaining of the Canadian classification and asking for the official classification of less-than-carload ratings on rubber hose, rubber packing and rubber tires. It is ordered that the application be not granted, but that, in Canadian classification 14, the restriction of 1st class to "carriage and wagon" solid tires, be removed, and that in the forthcoming supplement no. 3 to the said classification, this item be changed so as to read: "Tires, solid, in packages, 1st class."

G.T.R. and G. T. Pacific Ry. Inspected.

—A. W. Smithers, Chairman of the Board G.T.R., arrived in New York from London, Eng., Aug. 5, where he was met by C. M. Hays, President G.T.R. and G.T.Pacific Ry. Accompanied by E. H. Fitzhugh, First Vice President, the Chairman and President left Montreal, Aug. 9, on the annual trip of inspection over the G.T.R. Having completed this, Mr. Fitzhugh returned to Montreal and the Chairman and the President left Sarnia on the Northern Navigation Co.'s s.s. Hamonic, arriving in Fort William, Aug. 12, from which place accompanied by a party of British visitors, they travelled on a special train over the completed portions of the G. T. Pacific Ry., and inspected the progress of work at other points. The party went on to Vancouver, thence by G.T.P. steamship to Prince Rupert, to inspect the work in progress there.

A decision has been given in the Saskatchewan courts to the effect that the Canadian Northern Ry. must pay taxes on land in Prince Albert, Sask., valued at \$70,000 which it owns, but is not now using for railway purposes.

A Railway to Hudson's Bay.

The contract for the substructure of the bridge to be built over the Saskatchewan River at the Pas Mission, Sask., in connection with the proposed railway to Hudson Bay, has been let by the Department of Railways to Mackenzie, Mann & Co., Winnipeg. The estimated cost of the work is \$100,000. As a result of the letting of this contract there has arisen considerable speculation as to the building of the railway itself, and the report which gains most credence is that the line will be built by Mackenzie, Mann & Co. and operated by the Canadian Northern Ry., under an agreement similar to that under which the G.T. Pacific Ry. will operate the National Transcontinental Ry. from Winnipeg to Moncton.

Speaking at Saskatoon, Sask., July 23, the Minister of Railways said:—"Whether the Government or a private company operate the line, the Government will maintain absolute control of the rates. We intend that whoever builds that railway will have to provide not only for carrying trade by rail to Pas Mission and Hudson's Bay, but also for a transatlantic steamship service to the markets of the old world."

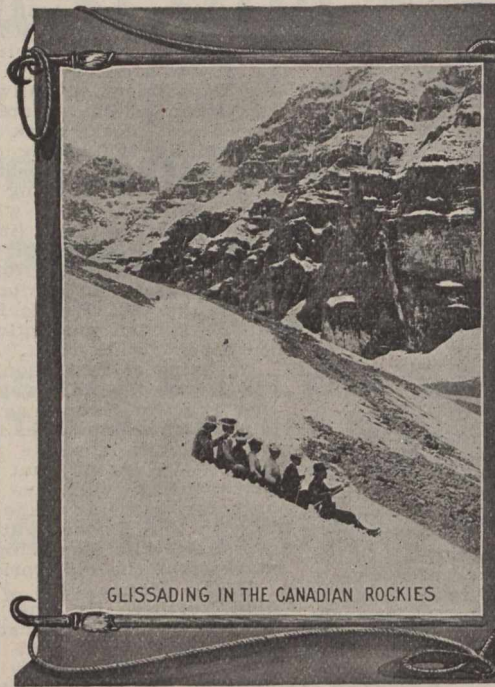
D. D. Mann, Vice President, Canadian Northern Ry., met the Minister of Railways at Lloydminster, Sask., Aug. 8, and on Aug. 13 he stated that the question of the railway to Hudson Bay had not been discussed between them on that occasion, and that there was no arrangement between his firm and the Government about the construction or operation of the railway. The Minister of Railways has also issued a denial of the story that there is any agreement with Mackenzie, Mann & Co. as to the line, his denial being based on a telegraphic account of an interview in Toronto with W. Mackenzie, President, in which the latter is quoted as saying:—"The Hudson Bay line must be built at once, but the point of its operation remains to be settled by Parliament." Pressed for further particulars Mr. Mackenzie would say nothing more than that it was "probable" the new Government line would be leased to the C.N.R.

The Manitoba Free Press of July 19, contained under the heading of "Twenty Years Ago":—"Hugh Sutherland leaves this morning via the Northern Pacific for Europe on Hudson's Bay railway business. Stewart Tupper will accompany him from Montreal." (Aug., pg. 617.)

Windsor St. Station, Montreal.—

Contracts have been let to the Dominion Bridge Co., for the steel work, and to C. E. Deakin for the masonry and general work on the annex to the Windsor St. station, Montreal. The work is to be completed by Nov. 1911. The estimated cost covered by these contracts is about \$1,250,000.

The Interstate Commerce Commission has decided in the matter of jurisdiction over rail and water carriers operating in Alaska, that the district of Alaska is not a territory of the United States in the sense in which that phrase is used in the act to regulate commerce as amended, and the Commission has therefore no authority or jurisdiction over carriers engaged in transportation of passengers or property within the district of Alaska. The general rule that a special tribunal ought not to enlarge its jurisdiction by intendment but ought to exercise only the powers clearly conferred by statute applies with special if not controlling force to the exercise by the Commission of jurisdiction in Alaska in view of the fact that under the act of May 14, 1898, power to regulate railway rates in Alaska was conferred upon another branch of the Government.



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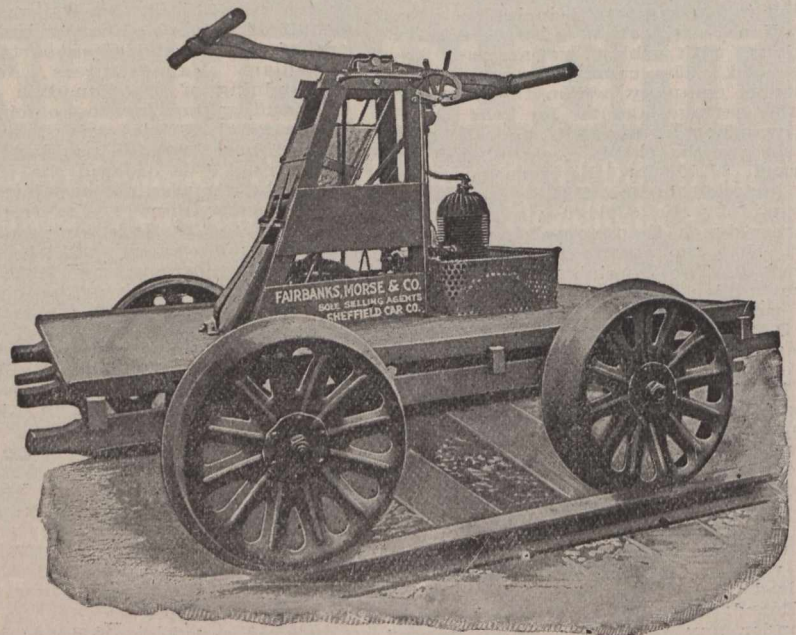
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They work harder and longer, for they
can Ride Home Quickly. Sections can
be lengthened and forces cut down with
increased efficiency.



No. 13 Fairbanks-Morse Air Cooled Motor Car

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MONTREAL ST. JOHN, N.B. TORONTO WINNIPEG CALGARY VANCOUVER

Handling Locomotives.

By H. H. Vaughan, Assistant to the Vice President Canadian Pacific Railway.

The desirability of pooling engines in place of operating them by regularly assigned crews depends, in the writer's opinion, on whether the engines are engaged in passenger or freight service, and in the latter case, on the conditions which exist.

PASSENGER SERVICE.—Where traffic conditions admit of the engine making greater mileage than can properly be run by one crew two crews assigned to one engine, or three crews to two engines, will enable the engine to make as great a mileage as is desirable. On account of the comparatively short time occupied from terminal to terminal, the crews can usually make a round trip without holding the engine longer than is required to handle it and prepare it for the return trip or to await its train. By using more than one crew to the engine, it is theoretically available on its return just as soon as though it were pooled. In practice, unless pooling is carried to the extent of sending out any engine on any train, certain engines are regularly used on certain trains or groups of trains, and it is comparatively easy to arrange the crews and engines so that a reasonable time may be allowed for repairs and yet ample service be obtained from the engine. When working with assigned crews it is of course usual to employ some extra passenger men to take the place of the regular men, who are also available in case an extra trip is required from an engine on account of specials or extra sections of regular trains. Where regular scheduled trains have to be provided for, this system is as flexible and convenient as pooling and has the additional advantage in passenger service that the men run certain trains regularly, and will consequently give better service than when handling a number of trains indiscriminately. Pooling in passenger service probably does not require much discussion. The system is not in extensive use and will presumably have few advocates. The writer would, however, state as a result of his experience with both pooled and assigned engines in passenger service, that he is most strongly opposed to pooling in this service and considers that far better results can be obtained from assigned crews.

FREIGHT SERVICE.—Here conditions are very different. The time is slow and a long time is occupied from terminal to terminal, so that crews may require a full allowance of rest on arrival, or may even have to be relieved on the road. Few, if any, of the trains run at regular hours, and in place of following a defined schedule, the demand for engines varies with the traffic. When business is heavy, engines are wanted as soon as they are repaired and ready for service, making it difficult, if not impossible, to select the engines in any particular order. By pooling, such difficulties may be more easily met, especially at large terminals. When engines are assigned the practice usually required by the agreement with the men is that engines shall be prepared and dispatched in the order in which they arrive, but if the engine is ready its use may be retarded by the time required by the crew for rest. In pooling, both these objectionable conditions vanish. An engine may be turned at once if fit for service and thus rendered immediately available, and the movement of the men being entirely independent of that of the engines, the detention of engines at a terminal can be regulated by simply increasing or decreasing the number in the pool.

Under such conditions, if pooling is not carried on in name, it will be in

fact, simply because business cannot be handled unless engines are used without reference to the order of their arrival. Granted therefore that pooling is advantageous under these conditions, it should be done properly. All the features necessary to a successful pooling system must be employed, such as thorough terminal inspection independent of the engine crews, and arrangements for handling tools and engine supplies, and caring for headlights, oil cups, etc. If pooling is resorted to when business is especially heavy, or when traffic is disturbed by storms or by other causes, without proper arrangements being made, the results are most objectionable. Under these circumstances the condition of the power will depreciate rapidly and the service rendered will be exceedingly inefficient. The maxim is frequently stated: "If you pool, pool," and its wisdom has been demonstrated by experience. The real question about pooling is therefore whether there are conditions under which it is preferable to adopt the alternative practice, that of running engines with assigned crews. This depends on the results obtained from the two systems which are in the writer's experience as follows:

MILEAGE.—It is possible to obtain somewhat greater average mileage per engine under the pooling system, but the increase does not exceed ten per cent when traffic is being handled smoothly and without excessive congestion and delays.

REPAIRS.—When running successfully under the assigned engine system repairs are less than when similar conditions exist with pooled engines. A man running an engine regularly keeps up the smaller details and knows what work is required at once and what must be looked after in due time. His inspection reports are more reliable than those of a man who has had an engine for one trip only. As he has to run the engine next trip as well he will handle it with greater care and avoid any action that will cause him trouble in the future. Men who have been accustomed to running pooled engines will not do all this at once but they most certainly will if assigned to an engine for any length of time and the difference is noticeable in engine houses where some engines are assigned and some are pooled.

Engines are sometimes taken care of by the headquarters station system the work required to maintain the engine in proper condition being done at the terminal designated as the home station, while at the other terminal the only work done is that necessary for the return trip. With this arrangement, even with pooled engines, the same crew will, if possible, make the round trip; but when they are changed, practically as much work is required at the away station as at the home station. The result is a considerable increase in the cost of repairs, for there is not as a rule very much difference in the cost at the home station.

When the assigned engine system proves inadequate for traffic demands, the results change. Men will endeavor to book enough work against the engine to hold it until they have rested, and on the other hand engines are liable to be wanted before repairs that are actually required are completed. Under these conditions engines may be better and more cheaply maintained when pooled; but under normal conditions the writer's experience would show that with assigned crews the cost of running repairs may be reduced five to ten per cent, and better mileage obtained from the engines between shoppings.

FUEL.—It is almost impossible to determine the fuel consumed by an engine on an individual trip and consequently difficult when pooling to keep any record of the amount of coal used

by different men. A record may be kept by engines, but it is then impossible to locate the responsibility for any excessive consumption. The practical result is that on pooled engines, individual fuel records are of comparatively little use. With assigned engines, while trip records may not be individually accurate, the average of several consecutive trips soon becomes so, as the variation of the amount of coal left on the tender, while important on one, is of comparatively small importance on a number of trips. There is no doubt in the writer's mind that individual coal records, whether by trip or by period, are an important factor in obtaining economical results in fuel consumption, both from men and from engines, and he ascribes the good results that have been obtained on the C.P.R. largely to the careful way in which the records have been watched.

Apart from the records, the familiarity of the men with the engines has an important bearing on fuel consumption. Most engines vary slightly in the way they burn the coal, in the nature and intensity of the draft, and in the best position for the throttle and reversing lever. Crews knowing an engine thoroughly learn about these peculiarities, while they do not when running a different engine each trip. One crew will obtain from an engine results that are impossible for another crew, and thus the result with assigned crews is a tendency to higher efficiency than when every engine has to be drafted and adapted to do the work with the poorest crew on the division. It is only necessary to watch the difference in the way an engine is handled by a regular crew and by a pooled crew, to realize the advantage of the former, and important results have been clearly shown with the same men and engines, on divisions where the two systems have been in effect.

SERVICE.—The remarks that have been made in connection with repairs and fuel apply with almost equal force to the class of service obtained from the engines, with reference to failures, breakdowns and ability to make the time required. A crew that knows the engine will get more out of it than one that does not. They will notice any difference in its working and will take more interest in getting any defect rectified. They will keep their equipment in better condition and will pay more attention to bearings which show signs of heating, etc. All these conditions lead to better and more efficient service.

ENGINE HOUSE EXPENSES.—Inspection, the care of tools, the filling of lubricators, headlights and cab lamps, are commonly looked after on assigned engines by the crews. When engines are pooled this work has to be done by the engine house force. At a large terminal this expense is not large, but when the number of engines handled is small, it is difficult to arrange the duties of the men doing this work to prevent its becoming a serious item. Conditions vary on different roads in this respect, but the fact remains that this work is not in any way burdensome to men having a regular engine, while it is burdensome if they are required to prepare a different engine each trip, and consequently they object to it very strongly. In the majority of cases this work constitutes an additional charge on engines that are pooled.

CONCLUSIONS.—The writer considers that in passenger service pooling is objectionable under any conditions and should be avoided if possible.

In freight service, pooling is advisable if conditions are such that engines cannot be run with assigned crews, and probably on divisions where business is so heavy that 60 engines per day or over are dispatched from the terminal;

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but the writer's experience is that where assigned crews can be used on engines, the cost of repairs, the amount of fuel consumed, and the class of service obtained, will all be more satisfactory.

He therefore regards pooling as a practice that may be necessary under certain conditions, but that is certainly not desirable if the alternative system can be satisfactorily carried out.

The preceding paper was read before the American Society of Mechanical Engineers and the Institution of Mechanical Engineers at Birmingham, Eng., recently.

Canadian Northern Ry. Earnings, Etc.

Gross earnings, working expenses, net profits, increases or decreases from 1908-09, from July 1, 1909:

	Earnings.	Expenses.	Net Profits.	Net Increase or Decrease.
July	\$ 843,500	\$613,900	\$229,600	\$ 26,700+
Aug.	807,100	602,700	204,400	18,300+
Sept.	1,076,800	765,300	311,500	60,400+
Oct.	1,884,200	903,500	480,700	60,600+
Nov.	1,517,600	970,100	547,500	134,000+
Dec.	1,160,300	825,900	334,400	49,300+
Jan.	792,300	669,700	122,600	22,200+
Feb.	695,900	567,400	131,500	3,100+
Mar.	934,100	661,800	272,300	67,800+
Apr.	1,153,100	821,900	331,200	107,300+
May	1,224,900	856,300	368,600	185,700+
June	1,228,700	935,900	292,800	60,300+
	\$12,821,300	\$9,194,400	\$3,626,900	\$831,500+
Inc.	\$ 3,152,400	\$2,320,900	\$831,500	.....

Approximate gross earnings for July, \$1,225,100, and for two weeks ended Aug 14, \$481,800, against \$843,500 and \$378,400 for same periods 1909.

C.P.R. Earnings, Expenses, Etc.

Gross earnings, working expenses, net profits, increases or decreases over 1908-9, from July 1, 1909:

	Earnings.	Expenses.	Net Profits.	Net Increase or Decrease.
July	7,140,029.92	4,660,159.20	2,479,870.73	205,297.48+
Aug.	7,426,984.62	4,462,928.75	2,964,057.87	385,159.16+
Sept.	5,323,178.03	4,591,288.86	3,431,889.17	1,317,281.40+
Oct.	9,744,596.87	5,358,299.68	4,386,297.19	1,731,030.48+
Nov.	9,075,963.93	5,383,625.98	3,692,337.95	1,471,258.60+
Dec.	3,214,753.04	5,099,334.94	3,115,423.10	918,671.53+
Jan.	6,104,426.90	4,787,830.51	1,316,596.39	926,846.56+
Feb.	5,992,052.14	4,505,032.40	1,487,019.74	724,874.46+
Mar.	7,796,337.54	5,085,164.15	2,711,173.39	907,465.26+
Apr.	7,985,230.21	5,004,119.08	2,981,111.13	887,603.61+
May	8,378,114.62	5,821,850.47	2,556,264.15	629,403.66+
June	8,807,817.50	6,089,901.94	2,717,915.56	820,490.77+

\$94,989,490.33 \$61,149,534.46 \$33,839,955.87 \$10,884,382.97+

Inc. \$ 3,152,400 \$2,320,900 \$831,500

The net result of the company's operations for the year ended June 30, are as follows:—

Gross earnings	\$94,989,490
Working expenses	61,149,534
Net earnings	\$33,839,956
Net earnings of steamships in excess of amount included in monthly returns	909,236
Income from other sources	2,425,477
Total net income	\$37,175,669
Deduct fixed charges	9,916,941
Surplus	\$27,258,728
Deduct amount transferred to steamship replacement account	\$900,000
Contribution to pension fund	80,000
	980,000

Net revenue available for dividend. \$26,278,728

Surplus for year carried forward, after payment of all dividends. \$13,896,000

Approximate gross earnings for July, \$8,660,000, and for two weeks ended Aug. 14, \$4,064,000, against \$7,004,000 and \$3,213,000 for same periods 1909.

DULUTH, SOUTH SHORE AND ATLANTIC RY.—Operating revenue for June, \$302,980.55; expenses \$203,629.17; net operating revenue \$99,351.38, against \$269,483.81 operating revenue; \$204,868.41 expenses; \$64,615.40 net operating revenue for June, 1909. Aggregate operating revenue for 12 months ended June 30, \$3,302,147.03; expenses \$2,269,247.84; net operating revenue \$1,032,899.19, against \$2,719,337.86 aggregate operating revenue; \$1,979,518.07 expenses; \$739,819.79 net operating revenue for same period 1908-09. Approximate gross earnings for July, \$313,502, against \$297,564 for same period 1909.

MINERAL RANGE RD.—Operating revenue for June, \$62,737.46; expenses \$57,695.53; net operating revenue \$5,041.93, against \$70,569 operating revenue; \$65,124.13 expenses; \$5,444.87 net operating revenue for June 1909.

Aggregate operating revenue for 12 months ended June 30, \$826,499.55; expenses \$738,669.21; net operating revenue \$87,830.34, against \$826,375.46 aggregate operating revenue; \$701,033.34 expenses; \$125,342.12 net operating revenue for same period 1908-09. Approximate gross earnings for July, \$56,651, against \$73,257 for same period 1909.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RY.—Operating revenue for June, \$1,338,367.22; expenses and taxes, \$851,129.19; operating income, \$487,238.03, against \$1,072,626.47 operating revenue; \$669,699.53 expenses and taxes; \$402,926.94 operating income for June, 1909. Aggregate operating revenue for 12 months ended June 30, \$15,407,179.40; expenses and taxes, \$9,026,601.21; operating income, \$6,380,578.19, against \$12,609,299.17, aggregate operating revenue; \$7,970,810.13 expenses and taxes; \$4,638,489.04 operating income for same period 1908-09. Approximate gross earnings for July, \$1,903,208, against \$1,711,948 for same period 1909.

CHICAGO DIVISION.—Operating revenue for June, \$795,561.74; expenses and taxes, \$581,659.93; operating income, \$213,901.81, against \$654,211.38 operating revenue; \$489,865.68 expenses and taxes; \$164,345.70 operating income for June 1909. Aggregate operating revenue for 12 months ended June 30, \$8,928,224.58; expenses and taxes \$6,262,495.86; operating income \$2,665,728.72, against \$7,556,603.11 aggregate operating revenue; \$5,502,270.18 expenses and taxes; \$2,054,332.93 operating income for same period 1908-09.

Grand Trunk Ry. Earnings, Expenses, Etc.

Subject to audit, the accounts for the half year ended June 30, show the following results: Gross receipts \$3,321,600 Working expenses, including \$120,000 in reduction of the engine and car renewal suspense account 2,456,000

Net receipts	£ 865,600
Income from rentals, outside operations and car mileage balance	58,100
Total net revenue	£ 923,700
Net revenue charges for the half year, less credits	507,000
Balance	£ 416,700
Deduct Canada Atlantic Ry. deficit for the half year	£34,900
Deduct Detroit, Grand Haven and Milwaukee deficit for the half year	34,600
	69,500

Surplus \$347,200 This surplus, added to the balance of \$11,800 from Dec., 1909, makes a total of \$359,000 available for dividend, which will admit of the payment of the full dividend for the half year on the 4% guaranteed stock and first and second preference stocks, leaving a balance of about £12,600 to be carried forward.

The accounts of the Grand Trunk Western Ry. for the year ended June 30, including the balance brought forward from the previous year, show a surplus sufficient to provide for the interest on the first mortgage bonds, and leave a balance of about £17,200.

Approximate earnings for July, \$3,179,896, and for two weeks ended Aug. 14, \$1,603,660, against \$3,491,184 and \$1,700,877 for same periods 1909.

TRAFFIC RECEIPTS OF THE SYSTEM.

Aggregate from July 1 to July 31:	1910	1909	Decrease
Grand Trunk	\$521,589	\$559,037	\$37,448
Canada Atlantic	25,887	30,672	4,785
G. T. Western	81,032	96,760	15,728
D. G. H. & M.	24,895	30,898	6,003
Totals	£653,403	£717,367	£63,964

J. A. Seguin, a Montreal barber, was fined \$20, Aug. 12, for scarping C.P.R. commutation tickets.

A new wage scale has been adopted and has gone into effect on the Intercolonial Ry., as affecting freight handlers, parlor and sleeping-car conductors; dining-car conductors, cooks, etc.; station-are boiler men, machinists, and other employes having to do with the operation of trains.

J. P. Mabee, representing the Board of Railway Commissioners and M. A. Knapp, representing the Interstate Commerce Commission, met in New York, Aug. 11, for a preliminary discussion on matters connected with an agreement for the regulation of international commerce between Canada and the U.S.

Too Late for Classification.

Arnprior and Pontiac Ry.—A United States railway paper published the following recently: "The A. & P. Ry. Co. advises that it will begin construction this season on its projected 75-mile electric railway which is to connect Ottawa, Fitzroy Harbor, Arnprior and Campbells Bay. The line will connect with the C.P.R. at Campbells Bay and Arnprior and with the G.T.R. at Graham's Bay. Power station and repair shops will be located at Fitzroy Harbor. Arthur Price 75 Somerset St., Ottawa, is Chief Engineer."

We are officially advised that it is not likely than any construction will be done on this projected line this year. The proposal is to build the railway in connection with the development of the Chats Falls in Fitzroy township. The scheme is not fully developed as yet, but our informant says that it has good prospects. The chief engineer is A.H.N. Bruce, of Ottawa, not Arthur Price, as stated in our contemporary.

Canadian Northern Ry.—It was announced Aug. 19 that arrangements had been completed with the St. Boniface, Man., city council, for extensive improvements within the next two years, to include a roundhouse, store house, coal warehouses, and freight sheds, and that the station at St. Boniface would be a joint one with the G.T.P.R., also that a new bridge would be built across the Red River, between Winnipeg and St. Boniface.

C.P.R. Guelph Station.—The Secretary of the Guelph Junction Ry. has received a letter from General Superintendent Osborne stating that the C.P.R. was only awaiting the settlement of the level crossing question before proceeding with the erection of the new passenger station at Guelph.

G.T.R. Port Huron Shops.—E.H. Fitzhugh, First Vice President, on a visit of inspection to Port Huron, Mich., Aug. 11, is reported to have stated that the addition to Block 1 of the shops there would be started as soon as material and workmen could be secured; that the new building would include a wood mill with 10,000 ft. of floor space, a blacksmith shop with 8,000 ft. of floor space, a lumber shed and dry kiln, and that it was estimated to cost about \$120,000.

Hudson Bay and Pacific Ry.—A London, Eng., cable, Aug. 19, says the directors have authorized the statement that the Hudson Bay and Pacific Development Co.'s circular in which it was said that the railway company's bonds had been guaranteed by the Dominion Government was unauthorized by the railway company.

Intercolonial Ry.—The buildings to be erected to replace those burned at Campbellton, N.B., include a two-storey passenger station with covered platforms; a freight shed, 20-stall locomotive house with annex for a repair shop, rest house for trainmen, ice house, track scale and other necessary buildings for a divisional point. The coal chute was the only building not destroyed in the recent fire, and it will remain as at present.

Midland Ry. of Manitoba.—An engineering party is making a survey from the G.N.R. track in St. Vincent, Minn., to the Northern Pacific Rd. station at Pembina, N.D., over which it is said the G.N.R. will run its trains to a more direct connection with the Canadian Northern Ry. than at present.

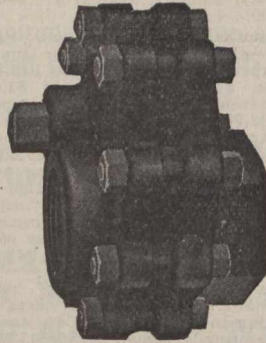
The Board of Railway Commissioners, at its operating sittings at Ottawa, Oct. 4, will consider the matter of a regulation, requiring each and every passenger car of railways subject to its jurisdiction, to be equipped with a tool box, containing saw, sledge and axe, and located in a convenient place in each car.

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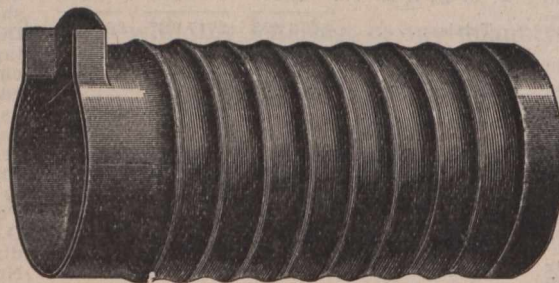
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Belleville Roundhouse.—Work was started Aug. 10 on the new roundhouse at Belleville. It is located close to the junction of the main and the Midland Ry. lines, just out the city limits, and will contain 42 stalls. When the new building is completed the present roundhouse will be torn down, and the tracks east of the station removed.

Allandale Buildings.—We were recently advised that it was intended to rebuild the transfer shed and weigh scales which were recently destroyed by fire at Allandale, Ont., on the old site. Plans had not then been prepared, but the intention was to practically duplicate the former buildings.

Toronto Station Building and Viaduct.—When in Toronto Aug. 9, in company with A. W. Smithers, Chairman of the Board, President Hays said there was nothing new to report as to the building of the Union station and the viaduct along the water front, but when he came back from his tour of the G.T. Pacific Ry. he would probably have a good deal to say.

In connection with the viaduct question, we are advised that it is the second main part of the work of grade separation in Toronto, the first of which is referred to below. This viaduct part of the work extends from Bathurst St. on the west to Logan Ave. on the east, but owing to the C.P.R. appeal from the Board of Railway Commissioners' order this part of the work is yet undetermined.

Grade Separation, Toronto.—The preparatory work for the separation of the grades on the G.T.R. from Bathurst St., Toronto, as far west as Sunnyside, on the Toronto-Hamilton line, has been in progress for some time, and it is reported that all the property necessary for the work has been acquired. The work is being done under the terms of an order of the Board of Railway Commissioners, the cost being apportioned between the company, the city of Toronto and the township of York. The first part of the grade separation work in Toronto extends from Bathurst St. on the east to Mimico on the west, six miles. The depression commences at the C.P.R. crossing just west of Bathurst St. and continues to a point east of Queen St. (Sunnyside) crossing, the new grade of the railway passing under Dufferin St., Dunn, Jamieson and Dowling avenues, without altering the grades of

these streets. From the point east of Sunnyside crossing the new grade will cross the following streets overhead: Queen St., Inuian Rd., Howard Ave., Ellis Ave., Windermere and Jane streets, and the public highway known as Queen St. west. The bridges carrying streets over the railway track will be of steel and concrete, and will provide a vertical clearance of 22½ ft. above the base of rail. The subways carrying the railway tracks over the various streets will be of steel and concrete, and will provide 14 ft. vertical clearance for the highways. The work will consist principally of open cutting and embankment, except where it passes the exhibition grounds, where a concrete retaining wall will be used. Walls will also be used at Parkdale and other points where local conditions require it. There will be four through main tracks for the entire distance, and such other additional tracks as may be required for serving industries. The gradients will be 0.40% in each direction. J. R. W. Ambrose, Engineer of Grade Separation, is in charge of the work for the G.T.R. and E. L. Cousins, formerly District Engineer G.T.R., Toronto, represents the city council.

Chatham to Windsor, Ont.—Work is in progress between Windsor and Chatham, Ont., preparing for the replacing of the present 80-lb. steel with 90-lb. rails. (Aug., pg. 639.)

Brandon Hotel and Station C. N. R.

The Canadian Northern Ry. has let a contract for building a hotel in Brandon, Man., with a frontage on Princess St. of 120 ft., by 100 ft. on Ninth Ave. South of the hotel and adjoining will be a new station, two stories and basement, 190 by 36 ft. The station will be built of stone and brick in classical style. It will have a large general waiting room, ladies' waiting room, ticket lobby, express office, telegraph office and express and baggage room on the ground floor, and staff offices on the first floor. These will be reached from a separate entrance on Ninth Ave. Passing through the station the concourse will be reached with three stub end tracks for passenger service. The concourse will extend to the rear of the hotel, with an entrance into the main rotunda.

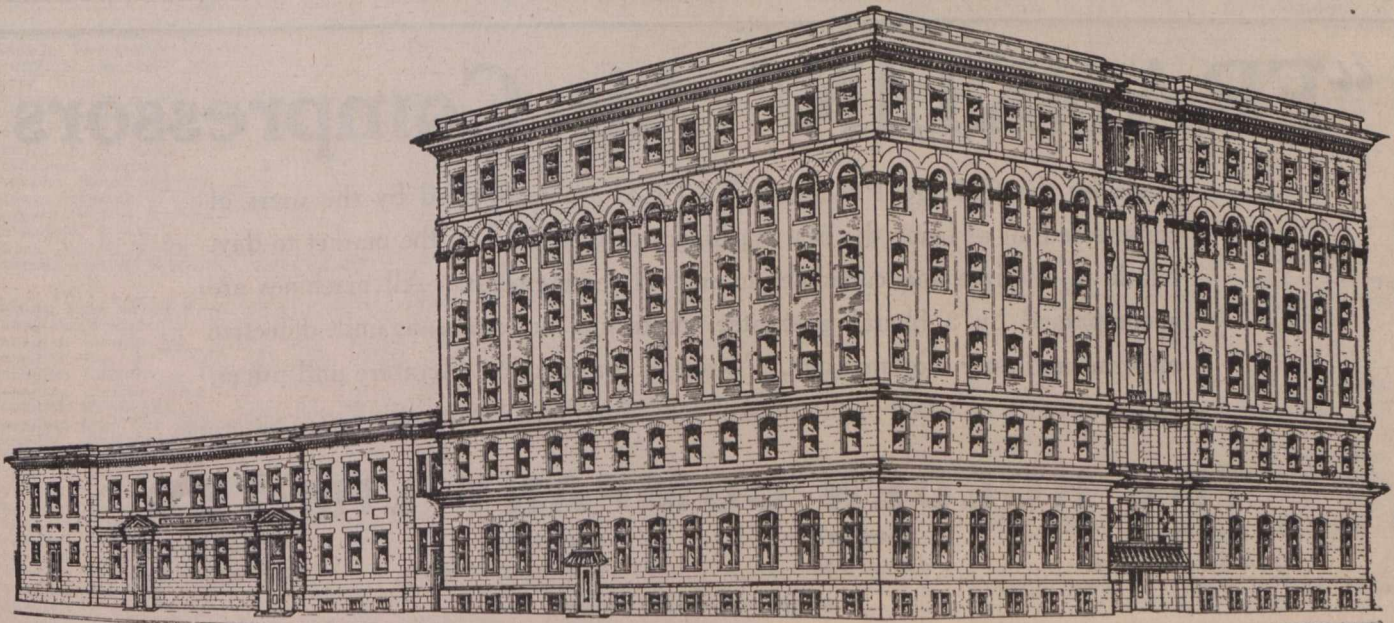
The hotel will be 90 ft. high, seven stories and basement. In the basement will be located the billiard room, barber shop, and public baths, lavatories,

store rooms and machinery room, and provision will also be made for a future grill room and cafe. On the ground floor, adjoining the station, will be the bar-room, which will be finished in fumed oak with red tile floors. The rotunda will occupy all of the corner of the hotel and front on the two streets. It will be 76 by 62 ft., and in it will be located the office, manager's office, check room and news stand. To the west of it will be the dining room, 39 by 63 ft., which will be panelled in mahogany. This room will be free from columns, so as to give an unobstructed floor for assemblies. To the rear of the dining room will be the kitchen, about 35 by 39 ft., pantries, etc. The drawing room on the first floor will be 32 by 48 ft., and off it a writing room. The bedrooms will be ranged both single and en suite, about half of them being the latter way and supplied with bathrooms. On the top floor will be the servants' quarters and 10 large sample rooms. The latter will be well lighted and ventilated. Two elevators will be provided in the building for passenger service, and one of them arranged to handle trunks to the sample rooms and other floors.

