

# The Railway and Marine World

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## LOCOMOTIVE BOILER CONSTRUCTION AT THE CANADIAN LOCOMOTIVE CO.'S WORKS.

By FREDERICK H. MOODY B.A.Sc.

Probably every reader of this article if he stops but a moment to consider, will agree that of all the branches of the metal working industries, less change has taken place recently in the art as applied to boiler making than to any other branch. The tools, with but few exceptions, are almost exactly the same as those developed years ago in old country naval yards for ship-plate and marine boiler work. The one prominent exception to this lack of development is that of the advent of the pneumatic tool as a handy and indispensable adjunct of the boiler shop for rivetting and chipping purposes.

Various reasons may be assigned to this seeming lack of improvement, the most prominent of these being the fact that plate-working machinery reached a high stage of perfection years ago, leaving less room for improvements—different from the case of machine tools where the introduction of high-speed steels practically revolutionized the industry.

The outcome of the few changes in boiler shop equipment has been that boiler shops in general have had a marked tendency to deteriorate from every standpoint, with the possible exception that quality of production has probably remained at the same steady point. The high quality of work which many of these old-time shops were capable of producing, is worthy of particular note.

Within the past few years, some remarkable changes may have been noticed. Throughout Canada, nearly all the leading boiler-making plants have been entirely rebuilt on a larger scale. From a production equipment standpoint, the shops are much the same as ever, the big change occurring in the layout, and general facilities for the expeditious handling of the material in a more systematic manner, the routing of the boiler through the shop being more or less automatic, making possible much more rapid production.

Such is the case of the Canadian Locomotive Co. at Kingston, Ont. This company, which has always been noted for the high quality of its product, was, until within the last couple of years, handicapped in the rapid production of work by an old-fashioned shop, which, while well equipped, was not designed according to a Taylor or any other system where rapid and at the same time efficient, production is the principal feature.

The demand for locomotives having increased to such an extent as to make the old plant inadequate, it was finally decided to build a new shop of the latest and most modern design, equipped with the very best machinery and appliances of all kinds, it being necessary to maintain the high reputation for quality while at the same time decreasing the cost of the output.

### DESCRIPTION OF PLANT.

The Canadian Locomotive Co.'s plant

is located on the Kingston waterfront. Previous extensions to other departments of the business having absorbed most of the available property, a wide pier was built out into the water, the outer end of the new locomotive boiler shop being located on this made land.

A comprehensive view of the main part of the boiler shop is given in fig. 1, a view looking from the outer end of the shop toward the main portion of the works. The section shown in the illustration is 380 by 60 ft., with a height of 35 ft., and is of the typical all-steel, trussed-roof shop construction, excellent lighting being obtained from very large windows. The blank part of the wall is

rivetter. It is of the Chambersburg Eng. Co.'s manufacture, with a throat depth of 14 ft. and 4 ft. 6 in. gap, and having a controlled range of pressures up to 225 tons for the large size rivets. The working pressure is about 100 lbs. Alongside is located the pump and accumulator, both being sufficiently large to supply a hydraulic flanging press and small hydraulic riveter as well. The latter is located alongside the large one.

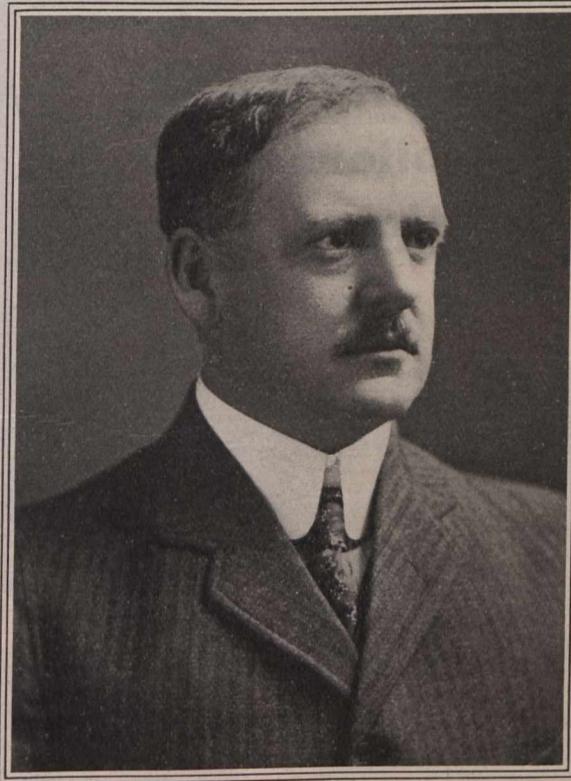
To the left, just out of the picture, there is a twin punch, each punch being supplied with a small jib, one of which shows in the photograph. Along the left wall, just visible in the picture, there is a large plate-trimming planer. The immediate foreground is the lay-out floor. Along the right wall, there are a couple of radial drills for tube-sheet work, and also a flange punch. Along the left wall there are a couple of cold cut-off saws. One of the finest pieces of the equipment is the large Hills & Jones roll in the middle foreground. This has rolls 22 ins. diameter, capable of bending plate up to 1½ in. and is driven by a 60 h.p. motor. It is of a modern design, capable of bending plate from the very edge. The construction consists of two rolls in vertical ways, between which the plate passes, with a third or bending roll set in ways at an angle to the perpendicular. The nearness of this third to the other rolls determines the curve. But few of this type of roll are to be seen in boiler shops. The background in the photograph is the erecting floor.

The flanging shop addition already mentioned, contains, as shown in fig. 2, a large flanging press, plate-heating furnace and flanging forge.

### CONSTRUCTION WORK.

The main feature of this article, i.e., the actual construction practice as followed by this company under the supervision of W. J. Robinson, Boiler Foreman, is next to be dealt with. As the initial step, the various plates entering into the boiler make up, are laid out in that section of the shop in the immediate foreground in fig. 1. On being laid out, they are all brought to the near end of the shop by the cranes to a convenient position for the jibs at the punches, which are located to the immediate left as before mentioned, to pick up. All plate work that has any flanging, is carried across to the right by the crane, and deposited in the flange shop. All other plate work is carried back down the shop to the edge-trimming planer.

Consider first the flanging operations: The piece operated on in fig. 2, is the front tube sheet. These sheets come from the mill in circular form, so that up to this stage they require no work in the boiler shop. The heating furnace and arrangement for transferring to the flanging press are well designed for quick work. The furnace doors, operat-



George Bury,

Vice President and General Manager, Western Lines, Canadian Pacific Railway.

made up of wood sheathed outside with tin, presenting an imitation brick surface. To the right of the part shown, there is a flanging shop, 48 by 45 ft., built on as an addition. This shop forms a part of the boiler shop with no intervening wall, and is of the lean-to type of construction.

The boiler shop proper is supplied with two 35-ton Shaw electric cranes as indicated, these being more than sufficient for all needs. They are of sufficient capacity to lift the heaviest boiler and carry it bodily down the shop to the large hydraulic rivetter at this end of the shop, the photograph, fig. 1, being taken from the platform of this

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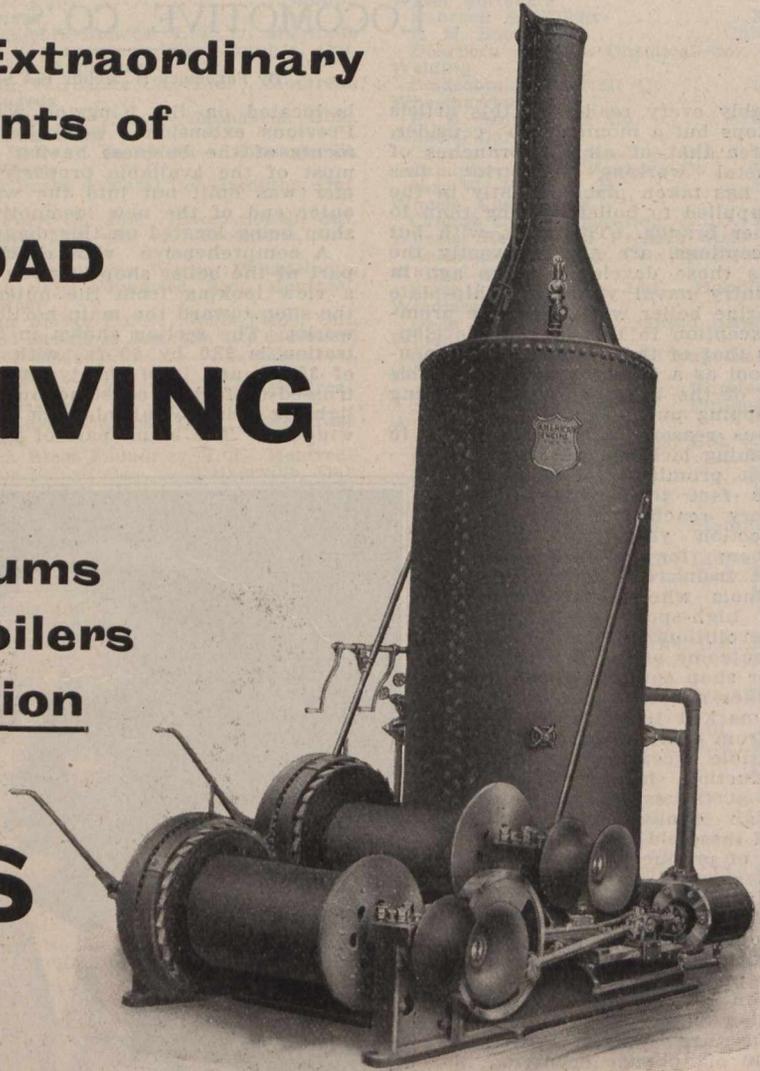
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ed by air, are controlled by levers located with the flanging press levers to the rear of that machine convenient for the operator. The heated plate, pulled out by hooks from the furnace on to a simple metal stand, is lifted with special hoop hooks by an air hoist on an I-beam track, running across to the flanging press. The plate is here dropped on to a couple of rollers, and shoved on to the lower clamping plate of the press. This plate is then raised by the operator, lifting the tube sheet up and clamping it

of dies for many parts on boilers of varying sizes, have been made from time to time.

Quite a number of sizes of dies have been made for hydraulically flanging the sides of the throat sheet. Where this is possible, the flange can be made in one heat. In the case of the throat sheet shown in fig. 3, which is one of an order of six boilers, it was considered inadvisable to make hydraulic dies, so only a single block of the requisite shape is made for the flanging operation. The sheet, originally flat, trimmed to

desired diameter. In the case of the barrel, the various straight and tapered courses after being thus punched and rolled, are fitted together on the floor in their proper relation to each other and held together as a unit by bolts in the circular seams and along the lapped seams. The front tube sheet is also bolted up into this barrel section. When thoroughly bolted together the whole unit is carried down the shop to the hydraulic rivetter, where the 20-ton hydraulic crane over the rivetter raises the barrel into position for rivetting, all

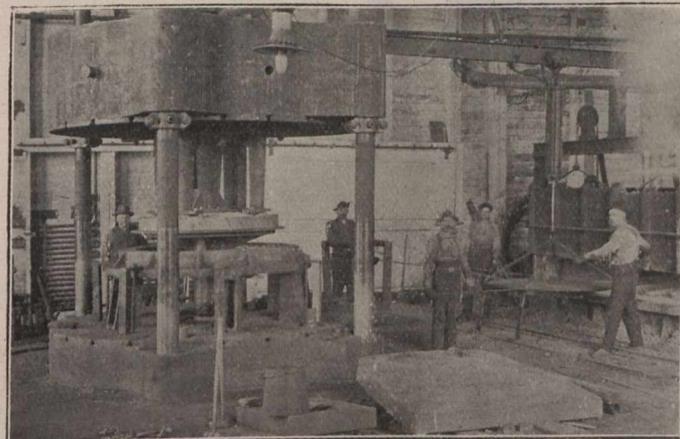
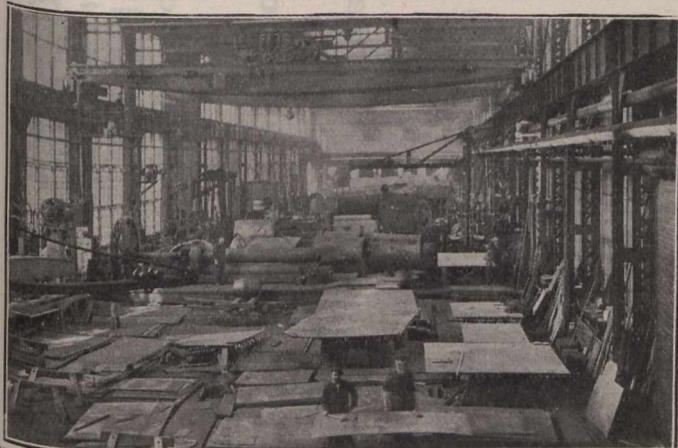


Fig. 1—View of Boiler Shop, looking from Outer End towards the Assembling and Erecting Floors.

Fig. 2—Arrangement of Heating Oven and Hydraulic Flanging Press.

to the upper clamping plate, the male part of the die, secured to the upper tube of the press by bolsters. The female part of the die, supported on bolsters on the lower table, is forced up over the projecting edge of the tube sheet by the whole lower table being raised; this forms the flange. The table and clamping plate are then lowered, plate removed, and the operations repeated. The action being familiar to all, requires no further description. The flanged edge and tube sheet are next laid out and the sheet taken first

the correct size, after being laid out to be punched for the barrel-flange fit, is removed to the punch for this purpose. From there it goes to the rolls, where the bends are given to it, and it is then brought on to the flanging shop. One edge at a time is heated in a flange fire, and in from four to five heats the flange is formed, all the work being done by the sledge hammer. In fig 3, the plate is shown fresh from the flange fire in the background, after the third heat. The sheet is brought across by a crane running on an I-beam. It is lowered on to the flange block and located by

the barred rivets being thus inserted. This process of forming the barrel is often slightly varied, depending on the way the different parts are advanced. The different courses may be independently butt strapped, and these courses then rivetted together. The process is but slightly affected by such changes in the routine.

Every plate as it leaves the rolls, is carried further on down the shop. Such is the case of the outer wrapper shown in fig. 4. The operations carried on in this position, are those of fitting the corners of the throat sheet and face

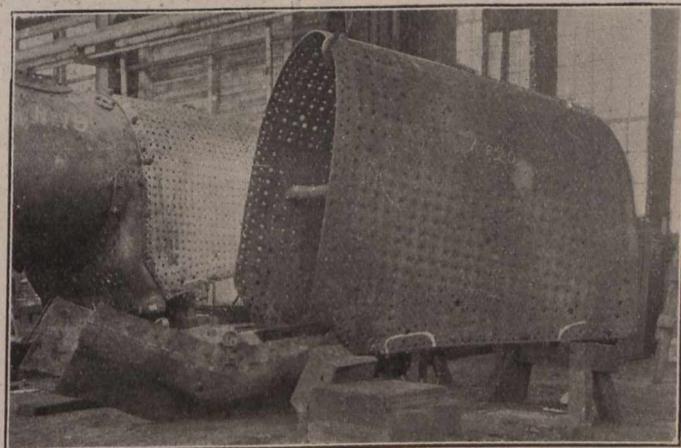
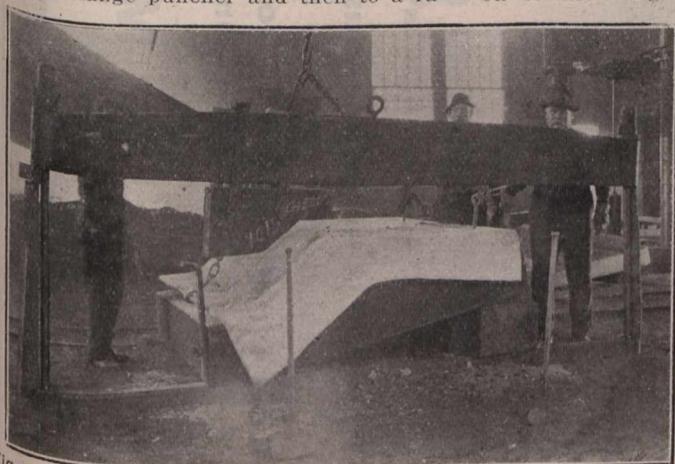


Fig. 3—Side-flanging a Throat Sheet by Hand on a Formed Flanging Block.

Fig. 4—Operation of Fitting Throat Sheet and Face Sheet Corners to Mud Ring.

dial drill to have the tube holes drilled. The art of using the flanging press for all kinds of flanging work has been developed to a high degree, a wide range of dies having been made for flanging up various parts of the boiler, such as tube sheet, face sheet, back sheet, back tube sheet, throat sheet, steam dome and the various pipe flanges. It is a question that only the condition of the order can decide, the question of whether or not the order contains enough locomotives to make it pay to make the necessary pair of dies for the press. This question has been settled so often in the affirmative that a large collection

pins dropped into two previously laid out and punched holes in the sheet, which register with similar holes in the block. The man to the right is shown inserting one of these pins. The clamp beam is quickly lowered by knocking out supporting end blocks, and tightening down the nuts on the guiding bolts. The four men in shifts of two, gradually hammer down the flange as desired. The flange for the barrel fits is similarly formed when no hydraulic dies exist.

The various component sheets of the boiler that require bending, after being laid out and punched, are taken to the rolls before referred to, and bent to the

sheet to the mud ring. The mud ring finished and drilled in the machine shop, is placed on low horses, and the outer wrapper bolted to it as indicated. The throat sheet, placed on the ground in front of the wrapper, is swung up into position with regard to mud ring and wrapper, and clamped there. The throat sheet has no holes in it up to this point, the reason for which will be explained presently. An oil torch directed against the corner of throat sheet where it fits over the mud ring, heats it to a working heat. This is done that the throat sheet may be worked directly into the exact shape on the mud

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ring over which it is to fit. Both corners are similarly treated, insuring a close fit. The face sheet, which, after flanging, is laid out and punched, is bolted into location on the mud ring and also tied to the latter by working hot.

The next step contains what is probably the most ingenious device in the whole process of manufacture and assembly. This device is the assembling stand shown in fig. 5, the next stand down the shop from that in fig. 4. The barrel completely rivetted up, is hori-

previously occupied by the preceding boiler parts.

The barrel, wrapper and mud ring are thus far exactly located with regard to each other. Customarily in locomotive boiler practice, the throat sheet, like all the other parts, is independently laid out from scale. The practice of this company is different in this particular. The multiplicity of joints occurring around the throat sheet, and the fact that the throat sheet is an awkward piece to lay out accurately to scale, all tend to introduce errors, so that if each

rivetted up in the usual manner, is loosely slipped into position, the boiler meanwhile lying on its back in the stand. The next step is that of putting in the face sheet and rivetting around the outside seam. This is done on the same stand. From the narrowness of the water leg, this rivetting is rather difficult, but is accomplished with a pneumatic rivetting hammer and long holding-on block. The rollers make it very convenient, during this operation, turning the boiler to the most convenient location.

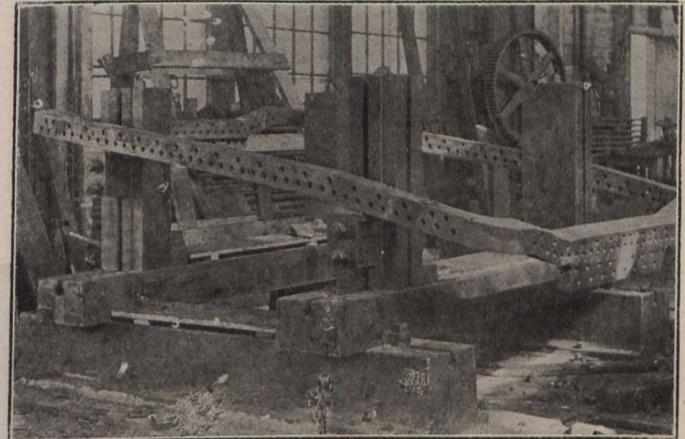
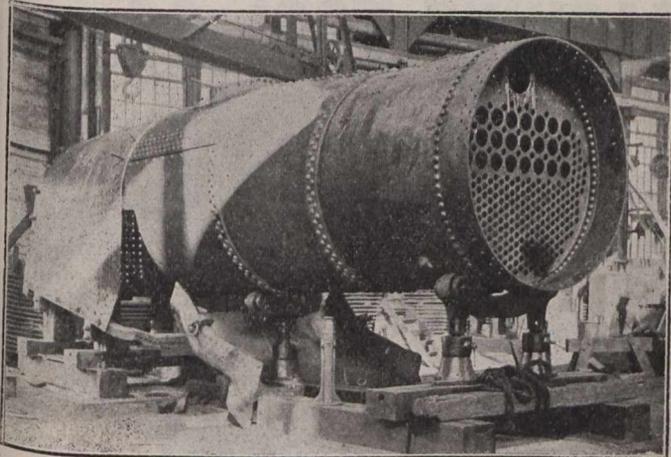


Fig. 5—Assembling Stand for Accurately Locating the Boiler Units.

Fig. 6—Detail View of Rear Part of Stand which supports Mud Ring.

zontally located on the two roller stands shown in fig. 5. These stands are vertically adjustable, being constructed like screw jacks. Both these stands are rigidly located on a concrete base, both having lengthwise adjustment and the front one crosswise as well. These adjustments accommodate all sizes.

The rear section of the assembling stand of fig. 5, is best shown in the closer view, fig. 6. Two stands parallel with the boiler centre line on a concrete base, carry longitudinally adjustable cross-beams on which are vertical supports, adjustable crosswise. Each

were independently made, punched and rivetted together without further fitting, the boiler might not line up properly. The method here used overcomes this. The blank throat sheet is slipped under the boiler on the stand, as shown in fig. 5, and fitted up in to its proper location with regard to its three joining members, and clamped in that location while the holes are laid out on it from the previously punched holes in the assembled pieces. The throat sheet thus laid out, is removed, punched and put back in location. The matched holes are then reamed as with all other joints.

The boiler is then rolled on its back again and the mud ring slipped into place in the bottom of the water leg, and securely bolted all around. Fig. 7 shows all this completed.

The boiler is then lifted bodily to the next stand shown in fig. 8. This stand is similar to the last one, only to facilitate working, the whole is lowered into a shallow pit. Overhanging this and the next stand, there are two jib cranes. For this stand, the jib supports the air rivetter for rivetting the mud ring into place. In this same location, the fire-door is rivetted up. It frequently so

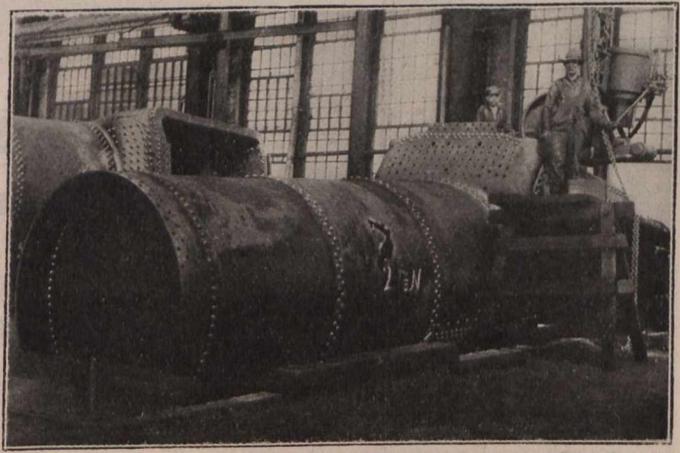
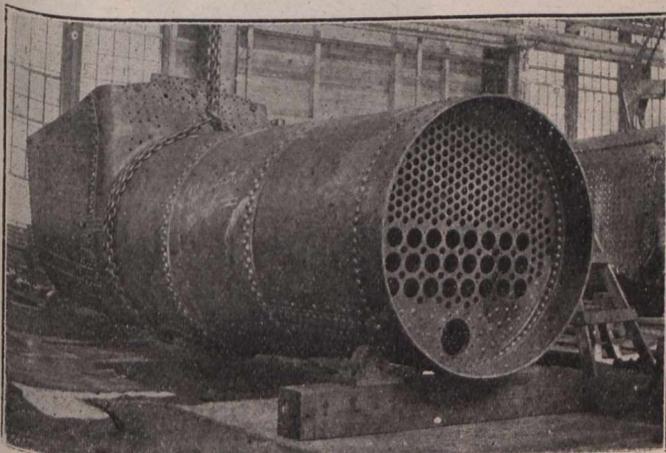


Fig. 7—Boiler on Stand after Face Sheet and Mud Ring are put in place.

Fig. 8—Pit Stand where Mud Ring is Rivetted and Firedoor Opening Fixed.

of these four supports carries a vertically adjustable bracket. Through the various adjustments, the mud ring may be located in its exact location with regard to the previously located boiler barrel, both vertically and crosswise. The outer wrapper is then slipped over the mud ring and bolted to it. The wrapper and barrel are then dowelled and bolted together. The advantage of this type of assembling stand is that once the first boiler is properly adjusted, the following boilers on the same order will slip into place without further adjustment of the device, dropping the parts into the same locations as those

The whole structure is then securely bolted together as a unit, when, after loosening from the mud ring, the barrel, wrapper and throat sheet are taken to the hydraulic riveter. This is as far as the hydraulic riveting can be carried, and is more than can commonly be obtained, the system of assembling making it possible.

The next step is that of putting the fire box in place. The boiler being through with the assembling stand after hydraulic rivetting, is placed on the next stand, as in fig. 7. This stand consists of rollers secured to wooden beams, the latter resting on concrete bases. The firebox, previously assembled and

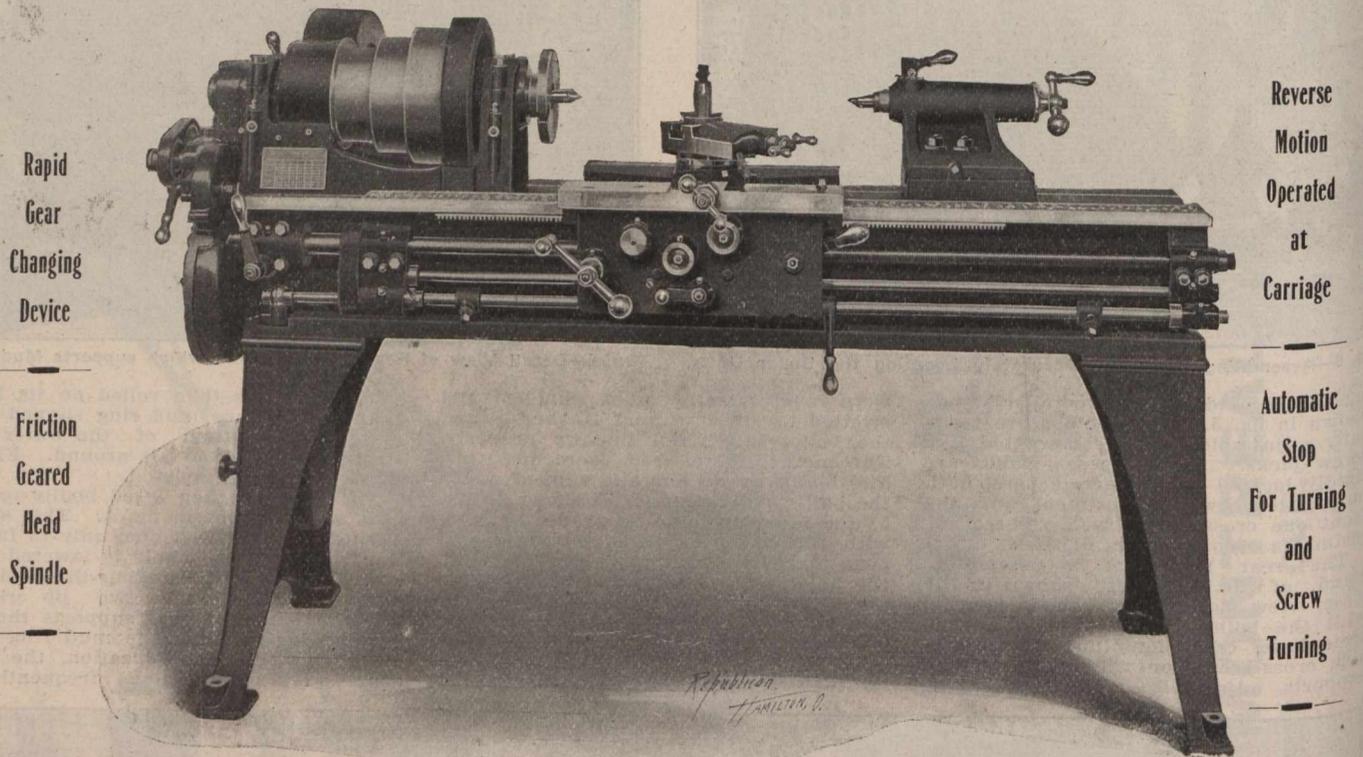
happens that the fire-door projection for the back sheet does not fit the opening in the face-sheet, so that the oil heater is again impressed into service and the inner opening stretched out to fit the outer, when the two are rivetted together.

The boiler is now moved on to a stand similar to the one previous to the last, as indicated in fig. 9. In this position, all the staybolt holes are tapped by air motor, the staybolts screwed in, and the heads cut off by the air clipper shown at work in fig. 9, supported from a jib. The staybolts are then rivetted over with a hand hammer and finally gone over with an air hammer. In this lo-

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ation, all the flexible staybolts are also inserted. Likewise many of the boiler trimmings, such as pipe flanges, are fitted on.

On the completion of these steps, the boiler is moved on to the next stand, which consists of two wooden horses. In this stand, the boiler is kept in a vertical position. Here, the smoke-box is rivetted on, smoke-box trimmings

ished pieces, seldom covered the same ground twice, everything gradually working from the lay out floor at the far end of the shop, up to the erecting floor end. By the adoption of some such system as the one just described the operating costs of a plant are very materially reduced, the handling of the material from point to point being reduced to a minimum. The manage-

ably attached; these may be secured in any desired position by the nuts shown, these nuts passing through a wooden jaw and holding plate. Radial movement of the bolt is permitted by slots in this piece C. To force out the jaws on the piece B, there is a cone-shaped piece on a bolt in the same line as the motor stem, but invisible in the photograph, being inside of the pipe bearing

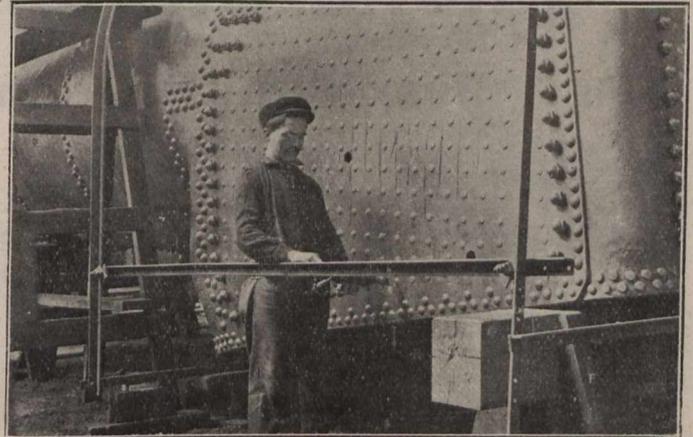
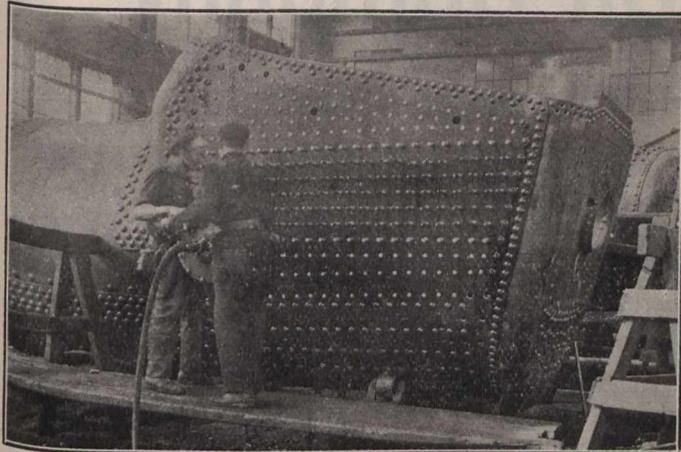


Fig. 9—Stand where the Boiler receives all the Staybolt Operations.

Fig. 10—Drilling Safety Holes in Staybolts with Simple Stand.

added, tubes inserted and beaded and the safety holes drilled in the staybolts in the manner indicated in fig. 10. The device for this consists of two hoop structures over the firebox with a cross piece between, against which the breast drill bears.

The boiler is now completed and is moved on to the next, which is the testing stand. Here all the pipe fittings and connections are attached, and the boiler subjected to a specified hydraulic pressure. This pressure is obtained by a powerful injector.

This end of the shop where the boiler

ment is to be congratulated on producing such a well designed shop.

**Steam Pipe Kinks at the Pere Marquette St. Thomas Shops.**

The idea of securing the throttle valve stand pipe while grinding in the valve, as shown in fig. 1, is due to H. Francis, who uses it for the purpose mentioned in the Pere Marquette Rd. shops at St. Thomas, Ont.

Ordinarily, the standpipe is stood up in some corner while the valve seats are being ground, a rather shaky support being thus obtained. When the operator tests the tightness of the fit, he is often unable to determine whether the "wobble" is due to the valve seats not being correct, or to the insecurity of the standpipe. This difficulty led Mr. Francis to devise this simple clamp. Two eye-bolts A pass through the brick wall on one side of the erecting floor, and are securely bolted, the eyes being on the inner side. Each of these longer eye-bolts has a shorter one, B, which hold the vee-clamp C over the stand pipe, tightening it up against wooden vee-blocks on the wall, securely holding the pipe. The standpipe being thus properly secured, it is quite possible to trace any looseness to its only cause—the poor fit of the valve seats. In addition to this advantage, the standpipe is made much more convenient for working upon.

Another kink, as developed by Mr. Francis, for use on the steam pipe, is illustrated in fig. 2. The Pere Marquette, like a few other roads, instead of casting the ball joint of the smoke box steam pipe integral with the end of the steam pipe, finishes the end of the pipe flush, and grinds a piece to this surface, this ball-joint piece having the ball face to give the ball and socket contact. This detachable piece is the piece A in fig. 2. The operation shown is the grinding together of this piece to the face B of the steam pipe.

To facilitate operations, a hole has been cut into the floor, into which the pipe is set on end. This feature is worthy of notice, as the curved pipe when stood up elsewhere always proved a menace to the workman's limbs. In this hole, the pipe is properly secured. The principal point in the device is the chuck for holding the ball piece A. It consists of a steel plate C, to which three wooden jaws D are slid-

on the inside of the jaws. A thumb nut on the bolt tightens up the cone, forcing out the wooden jaws. This makes a much neater and handier rig than is commonly used for such jobs.