The building will be heated by steam from the Brandon Electric Light Co.'s plant. A ventilating system will be installed, also a refrigerating system for the kitchen, larders and bar-room. The building will be lighted throughout with electricity, and will have an independent pump for fire protection purposes. The building will be of steel cage construction, with re-inforced concrete floors. The exterior walls will be of stone and brick. The floors of waiting rooms and ticket lobby, and of the rotunda, billiard room, etc., in the hotel will be of tile. The plans were prepared by Pratt & Ross, architects and engineers, under the direction of M. H. McLeod, General Manager C.N.R.

A Montreal press report states that the C.P.R. has recently completed a census of its employes in Montreal. The number given is 11,092, and the average earnings per head is given as \$3 a day making an annual distribution of about \$12,000,000.

An order in council has been passed relaxing the immigration regulations, in respect of cash qualification on entry, so far as they concern men who are fit, and willing to work on railway construction, and who are guaranteed work by railway companies or railway contractors.



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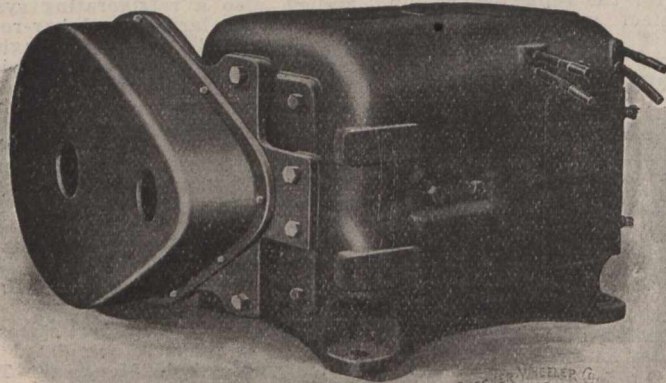
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TORONTO, CANADA, SEPTEMBER, 1910.

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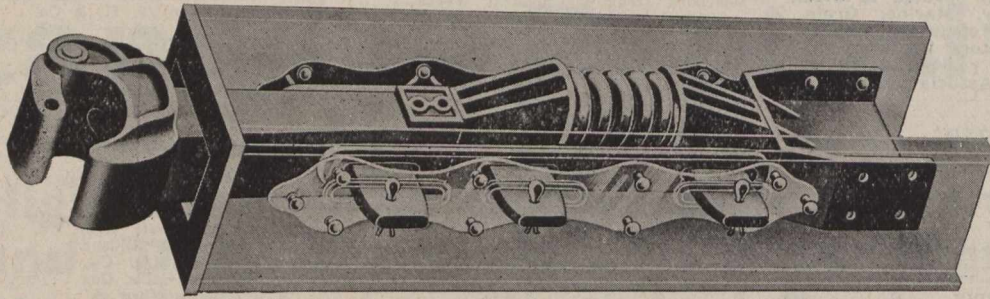
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WATER SUPPLY FOR RAILWAYS.

By H. B. Lake, Chemist C. P. R. Western Lines.

Although a railway is anxious primarily to secure water which will produce steam for its locomotives with as little trouble and expense as possible, yet in its capacity as a great public servant its interests lie in obtaining, early in its inception, supplies of water, not only good for steam production; plentiful for future developments, and harmless to live stock, but at certain points free from suspicion of pollution, clear and brilliant for the consumption of its patrons. Years ago when the richness of the west was discovered, and the earliest moment at which a train could be run was all important, anything liquid was commandeered, but as development

and competition ensue, the economy of applying special study to the water supplies from the time of location, becomes an ever increasingly economical factor. Proper selection of water supplies involves immediately the costs of operation of the whole system, and indirectly the speed of the trains; the safeguard of the health of the traveling public, of the company's employees, and of the live stock shipped; and finally it gives a new argument to the freight and passenger salesmen, as to the superiority of the railway's water supplies. Therefore, when selection or improvement of water supplies is being made, the problem does not conform to selecting the supply which will involve the least initial capital expenditure or maintenance. The advantages just recited must be considered, and properly weighed in with the debit and credit of the financial consider-

ations and the water supply becomes an efficient part of an economic system.

As soon as a new line is projected it will be economical to make a survey of the available water supplies, noting the observations coincidentally with a profile of the topography, and geology. If possible analyses should be made, and the results tabulated opposite a reduced profile, giving the mileage graphically. The method of tabulating this work is shown in fig. 1, the relative distances between supplies is seen at a glance, the main summits on the profile are pronounced, and complete mineral analyses are given. This information, if prepared and collated at the time of constructing new lines, would be valuable in selecting terminals, and considering the eventual necessity for drinking and live stock supplies. When it is revealed that some supplies are 2, 4, 6,

C.P.R. BRANDON SECTION WATER SUPPLIES

STATION	MILES RUN TO NEXT	PARTS PER 100,000												SCALE FORMING MATTER PER 100,000 LBS PER 1000 GAL.		TREATMENT LBS PER 1000 G.	NATURE OF SUPPLY	PROFILE	REMARKS	
		Ca CO ₃	Mg CO ₃	Ca SO ₄	Mg SO ₄	Ca Cl ₂	Mg Cl ₂	Na ₂ CO ₃	Na ₂ SO ₄	Na Cl	Fe ₂ O ₃	SiO ₂	Al ₂ O ₃	SiO ₂	CaO					SO ₃
0 WINNIPEG		18.70	5.59	1.06	9.49			12.98	1.66	9.56	15	1.75	37.14	3.75	2.5	1.0	RED RIVER (CITY SUPPLY)		RED RIVER FAR SUPERIOR TO CITY WELL WATER FOR BOILER. WELL WATER FROM GLACIAL DRIFT ON SURFACE OF LIMESTONE - CONSTANT TEMP 40° F.	
5 RUGBY JUNCTION		23.00	1.97	9.5	27.57			12.74	1.01	36.30	0.5	2.00	53.34	5%	3.2	2.5	WELLS (CITY SUPPLY) 50-100 FEET			
10 BERGEN																				
15 SLIGO																				
15 ROSSER		10.00	11.64	7.8	13.06			20.73		1.49	.15	1.05	49.68	4.50	3.5	1.2	WELLS			MEDIUM QUALITY.
20 ALDER																				
20 MEADOWS																				
25 MARQUETTE																				
35 REARBY		11.00	1.35	2.14	15.80			14.94	16.85	5.28	2.5	1.05	31.59	3.4	1.7	1.5	STANDING WATER (SUPPLY)	THE SLOUGH SUPPLY IS THE BEST		
40 POPLAR POINT		15.75	.52	41.99	44.20			12.33	19.93	5.28	3.5	1.25	34.43	3.5	2.0	1.5	ASSINIBOINE RIVER 5' DEEP			
45 THACKERY		63.40	20.26	5.81	54.54			3.16	62.95	13.10	5.5	1.25	10.26	10.1			DEEP WELL	LARGES WELL 15' DEEP		
50 HIGH BLUFF																				
55 PORTAGE la PRAIRIE		30.63	2.17	6.1	11.66			9.80	12.16	3.64	7.5	1.95	57.57	5.4	3.3	2.3	WELLS 18' DEEP (OLD SUPPLY)	RIVER SUPPLY THE BEST		
60 CONEY		14.65	2.84	6.71	16.83			18.38	2.03	3.94	.25	1.95	43.23	4.4	2.2	2.0	ASSINIBOINE RIVER (NEW SUPPLY FROM CITY)			
65 BURNSIDE		4.58	2.59	1.29	4.44			13.11		.50	3.5	8.5	14.10	1.2			CRESENT LAKE			
70 MCGREGOR		11.70	5.01	1.02	9.70			11.72	1.48	.20	1.80	2.254	2.4	2.0	5		STREAM 4' DEEP BASIN (SUPPLY)	STREAM FROM SAND DUNES		
75 AUSTIN		29.70	5.06	.78	8.49			13.10	1.63	.10	2.85	46.98	4.3	3.0	1.0		STREAM 2' DEEP (SUPPLY)	STREAM FROM SAND DUNES		
80 PRINSEY																				
85 SIDNEY		18.65	8.00	.54	7.0			10.70	11.25	1.98	.50	2.50	30.58	3	3.0		FOUR WELLS 6' DEEP (CRUDE)	LAKE IN SAND DUNES		
90 MELBOURNE		1.75	2.39	3.0	6.9			12.63	1.98		2.0	1.26	6.63	3.0			MOOSE LAKE 2 MILES EAST			
100 CARBERRY		25.37	1.27	1.46	2.72			6.19	5.81	.17	1.0	1.70	58.81	4	2.3	1.2	SANDPOINTS 20' DEEP	MEDIUM QUALITY - SURFACE WATER		
110 SEWELL																				
115 HOOTON																				
120 DOUGLAS		33.10	.35	20.13	39.62			8.39	15.01	7.58	63.2	2.5	96.08	9.6	4.5	5.0	WELL 12' DEEP (OLD SUPPLY)	CREEK FED BY SPRINGS MEDIUM QUALITY		
125 CHATER		17.88	2.28	5.4	5.48			11.44	2.47	.20	1.35	27.73	2.3	2.0	5		CREEK 1 MILE EAST (NEW SUPPLY)			
130 BRANDON		19.70	4.81	3.47	2.60			9.80	12.96	4.62	2.0	1.65	54.4	5.4	3.4	2.5	ASSINIBOINE RIVER (CRUDE)	RIVER WATER GOOD AFTER TREATMENT.		
135		3.97	.35	.50	1.23			11.63	47.40	4.62	1.2	1.10	7.27	7.4			11 (TREATED)			

H. B. Lake
Official Chemist
December 1909

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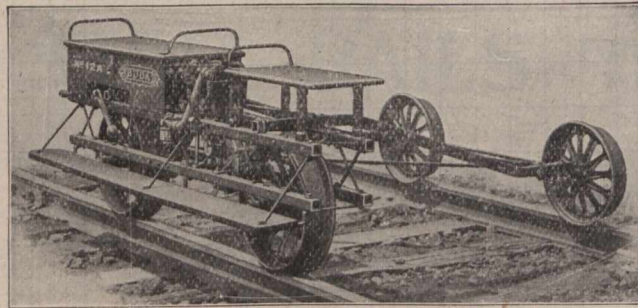
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8 and 10 times better in quality than others available, then the advantages become more apparent. The chart of columns in fig. 2 gives some idea of the variations in the scale forming ingredients of a few supplies. This chart also shows the enormous advantages of intelligent prospection, by which far superior supplies were discovered.

Whereas, on a projected line, especially through a region limited in water supply, quantity would rank first; yet, on a developed line, whereon traffic had increased and competition entered, then quality takes precedence. Hence, knowledge of quality and range of seasonal variation, not only of the supplies in use, but of all supplies available, becomes essential to economy. Fig. 3 shows the average cycle of seasonal variation. During the fall all surface waters gradually increase in concentration of salts, and after freezing over in the middle of November they are largely shut off from surface tributaries. Not only so, but any subsequent precipitation is in the solid form of snow, which thaws inappreciably. The body of water being thus approximately gas tight, bubbles of gases, such as oxygen liberated by the vegetation and carbonic acid by the aquatic life, are confined, and during this period I think the increased solvency of the waters enables them to attack and dissolve the shells of the millions of crustacea, and larger quantities of limestone. About the middle of March this concentration is suddenly arrested by the breaking up of the ice, dissolved gases escape and the supply is enormously diluted by snow water, and soon after by rains, which keep the supply relatively low in mineral contents, and is assisted to no small extent by the new swarms of crustacea, and revivifying of all vegetation and life which absorb chalky matter from the water, and, moreover, any carbonic acid is largely free to escape. During this period of less matter in solution there are, in some cases, enormous quantities carried by the streams in suspension. After this the gradual process of concentration again proceeds, and the cycle is repeated. These changes should be known for every large and important supply, as each supply has its own peculiar periods and variations, but the curve illustrates the general character of the seasonal cyclic variation. Therefore, analyses of supplies along main lines should be made constantly and tabulated, together with profile, mileages, and available quantities, as already referred to in fig. 1. Where visible supplies are lacking, or low in quality or quantity, prospection should be conducted by boring and drilling, and careful notes kept of all formations and waters encountered for immediate and future guidance, as shown in fig. 1. Such systematic investigation results in the abolition of the worst supplies, and the introduction of better

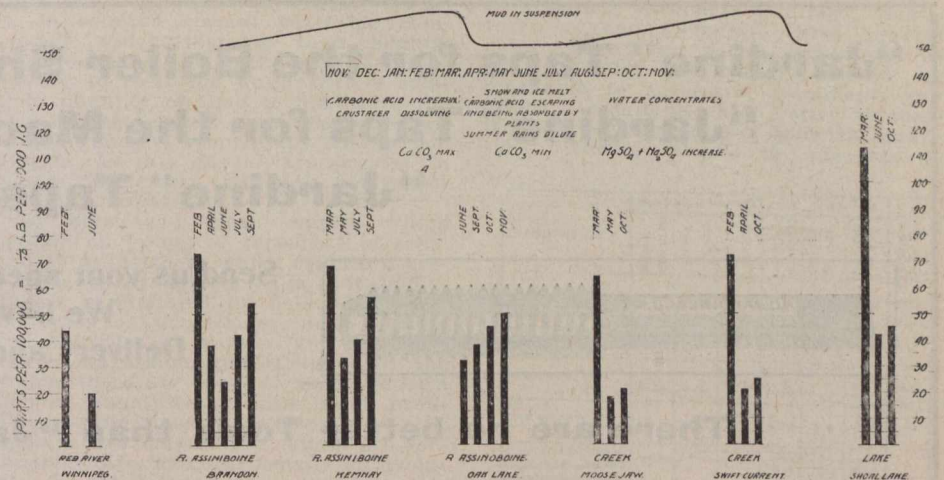


Diagram showing extreme seasonal variation in the scale forming matter of surface water.

supplies. Numerous cases could be given where the improvement has been effected at small expense, compared with the advantages gained, as shown in fig. 2.

Only after the systematic prospection outlined above has failed to reveal supplies of sufficient quality and quantity should special treatment be considered. The economical point is reached when the financial and other advantages accruing would show a good interest on the capital, plus any extra cost of operation necessary to effect the improvement. When large quantities of good water are required at a point where the present supply is bad or inadequate, then considerations of improvement may be so great as to overwhelm the immediate financial considerations, and make the selection of a supply involving special treatment essential. Such a conclusion would be reached when the existing supply was inadequate, with the alternative of hauling water, or attempting to use a supply of such quality that engine failures would be imminent; when the possible new supply would, without treatment, fill the firebox legs with mud or form heavy scale rapidly. If supply for the coaches or hotels, or the watering of live stock were involved, the advantages of treatment would be manifestly increased.

Fig. 4 shows graphically the difference in the amount of scale forming matter in a number of cases before and after softening in a simple form of plant in use on the C.P.R. Western Lines. Also the relation of soap destroying powder to the scale forming matter, showing that it is not a constant, as sometimes stated. It is evident therefrom that the amount of possible scale taken at terminals many times outweighs a small quantity of much harder water at less

important points. The amount of scale contained in the original water in several cases would have exceeded 10 tons a month. By assuming the scale as equal in density to limestone, the number of engines at 10 per day, and the average heating surface at 2,300 sq. ft., then the deposit would have equalled 1-16 in. thick in one month. And if we assume 50% removed as mud by washing out, then it would be 1-16 in. in two months, which is generally admitted to be equal to an increase of 10% of fuel required to produce the same evaporation, to say nothing of overheated plates and tubes, and pitting consequent on decomposition of scale.

The different temperature of portions of the heating surface, and the fact that some salts in water are deposited at different temperatures, accounts partly for the fact that analyses shown in fig. 5 of scale removed from various parts of the boiler, vary in composition. The other influencing condition is the overheating of already deposited scale resulting in decarbonation, and there is no doubt that the CO₂ thus liberated accelerates pitting and corrosion of any clean metallic surfaces, or those which occasionally become suddenly exposed by expulsion of scale by overheating and other causes. Therefore, we can formulate three general rules:—First—The supply. Waters may be muddy constantly or periodically, yet suitable otherwise. In such cases treatment must be directed to the removal of the matter in suspension. If only for boiler use some form of sedimentation, with or without coagulant, may be sufficient. Put if for drinking purposes as well, then filtration in addition will be necessary, and it is quite possible to adopt these processes in the wrong order. If the water is not only muddy at inter-

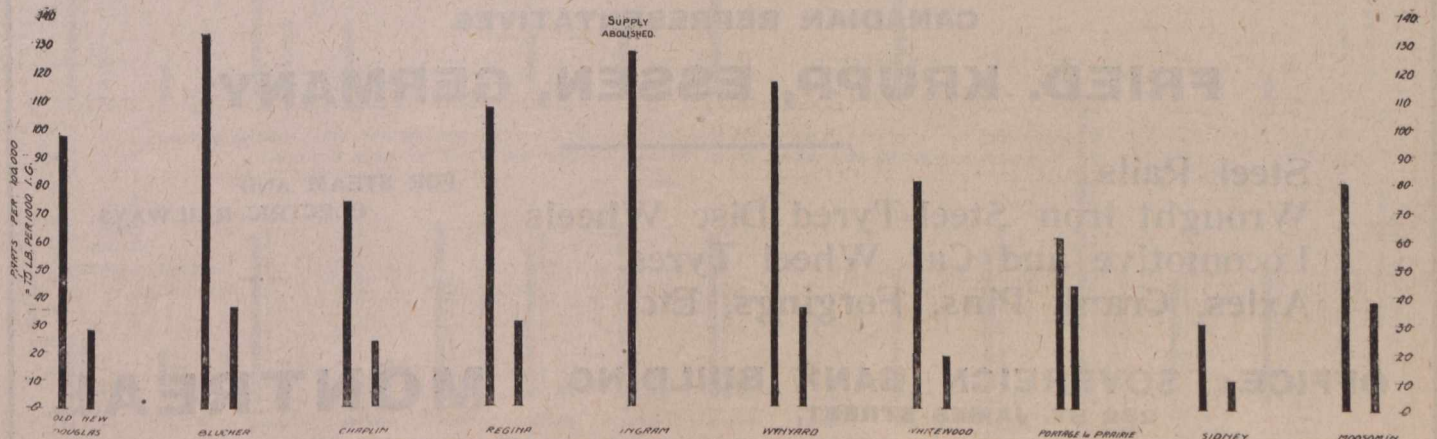
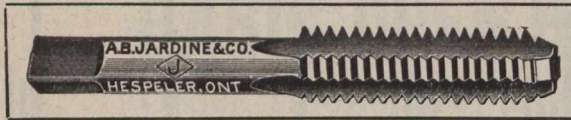


Diagram showing some instances of improvement effected by prospection. Columns represent proportion of scale forming matter.

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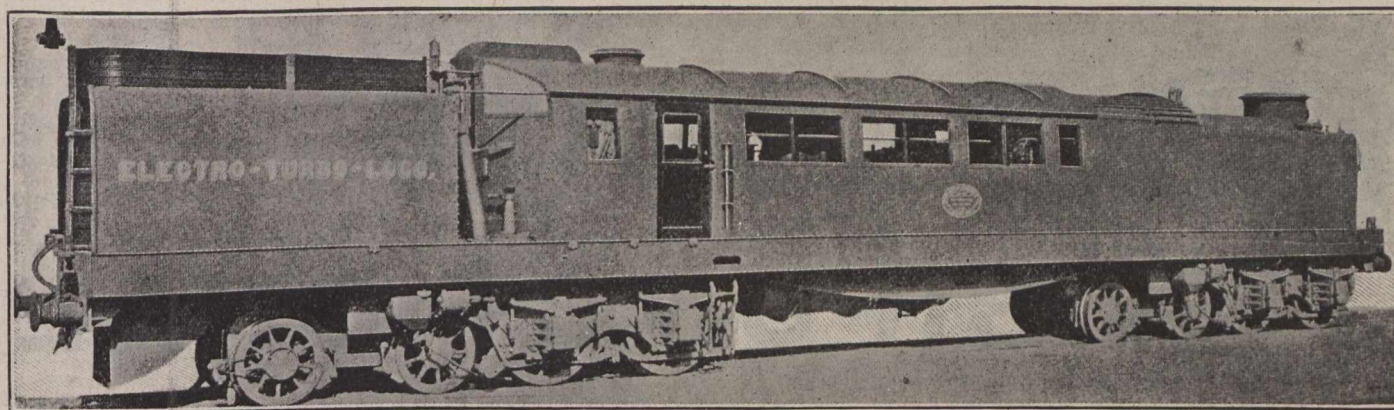
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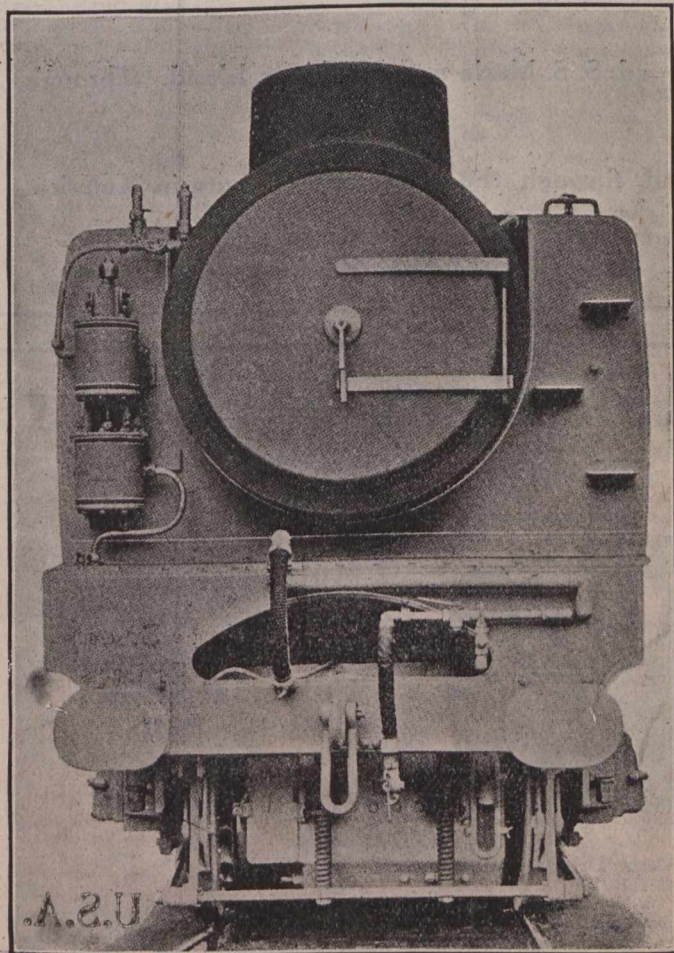
In our issues of Jan. and Feb. we gave some particulars of the Reid Company's steam turbine locomotive, which was under construction, and was described by Hugh Reid in his presidential address to the Glasgow University Engineering Society. The locomotive has made its preliminary trial on the main lines of the Caledonian and the North British railways, with a saloon carriage attached, and the following additional particulars are now available:—

Steam is generated in a boiler of the ordinary locomotive type, which is fitted with a superheater, and the coal and water supplies are carried in the side bunkers and side water tanks at both sides of the boiler. The steam from the boiler passes into a turbine of the impulse type running at a speed of 3,000 revolutions a minute, to which is direct-

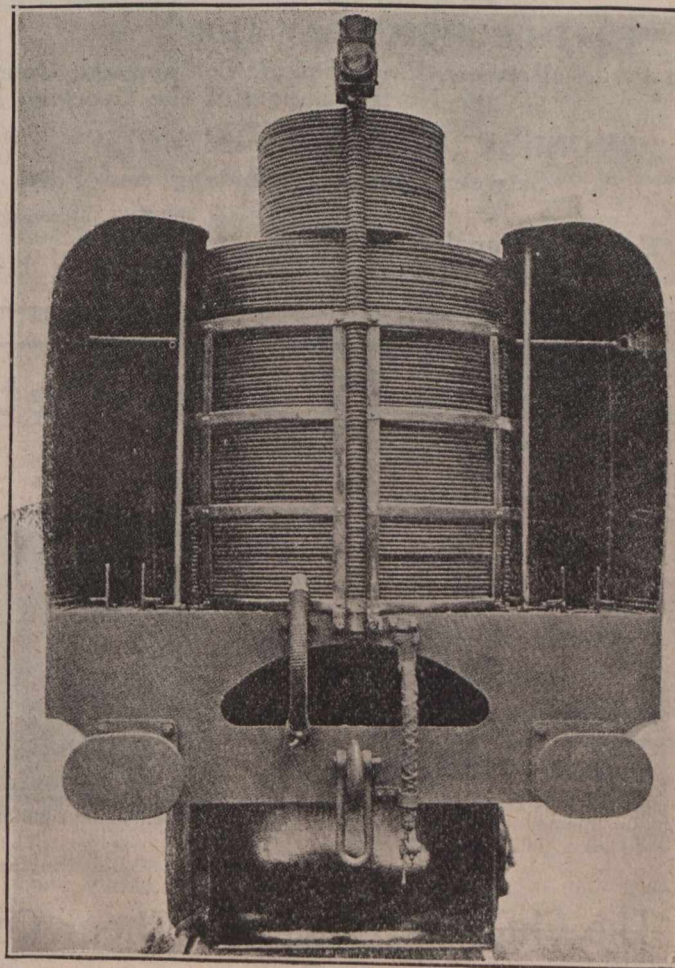
ly coupled a continuous-current, variable-voltage dynamo. The dynamo supplies current up to 600 volts to four series-wound traction motors, the armatures of which are built on the four driving axles of the locomotive. The exhaust steam from the turbine passes into an ejector condenser, and is, together with the circulating condensing water, delivered eventually to the hot well. As the steam turbine, unlike the reciprocating steam engine, requires no internal lubrication, the condensation water is free from oil, and consequently is returned from the hot well direct to the boiler by a feed pump. The water evaporated by the boiler is therefore returned to the boiler again and again, and the supply of water carried in the tanks is actually circulating water for condensation purposes. This condensing water is circulated within a closed cycle by small centrifugal pumps driven by

auxiliary steam turbines placed alongside the main turbine and dynamo. The cycle of condensing water is from the tanks through the first pump, then through the condenser, where it becomes heated in condensing the exhaust steam, and then to the hot well. From the hot well it passes through the second pump to the cooler, situated in front of the locomotive, where the full benefit of the blast of air caused by the movement of the locomotive, aided by a fan, is utilized for cooling the hot circulating water. After passing through the cooler, the water is returned to the supply tanks ready for further condensation duties.

It is obvious that the condensation of the exhaust steam deprives the locomotive boiler of the usual exhaust blast which induces the draft through the fire-box and boiler tubes. In the experimental locomotive, the induced draft is



Rear end.



Front end.



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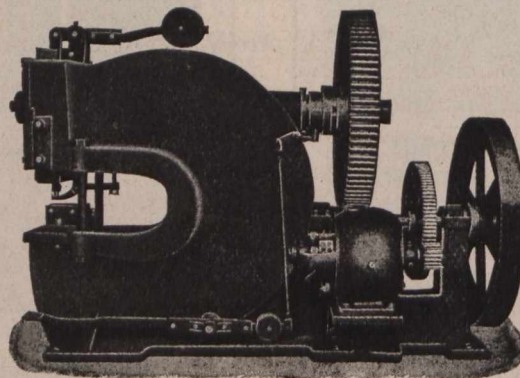
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replaced by forced draft provided by a small turbine-driven fan. The fan is placed within the cooler, so that it will deliver hot air to the boiler fire and at the same time assist the current of air through the cooler. The small switch-board and the instruments required, the controller for grouping the four motors in series—series parallel and parallel, according to the draw-bar pull to be exerted—and the regulator for controlling the voltage in the electrical circuit, and consequently the speed of the train, are all within easy reach of the engineman.

The foregoing comprises the main and auxiliary machinery of this experimental locomotive. The whole is mounted on a strong underframe, which is carried on two eight-wheel articulated trucks, that will easily negotiate curves. Each truck carries two of the four driving motors already referred to. As the engine is intended for express passenger main line work, it is hoped to obtain comparisons from its actual working with the performances of the reciprocating steam locomotives, especially as regards the relative consumption of fuel and water, the efficiency of transforming the energy of steam into drawbar pull, and the relative rapidity of acceleration. Most of the component parts of this locomotive have already proved themselves effective and efficient in other applications; the novelty lies in the combination of the different elements.—*Railway Age Gazette.*

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.

Canadian Pacific Ry.—N. R. DesBrisay has been appointed Travelling Passenger Agent, St. John, N.B.

The St. Maurice Valley extension from Shawinigan Falls to Grand Mere, Que., was taken over by the Operating Department, Aug. 14, and the service placed under the direction of G. Hodge, Superintendent District 3, Eastern Division, Montreal.

C. W. P. Ramsey has been appointed Division Engineer of Construction, Montreal, vice A. McCulloch, resigned to enter the Kettle Valley Ry. Co.'s service.

A. McArthur, heretofore Locomotive Foreman at Brandon, Man., has been appointed Locomotive Foreman at Fort William, Ont., vice G. Pratt, transferred to Souris, Man.

With further reference to the recent re-organization of the three grand divisions of the Western Lines into four for operating purposes, we are advised that the Freight Department is not affected thereby. The Western Lines are divided as follows for freight traffic purposes—

CENTRAL DIVISION.—Comprising main line and branches, Port Arthur to Swift Current and Rosyth, inclusive. Agents report to R. E. Larmour, General Freight Agent, Winnipeg.

WESTERN DIVISION.—Comprising main line and branches, Beverley to Laggan and Burmis, inclusive, also Wetaskiwin section, including Hardisty. Agents report to J. Halstead, General Freight Agent, Calgary, Alta.

KOOTENAY AND BOUNDARY DIVISIONS.—Comprising Crow's Nest line and branches, Passburg to Kootenay Landing, inclusive, also rail and water lines, Kootenay Landing to Midway, inclusive, and south of Arrowhead, B.C. Agents report to W. R. Haldane, General Freight Agent, Nelson, B.C.

PACIFIC DIVISION.—Comprising main line and branches, Stephen to Vancouver, inclusive, and Okanagan Lake. Agents report to W. C. Bowles, General Freight Agent, Vancouver, B.C.
F. A. Wilkin has been appointed As-

sistant Engineer, Winnipeg, vice H. Rindal, appointed Division Engineer Pacific Division.

R. H. Hart has been appointed Electrical Foreman, Winnipeg shops.

G. Pratt, heretofore Locomotive Foreman at Fort William, Ont., has been appointed Locomotive Foreman at Souris, Man., vice A. Peers, transferred to Brandon.

A. Peers, heretofore Locomotive Foreman at Souris, Man., has been appointed Locomotive Foreman at Brandon, Man., vice A. McArthur, transferred to Fort William, Ont.

T. F. Patterson, heretofore District Master Mechanic, Moose Jaw, Sask., has been appointed District Master Mechanic, Saskatoon, Sask., vice J. Scott transferred.

J. Scott, heretofore District Master Mechanic, Saskatoon, Sask., has been appointed Trainmaster District 2, Saskatchewan Division, Saskatoon.

W. E. Lovelock has been appointed city ticket agent, Saskatoon, Sask.

J. V. McNab has been appointed Resident Engineer, Moose Jaw, Sask., vice H. B. Sims transferred.

Jas. Black, heretofore chief clerk to Freight Claims Agent, Central Division, Winnipeg, has been appointed Freight Claims Agent Saskatchewan Division, Office, Moose Jaw.

G. Whitely has been appointed District Master Mechanic, Moose Jaw, Sask., vice T. F. Patterson transferred.

A. Halkett, heretofore Assistant Trainmaster District 2, British Columbia Division, Kamloops, and W. R. Boucher, have been appointed Trainmasters District 1, Saskatchewan Division, Moose Jaw.

E. G. Ranney and A. B. Burke have been appointed Travelling Passenger Agents for New England Territory, vice W. H. Snell and J. Burden. Headquarters, 362 Washington St., Boston, Mass.

Jas. Burden, heretofore Travelling Passenger Agent, has been appointed city ticket agent, Boston, Mass.

Grand Trunk Pacific Ry.—R. Johnston has been appointed acting Roadmaster between Punnichy and Kinley, Sask., vice P. Desmond, on leave of absence.

N. B. Walton has been appointed Trainmaster Districts 4, 5 and 6, including Tofield-Calgary branch, vice H. McCall, transferred to Edmonton. Office, Wainwright, Alta.

H. McCall, heretofore Trainmaster at Wainwright, Alta., has been appointed Trainmaster District 7. Office, Edmonton, Alta.

The following agents have been appointed:—Lazare, Man., S. C. McDonald; Fenwood, Sask., J. O. Deshaye; Punnichy, Sask., W. House; Semans, Sask., G. M. McGuire; Venn, Sask., A. Donnelly; Allan, Sask., J. A. Hamelin; South Saskatchewan, Sask., E. H. Harkness; Viking, Alta., J. L. Dodds; Holden, Alta., W. C. Stedman.

Grand Trunk Ry.—G. E. Gogo, heretofore operator, has been appointed General Yardmaster at Brockville, Ont., vice J. Hatton. Yardmaster, appointed General Yardmaster at Belleville, Ont.

J. Hatton, heretofore Yardmaster at Brockville, Ont., has been appointed General Yardmaster at Belleville, Ont.

D. J. Quinlan has been appointed Chief Dispatcher. Districts 11, 12, 13 and 14, Allandale, Ont., vice W. J. Piggott, appointed Trainmaster.

O. F. Clark, heretofore Trainmaster at Durand, Mich., has been appointed Trainmaster P.O. & N. Rd., and District 29 (Michigan Air Line), Western Division. Office, Pontiac, Mich.

F. G. Bement, heretofore Trainmaster at Battle Creek, Mich., has been appointed Trainmaster, Districts 25 (C.S. & M.), 27, 28 and 29 (Detroit Division), Western Division. vice O. F. Clark,

transferred. Office, Durand, Mich.

T. G. Akers has been appointed Trainmaster Districts 25 and 26, Western Division, H. W. Matthews, Trainmaster District 26, having been assigned to other duties. Office, Battle Creek, Mich.

The following agents have been appointed:—Hamilton, King St. (Pass.), F. W. Wilkinson; Dunnville, R. E. Elgie; Otterville, A. J. Madgett; Aubrey, H. A. Switzer; Sault Ste. Marie, Mich. (outside), F. R. Price; Cornwall Jct., H. C. Bouck; South River, J. J. Carey; Callender, D. H. Thompson; Nipissing Jct., G. Jardine; Mimico, M. J. O'Donnell; Vineland, C. L. Painter; London (Pass.), H. M. Hayes; Belle River, F. H. Burthwick; Simcoe, F. C. Faskin; Burgessville, R. W. Loftus; Wingham, G. Lamont; Whitechurch, G. E. Smith; Hawkesbury, H. B. Partridge; Barry's Bay, P. J. Lawlor; Madawaska, S. N. Milligan; London (outside), R. E. Ruse; Port Carling (outside), W. J. Bradley; Hemmingford, Que. (outside), R. W. Blair. Except where otherwise stated, the places mentioned are in Ontario.

Intercolonial Ry.—By the omission of this sub-heading in the transportation appointments published in our August issue, the appointments of H. H. Melanson and G. A. Fernley appeared as though they were to the Halifax and South Western Ry. The context, however, showed that this was not so.

Kettle Valley Ry.—A. McCulloch, heretofore Division Engineer of Construction C.P.R., Montreal, is reported to have been appointed Chief Engineer K.V.R., with office at Merritt, B.C.

New York Central and Hudson River Rd.—C. H. Hogan has been appointed Assistant Superintendent of Motive Power. Office, Albany, N.Y.

Prince Edward Island Ry.—The position of car foreman is vacant, owing to the death of F. Dammerell, on Aug. 5. T. Aitken, who was appointed acting car foreman some months ago, when Mr. Dammerell was taken ill, is still discharging the duties of the position.

Reid Newfoundland Co.—A. Hartery, heretofore Locomotive Foreman at Bay of Islands, has been appointed Travelling Engineer, vice J. Pitt, deceased.

J. Pumphrey has been appointed Locomotive Foreman at Bay of Islands, vice A. Hartery, appointed Travelling Engineer.

Toronto, Hamilton and Buffalo Ry.—E. A. Wigren, Auditor of Disbursements Michigan Central Rd., has also been appointed Auditor of Disbursements T.H. & B.R. Office, Detroit, Mich.

T. Eedson, Auditor of Freight Accounts, Michigan Central Rd., and heretofore Freight Accountant and Freight Claim Agent T.H. & B.R., has been also appointed Auditor of Freight Accounts and Freight Claim Agent T. H. & B.R. Office, Detroit, Mich.

H. J. Broderick, Auditor Passenger Accounts, Michigan Central Rd., and heretofore Ticket Accountant, T.H. & B.R., has been also appointed Auditor of Passenger Accounts, T.H. & B.R. Office, Detroit, Mich.

The Intercolonial Ry. has received three consolidation locomotives from the Canadian Locomotive Co., Kingston, Ont.

The assessment on the G.T.R. yards between Bathurst St. and Dovercourt Rd., Toronto, has been decreased from \$8,500 to \$7,500 an acre. The area covered is about 25 acres.

The G.T.R. has issued passenger and freight tariffs covering the rates to be charged on the 11 miles of the Chicago, Kalamazoo and Saginaw Ry., over which it has acquired running rights. The G.T.R. has its own terminals in Kalamazoo, Mich.

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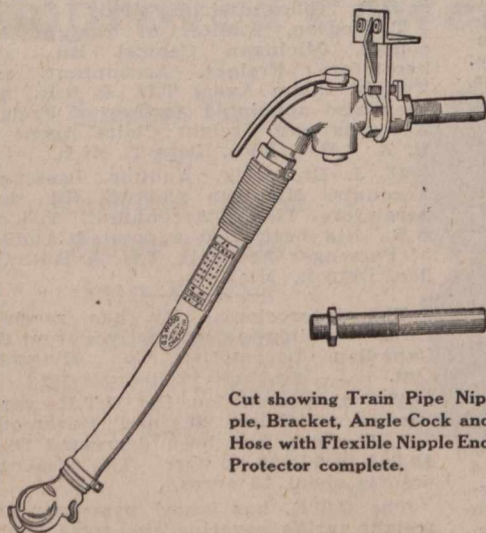
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MAINLY ABOUT PEOPLE.

Lord Strathcona celebrated his ninety-ninth birthday, Aug. 6.

Lord Strathcona has contributed \$5,000 to the Campbellton fire relief fund.

Sir Wm. C. Van Horne has been appointed a member of La Commission Metropolitaine des Parcs for Montreal.

Sir Wm. C. Van Horne and Sir Thos. G. Shaughnessy are among the incorporators of the Montreal Association for the Blind.

F. Dammerell, car foreman Prince Edward Island Ry., died at Charlottetown Aug. 5, aged 66, of cancer, after several months illness.

J. Wanless, formerly timber and tie inspector, C.P.R., but who retired on the pension fund some time ago, died at Toronto, Aug. 22.

H. Shearer, Superintendent Canadian Division M.C.R., St. Thomas, Ont., was married recently to Miss M. H. McDermott, at Marshall, Mich.

N. Curry, President Canadian Car & Foundry Co., has been elected a director of the Canadian Light & Power Co., Montreal.

Miss Jessie Field, daughter of J. G. Field, C.P.R. Ticket Agent at Tavistock, Ont., was married recently to C. N. McKinnon of Okotoks, Alta.

R. C. Desrochers, heretofore Assistant Secretary Department of Public Works, has been appointed Secretary, vice N. Tessier, deceased.

Hugh A. Allan, who spent some time in England in connection with the reorganization of the Allan Line, returned to Canada at the end of August.

A. W. Smithers, Chairman of the G.T.R. board of directors, arrived in Canada, Aug. 6, for the annual trip of inspection of the system.

Mrs. Honora Merry, mother of Mrs. Wm. Mackenzie, wife of the Canadian Northern Ry. President, died at Kirkfield, Ont., Aug. 21, aged 79.

A. Piers, Manager C.P.R. Steamship Lines, Liverpool, Eng., was in Montreal, during Aug., on his annual visit in connection with the Atlantic service.

J. Courturier, who has been in I.C.R. service since 1874, latterly as chief clerk at Levis, Que., is reported to be retiring from the service on account of ill health.

A. Butze, General Purchasing Agent G.T.R., returned to Montreal, Aug. 13, much improved in health, after spending two months at Battle Creek, Mich.

M. K. Cowan, ex-Solicitor G.T.R., who is now residing in Toronto, and Mrs. Cowan, have been at Lake Champlain and Lake Timagami for the holidays.

A. E. Morrison, brakesman C.P.R., has received a gold watch from one of the passengers, whom he assisted when a C.P.R. train was wrecked at Spanish River last January.

G. Moth, Trainmaster C.P.R., Moose Jaw, Sask., was presented with an address, a diamond scarf pin and some cut glass, by the staff there, recently, on his transfer to Calgary, Alta.

A. M. Fenton, formerly General Agent Omaha Rd., in Winnipeg, is reported to have been appointed Assistant General Freight Agent same road, with office at Minneapolis, Minn.

O. F. Jordan, for many years in M.C.R. service as Roadmaster and Division Superintendent, at St. Thomas, Ont., and latterly in the railway supply business, died at Jackson, Mich., Aug. 2.

E. Dent, President, and A. R. Bremner, Vice President, Quebec Central Ry., arrived in Canada towards the end of August, from London, Eng., for an inspection of the company's property.

J. T. Arundel, General Superintendent Manitoba Division C.P.R., Winnipeg, who recently returned from England, was confined to his home for a few days by illness, but has since resumed his duties.

J. E. Hutcheson, Superintendent and Purchasing Agent Ottawa Electric Ry., who went to England as Adjutant in charge of the Canadian Bisley team, returned to Ottawa at the end of August.

A. M. Jones, formerly Resident Engineer C.P.R., Ottawa, Ont., has been appointed engineer in charge of surveys in connection with the Quebec bridge reconstruction.

Ancillary probate of the will of Sir Robert G. Reid, President of the Reid Newfoundland Co., has been granted in the Halifax probate court. The value of the estate in Nova Scotia is given as \$16,000.

G. O'Farrell, formerly superintendent of lighthouses, and latterly on the National Transcontinental Ry. engineering staff, died in one of the camps, about 100 miles west of La Tuque, Que., July 25.

J. A. McGilivray, Superintendent Inverness and Richmond Ry. Coal Co., is a provisional director of the Inverness Amateur Athletic Association recently incorporated by the Nova Scotia Legislature.

W. Richards, of Biddeford, P.E.I., President of the Charlottetown Steam Navigation Co., sailed from Quebec by the s.s. Royal George, Aug. 4, on a visit to England, expecting to return in October.

Jas. Ross, Montreal, and a party of friends left St. Andrews, N.B., Aug. 7 for Sydney, N.S., in the steam yacht Shielah, and thence proceeded for a tour of the St. Lawrence River and the Great Lakes.

I. G. Ogden, Vice President C.P.R., has been elected a director of the Minneapolis, St. Paul and Sault Ste. Marie Ry., and the Duluth, South Shore and Atlantic Ry., in place of Sir Wm. C. Van Horne, resigned.

H. E. Elmer, senior dispatcher Toronto, Hamilton and Buffalo Ry., Hamilton, and who had been acting Chief Train Dispatcher since last winter, died there, recently. He was formerly in M.C.R. service at St. Thomas, Ont.

Sir Thos. G. Shaughnessy is Honorary President, and L. R. Johnson, Assistant Superintendent of Motive Power C.P.R., Montreal, is a member of the executive committee of the Canadian branch of the St. John Ambulance Association.

The Governor-General presented the silver medal of the Order of the Hospital of St. John of Jerusalem, at Ottawa, recently, to T. Reynolds, C.P.R. conductor, in recognition of his conduct in the Spanish River accident, Jan. 21.

F. H. Clergue, the moving spirit in the establishment of the various industries, and allied railways and steamship companies at Sault Ste. Marie, Ont., now owned by the Lake Superior Corporation, arrived in New York from England Aug. 5.

L. B. Archibald, Superintendent Parlor, Sleeping and Dining Car Service Intercolonial Ry., who is Supreme Grand Master for the year, attended the annual convention of the Knights Templar branch of the Masonic Order in Canada, at London, Ont., Aug. 4.

M. J. Butler, General Manager Canadian Steel Corporation, and formerly Deputy Minister of Railways and Canals, lectured on the transportation problem in Canada, at the Summer School of Science of the St. Francois Xavier University, Antigonish, N.S., Aug. 1.

A. H. Egg, son of W. F. Egg, formerly City Passenger Agent C.P.R., Montreal, has been awarded the diploma of Associate of the Royal College of Organists,

London, Eng. He had previously won the Strathcona scholarship at the Royal College of Music.

C. B. K. Carpenter, Managing Director New Canadian Co., building the Atlantic, Quebec and Western Ry., and C. B. Hibbard, Sherbrooke Ry. and Power Co., are provisional directors of the Soulanges Power Co., Ltd., recently incorporated by the Quebec Legislature.

H. H. Vaughan, Assistant to the Vice President C.P.R., contributed papers which were read at the International Railway Congress at Berne, Switzerland, and at a joint meeting of the Institute of Mechanical Engineers and the American Society of Mechanical Engineers, in London, Eng.

J. V. McNab, who was recently appointed Resident Engineer C.P.R., Moose Jaw, Sask., was born at Ayr, Ont., June 11, 1884, and entered C.P.R. service in 1906, since when he has been, to 1907, transitman at Kenora, Ont.; 1907 to July 15, 1910, transitman maintenance of way at Kenora, Brandon and Fort William.

G. A. Mountain, Chief Engineer Board of Railway Commissioners, who has relieved H. A. K. Drury, Assistant Engineer Board of Railway Commissioners, at Winnipeg, while the latter was on a vacation, during August, will inspect the G.T.P.R. and other lines under construction in the prairie provinces and British Columbia, during Sept.

J. J. Gilbertson, formerly Liverpool agent C.P.R., has commenced business at 28 Chapel St., Liverpool, Eng., as a general commission merchant, freight, passenger and insurance agent. The Liverpool Journal of Commerce recently published an appreciation of him, in which it spoke of him as "one of the best known and most highly esteemed of Liverpool shipping men."

R. Forget, President Quebec Ry. Light, Heat and Power Co., and Riche-lieu and Ontario Navigation Co.; J. N. Greenshields, director Quebec Ry. Light, Heat and Power Co.; H. A. Lovett, director Pacific Coast Coal Mines Ltd., and J. W. Pyke, dealer in railway supplies, Montreal, are directors of the City Central Real Estate Co., recently incorporated in Montreal.

W. Maughan, C.P.R., Toronto; M. Kinton, C.P.R., Huntsville, Ont.; C. D. Truemen, C.P.R., Midland, Ont.; L. Lavergne, Drummond Counties Ry., Arthabaskaville, Que.; J. Merriman, C.P.R., Hamilton, Ont., and G. E. Waller, Hamilton, Grimsby and Beamsville Electric Ry., Hamilton, Ont., are among those who have recently become members of the Canadian Ticket Agents' Association.

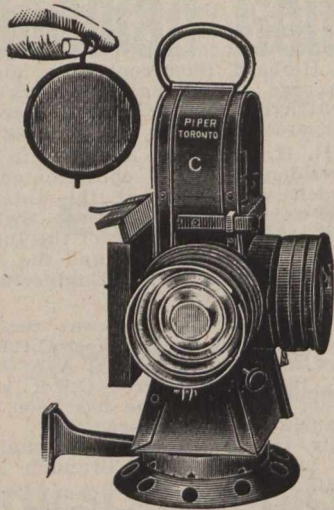
W. C. Starke, whose appointment as Travelling Car Service Agent G.T.R., Montreal, was announced in our last issue, was born at Montreal, Mar. 9, 1867, and entered G.T.R. service Sept. 18, 1881, since when he has been, to Mar. 1, 1898, in Car Accountant's office; Mar. 1, 1898, to July 1, 1901, Car Distributor; July 1, 1901, to July 18, 1910, chief clerk to Superintendent of Car Service.

Mrs. Grundy, wife of F. Grundy, Vice President Quebec Central Ry., died somewhat suddenly at Sherbrooke, Que., Aug. 11, aged 72. Mr. Grundy himself has been in feeble health for some time. Among the surviving children are:—Robert, Traffic Manager Egyptian State Railways, Cairo; E. O., General Passenger Agent Quebec Central Ry., Sherbrooke; G. G., General Manager Temiscouata Ry., Riviere du Loup, Que.

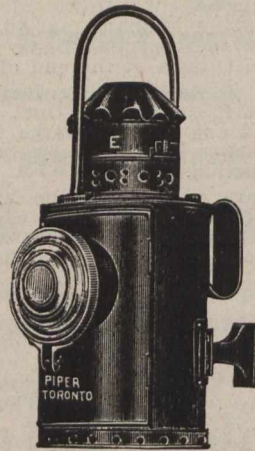
G. Pepall, whose appointment as Assistant Foreign Freight Agent G.T.R., Toronto, was mentioned in our last issue, was born at High Wycombe, Bucks, Eng., Jan. 15, 1849, and entered Canadian railway service, Mar., 1880, since

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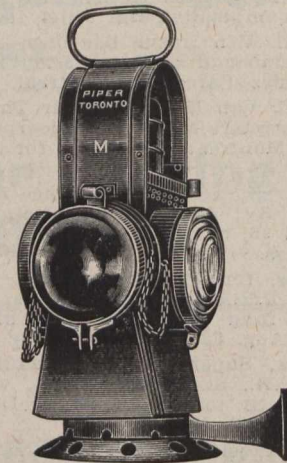
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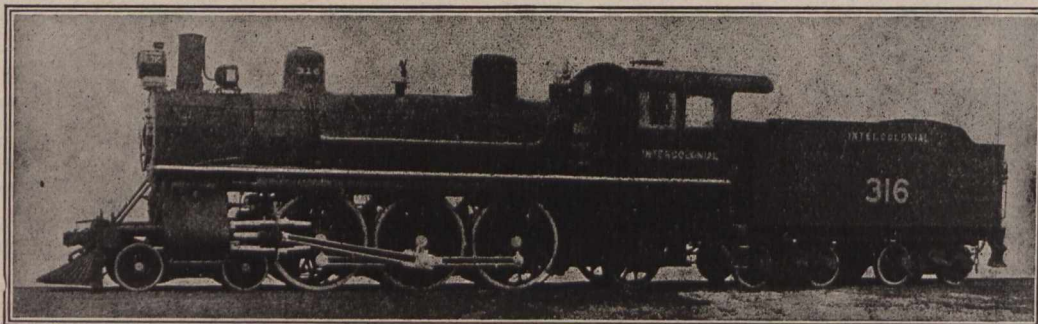
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when he has been, to Feb., 1884, clerk G.T.R. freight office, Toronto; Feb., 1884, to Apr. 1, 1898, chief clerk in charge of freight station, G.T.R., Yonge St., Toronto; Apr. 1, 1898, to July 15, 1910, Canadian Agent National Despatch-Great Eastern Line, Toronto, which position he still holds, in addition to that of Assistant Foreign Freight Agent G.T.R.

R. C. Vaughan, who was recently appointed Assistant to Third Vice President Canadian Northern Ry., and to Second Vice President Canadian Northern Steamships, Ltd., Toronto, was born in Toronto, Dec. 1, 1883, and entered railway service Oct. 3, 1898, since when he has been, to Mar., 1902, office boy, clerk and stenographer, General Freight Agent's office, C.P.R., Toronto; July to Dec., 1902, in Freight Department G.T.R., Toronto; Jan., 1903, to July 1, 1910, clerk, secretary to Third Vice President and General Manager, and chief clerk to Third Vice President, Canadian Northern Ry., Toronto.

A. B. Spencer, who has been appointed Chief Dispatcher Reid Newfoundland Ry., St. John's, Nfld., was born at Harbor Grace, Nfld., Oct. 21, 1882, and entered Reid Newfoundland Co.'s service Oct., 1900, since when he has been, to June, 1901, operator at Harbor Grace; June, 1901, to Feb., 1902, operator at Quinette, now Notre Dame Jct.; Feb., 1902, to Jan., 1903, agent at various points; Jan., 1903, to Apr., 1905, third trick dispatcher; Apr., 1905, to May, 1907, second trick dispatcher; May, 1907, to Jan., 1910, first trick dispatcher; Jan. to July 15, acting Chief Dispatcher.

A. R. Holtby, whose appointment as Master of Bridges and Buildings, Mountain Division, G.T.P.R., (Prince Rupert, B.C.), was announced in our last issue, was born at Rawdon, Que., Mar. 23, 1859, and entered railway service in Sept., 1881, since when he has been, to Oct., 1904, engaged in construction, bridges and buildings and wrecking departments, and also as General Car Foreman, Canada Atlantic Ry., and remained in that position, on the taking over of the Canada Atlantic Ry. by the G.T.R., to Dec., 1907; Dec., 1907, to Feb., 1909, General Car Foreman Canadian Northern Quebec Ry., Shawinigan Jct., Que.; Feb., 1909, to July, 1910, General Car Foreman, Canadian Northern Quebec and Quebec and Lake St. John Rys., Quebec.

Wm. Sargeant Poole, Mechanical Superintendent, Prince Edward Island Ry., whose portrait appeared in our July issue, was born at Burslem, North Staffordshire, Eng., July 20, 1844. He entered railway service in 1857 as apprentice in the Earl Granville's works at Hanley, Staffordshire, and served in other capacities until 1866, when he came to Canada. After spending a short time at other work he entered the service of Schreiber & Burpee, contractors for the construction of the P.E.I.R., and on the completion of the line from Charlottetown to Tignish, in 1875, he entered its service as a mechanic, becoming successively round house foreman, foreman of erecting shop and locomotive foreman. On Aug. 31, 1901, he was appointed Mechanical Superintendent.

Alfred Price, General Superintendent Alberta Division C.P.R., Calgary, whose portrait appears on the first page of this issue, was born in Toronto, Dec. 6, 1861, and entered railway service Sept., 1879, since when he has been, to 1881, operator, messenger and clerk Credit Valley Ry.; 1881 to 1882, car accountant same road, Toronto; 1882 to 1884, operator and relief dispatcher C.P.R., Toronto; 1884 to July, 1888, train dispatcher same road, Toronto; July, 1888, to May, 1896, car distributor same road, Toronto; May, 1896, to Aug., 1898, car distributor and Chief Train Dispatcher same road, Toronto; Aug., 1898, to May, 1901, Super-

intendent same road, Toronto; May, 1901, to Sept., 1902, Superintendent Districts 8 and 9, same road, Toronto; Sept., 1902, to May, 1903, Superintendent Districts 10 and 11 same road, Toronto; May, 1903, to 1905, Superintendent same road, Fort William, Ont.; 1905 to Feb., 1907, Superintendent of Transportation Western Lines, same road, Winnipeg; Feb. to Dec., 1907, General Superintendent Central Division same road, Winnipeg; Dec., 1907, appointed General Superintendent Western Division same road, Calgary, Alta., which division, with some slight alterations of territory, has now been re-named the Alberta Division.

A Railway Club President's Appreciation.

A. E. Cox, Storekeeper Canadian Northern Ry., who has entire charge of the stores of that large system from its eastern terminus at Port Arthur west, took an active part in the establishment last year of the Western Canada Railway Club, which has its headquarters at Winnipeg. He was its first Vice President and this year was unanimously elected President. Following is an extract from an unsolicited letter received from him recently:

"I would like to take this opportunity of offering you sincere congratulations on your publication, it is certainly up to date and contains a fund of useful and desirable information. I was particularly pleased to see that you were able to find room to print some of the papers given by members of the Western Canada Railway Club. It is very gratifying to us the good showing we have been able to make, our membership now being over the 400 mark. You have my best wishes for the continued success of the Railway and Marine World."

Owing to the comprehensiveness of its matter, every department of railway work being dealt with, the Railway and Marine World's circulation includes the officials of all railway departments. As an evidence of this it may be mentioned of the Canadian Northern Railway, in whose service Mr. Cox is, that every official, without a solitary exception, in the executive, engineering, purchasing, construction, maintenance, operating, mechanical and traffic departments is on our subscription list.

British Investments in Canada.

R. M. Horne-Payne, speaking at the annual meeting of the British Empire Trust Co., of which he is President, in London, Eng., recently, said in part:—Our efforts in the past have been and still mainly are connected with Canada. It is now no longer lack of knowledge, but rather too much knowledge, confusion of information, or misinformation, which is now holding back the British investor. The work of this company is to seek out and put forward in convenient form, with all possible safeguards, investments in the colonial dominions, offering smaller or greater profits with small or greater risks. The securities with which we are at present associated give a yield varying from 3 to 6%, and offer other advantages. It may take a longer or it may take a shorter period for our companies to attain their full success, but so far they are one and all progressing rapidly, and we have every reason to be proud of their record.

Having referred in detail to the recent issue of securities of the Duluth, Winnipeg and Pacific Ry., of the Canadian Western Lumber Co., and the Ca-

nadian Northern Ry. 5% convertible debenture stock, which were fully noticed in our July issue, Mr. Horne-Payne went on to say that he had bought C.P.R. ordinary shares at 42%. Referring to the Canadian Northern Ry., he said within five years' time it will be a transcontinental system, or, rather, a worldwide system, as fully equipped by land and water as the C.P.R. is today. The younger system will, for some years to come, have many disadvantages compared with the older system, and it will also have several advantages over the older system. They will not interfere with each other to any great extent. Canada is a big country, and I prophesy, confidently, that in two or three years after the completion of the transcontinental line, the C.N.R. shares will have gone a long way towards catching up the price of C.P.R. shares.

From time to time we read warnings, even strong protests in the press against what the writers call the enormous amount of money which is being poured into Canadian investments. No more misleading nor more unpatriotic cry could be raised, and I suspect that it is not an altogether disinterested cry. The fact is that out of £212,000,000 of British capital raised by public subscription in this country during our financial year, only £34,500,000 went to Canada—an exceedingly moderate sum when we come to think that in the United States, three railway systems alone have recently raised or are raising £30,000,000 without adverse comment. During our financial year only £71,000,000 of our money went into colonial investments altogether, whilst £94,000,000 went to foreign countries, and of this £35,000,000 were invested in South America and £23,000,000 in the United States. It is safe to say that a very great deal more than £23,000,000 was invested by Americans in Canada at 6 to 10%, so that what we have done in effect is to lend the Americans £23,000,000, probably at under 5%, and they have re-invested our money in Canada at a profit to themselves.

Montreal East Boulevard Co.—The Quebec Legislature has incorporated a company with this title. Among the powers asked for was the right to build and operate an electric railway along the boulevard, but the act as passed does not give it this power. The municipalities, however, may acquire rights over the road to be laid out, so that existing street railways may obtain franchises from them. (May, pg. 399.)

Montreal Street Ry.—The Quebec Legislature has authorized the company, in addition to its present charter rights, to build an underground railway throughout the city, subject to obtaining the necessary permission of the city, to be embodied in a bylaw and approved by the ratepayers. The work is to be started and \$2,000,000 expended thereon within four years. (Aug., pg. 683.)

Dominion Ry. and Plaster Co.—A small block of the stock of this company, which was authorized to build an electric railway in the vicinity of Sydney, N.S., is being offered for public subscription. (June, pg. 495.)

Maritime Coal and Ry. Co.—The Nova Scotia Legislature has authorized the company to build, in addition to its steam railways, an electric street tramway in Amherst, Springhill, Parrsboro and Oxford, and between any or all of these places, subject to the Government's approval.

Nova Scotia Hydraulic Co.—The Nova Scotia Legislature has incorporated a company with this title to develop water powers on any rivers in the province and to distribute electric power. The company may also build, buy, lease and operate electric tramways or railways. The provisional directors are:—J. A. Clark, W. T. Allan, Halifax; A. M. Covert, Canning, N.S.

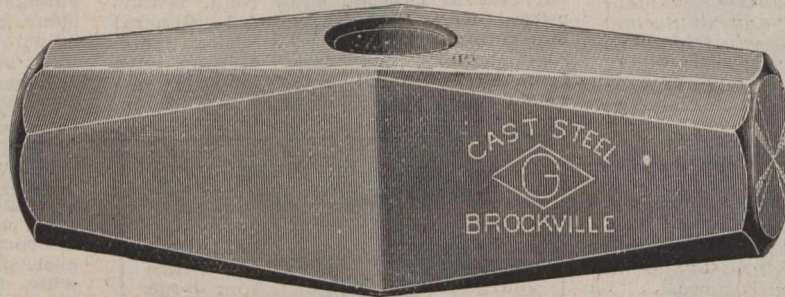
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WALKERVILLE - - - ONT.

Railway Finance, Meetings, Etc.

Acadia Coal Co.—Following are the officers and directors for the current year:—President, Sir H. Montagu Allan; Vice President, E. Franconi, Brussels, Belgium; other directors, C. R. Hosmer, Hon. R. Dandurand, A. A. Allan, C. Campbell, B. J. Allan, Montreal; M. Chevallier, H. Siemans, L. Jadot, Brussels, Belgium. The company owns 16 square miles of coal area in Pictou county, N.S., and has power to construct railways. Negotiations were at one time entered into with the N.S. Government for the construction of the Dartmouth-Guysboro-Country Harbor line in connection with the development of the colliery areas.

Ainslie Mining and Ry. Co.—A winding up order has been made by the N.S. Supreme Court with the Eastern Trust Co., Halifax, as liquidator. All claims were ordered to be filed by Aug. 19. The company was incorporated by the N.S. Legislature in Mar., 1904, with power to build a railway from Whycomagh, to Scottsville, and from Scottsville to Margaree Forks and Eastern Harbor, in Inverness county. The provisional directors were:—H. R. and H. H. Harrison, A. W. Redden, Halifax; M. J. Doucet, Grand Etang, N.S.; J. K. McDonald, Whycomagh. No work has been done.

Alberta Ry. and Irrigation Co.—Approximate net profits from all sources, exclusive of land sales, for June, \$32,166, against \$16,263 for June, 1909. Cumulative net profits, as above, for 12 months ended June 30, \$465,824. Railway traffic receipts for July, \$27,982, against \$27,041 for July, 1909.

Atlantic and Lake Superior Ry.—The Dominion Government, Aug. 5, sanctioned the sale by the Royal Trust Co. to the Quebec Oriental Ry., of the line between Matapedia and Paspébiac, Que., operated as the Atlantic and Lake Superior Ry. The line was originally constructed as the Baie des Chaleurs Ry., then it was transferred to the Atlantic and Lake Superior Ry., and when the bondholders took possession it was extended. The Quebec Oriental Ry., is the Quebec charter under which the Atlantic, Quebec and Western Ry., will operate the line, and the extension from Paspébiac to Gaspé, now under construction. The old titles which are associated with the C. N. Armstrong enterprises now pass out of existence.

The trust deeds deposited, Aug. 13, with the Secretary of State at Ottawa in connection with the transfer of the lines to the Quebec Oriental Ry., secure an issue of 5% first mortgage bonds for \$974,000, and 5% second mortgage bonds for a similar amount as part of the purchase price of the railway.

Crows Nest Coal Co.—A dividend of 1%, was paid Aug. 10, the first for two years. The company owns the Morrissey, Fernie and Michel Ry.

Cuba Rd.—The gross earnings for the year ended June 30, were \$2,559,335; net profits \$1,107,299 and surplus \$672,089. There were gains of \$402,170 in gross receipts, \$157,210 in net profits, and \$121,290 in surplus, as against the previous year. The fixed charges were increased by \$35,920.

Dominion Atlantic Ry.—Gross earnings for June, \$108,300, against \$112,854 for June, 1909. Aggregate gross earnings for 12 months ended June 30, \$1,184,850, against \$1,159,459 for same period, 1908-09.

Grand Trunk Pacific Branch Lines Co.—The London, Eng., Stock Exchange appointed Aug. 5, a special settling day for a further issue of £1,270,500 of 4% first mortgage sterling bonds, repayable in 1939, and guaranteed by Saskatchewan. These bonds are quoted on the Stock Exchange official list.

Grand Trunk Pacific Ry.—Application has been made to the London, Eng., Stock Exchange to list £2,000,000 of 3% stock; £21,600 of 4% stock; and £105,100 of 4½% stock.

The issue of £2,000,000 of 3% first mortgage sterling bonds, the principal and interest guaranteed by the Dominion Government, placed on the London, Eng., market, by the Bank of Montreal, recently, at 82½ was taken up as to 26% by the public, and the balance by the underwriters. The bonds form part of an amount, of which £5,200,000 has already been issued, created to provide funds for construction, and is redeemable at par Jan. 1, 1962.

Grand Trunk Ry.—G.T.R. officials in the U.S. are reported to have made formal announcement that an agreement has been entered into between the company's U.S. corporation and the Chicago, Kalamazoo and Saginaw Rd., whereby the G.T. Western Ry. secures an entrance into Kalamazoo, Mich., over the C., K. and S. Rd., from Pavillion to Kalamazoo, 11 miles. The agreement provides that the G.T.R. and the New York Central and Hudson River Rd., which controls the C., K. and S. Rd., are to form a closer alliance in the future.

We are officially advised that the G.T. Western Ry. has leased the portion of the C., K. and S. Rd. extending from Pavillion to Kalamazoo, Mich. The G.T. Western Ry. has acquired its own terminals in Kalamazoo, which were in the first place under the name of the Kalamazoo Terminal Ry.

Lake Superior Corporation.—At a meeting of directors at Sault Ste. Marie, Ont., Aug. 16, it was decided to pay on Oct. 1 a dividend of 2½% on the \$3,000,000 of outstanding income bonds. This is one-half of the annual rate of interest, and is the first dividend paid since Oct., 1906.

New Brunswick Coal and Ry. Co.—Central Ry. of N.B.—Judgment has been reserved by the N.B. courts in the case of Hon. W. Pugsley against the company for an accounting. There were a number of dealings of the two companies as separate concerns, and after the C. Ry. of N.B., had been absorbed by the N.B.C. and Ry. Co., and the N.B. Government, Hon. W. Pugsley being Premier, and also acting in his private capacity as a lawyer, a Royal Commission made an investigation into the affairs of the company and reported. Mr. Pugsley now desires to have a judicial accounting.

New Brunswick Ry.—Following are the directors for the current year:—Lord Strathcona, Sir Thos. G. Shaughnessy, R. J. Meighen, J. Turnbull, W. T. Whitehead, F. S. Meighen, Col. H. H. McLean, G. S. Cantlie, R. W. Reford. The new directors are Sir Thos. G. Shaughnessy and R. W. Reford, who take the places of the late J. S. Kennedy, and S. Thorne, New York. Subsequently R. Meighen was re-elected President, and W. T. Whitehead, Vice President. The railway is part of the C.P.R., but the company owns 1,600,000 acres of land in New Brunswick, part of its land grants. The income for the year enabled the company to increase its dividend from 3 to 4%.

Phillipsburg Ry.—Missisquoi Marble Co.—Following are the officers and directors for the current year:—President, H. W. Richardson, Kingston, Ont.; Vice President, R. J. Dale, Montreal; Manager, H. Timmis; other directors:—W. J. Morrice, S. H. Ewing, W. Mann, J. W. McConnell, Montreal; Jas. Playfair, Midland, Ont.; G. R. Crowe, Winnipeg.

Port Hood-Richmond Ry.—The Nova Scotia Legislature has ratified an agreement made Sept. 13, 1909, readjusting the company's bond issue, and authorizing the carrying of it into effect. The agreement specifies that the \$350,000

prior lien bonds shall constitute a first lien on the property, and provision is made for the issue of 1,540 bonds of \$500 each, at 4% upon a second mortgage, repayable Aug., 1926.

Quebec Central Ry.—Gross earnings for June, \$119,899.98; expenses \$81,220.87; net earnings \$38,679.11, against \$92,127.20 gross earnings; \$66,687.84 expenses; \$25,439.36 net earnings for June, 1909. Aggregate gross earnings for 12 months ended June 30, \$1,104,919.92; expenses \$758,664.01; net earnings \$346,255.91, against \$1,021,682.40 aggregate gross earnings; \$724,918.25 expenses; \$296,764.15 net earnings for same period 1908-09.