J. Ellis Barker, writing in the Nineteenth Century, says, the average income of railway workers, exclusive of station masters, inspectors and clerks is \$5.62 in England and Wales, \$5.36 in Scotland and \$4.46 in Ireland.

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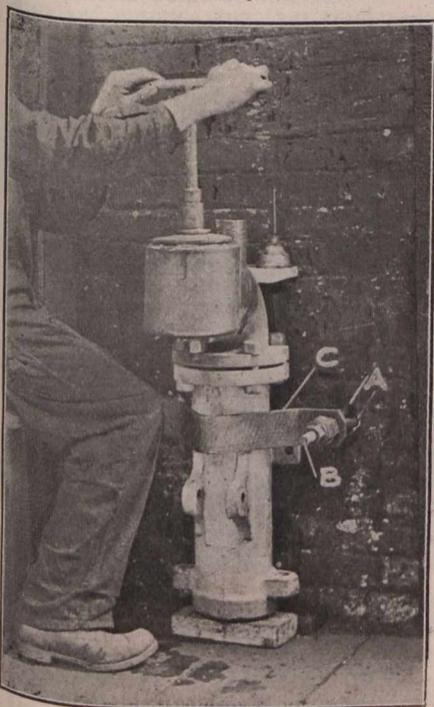


Fig. 1.—Throttle Valve Stand Clamp used in Valve Grinding.

is now located, is next to the erecting floor over to which it is now passed, to be built into the completed locomotive.

**SUMMARY.**

What impressed the writer most particularly in the gathering of this information, was the system that entered at every step. The reader will, no doubt, have noticed how the material and fin-

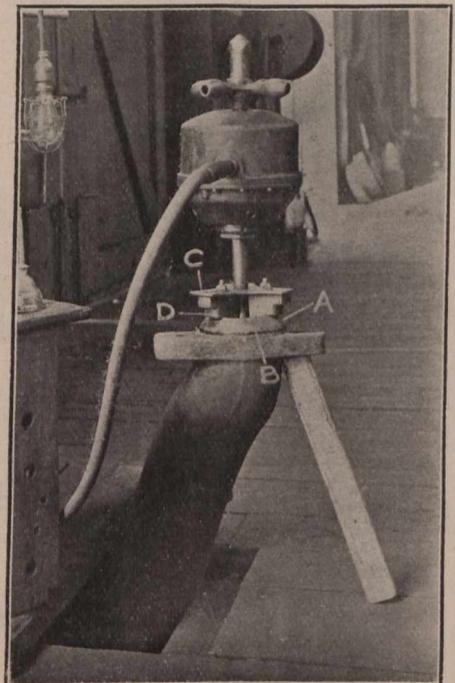


Fig. 2.—Grinding the Ball Seat in the Smoke-Box Steam Pipe.

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Canadian Pacific Ry. grants .....	1,281.46
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shown at B, fig. 1. This gave no record of the forcing pressures used except those that were taken down for various points in the path of motion of the plunger while under pressure. To determine the degree of increment of pressure, or the uniformity with which the wheel is forced on, these noted pressures must needs be plotted if any correct knowledge of the quality of the fit be desired. If the resultant line be practically straight and inclined to the horizontal, it shows that the diameters of fit are uniform and that at no particular point of the forcing-on period does the load do anything but uniformly increase.

movement being directly proportional to the hydraulic pressure applied. Through the system of multiplying levers the movement is conveyed in a straight line, vertical motion, to the pen D pressing against the paper. The relative movement of the roll of paper over the plane surface, and the upward movement of the pen, traces a line indicative of the pressures in the press for every point on the path of the wheel on to the axle. Such a curve is clearly shown in fig. 2. This card would indicate that the quality of the fit is good, as a straight line is traced. The sectioned paper being adapted to the gauge calibration, the exact pressure at any

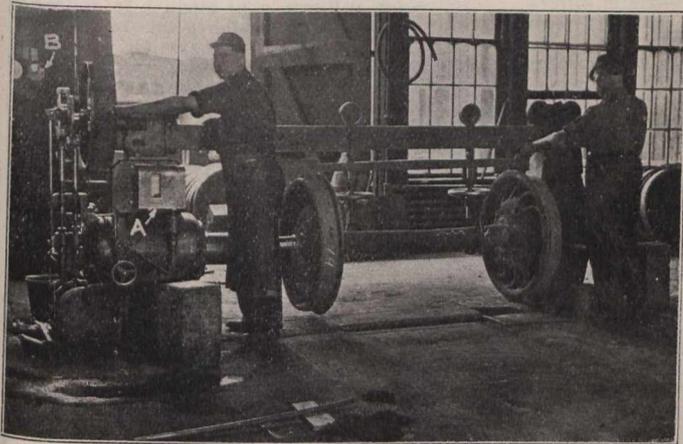


Fig. 1.—Car Wheel Press with Recording Pressure Gauge.

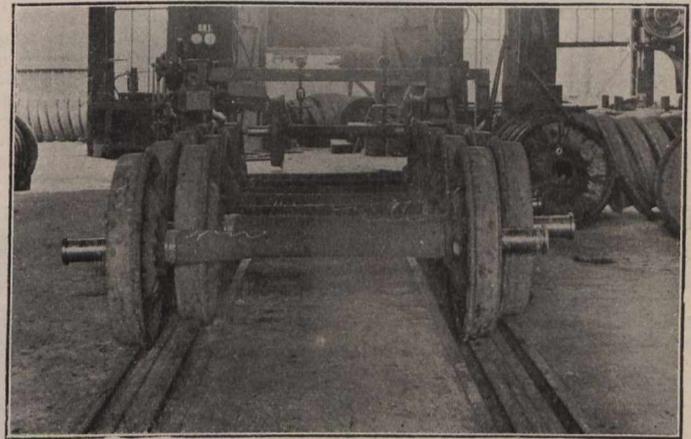


Fig. 4.—Track for Wheels Leaving the Press.

An ordinary hydraulic wheel press is employed for pressing on the wheel, the operation being shown in fig. 1. Two or three minor kinks in the loose assembling of the wheels and axle, before placing in the press were noticed, which, while good in themselves, are not of sufficient value to illustrate.

The main point of difference between standard practice and that employed by the M.C.R. in the actual pressing-on operation, is the introduction of a recording pressure gauge to the ram end of the press, as shown at A in fig. 1. In common with all railways, the M.C.R. has drawn up tables of pressures required for forcing on wheels whether cast iron, wrought iron or steel. These tables are given herewith; the maxi-

The recording gauge used is shown in fig. 2. A roll of section paper A passes over a plane surface B, winding from one roll to another, the paper receiving a motion to the left directly proportional to the movement of the car wheel over the axle hub during the forcing-

point may be directly read off. The paper as it passes on to the receiving roll, has the number of the car wheel written on it by the operator, thereby forming a record for future purposes. This makes it impossible for an imperfect fit to pass the foreman, the recording gauge curves being there for his inspection at any time.

The manner in which the gauge is connected up is indicated in fig. 3. The string A, passing over several small

TABLE I.—PRESSURES FOR CAST IRON HUBS

DIAMETER OF FIT, INCHES	FORCING PRESSURES—TONS			Variation
	Minimum	Maximum		
2½ - 2¾	12	22	10	}
3 - 3¼	16	26		
3½ - 3¾	20	30		
4 - 4¼	24	34		
4½ - 4¾	28	38	11	}
5 - 5¼	31	42		
5½ - 5¾	35	46		
6 - 6¼	38	50	12	}
6½ - 6¾	42	54		
7 - 7¼	45	58	13	}
7½ - 7¾	49	62		
8 - 8¼	52	66	14	}
8½ - 8¾	56	70		
9 - 9¼	59	74	15	}
9½ - 9¾	63	78		
10 - 10¼	67	82		

TABLE II. PRESSURES FOR CAST STEEL AND WROUGHT IRON HUBS

DIAMETER OF FIT, INCHES	FORCING PRESSURES—TONS			Variation
	Minimum	Maximum		
2½ - 2¾	15	25	10	}
3 - 3¼	19	29		
3½ - 3¾	24	34		
4 - 4¼	28	38		
4½ - 4¾	33	43	11	}
5 - 5¼	36	47		
5½ - 5¾	41	52		
6 - 6¼	44	56	12	}
6½ - 6¾	49	61		
7 - 7¼	52	65	13	}
7½ - 7¾	57	70		
8 - 8¼	60	74	14	}
8½ - 8¾	65	79		
9 - 9¼	68	83	15	}
9½ - 9¾	73	88		
10 - 10¼	77	92		

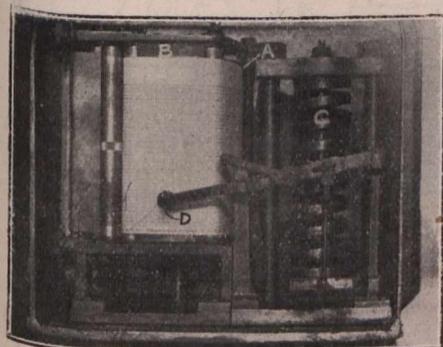


Fig. 2.—Mechanism of the Recording Pressure Gauge.

imum and minimum pressures for forcing the wheel on are listed, the variation between maximum and minimum being also tabulated. These figures for the maximum pressure are based on a fit pressure of 8 net tons per inch of diameter of the fit for cast iron, and 9 tons for cast steel and wrought iron. The diameter used is the mean of the two diameters given in the fit column.

Before the use of the recording pressure gauge, the pressures were obtained by two indicating gauges arranged on the wall some distance away as

on period, the movement being obtained through a string from the plunger attached to small gears in the bottom of the gauge drawing the paper between two knurled rollers. The arrangement on the machine is shown in fig. 3.

Referring again to fig. 2, the hydraulic pressure acting under the heavy coiled spring C compresses the latter, the

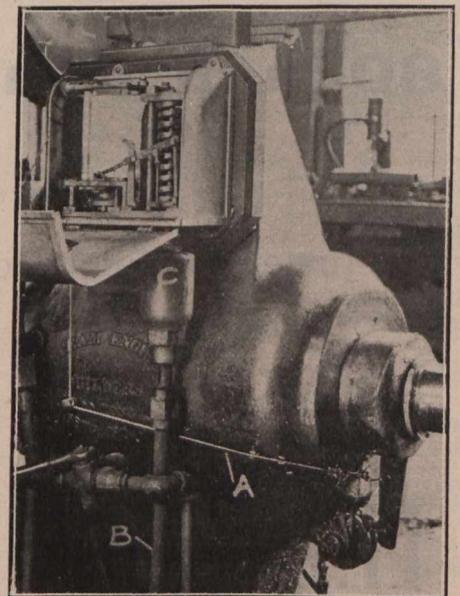
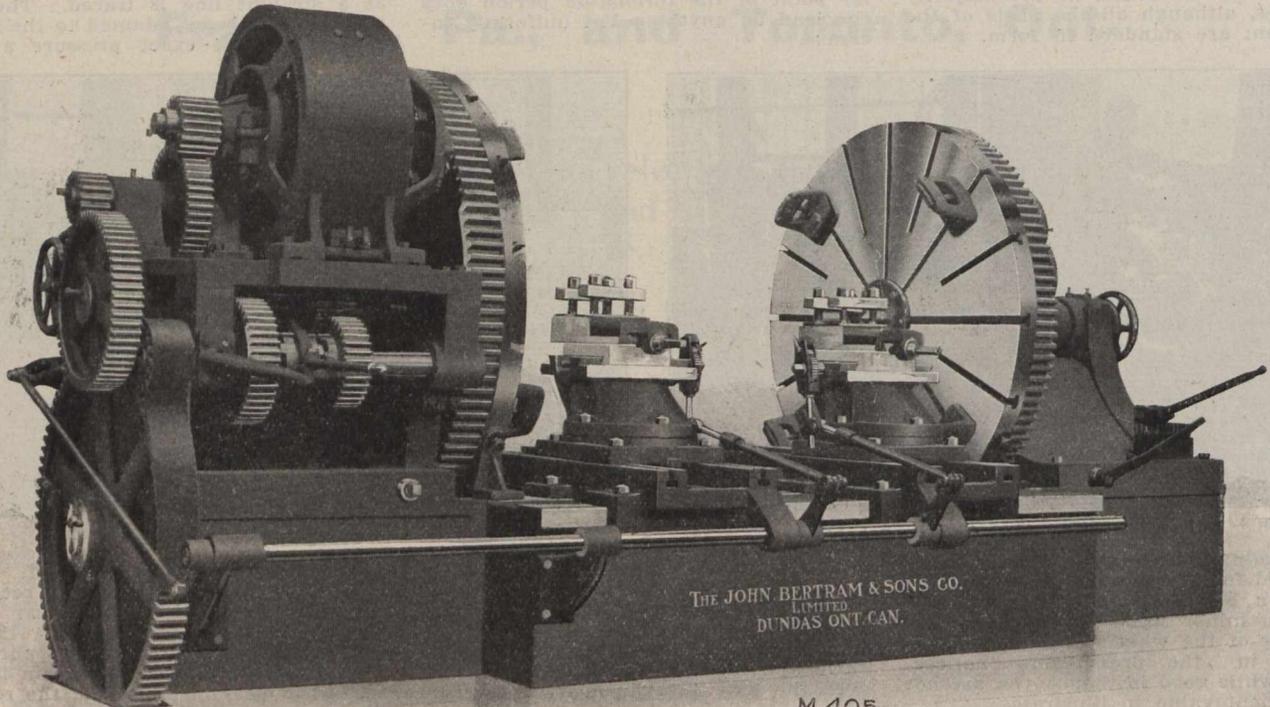


Fig. 3.—Recording Pressure Gauge Mounted on Press.

sheaves, gives a motion to the paper roll the same as that of the plunger. A ratchet attachment on the paper-roll-carrying drum, prevents the roll running back, all motion being ahead. A pipe, B, leading directly from the ram cylinder, delivers to a small cylinder C, in which the plunger compressing the



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gauge spring is attached. The arrangement is very simple and complete.

As part of the wheel mounting operation considered as a whole, it is interesting to note the wheel storage arrangement for the mounted wheels and axles as they leave the press. This is shown in fig. 4. It is customary in car wheel shops to merely run the wheels out on to the floor on completion which does not allow of a very orderly or compact arrangement. In the M.C.R. arrangement, two standard tracks are laid as indicated, just sufficient space being allowed for the wheels to clear each other. This arrangement has a twofold advantage it is possible to store a large number of wheels in a smaller space on account of the overlapping; and the fact that the wheels are on rails makes it possible for the operators to merely place the completed wheel on the rail, give a slight shove, and it will run some distance of its own momentum, whereas, without a track, the workman would have to shove the wheel to the place where it would be required.

**Hot Punch for Hexagon Nuts at the Michigan Central St. Thomas Shops.**

For the production of hexagon nuts under the drop hammer, John Sumner, the toolmaker at the M.C.R. shops at St. Thomas, Ont., has designed and built a die and necessary punches, all illustrated and described herewith. The idea was to construct a tool so that rectangular bar stock of a width equal to the hexagon flats, and a thickness equal to the nut thickness, might be employed. This has been successfully accomplished.

Fig. 1 shows the construction of the body and main part of the die, while figs. 2 to 4 show the main and auxiliary punches in the successive stages of operation; the same lettering is used in all four figures. As the illustrations show, the body consists of a steel block A, capped with a plate B, and having inserted in the bottom an annular die ring made of hardened steel. The block

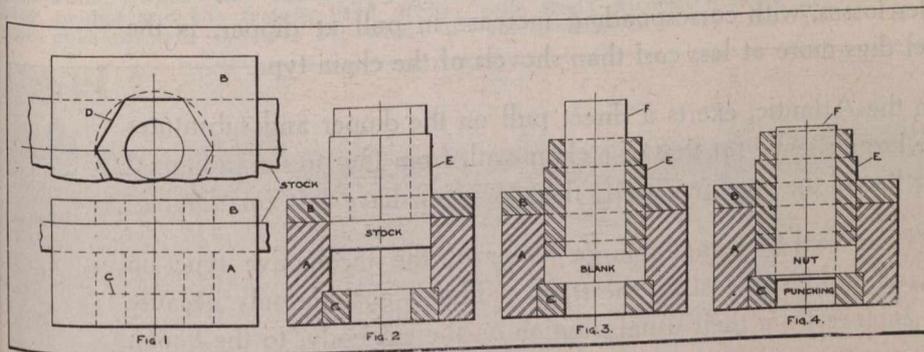


Fig. 1 to 4.—Hot Punch for Hexagon Nuts in Successive Stages of Operation.

A is grooved the width and depth of the stock, the cap B forming a passage through which the stock is fed. Through both body A and cap plate B, there is a hexagonal hole D extending down to the inserted ring C.

Preparation for the first operation is shown in fig. 2. A hollow hexagon punch E, the size of the nut to be punched, is placed in the hexagon opening in the cover B on top of the stock. A blow from the steam hammer punches out a nut blank as indicated in fig. 3, the blank resting on the ring C. A round punch F, of the requisite size to leave stock for thread in the nut, is next placed in the corresponding opening in the hexagon punch E. Another blow from the hammer forces this blank centre punch-

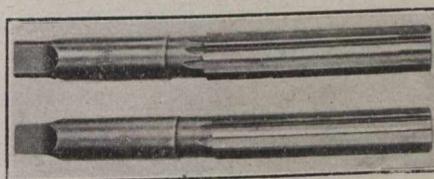
ed nut as indicated in fig. 4. By removing the die ring C, which is made to fit loosely, the complete nut may be removed. The two punches are then removed, the ring C replaced, and the tool is ready for further use.

This tool is not as rapid as hot nut pressing machines, but is especially useful in shops where the quantity of work to be produced is not sufficient to require such a machine.

**Straight Reamers at the Michigan Central St. Thomas Shops.**

While slightly foreign to railway work proper, the matter of tools and equipment is of sufficient importance to be considered at all times as bearing directly on the quality and quantity of production. In both classes can be considered the straight reamers made at the M.C.R. shops at St. Thomas, Ont., by John Sumner, the toolmaker.

Long tapered reamers with chip



Thread-Ended Straight Reamers.

breakers have been known in the machine tool industry for years, and are, in fact, a standard product which can be purchased in the market. These M. C. R. reamers are on the same principle.

Straight reamers are often entered into their holes with difficulty, especially if much stock has been left for the reamer to remove—which is more often the rule than the exception in railway practice. Also, on account of the forcing necessary, the mouth of the hole tends toward an oval shape unless extreme care is exercised.

These reamers indicated in the illus-

tration, are very simply made. They are merely the standard straight reamer with an ordinary flat top V-thread cut on the end of the reamer for a distance of upwards of an inch back from the point. This thread makes it possible to enter the hole easily, and the thread running up the reamer sufficiently far, straightens the reamer in the hole. By its use, it is a simple matter to make a perfect reamed hole.

During August, 23 employes were killed, and 27 were injured in the course of their work in connection with Canadian railways. Of the fatal accidents, 10 were due to being run over, nine to collisions, two to falls from locomotives, one to being struck by a train, and one to a driver jumping from his locomotive and receiving fatal injuries.

**Birthdays of Transportation Men in November.**

Many happy returns of the day to—  
J. O. Apps, General Baggage Agent, C.P.R., Montreal, born at Tara, Ont., Nov. 9, 1877.

A. B. Atwater, Assistant to President, lines west of Detroit and St. Clair Rivers, G.T.R., Detroit, Mich., born at Sheffield, Ohio., Nov. 1845.

G. B. Burchell, General Manager, Maritime Coal Ry. and Power Co., Joggins Mines, N.S., born at Sydney, N.S., Nov. 1, 1877.

J. R. Cameron, General Superintendent, Canadian Northern Ry., Winnipeg, born at Truro, N.S., Nov. 5, 1865.

L. D. Chetham, City Passenger Agent, C.P.R., and District Passenger Agent, Esquimalt and Nanaimo Ry., Victoria, born at Matlock, Eng., Nov. 5, 1869.

F. H. Clendenning, District Freight Agent, B.C. Coast Service and Trans-Pacific Steamships, C.P.R., Vancouver, B.C., born at Montreal, Nov. 9, 1881.

F. Conway, acting General Superintendent, Kingston and Pembroke Ry., Kingston, Ont., born at Ernestown, Ont.,  
W. L. Crighton, Advertising Agent, Intercolonial Ry., Moncton, N.B., born at Derby, Eng., Nov. 9, 1871.

W. Cuthbert, Fuel and Tie Agent, G.T.R., Montreal, born at Longueuil, Que., Nov. 9, 1856.

W. Downie, General Superintendent, Atlantic Division, C.P.R., St. John, N.B., born at Rock Currie, Ireland, Nov. 12, 1850.

Jos. Dubrulle, Jr., Manager, Canadian Pacific Car and Passenger Transfer Co., Prescott, Ont., born at Spencerville, Ont., Nov. 14, 1872.

R. L. Fairbairn, Assistant General Passenger Agent, Canadian Northern Ry., Toronto, born at Stillwater, Minn., Nov. 24, 1880.

Grant Hall, Assistant General Manager, Western Lines, C.P.R., Winnipeg, born at Montreal, Nov. 1863.

C. R. Hosmer, director, C.P.R., Montreal, born at Coteau Landing, Que., Nov. 12, 1851.

J. McGillivray, Superintendent, Inverness Ry. and Coal Co.'s lines, Inverness, N.S., born at Nairn, Scotland, Nov. 13, 1867.

J. P. Mabee, Chief Railway Commissioner, Ottawa, born at Port Rowan, Ont., Nov. 5, 1859.

T. E. Martin, Local Freight Agent, C.P.R., Quebec, Que., born at Beauharnois, Que., Nov. 23, 1852.

C. Murphy, General Superintendent of Transportation, Eastern Lines, C.P.R., Montreal, born at Prescott, Ont., Nov. 20, 1865.

F. Nicholls, Vice President, Toronto Ry., director, Canadian Northern Ry., born in England, Nov. 23, 1856.

W. J. Quinlan, District Passenger Agent, Grand Trunk Pacific Ry., Winnipeg, born at Montreal, Nov. 21, 1883.

H. P. Sharpe, General Agent, Dominion Express Co., Toronto, born at Brockville, Ont., Nov. 24, 1864.

G. H. Shaw, General Traffic Manager, Canadian Northern Ry., Toronto, born at Smiths Falls, Ont., Nov. 25, 1859.

J. B. Sheppard, District Freight Agent, C.N.R., Winnipeg, born at Teeswater, Ont., Nov. 27, 1881.

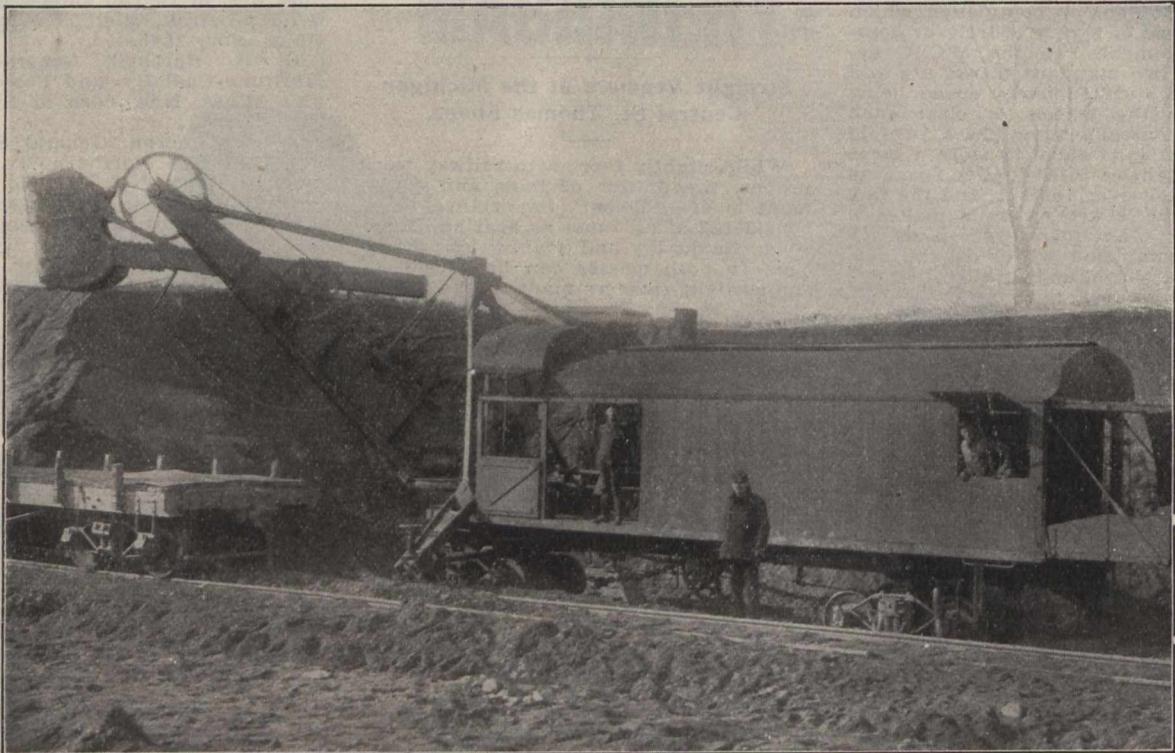
F. M. Spaidal, General Superintendent, Canadian Northern Quebec Ry., and Quebec and Lake St. John Ry., Quebec, born at Gananogue, Ont., Nov. 13, 1858.

J. Sparks, Assistant General Baggage Agent, Western Lines, C.P.R., Winnipeg, born in London, Eng., Nov. 25, 1874.

H. P. Timmerman, Industrial Commissioner, Eastern Lines, C.P.R., Montreal, born at Odessa, Ont., Nov. 6, 1856.

H. E. Whittenberger, Superintendent, Eastern Division, G.T.R., Montreal, born at Peru, Ind., Nov. 9, 1864.

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Further economy in operation is secured by using a large boiler of the locomotive type, in which more of the heat is utilized and less is lost up the stack. This is possible only because of the removal of the hoisting engines from their usual position on the car body, to the boom.

The placing of the main hoisting engines at the foot of the boom reduces the power necessary for swinging the boom and removes the twist upon the car body when working on one side. With this construction the turntable centre and boom foot constitute the engine frame. One casting takes the place of four or more in the usual construction, reducing the total weight of the shovel, and the weight on the front trucks.

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**Remodelling of the Grand Trunk Railway  
Ottawa Terminal Yards.**

By Alexander Gray, A.M. Can. Soc. C.E.

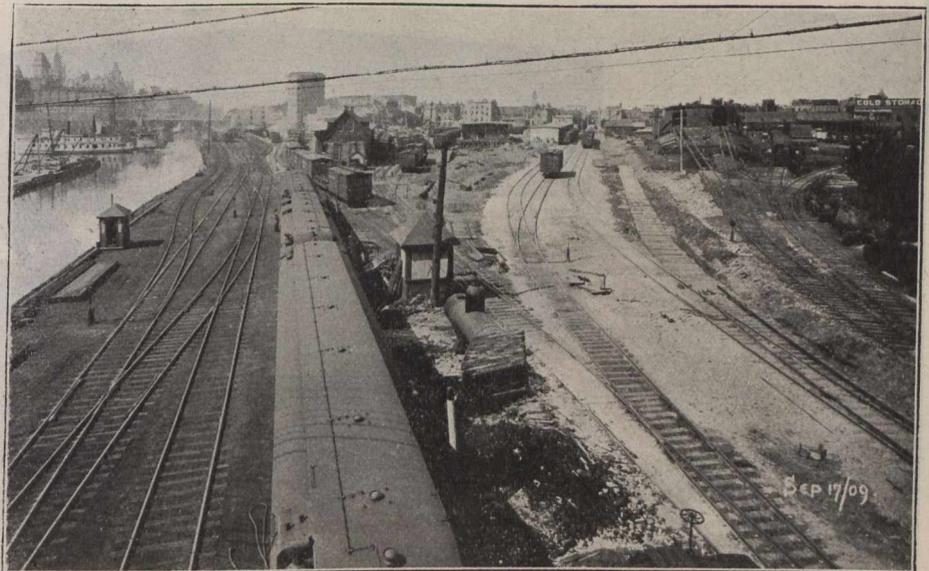
In giving a brief account of the work of remodelling the G.T.R. central station yard in Ottawa it would be superfluous to review the reasons which led up to such work, further than to say that when the Canada Atlantic Ry. was fortunate enough to secure this route to the heart of the city, the terminal was not designed with any consideration of future requirements. Tracks and other railway facilities were built by degrees as demands arose and property was acquired. Under such conditions it was only a question of time until all the available land north of Laurier Ave. was taken up with a jumble of tracks which were very difficult to operate and in an exceedingly poor state of repair, the rails being 56 lb. steel and the switches stub. When we came to consider the remodelling of this yard, the problem which confronted us was not to design a yard by using up the old one, but to design one without any regard for existing conditions, a yard giving the facilities for passenger and freight accommodation.

The passenger and freight yards are entirely separate from south of Laurier bridge, and as both the passenger and freight business enter from Besserer St. the grades of the tracks are governed by the grades of this street. From the station entrance towards the freight shed there is a drop of about 6 ft., which makes the passenger yard ascend from Laurier bridge towards the station and the freight yard descend from Laurier bridge towards Besserer St. While we were anxious to have the two yards of a uniform grade, it was impossible to obtain this without very considerable expense both in land damages and in bringing up the adjacent streets to such grade. With the present arrangement there is excellent drainage for these two yards. The 20 ft. roadway between the two ladder tracks may be called the water shed. The passenger yard drainage runs toward the canal and Laurier bridge and the freight yard drainage goes towards Besserer St., where it

put to work and excavated the freight yard for its entire width and right through to Besserer St. to a uniform grade of 1-10% and to a depth of 2 ft. below the base of rail. At the side of the tracks under the transfer platform the excavation was made about 18 ins. deeper, in order to have the sub grade of the tracks thoroughly drained. This arrangement gives a very dry yard in

be given to each move made, so that freight business would not be tied up during the construction of any of the new works.

The rail in the freight tracks is 80 lbs. and the switches are split with no. 9 frogs, thus having leads which will admit of a safe operation by the ordinary class of engines, although there is a special yard engine to do all the



G.T.R. Central Station Yards, Ottawa, from Laurier Avenue Bridge, Sept. 17, 1909 before Improvements.

all weather. Part of the excavation from this point was dumped into the old canal basin where the freight shed stood on piles, this part having never been filled in. With this work all surface traces of the old canal basin have now been obliterated.

In the carrying out of this work the chief point we had to keep in sight was the safe and speedy operation of present business. The freight facilities were so congested that we could not cut out one track without making provision for its business at some other point. It so

switching work in this yard. The maximum curvature is 9½ degrees, which is the turnout for no. 9 frog. Up to the time of writing there have not been any derailments in this yard since its completion, whereas previously there was an engine off the track on an average every 24 hours.

The freight yard consists of a freight shed and office 668 by 30 ft., with four parallel tracks the full length of the shed. A transfer platform 560 by 16 ft. and three pairs of unloading team tracks with macadamized roadways 30 ft. wide are also parallel with the freight shed. The floor of the freight shed is level with the floor of cars standing alongside. Freight can thus be loaded or unloaded into the cars through the shed. Opposite every alternate door in the shed is a set of weigh scales set in the floor, which saves a considerable amount of trucking.

The passenger yard tracks are in pairs 13 ft. centres, with room between each pair of tracks for a platform 19 ft. wide. The shortest pair of tracks have a train capacity of eight cars each (figuring average length of car over all at 70 ft.) and the longest can hold 17 cars. The total train capacity of this yard is 100 passenger cars, which figures out of a little more than double the train capacity of the old passenger yard. The passenger yard tracks are built of 100 lb. rail with no. 9 frogs. All the switches are on the one ladder, which gives the engine driver approaching the yard a clear view of the condition of all the switches. Ultimately it is the intention to have all these switches interlocked, the tower to be located either on or near Laurier bridge. A train shed, of the Bush type, 500 ft. long, covers all the tracks from the baggage annex to the canal. The tracks are ballasted with crushed stone which will keep down the dust in the station vicinity. The platforms are concrete at an elevation of 7 ins. above the top of rail.

In the passenger yard layout, in order to provide a through second track for the C.P.R. in the event of its double



G.T.R. Central Station Yards, Ottawa, from Laurier Avenue Bridge, Jan. 17, 1910, showing Improvements made.

drains into a sewer at Musgrove St. This was one of the difficulties in the old yard, there was no drainage, which meant a lot of heavy maintenance work during spring and fall weather.