Subject to audit, the accounts for the year ended June 30, show gross receipts, including interest earned, \$1,110,520; working expenses, \$758,664; net receipts \$351,856; interest on first and second debenture stock \$165,873, leaving a balance of \$185,983. From this is deducted the full interest on the 7% income bonds, payable Oct. 1, leaving a surplus of \$70,838. This surplus added to the \$46,232 brought forward from the previous year, shows \$117,070 available for dividend, from which is recommended a dividend of 2% on the share capital. This is the first distribution on this issue since the company was formed.

Quebec & Lake St. John Ry.—After prolonged and tedious negotiations between the committees representing respectively the prior lien bondholders and the first mortgage and income bondholders on the one hand, and the Canadian Northern Ry. Co. on the other, a settlement has been arrived at which received the ratification of the three classes of bondholders present at meetings in London, Eng., on Aug. 8. The difficulties which presaged considerable loss to the several interests involved arose out of the inability of the Q. & L. St. J. Ry. Co. to meet its fixed charges, and the consequent failure of the company to pay the interest due on the first mortgage bonds on Jan. 1 last, and subsequently the interest due on the prior lien bonds on April 1. Committees were appointed by the prior lien and first mortgage and income bondholders to safeguard their interests, and a new scheme has been evolved, the rejection of which would, it was claimed, after due consideration of the fullest information obtained from private, public and official sources concerning the past, present, and future of the company, involve in serious loss not only the income and first mortgage bondholders, but the prior lien bondholders as well. Under this scheme a new 4% debenture stock of the Q. & L. St. J. Ry. Co. is to be created and guaranteed unconditionally, both as to principal and interest, by the Canadian Northern Ry. Co. The prior lien bondholders will receive in exchange for each £100 bond, with the Oct. 1, 1910, and all succeeding coupons attached, an equal amount, or £100, of the 4% guaranteed debenture stock, the first mortgage bondholders for each £100, with all unredeemed coupons attached, £70 of the new stock, and the income bondholders £13 of such stock, interest accruing in all cases as from Jan. 1, 1911. This is the agreed result of discussion and mutual concessions, and of a supreme effort to arrive at an amicable and satisfactory solution of a knotty problem. When it is remembered that the original offer of the C.N.R. Co. was to pay to the first mortgage bondholders £60, and the income bondholders £12, the substantial advantages secured by the committees for their different interests will be apparent.—Canada.

Reid Newfoundland Co.—The issue of £800,000 of 3% stock of the Newfoundland Government, placed on the London, Eng., market, July 14, through Glynn, Mills, Currie & Co., and Coates, Son &

Co., at 97½, has been taken up. The arrangements with the underwriters, the Premier states are such that the Government will receive 96% of each £100 certificate. The proceeds of the issue are to be used to subsidize the building of 30 miles of branch lines, under the terms of an act passed last session.

St. Maurice Valley Ry.—A meeting of the shareholders has been called to be held in Montreal Sept. 17 to consider a proposal to lease the company's line to the C.P.R., by which it has been operated since construction, and pass resolutions respecting the issue of bonds and the form of mortgage to be given to secure the issue of such bonds. C. C. Pangman, of the C.P.R. Secretary's office, is Secretary of the company.

White Pass and Yukon Ry.—Gross earnings for July, \$214,337, against \$223,657 for July 1909.

I. C. R. Gas Plant at Moncton.

We are officially advised that arrangements have been completed for the installation of one more unit for the generation of producer and water gas at the Intercolonial Ry. shops at Moncton, N.B. The new outfit will be a duplicate of the one which has been in operation during the last two years, and which supplies producer gas to the gas engines in the power house and water gas to the furnaces in the shops. The new outfit will supplement the older one when more gas for power and heat is required, and it can also be used as a reserve unit in the event of repairs to the older unit being carried out. Each unit has capacity for gasifying 1,500 lbs. of bituminous coal per hour, and from this amount of coal 82,500 cu. ft. of producer gas and 24,000 cu. ft. of water gas are hourly produced. It is generally agreed about the shops that there is no more coal consumed in the new gas house than there was in the old style shop furnaces, and, that the producer gas for the engines and the power obtained from the latter, represent the gain that has been secured by burning the coal in the gas generators, instead of the old style boilers and furnaces.

It is said that Moncton is to be supplied with natural gas within a reasonable time, and if this desirable commodity becomes available for use at the I.C.R. shops—and the selling price is right—it is altogether likely that the gas generating plant above referred to will simply be held as a very valuable auxiliary plant.

Canadian Ticket Agents' Association.

—Secretary de la Hooke has issued one of his characteristic circulars to members, giving full particulars of the annual outing which will be held at Quebec on Oct. 5 to 7. The headquarters will be at the Chateau Frontenac, where the business meeting will open on Oct. 5 at 10 a.m., when the mayor will welcome the visitors. G. A. Cullen, G.P.A., Delaware, Lackawanna and Western Rd., and N. Mooney, G.A., New York Central Lines, will also speak, the former as representative of the American Association of General Passenger Ticket Agents. At 8.30 p.m. there will be a smoker for the men and another entertainment for the ladies. Oct. 6 and 7 will be devoted to pleasure trips and sightseeing, including probably, trips to the Plains of Abraham, Montmorency Falls and Ste. Anne de Beaupre, and a reception on the C.P.R. s.s. Empress of Ireland. The White Star-Dominion s.s. Megantic is expected to leave Quebec for Montreal on the morning of Oct. 8, and members have been invited to make the trip on her.

J. H. Bacon, G.T.P.R. harbor engineer at Prince Rupert, B.C., was married recently in Philadelphia, Pa., to Miss B. Tysen.

2 GRAND PRIZES AND 5 GOLD MEDALS

—more than was given to all other makes of pumps combined—were awarded by the Alaska-Yukon-Pacific Exposition to

"AMERICAN" PUMPING MACHINERY

The reason why "American" volute Centrifugal Pumps attain higher mechanical efficiencies than others is they are so designed that there is a shorter passage and less friction of fluid in passing through the pump.

The impeller is accurately machined to fit the casing, leaving clearance for only a film of fluid and preventing back-flow.

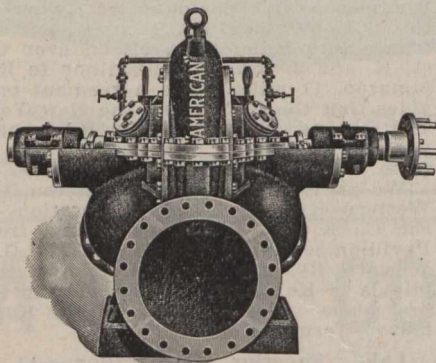
At the entrance of the discharge pipe is a cut-off, preventing fluid passing the discharge pipe and being repumped.

The same care that is employed in designing the principal features of the pump is carried out in every detail of construction; in balancing the impeller, overcoming the end thrust, water-sealing the inner end bearings and oiling the main outer end bearings with rings and chains and oil cellars.

"American" Volute centrifugals are made in both horizontal and vertical types in any number of stages, in any size from 1 inch to the largest installations made and equipped with any power.

Give us the opportunity to prove to you the superiority of "American" centrifugals for any installation adapted for this type of pump.

Complete Catalogue containing much hydraulic information found in no textbook of hydraulics, Free.



THE AMERICAN WELL WORKS

General Office and Works: Aurora, Ill., U.S.A.

R. H. BUCHANAN & CO., Montreal, Canadian Representatives

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RAMAPO
Automatic, Safety
SWITCH STANDS

have no equal
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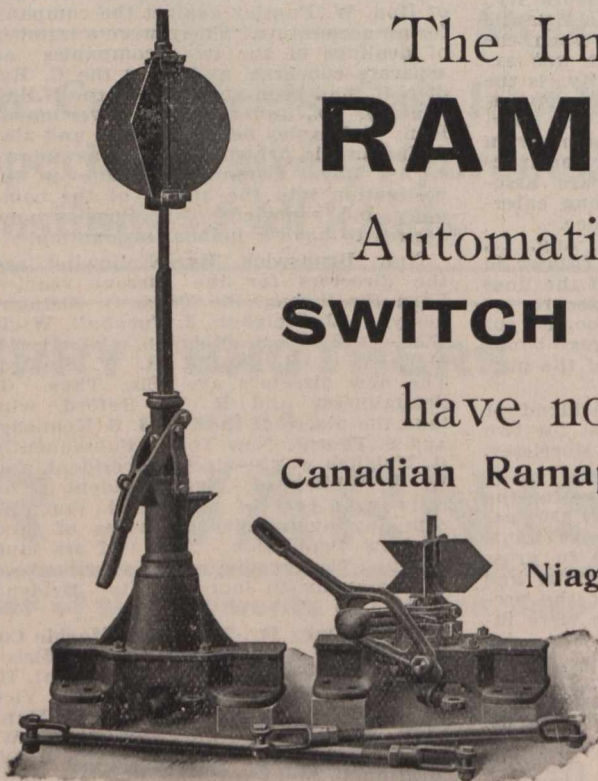
Manufacturers

Niagara Falls, Ont.

AGENCIES:

Dominion Equipment & Supply Co.,
354 Main St. Winnipeg

C. L. Hackett,
605 Eastern Townships
Bank, Montreal



Style No. 17

Style No. 20

Ask for Information about Six other Styles

The Hudson's Bay and Pacific Railway.

We have received the following letter from the Secretary of the Hudson's Bay and Pacific Ry. Development Co., Ltd., dated London, Eng., Aug. 17:—

"I am instructed to write you that at a meeting of the board of this company, held yesterday, the attention of the directors was called to an article in your issue for August, referring to the recent circulation of a printed offer of shares in this company, based upon certain statements as to the position and prospects of the company, and followed by a list of the names of directors. I am further requested by the board to say that the circular in question is absolutely unauthorized, and was published without their knowledge and consent. We trust that in fairness and justice to this company, you will give this the same publicity as you have given to the statements contained in your issue."

The prospectus referred to in our August issue, which purported to be issued from the company's office, 56 Moorgate St., London, and to be signed by the directors, stated among other things that the H.B. & P. Ry. Co. was authorized to issue 4% gold bonds, guaranteed by the Dominion, both as to principal and interest, to the amount of \$20,000 a mile; that it was entitled to a land grant of 5,000 acres of land per mile and to subsidies estimated at \$6,000 a mile. We pointed out that the Dominion Parliament had not authorized the Government to guarantee the bonds, that it had not granted any cash subsidy, and that no grant of land had been authorized to the H.B. & P.R. Co.

There is no doubt whatever that the prospectus referred to was issued, and we would suggest to the H.B. & P.R.D. Co. directors that it would be well for them to definitely state who issued it. Surely they must have seen or heard of it, even if it was issued without their knowledge or consent. If so, did they take prompt steps to repudiate it, or did they wait until we had exposed its unreliability, and this had been followed by Sir Wilfrid Laurier's public denial of some of its statements?

Portland Canal Short Line Railway.

We are officially advised that the line has been located from the wharf site on the tidal flats at Stewart, B.C., to the Red Cliff mine near the junction of Bear River and American Creek, 13.45 miles, and surveys are about to be made up Bear River over the divide into the Nass Valley, and up American Creek. On Aug. 12 there were 10 miles under construction, and it was expected that the balance of the distance will be covered early in September. Tracklaying should commence about Sept. 10. All the necessary track material is on hand at Stewart. The entire mileage should be completed this year. The maximum curvature is 10°; the maximum gradient going north is 1.40% for three-quarters of a mile; the balance of the line being an average of 0.8%. There is no adverse gradient going south. With the exception of one and a half miles of fairly heavy rock work and a short tunnel of 100 ft., the grading consists of a light embankment of alluvial gravel.

The wharf approach at Stewart is 5,960 ft. long and is a pile trestle constructed for heavy loading. The wharf, with deck elevation of 4 ft. above extreme high tide, is located so as to provide 22 ft. of water at extreme low tide at face of wharf. It is very strongly constructed, and will carry a safe loading of 600 lbs. per sq. ft. The dimensions of the wharf as built are 160 by 60 ft., to be extended later. All timber of Douglas fir, with hemlock piles. The wharf and approach should be complet-

ed Sept. 10, and tracklaying should commence about that date, all the necessary track material being now at Stewart. In addition to the wharf approach above mentioned, there will be about 1,300 ft. of pile trestling. A freight shed has been built at Stewart and a station is being built. It is also intended to build a locomotive shed, turntable, water tank and coaling plant at Stewart. Stations will also be built at Glacier, mileage 5.5, Bitter Creek, mileage 9.5, and Red Cliff, mileage 13.45.

W. H. Grant is Manager of construction. The sub-contractors under the Cassiar Construction Co. are the Westholme Lumber Co., Ltd., Stewart, and Gillett & McDonald, Stewart.

Weeds on Railway Right-Of-Way.

The Secretary of the Board of Railway Commissioners has issued the following circular:—

The Railway Act provides as follows: "Sec. 296.—Every Company shall cause thistles and all noxious weeds growing on the right of way and upon land of the company adjoining the railway, to be cut down or to be rooted out and destroyed each year, before such thistles or weeds have sufficiently matured to seed.

"Sec. 297.—The company shall at all times maintain and keep its right of way free from dead or dry grass, weeds and other unnecessary combustible matter."

Complaints continually come to the Board that these sections are not observed by some of the companies. Casual observation in some parts of the country shows that sec. 297 is being entirely overlooked. It is clear that many fires are communicated to adjacent lands by reason of companies not complying with these provisions of the law, entailing enormous loss. The Board deems it to be its duty to see that these sections are enforced, and to that end has given instructions that all railway lands shall be periodically inspected and full reports made of the conditions found to exist. This is a matter of vast moment in the preservation of timber lands, as well as the protection of property of all kinds along railway lines, and steps will be taken to enforce the law, unless voluntarily complied with.

Telegraph and Cable Matters.

W. G. Barber has been appointed Inspector G.N.W. Telegraph Co., at Toronto.

E. Paterson has been appointed Manager C.P.R. Telegraphs at Vancouver, B.C., vice M. T. Quigley, deceased.

The Dominion Government is reported to have decided to erect a wireless telegraph station at Lawn Hill, Queen Charlotte Islands.

The Canadian Northern Telegraph Co., has opened offices at Totogan, Man., and Laird, Sask., and has closed its office at Erwood, Sask.

J. Beauchamp has been appointed Chief Inspector G.N.W. Telegraph Co. at Quebec, and R. G. Morean has been appointed Assistant Inspector.

J. Fletcher, heretofore chief operator, has been appointed Superintendent C. P.R. Telegraphs at Vancouver, B.C., and has been succeeded by F. Swift.

R. H. Hathaway, chief clerk of the press and commercial news department, G.N.W. Telegraph Co., Toronto, has been appointed superintendent of that department, vice R. F. Easson retired.

C. E. Lillie has been appointed Manager G.N.W. Telegraph Co.'s office at Quebec, vice E. Pope, Superintendent, retired. The position of Superintendent has been abolished.

The C.P.R. has issued a notice to the effect that business messages of newspapers between points in Canada, heretofore charged at half day rates, will, from Sept. 1., be charged at regular message rates.

J. F. Fraser, who was recently appointed Superintendent Direct United States Cable Co., at Halifax, N.S., was born in Scotland, in 1854, and has been connected with the telegraph and cable service in Great Britain and the U.S. since 1870.

J. Wilson, who recently resigned the position of Superintendent C.P.R. Telegraphs at Vancouver, B.C., will spend some time in California for reasons of health. He held the position named for about 10 years, and was in C.P.R. telegraph service for 25 years.

The Maritime Telegraph and Telephone Co., Ltd., has been incorporated by the Nova Scotia Legislature, with a capital of \$500,000, which may be increased from time to time, to \$5,000,000, and office at Halifax, to erect telegraph and telephone lines throughout the province, and to enter into agreements with other companies. The provisional directors are: S. M. Brookfield, W. H. Covert, Halifax, N. S.; A. E. Ings, Charlottetown, P. E. I.

The C.P.R. has opened telegraph offices at Cedar Cottage, B.C.; Acme, Alderside, Banff Springs Hotel, Bittern Lake Hughenden, Irricana, Namaka, Redcliffe, and Whitla, (night only), Alta.; Kelloe, Ludiatt, Pettapiece, and Winnipeg Beach, Man.; St. Andrews, N. B.; Beamsville, Burwash, Erindale, Lakeside, Petewawa, Pickerel and Silverdale, Ont.; Abbotsford, Acton, Bedford, Brome, Chelsea, Drummondville, Kingsbury, Kipawa, Knowlton, Knowlton station, L'Ange Gardien East, Lawrenceville, Mansonville, Racine, Routhier, Roxton Falls, St. Guillaume, St. Hugues, St. Simon, St. Pie, South Bolton, South Roxton, Stanbridge, Valcourt, Val Morin, Warden, Wickham, and Windsor Mills, Que.; Biggar, Bridgeford, Colonsay, Forward, Glenside, Markinch, Rokeby, Senlac, Strongfield, Swinbourne, Traynor and Webb, Sask.

Among the Express Companies.

The Canadian Northern Ex. Co., has opened offices at Ste. Ursule, Que., Totogan, Man., and Brock, Sask.

The Dominion Ex. Co., having closed its offices at Shubenacadie and Stewiacke, N.S., these places are now exclusive offices of the Canadian Ex. Co.

H. S. Whisler, who was sentenced to three years in the Kingston penitentiary, last fall, for complicity in the robbery of the Canadian Ex. Co., at Niagara Falls, Ont., has been released.

W. C. Muir, heretofore Superintendent Canadian Northern Express and Telegraph Companies, has been appointed General Superintendent Canadian Northern Express and Telegraph Company, with office at Winnipeg, Scott Griffin, heretofore Manager at Toronto having been appointed Manager Canadian Northern Steamships Ltd., London, Eng.

In a recent case against the American Ex. Co., in the U.S., it was decided that the title to an article shipped c.o.d., passed from the seller to the buyer, immediately the shipment was delivered to the company, and that if the goods are ordered to be shipped from one point to a buyer at another point, c.o.d., by a common carrier, the sale is complete at the point of shipment. In contradistinction to this decision, under Canadian law, it is held that in the case of express companies carrying liquor into local option areas, c.o.d., the sale shall be deemed to be complete at the point of delivery.

Grain Elevator Notes.

The British North American Elevator Co. is arranging to erect an elevator at Wadena, Sask.

J. G. King, owner and operator of King's elevator at Port Arthur, Ont., died there recently, aged 67.

The name of the Andrews Gage Grain Co., Ltd., registered under the Dominion Companies Act, has been changed to the International Elevator Co., Ltd.

The Imperial Elevator Co.'s elevator at Crossfield, Alta., was burnt recently, with about 10,000 bush. of grain. The fire is locally supposed to have been the work of an incendiary.

The B.C. and Prairie Milling and Elevator Co., Ltd., has been incorporated under the B.C. Companies Act, with a capital of \$500,000, to conduct business in any part of the world.

The Swift Current Farmers' Milling and Elevator Co., Ltd., has been incorporated under the North West Territories Companies Ordinance, with a capital of \$50,000, and office at Swift Current, Sask.

The Manitoba Grain Growers Association, at its recent annual meeting, discussed the question of the public ownership of terminal elevators, and later sent a delegation to meet the Dominion Premier at Brandon, when representations were made on the subject.

The St. Lawrence Flour Mills Co., of Montreal, is reported to have decided to erect an elevator there, with capacity for about 500,000 bush. It is also stated to be considering the question of erecting flour mills and elevators in the prairie provinces.

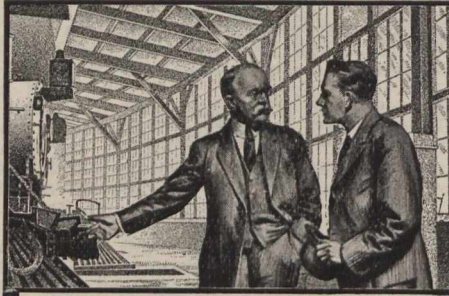
The Fox Bros. Cereal, Milling and Feed Co., Ltd., has been incorporated under the B.C. Companies Act, with a capital of \$500,000, to take over the business carried on at Vancouver by Fox Bros. and Co., and in connection therewith, among other things, to build, own and operate grain elevators, warehouses, etc.

Press dispatches from Calgary state that an understanding has been arrived at among the elevator companies operating in southern Alberta, by which, at many points, only one elevator will be opened, and where a company has about 35 or 40 elevators, only about 10 will be opened for business this year.

G. W. Stephens, Chairman Montreal Harbor Commissioners, in dealing with the grain situation at Montreal recently, stated that even with the additional elevator capacity at present under construction there, he believed, that within a few years they would fall short of the requirements of the port. He advocated the building of a number of storage elevators in Montreal.

The Alberta Pacific Elevator Co. is at present building elevators at Bow Island, Winifred, Seven Persons, Barnwell, Purple Springs, Olive, Tees, Halkirk, Burdett and Castor, Alta., and is reported to have secured sites for further erections at Loughheed, Hardisty, Prevost, Brandt, Acme, Cluny and Bassano. Facilities for handling grain will also be provided at Crowfoot, Brooks, Carlstadt and Irricana.

The Manitoba Elevator Commission is reported to have taken over 14 elevators from private owners at Gretna, Hartney, Souris, Hamiota, Swan Lake, Somerset, Shoal Lake, Strathclair, Dominion City, McGregor, Roland, Snow Flake and Lauder. The elevator which it is erecting at Dufresne will have capacity for 30,000 bush., and it is expected that it will be completed in time for this year's crop. It has been stated that the commission will have about 75 elevators under its control this year.



"Here's The Job—Now PRODUCE!"

"The last man at this job was a fine chap, but he couldn't 'make good,' so we had to let

him go. As I said before, the position calls for a TRAINED man.

Now It's 'UP TO YOU.'

Suppose it were up to you—could you "make good?" What is the difference between you and the fellow able to "produce" as a foreman or superintendent or manager? Training—that's all. A thousand jobs await the man able to "produce." Employers want him—are always eager to secure his services. The world has no pity for failures; it says to every man, "get ready to 'produce.'"

Every month there are received at the I. C. S. upwards of 300 voluntary letters from men that spare time study has qualified to "produce." Those letters prove conclusively that there is a way for every man—for you—to get ready to "produce." The I. C. S. can help you. Are you willing to help yourself?

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Please explain, without further obligation on my part, how I can qualify for a larger salary in the position before which I have marked X.

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| Locomotive Engineer | Concrete Engineer |
| Marine Engineer | Building Contractor |
| Mechanical Engineer | Mechanical Draftsman |
| Bridge Engineer | Automobile Operator |
| Structural Engineer | Chemist |
| Civil Engineer | Architect |
| Surveyor | Bookkeeper |
| Mining Engineer | Stenographer |
| Air-Brake Inspector | Advertising Man |
| Air-Brake Repairman | Civil Service |

Name _____

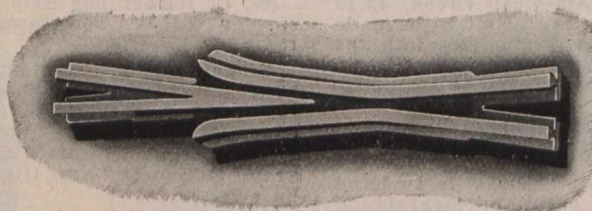
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ELECTRIC RAILWAYS.

Canadian Street Railway Association.

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 ASSOCIATION'S OFFICE, 157 Bay St., Toronto.
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 ASSISTANT SECRETARY, Aubrey Acton Burrows, Secretary and Business Manager, Railway and Marine World.
 OFFICIAL ORGAN, THE RAILWAY AND MARINE WORLD.

Repairs and Testing of Motor-Driven Compressors.

By A. M. Lindsay, Assistant to Superintendent of Rolling Stock, Montreal Street Railway.

The task of describing the methods of repairing, overhauling and testing motor driven air compressors on the Montreal St. Ry. system is a comparatively easy one owing to the simplicity of the straight air system, and the apparatus required for it.

The construction of the motor driven compressor is doubtless familiar to all your readers, consisting as it does of a small high speed d.c. motor, which takes power direct from trolley without the use of a starting resistance of any kind, and which is geared through helical or herringbone gears with a duplex compressor. The pistons are driven through connecting rods from a crank shaft with cranks at 180° to each other, gears and crank shaft running in oil. The motors, with the exception of one type, are completely enclosed and are dust and water proof, and can be

placed underneath the car without any additional protection.

Most of this company's compressors are placed in the front vestibules of the car, a position which has some advantages as regards inspection and accessibility, but which has some disadvantages in regard to the air supply, which is taken from inside the car. In winter the air inside the cars is considerably moister than the outside air, and as a result there is considerable condensation in pipes and reservoirs which often results in pipes becoming frozen solid, necessitating a pull into the car barn.

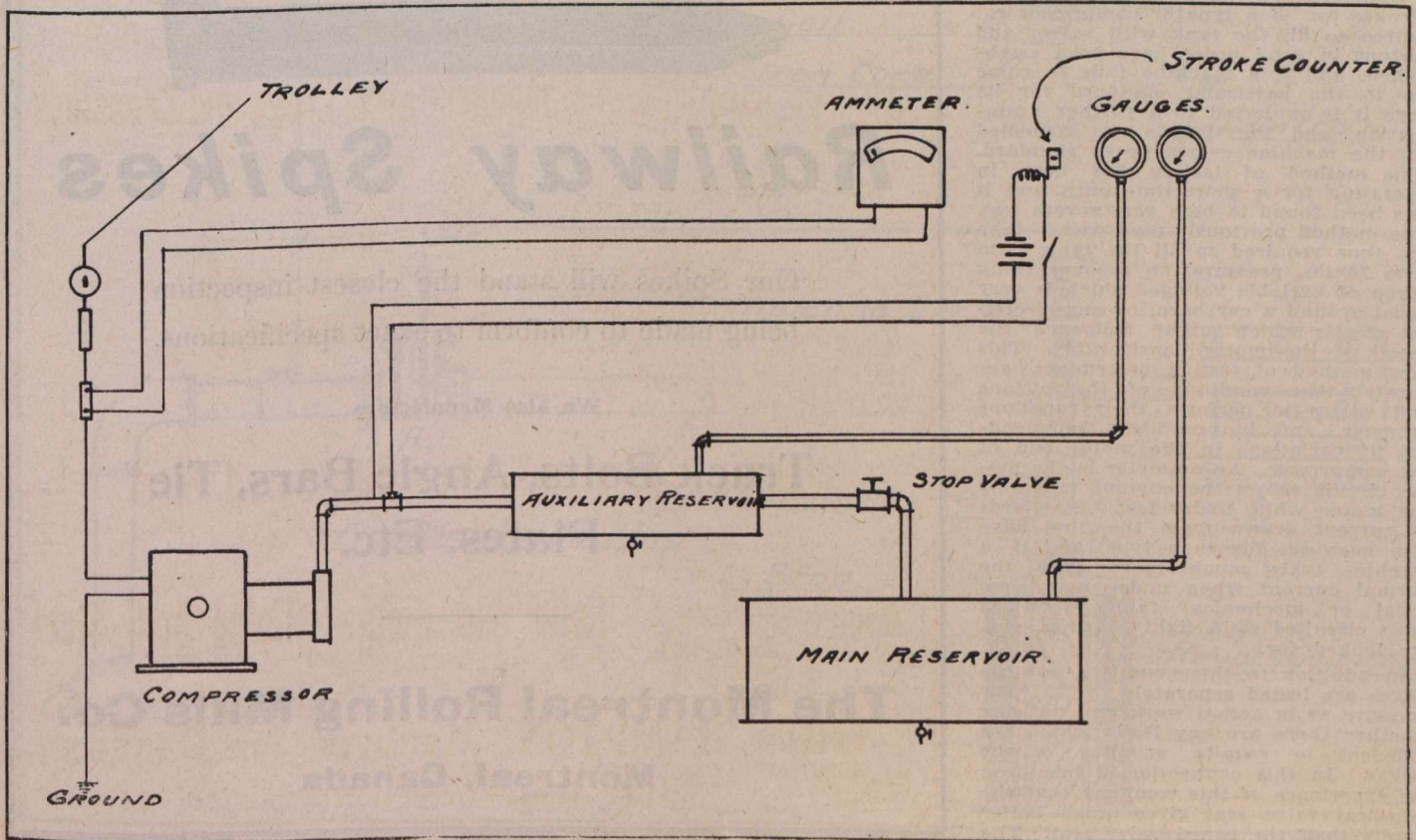
In ordinary service compressors are inspected every two weeks. This inspection consists of testing the motor for electrical troubles, wiping off the commutator, and renewing the brushes when necessary, seeing that the oil supply for armature, bearings, gears and cranks is at the proper level in each case, adjusting the governor, and seeing that the pressure holds up to the standard required. A drop of 2 lbs. in the pressure in five minutes is the most allowed. If the drop is greater than this, the source of loss has to be located and the necessary repairs made.

The whole air brake equipment on the cars is given a complete overhaul once a year. This work is done in the summer time, as far as possible. Overhauling once a year means on a mileage basis about 35,000-45,000 car miles. An old car is fitted up as a workshop and all overhauling is done in this car by the air brake crew, the car being moved about from barn to barn as the work demands. The car is fitted with a traveller running from end to end along one side and the compressor is picked up at the doors at either end of the car and moved into position on the overhauling trestles. There is also a portable traveller which is used to pick up the compressor from the oil pans in the car vestibules and carry them to the door of the overhauling car. On the other side of the car are the work bench, armature rack, testing reservoirs and the fixings for mounting governors and engineers valves upon, in order to test

them. No machine work, such as trueing commutators, boring out connecting rod ends, etc., is done on the car, but all such work is sent down to the machine shop. A small emery wheel is the only machine tool in the car.

The overhauling and testing is carried out as follows:—There is a spare compressor of each type on the air brake car, and the compressor which is to be overhauled is taken off its car and immediately replaced by the spare compressor of the same type, which has previously been overhauled and put in good shape. In this way it is not necessary to hold a car out of service for more than an hour or two. As a matter of fact, there are almost always cars held in the shop for repairs to some part of their equipments, and the change-over of the compressor is made at the same time, so that it is quite unusual to have to pull in a car off the road to keep the air brake crew working.

When a compressor is taken off a car it is placed on the overhauling bench and tested by the method described a little later, to see whether there are any very noticeable defects, either electrical or mechanical. It is then dismantled, any parts requiring machine work done are sent to the machine shops, and the rest of the machine is thoroughly cleaned and put together again, particular attention being paid to tightening of bolts, proper adjustment of bearings, connecting rod ends, and gearing. Care is also taken to have the direction of rotation of the armature correct. It frequently happens that an armature when repaired in the winding room is connected up so that for the same brush position the armature will rotate in the opposite direction to that in which it turned before repair. Rotation in the wrong direction is hard on the gears and also reduces the efficiency of the compressor, because the centre line of the crankshaft is, in most types of compressors, below the centre line of the cylinder, in order that the push on the connecting rod on the compression stroke may be as straight as possible,



Arrangement of apparatus for testing motor compressors.

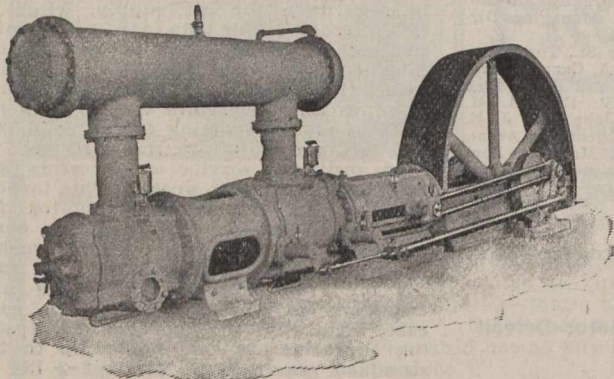
and if the direction of rotation is wrong then the connecting rod is at an increased angle to the horizontal on the compression stroke. The oil taken from the crank case and gear case of the compressor is cleaned by being passed through a centrifugal cleaner, and is then ready for use again. A note is taken of all faults found by the preliminary test, and during the dismantling of the machine, and these are embodied in a report sent in to the Superintendent of Rolling Stock. The changing of armatures which may have developed faults between the overhauling periods is done by the not very skilled class of labor, usually employed in car barns, and a very large percentage of the defects found at the overhauling period is due to improper handling by the car barn employes.

When the machine is reassembled it is connected up for testing, as shown by the accompanying diagram. The compressor is connected by a flexible hose to a small freight auxiliary reservoir, and this again is connected through a globe stop valve with the main reservoir. Both reservoirs are provided with pressure gauges. The compressor is raised to 75 lbs. per sq. in., the maximum pressure used on the system. The tester then closes the switch, which sets the stroke counter in operation, and at the same time opens the stop valve just enough to keep the pressure in the auxiliary reservoir constant at 75 lbs. sq. in. till the main reservoir pressure is raised to 75 lbs. per sq. in. The operation of the stroke counter is as follows:—The rush of air through the discharge pipe with each stroke of the pistons presses the flexible vane A, which is made of light sheet brass, against the insulated contact point B, thus closing the circuit through the magnet coil when the switch C is closed. The plunger D is pulled down against the action of the spring E, and by its movement actuates the counter, which thus records the actual number of strokes of the compressor. This automatic stroke recorder was designed by the mechanic in charge of the air-brake car and works very satisfactorily.

Standards of the average number of strokes for each type of compressor required to fill the tank with valves and pistons in good order have been established, and if a machine fails to come up to the particular standard for its type it is subjected to a further examination, and the defects are remedied till the machine comes up to standard. This method of testing has been in operation for a short time only, and it has been found to be a very severe test. The method previously used was to take the time required to fill the tank from 0 to 75 lbs. pressure, no account being taken of variable voltage, which is very usual around a car barn, or any electrical effects which might influence the speed of the motor considerably. This new method of testing determines accurately the condition of the pistons and valves to perform their functions properly, and is practically independent of variations in the motor end of the compressor. An ammeter in the motor circuit shows the current taken by the motor while under test. Standards of current drawn from the line have also been set for each type, and if a machine takes much more than the normal current when under test, electrical or mechanical faults, such as short circuited coils, tight bearings, etc., are looked for.