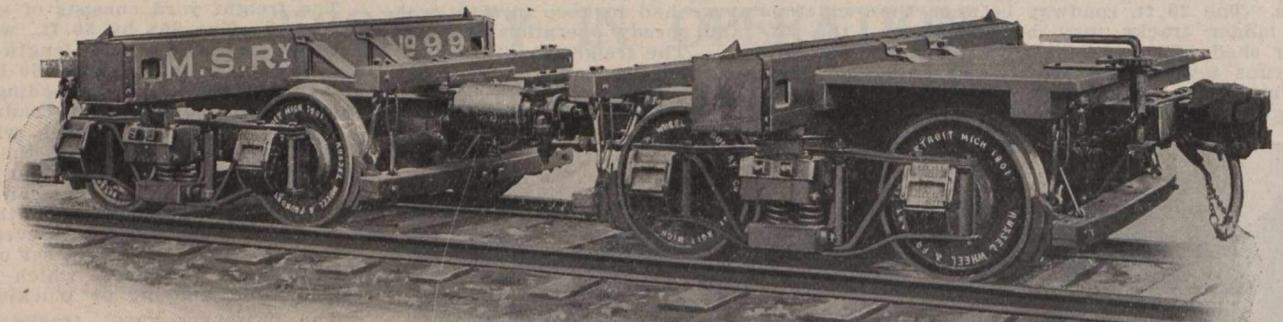
In the centre of the old yard between Laurier Ave. and Besserer St. there was a hump of about 3 ft. and as the tracks were lying on blue clay with little or no ballast underneath, a steam shovel was

happened that part of the new freight shed was located on vacant property, thus enabling us to build the freight office and about 300 ft. of the freight shed and two of the freight tracks before disturbing the old shed, which was located where part of the main passenger ladder track now runs. As the new tracks peculiarly crossed the old tracks diagonally, a good deal of study had to

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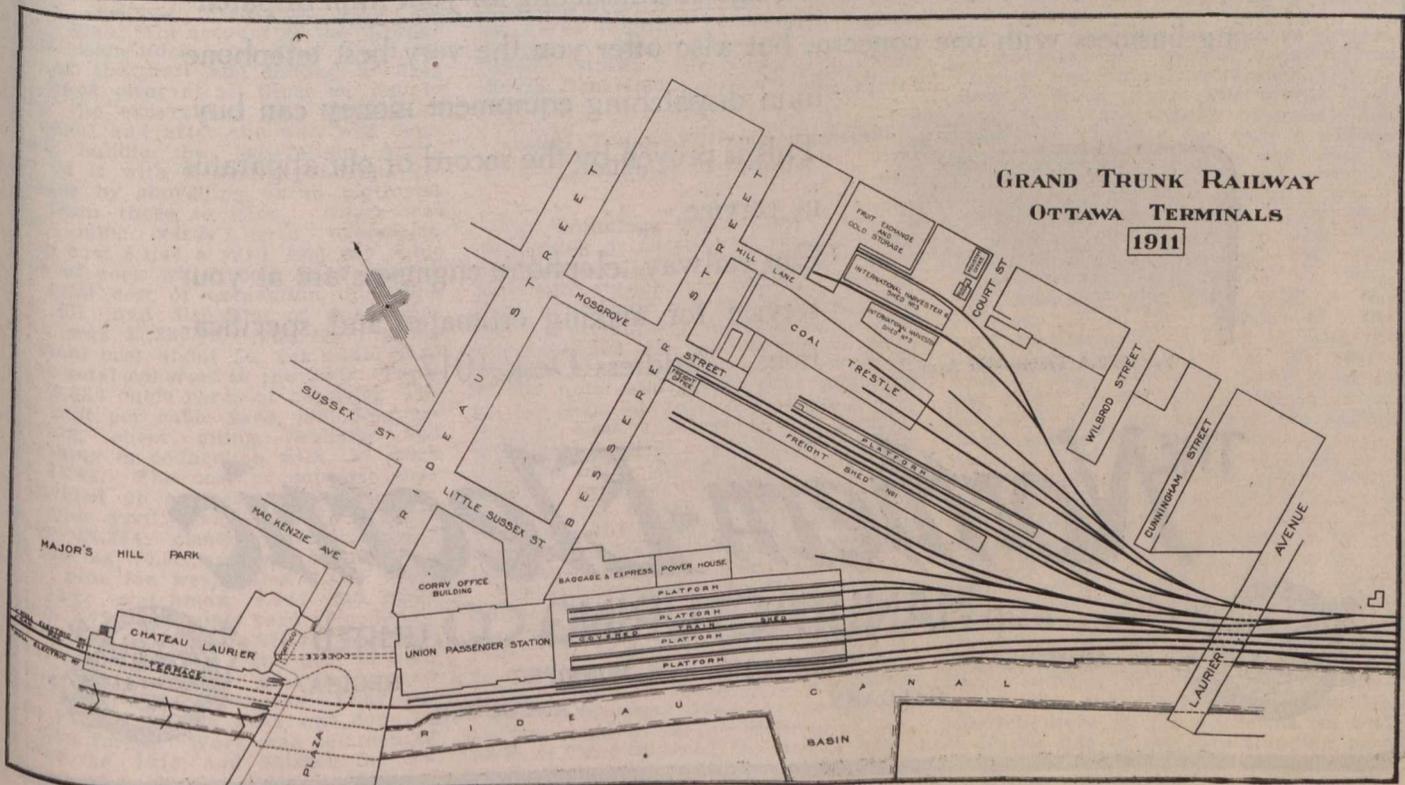
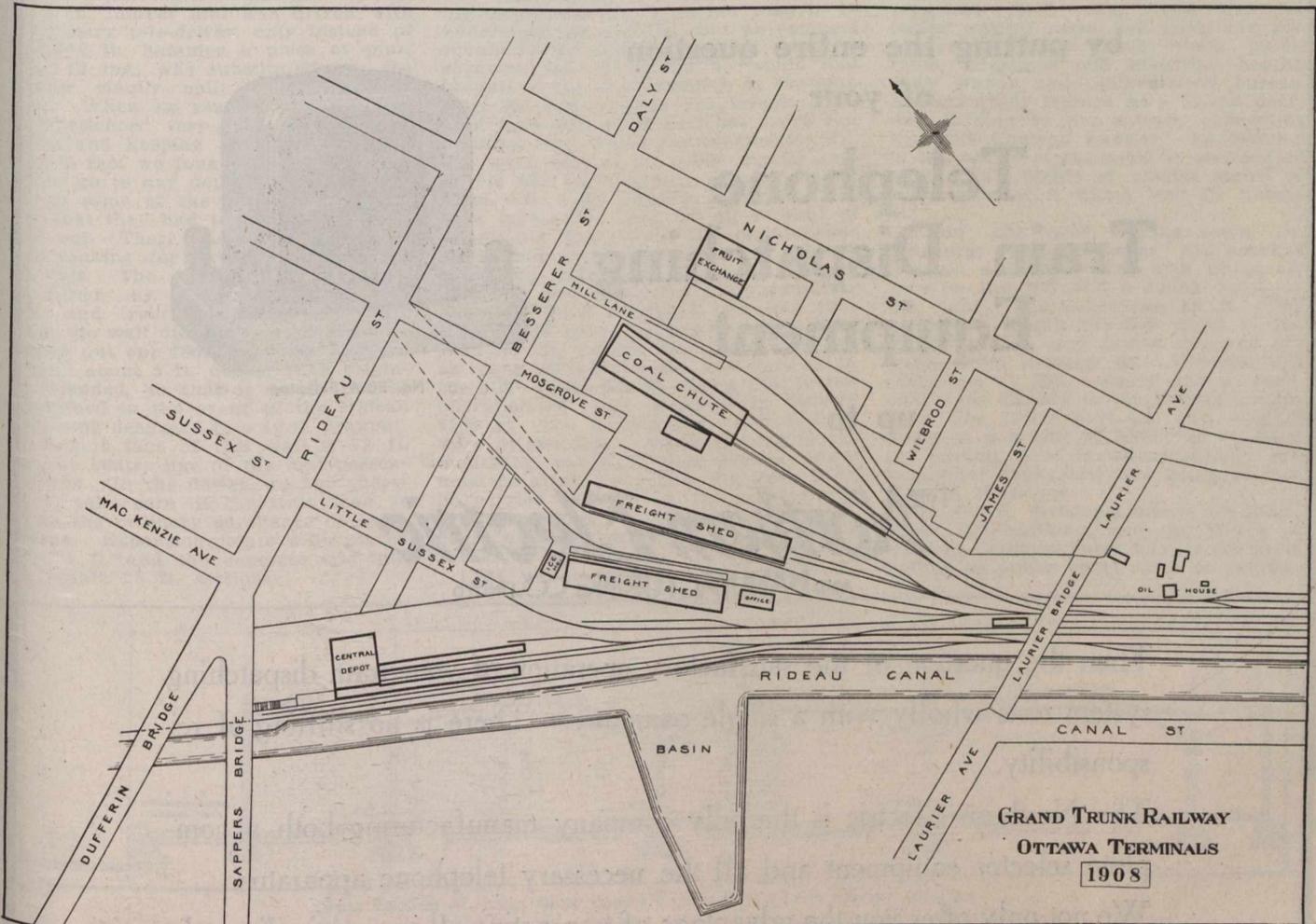
**RUSSEL WHEEL & FOUNDRY CO.**

**Detroit, Mich., U.S.A.**

tracking its lines across the Alexandra bridge, we had to build a retaining wall 1,079 ft. long of an average height of 17 ft. Before commencing work soundings were taken with an iron rod along the side of the wall at intervals of about 25 ft. Instead of these soundings go-

ing to rock (as the man who took them reported) they only went to rock for about half the length; the rock extended from Sappers bridge end of the work for about 550 ft. and then suddenly disappeared; its place being taken by large boulders and gravel. The

profile showing these soundings was so uniform that there were no grounds to question the results. This shows that no reliance can be placed on this method of sounding. The only safe way, in my opinion, is to put down test pits. Designing the wall on this profile we



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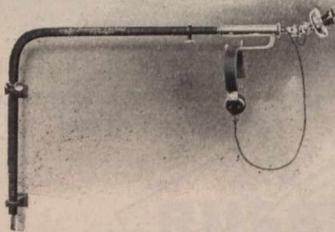
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figured on a rock foundation throughout and at the south of Laurier bridge end of the work for a distance of 137 ft. concrete piers 9 ft. 10 ins. by 5 ft. and at 12 ft. centres were built and put down in each case to the boulder foundation. Sheet piling was used in putting down these piers. The sheet piling was 3 in. lumber and was driven with an ordinary pile-driver, only instead of the 3,000 lb. hammer a piece of pine, 12 by 12 ins., was substituted; as the hammer simply split the piling in pieces. When we reached the boulders we experienced very great difficulty in driving and keeping the proper alignment, in fact we found it almost impossible to go to any depth in this foundation, as some of the boulders were so large that they had to be blasted to be taken out. There was little to be gained in looking for a better foundation than this. The piers are connected to each other by a concrete slab 2 ft. thick and reinforced with old rail. Where the wall did not rest on piers we widened out our footing 12 ins. and put the wall about 3 ft. deeper than originally intended, so that it would not be undermined in the event of the Rideau canal being deepened to a 10 ft. draught. The outside face of this wall is 13 ft. from the centre line of the first passenger track. In the design we had therefore to take care of the train load as well as the ordinary surcharge of earth pressure. Expansion joints were placed every 25 ft. and the concrete was laid in alternate 25 ft. sections.

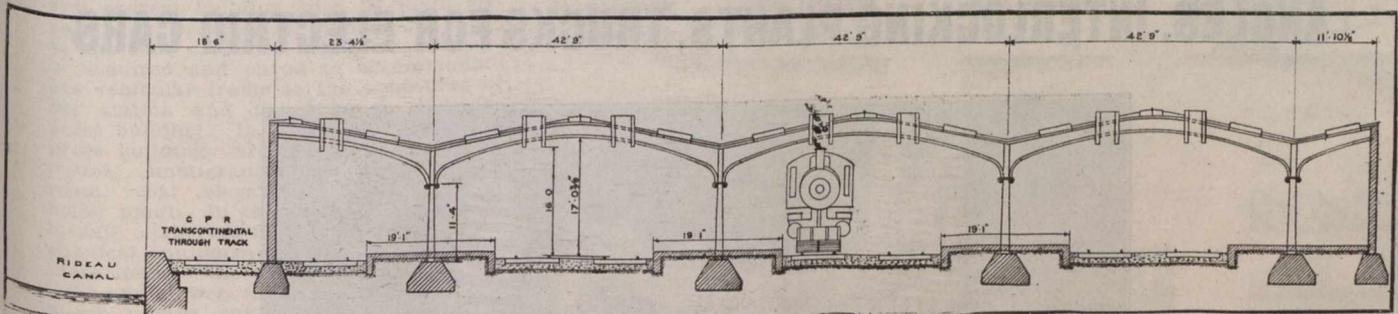
In the remodelling of railway terminals I think it is always advisable for the young engineer to freely discuss the disadvantages of existing conditions and endeavor to discover from the men who are responsible for the operation of the yard to be designed wherein the difficult and objectionable features of the existing conditions lie. I do not wish to be understood as advising that an engineer should be led entirely by what everyone suggests, for if he did he would find himself in the same position as the man with the ass crossing the bridge. The yard men will want switches every few hundred feet, where the roadmaster will not want any at all. The master mechanic will insist upon a gravity coaling plant, where the physical conditions favor a mechanical one, all on account of saving his department the maintenance work, and vice versa. When I was remodelling Bank St. yard in Ottawa, before it was completed the yardmaster and his crew strongly protested that they would never be able to operate the yard for the reason that there were not as many switches in the new yard as in the old. I am safe in saying that in the operation of our terminals in Ottawa 99% of the derailments and trouble were at switches. Another point in remodelling yards is that special study must be given as to how the work is to be carried out during the continuance of traffic. This is sometimes a very difficult problem, especially in congested yards.

[The writer of this article was Resi-

floor. In height this room is equal to the total height of the office building in the front portion of the structure. The walls of the room are in Travertine finish, the flooring is of marble and the ceiling is vaulted and richly coffered. The men's waiting room, smoking room, barber shop and lavatories are approached from this room, also the ladies' waiting room, rest room and lavatories, and the lunch room, parcel room, telephone and telegraph booths, news stands and information bureau. An important feature here is the doorway leading to the subway connecting with the Chateau Laurier. Its location in the centre of the room is emphasized by the two flights of marble stairs on either side of it which lead to Rideau St.

From the main waiting room, the concourse and platforms are reached through a ticket lobby, with ticket offices on the left and a lunch room on the right. The concourse, 60 ft. wide, extends in length the full width of the main building, and has a carriage entrance from Besserer St.. Through this concourse at the easterly end a vestibule leads directly to the baggage building. The lower part of the exterior walls, to a height of about 60 ft. from the ground, is of Stanstead granite, the remainder above this line being of buff Indiana limestone.

The G.T.R. divisional offices are located in this building, and the Board of Railway Commissioners has its offices as well as its public court room on the up-



Cross Section of Train Shed Grand Trunk Ry. Central Station, Ottawa.

The cost of excavation work was pretty high. On account of the through C.P.R. main lines being 26 ft. from the face of the wall and having to keep this track clear at all times we had to dump the excavations into the bed of the canal and after the wall was completed handle the excavations again, part of it with a derrick and the remainder by shovelling on to platforms and from there to cars. There was 4,800 cubic yards earth excavation which cost \$1.44 a yard, and 450 cubic yards of rock which cost \$2.10 a yard. The total cost of excavation, including back fill and disposing of waste material, was \$7,862.15. The sheet piling for piers cost about 3c. per cubic yard of the total concrete in the wall. There were 2,880 cubic yards of concrete. The total cost per cubic yard, including excavation, sheet piling, walling, and everything in connection with the work was \$8.43. The cost of concrete may be divided up as follows: Forms, 93c. per cubic yard; sand, \$1.087; crushed stone, \$1.364; cement, \$1.17; mixing and placing, 70.8c.; old rail for footings, 9.2c.; pipe for weep-poles, 1.8c.; walling, 13c.; watchman, 4.5c.; and excavation, 2.73c. per cubic yard of concrete. This comes to, labor \$3,879.7; materials \$4.89, and tools 16c. The cost of concrete, not including excavation and sheet piling for piers was \$5.67 per cubic yard. All this work was done by our own forces. Work was commenced on Feb. 20, 1910, and finished for the opening of navigation, May 1, 1910.

dent Engineer, G.T.R., at Ottawa, when the works described were carried out. He is now Assistant Engineer in Charge Upper Ottawa River Storage, Public Works Department, Ottawa.—Editor.]

### Grand Trunk Railway Terminal Buildings at Ottawa.

The buildings which the G.T.R. is completing at Ottawa include the Chateau Laurier hotel, the central union passenger station, the baggage and express annex and the power plant building. A preliminary description of these was published in our issue of Nov., 1907, a complete illustrated description of the hotel and station was published in our issue of July, 1908, and in our issue of June, 1911, we gave a panoramic view showing a portion of the station, the hotel, the plaza formed by the junction of the Dufferin and Sappers bridges, the Rideau canal and a portion of the Government buildings. Some fuller particulars of the station, train shed, etc., are now available.

The passenger station is built on the southerly side of Rideau St. between the Corry office building and the Rideau canal. It is entered from Rideau St., on the second floor, through a large main corridor in the centre, leading by a marble stairway down to the general waiting room which has an area of over 9,000 ft., and extends the whole width of the building on the lower or ground

per floors of the Rideau St. portion of the building.

The station has been planned to meet all practical and general requirements. Peculiar and difficult conditions with regard to track, street and bridge levels have been successfully overcome, and the result provides not only a railway terminal adequate to meet the needs of the travelling public, but an architectural adornment to the capital city.

THE TRAIN SHED is of the Bush type. It is 533½ ft. by 164 ft. and contains seven covered tracks. The train platforms are each 533½ ft. long. The area of the shed roof is 78,600 sq. ft. The width of the train platforms is 19 ft. 1 in. and the train shed columns are on the centre lines of these platforms. The columns and platforms are 42¾ ft. apart centre to centre, and the columns are spaced longitudinally on the platforms at a distance of 27 ft. centre to centre, the first row being 15 ft. from the station building. The distance from the top of track rail to the clearance line of smoke duct at the centre of each track is 16 ft. There are two skylights, each 4 ft. 10 ins. wide by 21 ft. long over each 19 ft. 1 in. platform, and one continuous skylight 3½ ft. wide, with a ventilator in the centre of each bay over the space between the tracks, the total area of all skylights being 26,150 sq. ft. The skylights over the platforms will furnish excellent light on the platforms, as well as to the side of the cars standing next to the platforms, and the skylights over

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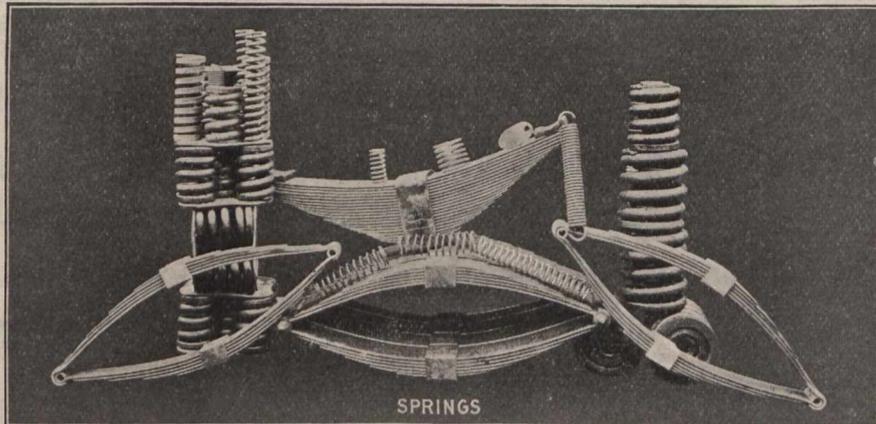
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the space between the tracks will afford good light to the inner windows of two lines of cars standing on a pair of tracks between the platforms. The open smoke ducts over each track are 2 ft. 5 ins. in clear width and have sides 4 ft. 2 1/2 ins. high. These smoke ducts extend the full length of the train shed over one track, which is a through track, and the smoke ducts for the other six tracks stop within 18 ft. of the concourse. The through track outside the train shed on the westerly side and parallel to it, is for the C.P.R. trans-continental trains.

The columns will be supported on concrete piers, of which about 80% will require to be piled, the remainder will be taken down to rock. The proportions of concrete in the foundations will be 1-2 1/2-5. The platforms and curbs will be composed of concrete, in the proportions of 1-2-4 for the curbs and 1-2 1/2-5 for the platforms. The sides of the train shed will have curtain walls of concrete. The roofing will be composed of a 2 in. slab of concrete, and it is intended to have a tar and gravel covering. The drainage of the roof will be taken care of by 4-in. wrought iron pipes extending down the centre of every second column, and will be led to main drains between columns, and drained in the canal close by.

**BAGGAGE AND EXPRESS ANNEX BUILDING.** Immediately adjoining, in the rear, next to the platforms and tracks and affording easy communication and most convenient operation, is the baggage and express building with its main elevation on Besserer St. facing the space at the foot of Little Sussex St., recently acquired and paved to accommodate the vehicular traffic to the concourse of the station and the baggage and express building. In the baggage and express building are provided the mail rooms, immigrants' quarters, engine room, coal elevators, conveyors and boiler plant. In the latter the most up-to-date labor-saving devices and mechanical equipment have been installed, these include the electric separators for light and power, the refrigeration plant, filters, pumps, engines, etc., required in the operation of both hotel and station.

**Railway Route Maps Approved.**

The Minister of Railways has approved of the following route plans.—

**CANADIAN PACIFIC RY.**—Wilkie to Anglia branch. The approval of July 24, was amended so as to cover the whole distance from Wilkie to Anglia, 78.1 miles, and a revision of the same line between mileage 7.46 and 24.9 was approved on same date.

**CANADIAN NORTHERN ONTARIO RY.**—Sept. 27, from Chisholm tp., Nipissing District to Capreol tp., Sudbury District, about 100 miles.

**C.P.R. Second Track in Saskatchewan.**

—In the article under this heading in our Oct. issue, page 951, it was stated that, "From Moose Jaw to Boharm, eight miles, the track will be laid with all crossed ties." It should have read, "all creosoted ties."

The Canadian Society of Civil Engineers, Ottawa Branch, has elected the following officers for the current year: Chairman, S. J. Chapleau; committee, G. J. Desbarats, R. F. Uniacke, John Murphy, N. Cauchon, R. de B. Corribeau; Secretary-Treasurer, V. Brayley.

J. F. Taylor, General Superintendent, Great Northern Ry., Great Falls, Mont., is reported as having stated at Lethbridge, Alta., recently that in future trains will run through from Lethbridge to Great Falls instead of transferring the passengers at Virden, Mont., as heretofore.

**Schemes of Erection Proposed for the Quebec Bridge.**

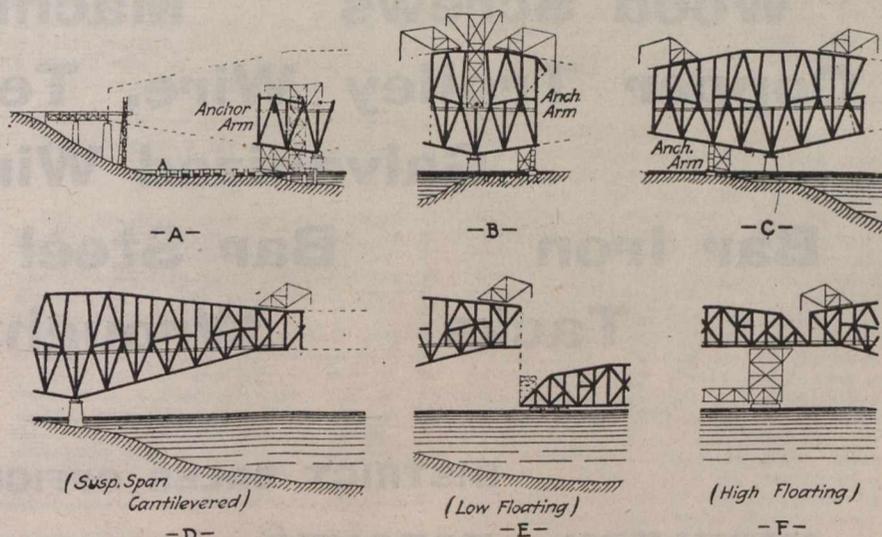
In our Sept. and Oct. issues we gave particulars of the schemes of erection proposed by the St. Lawrence Bridge Co., and the British Empire Bridge Co. Following are further particulars:

The Pennsylvania Steel Co. proposed three different schemes of erection on the Board's design in addition to submitting a tender for a suspension bridge based on a design by Gustav Lindenthal. The different schemes of erection of the cantilever designs differ only in the manner of the erection of the suspended span, viz., by cantilevering out, by floating on high falsework, and by floating on low falsework and hoisting into place. The method of erecting the cantilever and anchor arms is naturally the same in all cases.

Preparatory work in the nature of storage yards, crane, runways, loading and unloading gantrys, etc., is fully provided for by the proposal, and some of it is shown in the first of the sketches in the figure on this page. At the north side, where erection would start, there is a heavy timber elevator to deliver the bridge material from the upper to the lower level, as the company proposes to bring all material in by

the upper part of the tower is disconnected from the lower part at the level of the floor. The top is then skidded along the bridge floor until it is in a position directly over the main pier. The lower part of the tower is then taken down and re-erected on top of the section already in place. On the top of this reconstructed tower the booms are again erected, the hoisting engines remaining on a platform on the tower at the floor level.

The tower in this second position erects the permanent members of the truss that can be handled within the swing of the booms, including the top-chord section between the main posts and the two diagonals completing the triangle AL14—AU12—AL10. Under panel point AL10 a temporary steel bent is placed to support this triangle, the bent being imbedded in concrete to above high-water mark, as a protection against ice, etc. As the work of erection progresses from this point, the cantilever and anchor arms are so balanced that the centre of gravity of the completed work always lies between the main pier and the temporary tower at AL10. This tower being securely anchored down is also capable of acting as an anchorage, thus affording an extra factor of safety.



Pennsylvania Steel Co. Board's Design.

On the lower level a yard served by a 100-ton gantry is laid out for storing and handling material to be used on the north side. The material for the south half of the bridge will be brought to the north side and carried by the north gantry crane, assisted by a special derrick car, to a barge slip, whence the steel is transferred across the river on barges. On the south shore it is received by a gantry equipment similar to that on the north shore. All machinery is operated by electric power. An electric winch helps handle the scows and a motor operates the material trucks on the tracks from the gantry yard to the slip.

The first step in the erection will be the raising of a steel tower, 46 by 50 ft. and 248 1/2 ft. high, behind the main pier. This tower will be equipped with four booms of 90 tons capacity operating from the corners at the top. The booms are fed either directly from the gantry yard or by a special track leading from the yard.

The derricks on the tower erect the falsework between the pier and AL10, after which the permanent bridge steel, including the shoe, bottom chords, laterals, etc., up to the bridge floor is put in place. With a suitable number of additional stringers placed on the floor,

When the work has proceeded this far, the top section of the erecting tower is hung up from the top chords by floorbeams in temporary positions, and the lower part of the tower is taken down. The tower booms then erect the top chord travelers, one for the anchor arm and one for the cantilever arm, taking a large part of the material from the bottom sections of the tower.

These travelers have booms 90 ft. long and a lifting capacity of 100 tons. In addition they are equipped with two 20 ton derricks with booms 80 ft. long, located 15 ft. inside the centre line of the bridge trusses. The 20 ton derricks have double booms for convenience in driving pins. The travelers slide forward from panel point to panel point, on runway box girders. They have no wheels, but are fitted with sliding shoes, except in the cantilevering of the suspended span, when rollers are placed under these shoes. This is done as an added factor of safety to prevent any tendency of the traveler to slide forward, or to get out of hand when unclamped and moving.

Material is supplied to the top travelers by derricks situated on the bridge floor. One 100 ton derrick is located over the main pier and one for lighter material at panel AL10, both command-

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ing the gantry yard below. Where possible, material from the gantry yard is picked up direct by the top travelers.

After the main anchorages are in position the traveler on the cantilever arm continues ahead on the suspended span until the whole bridge is completed. Adjustable members are introduced at the end of the cantilever arm, in order that the work may be coupled up at the centre. The travelers are adjusted to work on a horizontal instead of inclined chord by means of extra steel members and the rollers mentioned above.

**HIGH FLOATING ERECTION.**—The suspended span is erected on high steel falsework, the proposed site for this erection being at Victoria Cove, about half a mile below the bridge site. Material for the suspended span is taken from the north gantry yard and transported by water as required. The falsework is erected by gin-poles assisted by a derrick on a scow. The span is erected on the falsework by an inside steel tower traveler, having two heavy derricks in front and a light one at the rear. This tower is high enough so that brackets on the top floor level overhang the top chord of the span, and from them the truss members are temporarily hung. When the span is fully assembled and the traveler taken down, the trusses connecting the two falsework towers are lowered from their top position to the bottom of the tower, where they are connected to these towers, thus acting as reinforcement to the pontoons and holding them in their proper relative positions.

The pontoons are floated under the falsework towers in between the temporary concrete piers upon which the framework is erected. At high tide the load of the falsework and suspended span is transferred to the pontoons which are then towed to the site. Two pontoons are used. Each is 252 by 75 ft., and 13 ft. deep.

**LOW FLOATING ERECTION.**—Under the scheme, the suspended span is erected in the same manner as for the high floating scheme except that the span is erected on low timber falsework. When the span has been completely assembled the falsework is removed, allowing the span to rest on four concrete piers, in which position it is finally riveted up. At the proper time six scows, three at each end, are floated in, and when the tide rises the span is transferred to these scows and towed into position. From this position it is jacked up into its final position.

The wire suspenders attached to the suspended span are held up in place by wooden falsework, the suspenders being sufficiently slack so that any wave motion will not tend to pick up any corner of the span before all four corners are attached, and the entire weight taken simultaneously by the lifting jacks.

The cast collars that hold the upper end of the wire suspenders are supported on a heavy frame made of girders, which are in turn attached to a chain of lifting plates. These plates are 27 ins. wide and are full of bolt holes, uniformly spaced, so that they can be thoroughly bolted together. The plates lap past each other so that each plate can act as both material and splice, and can also be readily removed as the span is gradually lifted. Each lifting plate has 10 in. pin holes every 3 ft.

On the top of the end of the cantilever arm is a steel box which has a 2,000 ton jack inside of it, and just above it is another steel box similar in design. The lifting plates pass through both of these boxes and at the start of the lifting operations the lifting plate carrying the suspended span is hung from the upper box by means of a 10 in. pin passing through the box and plate. The jack in the lower box is operated by an

ft. and a speed of 2 ins. per min. When everything is ready the jack is operated and the load raised 3 ft., or until the pin through the lower box and the lifting plates can be driven and the upper pin withdrawn. The upper box is then lowered until its pin hole comes opposite the next lowest in hole in the lifting plate. This pin is then driven and the lower pin withdrawn, the jacks again operated, thus completing a cycle. As sections of the lifting plates are released, they are disconnected and by means of the traveler are lifted out of the way.

The lifting operation proceeds at all four corners of the suspended span simultaneously. When the span is fully raised the final pins can be driven as the pin holes in the cast collars are not used during the raising.

A safety device is provided to safeguard the raising operations. It consists of four screws at the four corners of the lower box, driven by an electric motor operating through equalizing gears. These screws are always bearing against the upper box, and as they are capable of sustaining the whole load, the temporary failure of the lifting apparatus would have no serious result. These screws can also be used for quickly lowering the upper box after each operation.

After the load of the suspended span has been transferred to the lifting jacks the scows can be released and all lines and anchors cleared from the river. It

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is estimated that the span can be lifted and connected in two working days. Many of the special appliances proposed electrically-driven pump and is designed for a working pressure of 11,000 lbs. per sq. in. with an effective stroke of 3 ed by this firm in connection with the erecting of this bridge have been patented. The scows used in this scheme are each 257 by 38 ft. and 10½ ft. deep.

**Winnipeg Union Stockyards.**—As a result of a conference Oct. 10, between representatives of the Manitoba Government, the railway companies and the Abattoir Commission, it has been decided to start work immediately on the union stockyards. A site of 215 acres has been provided at St. Boniface, and it is expected to have everything in readiness for starting operations early in the fall of 1912. The union stockyards will be under the control of the government, in so far as the rates and charges are concerned, while the government, which has the first choice over the packing houses, has already obtained a site of 15 acres to be utilized in connection with the construction of a cold storage plant and abattoir.

David Jardine, of Farnworth and Jardine, Liverpool, Eng., who died there, Oct. 8, aged 84, was born in New Brunswick, and his firm controls the lumber properties formerly owned by the Alexander Gibson Ry. and Manufacturing Co. in New Brunswick.

#### Preserving Ties for the Canadian Northern Railway.

The C.N.R. management has, as officially stated in our last issue, made a contract for the preservative treatment of 500,000 ties at Fort Frances, Ont., by the Bruning and Marmetsche process. This is a German process, named after the inventors, and has been in use for about three years. It is claimed to be an improvement on the straight zinc chloride process introduced in 1838 by Sir William Burnett, and known as the Burnett or Burnettizing process. The new feature of the B. and M. process is the use of salts of aluminum, which are used to dissolve the cloudy precipitate which is formed when zinc chloride is diluted with water. It is claimed that by the clearing of the solution the zinc chloride is carried much further into the heartwood and penetrates the sap wood, and the aluminum sulphate holds a sufficient quantity of the zinc chloride there permanently so that it will not leach out. The solution is used hot enough to open the pores of the wood cells, which enables the timber to take up more solution than it could when cold and to coagulate the albuminous constituents of the wood cells with the zinc and special salts, impregnated, but the solution is not hot enough to form free acid, which would render the timber brittle, a drawback which caused the failure of some earlier and otherwise satisfactory processes.

This leaching out of zinc chloride has been the chief objection raised against the process, and in some cases where there is a heavy rain fall, it has been a considerable objection. On the other hand, F. J. Angier, in a paper read before the New York Railroad Club, states that a study of certain leaching tests shows less than 30% of the zinc chloride got out of the wood in nearly a year's time, and that the largest part (approximately 18%) leached out in the first 70 days. In a book describing a new process (Cresol Calcium) it is admitted that modern technicians ascribe little importance to leaching out and that zinc chloride never becomes altogether washed out. In a summary of the results of certain tests reported in the American Railway Engineering and Maintenance of Way Association's proceedings, it is stated with reference to various zinc chloride processes that 81%, 87% and 92% respectively of the Allardyce, Burnett (Chicago) and Wellhouse (Chicago) ties are still serviceable, points to the preservative value of zinc chloride.

As stated above, zinc chloride has been used for over 70 years as a preservative, and its advocates claim that its use is increasing, which they point to as proof that the leaching out is not such a serious matter at its opponents claim. The B. and M. process depends on zinc chloride for its preservative features. The aluminum sulphate, also a preservative, merely fixes the zinc chloride so that it does not leach out. Professor Hatt, Chairman of the American Railway and Maintenance of Way Association's committee on wood preservation, has given in a report evidence based on laboratory tests showing that after severe washing of sawdust a sufficient amount of aluminum and zinc remains, and states that a test has been made in exceptional severe exposures, like coal mines, or humid situations. The evidence shows that pit props have lasted in mines over two and one-half years when treated with B. and M. process, where untreated props only last nine months.

A. W. Smithers, Chairman of the Board of the G.T.R., sailed from New York, Oct. 4, for England.

# Why the G. P. R. North Toronto Route to Ottawa and Montreal is the Logical One

The train leaves as follows:

Leave North Parkdale	- - -	9.15 p.m.	Arrive Ottawa, 6.50 a.m.
Leave West Toronto	- - -	9.30 p.m.	Arrive Montreal 7.00 a.m.
Arrive North Toronto	- - -	9.40 p.m.	Daily except Sunday.
Leave North Toronto	- - -	10.00 p.m.	Will Stop at Westmount.

- ¶ The residents of Toronto are adjacent to either North Parkdale, West Toronto or North Toronto stations, same being easily accessible and closer to residential districts.
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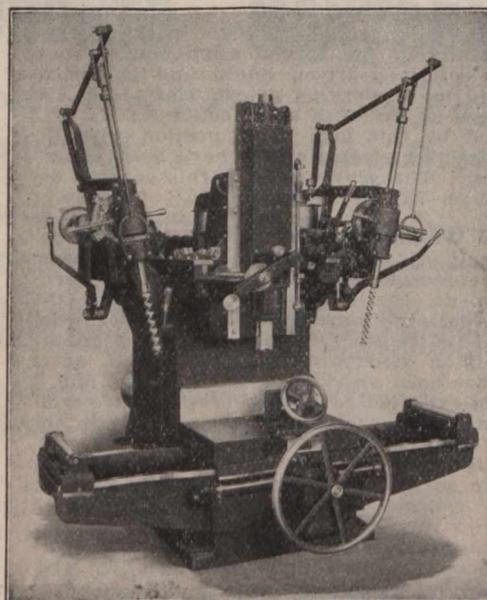
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**The Canadian Pacific Railway's Gravity Yard at Fort William.**

On account of the great satisfaction given by the C.P.R. hump yards at Winnipeg, the management decided to do away with the poling yard at Westfort, Fort William, and substitute for it a gravity yard.

To bring this change about it was necessary to raise the east end of the old receiving yard approximately 6 ft., and alter the eastern ladder track so that there will be two ladders running from the centre track of the old yard. The ladder at the west end of this yard is also changed so that the maximum length of the tracks is developed. The tracks in the old classification yard are lengthened and altered so that the ladders from the hump develop the longest track possible under existing conditions.

About 100 ft. of the east ladder of the classification yard is on pile trestle with planked top. The grade of the approach to the hump is approximately 1% and the decline to the east 3% for 150 ft. from the summit and gradually eased off.

The accompanying plan A, shows the old arrangement of tracks; plan B shows the arrangements of tracks in the new hump yard. The dotted lines in the latter plan show tracks which have been eliminated in the new layout.

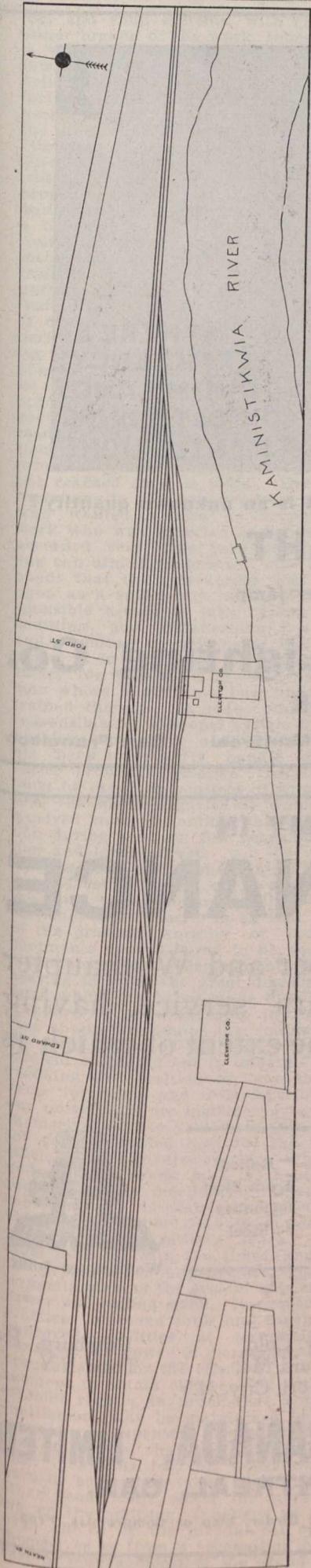
The work is in charge of Frank Lee, Division Engineer, Winnipeg.

**The Accounting Department in Connection with the Mechanical and Stores Department.**

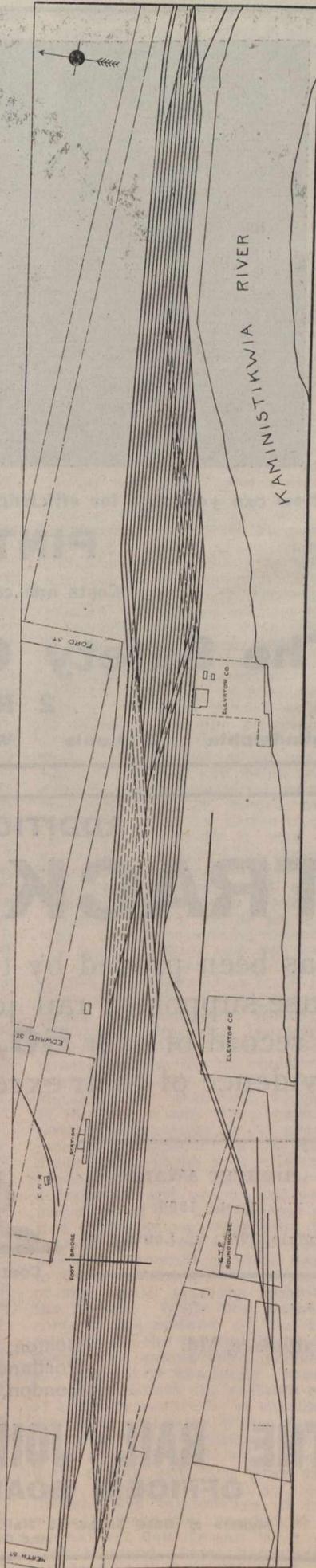
By A. A. Goodchild, Auditor of Stores and Mechanical Accounts, C.P.R., Montreal.  
(Continued from October issue)

Hitherto, his work has been manual, but now the stock cards and books engage considerable of his attention, for he is required to know the exact condition of his stock to enable him intelligently to place requisitions for the depleted materials, he must know what the average monthly consumption is, how far his stock will provide for ordered requirements, what quantity if any he has to on order, and whether through some special or irregular condition he is likely to be called upon for more than his normal supply. Thus it has become necessary for him to devote considerable time and attention to book records. This may be, and frequently is, an entirely new experience for him. Coupled to this, under the system which is still largely in vogue, he must devote his attention to the accounts of his store. The debits and credits are impressed upon him as important factors. For this purpose he engages a clerk, if the funds will permit, who does the necessary book work and accounting for him and in his ignorance of the merest theory of such work, signs statements and records which are put before the management of the road.

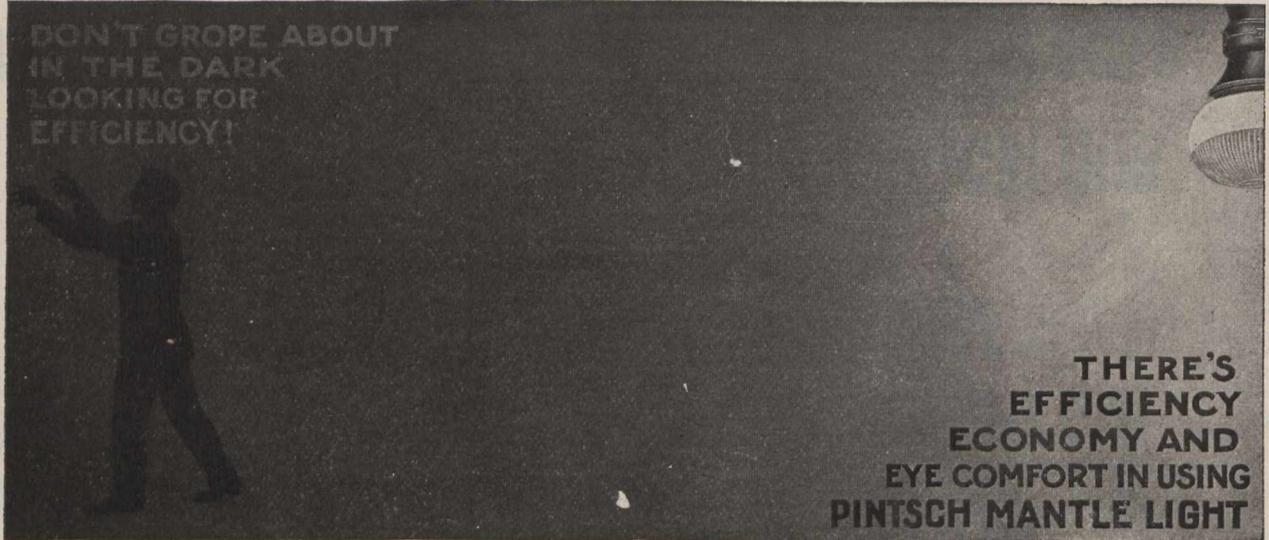
It is general practice when a storekeeper keeps his own accounts, for him to keep those of the mechanical department also, the stores being very closely allied thereto, especially in a large plant where considerable manufacturing is carried on for road purposes. This necessitates his becoming a timekeeper, as the largest disbursements of mechanical accounts are for labor. He must become an authority on distribution of such labor, and exercise a prerogative in connection with shop system, contract work, etc. Is it not hopeless to expect a man with a training which I have briefly outlined, to meet such varied requirements? With all respect to the large number of able general storekeepers on this continent, I affirm that they cannot devote their attention to storekeeping, account-



C.P.R. Poling Yard, Westfort, Fort William, Ont. Old Layout. Plan A.



C.P.R. Gravity Switching Yard, Westfort, Fort William, Ont. New Layout. Plan B.



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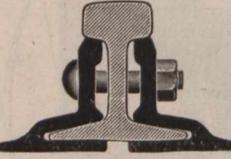
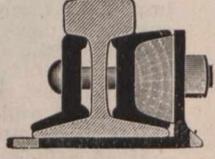
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ing, and shop systems, with justice to either branch of the work. Indeed, there is very little, if any, attempt at doing this, as a matter of fact. It is largely a fiction. The clerk is held responsible for statements, etc., issued under a storekeeper's signature for the reason that the storekeeper himself has no time to attend to such matters, and not infrequently looks upon them as of very secondary importance, or is lacking in a proper appreciation of the value of such duties, and he almost naturally develops a tendency to protect the store's accounts at the expense of those of the mechanical department. Quite apart from the question of integrity of the departmental officials, a feeling of dissatisfaction inevitably underlies all questions of disputed costs. Speaking from experience, I have no hesitation in affirming that it is a simple matter to load an account with items which should never be charged thereto, and so to manipulate accounts as to afford more than ample protection to the storekeeping department. There was a time in the recollection of many, when the necessity for proper accounting methods and men was not realized as it is today. Everything pertaining to the accounts, from the man who "wanted to know" to the underpaid clerk who was expected to "show," was accorded very little consideration, and one can almost understand how it came about that the storekeeper was looked upon as a sufficiently informed and responsible person to take charge of accounting and timekeeping, but today, and I venture to say, never more than today, it is considered proper and necessary for this work to be handled by men whose minds have been thoroughly trained thereto. A man who is held responsible for a proper system of timekeeping must have an organization at his back to properly handle all the varied problems relative thereto, and must be expert in matters of shop practice, the many vagaries of which have received much attention and investigation during the past few years of agitation and labor unrest.

If we look at the mechanical department, locomotive and car, we shall find the same high standard requirements of efficiency and capacity in all that relates to the practical working of these departments as was found to be necessary in the storekeeping department. In fact, bearing in mind the great organized efforts which are being made to raise the standard of apprenticeship in the various shops throughout the country, and the hard course of training which an efficient mechanic has to undergo before reaching the position of, say gang or shop foreman; and remembering that our universities are instinctively availing themselves of the vast openings offered for college trained men for the higher official appointments, and are educating and training young men in theory and practice of the mechanical railway, we can safely say the standard of excellence obtained is higher than in almost any other branch of railway work. They must keep up with the times, and with the pressure for improvements or betterments making for greater efficiency in power and rolling stock. Improved shop practice, improved tools and machinery, improved facilities at terminals for handling the power is increasing, and is brought about by the efforts of the management to obtain cheaper and yet more efficient results, in order that a proper equilibrium may be maintained between revenue and expenses. Yet we find, with few exceptions, that the practice is almost invariably for this department to have its accounting taken care of by another department, either the storekeeping or the auditing, I believe as much from choice of the mechanical officers themselves as from a recognition by the various managements of the sound busi-

ness principle that authority over the accounts of a department must be separate from the authority governing the practical working of that department. Such a rule has behind it the undoubted authority and wisdom of those whose duty it has been to ensure the most perfect results and records of business transactions.

What of the duties of the auditor in his relations with the mechanical and the stores departments? Labor is, of course, the important factor in all mechanical accounts, and the ensuring to every employe in all shops and round-houses, etc., of a just accounting for his time must receive first consideration. At the same time, necessary precautions against fraudulent claims for time not worked must be taken. It is also of prime importance that such time is properly distributed, or, in other words, that the account for which labor is performed is charged therewith, so that the correct cost of an engine or group of engines, a car or groups of cars, going through the shops for repairs or construction, etc., may be determined accurately. The cost of articles manufactured, such as bolts, nuts, forgings, wheels, castings, etc., must be compiled in such a manner as will make comparison with the market prices of such articles a simple proposition. No great advantage can accrue in manufacturing articles which can be purchased in the open market as cheaply or cheaper than you are making them. Shop costs systems have received a great deal of enterprising attention from what is yet a new branch of commercial life, the shop cost engineering profession. An elaborate system of store orders, requisitions, and labor distribution is entailed, much detail work of an accounting nature is necessary. Where piece work or contract systems are in force, it is necessary that the auditor should satisfy himself as to the completion of work paid for, in order that he may not certify for payment any unearned monies; but it must be recognized that much of this class of work requires mechanical experts to pass upon, and in many cases all the auditor can do is to see that proper safeguards are set up to prevent fraud or collusion. Other questions relating to labor, particularly those relative to shop efficiency, and job time records, come more or less under the observation of the auditor; but I am of the opinion that the less his department has to do with such matters the better, alike for himself and the mechanical department. They are the legitimate work of the mechanical staff, shop superintendent, foreman, clerks, and specialists, as the results obtained are purely of interest for economical reasons to the shops themselves, and all responsibility for their carrying out or development must devolve upon the shops. In none of these matters is the storekeeper an interested party, for even the item of labor on manufactured material, if properly cleared, does not affect his stock balances, whether the charges are correct or not. Both the storekeeper and the mechanical department, however, are concerned in all questions relating to material, and the essential duty of the auditor in this regard is to see that the storekeeper is properly credited with all materials delivered to or taken by the shop forces. At the same time he will see that the accounts for which material is charged are properly covered by approved requisition, and the purpose for which material is required is clearly set forth. If, as sometimes occurs, any unusual quantity is called for, the matter should be investigated, and he should satisfy himself as to the special requirements. Only such material as may be required for current needs should be requisitioned for, and bulk issues should not be allowed. He will endeavor in every way to

protect the stores by seeing that they are credited with the value of all issues, and, at the same time, must be equally satisfied that nothing is charged against the mechanical department, except that which is justly chargeable thereto. It should be clearly understood that no advantage can accrue to the storekeeper by overcharging other departments, and with careful checking of prices by the auditor there could not exist much opportunity for doing so, should there be any such desire. Careful inventories of material on hand should be taken at least once a year, and from his records the auditor should be enabled to inventory a considerable portion of every storehouse much more frequently. Should there appear from such inventory a surplus, it should be transferred to the general books of the company for funding purposes, as an offset against future possible shortages, or application of credit made to the accounts which have been charged with material since previous inventory, pro rata according to the amounts charged. As regards accounting for material received from purchasing of the same, he will see that proper acknowledgment is received from the storekeeper of all such items, and by having communication with all requisitions, will satisfy himself that authorized officials have approved the purchasing the same. He will see that the records of its receipt are kept in such a manner as will ensure against the passing of duplicate invoices or acknowledgments, and also that proper stock book records are maintained of all intake or output of the various items of material. At the most convenient time such records must be gone over with a view of satisfying himself as to surplus or obsolete material, or undue quantities of any articles being carried at one point on the road while purchases of similar material are being made elsewhere. Obsolete material should not be destroyed, sold, or turned over to the scrap pile, until the authority of the department for which it was originally procured, is obtained, as the storekeeper's accounts must receive credit for whatever loss is sustained, and the expense be borne by this department. Inventories should, as far as possible, be taken by auditors independent alike of the stores' auditor and the storekeeper, thus obviating any possibility of irregularities, the desire being at all times that the most accurate records possible be obtained. In companies where the consumption of material represents from \$100,000 up to \$2,000,000 a month, there is ample scope for the auditor, without infringing on the natural field of the storekeeper's activities, which pertain to the receipt and disbursement of material and maintenance of proper stock records of same; or of the mechanical department, whose duty it is to see that proper material is supplied for their requirements, and proper and economical use made of same. Economy of operation of the stores department is usually determined by taking the percentage which the amount of stock issues bears to the total stock on hand, at the first of the month plus the receipts during the month. While not mathematically correct, this method, no doubt, gives a fair line on the results obtained. At all events for comparative purposes, year by year, it is absolutely good, while month by month the variable conditions of business require to be considered. Except in special cases, where, for instance, material must be purchased abroad, the stock should not average more than 60 days' supply, and in a large number of items, 30 days' is sufficient, but forethought and interchange of ideas and plans between the storekeeper and the mechanical department, is at all times desirable, and even necessary, if this standard is to be maintained, also it

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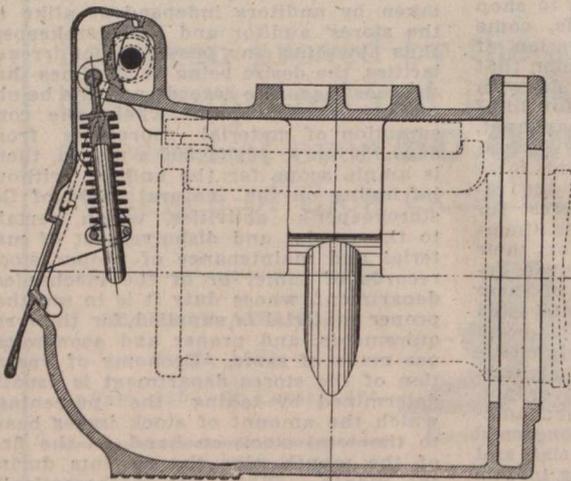
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G. T. BELL, Asst. Pass. Traffic Manager, MONTREAL.

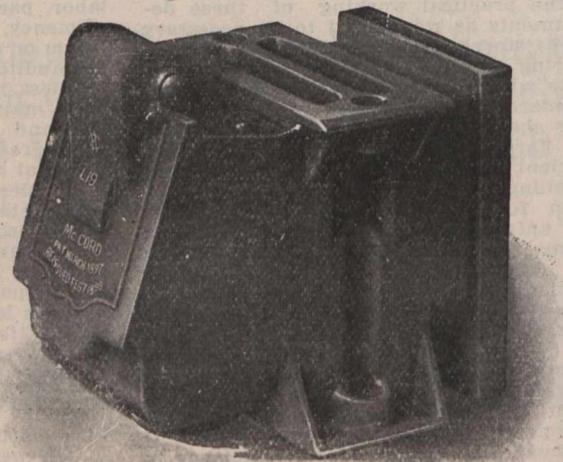
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should be remembered that the question of economical operation can be driven so far as to entail distinct loss to the companies. The auditor and general storekeeper should be vitally interested in these percentage figures, as they afford a ready means of determining the efficiency of the storekeeper. Continued poorness in this respect is a matter that calls for the general storekeeper's intervention, and sometimes a change of departmental officials.

A. Lowes Dickinson, in speaking on the necessary qualifications of an auditor, states: "There is probably no other profession, not even excepting law, which requires of its members, if they would succeed, a higher standard of education, experience, and general business knowledge. The moral qualities called for are so high that it should place the profession at the head of all which come in contact with business affairs. The lawyer's duty is first of all to his client, and that duty frequently compels him to avail himself of technicalities and other means of enabling that client to evade the law and its penalties, but the auditor or public accountant has only one duty to his client and to the public, and that is to disclose to him or for him 'truth, the whole truth and nothing but the truth,' so far as his abilities and special training to that end enable him to ascertain it. No legal quibble will save him from moral condemnation if he fails in his duty, no juggling with words or phrases will absolve him from responsibility, moral and often legal; for results that he has reason to know are not what they seem to be, or which having regard to his special training in business affairs, and the accounts relating thereto, he ought to have known did not represent the facts. Errors there may be, and for errors made after full and proper precaution taken and due care exercised, no responsibility will lie. But there is no profession in which the results of careless errors or misstatements will more certainly bring retribution."

In looking over a catalogue of the New York School of Accountancy recently, I came across the following paragraph regarding a public accountant: "The public accountant is expected to have a knowledge of the underlying principles of the laws that govern business relations, and of the practical applications of such principles, a thorough knowledge of the principles of modern accounting, and of their scientific application to the keeping and stating of accounts, in all lines of business enterprise, and whenever settlements involving money are to be made, he is expected to be able to solve the most abstruse and intricate problems that arise in any branch of accounting, and as an auditor, he is expected to have a broad general knowledge of business with the intuition of the detective, as well as the skill of an accountant."

At first sight these statements may appear to attach a somewhat exaggerated importance to the functions of an accounting officer, yet on closer analysis they do nothing more than express the merest truth, and I will not detain you with any discussion on the matter, but composed as the Canadian Railway Club very largely is, of mechanical and storekeeping representatives, I should like to emphasize the fact that the auditor, or other accounting officer, in the proper carrying out of his duties is absolutely impartial, and is independent of all forces whatever might be brought to bear upon him were he affiliated or subject to other departmental officials. He has no axes to grind, his duty being simply to set forth the actual financial facts of any particular operation, or set of operations, for the information of the management. This fact should make for harmonious relations between de-

partments, and I feel sure you will agree that anything which will facilitate such a desirable result is of great material benefit. Otherwise good individual enterprise is oftentimes invalidated by the knowledge that the heads of departments are at loggerheads, which knowledge invariably percolates through the respective staffs and finds expression in inattention, carelessness, or cussedness, and so makes for general inefficiency. You have all seen this sort of thing at work, and know exactly what I have reference to.

Auditing or accounting by an independent officer should make for real efficiency in the departments concerned. I speak for myself in this matter as much with regard to the stores and mechanical departments, and I welcome an outside auditor, who may be authorized to do so, going over the methods and analyzing the principles upon which the work of my department is conducted; showing up any loopholes or weak spots, in order that whatever remedy is found necessary may be applied. Not only this, but an auditor must keep his mind in a constant state of receptiveness. Many a good suggestion emanates from unexpected quarters, and the practical knowledge of a shop superintendent, a foreman, or a clerk should not only not be ignored, but should be sought and encouraged with the view of developing the utmost efficiency in all that pertains to the employer's interests. Differences of opinion will, and must exist, and in such cases the auditor cannot but be paramount in his rulings unless a higher authority intervenes. This efficiency is after all the *raison d'être* of the existence of the auditing department as it is today, and higher ideals of workmanship must naturally develop as the efficiency of the accounting department is evidenced in the various departments of railroading. The fruits themselves must be the evidence of the good workmanship, and not the self-compiled blue prints or glowing picture books with the halo beautifully worked in to add the necessary touch of sanctity to the artist, with the horns prominently displayed in the caricature of his unfortunate rival. Rivalry and competition are the soul of trade, also of railway efficiency, and are, therefore, eminently desirable, but honesty and integrity must go hand in hand therewith. Systems which lay bare all attempts to mislead shareholders, directors, presidents, or whoever it may be, and place before them only honest, unbiased results, must be more and more appreciated and ever increase in value to the vast corporations in which they are employed, and I believe you will find in such corporations more integrity and greater efficiency in all departments, officers, and men who are ready to be judged by the high quality of their accomplishment, and who recognize the desirability, and appreciate the arduous and somewhat thankless tasks of the accounting department.

The present status of the science of auditing and accounting is not at all final. There cannot be any finality in connection with it any more than with other branches of railroad science. Development must continue. A motto which impressed me very much, as a youngster, and which, if I remember correctly, was used by a Glasgow manufacturer as a part of his trade mark, reads thus: "While I live I grow." Life and growth are synonymous. Stagnation spells death. There are plenty of good men, very much alive, busy in the accounting world; new men with advanced ideas are constantly arriving on the scene, and I look forward hopefully, knowing that the value and importance of the work is becoming recognized as making for harmony, efficiency and truth.

The foregoing paper was read before the Canadian Railway Club recently.

### Sink Holes on the Duluth, Winnipeg and Pacific Railway.

The Duluth, Winnipeg and Pacific Ry. a subsidiary of the Canadian Northern Ry., has encountered a number of bad sink holes on the extension now being built between Duluth and Virginia, Minn. Many of these were filled directly with small dump cars, but in two instances the surface did not break through until after the track was laid over them and construction trains were running. At the larger one, at mileage 56, soundings were taken for a distance of about 1,500 ft., showed a depth of from 20 to 45 ft. of soft mud. The surface crust appeared to be fairly solid and it was hoped that it would hold up, but it broke through early last spring after trains had been running over it but a short time. About the middle of April this hole became so bad that it was impossible to operate trains over it, and steps were taken to completely fill it.

To support the track, timbers were laid about 30 ft. out on each side of the centre line and parallel with it. Large white and Norway pine and tamarack logs were laid across these outside timbers at intervals of 3 ft. The track was then laid over this grillage and the cars were dumped between the cross timbers. In the first 100 ft. of the hole an average of 200 12-yd. cars were dumped each day for three weeks before the material appeared above the surface of the water, for after the crust of the swamp was broken there was nothing immediately below the track but water and liquid mud. About a week after soundings were begun new soundings were taken, and where they had formerly showed a depth of soft material of 35 ft. they now showed a depth of 60 ft., indicating that there were harder layers of material in the soft mud. This was borne out by the action of the embankment which would be brought up nearly to grade, and would then drop suddenly a distance of 15 or 20 ft.

After spending over six weeks of steady work at this hole, and after filling only about 500 ft. of it, it was decided to try to prevent the rest of the swamp from breaking through. Contractors were ordered to crossway it with heavy timbers for a width of 50 ft. and a depth of at least 2 ft. where it had not already broken through, which work is now under way. In constructing this grillage, timbers are first laid close together longitudinally and with broken joints for the 50 ft. width. On top of this cross timbers 50 ft. long are laid close together. A layer of brush is put on top of this and the embankment dumped on the brush. In addition to this crosswaying a dredge is now digging a ditch 12 ft. deep for a distance of two miles to drain the swamp and solidify its surface. It is expected that these measures will remedy the trouble at this point.

At mileage 69 two sink holes were encountered close together, with a small ridge between them. Each hole was about 600 ft. long, and one had a maximum depth of 35 ft., while the other showed no bottom at a depth of 50 ft. Both of these have been filled solidly, using the same method as at mileage 56. They required about six weeks' work, dumping an average of 180 12-yd. cars per day.

This line is being built under the direction of H. T. Hazen, Chief Engineer, to whom we are indebted for the foregoing information.—*Railway Age Gazette.*

N. J. Grace, Travelling Passenger Agent, White-Star Dominion Line, and at one time New England Passenger Agent, G.T.R., at Boston, Mass., is reported to have died suddenly Oct. 1.

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**Telephone Train Dispatching.**

By A. Dwight Smith.

[The following is the third of the series of articles on this important subject, the two previous ones having appeared in our Sept. and Oct. issues.]

The most important feature of the telephone train dispatching system is the selector. A large number of these devices have been developed, but those which have proved successful can be

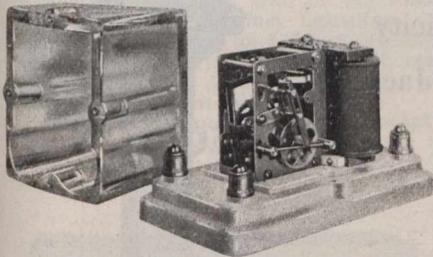


Fig. 1.—The Gill Selector.

counted very quickly. If some means were not provided so that the dispatcher could call a way station individually and keep the bell ringing as long as he wishes, telephone train dispatching would probably not be practical.

The selector is an electro-mechanical device by means of which the dispatcher is able to signal the station he wants without calling any other station. One

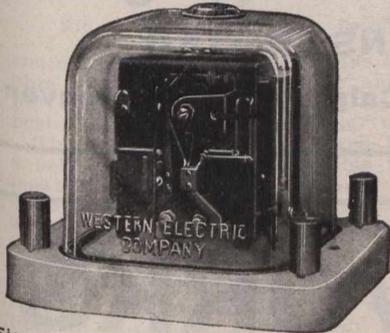


Fig. 2.—The Western Electric Selector.

is placed at every station and at the dispatcher's office is a corresponding key to operate it. The selector must not only be able to "select," as its name indicates, but it also must not affect the telephone line in any harmful way as regards talking. It must be possible to connect as many of these instruments to the circuits as may be desired and transmission is not affected. This

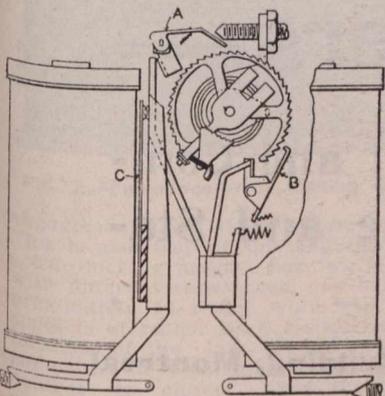


Fig. 3.—Schematic Diagram of Lever Movements, Western Electric Selector.

means, of course, a very careful electrical design, unless expensive auxiliary apparatus is to be used, and selectors in general use at present (all of the bridging type) meet this condition in a most

satisfactory manner. There are two selectors of this individual calling type in extensive use.

1. The Gill selector, fig. 1, was developed some years ago for use on telegraph circuits to call an operator in on the line and did away with the long continued calling of Morse characters. The essential features of this selector are the step-up selector wheel and the time wheel which is normally held at the bottom of an incline track. The operation of the selector magnet forces this wheel to the top of the track and allows the wheel to roll down to home. If the magnet is operated rapidly, the wheel does not get clear down before being pushed back again by an arm connected to the armature. The small pin on the side of the pawl engaging the selector wheel normally opposes the selector wheel teeth near their outer points. When the time wheel rolls

A, designed to engage with a ratchet wheel, to which is fastened a platinum pointed arm, mounted on the frame work as the retaining-pawl B, designed to retain the teeth as they are stepped around. Attached to the slow acting armature are two fingers, designed to engage with the two pawls in such a way that when in normal position with the slow acting armature the two pawls will be held out of engagement with the wheel. While in the operated position, the fingers will permit the pawls to engage with the wheel.

This selector is operated by first placing on the line an impulse of current which operates both magnets. There is then placed on the line a succession of shorter impulses which cause the stepping magnet to oscillate back and forth and step the wheel around the desired number of steps. The speed with which these impulses are sent out

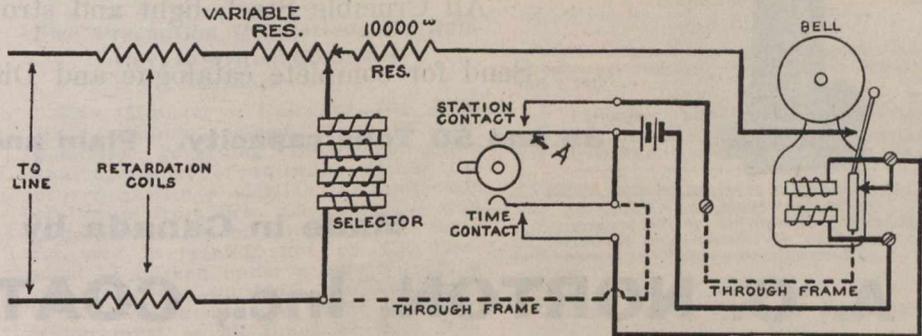


Fig. 4.—Wiring Diagram, Western Electric Selector. (Local Battery).

down to the bottom of the track, however, the pawl is allowed to drop to the bottom of the tooth. Some of the teeth on the selector wheel are formed so that they will effectually engage with the pawl only when the latter is in normal position, while others will engage only when the pawl is at the

bottom position, thus innumerable combinations can be made which will respond to certain combinations of rapid impulses with time intervals between. The correct combination of impulses and intervals steps the selector wheel clear around so that a contact is made. All other selectors fail to reach contact position, because at some point in their revolution, the pawl has slipped out, allowing the selector wheel to return home.

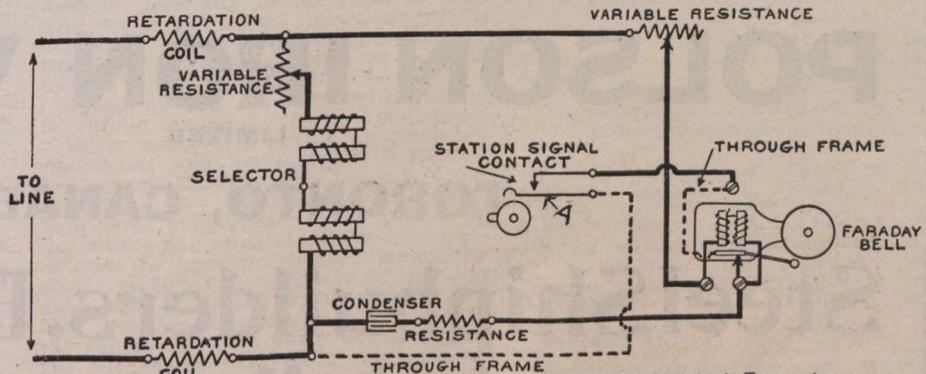


Fig. 5.—Wiring Diagram, Western Electric Selector. (Central Energy).

mits the wheel to fall back to normal position under the influence of a retractile spring.

When a station is called, say for instance, no. 15, all the selectors on the circuit take 15 steps, and the selectors at the first 14 stations will momentarily make their contacts as they step by, and the local battery at these stations close momentarily. This, however, will not cause the bell to ring, because the selector operates at the rate of 8 to 10 steps per second, and the arrangement of contact spring C, fig. 3, is such that it follows the movement of the stepping lever, and during a stepping cycle makes contact with the contact arm in but the small percentage of one-tenth of a second, the time necessary to take a step.

The contact arm of the wheel in its normal position rests against an insulated stop piece. On the other side of this stop piece is fastened a platinum contact which will engage with the contact arm when the stepping wheel is revolving

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ed to its limiting position. This stop piece is angularly adjustable and permits easy adjustment of any selector for any station. This makes this selector a universal type which is very desirable in emergency. The selector requires 10-milliamperes at 37 volts for its operation, and calls at the rate of one second per 10 stations. It is sealed in a glass dustproof cover but can be easily opened for maintenance work. Fig. 4 shows the local battery way station circuit used with this selector. There are two 40-ohm choke or retardation coils placed one on each side of the selector as a protection against lightning. The selector is wound to 3750 ohms and is connected in series with a taper resistance across the line to produce equal operating current in all bridges.