In addition to this complete test the valves are tested separately by relieving pressure as in actual work and noticing whether there are any leaks which are sufficient to require grinding of the valves. In this connection it has been the experience of this company that the spherical valve seat gives much better results than the coned valve seat. The

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Modern, high-speed self-contained designs of unusually rugged construction with large, well proportioned bearings and efficient lubrication.

Sustained high efficiency through the reduction of clearance losses.

A simple reliable Corliss Inlet Valve motion combining efficiency with endurance.

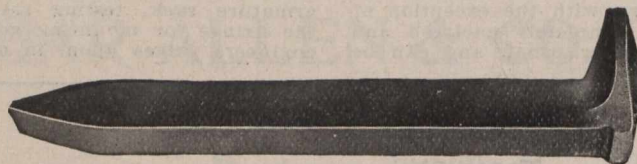
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The Montreal Rolling Mills Co.

Montreal, Canada

experiment is being tried of putting a sort of propeller on the under side of some of the valves, so that the air being forced past the under side of the valve causes it to be kept turning on its seat.

When the machine has been tested and passed it is ready to be put into a car. When installed the governor is adjusted, gauge tested, engineers' valve overhauled, and all leaks located and stopped, so that pressure does not drop by more than 2 lbs. in 5 minutes.

The following figures give some idea of the average cost of (1) overhauling alone, (2) overhauling and changing:—

Type	Average Mileage between Overhauls.	Average Overhauling Time.	Average Cost Material for Overhauling.	Average Total Cost Overhauling.	Average Overhauling and Changing Time.	Average Total Cost Overhauling & Changing.
No. 1	38610	13.3 hrs.	21c.	\$2.60	20.3	\$3.86
No. 2	38943	15.9 hrs.	32c.	\$3.15	23.5	\$4.23
Types	Compressors	Average Mileage	Average Overhauling Time Only.	Average Material Cost.	Average Total Cost.	Average Total Cost Overhauling and Changing.
1, 2 & 3	52	.....	17.3 hrs.	27c.	\$3.25	

In connection with the last set of figures it should be said that the compressors had been in service for over two years, and the average mileage would be about 90,000 miles. From these figures it will be seen that the average cost of overhauling is small, and works out at about .007 of a cent per car mile. The average cost of material is very low, which is due to the fact that a large percentage of the compressors have not been in service long enough to require the renewal of very many parts. With proper inspection and maintenance the cost of material per compressor should

not be greatly increased for some years to come.

The foregoing paper was read before the Montreal Air Brake Club recently.

Training the New Man on Both Ends of the Car.

By A. J. McDonald, Superintendent Quebec Ry., Light and Power Co.

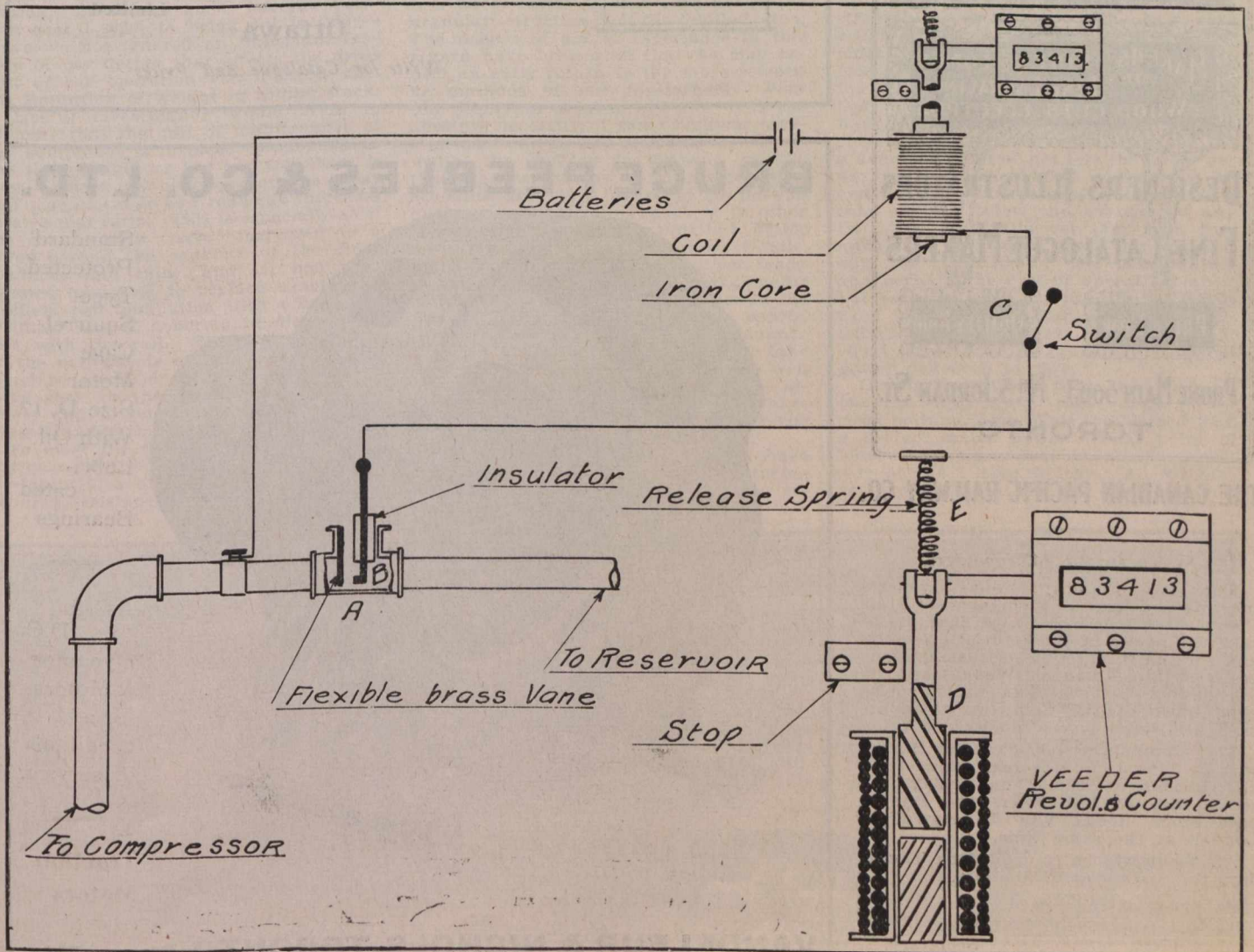
To be in position to expeditiously handle the pleasure travel of the summer months, by having a sufficiently large number of spare men to run the

extra cars required, as well as to be able to replace regular men, who for one reason or another are unable to attend to their duties, and at the same time keep as low as possible the expenses of a guaranteed minimum wage that is found necessary in many places, to obtain the services of suitable men, appears to me to be a subject worthy of consideration on the part of the operating department of the smaller companies.

To afford sufficient employment to the new man that he may be enabled to earn somewhat more than living expenses during the period of his probation on the

waiting list, makes it essential that he should be competent to accept whatever work offered, either as motorman or conductor, to attain this end it would therefore, seem necessary that in the employment of new men, only such should be employed as appear capable of filling the requirements of either end of the car. Such a man should be trained as motorman from 10 days to two weeks at his own expense and upon the expiration of that time should be trained as conductor at the company's expense, allowing him during such training the minimum wage paid to extra men who report at roll call and fail to obtain employment. After passing the final examination he should be placed on the spare list and employed on either end of the car as required. By this means the division superintendent would be in a position to observe more fully the capabilities of each man, so that when the time arrived for him to be assigned to a regular run he could be appointed permanently to the end of the car to which he proved to be best suited.

It frequently happens that where a number of men is engaged at about the same time there may be a greater call for the services of conductors than of motormen, with the result that the new conductor is enabled to earn fair wages and the new motorman who started at the same time, and often long before, remains idle the greater part of the time. This is a condition of affairs that causes dissatisfaction among the men and should be corrected if possible, so that each new employe would receive his share of employment according to priority in the service.



Details of Automatic Stroke Recorder Apparatus.

Morrisburg and Ottawa Ry.—The first sod of this projected electric railway is reported to have been turned at Morrisburg, Ont., Aug. 2. (April, pg. 311.)

Public Service Corporation.—The Quebec Legislature has changed the title of the Suburban Tramway and Power Co. to the Public Service Corporation. The company is authorized to build a line north of the St. Lawrence River, throughout the Montreal Island, and Soulanges, Laval and Terrebonne counties. In the act passed by the Quebec Legislature last session respecting the city of Montreal, it is provided that the city shall see to the carrying out of the agreement whereby the Suburban Tramway and Power Co. has undertaken, in favor of Longue Pointe, to extend its railway along the centre of Notre Dame St., from the gate near Maisonneuve to Dominion Park when the street is macadamized. Also that the city shall in good faith endeavor to arrive at an understanding with the company: (1), For the building and working by it of its tramway from its present terminus to the eastern limits of Longue Pointe; (2), For the placing of its tramway along the middle of Notre Dame St. from Dominion Park to the terminus; (3), For its granting passenger fares from Montreal to the new Longue Pointe ward. (May, pg. 401.)

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WOOD CUTS, ELECTROS

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THE CANADIAN PACIFIC RAILWAY CO.

Notice to the Shareholders.

The twenty-ninth annual general meeting of the Shareholders of this Company for the election of directors to take the places of the retiring directors, and for the transaction of business generally, will be held on Wednesday, the 5th day of October next, at the principal office of the Company at Montreal, at twelve o'clock noon.

The Common Stock Transfer Books will be closed in Montreal, New York and London at 3 p.m. on Friday, the second day of September; the Preference Stock Books will be closed in London at the same time.

All books will be re-opened on Thursday, the sixth day of October.

By order of the Board.

W. R. BAKER,

Secretary.

Montreal, 8th August, 1910.

**THE WILLSON PORTABLE
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Brilliant Powerful Economical

Specially adapted for use in all kinds of construction work.

Its candle power varies from 1,000—8,000 according to the size of apparatus. The cost of 8,000 candle power is less than 6c. per hour.

O'Brien & Fowler, Contractors to the G.T.P., say:—

"During the past two or three years we have used various kinds of lights, but none of them have proved the equal of yours, either in the matter of economy or usefulness. The effectiveness of your light is beyond dispute."

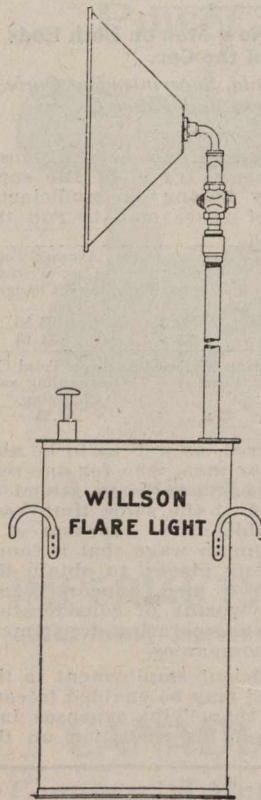
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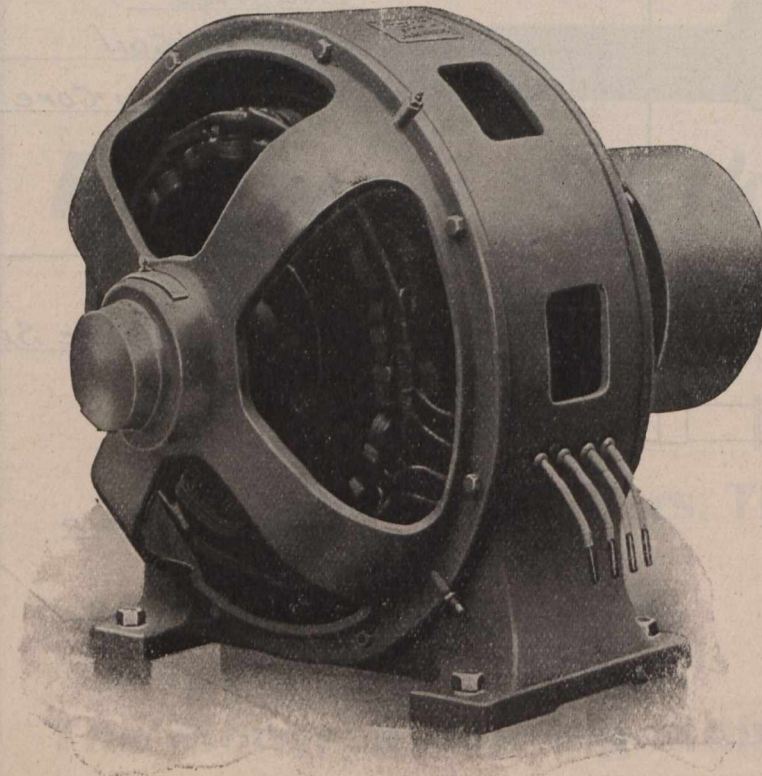
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Traction Motors

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The Limitation of Weight in Rolling Stock.

By D. E. Blair, Superintendent of Rolling Stock, Montreal Street Railway.

The advent of the pay-as-you-enter cars, a few years ago, either caused, or coincided with, a marked impulse toward new and improved designs of car bodies. As is quite natural, the development has been guided largely by the requirements of the transportation departments whose chief aim in life is to increase gross earnings while keeping down the ratio of platform expense to fare receipts. This ratio, taken alone, is not a true gauge of transportation efficiency, but is only one of the many factors that affect the cost of carrying a passenger.

The tendency of many car builders, guided by popular demands, has been to produce a car unit that will take fuller advantage of the improved methods of fare collection and handling of passengers, while all have been striving towards an easement of the traffic congestion, and slow schedules, brought about by the steady increase in the number of small car units operated over a given track during rush hours. Longer hauls, high rates of acceleration and braking, and competition with trunk lines have created a demand for cross seats while the increasing capacity of the car unit necessitated larger platforms to accelerate the entry and exit of passengers. These and other influences have resulted in increased dimensions. At the same time, it has been considered proper that a car should be substantially built so as to ensure long life and low depreciation. So far so good, but the question that I wish to bring out is this:—Have we not ignored an important feature of car design that affects the gross cost of car operation very closely, viz.: the limitation of weight in rolling stock.

Careful investigation would seem to indicate that the cost of maintenance of car equipment is in direct proportion to the total weight of the car and there is every reason to believe that the wear and tear of track and roadway increases to an equal ratio. This is especially so if the car weights have increased to a point beyond the capacity of the older roadbeds and rails and it has been deemed advisable to replace a soft and resilient rail foundation with a hard unyielding bed of concrete in direct contact with the rail. The first indication of the evil effects of heavy cars on the standard roadbeds of a few years ago were seen in the hammering down of the joints and a general depression of the subsoil under the track foundation.

To meet the first difficulty, our track engineers devised the continuance joint, the basic idea of which is to provide a bending resistance at the joint equal to,

but not greater than, the stiffness of a continuous rail. To overcome the second difficulty they provided the very logical expedient of laying down a solid foundation of concrete in order to extend the bearing surface of the track structure on the soft subsoil. Both these ideas were sound engineering practice, but, in the opinion of many engineers, these practices have been carried to an illogical conclusion.

It is a well known principle of mechanics that the energy of the impact of a hammer blow is measured by two factors, viz.:—a resisting force multiplied by the distance through which the resisting medium is forced to retreat from the blow. If we limit the backward movement of the rail to an infinitesimal amount by laying the rail in direct contact with a solid bed of concrete, the other factor of the equation increases enormously and the surface fibres of the rail are unable to withstand the abnormal bearing pressures between wheel and rail. The result is seen immediately in the high rate of metal flow and rail wear in the vicinity of the slightest unevenness in the track. A change in level of one hundredth of an inch will soon grow to serious proportions. Granted an absolutely perfect rail surface, and the effect is not appreciable, but this is an impossible condition.

The damaging effects of the vibrations set up by impact are not limited to the rail, but are quickly felt in largely increased wear of moving parts of truck and motor equipment and in the crystallization of car axles. It is not unlikely that the abnormal chipping of cast iron flanges of car wheels on hard roadbeds is a direct result of disintegration of the granular structure of the chilled iron. The results of actual experience in this regard have been such that we may expect an early return to the more scientific methods of our forefathers. Very few observant persons will now deny the absolute necessity of some resilient medium between rail and foundation. Meanwhile, the opinion is growing rapidly that the average cost of all maintenance accounts are very nearly in proportion to the weight of rolling stock or in other words that the ton mile unit is a better basis for comparison than the car mile. There are many who are not yet ready to concede the truth of these arguments because of the inherent difficulties in the way of supplying convincing proofs, therefore we may set the maintenance question aside for the present and take up an argument based upon facts so well known and easy of proof as to be almost beyond the criticism of the unbeliever, viz.:—the cost of power for the operation of cars.

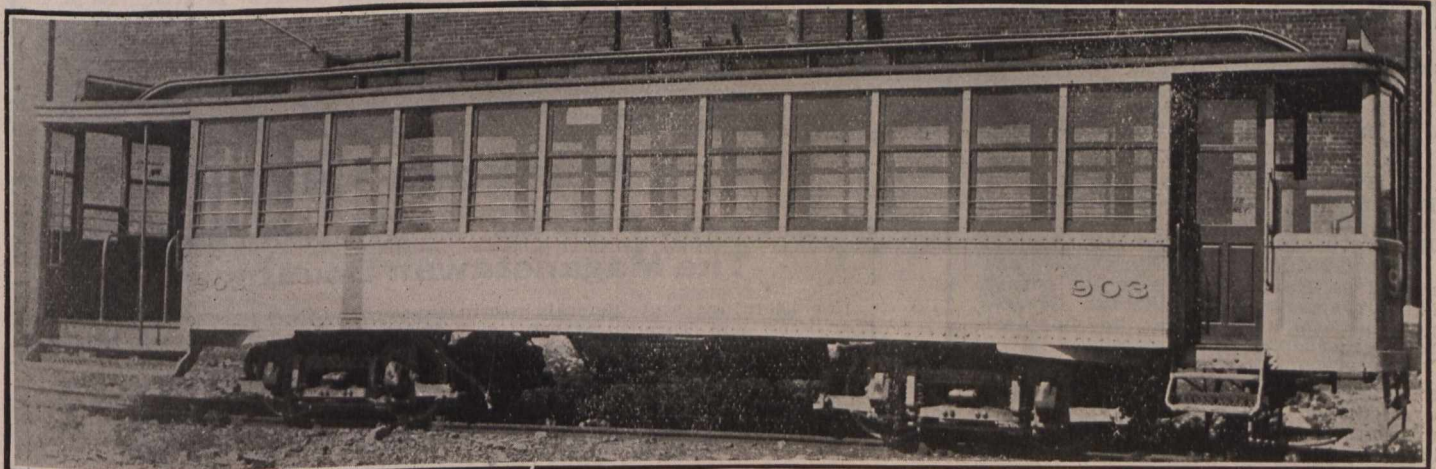
Several very interesting articles have appeared in the railway journals during the last two years dealing with the re-

duction of car weights to operating costs. These have been indexed for the convenience of those who may wish to read as they run. Of especial interest are those from the pen of Mr. Ayres of the Boston & Worcester system. He has given the subject a great deal of attention and his arguments are well worth a careful study. Among his deductions we find:—"While as above stated the cost of carrying around weight will vary in each case, it is believed that the figure of 7.5 per pound per year is a fair average value and by no means an extreme case. An effort has been made to get data from various operating companies as to their estimate of this cost. Very little data have been forthcoming but what have been secured show a general tendency in several large city systems to estimate it at 5c. per lb. per year. Even at 5c. per lb. per year, we can afford to pay \$1,000 a ton for a reduction of car weight."

Mr. Ayres further calls attention to the fact that we cannot figure the possible savings in this direction on the assumption that the capital cost of the car is a permanent investment at 5%. However, it is fair to assume that a saving of 5c. per year for 15 years is equivalent to the present value of a 15 year annuity of 5c. per year, or in other words that we can afford to spend 52c. to eliminate one pound of deadweight or about \$1,000 to reduce the weight by one ton.

The Boston and Northern Co. has lately given evidence of its belief in light weights by building 44 cars of the same size and capacity as a former standard type but which weigh 6,610 lbs. less and have greater inherent strength nevertheless. The new cars weigh 42,090 lbs. against 48,700 of the older car. They have been tested in service and it has been shown, that, basing the cost of power at the extremely low figure of 6-10 of a cent per k.w. hour, and with the number of service stops at only five per mile, there will be a definite saving of not less than 73c. per day per car or \$11,765 a year for 44 cars. These figures are based on costs that are far below the average of any Canadian road, and yet they look formidable. They have taken into account only the reduction of coal consumption and perhaps the cost of operating labor, but have not paid any heed to the heavy fixed charges on power plants and distributing copper, these items being of equal importance in gauging the cost of power delivered to cars.

Ordinary common sense will not allow the supposition that extra power costs nothing, even if we are blessed with a perfect water power. That point of view is too narrow to be accepted outside of the village smithy. An examination of power costs will show at once



Montreal Street Railway Steel Car.

THE CANADIAN PACIFIC RAILWAY CO.

Dividends for the half-year ended June 30th, 1910, have been declared as follows:—

On the Preference Stock, two per cent.

On the Common Stock, three and one-half per cent.

A further sum equal to one-half of one per cent. on the Common Stock will be paid thereon at the same time out of interest on the proceeds of land sales.

Warrants for the Common Stock Dividend will be mailed on the 30th September next to Shareholders of record at the closing of the books in Montreal, New York and London respectively.

The Preference Stock Dividend will be paid on Saturday, October 1st next, to Shareholders of record at the closing of the books at the Company's London office, No. 62 Charing Cross, London, S.W.

The Common Stock Transfer Books will close in Montreal, New York and London, at 3 p.m., on Friday, September 2nd. The Preference Stock Books will also close at 3 p.m., on Friday, September 2nd.

All books will be re-opened on Thursday, October 6th next.

By order of the Board.

W. R. BAKER,
Secretary.

Montreal, 8th August, 1910.



TIES AND RAILS FOR CONSTRUCTION OF INDUSTRIAL TRACKS ON EAST BANK OF THE DON.

TENDERS will be received by registered post only, addressed to the Chairman of the Board of Control, City Hall, Toronto, up to noon on Tuesday, September 6th, 1910, for the following materials:—20,800 feet of partly worn or re-laying rail, 400 oak ties and 4,800 cedar ties.

Envelopes containing tenders must be plainly marked on the outside as to contents.

Specifications may be seen at the office of the City Engineer, Toronto.

The tenderers shall submit with their tender the names of two personal sureties (approved by the City Treasurer), not members of the Council or officers of the Corporation of the City of Toronto, or, in lieu of said sureties, the bond of a Guarantee Company approved of as aforesaid.

The usual conditions relating to tendering as prescribed by City by-law must be strictly complied with.

The lowest or any tender not necessarily accepted.

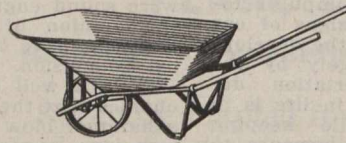
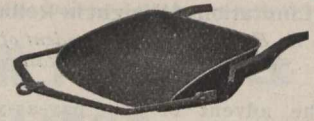
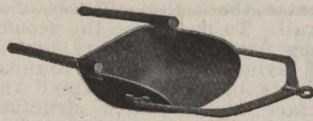
G. R. GEARY (Mayor)
Chairman Board of Control.

City Hall, Toronto, August 6th, 1910.

J. R. Wilson and K. W. Blackwell, Montreal, have been elected directors of the Nova Scotia Steel Co., succeeding R. Reford and R. E. Chambers.

The Sheddon Forwarding Co. has moved its Montreal office to the corner of St. James St. and Victoria Square, pending the alterations to its own building, 36 Victoria Square.

The Dominion Government, in order to aid in providing men for the railway construction camps, has granted permission for the bringing in of railway laborers under contract. Asiatics are not admitted under this regulation.



THE MEAFORD WHEELBARROW CO., LIMITED

MEAFORD, ONTARIO

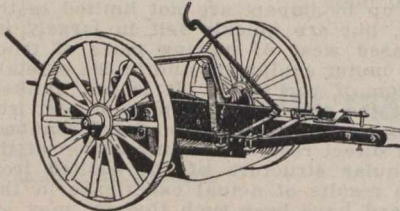
Manufacturers of Contractors' Supplies including:

WHEELBARROWS—Both Wooden and Steel, also STERLING line of Roller Bearing Easy Pushing Wheelbarrows and Concrete Carts,

DUMP CARS, DUMP CARTS, GRADING PLOUGHS, WHEEL SCAPERS both Square Box and Pressed Bowl.

DRAG SCRAPERS Pressed Steel. TRUCKS of every description

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The Quickest Route to MUSKOKA



is by way of the Canadian Northern Ontario Railway, which gives direct access by rail to the head of the lakes and has boat-side stations at Bala Park and Lake Joseph.

THE LAKE SHORE EXPRESS

with Parlor-Observation and Dining Cars is the best appointed train in the Muskoka service, and provides the quickest, most comfortable way to reach

Lake Simcoe

Sparrow Lake

The Muskoka Lakes

Parry Sound District

The Georgian Bay

The Maganetawan Country

For literature and general information, call C.N.O.R. Ticket Offices, corner King and Toronto Streets, and Union Station, or write C. Price Green, Passenger Agent, Toronto, Ont.

The other railways of the Canadian Northern Railway System traverse the finest summering country in Nova Scotia, Cape Breton Island, Quebec, Western Ontario, and the West. For booklets and information write to the Information Bureau, Canadian Northern Railway System, Toronto, Ont.

that it costs pretty much the same to produce one k.w. hour of energy, whether the total consumption is at a rate of 5,000 or 10,000 kilowatts, provided of course that the load factor and plant efficiency are comparable in each case.

One might just as well argue that an uncollected fare did not represent a loss because the car had to run anyway and the expenses were normal. To those who may say that their plant has plenty of reserve capacity and that they can stand a certain amount of extra weight without increasing fixed charges, we might answer that, so long as you have reserve capacity, you are paying fixed charges on future development and that every pound added to your rolling stock brings so much nearer the day when you will have to add another underloaded unit to your plant in order to take care of your immediate requirements. At the same time, you will likely have to add another one, two or more feeders because one feeder will take care of the extra load in only one direction.

The fixed charges on plant and distributing lines should be taken together because the increased mechanical efficiency of a larger plant is offset by the extra cost of distributing lines and increased transmission losses over greater distances. Furthermore, for a given plant, the true maintenance and depreciation charges will increase in proportion to the load carried, especially if the additional power subjects the plant to overloads. Going somewhat further into details, it is a simple matter to develop an argument that may be applied to your own exact conditions. Experience has shown that cars cannot be operated in city streets under perfect conditions at schedule speeds of 8 m.p.h. with a power consumption less than 100 watts per ton mile at the car. This figure is altogether too low for average conditions, but is commonly used as a very conservative and handy basis for rough engineering calculations. Our power consumption in Montreal, for traction only, varies from 110 to 200 watts per ton mile. A fair all year round average might be struck at 160 watts at the power house. The total power used, including power brakes, heating and lighting, runs over 200 watts per ton mile on a 12 months basis. Let us assume that 120 watts per ton mile at power house is possible. This is equivalent to about 1 k.w. hour per car mile for a light single truck car of 8 tons, 2c. per car mile for a 16 ton car and 3c. for a 24 ton car. Assume further that a car doing duty on a given run will average 150 miles a day for 365 days a year or 54,750 miles a year. The holding of car for repairs or other reasons does not affect the issue since the crippled car must be replaced by an equivalent unit.

The cost of power varies so widely that a definite cost per year cannot be fixed but we may arrive at a conclusion in this way:—To move 1 ton 1 mile your d.c. power plant must produce 120 watt hours; to move 1 ton 54,750 miles your d.c. power plant must produce 6,570 k.w. hours; multiply this figure by your own power cost. When power costs 1c. per k.w. hour each ton costs \$65.70 a year; when power costs 1.5c. per k.w. hour each ton costs \$98.55 a year. \$100 per ton per year, or 5c. per pound per year is a convenient figure to use and is much below the average cost of operation on all large American systems. Some competent engineers insist that double this amount is a fair average, but we must move cautiously where the lights are dim.

Let us imagine the construction of a new lot of cars to see what this item of \$100 a year really means to us. We propose to build one or more cars of certain outside dimensions and seating capacity, to suit our own ideas and conditions. Our specifications call for a cer-

tain general style of construction and inside finish. The seating arrangements are outlined and the length and width are fixed. All this to be delivered for a certain price. The car builder adheres more or less closely to our ideas and specifications and turns out a car that in outward appearance is a credit to him and a joy to the purchaser. There has been no limit set to the weight of car and the builder finds it more convenient, perhaps on account of limited shop facilities and perhaps because it is cheaper, to use standard commercial shapes and dimensions where a lighter shape of better design would have done as well. A ½ inch side plate would be strong enough as a girder but is not strong enough to hold certain riveted connections or it may be subject to buckling. Properly designed braces and reinforcements would be lighter, but both brains and labor are expensive, so in goes a ¾ or ⅝ inch plate the whole length of car. Furthermore, why should the builder trouble himself to give what the purchaser has not asked for. The purchaser's inspector calls around to view the car from time to time, objects to the color of paint used and to the fit of doors and windows. He may even authorize a little bill for extras and the car body is completed to everybody's satisfaction, but its weight is say 23,000 lbs. The addition of body equipment will bring the total weight up to 25,000 lbs., on the centre plates. Suitable trucks are then purchased. They must be able to carry all this weight indefinitely, weight no object, say 15,000 lbs. a pair. A four motor equipment of reasonable capacity weighs 12,000 lbs., and the car makes its trial trip weighing 52,000 lbs., or 26 tons. The seating capacity is 45, so that each passenger might have the satisfaction of knowing that the grasping company is moving 1,150 lbs., as well as his own weight, for several miles, all for 3c. and a transfer thrown in. This is not an exceptional case but is standard practice almost everywhere to-day. One cannot help thinking of the days when his 30 lbs. bicycle carried him safely over many a mile of rough road.

Now there is no doubt that if a certain amount of intelligent effort had been applied to the original design, with a view eliminating all unnecessary weight, it would have been found that a car body, inherently quite as strong and stronger, quite as serviceable and of equal capacity and beauty could be built weighing, for the sake of argument, 4,000 lbs. less. The body equipment might be reduced 300 lbs. in weight. A lighter truck frame, lighter springs, axles and wheels are then possible, say a reduction of 1,800 lbs. Lighter motors might be considered, but there we find ourselves in the hands of the enemy. The motor manufacturers have fixed upon a given weight for a given capacity. Their product is good and it meets the demand. The question of weight does not affect them directly, except in so far as durability and low maintenance are concerned. They will argue that a lighter motor is quite possible, but it will cost more and the market places no premium on lightness. We have again to admit that, through our own fault, the market does not offer what we need and we decide on an equipment weighing 12,000 lbs. Altogether we have reduced the weight by 6,000 lbs., or three tons and can expect a saving of \$300 a year per car in our power bill, all net profit because the cost of the lighter car need not be greater than the heavy one. The present value of this saving at 5% is \$3,000. If we wish to expend a part of this amount towards nickel-steel, and aluminum in place of mild steel and cast iron and wood we can cut down the weight much further.

The possibilities of lowering the cost of transportation along this line are so

great that several questions present themselves. Are we not justified in placing a premium upon lightness in car construction and car equipment even to the extent of doubling the first cost of a car? Is the saving of power the only economy to be effected by limiting car weights? Would the increased cost of maintaining very light rolling stock not be offset by greater savings in track renewals and repairs? Would the transmission problems of most 500 volt systems be simplified? If the average weight of rolling stock were decreased 25%, for a given size of unit, what decrease might we expect in car maintenance? Judging from my own experience, I should answer the last question by saying that the cost of all wearing parts of equipment such as brake shoes, brasses, gears, pinions, trolley wheels, carbon brushes, etc., would decrease in proportion. The wear of car wheels is more complicated but follows pretty much the same rule. Repairs to running gear, brake beams, brake heads, etc., also bear a very definite relation to weights and pressures handled.

Militia vs. Street Cars.

Our issue of July, 1909, contained full particulars of the conviction by the Winnipeg police magistrate of a Winnipeg Electric Ry. motorman for the alleged obstruction of the 90th Rifles on June 1, 1909. The circumstances were that a car was proceeding west on Broadway, when the 90th regiment was coming out of the drill hall, and crossing the street. The motorman rang his gong and stopped the car with the fender protruding over the crossing, whereupon Capt. Blanchard, with sword in hand, boarded the car and peremptorily arrested the motorman and took him to the guard house at the drill hall, and after detaining him there a short time, marched him under a guard of soldiers with fixed bayonets from the drill hall by way of Main St. to the police station.

The magistrate's decision was appealed to County Judge Walker, who took the evidence over again, but at the request of counsel for the prosecution, who evidently anticipated an adverse decision, the Judge stated a case to the Court of Appeal as to the legal point involved, in regard to which had the right of way, the electric railway or the militia, and the matter came before the Court of Appeal in June. The Winnipeg Electric Ry.'s counsel contended that the County Judge had no jurisdiction to state the case and reserve judgment. The Court of Appeal agreed with this and dismissed the matter.