When a station is called, contact A, fig. 4, is made. It closes the local battery through the vibrating bell. The bell is also equipped with an auxiliary

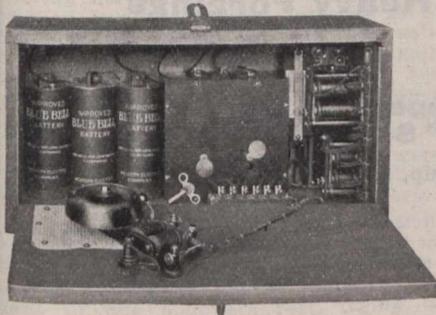


Fig. 6.—Cummings-Wray Selector.

contact which makes and breaks a 10000 ohm resistance across the line, and gives the dispatcher an "answer back"—a positive sign that he has rung the bell. This selector is also arranged to ring a bell by means of a main line battery located at the dispatcher's office, thus eliminating the local battery at the way station. Fig. 5 shows the apparatus so arranged.

All selectors are arranged with a back contact, by means of which time signals can be sent out to each way station on the line simultaneously for the comparison of clocks—a feature that is not obtained on any other type of selector.

The Sandwich selector is another type which is on the step-up principle. It consists of a stepping segment, stepping magnet and one locking magnet. The locking magnet controls the locking pawl and is normally one of

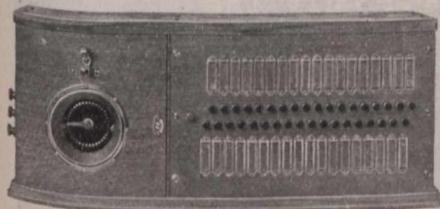


Fig. 7.—Cummings-Wray Calling Cabinet.

engagement from the stepping segment. This is also true of the stepping pawl. The locking magnet has two windings with different resistances, one being approximately 20 ohms, while the second spool is of rather high resistance. One terminal of the low wound magnet is connected to a platinum point and this contact is closed when the locking armature pawl is pulled down.

The circuit arrangement for this magnet system is such that the low wound magnet will get a portion of the line current from a shunt winding, and when the armature pulls down a magnet winding, has a local closed circuit through this contact on the armature.

Thus the magnet is made slow acting since the low resistance winding has much the same effect as a copper sleeve over the core. When current is put to the line, this armature is put down as is also the stepping armature and as the circuit is interrupted, the stepping magnet will function quite rapidly, advancing the segment, while the locking magnet will not release. The stepping segment is therefore held in an advanced position.

The only successful multiple calling apparatus in service is the Cummings Ray selector, (figs. 6 and 7), which is installed on some of the western railways in the United States but is not used on any of the installations in Canada. This is based on the principle of synchronous clocks, but has of course a serious objection in that all the clocks on the circuit must be wound once a week. Indications point to a discontinuance of this system.

### Fire Precaution Regulations for Railways in British Columbia.

The Minister of Railways for British Columbia issued recently, regulations governing the construction and operation of railways within the province, with a view to the protection of forests from fire. The right of way is to be cleared of all perishable matter, and everything, not to be used, must be burned under a permit from a provincial fire warden. Nothing must be thrown outside the right of way, which must at all times be kept free from dead timber, brush, dry grass and other inflammable matter. In specially dangerous places the Minister may direct the cutting and clearing of fire guards on lands adjacent to the right of way. The companies must provide sufficient appliances at suitable points, and their employes, as well as the men employed by contractors, are liable to be called upon to aid in subduing forest fires in proximity to the right of way. The debris on Crown lands, where the company has cut, under permit, any timber, must be dealt with as directed by the Minister of Lands.

Following are the rules with respect to safety appliances on locomotives:

Every locomotive having an extension smoke-box shall be equipped with netting mesh, the mesh to be not larger than 2 1/2 x 2 1/2 per in. no. 10 Birmingham wire gauge, and to be placed in the smoke-box so as to extend completely over the aperture through which the smoke ascends; the openings of the said mesh not to exceed a quarter of an inch and one sixty-fourth of an inch to the square inch. On every engine equipped with a diamond stack the mesh to be not more than 3 x 3 per in. of no. 10 Birmingham wire gauge, and to be placed across the top of the stack so as to completely cover the same; the opening of the said mesh not to exceed three-sixteenths of an inch and one sixty-fourth of an inch to the square inch.

The openings at the back of the ash-pans on every locomotive must be covered with heavy sheet-iron dampers, or with screen-netting dampers, 2 1/2 x 2 1/2 per in. of no. 10 Birmingham wire gauge; such dampers to be fastened either by a heavy spring or a split cotter and pins.

Overflow pipes from the injectors must be put into the front and back part of the ash-pans and used from April to October, inclusive.

During the months from April to October inclusive, wire screens must be fixed to the windows of all smoking compartments of railway carriages.

The remaining sections of the rules provide for the inspection of these safety appliances by the railway officials at least once a week, the keeping of the

records of such inspections, and for inspections at reasonable times by the Government fire wardens.

### Canadian Northern Railway Earnings, Expenses, Etc.

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

	Earnings.	Expenses.	Net Profits.	Net Increase
July	\$1,475,900	\$1,114,800	\$361,600	\$13,400
Aug. 1, 1911	1,420,600	1,105,900	314,700	51,700
Inc.	\$2,596,500	\$2,220,200	\$676,300	\$65,100
	578,400	513,300	65,100	.....

Approximate earnings for September, \$1,576,400, and for two weeks ended October 14, \$941,400 against \$1,279,600 and \$667,700 for same periods 1910.

Milage operated during above periods, in 1911, 3,711, against 3,297 in 1910

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

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

	Earnings.	Expenses.	Net Profits.	Net Increase.
July	\$ 9,661,818.14	\$ 5,953,789.81	\$ 3,708,028.33	\$ 218,408.74
Aug. 10, 1911	10,421,904.42	6,346,333.41	4,075,571.01	383,898.68

\$20,083,722.56 \$12,305,123.22 \$7,778,599.34 \$602,307.42

Inc. 1,959,176.57 1,386,869.15 602,307.42 .....  
Approximate earnings for September, \$9,834,000, and for two weeks ended October 14, \$4,906,000, against \$9,115,000 and \$4,577,000 for same periods 1910.

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

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

GRAND TRUNK RAILWAY.		
	1911.	1910.
Earnings	\$3,548,500	\$3,067,600
Expenses	2,597,800	2,213,700
Net earnings	\$ 950,700	\$ 853,900

CANADA ATLANTIC RAILWAY.		
	1911.	1910.
Earnings	\$ 189,000	\$ 162,500
Expenses	175,600	157,900
Net earnings	\$ 13,400	\$ 4,600

GRAND TRUNK WESTERN RAILWAY.		
	1911.	1910.
Earnings	\$ 572,500	\$ 498,200
Expenses	473,400	399,500
Net earnings	\$ 99,100	\$ 98,700

DETROIT, GRAND HAVEN AND MILWAUKEE RY.		
	1911.	1910.
Earnings	\$ 192,650	\$ 156,600
Expenses	153,950	144,700
Net earnings	\$ 38,700	\$ 11,900

Approximate earnings for Sept., \$4,409,559, and for two weeks ended Oct. 14, \$1,981,330, against \$4,087,955 and \$1,843,722 for same periods 1910.

TRAFFIC RECEIPTS OF THE SYSTEM.		
Aggregate from July 1 to Sept. 30:		
	1911.	1910.
Grand Trunk Ry.	£2,125,503	£1,813,107
Canada Atlantic Ry.	113,237	95,403
Grand Trunk Western Ry.	346,035	292,226
Detroit, Grand Haven and Milwaukee Ry.	117,200	95,064
Totals	£2,701,975	£2,295,800

A large number of mules have been imported into Canada from Mexico for use on Canadian Northern Ontario Ry. construction between Gowganda Jct. and Port Arthur, Ont.

The hearing of the case of the Province of Alberta against the Royal Bank in connection with the money received from the sale of the bonds on the Alberta and Great Waterways Ry., was concluded at Edmonton, Alta., Oct. 12, and judgment reserved.

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## Electric Headlight Saves Train

(From Daily Papers)

"Wednesday night B—— forgot to deliver an order to hold Eastbound Passenger Train No. 6, and only the fact that the Electric Headlight of the oncoming Passenger train was seen at a great distance by the Engineer of the Westbound Freight prevented a head end collision in the —— Canyon near ——, The warning light was seen in time to enable the freight to get back on to the siding at ——."

**PYLE-NATIONAL ELECTRIC HEADLIGHT CO.**

CHICAGO

**Canadian Ticket Agents' Association Annual Meeting.**

The twenty-fifth annual meeting of the members of this Association was held at Sault Ste Marie, Ont., Oct. 4, 5 and 6. The attendance was not as large as usual, there being about 80 members present, and a large number of ladies. The Secretary-Treasurer, E. de la Hooke, as usual, had all arrangements most carefully made.

The business meeting was held Oct. 4, the President, J. F. Dolan, city ticket agent, Richelieu & Ontario Navigation Co., Montreal, being in the chair. Mayor Munro, and C. H. J. Jones, President, Board of Trade, welcomed the members and F. W. Churchill, C.P.R. ticket agent, Collingwood, Ont., responded on behalf of the Association.

The Secretary-Treasurer, E. de la Hooke, presented his annual report, showing that 25 new members had been enrolled during the year, but that 18 of the old members had not paid their subscriptions, so that there was a net gain of seven, the membership being 205 against 198 a year ago. The balance on hand at the beginning of the year was \$169.58 and the receipts \$669.01, a total of \$838.59. The expenditures were \$516.13, leaving a balance of \$322.16, the largest in the Association's history.

On the question of Transportation, Mr. de la Hooke said:—"The matter of the disabilities as to free transportation in the United States, under which many of our members rest, owing to the laws laid down by the Interstate Commerce Commission, has received attention during the year. In accordance with resolution passed at the Quebec meeting your Secretary wrote G. A. Cullen, General Passenger Agent of the Delaware, Lackawanna and Western Ry., who was the accredited representative of the General Passenger and Ticket Agents' Association to our meeting to take the question up in our behalf and endeavor to interest his Association in the matter. He was given the salient points in the situation and in replying in very courteous but not encouraging terms stated that he would do all he could to advance our claims."

Reference was made to the death of four members during the year, C. E. Morgan, of Hamilton, W. Bunton, of Peterboro, J. C. Whichelo, of Parry Harbor, and W. F. Bleecker, of Marmora.

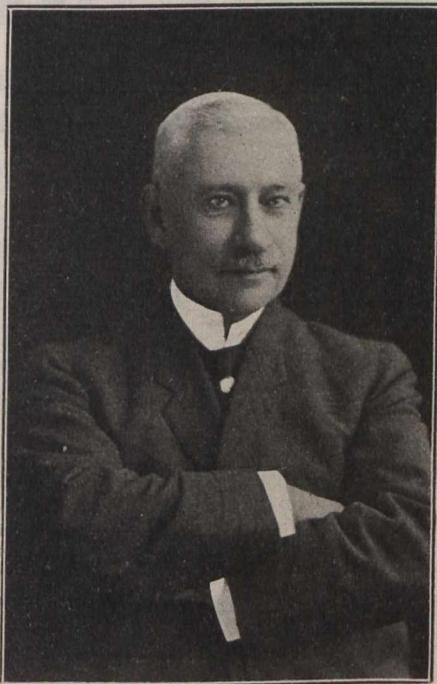
The President, J. F. Dolan, read his address in which he thanked the Association for the honor conferred on him in his election. He spoke approvingly of the selection of Sault Ste. Marie for the meeting, referring to it as a place where, "while physical beauties are everywhere to be seen, they are made to join hand in hand with commerce and industry." Feeling references were made to the members who had died during the year. He suggested a change of name to "The Canadian Association of Passenger and Ticket Agents," so as to allow general, district and travelling agents to become members.

A very interesting letter was read from Barlow Cumberland, Vice President of the Niagara Navigation Co., and one of the earliest members of the Association, regretting his inability to be present and referring to the work performed by the Association.

H. G. Elliott, General Passenger Agent, G.T.R., Montreal, as the representative of the American Association of General Passenger and Ticket Agents, and M. H. Bohrer, D.P.A., Mobile and Ohio Rd., Chicago, representing the American Association of Passenger Agents, addressed the meeting.

As suggested in the President's ad-

dress, an amendment to the constitution was introduced to make eligible for membership, district passenger agents, general agents, passenger department,



**S. B. Morris,**  
President, Canadian Ticket Agents' Association.

travelling passenger agents and steamship agents doing business in Canada. After a good deal of discussion, this motion was carried and the name of the association was changed to Canadian



**W. Jackson,**  
Who has attended twenty-five consecutive annual meetings of the Canadian Ticket Agents' Association.

Association of Passenger and Ticket Agents.

The following officers were elected for 1912:— President, S. B. Morris, C.P.R., Rodney, Ont.; First Vice President, G.

J. Alexander, G.T.R., Richmond, Que.; Second Vice President, J. Kidd, C.P.R., Goderich, Ont.; Third Vice President, C. B. Janes, C.P.R., Orillia, Ont.; Secretary-Treasurer, E. de la Hooke, London, Ont.; Executive Committee, W. Jackson, C.P.R., Clinton, Ont.; M. McNamara, G.T.R., Walkerton, Ont.; F. W. Churchill, C.P.R., Collingwood, Ont.; W. McIlroy, C.P.R., Peterboro, Ont., and C. E. Horning, G.T.R., Toronto.

C. A. Cairns, G.P. and T.A., Chicago, and North Western Ry., Chicago, presented W. Jackson, C.P.R., Clinton, Ont., with a silver tray on behalf of the Association's guests, in appreciation of his untiring work in its interests and in commemoration of his attendance at every one of the twenty-five annual meetings. Mr. Cairns prefaced the presentation with a very interesting and amusing speech.

**SOCIAL FEATURES.**

C. H. J. Jones, President, Board of Trade, W. B. Moorhouse, C.P.R.; W. R. Thom, Northern Navigation Co., and H. J. Herrold, A. C. & H.B. Ry., all of Sault Ste. Marie, had charge of the entertainment features of the programme and are to be congratulated on the efficient manner in which they were carried out.

On the evening of Oct. 4, a smoker was held for the men at Columbia Hall and an interesting boxing bout was given. The ladies being taken to the theatre and entertained at supper afterwards at the St. Charles Hotel. On the morning of Oct. 5, the whole party was conducted through the Lake Superior Corporation's steel plant. At noon they boarded the steamboat City of Chatham from the Commercial Dock at the plant and were given a trip through the locks and up the St. Marys river, refreshments being served on board. In the evening a reception and informal dance were given at Columbia Hall. On Oct. 6, the entire party were taken as the guests of the Algoma Central and Hudson Bay Ry. by special train to Pangissin, 68 miles north of Sault Ste. Marie, which is the farthest point to which the line is at present in operation and where a camp dinner was served.

The following presentations were made on behalf of the Association:— W. B. Moorhouse, ticket agent, C.P.R., silver chafing dish; C. H. L. Jones, President, Board of Trade, cut glass pitcher; H. J. Herrold, General Agent, A.C. & H. B. Ry., cut glass lemonade jug; W. R. Thom, Northern Navigation Co., cut glass pitcher; J. J. Brignall, Travelling Passenger Agent, C.P.R., cut glass bowl.

**TRANSPORTATION IN THE UNITED STATES.**

As stated in our last issue, W. McIlroy, City Passenger Agent, C.P.R., Peterboro, Ont., who was appointed to represent the Association at the American Association of General Passenger and Ticket Agents' annual meeting in St. Paul, Minn., was unable to attend, so he sent a written communication, in which, in referring to the C.T.A.A.'s Quebec meeting last year, he said:—"The subject of free transportation over U.S. railways to members of the C.T.A.A. who are not wholly employed in the ticket business, was again brought up and discussed, and I have been requested to bring the matter before you again. When the payment of commissions to agents on tickets sold by them over foreign lines were cut off some years ago, it was followed by a ruling of the Interstate Commerce Commission that no ticket agents, except those wholly employed in railway business, should secure free transportation over U.S. lines. The members of our Association who come under the ban by this ruling are successful business men in the smaller towns throughout Canada. They are paid commission for selling tickets by the railways they directly represent. They also sell coupon tickets over foreign lines, both in

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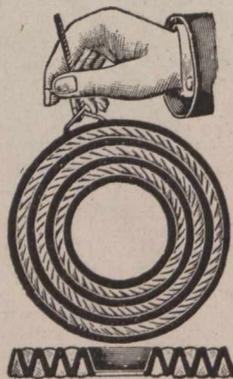
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going to pieces like rubber or composition discs.



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Canada and the United States. They can get transportation over foreign lines in Canada at least once a year through the Secretary of our Association, but they get nothing from U.S. lines. The members of our Association want to go to the United States and familiarize themselves with the railways and the wonders of that great country, but they are barred out as a body by the Interstate Commerce Commission's ruling. Is there no remedy? Could not free transportation be arranged for once a year for the annual meeting to all the members of our Association? I solicit your earnest endeavours on our behalf."

### Canadian Pacific Railway Co's. Annual Meeting.

The 30th annual meeting of shareholders was held in Montreal, Oct. 4. Sir Thos. G. Shaughnessy, President and Chairman of the Board, in moving the adoption of the report, which was published in our last issue, said:

The volume of passenger and freight traffic even exceeded our expectations, with the very gratifying result that your gross operating revenue for the year was over \$104,000,000. The additional acreage under crop this year at the estimated average yield per acre will furnish largely increased tonnage for the transportation companies, and, although the quality of wheat has been injuriously affected in some portions of Western Canada where bad weather prevailed during the harvest season, it is apparent that the financial return to the producers will be very large indeed.

The expenditures in the year for the upkeep of the property were on quite a liberal scale, and as a consequence your railway and equipment are in an excellent state of efficiency.

It is expected that the 75 miles of the Georgian Bay and Seaboard Ry. between Coldwater and Bethany, Ont., a portion of the shorter and more economical route between Georgian Bay and the head of ocean navigation, will be completed this autumn, and such progress has been made with the construction of the various branch lines in Western Canada that about 374 miles will be finished within the next couple of months and added to the mileage that is being operated. It will not only be desirable but necessary to continue to build year by year a good many miles of these branch lines to provide present and incoming settlers with transportation facilities, more miles, indeed, than you would have been called upon to provide had the Dominion and Provincial Governments who have pledged their credit almost beyond the limit of prudence insisted that these companies should open up new territory, instead of building their lines through settled sections of the country where ample transportation facilities already existed.

It is evident that on some portions of the system the time is almost at hand when a single track will not accommodate your growing traffic without congestion and increased expense, and, therefore, your directors are of opinion that the double track should be continued westward from Brandon to Medicine Hat, about 524 miles, as rapidly as the work can be done without undue interruption to the train service.

With all that has been done during the past seven or eight years, we find that at points like Montreal, Toronto, Ottawa, Fort William, Winnipeg, Calgary and Vancouver, we must still further enlarge our accommodation for passengers and freight. Nearly all of the requisite property has been acquired, and the various works will be carried to completion as soon as possible. It is important that modern and com-

modious shops should be provided for the maintenance and repair of the large number of cars and locomotives now in service on your lines in Alberta, and it has been decided that for present and future convenience and economy Calgary will be the best location for these shops, provided that suitable arrangements can be made with the city authorities.

The outcome of the first season's work on the irrigation system in what is known as the eastern block is very gratifying. The great dam at the Horse Shoe Bend of the Bow River, south of Bassano, is almost finished, and before the close of the season upwards of 6,000,000 yards of material will have been moved in making ditches. This should ensure the completion of the work within the next two years, but, of course, some of the land can be served with water before that time.

After more than twenty years of immunity from serious accident of any nature to our fleet on the Pacific Ocean, we were so unfortunate as to lose the s.s. Empress of China, wrecked on the coast of Japan, July 27. Another steamship to take the place of the Empress of China, but twice as large and costly, will be provided at the expense of the steamship replacement fund.

Very favorable business conditions exist throughout all the territory served by your lines in Canada, and there would appear to be ample justification for expecting their continuance. West of Lake Superior there is a universal spirit of confidence and buoyancy, and, while there is some apprehension that real estate values are, in certain localities, on rather a speculative basis, there is room for serious error in this regard because of the business strides that are being made by almost every city and town of any importance. It will be disappointing if the immigration next year is not larger than ever before, and with our country's advantages so well known and recognized all over the world, there would appear to be no good reason why we should not have an increasing number of new-comers year by year for a long time to come. If this be the case there will be no halt in the activity and progress of the West. The commerce and manufactures of Eastern Canada are in a thriving state, as indicated by the quantity of goods that is being shipped. The increase in the demand for a great many articles previously manufactured abroad, or that had only been made in Canada in a small way, encouraged the establishment of new industrial works, as well as the enlargement of existing ones, thus furnishing employment for thousands of additional workmen, so that in point of increased population Eastern Canada has quite kept pace with the West. With the continuance of good times in the agricultural districts the commercial interests of the country will be proportionately benefited, and those who are engaged in manufacturing enterprises should feel warranted in making such additions to their works and employing such additional workmen that large consumers of material in Canada will no longer be compelled to go abroad to meet any portion of their requirements.

The shareholders are to be congratulated the executive are to be congratulated on having a most capable staff of officers and employes, to whose united efforts the signal success of the company's operations may be attributed. Since the close of the fiscal year the company and the board of directors met with another serious loss by the death on July 13 of Robt. Meighen, who joined the board in 1908. He was a good citizen, a capable and upright business man, and had been a warm friend and supporter of the company from its inception. Sir Wm. Whyte, who as Vice

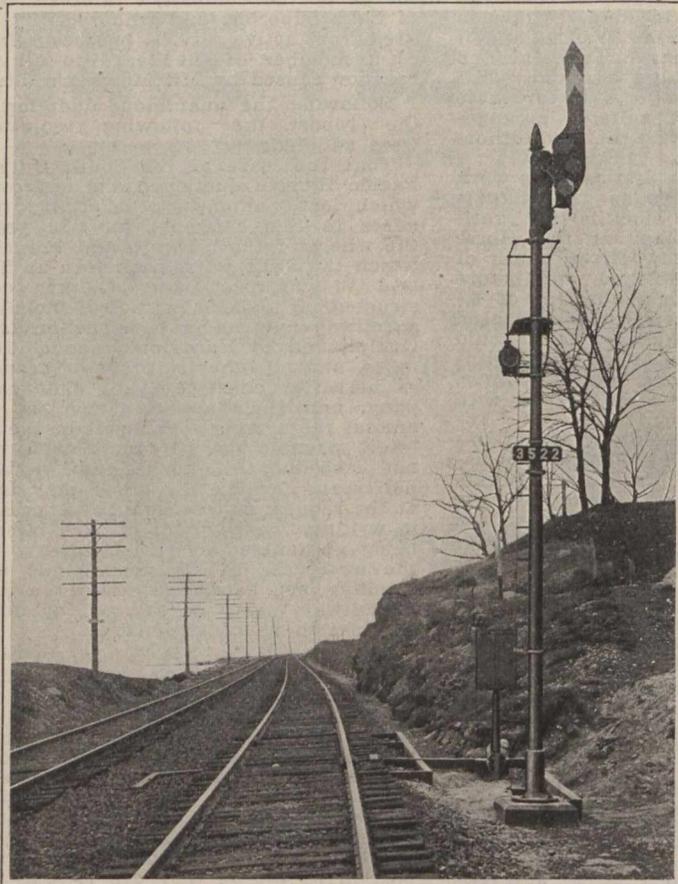
President was for many years in special charge of the company's interests west of Lake Superior, and who recently retired from active service, has been elected a member of the board to fill the vacancy caused by Mr. Meighen's death.

Following the unanimous adoption of the report, the following resolutions were adopted:

That the lease of the South Ontario Pacific Ry. be sanctioned and approved, which lease, amongst other things, demises to this company for 999 years, the whole of the railways and branches which the S.O.P.R. Co. has been authorized to construct, and whether constructed or to be constructed, including a railway now under construction from Guelph Jct. to Hamilton, about 16½ miles, and all other railways or branches hereafter constructed by that company, and their appurtenances, at an annual rental of a sum equal to the interest payable on all bonds at a rate not exceeding 4% per annum, payable half-yearly, which the lessor may issue at the request of this company expressed in writing, the payment of such interest being guaranteed by this company, and the aggregate of all such bonds outstanding not to exceed \$30,000 a mile of railway either constructed or under contract to be constructed.

That the lease from and agreement between the Alberta Ry. and Irrigation Co. and this company be sanctioned and approved, which amongst other things, demises to this company, for 999 years, the whole of the railways and branches of the lessor company, in Alberta, constructed, or to be constructed, and their appurtenances, and all the corporate powers possessed by it and such portion of all the other powers, properties, etc., in so far as they are or may become necessary for the working of the said railways and branches, at an annual rental equal to 6% per annum on the whole of the outstanding ordinary capital stock of the lessor company, viz., \$3,250,000, and which lease also includes the sale and conveyance to this company of the whole of the lessor company's lands, irrigation works and mines, and generally all its assets and properties, excepting those to be leased as aforesaid, in part consideration of the above payment on the capital stock and in part consideration of the assumption by this company of all the obligations of the lessor company, including its outstanding debenture stock, the interest of which will be paid by this company half-yearly until redemption of same as provided for in the trust deed.

That the directors be authorized and empowered to enter into a lease from the Esquimalt and Nanaimo Ry. Co. to this company of its railways now constructed or to be constructed, including the railway in operation from Victoria to Wellington on Vancouver Island, about 78 miles, and the railway from Wellington to Alberni, about 60 miles, a portion of which railway, viz.:—from Wellington to Cameron Lake, 30 miles, has been completed and is now in operation, and the remainder from Cameron Lake to Alberni is approaching completion, for 99 years at a rental equal to interest at the rate of 4% per annum, payable half-yearly on mortgage bonds guaranteed both as to principal and interest by this company, and to be from time to time issued by the E. and N.R. Co. with the consent in writing of this company, the said bonds not to exceed in the aggregate \$14,000 a mile in respect of the railway from Vancouver to Wellington and \$30,000 a mile in respect of the branch railway from Wellington to Alberni and such other railways, branches and extensions as may be hereafter constructed; such lease to be in such form as may be approved by the directors of this com-



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**T**HE hinges or yokes of the lock gates, aggregating 1,138,236 pounds, 284 castings all told, are being made by the Wheeling Mold & Foundry Company, for the McClintic-Marshall Construction Company. "Masvan" Ferro Vanadium is used in the molten steel.

The racks and pinions for the emergency dams, aggregating 1,350,000 pounds, are being cast by the American Steel Foundries Company for the American Bridge Company. "Masvan" Ferro Vanadium is used.

Physical and dynamic qualities excelling those of any other type of steel casting are obtained for this monumental work through the use of our standard vanadium alloys. For castings or forgings designed for the hardest service, specify "Amervan," or "Masvan" ferro vanadium to your steel maker. Vanadium as a component element of steel gives it strength, ductility, and life, without brittleness or the tendency to crystallize. The best means of getting Vanadium into steel as a component part is to use "Amervan" or "Masvan" alloys.

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pany; and, that the former resolution authorizing lease of the said company's railways be abrogated.

Whereas the branch lines and extensions set forth below have been constructed or are in course of construction, and it is deemed desirable that authority be given to the directors to issue consolidated debenture stock to meet the requisite expenditure in connection therewith, it was resolved that the construction and equipment of the following branch lines and extensions of other branch lines which have been heretofore authorized, be approved:

Moose Jaw southwesterly branch, southerly and southwesterly from Moose Jaw, 35 miles.

Kerrobot northwesterly branch, northwesterly from Kerrobot, on the Moose Jaw northwesterly branch, 25 miles.

Weyburn-Lethbridge branch, extension westerly from the westerly end of the branch heretofore authorized, 21 miles.

Estevan-Forward branch, westerly and northwesterly from Estevan on the Souris branch, 55 miles.

Swift current branch, southerly and southeasterly from Swift Current, 45 miles.

Swift Current northwesterly branch, northerly northwesterly from Swift Current 35 miles.

Wilkie northwesterly branch, northwesterly from Wilkie on the Pheasant Hills branch, 32 miles.

Wilkie-Anglia branch, southeasterly from Wilkie, on the Pheasant Hills branch, 35 miles.

Bassano-Irricana branch, northerly and northwesterly from Bassano, on the main line to Irricana on the Langdon branch, 73 miles.

Kipp-Aldersyde branch, extension northwesterly from the northerly end of the branch heretofore authorized to Aldersyde, 27 miles.

And for aiding the construction and equipment of these branch lines and extensions the directors may issue and dispose of consolidated debenture stock to such an amount as they may deem expedient, not exceeding in the aggregate £6,000 sterling a mile in respect of the Moose Jaw southwesterly branch, the Swift Current southeasterly branch, the Bassano-Irricana branch, the Kerrobot northwesterly branch and the Wilkie-Anglia branch, and £5,000 sterling a mile in respect of the Wilkie northwesterly branch, the extension of the Weyburn-Lethbridge branch, the Estevan-Forward branch, and the extension of the Kipp-Aldersyde branch.

Whereas this company has statutory power to issue consolidated debenture stock in aid of the acquisition of steam vessels to the extent of the cost thereof, and the Fairfield Shipbuilding and Engineering Co. has recently constructed for this company on the Clyde, Scotland, two single screw steamships named Princess Adelaide and Princess Alice respectively, each being about 290 ft. long, with beam of about 46 ft., moulded depth of about 15 ft., triple expansion engines and a tonnage of about 2,000 tons; and Bow, McLachlan & Co., of Paisley, Scotland, have recently constructed for the company a steel twin-screw passenger steamship named Princess Mary, 210 ft. long with beam of 40 ft., moulded depth of 14 ft., triple expansion engines, and a tonnage of about 1,500 tons, and have entered into a contract for the construction for this company of a steel single-screw passenger steamship named Princess Sophia, about 245 ft. long with beam of about 44 ft., moulded depth of 18 ft., triple expansion engines and a tonnage of about 2,000 tons; and this company has recently purchased the steel screw steam tug Colima, 91 ft. long, beam 22 ft., depth of hold 9 ft., with compound en-

gines; and the total cost of the said five vessels, including rigging, appurtenances and auxiliaries, will amount to about £300,000 sterling; and this company, pursuant to the authority given by the shareholders on Oct. 2, 1907, has entered into a contract for the construction by the Fairfield Shipbuilding and Engineering Co. of two steel quadruple turbine steamships for its Trans-Pacific Ocean service, to be named Empress of Asia and Empress of Russia, such steamships to have a gross tonnage of 15,000 tons each, a length of 570 ft., moulded depth of 38 ft., beam of 68 ft., and the whole cost thereof, including rigging, appurtenances and auxiliaries, complete when delivered, being £500,000 sterling, each; and the directors have decided to pay the cost of one of the last recited steamships out of the Steamship Replacement Fund; and in order to provide funds for payment of the cost of one of the steamships lastly described, and of the four steamships first described, and of the tug and their rigging, appurtenances and auxiliaries, and pursuant to the power above recited, it is deemed advisable to create an issue of consolidated debenture stock, it is resolved that this company is hereby authorized to issue consolidated debenture stock, and bearing interest not exceeding 4% per annum, to the amount of £800,000 for the purpose of paying the cost of the steamships above described and their rigging, appurtenances and auxiliaries; and that such stock may be issued in such manner and in such amounts respectively as shall from time to time be determined by the directors.

The retiring directors, Sir Wm. C. Van Horne, R. B. Angus, E. B. Osler, M.P., and H. S. Holt were re-elected for a further term of four years. At a meeting of the board held immediately after the shareholders' meeting, the following officers were re-elected for the current year: President, Sir Thos. G. Shaughnessy; Vice President, D. McNicoll; Executive Committee, R. B. Angus, D. McNicoll, E. B. Osler, M.P., Sir Thos. G. Shaughnessy, Lord Strathcona, and Sir Wm. C. Van Horne.

### 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 Pintsch Compressing Co., has appointed as its attorney in British Columbia, Jas. Dunn, Vancouver.

The Brown Hoisting Machinery Co., of Cleveland, Ohio, announces the opening of its San Francisco office in the Monadnock Building, with J. P. Case as Manager.

A. H. Wiggin, President, Chase National Bank, New York, has been elected a director of the American Locomotive Co., in place of the late J. E. French.

Supplementary letters patent have been issued under the Dominion Companies' Act increasing the capital of the St. Laurence Bridge Co. from \$500,000 to \$3,000,000.

The Pratt and Letchworth Co., Ltd., Brantford, Ont., has been authorized by letters patent under the Ontario Companies Act to increase its capital from \$350,000 to \$400,000.

The Titanium Alloy Manufacturing Co. calls attention to statistics issued by

the American Steel Association respecting the tonnage of steel treated with various alloys during 1910. Out of a total of 567,819 gross tons, 326,316 were treated with Titanium.

T. A. Edison, Inc., Orange, N.J., has issued as a pamphlet, a reprint of argument comparing the relative economy of primary batteries and lead type portable storage batteries for railway signal operation, which was read at a recent meeting of the Railway Signal Association at Chicago, Ill., by E. E. Hudson.

The Robb Engineering Co., Ltd., Amherst, N.S., has taken the general agency for Canada of the gas engines and suction gas producers made by Davey, Paxman & Co., Ltd., of Colchester, England. The Paxman gas engine is made in a full line of sizes from 2½ to 300 h.p.; those larger than 20 h.p. are equipped with a compressed-air self starter which starts the engine with the same ease and certainty as a steam engine.

The Nova Scotia Car Works, Ltd., Halifax, N.S., is duplicating its power plant, and has placed the order with the Robb Engineering Co., Amherst, N.S., which supplied the original equipment. The new installation will consist of a 600 h.p. Corliss engine for direct connection to electric generator, three 200 h.p. return tubular boilers with self-supporting steel smoke stack 5 ft. diameter, 90 ft. high, also feed-water heater, piping and other accessories.

The Brown Hoisting Machinery Co., Cleveland, Ohio, has issued a well printed and illustrated pamphlet showing a few typical installations of the Brown-hoist locomotive cranes, equipped with bottom block and lifting magnet, and some with Brownhoist grab bucket. These cranes can be used for switching purposes, the four-wheel tynes being equipped with drawbar, and the eight-wheel types with M.C.B. couplers. The latter are also equipped with steam brakes, M.C.B. trucks, train pipe, air hose connection and grab handles and stems.