The County Judge has since given judgment as follows:—"I must conclude from the evidence that the act complained of was (on the part of appellant, the motorman) purely accidental and not of such a nature as is contemplated by the statute as being an obstruction. The appellant had a right to run his car over the track, and this the respondent well knew. He, however, was bound to be diligent in running his car so as not to interfere with the rights of others. This rule will also apply to the movements of the troops if it is negligent, liability follows and negligence is defined (as one writer says) by that past master of English language, as well as of English law, Sir Frederick Pollock, in these six words, "Negligence is the contrary of diligence." I cannot help believing that the appellant, when he observed that he could not pass in front of the troops, as they were emerging from the drill hall, without interference, was very diligent in stopping the car as he did, and this was all he was called on to do. A reasonable patience of a few seconds on the part of respondent would have avoided the possibility of any collision whatever, and a proper handling of the troops

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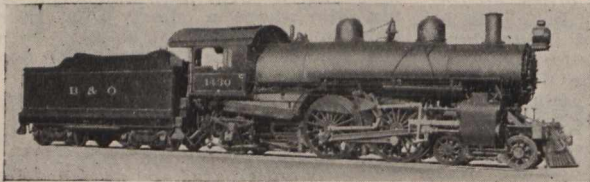
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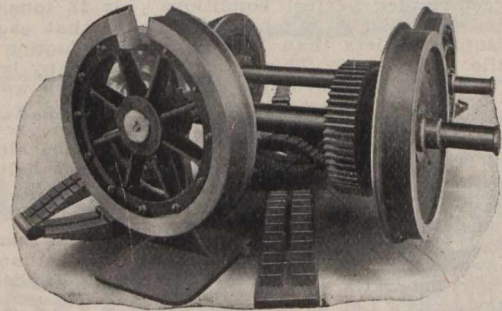
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after the car had stopped, by way of a slight divergence, would have saved any further trouble, as there was ample room over the crossing (about 16 ft.) for the troops to pass, and I take it from the evidence they did, after the arrest, pass in front of car. I hold that the moving of the car during the scuffle was owing to the conduct of the troops and accidental. The conductor of car was a corporal of the 90th, and he says in his evidence that Capt. Blanchard, who was in command of the leading file of troops, and in a position to observe all that took place, said to him shortly after the arrest: "I do not think you intended to hit anybody." The evidence, to my mind, bears out this conclusion. I fail to realize there was any necessity for the action taken. It seems precipitate, arising from a claim of paramount right of way exercised without a considerate realization of the situation and right of others. Finally I hold that the occurrence, such as it was, so far as concerns the appellant, might reasonably and fairly have been treated as the most as a simple mishap. I therefore find a verdict for appellant and direct an order to go quashing the conviction, but under the circumstance without costs, excepting reporter's fee, which I fix at \$5."

Projects, Construction, Betterments, Etc.

British Columbia Electric Ry.—The Vancouver Park Commissioners considered, Aug. 10, a letter from the company asking for a lease of a sufficient right of way on the foreshore around Stanley Park for an electric railway. The letter was held over for future consideration.

The company has been making tests for the foundations of the new building which it proposes to erect at the corner of Hastings and Carroll streets, Vancouver. The plans for the building have not yet been definitely approved.

Clearing right of way for the line between Vancouver and New Westminster, via Burnley, is being proceeded with from the New Westminster end, and grading is reported to have been started near the Cariboo.

The approach of the B.C.E. Ry. to the north end of the Lulu Island bridge was completed Aug. 1, and track has been laid from the main line on Columbia St., on to the bridge. At the south end of the bridge an approach both for the highway and the railway is being constructed, the city contributing towards its cost. Further railway building along the Lulu Island river towards the city limits will be gone on with as soon as the bridge approaches are completed.

It was reported Aug. 8 that 46 miles of track had been laid on the line from New Westminster to Chilliwack, and that the line was expected to be completed and in operation by Oct. 1. Its total length will be 63 miles, and it is expected that the run will be made in two hours. A two-hour service is to be given in each direction, and the plans of the company are also said to include running a daily parlor car service over this line, with probably a buffet. The rolling stock will include eight or 10 passenger cars, 150 freight cars, three or more electric locomotives, and several lighter ones. The heavier engines will be used to haul 500 tons of freight. The freight cars will run up to 80,000 lbs. capacity.

A proposal for the erection of car shops capable of turning out all the cars required for the company's various lines is under consideration. As soon as the new freight sheds in New Westminster are completed the building on Twelfth St. at present used as a freight shed will be turned into a repair shop for the cars on the Fraser valley lines. The repair shop in Vancouver is too

small to fulfil requirements there and increased accommodation must be had. The present car building shops at New Westminster are not sufficiently large to meet demands.

The by-law granting a franchise in the Point Grey district was approved by the ratepayers July 23. The company's General Manager wrote to the Reeve July 25, to the effect that the building of the lines A and B mentioned in the bylaw will be proceeded with at once, and desiring to know how much of the several streets were opened to permanent grade. It is expected the line beginning on Fourth Ave. and running along Alma St. to Tenth Ave., thence along Tenth Ave. to Sasamat St., thence along Sasamat St. to Fourth Ave. and thence west on Fourth Ave. to Dufferin St., will be completed by winter. The council is contemplating putting a steam shovel on Tenth Ave. for the more rapid completion of the grading, etc., on these streets.

C. Hoard, C.E., is making surveys for a proposed electric railway through Sidney and Saanich, on Vancouver Island. (Aug., pg. 681.)

Grand Valley Ry.—Route maps have been approved by the Department of Railways for extensions of street railway lines in Brantford, Ont.

A Brantford press report states that the project in which this company is interested for the building of an electric railway from that city, via Waterford and Simcoe to Port Dover, is again under consideration, and a plan is being discussed for providing a subsidy in aid. (Aug., pg. 682.)

Hamilton, Galt and Berlin Ry.—W. J. Grant, C.P.R. Commercial Agent, Hamilton, said Aug. 3, that engineers were completing surveys with a view of determining the most practical routes for this proposed electric line. Decisions were not arrived at in a hurry, but he expected that in about a month something definite might be heard about the line from Hamilton to Guelph Jct. The proposition would have first to be submitted to the C.P.R. Executive, and financial arrangements made.

Hamilton, Waterloo and Guelph Ry.—J. Patterson, who is promoting the building of this electric railway, returned to Hamilton, Ont., from London, Eng., Aug. 15, and said he had good hopes that the line would be built, but he could not make a definite announcement for a few weeks. (Aug., pg. 682.)

Hull Electric Co.—Grading has been in progress since July 15 on the extension from the C.P.R. station, Brewery St., Hull, Que., to the first tollgate on the Chelsea road, and it is expected to have a car service in operation over it by Sept. 30. (Aug., pg. 682.)

The London and Lake Erie Ry. and Transportation Co. has a gang at work at the London, Ont., end of the line to Port Stanley, straightening the road so as to enable it to give a better service. Between St. Thomas and Port Stanley there are no less than 33 curves, and it is said that most of these will be eliminated. The question of building a second track is also under consideration, but no decision has been reached as to whether this will be done or not. (May, pg. 399.)

Montreal St. Ry.—A petition has been presented to the city council protesting against the M.S.R.'s proposed car tracks on Dorchester St. (Aug., pg. 683.)

Moose Jaw Electric Ry.—A company with this title has been incorporated under the British Columbia Companies Act to construct electric railways in British Columbia and Saskatchewan. We are advised that this has been done, owing to some difficulties respecting incorporation under the North West Territories Companies Ordinance. A special act will be applied for at the next session of the Saskatchewan Legislature,

but meanwhile the preliminary work will be done under the British Columbia incorporation. J. B. McRae is acting as Engineer, and A. H. Dion, son of A. A. Dion, Superintendent Ottawa Electric Ry., will be in charge of construction and subsequent operation at Moose Jaw. The head office is, temporarily, in the Citizen Bldg., Ottawa.

The lines proposed to be built will extend from the exhibition grounds, along Main St. to the C.P.R. station, along Manitoba St., to between 10th and 11th streets, then across the C.P.R. tracks as far as Iroquois St., along this street to Sixth Ave., along Sixth Ave. to Saskatchewan St., and along this street to the exhibition grounds. There will be a branch line along Athabaska St. past the athletic grounds, another along High St., between Main St. and Sixth Ave., with a loop around Seventh Ave. and Manitoba St. to Sixth Ave., and another along Hochelaga St. to Eighth Ave. The lines on Main and High Streets will be double track lines. This will give about seven miles of track, which will be laid with seven inch, high T type rail, 70 lbs. per yard. The power house will be built at the corner of High St. and Fourth Ave., but the plans have not been definitely approved. The proposal at present under consideration is to instal two 150 k.w., 500-600 v., d.c. generators, driven by two 205 h.p. oil engines, combustion type, using crude oil as fuel. The cars to be used will be of the pay-as-you-enter type, and an order for six will be placed shortly. (Aug., pg. 683.)

Mount McKay and Kakabeka Falls Ry.—An agreement giving the company temporary rights for three months over the street railway tracks in Fort William has been approved by the Port Arthur and Fort William Railway Commission, the company to use its own power and cars. The company desires to haul gravel for construction purposes, and the agreement provides that the hauling is to be done at night only. (Mar., pg. 231.)

Nelson St. Ry.—The extension of the line in Nelson, B.C., has been completed, and placed in operation. The new cars have been built by the Ottawa Car Co. (Aug., pg. 683.)

Nipissing Central Ry.—A preliminary survey for a branch line from near Port Cobalt to Kerr Lake, Ont., is being made. The branch starts from the main line, passes through Port Cobalt and runs along the shore of Kerr Lake. It has not been decided when the line will be built.

The ratepayers of New Liskeard, Ont., will vote Sept. 3 on a bylaw granting a franchise to the company for the operation of an electric railway in the town. (June, pg. 495.)

The Ontario and West Shore Ry. Co. has secured options on the right of way required for building its line through Huron tp., with the exception of three properties, where it is expected the line will be run along the public highway. This gives the company a route into Kincardine, Ont. (Aug., pg. 683.)

Ottawa Electric Ry.—A permit has been granted by the city council for the erection of a brick transforming station on the south side of Slater St. Ottawa, to cost \$18,000. In addition to this being made a distributing station for power, the company will concentrate its construction, meter and repair plants there. (July, pg. 585.)

People's Ry.—We are advised that the contract has been awarded for the grading of the section from Berlin to Bloomingdale, on the line to Guelph, Ont., to F. W. Maxwell, of Port Hope. Three miles of track is to be built by Dec. 1. A second contract has been let for the grading from Berlin westerly to New Hamburg, 14 miles, to D. B. Campbell, Latchford, Ont., to be completed by



Department of Railways and Canals.

QUEBEC BRIDGE.

Tenders for Superstructure.

Notice to Contractors.

SEALED TENDERS addressed to the undersigned and endorsed "Tender for Quebec Bridge Superstructure," will be received at this office until 12 o'clock noon, not later than September 1st, 1910, for the superstructure of a bridge across the St. Lawrence River near the City of Quebec.

Plans and specifications may be seen and forms of Tender obtained on and after July 1st 1910 at th office of the Quebec Bridge Board of Engineers, Canadian Express Building, Montreal, and at the Department of Railways and Canals, Ottawa.

Parties tendering will be required to accept the fair wages schedule prepared or to be prepared by the Department of Labour, which schedule will form part of the sontract.

Contractors are requested to bear in mind that tenders will not be considered, unless made strictly in accordance with the printed forms, and in the case of firms, unless there are attached the actual signature, the nature of the occupation, and place of residence of each member of the firm.

An accepted bank cheque for the sum of \$500,000.00 made payable to the order of the Minister of Railways and Canals of Canada must accompany each tender, which sum will be forfeited if the party tendering declines entering into contract for the work at the rates stated in the offer submitted and in accordance with the terms stated in the form of Contract accompanying the Specifications.

Cheques thus sent in will be returned to the respective contractors whose tenders are not accepted.

The lowest or any tender not necessarily accepted.

L. K. JONES,
Secretary.

Department of Railways and Canals,
Ottawa, 17th June, 1910.

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DEPARTMENT OF RAILWAYS AND CANALS.
QUEBEC BRIDGE.

Tenders for Superstructure.

Notice to Contractors.

EXTENSION OF TIME FOR RECEIVING
TENDERS.

THE time for receiving tenders for the superstructure for the Quebec Bridge, advertised to be received up to the 1st of September, 1910, is hereby extended for one month, viz: up to the first of October, 1910.

By Order,
L. K. JONES,
Secretary.

Department of Railways and Canals,
Ottawa, 9th August, 1910.

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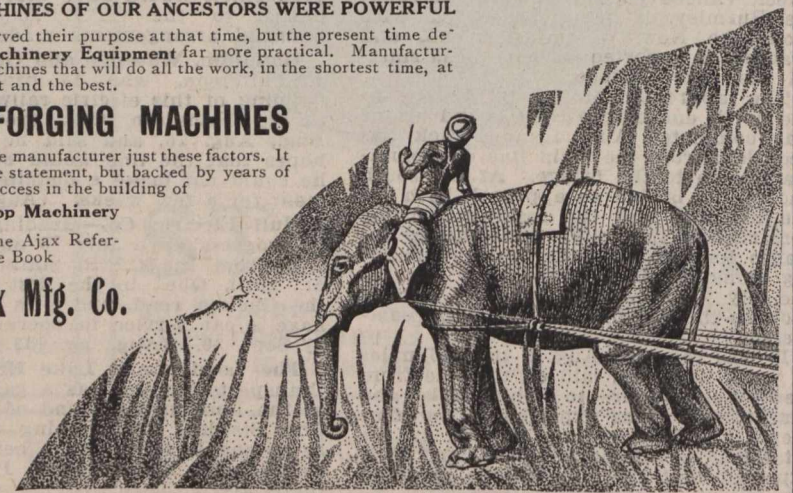
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Dec. 30. The Acme Construction Co. is doing the grading between Bloomingdale and Guelph. This latter work has been in progress for over a month and is proceeding satisfactorily. It was expected that grading would be completed as far as New Germany by Aug. 17, and the balance by Dec. 15. Grading for 29 miles is expected to be completed by Dec. A contract has been let to T. Robbins, Galt, Ont., for all the concrete work on the line. This includes three large piers and two abutments for the bridge over the Grand River, east of Berlin, and has to be completed by Dec. 1.

We are also advised that it is intended to start surveys for the line from Guelph, to Elora, Fergus and Arthur, and to complete the surveys from Guelph to Hespeler, and Puslinch Lake. When this line is completed the company will be enabled to connect with the Galt, Preston and Hespeler Ry., and through it with other lines. It is intended to open an amusement park during the summer between Berlin and New Hamburg. The plans on hand and contemplated, if carried out, will give 80 miles of line by the end of 1911.

A plan has been submitted to the London city council by W. H. Bug and J. C. Moody for the extension of this line from Stratford to London. The plan was a preliminary one, but if there was disposition shown to give it consideration, the company's engineers would go over the ground and prepare detailed plans. The council promised to take up the matter again.

Several members of the directorate of the People's Ry., went over the line of the London, and Lake Erie Ry. and Transportation Co., Aug. 9, and discussed the question of building a branch of their line from Berlin to St. Thomas, to connect with the L and L.R. Ry. and T. Co.'s line.

Guelph ratepayers will be asked early in Sept., to vote on a by-law granting a franchise to the company within the city. Stock amounting to \$160,000 has been taken in the company, with the approval of the ratepayers as follows: Berlin, \$60,000; Wilmot tp., and New Hamburg village, \$20,000 each; Wellesley, and Blenheim, \$15,000 each; Tavistock village and Waterloo tp. \$10,000 each. (Aug. pg. 683.)

Pictou County Electric Co.—The Nova Scotia Legislature has repealed rule 5 of schedule A, chap. 137, of 1902, and substituted a new one, providing (a), that platforms of all cars shall be provided with gates and doors; that passengers shall be received and discharged on either side, except at turnouts, when the left side only shall be used; (b), that spitting shall not be allowed on the cars; (c), that no person may cross over the company's bridge across the East River, New Glasgow; (d), there shall be no loitering about the company's property.

The act also declares that the company is possessed of all the powers and privileges of the Egerton Tramway Co.; ratifies the trust deed to the Eastern Trust Co. to secure the issue of bonds of the tramway company, and authorizes an exchange of the existing bonds, if required by the bondholders, for bonds of the Pictou County Electric Co. (July, 1909, pg. 523.)

Port Arthur and Fort William Electric Ry.—The ratepayers of Port Arthur, Ont., will vote Sept. 8 upon a bylaw to provide \$12,000 for the new car barns now under construction. (Aug. pg. 683.)

Quebec Ry. Light and Power Co.—Considerable progress has been made on the new office building which the company is erecting on the corner of Crown and St. Joseph streets, Quebec.

The engineering department is at work on the plans for the 3/4-mile up-

per level line at Montmorency Falls park, the plan, profile and book of reference of which has been deposited with the Registrar of Quebec county.

The 2.50 mile extension from the city to the top of Sillery Hill, near the site of the new Quebec Bridge, is expected to be completed early in Sept. (Aug. pg. 683.)

The St. George Electric Co. is authorized by the Quebec Legislature to build an electric tramway from the Quebec Central Ry. St. George station through St. George, Beauce county, and the Riviere du Loup valley to the Kennebec line near the International boundary separating Quebec from Maine.

Sherbrooke Ry. and Power Co.—This is the new title authorized by the Quebec Legislature for the Sherbrooke St. Ry. Co. The head offices are to be in Montreal, the operating office only in Sherbrooke. The company is given power to build electric railways both in Sherbrooke and outside, but not exceeding the limits of St. Francis district. Freight may be carried as well as passengers, and mails "by animals, electricity, or compressed air or other motive power, except steam, as the company from time to time deems expedient, except that during the period of winter, the company may substitute sledges drawn by horses." The other parts of the act refer to the company's powers as to the development and distribution of power.

Construction is being proceeded with in connection with the power plant, at which it is proposed to develop 2,500 h.p. A contract has been let to the Bishop Construction Co. for the erection of a power house in Sherbrooke. (June, pg. 497.)

Simcoe Ry. and Power Co.—An order in council has been passed by the Ontario Government approving of by-laws of the county of Simcoe and the townships of Tiny and Matchedash granting the company the use of certain roads and road allowances for the purpose of erecting a pole line for the transmission of electricity from the Big Chute on the Severn River into Midland, Ont. The company has power to build electric railways radiating from Midland. (May, pg. 401.)

Stratford Ry.—A bylaw was passed by the ratepayers July 30 by 1,492 votes to 48 granting a franchise for an electric railway in Stratford, Ont., to a syndicate of St. Mary's men, who were associated with the St. Mary's and Western Ontario Ry., a steam railway operated and controlled by the C.P.R. (Aug. pg. 685.)

Electric Ry., Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for June, \$253,180; working expenses \$159,095; net operating earnings \$94,085; renewal funds \$17,852; net earnings \$76,233; approximate income from investments \$16,500; net income \$92,733, against \$200,624 gross earnings; \$116,025 working expenses; \$84,599 net operating earnings; \$13,958 renewal funds; \$70,641 net earnings; \$13,550 approximate income from investments; \$84,191 net income, for June 1909. Aggregate gross earnings for 12 months ended June 30, \$2,981,617; net earnings \$1,239,839, against \$2,298,778 gross and \$1,027,116 net for same period 1908-09.

Calgary St. Ry.—Total revenue for June, \$19,419.10; expenses, maintenance of way and structures \$1,020.96, maintenance of equipment \$1,193.02, transportation expenses \$3,726.00, general expense \$584.62, power \$2,530.00, total \$9,054.60; net earnings \$10,364.50.

Calgary St. Ry.—Gross earnings for July were \$23,570.55, against \$4,703.65 for July, 1909, the first month of operation.

Capt Breton Electric Co.—The gross earnings for May were \$9,196.14, against \$7,073.36 for May, 1909. The net earnings for the five months ended May 31 were \$14,441.52, against \$10,013.58 for the five months ended May 31, 1909.

Halifax Electric Tramway.—Railway receipts for July, \$22,176.80, and for two weeks ended Aug. 14, \$10,490.94, against \$20,125.47 and \$10,067.62 for same periods 1909.

Hamilton St. Ry.—The gross receipts for the quarter ended June 30 were \$91,764.91, against \$82,453.14 for the same period 1909. The amount paid to the city for the quarter was \$9,221.16, against \$8,476.21 for the same period 1909.

London St. Ry.—Gross earnings for June, \$22,905.09; expenses \$16,027.00; net earnings \$6,878.09; deductions \$2,363.05; net income \$4,515.04. Aggregate gross earnings for six months ended June 30, \$117,264.69; expenses \$86,598.68; net earnings \$30,666.01; deductions \$14,256.90; net income \$16,409.11.

London St. Ry.—Gross earnings for July, \$24,248.90; expenses, \$16,556.08; net earnings \$7,692.82; deductions, \$2,441.75; net income \$5,251.07, against \$24,802.95 gross earnings; \$15,767.84 expenses; \$9,035.11 net earnings, for July 1909. Aggregate gross earnings for seven months ended July 31, \$141,513.59; expenses \$103,154.76; net earnings \$38,358.83; deductions \$16,698.65; net income \$21,660.18, against \$135,798.89 aggregate gross earnings.

Montreal St. Ry.—Passenger earnings for July, \$383,371.70; miscellaneous earnings \$15,475.22; total earnings \$398,846.92; operating expenses \$215,224.22; net earnings \$183,622.70; city percentage on earnings \$49,992; interest on bonds and loans \$14,705.50; rent leased line, \$552.90; taxes \$4,000; surplus \$114,372.30; expenses per cent. of earnings 53.96, against \$334,237.57 passenger earnings; \$11,335.99 miscellaneous earnings; \$345,573.56 total earnings; \$177,412.11 operating expenses; \$168,161.45 net earnings; \$34,945.22 city percentage on earnings; \$14,439.62 interest on bonds and loans; \$498.67 rent leased lines; \$3,000 taxes; \$115,277.94 surplus; 51.34 expenses per cent. of earnings for July 1909. Aggregate total earnings for 10 months ended July 31, \$3,490,646.48; operating expenses \$2,021,516.05; net earnings \$1,469,130.43; total charges \$446,853.74; surplus \$1,022,276.69; expenses per cent. of earnings 57.91, against \$3,137,546.83 aggregate total earnings; \$1,866,015.41 operating expenses; \$1,271,531.42 net earnings; \$388,574.71 total charges; \$882,956.71 surplus; 59.47 expenses per cent. of earnings for same period 1908-09.

Port Arthur and Fort William Electric Ry.—The total receipts for July were \$14,189.48, and the expenditure \$8,103.56, leaving net earnings of \$6,085.92. The monthly report showed:—Car mileage, 50,141 miles; gross earnings per car mile, 28.281 c.; operating expenses per car mile, 16.162 c.; net earnings per car mile, 12.189 c.

Toronto Ry.—Gross earnings for June, \$353,791.91; expenses \$170,426.48; net earnings \$183,365.43, against \$323,722.95 gross earnings; \$155,919.81 expenses; \$167,803.14 net earnings for June, 1909. Aggregate gross earnings for six months ended June 30, \$1,656,841.51; expenses \$870,381.43; net earnings \$786,460.08, against \$1,483,749.53 aggregate gross earnings; \$775,005.02 expenses; \$708,744.51 net earnings for same period 1909.

Winnipeg Electric Ry.—Gross earnings for June, \$242,420; expenses \$117,128; net earnings \$125,292, against \$193,836 gross earnings; \$95,111 expenses; \$98,725 net earnings for June, 1909. Aggregate gross earnings for six months ended June 30, \$1,532,195; net earnings \$754,880, against \$1,210,903 gross and \$602,315 net for same period 1909.

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Electric Railway Notes.

C. Murphy, foreman trolley department B.C. Electric Ry., died at Vancouver, B.C., recently.

The London St. Ry. has ordered one heavy double broom electric sweeper, from the Ottawa Car Co., Ottawa.

The Edmonton Radial Ry., has ordered one heavy double broom electric sweeper from the Ottawa Car Co., Ottawa.

The Quebec Ry. Light and Power Co., has received four pay-as-you-enter cars, 18 ft. long, from the Ottawa Car Co., Ottawa.

The Toronto Suburban Ry., has received two 49 ft. pay-as-you-enter cars from the Preston Car and Coach Co., Preston, Ont.

The Edmonton Radial Ry., has received two pay-as-you-enter cars, mounted on 27-G-1 trucks, from the Ottawa Car Co., Ottawa.

The Hamilton St. Ry. has received one pay-as-you-enter car, 43 ft. long overall, with longitudinal seats, mounted on 27-G-1 trucks, from the Ottawa Car Co., Ottawa.

Wm. Boucher, conductor on the Hull Electric Ry., has been convicted of using a digger on his fare box, and sentenced to six months imprisonment.

R. H. Sperling, General Manager B.C. Electric Ry., accompanied Geo. Kidd, Secretary of the Board of Directors, London, Eng., on his trip of inspection over the company's lines early in Aug.

The ratepayers of Detroit, Mich., will be asked in Nov. to vote on the question of acquiring the ownership of the Detroit United Ry. by the city. The D. U. Ry. owns the Sandwich, Windsor and Amherstburg Ry. in Canada.

The London, Ont., city council has sent to the London St. Ry. a bill for \$1,000, representing the alleged cost to the city of repairs to water pipes, claimed to have been made necessary by electrolysis.

A memorial tablet to the late John Bell, K.C., General Counsel of the G.T.R., who died in June, 1906, aged 83, has been placed in St. Andrew's Church, Belleville, Ont., of which he was an elder and trustee for many years.

The Vancouver city council has been advised by the B.C. Electric Ry. that it is the company's intention to equip all its cars operating in the city with a new pattern of fender, which is being constructed at the company's shops in New Westminster.

The Port Arthur and Fort William Electric St. Ry. commission has asked the Port Arthur, Ont., city council to purchase a car to replace car 16, which was recently burned. This car was exclusively used in the service of the Port Arthur city council for haulage purposes.

The Port Arthur and Fort William Electric Ry., has received four 49 ft. pay-as-you-enter cars from the Preston Car and Coach Co., Preston, Ont. Two of these cars are for Port Arthur and two for Fort William, and they are, in each case, similar to those already

supplied, and of which we have previously given particulars.

The Quebec Ry., Light and Power Co. operates an observation car over its city lines at a fare of 25c. per passenger. A complaint was made alleging that the company was only allowed to charge 5c. fare. The company's case was that if the fare for the trip was collected in the ordinary way it would equal 25c. The case was dismissed.

Suit has been entered in the Ontario courts, by J. M. Dixon, Edmonton, Alta., and S. M. Coulter, Toronto, to recover from W. G. Trethewey, Toronto, \$176,000, alleged to be due for securing a street railway franchise in Edmonton, for which, it is claimed, the defendant agreed to give a share in certain north-west lands, which he had failed to do.

An action brought against the Windsor and Tecumseh Electric Ry. and its directors collectively by G. E. Thomas, for \$5,500 damages, was dismissed at the recent assizes at Sandwich, Ont. The directors entered into a contract with G. E. Thomas for overhead work, but the shareholders refused to ratify it, and Mr. Thomas thereupon sued for the amount stated as damages.

A special investigation having shown considerable dishonest practices by some employes of the Hull Electric Co., which operates an electric railway between Ottawa and Aylmer, Que., it has been found necessary to add to the protective features of the fare boxes, and a device invented by the General Superintendent, G. Gordon Gale, for which it is claimed that the fare box door is fastened in such a way that it is impossible to open it without detection, is being tried.

At the suggestion of the Selkirk, Man., board of trade, it has been decided to form a commission composed of representatives from the Selkirk town council, and the councils of the rural municipalities of Kildonan, St. Andrews and St. Anne's, for the purpose of watching the railways operating within their boundaries, and generally to deal with railway matters affecting the several municipalities. The Secretary of the board of trade has been asked to become secretary of the special body.

The steel pay-as-you-enter cars, floor plan of which is given on this page, and which the Montreal St. Ry. is adding to its equipment were described in our Aug. issue, pg. 681. We have since received the following additional particulars:—Length over bunters, 46 ft. 5 in., over vestibules, 45 ft. 5 in.; body, 31 ft. 11 ins.; length of front vestibule, 5 ft. 4 ins., of rear platform, 7½ ft.; width over rubbing strips, 8 ft. 3½ ins.; over side panelling, 8 ft. 2½ ins.; interior finish, cherry; seats, non-reversible, upholstered in rattan; trimmings, solid bronze and polished.

The number of injuries to persons and loss of life by street car accidents is being considered by the City Engineer of Montreal. He is devoting a good deal of attention to the subject, and says he hopes to be able to design something in the way of a shield which will have the effect of protecting the whole front of the car. The principal difficulty in the way of doing anything effective is the

snow in winter. The Quebec Public Utilities Commission has had the matter under consideration and a return is being prepared showing the number of such accidents, as far as possible, as have occurred.

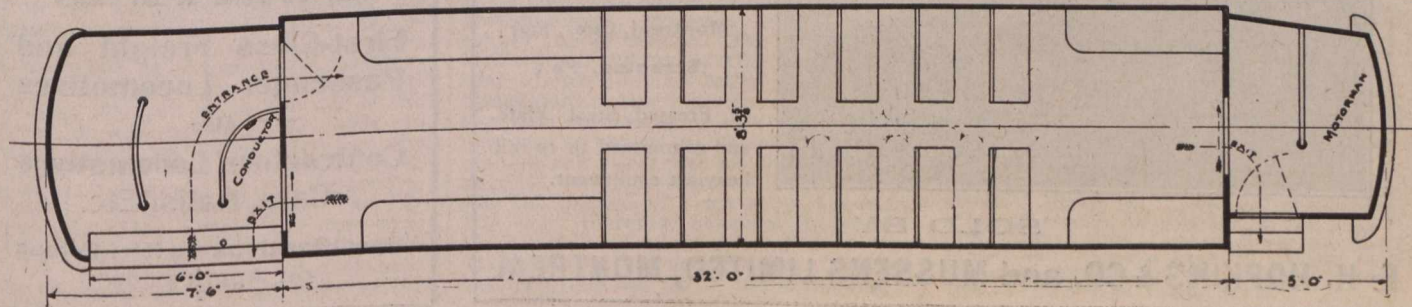
The Judicial Committee of the Privy Council has granted the city of Montreal special leave to appeal from the judgment of the Supreme Court of Canada, on the question of the jurisdiction of the Board of Railway Commissioners over the Montreal St. Ry.'s through traffic with the Montreal Park and Island Ry. The decision referred to reversed an order of the Board of Railway Commissioners, directing the Montreal St. Ry. to enter into any agreement necessary for the carrying out of the Board's order on the Montreal Park and Island Ry., to grant certain special facilities to residents of the district through which it operates.

The British Columbia Electric Ry. put in force on the Vancouver-New Westminster and the Eburne and Steveston lines on Aug. 1, the card system of car dispatching. As soon as the regular service to Chilliwack has been started the new system of dispatching will be put in force on that line also. The system was inaugurated by Trainmaster W. H. Elson, and is being operated by E. S. Sterling, Chief Dispatcher, and J. Masters, L. Grimmer, — Frizzel, E. Miller and — Higgins, dispatchers. The dispatching office is at present at the car barns, but it will be located in the head-quarter office when the new building is completed.

N. C. Pilcher, Manager of the Port Arthur and Fort William Electric Ry., has resigned, the resignation taking effect Aug. 15. The commission offered an increase of \$500 a year in order to retain his services, but Mr. Pilcher declined to consider it. He has been appointed Manager of the Sherbrooke Ry. and Power Co., Sherbrooke, Que.

G. McPhillips, Civil Engineer, says he is the only surviving official of the first electric railway in Canada, and the second on the American continent. It was, he says, built in 1885, and ran from the G.T.R. bridge at Walkerville, to Windsor, Ont., on wooden rails, trimmed with iron straps. The project was abandoned, but he says the poles and wire arms stood on Sandwich St., Windsor, until 1892.

The Berlin and Waterloo St. Ry. Co. has been denied by the Judicial Committee of the Privy Council, special leave to appeal from a judgment of the Supreme Court of Canada, in its case against the town of Berlin, Ont., as to the basis on which the street railway was to be valued when taken over by the municipality. The arbitrators in their award valued the railway as being a railway in use and capable of being used as a street railway, and did not allow anything for any privilege or franchise. The petitioner contended that the valuation should have been on the net earnings. The decision of the arbitrators was originally upheld by the Ontario High Court, reversed by the Ontario Court of Appeal, and the original award of the arbitrators was later restored by the Supreme Court of Canada.



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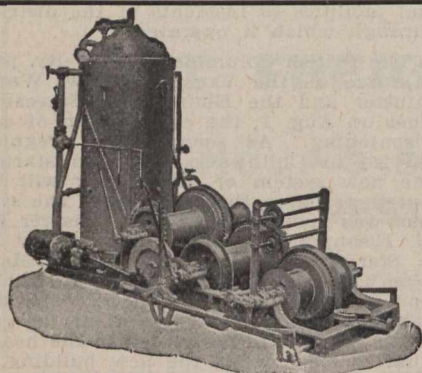
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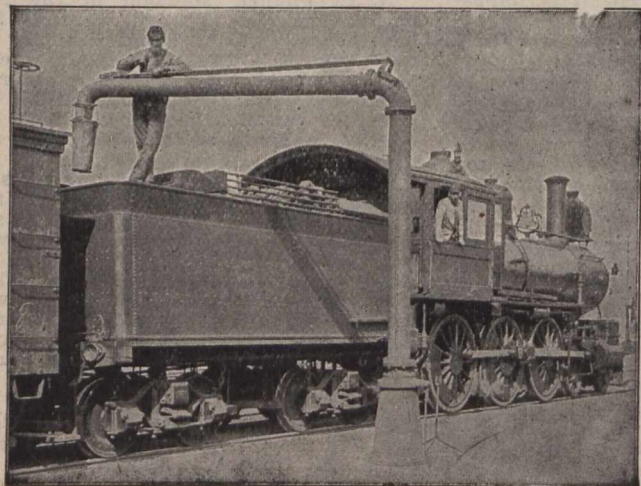
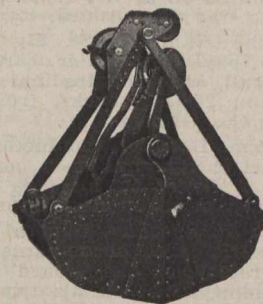


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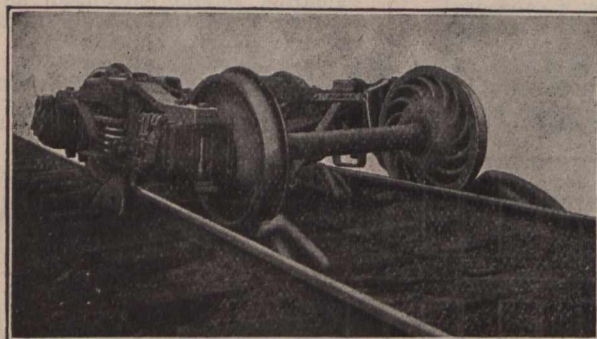
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Ont.; GRAND SECRETARY-TREASURER, Capt. H.
O. Jackson, 376 Huron St., Toronto.