Babcock & Wilcox, Ltd., Montreal, report the following orders: Winnipeg Electric Ry., 6,500 h.p. boilers; British Columbia Electric Ry., 2,000 h.p. boilers and C. G. stokers; Regina Electric Ry., 1,000 h.p. boilers and superheaters; Saskatoon, City Power Station, 1,500 h.p. boilers, superheaters, stokers, coal handling machinery and piping; Edmonton Electric Ry., 1,500 h.p. boilers, superheater, stokers and piping; Dominion Iron & Steel Co., 8,000 h.p. boilers, superheaters and stokers; Calgary Electric Ry., 2,000 h.p. boilers, superheaters and stokers; Moose Jaw, electric power plant, 300 h.p. boilers and superheaters; Canadian Pacific Ry., 1,200 h.p. boilers and superheaters for Windsor St. station, Montreal, and 650 h.p. for Place Viger station; Acadia Coal Co., 3,000 h.p. of boilers, superheaters, stokers and coal handling machinery; Atlin Construction Co., Prince Rupert, B.C., 500 h.p. boilers and stokers; Canada Iron Corporation, Midland, 2,500 h.p. boilers; Lethbridge Collieries, 1,000 h.p. boilers and stokers; Alberta Ry. and Irrigation Co., 500 h.p. boilers and stokers; Dominion Express Co., Montreal, 320 h.p. boilers; Canadian Car & Foundry Co., Montreal, 500 h.p. boilers; North Vancouver City Ferry, no. 2, marine water tube boilers; Montreal floating dock, 6 boilers portable type. They have recently completed etaoinshrd new boilers in the Government steamship Aberdeen at Halifax. By A. Dwight Smith.

The St. John's Ambulance Association class of the C.P.R. shops, gave a demonstration of first aid work, before the Western Canada Railway Club, at Winnipeg, Oct. 9.



## TORONTO AND TRENTON NEW LINE--NOW OPEN

Effective Monday, Oct. 9, 1911

### CONDENSED TIME TABLE

Eastbound—Read down.		STATIONS.	Westbound—Read up.	
No. 10 P.M.	No. 8 A.M.		No. 7 P.M.	No. 9 P.M.
6.30	9.30	.... TORONTO	1.00	9.30
9.00	12.00	.... Port Hope	10.30	7.00
9.15	12.15	.... Cobourg	10.15	6.45
9.43	12.43	.... Cobourne	9.47	6.17
10.00	1.00	.... Brighton	9.30	6.00
10.20	1.20	.... TRENTON	9.10	5.40
P.M.	P.M.		A.M.	P.M.

For Time at Intermediate Points, See Time Tables

Trains run daily, Sunday excepted. Solid, Wide, Vestibuled Trains.

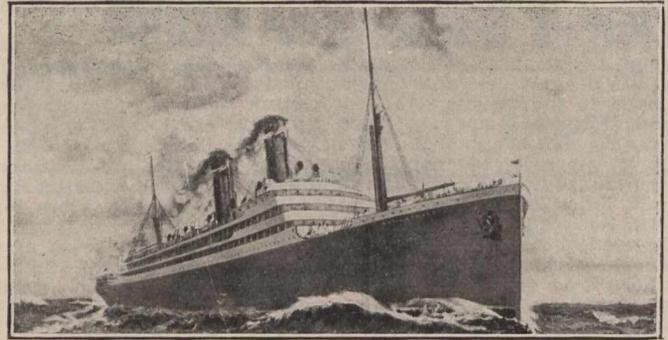
#### Dining Car Service

Toronto to Trenton, on Train No. 8. Trenton to Toronto, on Train No. 9.

#### Parlor Cars On All Trains

Trains run from and to Union Station, Toronto. Union Station with Central Ontario Railway is located in centre of Town of Trenton. All Central Ontario Railway Trains make close connections at Trenton Union Station with above trains.

GEO. H. SHAW, General Traffic Manager, Toronto, Ont.  
R. L. FAIRBAIRN, Asst. Genl. Pass. Agent, Toronto, Ont.



## THE ROYAL LINE

MONTREAL-QUEBEC TO BRISTOL

(Summer Service)

HALIFAX TO BRISTOL

(Winter Service)

### ROYAL GEORGE AND ROYAL EDWARD

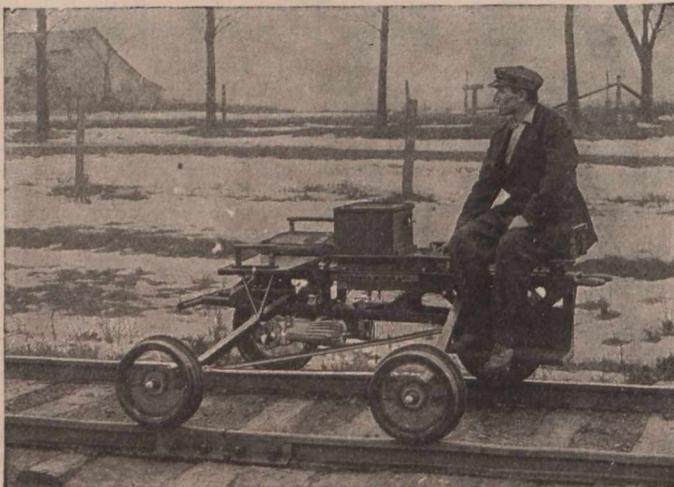
Their equipment and interior appointments are of the most luxurious and modern description, and all the conveniences and comforts that make for an enjoyable voyage have been thoroughly anticipated. Marconi wireless, deep sea telephones, passenger elevators, thermo-tank system of ventilation, superbly appointed cabins.

For full particulars apply to the nearest Railway or Steamship Agent.

P. MOONEY, Genl. Agent, Halifax, N.S.; GUY TOMBS, Genl. Agent, Montreal, Que.; H. C. BOURLIER, Genl. Agent, Toronto, Ont.; A. H. DAVIS, Genl. Agent, Winnipeg, Man.

GEO. H. SHAW, Gen. Traffic Manager, Toronto, Ont.  
WM. PHILLIPS, Gen. Freight and Pass. Agent, Toronto, Ont.

## All Steel Section Car



No. 28 Fairbanks-Morse Gasoline  
Motor Cars

### SPECIFICATIONS

Gauge	Any gauge 24 inches and over.
Wheel Base	3 feet 10 inches.
Length of Car Over All	7 feet 0 inches.
Width, Without Guide Arms	26 inches.
Wheels	17-inch wood center and 14-inch wood center guide wheels.
Axles	Rear axle 1½ inches. Front axle 1½ inches.
Axle Boxes	Rear boxes are malleable iron with oil cellar. Front boxes are full brasses and oiled by engine lubricating system, as well as grease cups for emergency use.
Frame	All pressed steel and steel guide arms.
Power	Two-cylinder, 3¼ x 4 inches, two-cycle air-cooled engine, one cylinder direct connected to front axle on each side. Cranks entirely enclosed. Engine develops about 4 H.P.
Lubrication	Engine is entirely lubricated by oil mixed with the gasoline and reaches the engine with the gasoline, passing through the carburetor.
Control	Spark and throttle are controlled by levers on the seat and the throttle lever also operates a switch and cylinder relief cocks.
Brake	On front and rear wheels. Can be operated from either front or rear seat.
Seating Capacity	Three persons.
Tank	Gasoline tank holds about 2¼ gallons, which operates the car about 80 miles.
Speed	Runs either way up to 30 miles per hour.
Weight	About 400 lbs.

## The Canadian Fairbanks-Morse Co., Limited

MONTREAL

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## RAILWAY DEVELOPMENT.

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

**Alberta Central Ry.**—Steel is reported to have been laid west of the Calgary and Edmonton Ry. at Red Deer to the river, and the substructure of the bridge, half a mile in length across the river, has been completed. It is expected that the bridge will be completed by the end of the year. Track laying will be continued on the farther bank of the river pending the completion of the bridge, and it is expected to have it laid as far as Rocky Mountain House by Dec. 31.

The Board of Railway Commissioners has approved location plans for the line between mileage 64.5, and 71.3 west of Red Deer; and between mileage 160 and 194.6 east from Red Deer, Alta. (Oct., pg. 935.)

**Algoma Central and Hudson Bay Ry.**—The Board of Railway Commissioners has authorized the operation of trains over the extension of the main line, in Sault Ste. Marie. It has also approved location plans for the extension of the line from mileage 30.08 to 129.39.

Arrangements are being made for the letting of contracts for the building of a new station at Tagona, at a cost of about \$10,000, and plans are being prepared for a new station and office building at the foot of Bruce St., Sault Ste. Marie, at an estimated cost of \$100,000. R. S. McCormick, Chief Engineer, was reported as saying, Oct. 11, that the contract for this work would probably be let in the spring of 1912. (Oct., pg. 935.)

**Atlantic, Quebec and Western Ry.**—Track has been laid on the extension of the line into Gaspé, Que., and we are advised that construction trains are being run through to that point. The bridge work and ballasting on the extension are being finished, and it was expected to have everything practically completed by the end of October. (Oct., pg. 935.)

**Brandon Transfer Ry.**—The short piece of line connecting C.P.R. and Canadian Northern Ry. and the Brandon, Saskatchewan and Hudson Bay Ry. (Great Northern Ry.) was opened for traffic, Sept. 19. The line was built and is being operated by the last mentioned railway, under an order of the Board of Railway Commissioners; the rate for handling traffic being \$3 a car. (Oct., pg. 935.)

**British Columbia and Alaska Ry.**—Plans for this projected railway from Vancouver to Fort George have been filed at Victoria and Ottawa. J. Wolkenstein, President, accompanied by several of the directors, completed an inspection of the route Sept. 25, and in Vancouver, on their return from Fort George, the President said arrangements for building the line were being advanced, but whether by the company itself, or in amalgamation with another company, he was not then in a position to state. (Oct., pg. 935.)

**Burrard Inlet Tunnel and Bridge Co.**—An agreement was signed Sept. 28, between the company and the city of Vancouver respecting the building of a bridge across the second narrows of Burrard Inlet. Under the agreement, the city will subscribe for \$200,000 of the company's stock. The company is controlled by the municipalities and the bridge is to be built in connection with railways to be built by the Vancouver, Westminster and Yukon Ry. (See Vancouver, Westminster and Yukon Ry., Oct., pg. 937.)

At a meeting of the directors, Oct. 5, Sir J. Wolfe Barry, of London, Eng., was appointed consulting engineer.

**Central Ry. of Canada.**—We are officially advised that the engineers in

charge of parties are: De S. Beaudry Hawkesbury, Ont., on the section west of that point, and L. G. Parker, St. Andrews, Que., on the section east from Hawkesbury. It is expected to get the location completed, the right of way cleared, and a start made with the earth work during the winter, so as to have some grade ready for tracklaying in the spring of 1912. L. B. Howland, Toronto, formerly President and General Manager, Irondale, Bancroft and Ottawa Ry. has been appointed Superintendent of Construction. (Oct., pg. 939.)

**Dominion Atlantic Ry.**—The Board of Railway Commissioners has extended the time to Mar. 31, 1912, for the completion of the reconstruction of the bridge over the Shubenacadie River at South Maitland, U.S. (Sept., pg. 853.)

Application is being made to the Dominion Parliament to extend the time within which the company may build the line from between Kentville and Canning, to between Berwick and Middleton, authorized to be built in 1908.

**Edmonton, Dunvegan and British Columbia Ry.**—T. Turnbull, Chief Engineer, arrived in Edmonton, Alta., Sept. 21, after having made a preliminary survey of the first hundred miles of this projected railway out of Edmonton. The company has several survey parties in the field locating the line.

A meeting of shareholders will be held in Edmonton, Nov. 6, for the purpose of formally organizing the company. C. Pringle, Ottawa, is Secretary of the Provisional Directors. (See Edmonton to Peace River, Oct., pg. 935.)

**Edmonton to Peace River.**—In connection with the reports referred to in our last issue, an interview with J. L. Cote, a member of the Alberta Legislature, in Vancouver, Oct. 22, states that the charter which has been acquired by the J. D. McArthur interests, covers the building of a line from Edmonton to Fort George. This is the route of the Edmonton, Dunvegan and British Columbia Ry. Mr. Cote added that a survey party was going over the route to secure data preliminary to the location survey. It is expected that construction will be started during 1912, and the line completed in 1914. (Oct., pg. 935.)

**Erie, London and Tillsonburg Ry.**—Dominion Parliament is being asked for an extension of time within which the projected line from Port Burwell to London may be built, J. H. Teall, Tillsonburg, Ont., is President of the company. (June, 1910, pg. 447.)

**Fredericton and Grand Lake Coal and Ry. Co.**—The question of the building of a railway from Fredericton or Gibson to the Queen's County coal fields near Minto, N.B., in the interests of the C.P.R. is under consideration. The Fredericton and Grand Lake Coal and Ry. Co., with H. P. Timmerman, of the C.P.R., as one of the provisional directors, was incorporated by the N.B. Legislature in 1910, and in addition to having power to build from Fredericton or Gibson to Minto, was authorized to acquire the New Brunswick Coal and Ry. Co.'s lines, etc. Location surveys have recently been made by D. F. Maxwell, who went over the route in company with Sir Thos. Tait, Sept. 30. It is reported that the F. and G.L.C. and R. Co. has entered into a contract to supply 100,000 tons of coal a year to the C.P.R., and that the line will be built at once in order to deliver the coal. One report says that the line will be completed by Oct. 1, 1912.

Under the terms of an act passed last session of the New Brunswick Legislature, the Provincial Government is authorized to guarantee the bonds of the F. and G.L.C. and Ry. Co., provided it has entered into a contract with the C.P.R. or other company for the operation of the line, and for the mining of

at least 100,000 tons of coal, and also for the leasing from the province of the Coal and Ry. Co.'s line.

**High River, Saskatchewan and Hudson Bay Ry.**—Application is being made to the Dominion Parliament to incorporate a company to build a line from tps. 25 to 29, range 1, west of the 4th meridian, Alberta, northeasterly to Saskatoon, thence to tps. 52 to 56 on the eastern boundary of Saskatchewan, thence to The Pas, N.W.T. A. A. Ballachey, High River, Alta., is solicitor for applicants. (Sept., pg. 53.)

**Intercolonial Ry.**—Contracts are reported to have been let by the late Dominion Government for the building of the following lines: Dartmouth to Deane, N.S., 43.2 miles, M. P. Davis & Co.; Guysboro to Country Harbor, N.S., 72 miles, Nova Scotia Construction Co.

A contract is reported let to F. Wilson, Truro, N.S., for the erection of a new station there. The building will be 296 by 50 ft., the centre portion being two stories high. The building will be of stone and the contract price is \$150,000. The actual work of building the line will be started in the spring. (Oct., pg. 935.)

**Kaslo and Soan Ry.**—In a recent interview, J. L. Retallack, who is at the head of the company formed to take over this railway, stated that there is every probability that the line between Kaslo and Sproules, B.C., will be put into condition for carrying traffic this fall, and that the remainder of the line from Sproules to McGuigan, will be in shape for operations in the spring. (Oct., pg. 935.)

**Kettle Valley Lines.**—Recent press reports state that of the 250 miles under construction, 65 miles of grading has been completed, and 50 miles of track laid. It is expected that by the end of the year another 15 miles of grading will be completed, and an additional 25 miles of track laid. (Oct., pg. 935.)

**Kootenay and Alberta Ry.**—Application will be made to the Dominion Parliament to extend the time within which the company's projected line may be built. G. V. Cousins, Montreal, is solicitor for the company. (Oct., pg. 937.)

**Michigan Central Rd.**—Last year the company built a section of 16 stalls for a roundhouse at St. Thomas, Ont. Work has been started on an addition of 25 stalls, the contract being reported let to G. A. Ponsford. The old roundhouse is to be abandoned entirely as soon as the new one is completed. (Sept., pg. 855.)

**Minneapolis and St. Louis Rd.**—Iowa Central Ry.—A New York press despatch of Oct. 18 says: "N. Erb., President of the Minneapolis and St. Louis Rd. and the Iowa Central Ry., who returned to-day from an inspection trip, said that preliminary arrangements had been made for extending the Minneapolis and St. Louis to the Canadian border. Engineers were instructed to make a reconnaissance for two routes to the Canadian border, one from Minneapolis to Emerson, where a connection would be effected with the Canadian Northern Ry. and another from Watertown to a point on the border, where a connection would be made with the Grand Trunk Pacific Ry. as well as with the Canadian Northern."

**Montreal-St. Lambert Tunnel.**—It is reported in Montreal, that in connection with the announced intention of the Canadian Northern Ry. to enter Montreal by a tunnel under Mount Royal, the project of connecting Montreal with the south shore by a tunnel under the St. Lawrence River will be carried out. The Montreal South Shore Land and Development Co. is reported to have secured over 600 acres on the south shore, and is about to amalgamate with other interests having the construction of the

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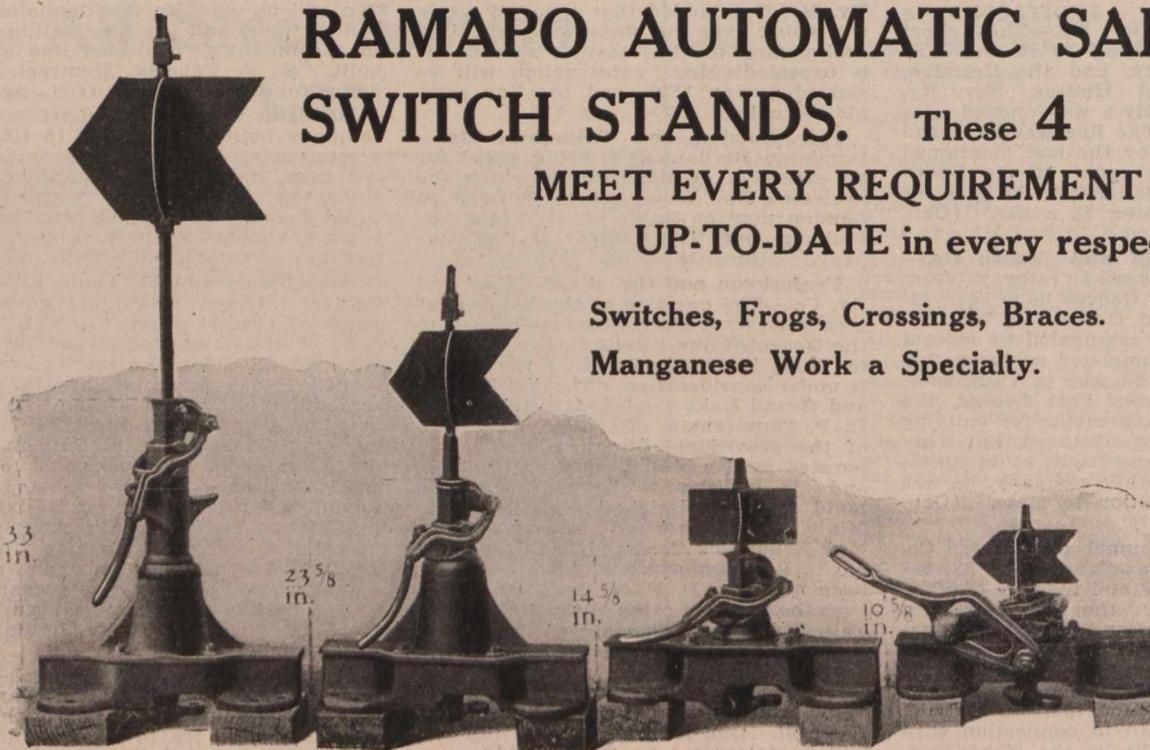
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MEET EVERY REQUIREMENT and are UP-TO-DATE in every respect.

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tunnel in view. The syndicate is stated to comprise among its members, R. Forget, D. McMartin, A. E. Robert, J. L. Perron, W. G. Ross, and Mackenzie, Mann & Co., Ltd. The report further states that the south end of the tunnel will be between St. Lambert and Longueuil, and that the northern end will be either in Chaboillez Square, or between Harbor and Frontenac streets. (See Montreal Central Terminal Co., July, pg. 647.)

**Nelson River Ry.**—Application is being made to the Dominion Parliament to declare the company's corporate powers to be in full force and effect, and extending the time within which the authorized lines may be built. (July, 1910, pg. 549.)

**North Arm Bridge and Ry. Co.**—The Dominion Parliament is being asked to incorporate a company with this title, to build a bridge across the north arm of Burrard Inlet, from Turtles Head to lot 575, directly north of White Rock island, with power to connect with the C.P.R. Port Moody branch to North Vancouver, or with any lines to be built on the north shore of Burrard Inlet, and with any street railway. W. H. Langley, Victoria, B.C., is solicitor for applicants.

**Quebec Central Ry.**—Tenders are being asked for the erection of a two story concrete station at Sherbrooke, Que. The estimated cost of the building is \$30,000. Sept., pg. 855.)

**Quebec Eastern Ry.**—A party of 16 is reported to have left Sherbrooke, Oct. 6, in charge of Hazen Drury, to make a survey for a line from Sherbrooke to Quebec. In connection with this report it is further stated that R. Forget and J. A. Greenshields have secured control of the charter; and that they have also acquired control of the Lotbiniere and Megantic Ry., which line will be utilized as a part of the projected railway. The Q.E. Ry. Co. was originally incorporated with power to take over the L. and M. Ry., and the charter of the Wolfe, Megantic and Lotbiniere Ry. F. N. McCrea and others controlling the L. and M. Ry. were interested in the Q.E. Ry. A Montreal report, Oct. 14, says that when constructed the line will connect at Quebec with the Quebec and Saguenay Ry., now under construction. Certain preliminary surveys were made in 1909, but nothing definite was done. (May, pg. 411.)

**Reid Newfoundland Ry.**—A passenger train service has been put in operation on the Bonavista branch, the first of the lines to be built, under the agreement of 1909. Grading on the Trepassey line is being pushed and work on the line from Broad Cove station to Heart's Content, has been started. This line will be 35 miles long, and run along the south shore of Trinity Bay. (Oct., pg. 937.)

**St. John Valley Ry.**—The Premier of New Brunswick, stated Oct. 5, that the contract with the Dominion Government for the building of the projected railway from St. John to Grand Falls, was ready for signature, but it could not be signed until some small matters of detail had been arranged with the new government at Ottawa. (Oct., pg. 937.)

**Temiskaming and Northern Ontario Ry.**—Grading on the extension of the Porcupine branch to Pearl Lake, Ont., has been practically completed. There are four rock cuts still to be finished. Some track has been laid, and it is expected to have the extension completed early in Dec.

The spur to connect the line at North Bay with the G.T.R. at Nipissing Jct., is practically completed. A new freight shed to be used jointly by the T. and N. O.R. and the G.T.R., at Regina St., North Bay, is expected to be completed early in Nov.

Speaking in Toronto, Oct. 13, A. C.

Macdonnell, M.P., said it was assured that the new Dominion Government would grant a bonus to the line, which the late Government had refused to approve.

Professor S. C. Ellis, has returned to Ottawa, having completed an exploration survey of the country between Cochrane and James Bay, and of the conditions of James Bay itself in the vicinity of Moose River. A report of his observations will be presented to the Commissioners for consideration in connection with the project to extend the line to Hudson Bay. (Oct., pg. 937.)

**United Gold Fields of B.C.**—The Dominion Parliament is being asked to change the head office of the company from Frank to Blairmore, Alta.; authorize a change in the location of one of its authorized lines from "range four" to "ranges three and four"; to authorize the building of the following additional lines: From the C.P.R. at Blairmore southerly to the company's coal mines, and from Blairmore easterly to Lillie; and to extend the time within which the lines may be built. (Aug., 1909, pg. 577.)

### Grand Trunk Pacific Ry. Co's. Annual Meeting.

The adjourned annual meeting of shareholders was held in Montreal, Oct. 10. The President, C. M. Hays, stated that during the year track laying on the main line of the Western Division had been extended from Wolf Creek to Fitzhugh west of the Athabasca River in the Rocky Mountains, which is 1,027 miles west of Winnipeg, and will be the divisional point for that section, and that construction work is under full headway with night and day forces to Tete Jaune Cache, on the Fraser River beyond Yellowhead Pass on the western slope of the Rocky Mountains, and it is expected that track laying will reach this point, 1,094 miles west of Winnipeg, before the close of the year. From Prince Rupert, track is laid easterly for 100 miles to Copper River, and construction work is being prosecuted vigorously with night and day forces from Copper River to Aldermere, 240 miles east of Prince Rupert. This section of the line includes the crossing of the Skeena River, where the substructure for a large bridge is being built, and also includes several short tunnels, the character of which will probably delay the laying of track, but it is expected that early in the season of 1912 the track will reach Aldermere. The contract for the construction of that section of the line through Northern British Columbia between Aldermere and Tete Jaune Cache, 410 miles, has been let to Messrs. Foley, Welch & Stewart, who have done most of the construction work on the main line of the Western Division. As this portion of the railway is located for the most part along the navigable rivers in that part of country which will be available for the transportation of material and supplies during the building of the line, it is expected that these advantages will greatly facilitate the progress of the work. The reports received from the engineers who have explored this new region are very gratifying with regard to the large areas of arable land situated in the valleys contiguous to the line, and judging from the tide of immigrants and settlers which has already set in to this territory, there is every reason for the belief that there will be a large traffic available for transportation as soon as the railway can be completed. Although this portion of the railway is designated the "Mountain Section," the future prospects of the company in connection with the same are exceptionally favorable

and unique in respect to the large areas of land just referred to which are available for settlement and agriculture by reason of the fact that the valleys are wider, thus affording a more distant prospective to the mountains from the location of the line, which also enhances its scenic features.

For the purpose of occupying additional territory in the Western Provinces that is being settled which gives good promise of increasing traffic, the company has under construction approximately 1,400 miles of branch lines, considerable portions of which have already been completed, the latter including the lines to Yorkton, Canora, Regina and Moose Jaw. Lines are also under construction to Prince Albert, Battleford, Calgary and Lethbridge, which will place all these growing cities in direct communication with the main line and secure a large volume of traffic that is rapidly becoming established. Branch lines are also being built into the rich coal fields situated west of Edmonton.

On all portions of the line which have been sufficiently completed trains are in operation and a daily through freight and passenger service is established on the line between Winnipeg, Edmonton and Edson.

For the purpose of establishing suitable hotel accommodations throughout the country which will be traversed by the company's lines, it is proposed to construct a chain of first-class modern hotels. A contract has been let for the construction of a large hotel in Winnipeg at a cost of \$1,500,000. This hotel will be located on Broadway, next to the Manitoba Club, and within easy access to the new union station on Main St. As the hotel is also located at the site of old Fort Garry, "The Fort Garry" has been adopted as its name. Other hotels will be constructed in the near future at Edmonton, also in Jasper Park in the Rocky Mountains, and at Prince Rupert.

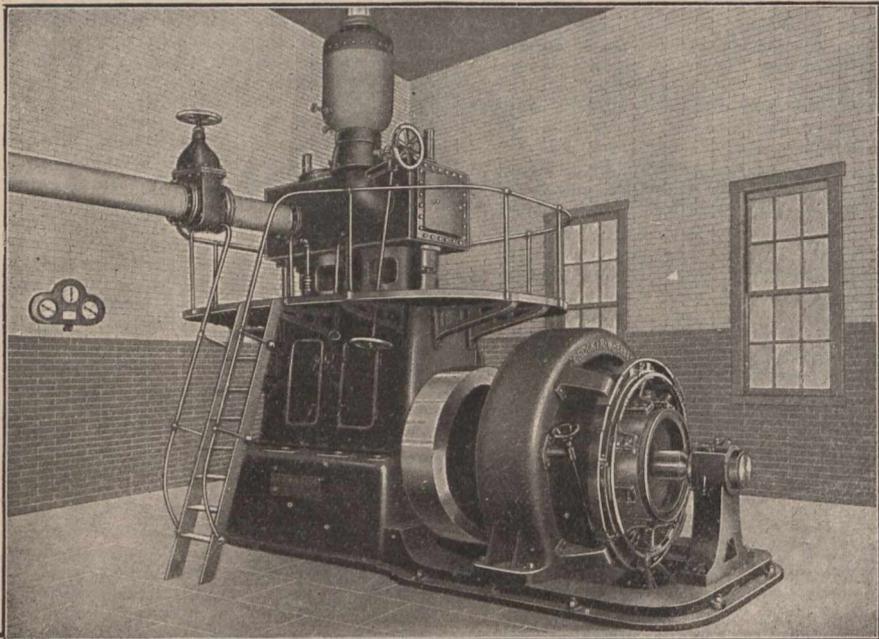
The company has been granted a subsidy by the Government for the construction of a floating dry dock at Prince Rupert at an approximate cost of \$2,200,000, on which work has already been commenced, and tenders have been asked for the construction of terminals and station in that city.

The steamship Prince John has been added to the company's fleet on the Pacific Coast and placed in service between Prince Rupert and the Queen Charlotte Island. This region is rapidly developing as a rich mineral and agricultural district and will no doubt eventually provide a large traffic for the company's steamships and railway.

Good progress has been made in construction on the Eastern Division (National Transcontinental Ry.). A total of 1,223.45 miles of main line track and 136.50 miles of side track have been laid, and the remaining portions of this section are all under contract. Considerable portions of the main line track have been laid in continuous sections, particularly from Moncton to the western boundary of New Brunswick, 218.2 miles; from Quebec westerly beyond La Tuque, 253 miles, and from 125 miles east of Cochrane westerly for 290 miles; from Lake Superior Junction easterly 100 miles has been laid. The line between Fort William and Winnipeg has been in operation during the past year for freight traffic principally, by means of which the company has been enabled to participate in the transportation of the northwestern grain crop to the extensive elevator and terminals which have been constructed at Fort William, and it is expected that this portion of the line will be finally completed for daily train service within a few months.

In the construction, therefore, of approximately 5,133 miles of railway un-

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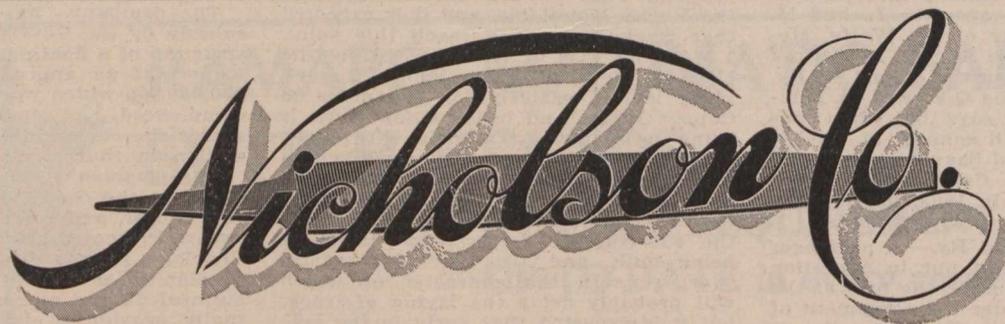
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dertaken in the first instance, there has been laid practically 3,300 miles of main line track, and on large sections on which the construction of the road-bed is already advanced, a large addition will be made to the track mileage within the next few months.

Under agreements with the Government to provide equipment for the operation of the railway, there have been purchased 13,749 freight cars, 173 passenger cars, and 129 locomotives.

The terms of office of the directors expires each year when the full board is eligible for re-election. In the representation on the board by members of the board of Grand Trunk Ry. Co. of Canada resident in London, these directors serve in turn in alternate years. Hugh A. Allan, who was a member of the first board of directors, and has served since the organization of the company in 1904, having taken up his residence in England, is unable to continue as an active member of the board, and the company and directors have much regret in parting with his able co-operation and support.

The following directors are proposed for re-election: A. W. Smithers, Sir Henry Mather Jackson, G. Von Chauvin, Col. Firebrace, C. M. Hays, E. J. Chamberlain, W. Wainwright, E. H. Fitzhugh, W. H. Biggar, E. B. Greenshields, Hon. R. Dandurand, Hon. Geo. A. Cox, E. R. Wood, J. R. Booth.

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

**New England Extensions.**—A. W. Smithers, Chairman of the Board, G.T.R., accompanied by C. M. Hays, President, G.T.R., and officers of the Central Vermont Ry., made an inspection of the route of the projected Southern New England Ry. in Massachusetts and Rhode Island recently.

The S.N.E. Ry. has been ordered to file a bond of \$1,000,000 to protect property owners in Massachusetts, whose property may be taken for the building of the line.

It appears that the differences between the S.N.E. Ry. and the New York, New Haven and Hartford Rd., in Woonsocket, Mass., have not been completely adjusted, as the latter company has filed plans for two new freight houses on North Main St., on part of the route located for the S.N.E. Ry..

**Ottawa Station.**—The first section of the new Central Station at Ottawa to be completed was handed over by the contractors to the company, Oct. 14. The work was reported to have been completed, with the exception of some finishing touches, Oct. 7. It was expected that the staff would move into the new offices by Oct. 30.

**Ashbridge Bay Spur.**—The Toronto board of control has granted the company permission to build an industrial spur and sidings from the National Iron Works to Leslie St., in the Ashbridge Bay district. The agreement provides that the line may be acquired by the city at any time it is thought advisable to take it over and make it part of the city's industrial system in the district. The line is estimated to cost \$90,000.

**Toronto Grade Revision Work.**—Considerable progress has been made on the grade revision work westerly to Mimico, and the permanent tracks have been laid on the section to near Sunnyside, where the buildings south of the Lake Shore road have been demolished, and a start made on the work for the bridge which is to carry the road over the railway. The Board of Railway Commissioners has approved plans for this bridge, without prejudice to the Toronto and York Radial Ry. (Mimico and Lake Shore Division.)

**Midland-Penetang Branches Connection.**—The Board of Railway Commissioners has authorized the opening for traffic of the line from Tiny Jct., on the line from Orillia to Midland, to Saurin Jct., on the line between Colwell and Penetanguishene, Ont. A service of two trains a day each way was commenced Oct. 3.

**Northern Division Bridges.**—The Board of Railway Commissioners has authorized the rebuilding of 14 bridges on the Northern Division.

**Hamilton.**—Press reports state that the company has purchased a considerable area in the vicinity of Barton and Ferguson Sts., upon which it is expected a new station will be built. C. M. Hays, President, informed the mayor, Oct. 6, that one of the Vice Presidents would visit the city shortly and hear the representatives of the different interests as to the railway accommodation provided by the company in the city.

The mayor received a telegram Oct. 18, from C. M. Hays, stating that he, Vice President Kelley, and W. G. Brownlee, General Transportation Manager, would be in the city, Oct. 28, to discuss the question of the company's facilities there, with a view to their improvement and extension.

**Guelph Station.**—The new station at Guelph, Ont., has a frontage of 123½ ft., and a depth of 43 ft., with aloggia and porte-cochere. The general waiting room is 60 by 40 ft.; the ladies' parlor, 17 by 43 ft.; the smoking room, 27 by 20 ft.; parcel and baggage office, 13 by 21 ft.; baggage room, 40 by 26 ft. The ticket and telegraph office is directly opposite the porte-cochere. There is a covered platform of 100 by 30 ft. between the station and the express building which is 40 by 33 ft. These buildings are constructed on concrete foundations, of Bryants Pond grey granite, from foundation to window-sill, with pressed buff brick for walls, trimmed with granite jamb linings, and belt course for all buildings. The entire roof is covered with dull green tile. The interior of offices and waiting rooms is finished in the floors and wainscoting, quarter cut oak trims, doors and sash, granulated plaster walls and ceilings, decorated in suitable tints. The interior of the baggage room and express building is finished in pressed brick. The area of platforms for handling of public is 29,200 sq. ft., and has four tracks in front of the station for passenger trains. At the rear is a circular driveway through a porte-cochere with a side walk from the streets, leading to the loggia for main entrance to the waiting room. The grounds on the city side and end of the building are terraced and sodded, and it is located on what was known as Jubilee Park, the tracks being elevated some 6 ft. The building has a pleasing appearance from the main streets of the city.

**Brantford Industrial Switch.**—Plans were approved by the Board of Railway Commissioners, Oct. 11, for the proposed Holmedale cut-off from the Ontario Institute for the Blind to the Brantford and Tillsonburg branch line. An agreement respecting this work was made with the G.T.R. some time ago, and the commissioners' order only was required to enable the work to be gone on with. The mayor stated that the work is to be started at once and it will be completed early in 1912.

**Interchange Track at Ingersoll.**—The Board of Railway Commissioners has authorized the G.T.R. to build a track for the interchange of traffic with the C.P.R. at Ingersoll, Ont.

**London Improvements.**—C. M. Hays, President, stated in a recent interview, that nothing could possibly be considered in the way of the proposed improve-

ments in London, Ont., until the work in progress in Toronto is out of the way. (Oct., pg. 943.)

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

Summaries of other orders are given on another page under "Orders by the Board of Railway Commissioners."

##### RATES ON MEATS, ETC., IN BRITISH COLUMBIA.

14871. Sept. 1.—Re application of Vancouver-Prince Rupert Meat Co., Ltd. complaining against increased rates charged by Great Northern Ry., under Supplement 32 to its Special Tariff, C.R.C. 602, effective Aug. 1, 1911, on meats, fresh, cured, smoked, dried, or salted, and packing house products, from Sapperton to Vancouver, B.C., shipped by the applicant company; and applying for an order directing the railway company to restore the rate of 5c. per 100 lbs., minimum weight 17,000 lbs., per car, as agreed between the applicant company and the railway company. It is ordered that the Special Tariff of the railway company, Supplement 32 to C.R.C. 602, dated July 18, 1911, effective Aug. 1, 1911, be cancelled in so far as it affects the said traffic; and the railway company is required to restore the rate on the said tariff from Sapperton, B.C., to Vancouver, in force under the tariff issued by the railway company, Supplement 22 to C.R.C. 602, effective Oct. 10, 1910; provided that should the railway company be able to prove the said restored rate to be unremunerative after it has been in effect for a period of not less than one year from the date of restoration, application may be made to the Board for leave to increase it.

##### G.N.R. TO FURNISH REFRIGERATOR CARS.

14872. Sept. 1.—The application of the Vancouver-Prince Rupert Meat Co., Ltd., complaining of refusal of Great Northern Ry. to furnish duty-paid refrigerator cars for dressed meat for shipment from the applicant company's plant at Sapperton, B.C., to Vancouver. It is ordered that the railway company, within the shortest time necessary to provide such equipment, furnish the applicant company with refrigerator cars properly equipped with racks, or cross-pieces, suitable for holding the hangers or hooks used by the applicant company in loading its fresh meat shipments.

##### GREAT NORTHERN RY. RATES.

14887. Sept. 2.—Re application of Prudential Builders, Ltd., for order directing the Great Northern Ry. to provide a 30,000 lbs. minimum weight on a 40,000 lbs. capacity car on the Vancouver, Victoria and Eastern Ry., from Burnaby Lake, B.C., to Vancouver. It is ordered that the G.N.R. amend item 70 of its Special Tariff C.R.C. 602 issued June 20, 1909, applying to lumber, lath and shingles shipped from the company's stations in British Columbia to Vancouver and New Westminster, so as to provide the reduced minimum weight of 30,000 lbs., for cars less than 36 ft. in length.

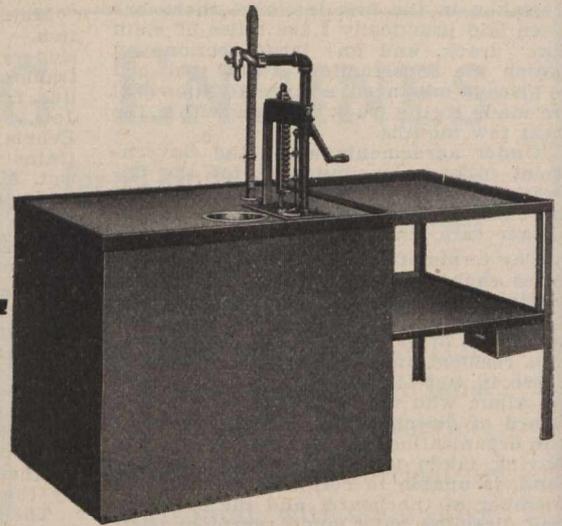
##### REFUND OF OVERCHARGE ON LUMBER.

14888. Aug. 31.—Re application of Fullerton Lumber and Shingle Co., for order directing the Great Northern Ry. to refund an amount alleged to have been overcharged by the railway companies on a carload of lumber shipped by the applicant company from Tynehead, B.C., to Moose Jaw, Sask. It is ordered that the railway company be permitted to refund to the applicant company \$12.85 overcharged by the railway companies on the shipment.

The Intercolonial Ry. has changed the name of its station at St. Michel, Que., to La Durantaye.

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### Orders by the Board of Railway Commissioners.

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

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

14482. Sept. 9.—Approving location of G.T.P.R. station at Entwistle, Alta., authorizing the building of a highway approach thereto, and pending completion of same, ordering that trains be stopped at King St., for passengers and at the sawmill siding for freight.

14712. Sept. 6.—Approving C.N.O.R. location through unsurveyed territory, Thunder Bay District, mileage 140 to 160 from Port Arthur.

14713, 14715. Sept. 7.—Authorizing C.N.R. to cross three public roads with its Prince-Albert Battleford line, Sask.

14716. Sept. 7.—Approving plans of proposed new station and platform to be built at Shawinigan Jct., Que.

14717. Sept. 6.—Approving C.N.O.R. location through unsurveyed territory, Thunder Bay District, mileage 120 to 140 from Port Arthur.

14718, 14721. Sept. 5.—Approving Kettle Valley Ry. plans for bridges over Coldwater and Kettle Rivers, B.C.

14722. Sept. 6.—Approving C.N.O.R. location through unsurveyed territory, Thunder Bay District, mileage 179 to 200 from Port Arthur.

14723. Sept. 7.—Disallowing joint tariffs on oysters from New Haven, Conn., Providence, R.I., and other shipping points of Adams Ex. Co. taking higher through rates than \$1.50 per 100 lbs. to Toronto and \$1.55 per 100 lbs. to Guelph, Ont., new joint tariffs to be issued.

14724. Sept. 5.—Authorizing C.P.R. to build double track and sidings across highways on its Brandon, Man., subdivision, from mileage 57.64 to 130.49.

14725. Sept. 8.—Authorizing Vancouver Power Co., and New Westminster Southern Ry. to operate trains over crossing at Cloverdale, B.C., interlocker being completed.

14726. Sept. 9.—Authorizing C.P.R. to build bridge 133.28 over Thessalon River, Lake Superior Division.

14727. Sept. 9.—Authorizing C.P.R. to build spur into city's material yard, Lethbridge, Alta.

14728. Sept. 9.—Authorizing C.P.R. to build spur for Gordon, Ironsides & Fares Co., Moose Jaw, Sask.

14729. Sept. 8.—Authorizing G.T.P.R. to build standard no. 1 station at Reford, Sask.

14730. Sept. 9.—Authorizing G.T.R. to rebuild bridge across public road, con. 3, Tay tp., Ont.

14731. Sept. 7.—Authorizing G.T.R. to build eight bridges on District 13, Northern Division, Ont.

14732, 14733. Sept. 8-9.—Authorizing C.N.R. to cross six highways with its Prince Albert Battleford line, and five highways with its Swift Current line, Sask.

14734. Sept. 6.—Approving substructure plans of subway under C.N.R. at 23rd St., Saskatoon, Sask.

14735. Sept. 8.—Approving character and plans, ninth concession, Berfeltz and Brewer municipal drains under G.T.R. in Huron county, Ont.

14736. Sept. 12.—Authorizing G.T.R. to build siding into Tudhope-Anderson Co.'s premises, Orillia, Ont.

14737. Sept. 9.—Extending to Oct. 31, time for completion by G.T.R. of cutting down embankment in Camahé tp., Ont.

14738. Sept. 9.—Authorizing C.P.R. to build subway across Scarlett Road, York tp. and to take possession of private land.

14739. Aug. 2.—Authorizing C.P.R. to build third track between Angus and Mile End across papineau Ave., Montreal, and Montreal St. Ry.

14740. Sept. 11.—Authorizing C.P.R. to build its Reston and Wolsey branch across 34 highways in Saskatchewan.

14741. Sept. 12.—Authorizing city of Hamilton, Ont., to maintain sewer under T.H. & B.R. on south side of Main St.

14742. Sept. 12.—Approving location of C.N.O.R. station grounds at St. Benoit, Que.

14743. Sept. 12.—Ordering C.P.R. within 15 days, under penalty of \$25 a day to erect between mileposts 123 and 126, fences of 4½ ft. minimum height, with swing gates at farm crossings, at Alameda, Sask.

14744. Sept. 12.—Authorizing G.T.P. Branch Lines Co., to connect its Yorkton branch with C.N.R. at Canora, Sask.

14745. Sept. 12.—Authorizing G.T.R. to change deviation of spur on its Lachine Canal branch, into Canadian Light and Power Co.'s premises, Montreal.

14746. Sept. 11.—Relieving C.P.R. from further protection of crossing on London and Chatham road at mileage 62.2, east of Chatham, Ont.

14747. Sept. 11.—Ordering G.T.R. to enlarge culvert on lot 21, con. 14, Hullett tp., Ont.

14748, 14749. Sept. 13.—Authorizing Kettle Valley Ry. to cross roads at stations 945 and 901, northwest of Midway, B.C.

14750, 14751. Sept. 11.—Authorizing C.P.R. to build spurs for Halliday Bros., Winnipeg, and Dryden Timber and Power Co., Wabigoon River, Ont.

14752. Sept. 11.—Authorizing South Ontario Pacific Ry. (C.P.R.) to build overhead crossing for its Guelph Jct. to Hamilton branch, over Mill St., Waterdown, Ont.

14753. Sept. 11.—Authorizing South Ontario Pacific Ry. (C.P.R.) to close portion of road allowance between East and West Flamboro tps., Ont.

14754. Sept. 13.—Relieving C.P.R. from further protection at Pottery Corner crossing, Ops tp., Ont.

14755. Sept. 13.—Ordering G.T.R. to provide farm crossing for J. Lauzon, Tilbury North, tp., Ont.

14756. Sept. 14.—Authorizing Saskatchewan Government to build highway crossing over C.P.R. along north of sec. 15, tu. 5, r. 11, w. 2 m.

14757. Sept. 14.—Authorizing C.P.R. to build across highway crossing east of Lachevrotiere station, Que.

14758. Sept. 14.—Authorizing C.P.R. to build its Plenty ballast pit spur on its Moose Jaw northwesterly branch to sec. 3, tp. 33, r. 19, w. 3 m., Sask.

14759. Sept. 14.—Amending orders re operating of semaphores at crossing of Hull Electric Ry. by C.P.R. at Hull, Que.

14760. Sept. 13.—Ordering C.N.R. to fence its right of way on its Wawanesa subdivision by July 1, 1912, under penalty of \$25 a day.

14761. Sept. 13.—Authorizing C.N.R. to connect with G.T.P.R. Melville-Yorkton branch, in s.w. ¼ of sec. 36, tp. 30, r. 4, w. 2 m., Sask.

14762. Sept. 14.—Extending to Oct. 15, time for completion by C.N.R. across Notre Dame St., Montreal, and Montreal St. Ry.

14763. Sept. 14.—Authorizing C.N.R. to cross and divert public road on its Rossburn line, between secs. 21 and 20, tp. 25, r. 31, w. p.m., Sask.

14764. Sept. 18.—Authorizing C.N.R. to cross with its Strathcona-Camrose line eight highways in Alberta.

14765. Sept. 11.—Ordering C.P.R. to build crossing at extension of Henderson St., Grayson, Sask.

14766. Sept. 18.—Authorizing C.P.R. to rebuild bridge 93.5 over Stave River, B.C.

14767. Sept. 18.—Authorizing C.P.R. to extend spur serving National Portland Cement Co. in Brant tp., Ont.

14768. Sept. 16.—Authorizing C.P.R. to operate sidings for Lethbridge Collieries Co. 4 m. near Lenzie, Alta.

14769. Sept. 16.—Authorizing C.P.R. to build two spurs to proposed freight shed at corner of Water and Sherbrooke Sts., Peterboro, Ont.

14770, to 14772. Sept. 18-16.—Approving details of masonry of abutments for subway to be built at Keele St. and or bridges to be built at Jameson and Dowling Aves. Toronto.

14773 to 14775. Sept. 18.—Authorizing G.T.P. Branch Lines Co., to cross with its Biggar-Calgary branch, three highways in Winlow municipality, and two highways in Prairiedale municipality, Sask.

14776. Sept. 18.—Authorizing G.T.P.R. to cross with its Lake Superior branch, C.N.R. main line at Empire St., Fort William, Ont., interlocker to be installed.

14777. Sept. 18.—Authorizing C.P.R. to join its main line at mileage 88 from Victoria Harbor, with its Ontario and Quebec line at mileage 38.57 from Havelock, Ont.

14778. Sept. 18.—Approving C.N.R. location through tps. 10-11, r. 1-3, w. 3 m., Sask.

14779. Aug. 8.—Appointing 12 fire wardens to investigate fire appliances with which locomotives operating in British Columbia are equipped.

14780, 14781. Sept. 2, Aug. 31.—Dismissing Fullerton Lumber and Shingle Co.'s com-

plaint re credit allowed on shipments of lumber, C.P.R. accepting complainant's bond, and dismissing its complaint re rates on lumber.

14782. Sept. 2.—Dismissing New Westminster Board of Trade's application re cost of protecting crossing there.

14783 to 14785. Sept. 2-1.—Dismissing applications of Prudential Investment Co., and Prudential Builders, Ltd., re rebate on cost of spur rates on V.V. and E. Ry., and cost of constructing spur at Burnaby Lake, B.C.

14786. Aug. 31.—Dismissing V.V. and E. Ry. application to take certain lands at Burrard Inlet, Vancouver, B.C.

14787. Sept. 7.—Dismissing complaint of Canadian Rate Adjusting Agency, Lethbridge, Alta., re car of apples frozen in transit.

14788. Sept. 7.—Dismissing complaint of Elko B.C., board of trade re refusal of G.N.R. to instal agent there.

14789. Sept. 15.—Authorizing C.N.R. to cross highway in Maryfield, Sask., with its Prince Albert-Battleford line.

14790. Sept. 14.—Authorizing city of Toronto to erect wires across C.P.R. wires at Avenue Road.

14791, 14792. Sept. 15.—Authorizing G.T.P. and G.T.P. Branch Lines Co. to build stations at Mackay and Alix, Alta.

14793. Sept. 15.—Authorizing G.T.R. to build spur on W. Laking, Haliburton, Ont.

14794. Sept. 15.—Approving G.T.R. plans of gates at Simplex St., St. Pierre, Que.

14795. Sept. 14.—Authorizing C.N.R. to cross public road on its Prince Albert-Battleford line in Mayfield, Sask.

14796. Sept. 13.—Authorizing C.P.R. to cross with its Lauder Westerly extension from Tilston to Griffin, four highways in Albert municipality, Sask.

14797. Sept. 13.—Authorizing C.P.R. to cross three highways with its Bayea South branch, Alta.

14798. Sept. 15.—Authorizing C.P.R. to build additional track across St. Hubert St., Montreal.

14799. Sept. 16.—Authorizing C.P.R. to build extra track under viaduct on Wellington St., Ottawa, Ont.

14800. Sept. 13.—Authorizing C.P.R. to rebuild five bridges on its Eastern Lake Superior and Alberta Divisions.

14801. Sept. 13.—Approving details of subway to be built over Jane St. West Toronto, Ont.

14802. Sept. 18.—Authorizing Canadian General Electric Co. to erect travelling crane over C.P.R. spur, Peterboro, Ont.

14803. Sept. 18.—Approving Alberta Central Ry. location from mileage 64.5 to 71.3 west of Red Deer.

14804. Sept. 19.—Authorizing C.N. Alberta Ry. to cross seven highways with its St. Albert Westerly line.

14805. Sept. 19.—Authorizing C.N.R. to cross with its Rossburn line 13 highways in Saskatchewan.

14806. Sept. 19.—Authorizing C.P.R. to build siding across road allowance near Qu'Appelle station, Sask.

14807. Sept. 18.—Approving location of G.T.P. Branch Lines Co.'s line from east line of sec. 9, tp. 33, r. 21, to south line of sec. 11, tp. 31, r. 25, w. 3 m. mileage 50.23 to 77.13, Sask.

14808. Sept. 19.—Authorizing G.T.P. Branch Lines Co. to cross highway with its Calgary branch at mileage 185, Alta.

14809. Sept. 15.—Approving site of G.T.P.R. station at Rosevear, Alta.

14810. Sept. 18.—Approving stress sheets of proposed G.T.R. bridge at Lost Channel, District 30, near St. Louis station.

14811. Sept. 19.—Further extending to July 1, 1912, time for completion by G.T.R. of overhead bridge at Lachine Road, Montreal.

14812. Sept. 11.—Ordering C.N.R. to file plans within one month for undercrossing about one mile from Camrose, Alta.

14813. Aug. 31.—Dismissing application of Matsqui-Sumas board of trade for order directing C.P.R. and B.C. Electric Ry. to build crossing at Hazel St., Abbotsford, B.C.

14814. Aug. 31.—Dismissing application of C. J. Piper, Piper's Siding, B.C., re passenger rates charged by Vancouver, Fraser Valley and Southern Ry.

14815. Sept. 1.—Dismissing application of transportation committee of Surrey, B.C., board of trade, re refusal of G.N.R. to carry explosives on its mixed trains to Hazelmere, B.C.

14816. Sept. 2.—Authorizing C.P.R. to build spur for Nicola Valley Pine Lumber Co.

14817. Sept. 20.—Approving Alberta Central Ry. location from mileage 160 to 194.6 east from Red Deer.

14818. Sept. 20.—Authorizing C.P.R. to build spur to Loudon Hardware Specialty Co.'s premises, Winnipeg, Man.

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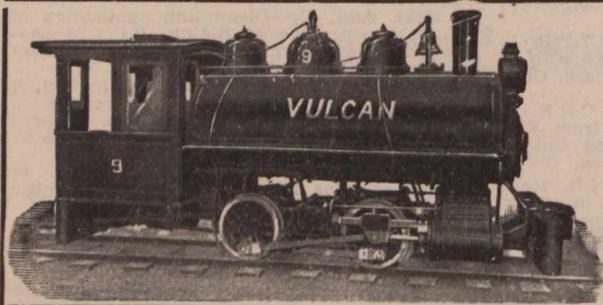
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14819. Aug. 1.—Ordering G.T.R. to build interchange track with C.P.R. at Ingersoll, Ont.
14820. Sept. 21.—Ordering C.P.R. to submit within 30 days reasons why it should not erect or join with Naperville Jct. Ry., in erecting a station at Delson Jct., Que., re order 14362, July 21.
14821. Sept. 19.—Authorizing G.T.R. to build spur into Beardmore & Co.'s premises, Acton, Ont.
14822. Sept. 4.—Authorizing B.C. Electric Ry. to cross G.N.R. at New Westminster, interlocking plant to be installed.
14823. Sept. 11.—Ordering C.P.R. to build highway crossing at First Street North, Strathcona, Alta.
14824. Sept. 8.—Dismissing application of town of Nanton, Alta., for crossing at Alberta St., by C.P.R.
14825. Sept. 14.—Ordering city of Moose Jaw, Sask., to show cause why it should not contribute to cost of bridge over C.P.R. at Thunder Creek.
14826. Sept. 20.—Authorizing C.P.R. to build bridge 3.6 Benny's Subway-Montreal Terminals, Eastern Division.
14827. Sept. 20.—Approving location of Algoma Central & Hudson Bay Ry., from mileage 30.08 to 83.
14828. Sept. 20.—Approving detail plans of C.N.O.R. bridge over Rideau River, Gloucester and Nepean tps.
14829. Sept. 20.—Approving location and detail plans of passenger shelters for Sandwich South tp., Ont., to be built by Windsor, Essex and Lake Shore Rapid Ry.
14830. Sept. 21.—Approving plans of South Ontario Pacific Ry. bridge at mileage 12.46 East Flamboro tp.
- 14831 to 14833. Sept. 21.—Authorizing C.P.R. to build spurs for A. Bremner, Ltd., to ballast pit, Terrebonne County, Que.; John Morrow Screw Works, Ltd., Ingersoll, Ont., and Sand & Supplies Ltd., Dumfries tp., Ont.
14834. Sept. 21.—Approving detail plans of C.P.R. overhead roadway bridge, Peterboro Lumber Co.'s premises to George St., Peterboro, Ont.
14835. Sept. 22.—Authorizing G.T.P. Branch Lines Co., to build its Biggar-Calgary branch across three highways in Alberta.
14836. Sept. 22.—Approving C.N.O.R. revised location through Boulter, Chisholm, and Himsworth tps., Nipissing and Parry sound districts, mileage 316.74 to 328.13.
14837. Sept. 22.—Authorizing C.N.O.R. to cross and divert Stanley Ave., Junction Gore, Gloucester tp.
14838. Sept. 22.—Authorizing C.N.O.R. to cross Riviere des Prairies, main channel, at mileage 40 from Hawkesbury.
14839. Sept. 25.—Ordering C.P.R. to make Verner, Ont., a flag station for trains nos. 1 and 2, for passengers travelling either way between Verner and any point.
14840. Sept. 25.—Approving change in location of proposed C.P.R. station at Hammond, B.C.
14841. Sept. 25.—Authorizing G.T.P. Branch Lines Co. to cross with its Prince Albert branch, highways between mileage 85.7 and 85.9, East Saskatchewan District.
14842. Sept. 25.—Authorizing G.T.P.R. to operate trains over bridge at Kaministikwia River, near Fort William, Ont.
14843. Sept. 25.—Authorizing G.T.P.R. and C.P.R. to operate trains over interlocking plant, near Forrest, Man., without coming to a stop.
14844. Sept. 27.—Approving C.N.R. location through tp. 11, r. 5 to 7, w. 3 m., Sask., mileage 77.27 to 97.
- 14845, 14846. Sept. 23.—Approving C.N.O.R. revised location, mileage 89.78 to 94.97 and 101.52 to 110.14 from Sudbury Jct., Algoma District.
14847. Sept. 25.—Rescinding order 14761, Sept. 13, re connection of C.N.R. and G.T.P.R. s.w. ½ sec. 36, tp. 30, w. 2 m., Sask.
- 14848, 14849. Sept. 27.—Authorizing C.P.R. to build its Virden-McAuley Branch across 12 highways in Manitoba.
14850. Sept. 26.—Authorizing C.P.R. to build extension to bridge 43.4 on its Farnham subdivision, over G.T.R. and Montreal, Park and Island Ry.
14851. Sept. 26.—Authorizing Kootenay Central Ry. Co. (C.P.R.) to divert highway at mileage 11.
14852. Sept. 27.—Approving details of South Ontario Pacific Ry. bridge 15.4 over G.T.R. near Hamilton, Ont.
14853. Sept. 25.—Authorizing South Ontario Pacific Ry. (C.P.R.) to divert forced road on lots 12 and 13, con. 2, East Flamboro, tp., Ont.
14854. Sept. 26.—Approving location of G.T.P. Branch Lines Co.'s proposed station at Mulcahey, Sask., on its Melville-Regina Branch.
14855. Sept. 25.—Authorizing G.T.P. Branch Lines Co. to cross highway with its Prince Albert Branch at mileage 86.5, Sask.
14856. Sept. 26.—Approving location of Algoma Central and Hudson Bay Ry. from mileage 83.00 to 129.39, Ont.
14857. Sept. 27.—Relieving Toronto, Hamilton and Buffalo Ry. from further protection at Bow Park crossing, east of Brantford, Ont.
14858. Sept. 26.—Authorizing C.P.R. to build spur into Alberta Sewer Pipe Co.'s premises, at Calgary Jct., Alta.
14859. Sept. 28.—Authorizing C.P.R. to cross with its Virden-McAuley Branch, 17 highways in Saskatchewan.
14860. Sept. 28.—Authorizing G.T.P. Branch Lines Co., to cross highways on its Melville-Regina Branch, Assiniboia District Sask.
14861. Sept. 30.—Authorizing C.N.R. to open for traffic its line from Toronto to Trenton.
14862. Sept. 25.—Authorizing C.P.R. to build spur for W. A. Denby, Calgary Jct., Alta.
14863. Sept. 1.—Authorizing C.P.R. to take certain lands in Coquitlam municipality, New Westminster District, B.C., for accommodation of traffic.
14864. Sept. 28.—Authorizing G.T.R. to build spur for Crushed Stone, Limited, in Eldon tp., Ont.
14865. Sept. 27.—Authorizing G.T.R. to build additional track across Montrose St., Preston, Ont.
14866. Sept. 22.—Approving plans of G.T.R. bridge at Sunnyside crossing, Toronto, without prejudice to Toronto & York Radial Ry.
14867. Sept. 19.—Dismissing application of C.N.O. Ry. to divert private roadway to C.H. & B. Billings, Junction Gore, Gloucester tp.
14868. Sept. 23.—Approving C.N.O.R. location from mileage 0 to 10.97 from Yonge St. and through part of York tp. and Etobicoke.
14869. Sept. 1.—Authorizing Vancouver Victoria & Eastern Ry. to build farm crossing over C.P.R. between Rymer and Campbell Aves., Vancouver, B.C.
14870. Sept. 4.—Authorizing B.C. Electric Ry. to cross C.P.R. at Millside, B.C.
- 14871, 14872. Sept. 1.—Cancelling G.N.R. Special Tariff Supplement 32 to C.R.C. 602, so far as it affects traffic of Vancouver-Prince Rupert Meat Co., and to restore Supplement 22, and ordering G.N.R. to furnish refrigerator cars properly equipped for handling the company's meat shipments.
14873. Sept. 15.—Authorizing Vancouver-Nanaimo Coal Co. to carry its line from coal mine across Esquimaux & Nanaimo Ry., Mountain District, Vancouver Island.
14874. Aug. 31.—Ordering C.P.R. to provide safe crossings in Yale, B.C., and to limit speed of trains through town.
14875. Sept. 2.—Ordering G.N.R. to file within 30 days, plans showing interchange track with C.P.R. at Sapperton, B.C.
14876. Sept. 2.—Ordering G.N.R. to provide station at Mountain, B.C., equal to standard no. 2.
14877. Sept. 14.—Authorizing city of North Vancouver, B.C., to build subway at Columbia Ave., on C.P.R. lands, 20% of cost to be paid from railway grade crossing fund.
14878. Sept. 19.—Authorizing G.T.R. to build subway under its tracks at Guelph, Ont.
14879. Sept. 23.—Extending to Oct. 31 time for completion of C.P.R. subway at 8th St. West, Calgary, Alta.
14880. Sept. 28.—Ordering C.P.R. to build highway crossing at milepost 158 on its Sault Branch, for Laird tp., Ont.
- 14881, 14882. Sept. 15.—Prescribing extra press delivery and collection limits for Brandon and Portage La Prairie, Manitoba.
14883. Sept. 19.—Ordering G.T.R. to build a foot subway east of eastern abutment of Huskisson St., Guelph, Ont., and to widen approaches to main subway.
14884. Sept. 30.—Authorizing G.T.R. to build spur at Point Claire Station, Que.
14885. Sept. 19.—Authorizing C.N.O.R. to cross Point Anne Road, Point Anne con., Thurlow tp.
14886. Aug. 19.—Dismissing application to compel G.T.P.R. to erect station at Kitsumkalum and siding and flag station at Stewarts Landing, B.C.
14887. Sept. 2.—Ordering G.N.R. to amend item no. 70 of Special Tariff C.R.C. 602, June 20, 1909, applying on lumber, lath and shingles shipped from B.C. to Vancouver and New Westminster to provide the reduced minimum of 30,000 lbs. for cars less than 36 ft. long.
14888. Aug. 31.—Authorizing G.N.R. to refund to Fullerton Lumber & Shingle Co. \$12.85, amount overcharged on shipment of lumber from Tynehead to Moosejaw.
- 14889, 14890. Sept. 29.—Authorizing G.T.R. to rebuild 10 bridges on its Northern Division.
14891. Sept. 29.—Authorizing International Bridge & Terminal Co. to build bridge over Rainy River at Fort Frances, Ont.
14892. Sept. 30.—Authorizing C.N.Q.R. to cross Valois St., Montreal.
14893. Sept. 30.—Extending to Mar. 31, 1912, time for completion by Dominion Atlantic Ry. of bridge over Shubenacadie River at South Maitland, N.S.
14894. Sept. 30.—Authorizing C.N.Q.R. to cross Ontario St., Montreal.
14895. Sept. 30.—Relieving G.T.P. Branch Lines Co. from installing interlocking plant at crossing of its Melville-Regina Branch with C.N.R. incinerator spur, near Saskatoon, Sask.
14896. Sept. 29.—Authorizing G.T.R. to rebuild four bridges on its Northern Division.
14897. Sept. 30.—Authorizing C.N.R. to cross with its Swift Current line, 13 highways in Saskatchewan.
- 14898, 14899. Sept. 30.—Authorizing Algoma Central & Hudson Bay Ry. to operate extension of its main line to Bruce St. and extension across Huron, Hudson, West and Portage Sts., Sault Ste Marie, Ont.
- 14900, 14901. Sept. 29.—Authorizing C.N.Q.R. to cross Chambly and Nicolet Sts., Montreal, by adding double track.
14902. Oct. 2.—Authorizing C.N.R. to open for traffic its line from Togan to end of track, 17 miles, on its Oakland Extension, Man.
14903. Sept. 29.—Authorizing C.P.R. to build branch and Y near Byng Inlet station, Parry Sound District, Ont.
14904. Sept. 29.—Authorizing Georgian Bay & Seaboard Ry. (C.P.R.) to cross C.N.O.R. at mileage 41.08 from Victoria Harbor, interlocking plant to be installed.
14905. Sept. 29.—Authorizing C.P.R. to open for traffic its Lacombe Easterly Branch from mileage 85.89 to 105, between Castor and Coronation, Alta.
- 14906, 14907. Sept. 14, 15.—Prescribing express delivery and collection limits for Regina, Sask., and St. Boniface, Man.
14908. Sept. 7.—Dismissing application of residents of Kipp, Alta., to compel C.P.R. to erect station.
14909. Oct. 3.—Authorizing C.N.O.R. to build bridge over creek at station 135.80, Gloucester tp.
14910. Oct. 3.—Authorizing G.T.R. to open for traffic its railway between Orillia and Midland, at Tiny Jct., to between Colwell and Penetanguishene, at Saurin Jct., Ont.
14911. Sept. 25.—Authorizing Essex Terminal Ry. to cross Sandwich, Windsor and Amherstburg Ry. on Bedford St., Sandwich, Ont. details and signals to be provided.
14912. Oct. 2.—Extending to Dec. 31 time for completion by C.P.R. of subway in sec. 34, tp. 24, r. 2, w. 5 m.
14913. Oct. 2.—Dismissing application of city of St. Boniface, Man., re constructing Rue Messier across C.P.R. Emerson branch.
14914. Oct. 3.—Authorizing Essex Terminal Ry. and Windsor, Essex and Lake Shore Rapid Ry. to operate trains over crossing on Howard Ave., Windsor, Ont., without being brought to a stop.
14915. Oct. 3.—Authorizing G.T.P. Branch Lines Co. to cross with its Brandon branch five highways in North Cypress municipality, Man.
14916. Oct. 3.—Authorizing G.T.R. to make deviation in siding into National Mfg. Co.'s premises, Ottawa, Ont.
14917. Oct. 3.—Authorizing C.N.O.R. and G.T.R. to operate trains over interlocker at Coburg without stopping.
14918. Oct. 3.—Authorizing city of Toronto to maintain a relay telephone and 2,200 volt pole line in connection with its hydro electric system across C.P.R., G.T.R. and G.N.W. and C.P.R. Telegraph Co.'s wires at Strachan Ave.
14919. Oct. 3.—Authorizing South Ontario Pacific Ry. (C.P.R.) to build crossing at mileage 2.5.
14920. Oct. 2.—Authorizing C.P.R. to open for traffic its double track, Brandon Subdivision, mileage 55 to 92.4 and 121 to 131.2, Man.
14921. Oct. 3.—Authorizing C.P.R. to build spur for Standard Chemical Iron & Lumber Co., Winnipeg, Man.
14922. Oct. 4.—Authorizing C.N.R. to open for traffic its line from Vegreville to Warden, Alta., 109 miles.
14923. Oct. 2.—Authorizing Alberta Central Ry. to build bridge over Medicine River west of Red Deer, Alta.
- 14924, 14925. Oct. 5.—Authorizing C.N.Q.R. to build double track across Orleans

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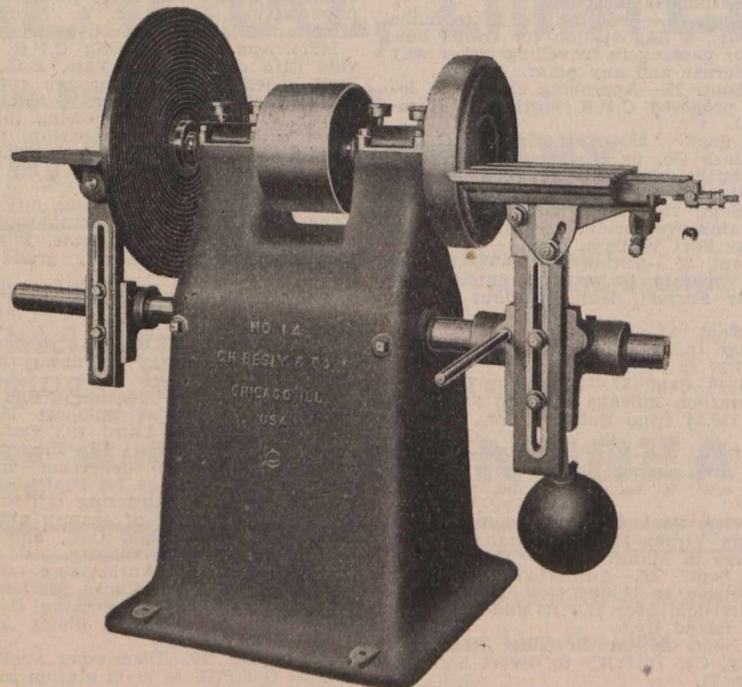
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TORONTO, CANADA, NOVEMBER, 1911.