Cassandra-Advance Investigation.

The following judgment has been delivered by Capt. L. A. Demers, acting Wreck Commissioner, concurred in by F. Nash and F. Hamelin, in the complaint of the captain of the Donaldson Line s.s. Cassandra, against the captain of the Montreal Transportation Co.'s steamboat Advance, for a violation of the rules of navigation within the port of Montreal, on June 13.

The court is of opinion that, firstly, the master of the Advance having taken a pilot on board, should have, in an occasion of the kind, accepted his suggestion to await the passing of the Cassandra, the in-coming vessel, before making any attempt to proceed. Admitting that the pilot's suggestion was not agreeable to the master who is the responsible man, and notwithstanding his statement that there was danger in taking the proper side of the channel to go down the river, as the current might have thrown the vessel across the bow of the Cassandra, the court claims that such a procedure should have been adopted, as by the rules of the road, the Cassandra, having a red light on her starboard bow, it was her duty to keep out of the way by either porting, stopping or reversing. It may be presumed that during the outburst of temper which the master showed when he pushed the pilot away from his post, he may have forgotten the orders he gave subsequently, and the court accepts the evidence of the Cassandra witnesses, corroborated by the pilot of the Advance, against the statement made by the master of the Advance. Though, at no time, was a collision very imminent, the avoidance was due only to the precautionary measures taken by those on the Cassandra. The rules for the narrow channels and rivers are, that ships should take the right side of the channel, which rules were not complied with by the captain of the Advance, and no matter what were his intentions, or his fears about adopting certain ways, or following the instructions of the pilot, he should have observed the regulations, or awaited the passage of the Cassandra, either by going to the wharf, or stopping or backing his vessel, or returning to the place he had left. Such course could easily have been adopted, as he was out of the current in still water, there being no wind to affect his vessel, therefore the court concludes that the complaints of the pilot and master of the Cassandra, as well as those of the pilot of the Advance, are well founded, and that such action on the part of any master or officers of vessels cannot be countenanced or overlooked, the safety of traffic in the

port of Montreal, or anywhere else must be assured. In view of the fact that there was no delay nor damage to the Cassandra, the court has no power to inflict a fine, but severely reprimands the master of the Advance for contravening the rules framed for the protection of traffic in harbors and rivers, and also warns him as well as others, that in the future, for any attempt to disregard the existing laws, the certificates of the offending parties will be dealt with.

The Minto-Rosalind Collision.

The collision between the Dominion Government s.s. Minto and the s.s. Rosalind, at Charlottetown, P.E.I., May 24, has been investigated by W. R. Lugar, acting Wreck Commissioner, with A. Brown, Master Mariner, and J. White, harbor-master. Following is their judgment:—

The Rosalind was lying at Peake's wharf no. 2, on May 24, and was moored on the east side, but projecting from the wharf about 70 ft. The s.s. Minto was coming up the harbor to take up her usual berth at the Marine Department wharf, lying eastward of the Rosalind. The tide was nearly at half ebb, with a fresh breeze blowing from the southwest. The weather was clear and the time about 1.30 p.m. The master of the Minto was endeavoring to get his vessel into her usual berth and under estimated the strength and set of the tide, which formed an eddy round the stern of the Rosalind, thereby causing the Minto to set towards the former vessel, damaging her own boats, davits, rails and stanchions; and also the teak quarter rail stanchions, flag staff, awning spars and after davit standard of the Rosalind. Taking into consideration the careful manner Capt. Finlayson has always navigated the Minto, and the manner in which he endeavored to minimize the collision, we do not consider it a case for dealing with his certificate, but consider it necessary to warn him to be more cautious when coming into the harbor, and finding vessels projecting from the wharf beyond the ordinary custom of this port, and to give them a wider berth.

Stranding of the s. s. Aeota.

The judgment of the court, consisting of Capt. L. A. Demers, acting Wreck Commissioner, assisted by J. Bain and N. MacLeod, as assessors, in the matter of the grounding of the s.s. Aeota, recently, was as follows:—

That in view of the fact that the vessel was being navigated in what may be termed foreign waters to the master, he was guilty of a grave error of judgment, when having only an approximate position at Cape Magdalen, he attempted to steer a course more southerly, which was in truth, too fine, under the existing atmospheric conditions. The court is of opinion that when the approximate distance was found at Cape Magdalen, a course should have been taken, keeping some distance from the land, and when the distance from Magdalen to Martin River had been made, it holds that as a precautionary measure, the master should have stopped the vessel and awaited the lifting of the fog. It has been shown that he failed to take into consideration the influence of the current, the tide being at ebb, which had a tendency to throw the vessel towards the land, which effect was all the more pronounced owing to the slow speed, and as she was headed in a southerly direction. The court therefore censures the Master for his lack of adequate caution in the navigation of his vessel under the conditions which led up to the stranding.

Steamboat John Hanlan Collision.

Capt. L. A. Demers, acting Wreck Commissioner, assisted by J. B. Foote and G. C. Holloway as assessors, recently held an investigation into the collision of the Toronto Ferry Co.'s steamboat John Hanlan, with a gasolene launch in Toronto bay, whereby two lives were lost. The following judgment was delivered:—

The court finds that the captain of the ferry steamboat, indirectly contributed to the collision by not blowing a whistle of warning, and by not keeping a proper lookout on board, which is necessary at all times, especially in Toronto bay, where there is a number of small craft; also by not having launched a boat and taking all necessary measures to assure himself that a rescue was impossible, and by showing an ignorance of the working of his propeller, and the action of it on his vessel when going full speed astern; and for these reasons, the court has no option but to condemn Capt. Joyce and suspend his certificate for three months, from July 28 to Oct. 28, and in the meantime the court orders the captain to submit to an examination as to his hearing and sight, and if an unfavorable report is received, his certificate will be retained and cancelled. The examination to be undergone before Capt. Moller the examiner for Toronto district. Regarding the gasolene launch, the court is of opinion that it was navigated in a careless manner, and considers it would fail in its duty if it did not bring to the attention of the proper authorities, the necessity of making stringent regulations for the operation of small pleasure craft on Toronto bay, and is under the impression that such pleasure craft should at no time interfere with the traffic carried on in the bay, and should all carry the regulation lights, placed in such a position that there should be no convergence of the lights, that is to say, that one light should be seen across the other bow, but this is a suggestion only, as the court has no power to order it.

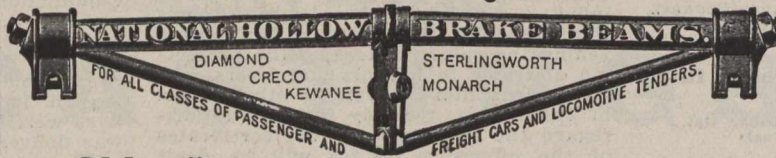
Since the foregoing judgment was delivered, the Ontario Attorney-General took action against Capt. Joyce of the steamboat John Hanlan, and the two men who operated the launch, under sec. 284 of the Criminal Code, to which special reference was made in our last issue. Later, the proceedings against Capt. Joyce were dropped.

Notices to Mariners.

The Department of Marine has issued the following:—

- 69. July 22.—192. Quebec, Ottawa river, Lake of Two Mountains, Ile aux Tourtes, buoy established. 193. Ontario, River St. Lawrence, Thousand Islands, light established on island south of Bridge island.
- 70. July 25.—194. Nova Scotia, Scatarie island, north east point, change in characteristic of fog alarm. 195. Nova Scotia, Cape Breton island, east coast, Flint island, characteristic of fog alarm. 196. Prince Edward Island, north coast, Savage harbor, change in position of range lights. 197. Prince Edward Island, north coast, North Rustico, new range lights.
- 71. July 26.—198. British Columbia, Triangle island, Ikeda bay, and Prince Rupert harbor, wireless telegraph stations established. 199. British Columbia, Vancouver island, west coast, Nootka sound, Friendly cove, proposed lighthouse. 200. British Columbia, Vancouver island, Scott islands, Triangle island, lighthouse building.
- 72. July 27.—201. British Columbia, Vancouver island, west coast, Clayquot Sound, Village channel, off Stockham island, beacon established. 202. British Columbia, Chatham Sound, Tree bluff (Jap point), buoy established.
- 73. July 29.—203. Ontario, River St. Lawrence, Aultsville, buoys established. 204. Ontario, River St. Lawrence, Cole shoal, intended change in position of gas buoy.
- 74. Aug. 2.—205. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, Montreal harbor, change in position of Hochelaga range lights.

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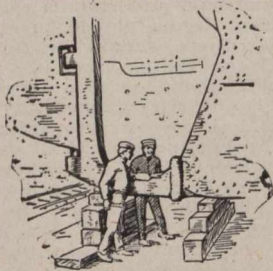
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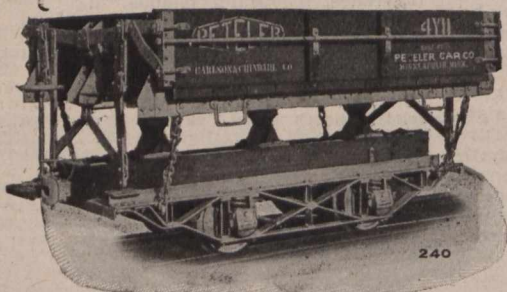
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A. A. HEARD, G.P.A., Albany, N.Y.

75. Aug. 2.—206. Ontario, River St. Lawrence, Jackass shoal, gas buoy established. 207. Ontario, Georgian Bay, Parry Sound approach, south channel eastward of Parry island, Five Mile narrows, channel to be closed to navigation while dredging is in progress.

76. Aug. 4.—208. New Brunswick, south coast, Bay of Fundy, St. Andrews harbor, western entrance, buoys established. 209. New Brunswick, Restigouche river, Campbellton, back range lighthouse burnt down, temporary light.

77. Aug. 8.—210. Nova Scotia, Bay of Fundy, Lurcher shoal, lightship to be removed from her station temporarily for repairs.

78. Aug. 9.—211. Nova Scotia, Halifax harbor, Richmond depot wharf enlarged, hydrographic notes. 212. New Brunswick, east coast, Kouchibouguac bay, Kouchibouguac river, range lights temporarily discontinued.

79. Aug. 10.—213. Quebec, Saguenay river, Chicoutimi, temporary light. 214. Quebec, River St. Lawrence below Quebec, Goose island reef, gas buoy established. 215. Quebec, River St. Lawrence below Quebec, off Beauport wharf, buoys established.

80. Aug. 11.—216. Ontario, Georgian Bay, Parry Sound approach, south channel eastward of Parry island, Two Mile narrows, dredging in progress, channel closed to navigation. 217. United States of America, Lake Superior, Split rock, light and fog signal to be established.

81. Aug. 15.—218. Nova Scotia, west coast, St. Mary bay, off southern entrance to Grand Passage, whistling buoy established. 219. Nova Scotia, south coast, off entrance to Torbay, whistling buoy established. 220. Newfoundland, south coast, Cape Freels, fog alarm to be established.

The names of the barges Aberdeen and Ivy, have been changed by orders in council, to Gladys H. and Donald D., respectively.

Atlantic and Pacific Ocean Marine.

Capt. Cooper, R.N.R., of the C.P.R. s.s. Empress of China, has been awarded a medal for long service in the Royal Naval Reserve.

The Elder Dempster Co.'s s.s. Benin, which arrived in Montreal Aug. 15, from England, has been placed on the Montreal-Mexico route.

The Canada Line's s.s. Prinz Oskar, which was recently damaged in the St. Lawrence channel, and which has been repaired at Quebec, sailed for Hamburg Aug. 16.

A. Piers, Manager C.P.R. Steamship Lines, Liverpool, Eng., was in Montreal early in August, on his annual consultation trip in relation to the company's winter schedule.

The s.s. Aeota, which ran aground recently, near Martin River, has been temporarily repaired at Quebec to enable her to proceed to England, where complete repairs will be undertaken.

The shipliners at Montreal have applied for the appointment of a board of conciliation, to investigate their demands on the shipping companies for increased wages.

The Thomson Line commenced its autumn service between Mediterranean ports and Montreal, Aug. 25, by the sailing of the s.s. Bellona from Naples. The service will be continued as long as the St. Lawrence route is open for navigation.

The Canadian Northern Steamships' s.s. Royal Edward, which arrived at

Quebec, Aug. 10, made a new land to land record on the Atlantic. The time taken was 3 days 15 hrs., or about 3 hrs. less than the previous record.

A bill has been introduced into the British House of Commons, making it compulsory that all vessels, British or foreign, which embark passengers at British ports, be equipped with a wireless telegraph installation, capable of transmitting 100 miles, with a penalty of £1,000 in the event of non-compliance.

The Government has renewed the mail subsidy contract with the Union Steamship Co., for service between Vancouver and Australia, for one year. Reports are current that the Government will shortly call for tenders for a five year contract for this service, and it is understood that there will be some keen competition.

Montreal press reports state that the preliminary investigation into the cause of the grounding of the s.s. Stigstad, at Cap a la Roche, will, in view of the fact that there have been other similar accidents this year at this point, lead to a more searching enquiry. It is also stated that some of the larger vessels will not navigate the channel at night, until it has been widened at Cap a la Roche.

The Canadian Mexican Pacific Steamship Co., Ltd., has been incorporated under the B.C. Companies Act, with a capital of \$500,000, to take over as a going concern, the business now carried on by T. H. Worsnop, as the Canadian Mexican Pacific Steamship Co.; to build, purchase and otherwise acquire and operate steam and other vessels; to acquire postal or other subsidies; to build and

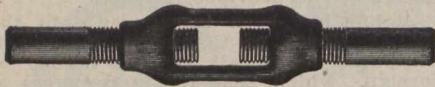
LIST OF STEAM VESSELS REGISTERED IN CANADA DURING JULY, 1910.

Name	No.	Where and When Built	Engines, etc.	Length	Breadth	Depth	Gross Tons	Reg. Tons	Port of Registry	Owners
Ah See	126,518	Coal Island, B. C., 1910	Screw 15 n. h. p.	64.0	16.3	5.0	44	16	Victoria, B.C.	A. See, Coal Island, B.C.
Allege	126,456	Notre Dame de Pierre-ville, Que., 1910	" 2 "	69.0	15.9	3.2	73	50	Sorel, Que	I. Yargeau and C. Salvas, N D de Pierreville, Que.
Aylmer	122,279	Hamilton, Ont., 1908	" 1 "	50.0	9.5	4.0	12	8	Winnipeg	N. K. Luxton, Banff, Alta.
Bella Dona	130,281	Dunnville, Ont., 1910	" 1 "	59.2	22.0	3.2	57	48	St. Catharines, Ont.	C. Ross, Port Maitland, Ont.
Bully II	122,598	Indian Island, N.B., 1909	" 7 1/2 "	29.5	7.4	6.6	6	6	St. Andrews, N.B.	J. Mathews, Campobello, N.B.
Burin	126,895	Vancouver, B.C., 1910	" 4 "	55.0	16.8	7.2	45	30	Vancouver, B.C.	J. Hodder, Vancouver, B.C.
College	126,519	Victoria, B.C., 1910	" 9 1/2 "	54.2	15.2	7.5	46	23	Victoria, B.C.	E. Lanphere, Victoria, B.C.
Contrecoeur	126,459	Sorel, Que., 1910	" 48 "	83.3	22.7	8.9	174	74	Sorel, Que	Minister of Marine, Ottawa
E. C. Oggel	126,643	Grand Haven, Mich., 1874	" 3 "	53.0	13.0	7.5	26	17	Port Dover, Ont.	H. W. Ansley, Port Dover, Ont.
E. E. Frost	103,822	Buffalo, N.Y., 1885	" 4 "	38.0	11.4	5.0	13	9	Cornwall, Ont	J. J. Fallon, Cornwall, Ont.
Ella Mary	126,835	Toronto, 1910	" 9 "	66.0	11.7	6.1	42	25	Toronto	Polson Iron Works, Toronto
Evelyn E. F. Francis	126,477	East Dover, N.S., 1910	" 1 1/2 "	30.0	10.0	4.5	10	8	Halifax, N.S.	I. W. Fader, East Dover, N.S.
Cutting	126,897	San Francisco, Cal., 1889	" 14 "	80.5	20.5	7.6	91	60	Vancouver, B.C.	D. G. Macdonell, Vancouver, B.C.
Geo. E. Young	126,060	Tobermory, Ont., 1909	" 1 "	42.0	10.0	3.6	12	8	Owen Sound, Ont.	G. E. Young, M.O., Tobermory, Ont.
Geo. H. Jones	130,221	Owen Sound, Ont., 1910	" 10 "	65.4	14.5	6.0	71	48	" "	D. Rumley and S. Robinson, Owen Sound, Ont.
Hiram Robinson	126,530	Sand Point, Ont., 1910	" 37 "	110.0	23.6	6.7	203	118	Ottawa	Upper Ottawa Improvement Co., Ottawa
Lotbiniere	126,458	Sorel, Que., 1903	" 46 "	78.5	23.2	7.8	146	17	Sorel, Que.	Minister of Marine, Ottawa
Montmagny	126,457	" 1910	" 148 "	212.6	34.8	19.5	1269	723	" "	" "
Renvoyle	126,836	Glasgow, Scotland, 1910	" 157 "	250.0	42.7	16.3	1830	1176	Toronto	Point Anne Quarries, Toronto
Resort	126,898	North Vancouver, B.C., 1910	" 2 "	45.2	11.8	5.4	23	16	Vancouver, B.C.	Sechtel Steamship Co., Vancouver, B.C.
S. and G.	126,775	St. Charles, N.B., 1908	" 5 "	33.0	11.2	4.3	10	10	Richibucto, N.B.	S. Gray, Richibucto, N.B.
Sylvalee	126,772	Richibucto, N.B., 1910	" 1 "	36.0	12.0	4.6	12	11	" "	J. Legooof, Richibucto N.B.
Thos. J. Drummond	126,863	Dumbarton, Scotland, 1910	" 215 "	247.8	43.7	22.8	2201	1164	Sault Ste. Marie, Ont.	Algoma Cent. & Hudson Bay Ry., Sault Ste. Marie, Ont.
Trillium	126,833	Toronto, 1910	Paddle 48	150.0	30.0	7.2	673	463	Toronto	Toronto Ferry Co., Toronto
Wacouta	116,663	Peterboro, Ont., 1909	Screw 6	66.0	13.6	5.0	33	22	Lindsay	C. W. Burgoyne, Fenelon Falls, Ont.

LIST OF SAILING VESSELS AND BARGES REGISTERED IN CANADA DURING JULY, 1910.

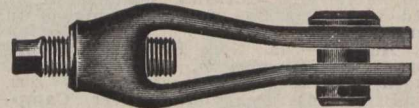
Name	No.	Where and When Built	Rig	Length	Breadth	Depth	Reg. Tons	Port of Registry	Owners
Cynthia W.	126,714	U. S.	Dredge	114.3	48.3	7.8	679	St. John, N.B.	J. E. Moore and G. McAvity, St. John, N.B.
E. J. Fader, No. 4	126,785	New Westminster, B.C., 1909	Barge	74.4	30.0	6.8	149	New Westminster, B.C.	E. J. Fader, New Westminster, B.C.
George Groat	126,609	Chatham, N.B., 1910	"	112.0	26.3	6.0	116	Chatham, N.B.	J. B. Snowball Co., Chatham, N.B.
Ida O. Campbell	126,566	Shelburne, N.S., 1910	Schr.	47.5	14.3	6.3	19	Sydney, N.S.	Lingan Fishing Co., Lingan, N.S.
Mainland	126,608	Chatham, N.B., 1909	Barge	104.0	26.0	6.5	101	Chatham, N.B.	J. B. Snowball Co., Chatham, N.B.
Mary E. Spears	126,068	Whitehead, N. S., 1905	Schr.	35.7	12.1	5.4	10	Charlottetown, P.E.I.	D. Spears and W. Jost, French River, P.E.I.
Mayers, No. 1	126,787	French River, P.E.I., 1910	Barge	86.2	28.0	7.2	133	New Westminster, B.C.	J. Mayers, New Westminster, B.C.
Pioneer No. 1	126,520	New Westminster, B. C., 1910	"	110.0	40.5	8.5	309	Victoria, B.C.	Victoria Lumber and M'fg. Co., Chemainus, B.C.
Rowdy	126,816	Chemainus, B.C., 1910	Sloop	24.6	7.8	3.6	4	Lunenburg, N.S.	H. Zwicker, Lunenburg, N.S.
Sanghe	126,069	Lunenburg, N.S., 1910	Schr.	42.0	13.7	4.9	13	Charlottetown, P.E.I.	T. A. McDonald, River John, N.S.
Seth Jr.	126,039	River John, N.S., 1910	"	118.0	30.3	11.1	200	Liverpool, N.S.	W. W. Bartling, New York, N.Y.
Wawota	126,774	Liverpool, N.S., 1910	"	30.5	9.9	4.8	11	Richibucto, N.B.	W. H. and W. R. Long, Richibucto, N.B.
Will W. Case	126,896	Point Sapin, N. B., 1903	Barge	141.1	31.7	10.0	591	Vancouver, B.C.	S. F. McKenzie, Vancouver, B.C.
Willetta	126,478	Rockland, Me.	Schr.	42.0	13.0	5.6	15	Halifax, N.S.	J. Gray, M.O., Sambro, N.S.
Zahra	126,834	Sambro, N.S., 1910	"	75.0	16.8	7.5	47	Toronto	E. Jarvis, Toronto
		South Boston, U.S., 1904	"						

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own wharves, docks, etc., and to conduct a general navigation business.

Press reports state that the Merchants' and Shippers' Steamship Line is being organized in Australia, to operate a fast line of cargo steamships, with large refrigerator accommodation and large space for all classes of perishable goods, between Australia, Tasmania, New Zealand, United States, Canada and Great Britain. It is stated that the service will be started shortly with five vessels, maintaining regular monthly sailings. The line will, it is said, be managed by the Sydney Shipping and Mercantile Agency, of Sydney, New South Wales.

Maritime Provinces and Newfoundland.

The Nova Scotia Legislature has authorized the city of Dartmouth to issue \$75,000 debentures for ferry purposes.

The Dominion Department of Public Works will receive to Sept. 12, tenders for building a one-yard dipper dredge for Prince Edward Island.

The Dominion Department of Public Works has recently awarded dredging contracts in Miramichi Bay to W. J. Poupore, Montreal, and A. and R. Loggie, Loggieville, N.B., the amount of each contract being \$100,000.

The Sydney Ship Chandlery Co. Ltd., has been incorporated by the Nova Scotia Legislature, with a capital of \$10,000, and office at Sydney, the provisional directors being: J. Murphy, Louisburg; C. E. Morris and J. McNamara, Sydney, N. S.

Bowring Bros. are reported to have in contemplation the building of an additional steamship to run on the St. John's and New York route, in conjunction with the s.s. Florizel. The estimated cost of the proposed new vessel is reported as \$400,000.

The Atlantic Fisheries Co. Ltd., of Lunenburg, N. S., has amalgamated with the C. Robin Colas Co., Ltd., and A. G. Jones & Co., of Halifax, and will conduct business under the name of Robin, Jones and Whitman, Ltd. The steamship agencies heretofore carried on by A. G. Jones and Co., will be continued under the old name.

The Newfoundland Steam Whaling Co.'s s.s. Sobraon has been sold to a Norwegian firm. She was built at Sunderland, Eng., in 1889, her dimensions being, length, 286.3 ft., breadth 41 ft., depth 26.4 ft., tonnage, 2,385 gross, 1,541 register. Her equipment includes triple expansion engines with cylinders 23½, 39 and 64 ins. diam., by 42 ins. stroke, having 278 n.h.p. The price paid is stated to have been £8,250.

The city of Sydney has been authorized by the Nova Scotia Legislature, to borrow \$50,000 for the acquirement of a site for a ship-building plant, dry dock and ship repairing works, or either of them, and to provide annually out of the rates, sufficient to pay 1½% on the cost of the plant, not exceeding \$1,500,000, for 20 years. The act is not to take effect until it has been formally adopted by the ratepayers in accordance with the provisions of the city charter and amending acts.

The s.s. Scotsburn, which has been built at Mahone Bay, N.S., for the Halifax and Glace Bay Steamship Co., was recently towed to Halifax, where her engine and boiler will be installed. When completed, the vessel will be operated over the Halifax-Cape Breton route, making calls at Sydney, North Sydney, Glace Bay, Port Morien, Main-a-Dieu, Louisburg, Gabarus and Fourche, by way of Bras d'Or, on alternate trips. She is 121 ft. long, 23 ft. beam, with 9 ft. hold, and has accommodation for about fifty passengers.

The following changes have been made in the port charges at St. Pierre, Miquelon: French or foreign vessels, over 25 tons register, engaged in fishing or any kind of navigation, \$2.50 a ton a year; vessels over 25 tons register, entering for shelter and not landing merchandise, importing fresh fish only, 50c. a ton a year; vessels up to and including 25 tons register, foreign going coasters, or fishermen, fitted out in the colony, vessels importing coal or bait, free; the acts of 1906, 1907 and 1909, relating to port charges have been repealed.

Constant and Hawthorne of Montreal, acting for European clients, have written the Sydney, N.S., city council, offering to locate a dry dock, and ship building and repairing plant there, provided the city grant a bonus of \$350,000 and free site. The matter will be taken up by the ratepayers on the recommendation of the council. The plans presented cover the construction of a berth for building vessels up to 300 ft. long; engine shop; working plant; floating dock of the second class section steel pontoon type, capable of accommodating a vessel of 15,000 tons register, and a marine slip capable of handling vessels of about 5,000 tons.

Province of Quebec Marine.

L. C. Webster and W. Dobell have been elected members of the Quebec Harbor Commission.

The dredging of the St. Charles River, for the improvement of its navigation, was commenced Aug. 15.

Capt. L. A. Demers, Wreck Commissioner, left Ottawa Aug. 12 for a trip of inspection, and examination of the St. Lawrence pilots.

The Maisonneuve town council has passed a bylaw granting exemption from taxation, for 20 years, to the Vickers, Son and Maxim interests, for their proposed ship-building, repairing and dry dock plant at Molson's Creek.

The s.s. Crown of Aragon, which was chartered by the Dominion Iron and Steel Co., has been seized on a claim for \$10,000 by the Canadian Electric Light Co., for damage alleged to have been caused to its cable between Quebec and Levis.

The Montreal harbor revenue for July was \$56,456, against \$54,073 for July 1909, and from the opening of navigation, the revenue was \$169,296, against \$142,128, for the same period 1909. There was a considerable decrease in the receipts from local traffic.

The Dominion Department of Public Works has awarded contracts for dredging at Montmagny, to L. Cohen and Son, Montreal, and for the construction of a breakwater at Matane, to N. Trudel. The dredging contract totals \$8,000 and the breakwater \$5,500.

W. J. Thompson, Manager Quebec and Levis Ferry Co., was sentenced by the Superior Court, Quebec, Aug. 5, to 48 hours imprisonment, and the company was fined \$50 for contempt of court, in connection with the litigation proceedings between the Quebec and Levis Ferry Co., and the Levis Ferry, Ltd.

Press reports from Quebec, Aug. 8, stated that following an agreement, which has been reached between the rival ferry companies, the warrant issued by the Admiralty Court for the steamboat Lauzon, has been dropped, and a settlement reached by the Levis Ferry Ltd., paying the Quebec and Levis Ferry Co., \$500.

The Montreal Harbor Commissioners are reported to have decided to erect a new office building for their traffic and elevator staffs, opposite the Jacques Cartier pier. It is stated that the building will be two stories, costing about

\$10,000, and that it will be ready for occupation by the opening of navigation next year.

The St. Lawrence Bridge Co., Ltd., has been incorporated under the Dominion Companies Act, with a capital of \$500,000, and office at Montreal, to carry on a bridge building business, and in connection therewith, to own and operate steam and other vessels, and to engage in contracts for engineering and other works involving the use of same.

G. W. Stephens, Chairman Montreal Harbor Commissioners, in a recent interview, is reported to have said, in regard to the proposed construction of a dry dock at Montreal, that while nothing had been settled definitely, there was a probability that a dock would be established there before next season was over. The Government is still considering the question of a subsidy.

Donald Fraser and Sons, Ltd., has been incorporated by the Quebec Legislature, with office at Cabano, with power, among other things, to own and operate steam and other vessels, to carry on a general navigation business, and to erect telegraph lines in Temiscouata, Kamouraska and Rimouski counties. The provisional directors are D. and A. Fraser, D. Fraser, Jr., W. Matheson and A. Brebner.

The Quebec city council has approved the ferry committee's report respecting the protest recently made against the vessels and service of the Levis Ferry, Ltd., by the Quebec and Levis Ferry Co., which formerly had the contract for operating the ferry between Quebec and Levis, and recommended that the former company be notified that it must conform to the contract or it will be annulled. It is stated that if the Levis Ferry, Ltd., is compelled to conform to the contract immediately, new boats will have to be acquired, as the present ones are not paddle wheel steamers, for which the contract calls.

Ontario and the Great Lakes.

Moore and Fraser, Port Stanley, are reported to have purchased the steam tug Prodigy at Cleveland, O., for fishing purposes.

The Dominion Department of Public Works will receive tenders to Sept. 12 for the construction of an extension to the north wharf at Pelee Island.

The Dominion Department of Public Works received tenders, Aug. 31, for the construction of a breakwater at Bare Point, Port Arthur.

The steamboat Ossifrage, which grounded in the Thames River, near Chatham, Aug. 11, was released Aug. 15. The damage sustained is said to be small.

The steamboat, D. A. Gordon, which recently arrived on the Great Lakes, from England, was recently reported ashore on Parisian Island, Whitefish bay, Lake Superior.

The Dominion Department of Public Works will receive to Sept. 13, tenders for the construction of an extension to the breakwater in Colpoys bay at Wiarton.

F. S. Wiley, Port Arthur, is reported to have purchased the Pittsburgh Steamship Co.'s steamboat J. B. Trevor, which was wrecked last fall on Isle Royale.

The Department of Railways and Canals recently received tenders for placing stone protection on the summit level, and for straightening the channel at head of lock 2, on the Welland Canal.

The Minister of Marine and the Minister of Public Works left Brockville, Aug. 4, on the Government steamboat Simcoe, for an inspection trip of the harbors and rivers of the Great Lakes.

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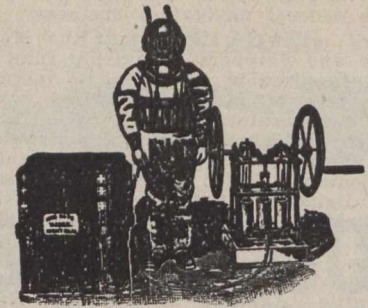
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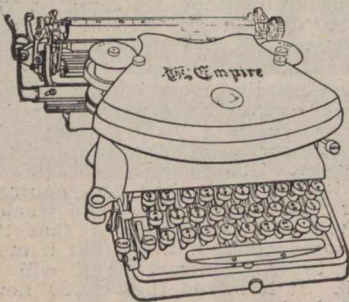
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Forwarders Ltd., incorporated under the Dominion Companies Act, with office at Kingston, Ont., has been licensed to carry on business in Ontario, with A. McLelland, Kingston, as its attorney.

Press reports state that a Government life saving station will be established shortly at Point Pelee. It is stated that the equipment will include a steel motor boat.

Capt. J. Whiteside, of the Merchants Mutual Steamship Co.'s steamboat Acadia, was killed at Port Arthur, Aug. 4, by the breaking of a derrick boom, while he was superintending the unloading of the vessel.

The damage caused by the carrying away of the gates at lock 17 on the Cornwall canal recently, has been estimated at \$12,000, including the damage to the steamboat Phoenix, and to the Canada Cotton Co.'s property and stock.

The steamboat H. M. Pellatt, in tow from Buffalo to Ashtabula, was run down by the Marquette and Bessemer car ferry 15, bound from Conneaut to Port Stanley, Ont., damaging her considerably. She has been docked at Cleveland for repairs.

The Windsor, Ont., steamboat City of Dresden, was seized Aug. 6, and fined by U.S. Customs officials, for violation of the customs laws, in landing a cargo at Sandusky, Ohio, from Rondeau, Ont., without first obtaining permission.

The Northern Navigation Co.'s s.s. Harmonic is reported to have created a record for the 289 miles of the Sault to Port Arthur run, doing the journey in 15 hrs. 30 mins. The previous best is stated to have been the C.P.R. s.s. Kewatin, in 16 hrs. 50 mins.

The St. Lawrence and Chicago Steam Navigation Co.'s s.s. E. B. Osler, ran aground in the St. Clair River, near Port Huron, Aug. 15, during a fog, and was released, apparently without damage, after having a portion of her cargo of coal lightered.

A press report states that new concrete wharves have been built at Sand Point and Arnprior, Ont., on the Ottawa River, that it is proposed to build a similar wharf at Norway Bay, Que., and that steamboats will be put on to serve these places. The reports state that Mackenzie, Mann & Co. are interested.

The Niagara, St. Catharines and Toronto Navigation Co. is in the market for a steel steamboat, about 200 ft. long, for the Toronto and Port Dalhousie route, and also for new boilers for the steamboat Garden City, to be installed during the winter. Particulars will be supplied by E. F. Selxas, General Manager, St. Catharines.

H. Sutherland, Executive Agent Canadian Northern Ry., Winnipeg, was in Port Arthur early in August, when he inspected the coal and ore docks there. He is reported to have stated that the accommodation there would have to be largely increased, but that nothing could be decided until the matter had been submitted to the directors.

The U. S. Lake Survey reports the levels of the Great Lakes for July, in feet above tidewater, as follows: Superior, 601.89; Michigan and Huron, 580.50; Erie, 572.35; Ontario, 246.29. Compared with the average July levels for the past 10 years, Superior was 0.92 ft. below; Michigan and Huron, 0.72 ft. below; Erie 0.52 ft. below, and Ontario 0.53 ft. below.

The Jaques Transportation Co., Ltd., has been incorporated under the Dominion Companies Act, with a capital of \$250,000, and office at Ottawa, to build, purchase and otherwise acquire and operate steam and other vessels; to conduct salvage operations, and to construct wharves, piers, docks, etc. The provisional directors are: C. A. Jaques, R. Bickerdike and A. M. Jaques, Mont-

real; J. H. Hall, Ottawa, and W. S. Hall, L'Orignal, Ont.

This company has been incorporated to take over the steamship C. A. Jaques, a description of which was given in our Aug. issue. She will be run in the freight trade between Montreal and Fort William and Port Arthur, under the management of the Merchants Mutual Line. The officers and directors of the company are:—President, R. Bickerdike; Vice President, J. H. Hall; Managing Director, C. A. Jaques; Secretary Treasurer, A. M. Jaques; other director, W. S. Hall.

The Detroit and Owen Sound Summer Resort Co., Ltd., has been incorporated under the Ontario Companies Act, with a capital of \$100,000 and office at Owen Sound, to conduct a summer resort in Sarawak township, Ont., and in connection therewith, to own and operate steam and other vessels, and to carry on a general transportation business by water. The provisional directors are: I. N. Aldrich, Detroit, Mich.; B. Worley, F. H. Wheeler, Chicago, Ill.; E. Lemon and C. A. Fleming, Owen Sound, Ont.

The Toronto board of control has decided to provide a 20 ft. channel through the bay, and to build a dock at Ashbridge bay, at an estimated cost of about \$200,000. The dock will be 250 ft. wide by 600 ft. long, with composite wood and concrete substructure, and concrete above the water line. Freight sheds 500 ft. long by 30 ft. wide, by 14 ft. high, will also be erected. This is stated to be the first step of an extensive scheme of improvement, which the city will undertake.

Polson Iron Works, Ltd., has just completed a steam yacht for J. F. Kuhn, Pittsburgh, Pa. It has been named Ella Mary, and is a screw-driven vessel, with engine of 9 n.h.p., and has dimensions, length, 66 ft.; breadth, 11.7 ft.; depth, 6.1 ft.; tonnage, 42 gross, 25 register.

The Upper Ottawa Improvement Co., has added another vessel to its fleet. The Hiram Robinson was built this year at Sand Point, Ont., and is a screw driven vessel, with engine of 37 n.h.p.. Her dimensions are, length 110 ft.; breadth 23.6 ft.; depth 6.7 ft.; tonnage, 203 gross, 118 register.

A Belleville press dispatch says:—The Ontario and Quebec Steamship Co. has been formed by Hepburn & Co., of Picton, and the owners of the steamboats

Brockville, Aletha and Varuna. The company will build a new steamer, to cost \$130,000, which will be run in connection with the Alexandria on the Montreal route.

The Pointe Ann Quarries Ltd., has registered its steamboat Renvoyle, at Toronto. Some details of this vessel were given in a recent issue. The following are her dimensions; length, 250 ft.; breadth, 42.7 ft.; depth, 16.3 ft.; tonnage, 1830 gross 1176 register. She is a screw-driven vessel, with engine of 157 n.h.p.

The Western Dry Docks Co., Port Arthur, has placed orders for one large plate shear, one bending roll, one angle shear, one lathe and one drill, with the John Bertram and Sons Co., Dundas, Ont.; for electrical equipment with the Canadian Westinghouse Co., Hamilton, Ont., and for pumping machinery with the John Inglis Co., Toronto.

The Porcupine Trading and Transportation Co., Ltd., has been taken over by A. Miller, of Haileybury, and will in future be operated as the Miller Porcupine Transportation Line. It is stated to be the intention to run a freight and passenger service between Kelso and Porcupine. The boats which were being operated on the Frederickhouse River are being overhauled for the passenger service. The freight boats are running to within six miles of Porcupine, where the freight is transferred to canoes.

A press report from Fort William, Aug. 15, states that following an informal conference between city officials and officials of the Northern Navigation Co., the following information was given out by the mayor:—"Things being equal, or nearly equal, the headquarters of the Northern Navigation Co. will be established in Fort William. Things not being equal, or nearly so, Fort William the business of the company will be transacted in Port Arthur, until conditions force the consolidation of all G.T.P.R. business in Fort William."

Capt. J. McGiffen, probably the best known captain on the Great Lakes, died at Toronto Aug. 19, aged 68. He had been in the Niagara Navigation Co.'s service for 23 years, having commanded, consecutively, the Chicora, Cibola, Chippewa and Cayuga, and being at the time of his death the senior captain and commodore of the fleet. Though he had been suffering from diabetes for a number of years, he was on duty up to with-

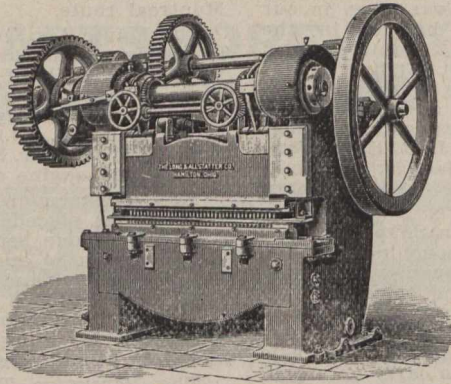
SAULT STE. MARIE CANALS TRAFFIC.

The following commerce passed through the Sault Ste. Marie Canals in July :

ARTICLES.	CANADIAN CANAL	U. S. CANAL	TOTAL
Copper..... Eastbound..... Net tons	553	17,862	18,415
Grain..... "..... Bushels	3,026,705	1,616,878	4,643,583
Building stone..... "..... Net tons	.....	1,377	1,377
Flour..... "..... Barrels	283,712	590,068	873,780
Iron ore..... "..... Net tons	4,746,106	2,239,020	6,985,126
Pig iron..... "..... ".....	.....	8,094	8,094
Lumber..... "..... M. ft. B.M.	2,014	97,635	99,649
Silver ore..... "..... Net tons	.....	.....	.....
Wheat..... "..... Bushels	2,991,193	1,141,422	4,132,615
General merchandise..... "..... Net tons	15,738	16,045	31,783
Passengers..... "..... Number	3,230	5,184	8,414
Coal, hard..... Westbound..... Net tons	29,590	142,810	172,400
Coal, soft..... "..... ".....	497,173	1,578,228	2,075,401
Flour..... "..... Barrels	100	.....	100
Grain..... "..... Bushels	.....	.....	.....
Manufactured iron..... "..... Net tons	12,148	39,856	52,001
Iron ore..... "..... ".....	.....	.....	.....
Salt..... "..... Barrels	6,937	41,432	48,369
General merchandise..... "..... Net tons	72,262	85,597	157,859
Passengers..... "..... Number	4,560	5,114	9,674
Vessel passages..... Number	1,062	2,180	3,242
Registered tonnage..... Net	3,372,743	4,503,715	7,876,458
Freight—Eastbound..... Net tons	4,940,006	2,570,230	7,510,236
—Westbound..... ".....	612,234	1,852,703	2,464,937
Total freight..... ".....	5,552,240	4,422,933	9,975,173

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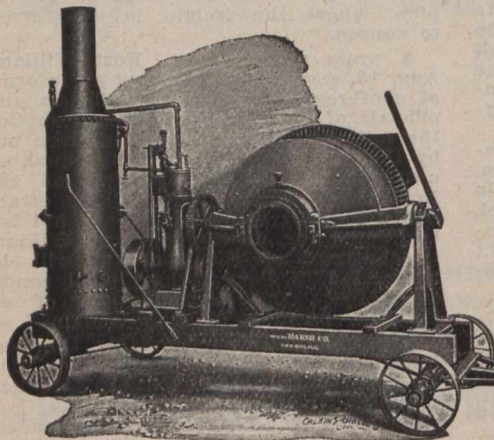
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in a few days of his death, when a comparatively trifling wound on a finger caused him to lay up. The funeral took place at Toronto Aug. 22. Capt. Sylvester, Capt. Crangle, Capt. Trowell, Capt. Jackson, F. Barlow Cumberland, Vice President Niagara Navigation Co., and B. W. Folger, General Manager Niagara Navigation Co., acting as pall bearers. Flowers were sent by the Niagara Navigation Co., Shippers' Association, officers of the Niagara Navigation Co.'s vessels, Niagara Gorge Rd., Hamilton Steamboat Co., Argyle Steamboat Co., and others.

Manitoba, Saskatchewan and Alberta.

The Winnipeg wharf committee, met Lt.-Col. W. P. Anderson, Chief Engineer of the Department of Marine, in Winnipeg recently, when matters relating to the establishment of Winnipeg as a public harbor, and the construction of wharves and other works, were discussed.

The Arctic Ice Co.'s steel steamboat, Amelia Mac, was launched at Winnipeg, late in August. Her dimensions are, length 70 ft.; beam, 16.6 ft.; draught, 4.6 ft. She is equipped with double compound engines with cylinders 7 and 14 ins., diam., by 10 ins. stroke, driving twin screws. This is claimed to be the first steel boat to be launched in Winnipeg.

A recent dispatch from Ottawa states that the reports received of the survey along the Saskatchewan River, in connection with the proposed opening of the waterway between Winnipeg and Edmonton, indicate that preliminary estimates will be ready by the next assembling of Parliament. It has been stated that the work can be done for about \$15,000,000, exclusive of the construction of locks at Grand Falls.

The Peace River Trading and Navigation Co., is reported to have entered on a programme of improvement in that district, which will involve the expenditure of about \$300,000. F. S. Lawrence, General Manager, who was in Winnipeg recently, stated the company had in contemplation, the building of a stern wheel steamboat, to run from Vermillion Falls to Hudson's Hope, B.C., about 500 miles, which latter point is only a short distance from Prince Rupert.

In our July issue, under this heading, we mentioned that the s.s. Mikado had arrived in Winnipeg from Selkirk, on June 10, and stated that it was said this was the first steamboat plying on Lake Winnipeg to go up to the city. It should have been stated that it was the first steamboat plying on Lake Winnipeg to go up to the city since the opening of the St. Andrew's lock and dam. The Hudson's Bay Co.'s steamboat Colville, which for many years plied on Lake Winnipeg, and prior to the advent of the railways, carried the company's supplies across the lake to Grand Portage, at the mouth of the Saskatchewan River, frequently went up to Winnipeg during high water periods.

B.C. and Pacific Coast Marine.

A ferry service was commenced between Ladner and Steveston, early in August, by the new steamboat New Delta, recently built at Vancouver.

The C.P.R. steamboat Kaleden, recently built for service on Okanagan Lake and River, has been put into service between Penticton and Okanagan Falls.

The Gulf Steamship and Trading Co., has inaugurated a steamboat service between Victoria and New Westminster. Two round trips are being made each week, the rates being the same as on the C.P.R. vessels.

Judgment was delivered Aug. 1, in the case of the collision of the C.P.R. Charmer and the s.s. Bermuda, which occurred some time ago. The Charmer has been held responsible for the accident, and condemned in damages, stay of execution being granted, pending an appeal.

The plans, which have been submitted for the construction of a ferry building at North Vancouver, provide for a building 132 by 26 ft., including winter and summer waiting rooms, board room, manager's and secretary's offices, etc. It will be arranged in one storey, and heated by hot water.

The Canadian Western Lumber Co., Ltd., with head office in Toronto, and which has power to own and operate steam and other vessels, and other means of transportation, has been licensed to carry on its business in British Columbia, with J. D. McCormack, Fraser Mills, as its attorney.

The West Coast Fishing and Curing Co., Ltd., has been incorporated under the B.C. Companies Act, with a capital of \$50,000, to conduct a general fishing and packing business, and in connection therewith to own and operate steam and other vessels, wharves, warehouses, etc.

The Northern British Columbia Development Co., Ltd., has been incorporated under the B. C. Companies Act, with a capital of \$25,000, to carry on a general development business, and in connection therewith, to build, purchase or otherwise acquire and operate steam and other vessels.

It is reported that W. R. Grace and Co. will build four steamships for a service between British Columbia, Puget Sound, and other Pacific coast ports. The plans for the vessels show dimensions:—Length, 410 ft.; breadth, 52 ft.; depth, 22½ ft., with a dead weight capacity of 7,600 tons, and capable of a speed of 12 knots an hour.

The Balcom Steamship Co. is reported to have decided to operate a regular service between Victoria, Prince Rupert and Stewart. The company is, at present, running one steamboat under charter, and it is said, will charter another immediately, and expects to have two more vessels from England on the route in the spring.

The Progressive Towing Co., Ltd., has been incorporated under the B.C. Companies Act, with a capital of \$100,000, to take over the business now carried on by the Progressive Steamboat Co., Ltd., at Vancouver; to purchase or otherwise acquire and operate steam and other vessels, and conduct a general navigation business.

Press reports from Vancouver state that the second vessel which the C.P.R. has under construction in Scotland for the Pacific Coast service will be named Princess Mary. It was anticipated that she would be launched towards the end of Aug., and she is expected to be ready for service before the end of the year.

The North Arm Steamship Co., Ltd., has been incorporated under the B. C. Companies Act, with a capital of \$25,000 to take over the business at present carried on on Burrard Inlet, under the name of the North Arm Steamship Co., and to build, purchase or otherwise acquire and operate steam and other vessels in the passenger and freight business.

The Sechelt Steamship Co.'s s.s. Sechelt during a fog, Aug. 7, ran on the rocks near Prospect Point lighthouse, and sank. The passengers and crew were landed safely at the lighthouse. She was built at Pontiac, Wash., in 1893, and was formerly known as Hatty Hansen. Her dimensions were, length, 73 ft., breadth 15.2 ft.; depth, 7.4 ft.; tonnage, 105 gross, 71 register, and she was equipped with a 16 h.p. engine driving a screw.

The wharf constructed by the Provincial Government at Stewart, has been taken over by the Dominion Government, and arrangements are being made for the building of an approach to it, so that access can be had to it from the land side, at all times. Previously, it was only possible to reach it from the land side at low tide. It is reported that Mackenzie, Mann & Co., will shortly commence the construction of a private wharf at Stewart, in connection with the Portland Canal Short Line Ry.

The C.P.R. s.s. Princess May struck a reef at Sentinel Island, in the Lynn canal, Aug. 5, and eventually sank in deep water. Assistance was called for by wireless telegraph and several steam tugs were dispatched from Juneau, where the passengers and crew were safely landed. The Princess May, formerly Hating, was built at Newcastle, Eng., in 1888, and was purchased from the Chinese government in 1901. She was a screw driven vessel, with engine of 450 n.h.p. Her dimensions were: length, 249 ft.; breadth, 33.2 ft.; depth, 17.7 ft.; tonnage, 1,717 gross, 892 register.

Press reports from Vancouver, recently stated that a service between Vancouver and Fort George was about to be inaugurated, by rail, automobile and steamboat. The steamboat which will be used in the service is owned by the British Columbia Express Co., and is named B. X. She was built this year at Soda Creek, B.C., and is a paddle-wheel steamer, with engine of 27 n.h.p. Her dimensions are: length, 127.5 ft.; breadth, 28 ft.; depth, 5.1 ft.; tonnage, 513 gross, 323 register. The headquarters of the company are at Ashcroft, and the boat will run between Soda Creek and Fort George, making three round trips each week. The complete journey from Vancouver to Fort George of 530 miles will be accomplished in 36 hrs., and the return journey in 30 hrs.

Welland and Georgian Bay Canal.

An Ottawa dispatch of Aug. 23 says:—The Department of Railways is having a survey made to determine the cost of enlarging the Welland Canal, and it is expected that before Parliament meets the work will be completed. A rough estimate fixed the cost of making a 21 ft. passage, at \$50,000,000, which is about half what the Georgian Bay Canal is estimated to cost. However, it is pointed out that as the enlargement of the Welland Canal would have to be followed by the enlargement of the whole system of St. Lawrence Canals the cost of improving the Welland route might be greater than the Georgian Bay Canal. The company which wants to build the latter waterway, with generous Government aid, renewed its offer before the departure of Sir Wilfrid Laurier for the west. The Prime Minister has stated that both waterways will be developed as soon as the finances of the country warrant. However, one has to come first, and the survey which is now being made of the Welland will aid Parliament in deciding which.

Vessels Removed from the Register.—

The following vessels were removed from the register during July, for the reasons assigned: Steam—Daughter of the Peaks, Kenora, Ont., nine tons, condemned; James Semple, Pictou, N. S., 63 tons, broken up; Sayona, 30 tons, sold to foreigners. Sailing—Acadian, Weymouth, N. S., 32 tons, sunk; Harold L. Berry, Charlottetown, P.E.I., 99 tons, wrecked; Havelock, Annapolis Royal, N. S., 198 tons, wrecked; Native of Foucher, Arichat, N. S., 16 tons, burnt; Reynard, Parrsboro, N. S., 560 tons, wrecked; St. Joseph, Quebec, Que., 115 tons, broken up.

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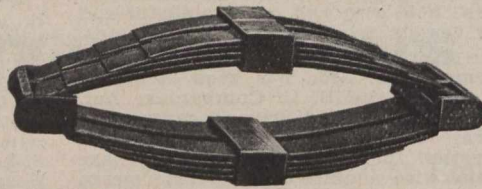
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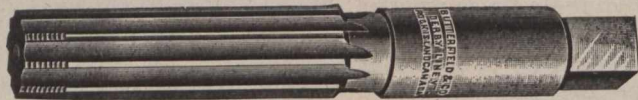
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The Water Carriage of Goods Act.

The Water Carriage of Goods Act, the text of which we published in our June issue, comes into force Sept. 1. Reports state that shipowners maintain that it makes them appear to be the insurers of the cargo, and that it will inevitably tend to raise rates to the detriment of the shipping trade. In this connection it may be as well to point out that clause 4 provides that any bill of lading containing a clause whereby the owner or charterer is relieved from liability for loss or damage arising from negligence in loading, custody or delivery, or the obligations to properly man, equip and supply the vessel, are lessened or avoided; or the obligations of the master, officers or agent to carefully handle, stow, care for and deliver goods, is lessened or avoided, such clause shall be null and void. Clauses

6 and 7 provide that neither the ship, owner, charterer nor agent shall be liable for loss or damage arising from faults or errors of navigation, or latent defect, nor for loss by fire, dangers of navigable waters, acts of God or public enemies, inherent defect, quality or vice of the thing carried, insufficiency of package, seizure under legal process, acts of omission by shipper, attempting to save life or property at sea, etc., if, in the first two cases mentioned, due diligence is exercised to have the ship in all respects, properly manned, equipped and supplied.

Beeson's Marine Directory of the North Western Lakes, has reached its 24th year of publication. The tabulated information is as complete as usual, and the illustrations are numerous. In the general information is giv-

en descriptions of the Canadian harbors on the Upper St. Lawrence River, and Great Lakes and Georgian Bay, compiled from official sources. The compilation of the information and its arrangement are personally attended to by H. C. Beeson, who started the publication, and he also is its publisher from his offices, 1340 Washington Boulevard, Chicago, Ill.

Capt. H. St. G. Lindsay has been appointed Examiner of Masters and Mates, vice Capt. L. A. Demers, appointed Wreck Commissioner.

Orders in council have been passed approving regulations for the governance of draw or swing bridges, other than railway bridges, and for the establishment and use of cable ferries, over and across navigable waters, and rescinding the orders in council, respecting same issued May 3.

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Tate Accumulator Co. of Canada, Toronto

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Canadian Westinghouse Co. Hamilton, Ont.

Ales
E. L. DrewryWinnipeg.

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Hamilton Steel & Iron Co., Hamilton, Ont.
Montreal Rolling Mills Co.....Montreal.
Nova Scotia S. & C. Co., New Glasgow, N.S.

Anti Rail Creepers
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Automobiles
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Axles
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James Hutton & Co.Montreal.
Nova Scotia S. & C. Co., New Glasgow, N.S.
Pittsburg Forge & Iron Co., Pittsburg, Pa.
Jas. W. Pyke & Co.....Montreal.

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Tallman Brass & Metal Co., Hamilton, Ont.

Beacons
International Marine Signal Co....Ottawa.

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Canadian Car & Foundry Co....Montreal.
Chicago Railway Equipment Co..Chicago.

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Polson Iron Works, Ltd.....Toronto.
Robb Engineering Co., Ltd..Amherst, N.S.

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John Inglis Co., Ltd.Toronto.
Polson Iron Works, Ltd.....Toronto.
Robb Engineering Co., Ltd..Amherst, N.S.

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Toronto Bolt and Forging Co...Toronto.

Bolts, Carriage and Machine
Toronto Bolt and Forging Co...Toronto.

Bolts, Track
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Pittsburg Forge & Iron Co., Pittsburg, Pa.
Toronto Bolt and Forging Co...Toronto.

Borers, Car Wheel
John Bertram & Sons Co....Dundas, Ont.

Braces, Cross Arm
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Toronto Bolt and Forging Co....Toronto.

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Chicago Railway Equipment Co..Chicago.

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Canada Iron Corporation, Ltd..Montreal.
The Holden Co., Ltd.....Montreal.

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Canada Iron Corporation, Ltd..Montreal.
Railway Materials Co.New York.

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Dominion Bridge Co.....Montreal.

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American Vanadium Co....Pittsburg, Pa.

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Brown Hoisting Machinery Co., Cleveland.
Williams & Wilson, LtdMontreal.

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Dominion Bridge Co.....Montreal.

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Car Movers
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Crossen Car Mfg. Co.....Cobourg, Ont.
Canadian Car & Foundry Co....Montreal.
J. T. GardnerChicago, Ill.
Hart-Otis Car Co., Ltd.....Montreal.
Hicks Locomotive and Car Works, Chicago.
The Males Co.,Cincinnati, O.
Ottawa Car Co., Ltd.....Ottawa.
Pay-As-You-Enter Car Co...New York.
Preston Car and Coach Co., Ltd..Preston.
Russel Wheel & Fdry Co...Detroit, Mich.
Silliker Car Co., Ltd.....Halifax, N.S.

Cars, Logging
Peteler Car Co.Minneapolis, Minn.
Russel Wheel & Fdry Co...Detroit, Mich.

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American Vanadium Co....Pittsburg, Pa.
Canadian Car & Foundry Co....Montreal.
Crossen Car Mfg. Co.....Cobourg, Ont.
John Inglis Co., Ltd.Toronto.
Lumen Bearing Co....West Toronto, Ont.
I. Matheson & Co....New Glasgow, N.S.
Russel Wheel & Fdry Co...Detroit, Mich.
Standard Steel Works Co..Philadelphia, Pa.

Castings, Brass
Canadian Bronze Co.Montreal.
Canada Iron Corporation, Ltd...Montreal.
Kerr Engine Co.Walkerville, Ont.
Lumen Bearing Co....West Toronto, Ont.
I. Matheson & Co....New Glasgow, N.S.
Tallman Brass & Metal Co., Ltd.Hamilton.

Castings, Car
Edgar Allen & Co., Ltd.Montreal.
Am. Brake Shoe & F'dry Co., Mahwah, N.J.
Canada Iron Corporation, Ltd...Montreal.
Russel Wheel & Fdry.. Co..Detroit, Mich.

Castings, Iron
Allis-Chalmers-Bullock Ltd.Montreal.
Canada Iron Corporation, Ltd...Montreal.
Kerr Engine Co....Walkerville, Ont.
Russel Wheel & Fdry.. Co..Detroit, Mich.

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Edgar Allen & Co., Ltd.Montreal.
Am. Brake Shoe & F'dry Co., Mahwah, N.J.

Castings, Malleable
Galt Malleable Iron Co.....Galt, Ont.
Taylor & ArnoldMontreal.

Castings, Manganese Steel
Edgar Allen & Co., Ltd.Montreal.
Lumen Bearing Co....West Toronto, Ont.
Montreal Steel Works, Ltd.....Montreal.

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W. Kennedy & Sons, Ltd., Owen So'd, Ont.
Montreal Steel WorksMontreal.

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Vandeleur & NicholsToronto.

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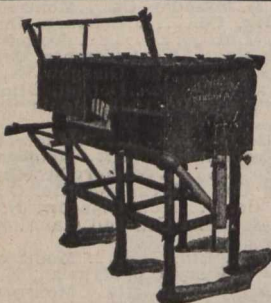
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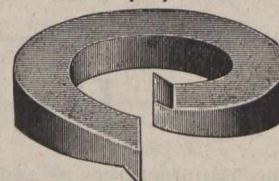
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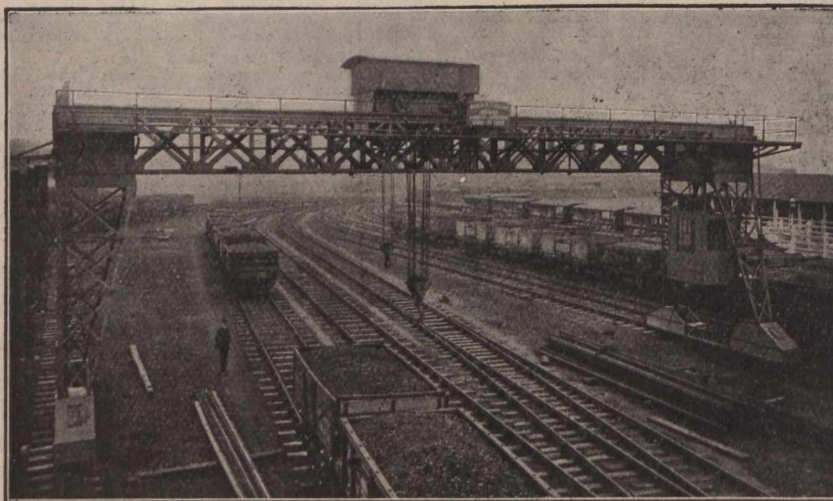
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 Falls Hollow Staybolt Co. Cuyahoga Falls.
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 Baldwin Locomotive Works. Philadelphia.
 Canadian Locomotive Co. Kingston, Ont.
- Locomotives, Rack**
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 Montreal Locomotive Works. Montreal.
- Locomotives, Steam**
 Baldwin Locomotive Works. Philadelphia.
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 Canadian Fairbanks Co., Ltd. Montreal.
 Canadian Locomotive Co. Kingston, Ont.
 Dominion Equip't & Supply Co., Winnipeg.
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 The Males Co., Cincinnati, O.
 Montreal Locomotive Works. Montreal.
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John Bertram & Sons Co. ..Dundas, Ont.
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Brown Hoisting Machinery Co..Cleveland.
- Machines, Logging**
Russel Wheel & Fdry. Co..Detroit, Mich.
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John Bertram & Sons Co. ..Dundas, Ont.
- Machines, Planing and Shaping**
John Bertram & Sons Co. ..Dundas, Ont.
Cleveland Punch & Shear Wks., Cleveland.
- Machines, Radial Drilling**
John Bertram & Sons Co. ..Dundas, Ont.
- Machines, Rivetting**
Long & Allstatter Co. Hamilton, Ohio.
- Machines, Slotting**
John Bertram & Sons Co. ..Dundas, Ont.
- Machines, Straightening**
Cleveland Punch & Shear Wks.Cleveland.
- Machines, Tire Welding**
Long & Allstatter Co. Hamilton, Ohio.
- Machines, Track**
Greenlee Bros. & Co.Chicago, Ill.
- Machines, Tracklaying**
F. H. Hopkins & Co.Montreal.
- Machines, Wood and Iron Working**
Canadian Fairbanks Co., Ltd...Montreal.
Williams & Wilson, LtdMontreal.
- Machine Tools**
John Bertram & Sons Co. ..Dundas, Ont.
Pratt & Whitney Co.Dundas, Ont.
- Manhole Frames and Covers**
American Brake Shoe & Fdry Co.Mahwah.
Canada Iron Corporation, Ltd...Montreal.
- Marine Repairs**
Goldschmidt Thermit Co.Toronto.
- Marine Supplies**
Rice Lewis & Son.....Toronto.
- Metal, Anti-friction**
W. AbbottMontreal.
- Metal, Babbit**
Tallman Brass & Metal Co., Hamilton, Ont.
- Metals**
Goldschmidt Thermit Co.Toronto.
- Metal Work, Structural**
Canadian Bridge Co....Walkerville, Ont.
Dominion Bridge Co.....Montreal.
Montreal Locomotive Works.....Montreal.
Jas. W. Pyke & Co.Montreal.
- Milepost Numbers**
Acton Burrows, Limited.....Toronto.
- Motors**
Canadian Fairbanks Co., Ltd...Montreal.
McCord & Co.Chicago, Ill.
- Motors, Electric**
Allis-Chalmers-Bullock Ltd.Montreal.
Canadian Crocker-Wheeler Co.Montreal.
Chapman & Walker, Ltd.....Toronto.
Northern Electric & Mfg. Co....Montreal.
Vandeleur & NicholsToronto.
- Motor Generator Sets**
Allis-Chalmers-Bullock Ltd.Montreal.
Chapman & Walker, Ltd.....Toronto.
Vandeleur & NicholsToronto.
- Motors, Turntable**
Taylor & ArnoldMontreal.
- Nickel**
The Orford Copper Co.New York.
- Nickel for Nickel Steel**
The Orford Copper Co.New York.
- Numbers**
Acton Burrows, LimitedToronto.
- Nut Locks**
Positive Lock Washer Co. ..Newark, N.J.
- Nuts, Clevis**
Cleveland City Forge & Iron Co.Cleveland.
- Nuts, Square and Hexagon**
Montreal Rolling Mills Co.....Montreal.
Toronto Bolt & Forging Co.....Toronto.
- Oakum**
The Hudson's Bay Co.....
- Office Fittings**
Can. Office & Sch'l Furn. Co....Preston.
- Office Signs**
Acton Burrows, LimitedToronto.
- Oils**
Galena Signal Oil Co..Franklin & Toronto.
- Packing**
The N. L. Piper Ry. Supply Co..Toronto.
- Paints**
R. F. Johnston Paint Co., Cincinnati, Ohio.
- Pile Drivers, Railway**
F. H. Hopkins & Co.Montreal.
Mussens, LimitedMontreal.
- Pinch Bars**
The N. L. Piper Ry. Supply Co..Toronto.
- Pipe, Culvert, Cast Iron**
Gartshore-Thompson Pipe Co...Hamilton.
- Pipe, Gas, Cast Iron**
Gartshore-Thompson Pipe Co...Hamilton.
- Pipe, Sewer, Cast Iron**
Gartshore-Thompson Pipe Co...Hamilton.
- Pipe Stocks**
Butterfield & Co.Rock Island, Que.
A. B. Jardine & Co.....Hespeler, Ont.
- Pipe, Water (Cast Iron)**
Gartshore-Thompson Pipe Co...Hamilton.
- Planers**
John Bertram & Sons Co. ..Dundas, Ont.
- Platforms, Steel**
Standard Coupler Co.New York City.
- Ploughs, Contractors'**
Meaford Wheelbarrow Co., Ltd., Meaf'd, Ont.
Mussens, LimitedMontreal.
- Porter**
E. L. DrewryWinnipeg.
- Powder, Blasting**
Standard Explosives, Limited ..Montreal.
- Preservative for Hose**
Guilford S. Wood.....Chicago, Ill.
- Printing**
Southam PressToronto.
- Propellor Wheels**
W. Kennedy & Sons, Ltd., Owen So'd, Ont.
- Pumps**
Canadian Fairbanks Co., Ltd...Montreal.
S. F. Bowser & Co., Ltd.....Toronto.
Ontario Wind Engine & Pump Co..Toronto.
James Smart Mfg. Co....Brockville, Ont.
Vandeleur & NicholsToronto.
- Pumps, Centrifugal**
The American Well Works...Aurora, Ill.
M. Beatty & SonsWelland, Ont.
John Inglis Co., Ltd.Toronto.
- Pumps, Deep Well, Steam and Power**
The American Well Works...Aurora, Ill.
- Pumps, Fire Pressure**
The American Well Works...Aurora, Ill.
- Pumps, Irrigating**
The American Well Works...Aurora, Ill.
- Pumps, Reclamation**
The American Well Works...Aurora, Ill.
- Pumps, Sprinkler Systems**
The American Well Works...Aurora, Ill.
- Pumps, Underwriters' Fire**
The American Well Works...Aurora, Ill.
- Punches and Shears**
Cincinnati Punch & Shear Co., Cincinnati.
Cleveland Punch & Shear Wks., Cleveland.
Long & Allstatter Co. Hamilton, Ohio.
Williams & Wilson, LtdMontreal.
- Rail Benders, Roller**
Dominion Equip't & Supply Co..Winnipeg.
F. H. Hopkins & Co.Montreal.
Montreal Steel WorksMontreal.
- Rail Drilling Machines**
A. B. Jardine & Co.Hespeler, Ont.
- Rails, new**
Dominion Iron & Steel Co....Sydney, N.S.
Drummond, McCall & Co.....Montreal.
J. T. GardnerChicago, Ill.
J. J. GartshoreToronto.
F. H. Hopkins & Co.Montreal.
Peteler Car Co.Minneapolis, Minn.
- Rails, for relaying**
F. H. Hopkins & Co.Montreal.
J. J. GartshoreToronto.
Mussens, LimitedMontreal.
Provincial Steel Co., Ltd. .. Cobourg, Ont.
Jas. W. Pyke & Co.Montreal.
- Rail Joints**
Goldschmidt Thermit Co.Toronto.
The Rail Joint Co. of Canada...Montreal.
- Rails, Re-rolled**
Provincial Steel Co., Ltd. .. Cobourg, Ont.
- Railway Supplies**
Canadian Fairbanks Co., Ltd..Montreal.
Franklin Mfg. Co.Franklin, Pa.
T. McAvity & SonsSt. John, N.B.
The Hiram L. Piper Co.....Montreal.
The N. L. Piper Ry. Supply Co..Toronto.
Rice Lewis & Son.....Toronto.
Russel Wheel & Fdry. Co..Detroit, Mich.
Williams & Wilson, LtdMontreal.
- Reamers**
Butterfield & Co.....Rock Island, Que.
Cleveland Punch & Shear Wks.Cleveland.
A. B. Jardine & Co.Hespeler, Ont.
- Replacers, Car and Locomotive**
Alexander Car Replacer Mfg. Co.Scranton.
Dominion Equip't & Supply Co..Winnipeg.
The Holden Co., Ltd.....Montreal.
F. H. Hopkins & Co.Montreal.
W. K. Kenly Co.Chicago, Ill.
- Rivets, Boiler, Bridge and Structural**
Montreal Rolling Mills Co.....Montreal.
Toronto Bolt & Forging Co.....Toronto.



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