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Table listing advertisers under letters O, P, and Q. Includes entries like H. & E. Lifting Jack Co., Ltd., Hall Signal Co., Hart, John A., Co., etc.

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Table listing advertisers under letters M, N, and O. Includes entries like Parry Sound Lumber Co., Ltd., Pay-As-You-Enter Car Corporation, Phillips, Eugene F., Electrical Works, Ltd., etc.

Table listing advertisers under letters P, Q, and R. Includes entries like Polson Iron Works, Ltd., Positive Lock Washer Co., Pratt & Letchworth Co., Ltd., etc.

Table listing advertisers under letters S, T, and U. Includes entries like Rail Joint Co. of Canada, Ltd., Railway Materials Co., Reid, John, & Co., Robb Engineering Co., Ltd., etc.

Table listing advertisers under letters V, W, and X. Includes entries like Safety Car Heating and Lighting Co., Saxby & Farmer, Ltd., Seeger Refrigerator Co., Shanly, J. M., etc.

Table listing advertisers under letters Y, Z, and A. Includes entries like Tallman Brass and Metal Co., Ltd., Taylor & Arnold, Ltd., Taylor, J. & J., Titanium Alloy Manufacturing Co., etc.

Table listing advertisers under letters B, C, and D. Includes entries like Union Switch and Signal Co., United States Light and Heating Co., Vulcan Iron Works, etc.

Table listing advertisers under letters E, F, and G. Includes entries like Western Wheeled Scraper Co., White Star-Dominion Line, Whyte Railway Signal Co., Ltd., etc.

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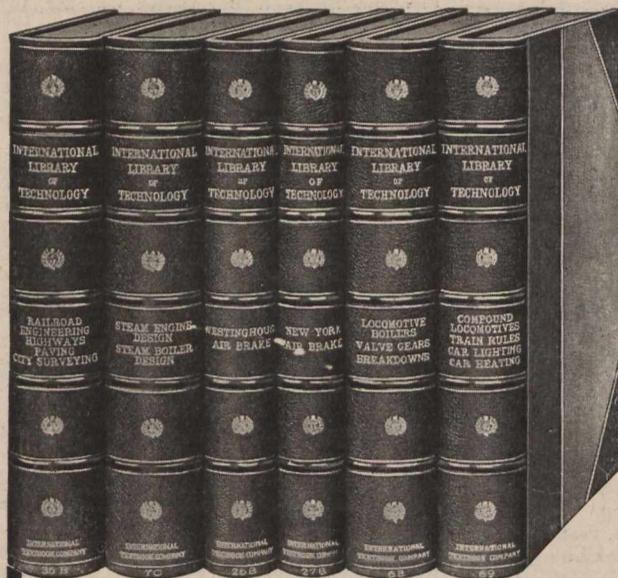
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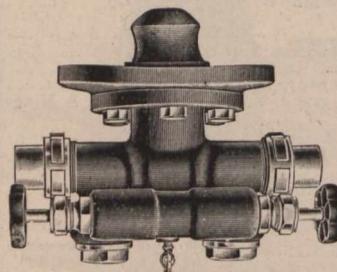
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(Continued from page 1043.)

- and St. Jean D'Arc Sts., Montreal.
14926. Oct. 2.—Authorizing Thurlow Ry. to connect with C.N.O.R. on lot 23, Con. 1, Thurlow tp.
- 14927, 14928, Oct. 5-4.—Authorizing G.T.P. Branch Lines Co., to build its Prince Albert branch across highway at mileage 103.5, and to cross with its Biggar-Calgary branch, 17 highways in Saskatchewan.
14929. Sept. 29.—Authorizing Toronto Eastern Ry. to connect with C.N.O.R. in con. 3, Darlington tp., from line on Wellington St., Bowmanville.
- 14930, 14931. Oct. 2.—Authorizing C.P.R. to extend spur in Moose Jaw, Sask., and to extend spur for Alexander Brown Milling Co., near Princess St., Toronto.
14932. Oct. 5.—Extending to Dec. 31, time within which C.P.R. may complete for Provincial Reformatory, Guelph tp. Ont., branch authorized by order 12409, Nov. 10, 1910.
14933. Oct. 3.—Authorizing C.P.R. to extend spur on Jarvis Ave., Winnipeg, for Gaar, Scott & Co.
14934. Oct. 4.—Authorizing C.P.R. to build its Quill Lake branch across 11 highways in Saskatchewan.
- 14935 to 14937. Oct. 4-5.—Approving location of C.P.R. stations at Champion, Nightingale, and Standard, Alta.
14938. Oct. 4.—Authorizing C.P.R. to build spur for Castor Coal Co. Castor, Alta.
14939. Oct. 6.—Authorizing C.P.R. to rebuild bridge 8.8 on its Cranbrook subdivision, Alberta Division.
14940. Oct. 7.—Authorizing G.T.P.R. to cross two highways in Shoal Lake District, Man., at mileage 8.8 and 9.5, Manitoba.
- 14941, 14942. Oct. 6-7.—Authorizing G.T.P. Branch Lines Co. to cross with its Brandon Branch, 12 highways in Manitoba, and to cross with its Battleford Branch two highways in Saskatchewan.
- 14943, 14944. Oct. 6.—Authorizing G.T.R. to build spur into St. Mary's Portland Cement Co.'s premises, Blanshard tp. Ont.
14945. Oct. 6.—Ordering Michigan Central Rd. to replace pipes under Wellington and Forest Sts. and third Ave., St. Thomas, Ont.
14946. Oct. 7.—Extending for 30 days time, time for installation of electric bell by C.P.R. at crossing near Piles Jct., Que.
14947. Oct. 7.—Approving G.T.R. plan A for re-arrangement of tracks at Powasson station, Ont.
14948. Oct. 7.—Authorizing James Bay and Eastern Ry. (C.N.R.) to cross and divert public road in Ashuapmouchouan tp., Que.
14949. Oct. 7.—Authorizing G.T.R. to build spur into Dominion Sugar Co.'s premises, Berlin, Ont.
14950. Oct. 9.—Authorizing G.T.R. to rebuild bridges 273 and 288 in Albion and Innisfail tps., Ont.
14951. Oct. 9.—Authorizing G.T.R. to build spur into Standard Chemical Iron and Lumber Co. of Canada's premises, South River, Ont.
- 14952 to 14954. Oct. 9, 5.—Authorizing G.T.P.R. to cross highway in n.w. ¼ sec. 5, tp. 11, r. 2; w. p.m., mileage 113.9; approving revised location from sec. 9, tp. 47, r. 1, to sec. 23, tp. 45, r. 4, w. 6 m., mileage 99.70 to 129 Alberta District, and from sec. 1 to sec. 8, tp. 45, r. 1, w. 6 m., mileage 110.57 to 113.53 Alta.
14955. Oct. 7.—Authorizing G.T.P. Branch Lines Co. to build across highway on its Yorkton extension, Sask.
14956. Oct. 9.—Authorizing C.N.R. to open for traffic its line between Delisle and MacRorie, Sask., 46 miles.
14957. Oct. 9.—Authorizing C.N.O.R. to cross C.P.R. and G.T.R. near St. Clair Ave., Toronto.
14958. Sept. 5.—Authorizing James Bay and Eastern Ry. (C.N.R.) to cross public road in Demueles and Ashuapmouchouan tps., Que.
14959. Oct. 4.—Approving location of Campbellford, Lake Ontario and Western Ry. from mileage 0, at Glen Tay, on C.P.R. southerly for 15.1 miles to western boundary of South Sherbrooke tp., Ont.
14960. Sept. 5.—Authorizing C.P.R. to divert original road allowance between secs. 20 and 29, tp. 15, r. 10, w. 4 m., Alta.
14961. Oct. 4.—Authorizing C.P.R. to cross with its Manitou Lake branch, eight highways in Manitoba.
14962. Oct. 6.—Approving location of C.P.R. Wilkie-Anglia branch, mileage 7.46 to 24.90, Sask.
14963. Sept. 11.—Dismissing application of A. R. Hanson, Prevost, Alta., re shipment on which overcharge is alleged against C.P.R.
14964. Sept. 19.—Ordering C.P.R. to reduce export rate on lumber from Lorange, Hebert and Campeau to 5c. per 100 lbs., and to file a tariff making rates effective by Oct. 18.
14965. Sept. 14.—Ordering C.P.R. to extend its grain loading platform at Earl Grey, Sask., by No. 1.
14966. Sept. 7.—Dismissing application of farmers in vicinity of Staunton, Alta., re C.P.R. switching accommodation.
14967. Oct. 9.—Authorizing C.P.R. to use bridge 72.6 over Little Key River, Lake Superior Division.
- 14968, 14969. Oct. 6.—Authorizing C.P.R. to rebuild bridges 19.6 Brandon sub division, Manitoba Division, and over Kicking Horse River, Golden Mountain subdivisions, British Columbia Divisions.
14970. Oct. 6.—Authorizing Niagara, St. Catharines and Toronto Ry. to build spur for MacMahon Bros., Thorold, Ont.
14971. Oct. 9.—Authorizing B.C. Electric Ry. to cross C.P.R. at Columbia St. New Westminster.
- 14972, 14973. Oct. 3.—Authorizing Oshawa Electric Ry. to make certain changes in orders 14509 and 14508, Aug. 8, re spur to carriage factory and across Simcoe St., Oshawa, Ont.
14974. Sept. 19.—Authorizing Algoma Central and Hudson Bay Ry. to cross C.P.R. at grade at Hobon, Ont., interlocking plant to be installed.
14975. Oct. 4.—Approving deviation of Alberta Central Ry. location mileage 0 to 64.5, west from Red Deer.
14976. Sept. 15.—Dismissing application Municipality of Shellmouth, Man., re highway crossing on C.N.R.
14977. Sept. 15.—Ordering C.N.R. to erect gates at Main St crossing, Winnipeg, pending completion of track elevation required by order 14159, 30% of cost to be paid by C.N.R., 30% by city of Winnipeg, 30% by city of St. Boniface, 10% by Winnipeg Electric Ry.; night and day watchman to be appointed.
14978. Oct. 3.—Approving C.N.Q. Ry. plans for bridge over Rouge River, St. Andrews Parish, Que.
14979. Sept. 19.—Authorizing C.N.Q.R. to take 15 ft. of B. J. Coghlin Co.'s land for railway purposes in Hochelaga ward, Montreal.
14980. Oct. 6.—Approving revised location C.N.O.R. Toronto-Ottawa line at Buck Lake, Bedford tp.
14981. Sept. 19.—Authorizing C.N.O.R. to operate trains for construction purposes only until Dec. 31 over C.P.R. and G.T.R. near Ottawa.
- 14982 to 14989. Aug. 10, Sept. 15.—Naming express delivery and collection limits for Port Arthur, Ont., Selkirk, Man., Watrous, Saskatoon and Prince Albert Sask. Edmonton Alta., Victoria and Vancouver, B.C.
14990. Sept. 14.—Authorizing G.T.P. Branch Lines Co. to cross two road allowances and divert one on its Prince Albert Sask. branch.
14991. Sept. 1-4.—Authorizing G.T.P.R. to build footwalk along Main St. and over C.P.R. to new dock at Vancouver, B.C., C.P.R. to build spur to wharf upon terms to be agreed upon.
14992. Oct. 12.—Authorizing C.P.R. to build spur for International Harvester Co., Regina, Sask.
14993. Sept. 11.—Authorizing city of Edmonton, Alta., to extend James St., across C.N.R.
14994. Sept. 11.—Extending to May 1st, 1912, time within which city of Edmonton, Alta., may comply with order 5598 re construction of subway for Edmonton Radial Ry. under C.N.R. and G.T.P.R. at First and Nemayo Aves., watchman to be installed at crossings.
14995. Aug. 31. Ordering G.N.R. to build iron pipe culvert on west side Cariboo Rd., Burnaby municipality, B.C., by Oct. 15, cost to be paid by municipality.
14996. Sept. 15. Authorizing Midland Ry. of Manitoba (G.N.R.) to connect with C.N.R. and cross G.T.P.R. in parish lot 55, St. Boniface parish, Man., interlocker to be enlarged at junction.
14997. Aug. 31. Ordering that G.N.R. drawbridge across False Creek, Vancouver, B.C., be protected by derrails interlocked with home semaphores and operated by electricity.
- 14998 to 15001. Aug. 10 to Sept. 14.—Naming express delivery and collection limits for Fort William, Ont., Weyburn and Moose Jaw, Sask., and Nelson, B.C.
15002. Sept. 15.—Authorizing G.T.P. Branch Lines Co. to connect its Melville-Regina branch with C.P.R. Prince Albert branch in s.e. ¼ sec. 36, twp. 17, r. 20, w. 2 m., Regina, Sask., interlocking plant to be installed.
15003. Oct. 3.—Extending to Jan. 1, 1912, or later, time for installation of interlocker at Chaudiere Jct., near Ottawa, for crossing of C.N.O.R. by C.P.R., crossing to be used on hand signal for construction purposes in meantime.
15004. Oct. 3.—Refusing application of Montreal St. Ry. for recommendation to Governor in Council of amalgamation agreements with Montreal Terminal Ry. and Montreal, Park Island Ry.
15005. Oct. 3.—Authorizing C.N.R. to build across Rainy Lake, Ont., and approving revised location subject to conditions to allow tying up of logs, and for passage of steamboats and logs.
15006. Sept. 15.—Naming express delivery and collection limits for Winnipeg.
15007. Oct. 5.—Authorizing C.N.Q.R. to cross with double track Bourbonniere St., Maisonneuve.
15008. Sept. 14.—Dismissing city of Saskatoon application for C.N.R. spur to power house under construction.
15009. Oct. 10.—Authorizing C.P.R. to build spurs for Thessalon Lumber Co., Lefroy tp., Ont.
15010. Sept. 1.—Naming express delivery and collection limits for New Westminster, B.C.
15011. Oct. 3.—Authorizing Kootenay and Alberta Ry. to take land at junction with C.P.R. Crow's Nest line in Alberta.
15012. Oct. 12.—Amending order 14562 re Alberta Government highway crossing over C.P.R. in s.w. ¼ sec. 36, tp. 46, r. 22, w. 4 m., by providing that cost of building and maintaining crossing be paid by C.P.R.
15013. Aug. 2.—Authorizing Alberta Ry. and Irrigation Co. to build Fourth Ave. across its railway in Warner.
15014. Aug. 2.—Authorizing South Ontario Pacific Ry. (C.P.R.) to connect its Guelph Jct. to Hamilton line with T.H. & B. Ry. at mileage 16.17 near Hamilton, Ont.
15015. Aug. 2.—Authorizing G.T.R. to build branch crossing C.P.R. to connection with T. & N.O.R. at Nipissing Jct., Ont., interlocking plant to be installed.
15016. Oct. 12.—Approving plans of bridge to carry Dufferin St., Toronto, over G.T.R.
- 15017, 15018. Oct. 12.—Authorizing G.T.P. Branch Lines Co. to amend orders 18890, June 13, and 10550, May 13, 1910, re location of Calgary branch.
15019. Oct. 11.—Authorizing C.P.R. to build spur for Harrison & Beatty, on lot 14, con. 12, Sydenham tp., Ont.
15020. Oct. 12.—Authorizing McKim tp., Ont., to build crossing over C.P.R. Stobie branch.
15021. Oct. 12.—Approving revised location of Vancouver Victoria and Eastern Ry. from Hope to west boundary of Yale District B.C., 24.17 miles.
- 15022, 15023. Oct. 12.—Amending orders 14890 and 14889 re G.T.R. Northern Division bridges.
15024. Sept. 15.—Naming express delivery and collection limits for St. Boniface, Man., and rescinding order 14907.
15025. Oct. 11.—Ordering Central Ontario Ry. to provide proper drainage for A. Doxstatot, Glen Ross, Ont.
15026. Oct. 16.—Authorizing C.N.O.R. to build bridge over Sydenham Lake, Loughborough tp.
15027. Oct. 10.—Authorizing C.P.R. to operate passing siding south of present main track, Thessalon tp., Ont.
- 15028 to 15031. Oct. 11, 10.—Authorizing C.P.R. to rebuild bridges at mileage 0.41, Manitoba Division, Fort William Terminals, at mileage 43.79, Chalk River subdivision, Eastern Division, at mileage 165.01 Sault Ste. Marie and branch, approving plans for work to be done at bridge 30.55, Gibson subdivision, Atlantic Division.
15032. Oct. 9.—Authorizing C.P.R. to build its Lacombe Easterly branch across 16 highways and divert one between mileage 106.30 to 119.72, Alta.
15033. Oct. 12.—Authorizing C.P.R. to cross passing siding over road allowance in Lefroy tp., Ont.
- 15034, 15035. Oct. 9.—Authorizing C.P.R. to cross with its Regina, Saskatoon and North Saskatchewan line, six highways in Saskatchewan.
15036. Oct. 10.—Approving location of C.P.R. branch from MacLeod to Frank, mileage 0 to 54.52, Alta.
15037. Oct. 9.—Authorizing G.T.P.R. to build its main line across highways at mileage 72, North Alberta District.
- 15038 to 15042. Oct. 11, 10.—Authorizing G.T.P. Branch Lines Co. to cross with its Biggar-Calgary branch 11 highways and with its Calgary, Melville-Regina and Prince Albert branch at five highways in Saskatchewan.
15043. Oct. 10.—Authorizing G.T.R. to rebuild swing bridge over Richelieu River, District 30.

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D. McNicoll, Vice President, C.P.R., has been elected a director of Molson's Bank.

W. J. Lynch, son of P. J. Lynch, Superintendent, G.T.R. Barrie, Ont., died there recently.

C. M. Hays, President, G.T.R., and Mrs. Hays, returned to Montreal, Oct. 7, from their summer residence.

A. R. Owen, C.P.R. agent at Shanghai, left Montreal, Sept. 7, on his return to China, after a trip to Europe.

C. F. Smith, Vice President, Dominion Express Co., died in the Royal Victoria Hospital, Montreal, Sept. 30, aged 70.

T. Bower, for many years foreman in the Michigan Central Rd. shops, St. Thomas, Ont., died there, Sept. 30, aged 64.

S.R. Poulin, District Engineer, District F., National Transcontinental Ry., died in the hospital at St. Boniface, Man., Oct. 14.

Sir William Whyte, director, C.P.R., has been elected a director of the Imperial Guarantee and Accident Insurance Co. of Canada.

Sir W. H. White, director, G.T.R., accompanied by Lady and Miss White, arrived in Canada, at the end of September, on a short visit.

Sir Donald Mann, Vice President, Canadian Northern Ry., has been elected Honorary President of the Toronto Inverness-shire Association.

R. A. R. Sinclair, son of Angus Sinclair, C.E., contractor, Canadian Northern Ry., was married at Toronto, Oct. 14, to Miss Muriel Jarvis.

Arrangements are being made for a public banquet to Sir Wm. Whyte, in Winnipeg, in connection with his retirement from railway service.

E. J. Wearing, G.T.R. passenger agent in Liverpool, Eng., arrived in Victoria, B.C., Oct. 11, on a tour over the G.T.R. and G. T. Pacific Ry. lines.

Mrs. Balkwill, mother of Jas. Balkwill, chief clerk in the Superintendent's office, Michigan Central Rd., St. Thomas, Ont., died at Dutton, Ont., Oct. 6.

W. G. Annable, General Passenger Agent, C.P.R., Atlantic Lines, and Mrs. Annable, returned to Montreal, Sept. 29, from a trip to Great Britain.

W. Harty, President, Canadian Locomotive Co., Kingston, Ont., has resigned the chairmanship of the Governors of the School of Mines, Kingston.

Miss Gertrude Foy, eldest daughter of the late John Foy, President of the Niagara Navigation Co., was married in Toronto, Oct. 17, to C. S. Murray.

H. G. Wilson, secretary to Superintendent Tisdale, G. T. Pacific Ry., was run over by an engine and killed, Sept. 23, in the yards at Transcona, Man.

E. H. Keating, M. Can. Soc. C.E., ex-Manager, Toronto Railway, returned to Toronto, Oct. 22, from Europe, accompanied by Miss Keating and Miss Jessie Keating.

M. W. Irwin, who died in Guelph, Ont. Oct. 13, from the effects of an accident, was a twin son of J. Irwin, Superintendent, Canadian Northern Ry., Dauphin, Man.

Lord Northcote, who died in England, Sept. 29, was, as H. Stafford Northcote, one of the first directors of the C.P.R. Lady Northcote is the adopted daughter of Lord Mount Stephen.

Mrs. J. D. McDonald and Miss McDonald have left Toronto to reside in Chicago, in consequence of Mr. McDonald's appointment there as Assistant General Passenger Agent, G.T.R.

Miss E. M. Reid, daughter of the late

R. Reid, of London, one of the original members of the National Transcontinental Railway Commission, was married in Ottawa, Oct. 11, to G. J. Ingram.

Guy Tombs, General Freight and Passenger Agent, Canadian Northern Quebec and Quebec and Lake St. John Railways, has been appointed a justice of the peace for the Province of Quebec.

John H. Mulock, who died in Jersey, Channel Islands, recently, was a native of Brockville, Ont., and for some years was chief clerk in the audit section of the C.P.R. Freight Department, Montreal.

The King has awarded the King Edward medal of the first class to the widow of W. McFall, a C.P.R. locomotive driver, who was killed through devotion to duty at North Wakefield, Que., in April.

C. Luscombe, of the C.P.R. engineering staff at Smiths Falls, Ont., was presented with a cabinet of silver by his associates, on the occasion of his marriage to Miss M. Smith, which took place at Quebec, Oct. 12.

F. Jaques, of C. E. Jaques & Co., Montreal, was presented with a cabinet of silver by the marine men of the city, Oct. 12, R. Bickerdike, M.P., acting as spokesman. Mr. Jaques was married Oct. 18 to Miss M. Fahim.

J. W. Phair, Bridge and Building Master, Canadian Northern Quebec Ry., and Quebec and Lake St. John Ry., Joliette, Que., was killed near Quebec, Oct. 11, as a result of a collision between his gasoline car and an express train.

R. W. Fair, Stratford, Ont., won a G.T.R. scholarship at McGill University, Montreal, in the recent examinations. For the three scholarships open this year, there were only two candidates, and only one scholarship was awarded.

A. B. LaPrairie, who died at Point St. Charles, Montreal, Oct. 1, aged 73, retired from active railway service two years ago, after having been for 55 years with the G.T.R. for the last 33 years of which period he was foreman in the car repairing department.

J. C. Stubbs, Vice President and Director of Traffic of the Oregon-Washington Rd. and Navigation Co., the Oregon Short Line Rd., the Southern Pacific Ry., and the Union Pacific Rd., has announced, according to press reports, that he will retire on Jan. 1.

W. B. Scott, at one time clerk in the G.T.R. freight service at Guelph, Ont., and latterly Assistant Director of Maintenance and Operation, Union Pacific Rd., at Chicago, is reported to have been appointed Vice President and General Manager of that road at Omaha, Neb.

T. Skinner, of London, Eng., director, C.P.R., returned to Montreal, Oct. 16, after a trip to the Pacific coast on business connected with the Hudson's Bay Co., of which he is Deputy Governor. He was re-elected a director of the Dominion Atlantic Ry., at the annual meeting in Montreal, Oct. 13.

Lord Strathcona, who sailed from England, Sept. 23, on a flying visit to Canada, via New York, spent a few days in Montreal and Ottawa, returned to New York and sailed from there, Oct. 4, for England. It is announced that he will retain the office of High Commissioner for Canada, in England, for the present.

W. H. Plummer, Sault Ste Marie, Ont., who died in Toronto, Oct. 13, was associated with F. H. Clergue in the early days of the various industries owned by the Lake Superior Corporation. He was a brother of J. H. Plummer, President, Dominion Steel Corporation, and of F. Plummer, General Manager, Canadian Lake Line.

A. E. Boughner, who has been appointed Superintendent of Transportation, Missouri, Kansas and Texas System, Denison, Tex., was born in St. Thomas, Ont., and began his railway career with the Canada southern Ry., where he was, from 1876 to 1880, consecutively, messenger, call boy and telegraph operator.

Miss Wicksteed, eldest daughter of H. K. Wicksteed, M. Can. Soc. C.E., Chief Engineer of Surveys, Mackenzie, Mann & Co., Ltd., was married at Cobourg, Ont., Oct. 18, to H. Morrison, of Dartmouth, N.S. The staff of the survey department gave a bracelet watch to the bride and a gold watch to the bridegroom. The C.N.R. management placed an official car at their disposal for a trip to Quebec.

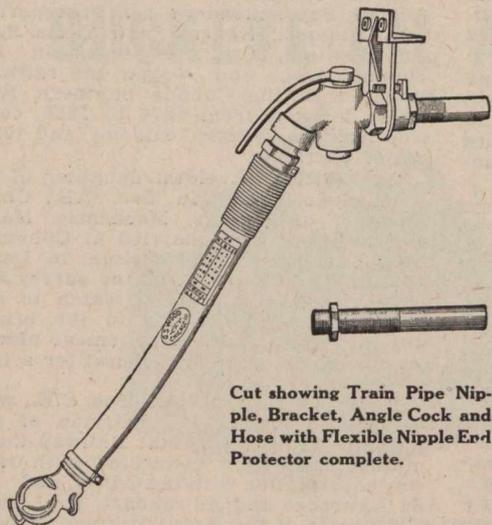
R. W. Leonard, M. Can. Soc. C.E., who has been appointed Chairman of the National Transcontinental Railway Commission, has been connected with railway construction with the C.P.R., and the St. Lawrence and Adirondack Ry. He is a graduate of the Royal Military College, Kingston, Ont., and a Governor of the Queens School of Mining. He is President and General Manager of Coniagas Mines, Ltd., and in military life holds the rank of Major. The salary attaching to the position is \$10,000 a year.

Hon. Francis Cochrane, who has been appointed Minister of Railways and Canals, was born at Clarenceville, Que., Nov. 18, 1852. He entered political life as Minister of Lands and Mines in the Ontario Government, May 30, 1905, when he was elected as member of the Legislature for East Nipissing, and was re-elected for the newly created constituency of Sudbury in 1908, and continued to administer the same department, the name of which was changed to Lands, Forests and Mines, until his present appointment.

D. E. Galloway, who has been appointed Assistant to the President, G.T.R., and G.T.P.R., was born in Puslinch tp., Ont., Aug. 31, 1882, and entered G.T.R. service, Feb. 1, 1901, since when he has been, to Nov., 1901, in Claims Department, Hamilton, Ont.; Nov., 1901, to Sept. 21, 1904, in Claims Department and General Freight Department, Montreal; Sept. 21, 1904, to Jan. 7, 1910, private secretary to the Second Vice President and General Manager, G.T.R., Montreal, and Jan. 7, 1910, to Oct. 2, 1911, private secretary to the President, G.T.R., and G.T.P.R., Montreal.

G. R. Starke, Secretary, Dominion Transport Co., W. A. Clarke, general agent, Dominion Express Co., and E. R. Belcourt, Manager, Shedden Forwarding Co., Montreal, are among the directors of the Montreal Vehicular Traffic Co., which has been incorporated under the Quebec Companies Act, with a capital of \$10,000 and office in Montreal, to promote and facilitate the improvement of streets and roads, to suggest and promote the passing of bylaws and legislation as to traffic, and to do "every act and deed which may be expedient or necessary for the protection of the rolling and vehicular traffic generally."

Hon. John Douglas Hazen, who has been appointed Minister of Marine and Fisheries, was born at Oromocto, N.B., June 6, 1860. He was called to the bar in 1883, and was a member of the senate of the University of New Brunswick, and also registrar and treasurer, from 1882 to 1890. He was elected to the House of Commons for St. John, N.B., in 1891, but was defeated in 1896. In 1899 he was elected to the New Brunswick Legislature for Sunbury and was re-elected in 1903 and 1908. From 1899 to Mar. 24, 1908, he was leader of the opposition in the Legislature, and from the latter date he was Premier and Attorney General of the province.



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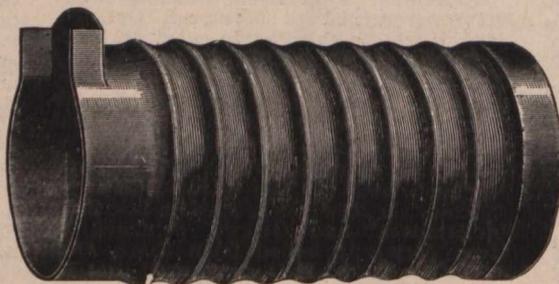
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M. G. Murphy, who has been appointed District Passenger Agent, C.P.R., Toronto, was born at Halifax, N.S., Feb. 26, 1878, and entered C.P.R. service, Mar. 31, 1899, since when he has been, to Jan., 1901, agent and operator, Atlantic Division; Jan., 1901, to 1903, chief clerk, Freight Agent, C.P.R., and agent, Dominion Express Co., Halifax, N.S.; 1903 to 1905, Travelling Passenger Agent, Atlantic Division; 1905 to June, 1907, Assistant to District Passenger Agent, St. John, N.B.; June, 1907, to Nov. 1, 1910, General Travelling Passenger Agent, Western Lines, Winnipeg; Nov. 1, 1910, to Oct. 1, 1911, General Travelling Passenger Agent, All Lines, Montreal.

The Canadian Freight Association, at its meeting in Montreal Oct. 19, passed the following resolution: "This association learns with regret that W. B. Bulling, owing to ill-health, has been obliged to retire temporarily from active duty as Assistant Freight Traffic Manager, C.P.R. Its members desire to place on record an appreciation of his services. His long years of experience, his accuracy and strength of memory, and the thoroughness of his work inspired respect and confidence, while his unflinching patience, integrity and courtesy caused him to be held in high esteem and friendly affection by all. It is the hope of this association that a complete rest may restore his health and enable him to once again become an active member."

C. H. Temple, who has been appointed Superintendent of Motive Power, Western Lines, C.P.R., Winnipeg, was born in Montreal in 1862, and entered railway service in 1874, since when he has been, to 1881, office boy and apprentice, G.T.R., Belleville, Ont.; 1881 to 1886, mechanic and mechanical clerk in Mechanical Superintendent's office, G.T.R. Montreal; in 1886 he was appointed Foreman, C.P.R. shops at Yale, B.C., and subsequently, to 1902, he acted as Foreman at Kamloops, Vancouver, Revelstoke and North End, B.C.; 1902 to Jan., 1905, Master Mechanic, Pacific Division, C.P.R.; Jan., 1905, to June, 1909, Master Mechanic, Central Division, C.P.R., Winnipeg; June, 1909, to Oct., 1911, Assistant Superintendent of Motive Power, Western Lines, C.P.R., Winnipeg.

R. S. Logan, who has been appointed Vice President, G.T.R., in charge of Land, Tax, Claims and Mail Department, Montreal, was born at St. Louis, Mo., Feb. 13, 1864, and entered railway service in 1885, since when he has been, to Dec. 1, 1890, clerk in General Manager's office, Wabash, St. Louis and Pacific Ry.; Dec. 1, 1890, to July 1, 1896, secretary to General Manager, Wabash and Pacific Ry.; July 1, 1896, to Jan. 1, 1901, secretary to General Manager, G.T.R.; Jan. 1 to Mar. 15, 1901, Assistant to General Manager, G.T.R.; Mar. 15, 1901, to Mar. 17, 1902, Vice President and General Manager, Central Vermont Ry.; Mar. 17, 1902, to Jan. 7, 1910, Assistant to Second Vice President and General Manager, G.T.R.; Jan. 7, 1910, to Oct. 2, 1911, Assistant to the President, G.T.R. and G.T.P.R.

M. M. Reynolds, who has been appointed Vice President, G.T.R., in charge of the Financial and Accounting Departments, Montreal, was for eleven years prior to Jan., 1892, Auditor, National Ry. of Mexico; Feb., 1892, to Mar., 1896, General Auditor, Central Vermont Rd., St. Albans, Vt.; Mar., 1896, to Apr. 30, 1899, Auditor for the Receivers, same road; May, 1899, to Sept. 30, 1902, Auditor, Central Vermont Ry., successor to the C.V. Rd.; Oct. 1, 1902, to Apr. 13, 1904, Comptroller, National Ry. of Mexico; Apr. 13, 1904, to Apr., 1908, Comptroller, same road. Apr., 1908, Comptroller, and Mexican

Interoceanic Ry.; Apr. 1, 1908, to Jan. 7, 1910, Fifth Vice President, G.T.R.; Jan. 7, 1910, to Oct. 2, 1911, Third Vice President, same road, and from Apr., 1908, also Third Vice President, G.T.P.R.

F. Nowell, who has been appointed District Master Mechanic, C.P.R., White River, Ont., was born at Stratford, Ont., May 31, 1872, and entered railway service, Feb. 1886, since when he has been, to 1893, machinist apprentice, C.P.R., Montreal; 1893 to Sept. 1895, not in railway service; 1895 to 1897, fitter and leading hand in erecting shop, C.P.R., Montreal; 1897 to July 1900, fitter, C.P.R., Kamloops, B.C.; July, 1900, to Feb., 1901, fitter, C.P.R., Montreal; Feb. 1901, to 1903, relieving foreman, C.P.R. shops, Montreal; 1903 to Jan., 1905, Night Locomotive Foreman, C.P.R., Outremont, Que.; Sept. 1905 to Dec., 1907, Locomotive Foreman, C.P.R., Three Rivers, Que.; Dec. 1907, to Mar., 1908, Locomotive Foreman, C.P.R., Quebec, Que.; Mar. 1908 to Sept., 1911, Locomotive Foreman, C.P.R., Ottawa, Ont.

R. L. Burnap, who has been appointed Assistant Freight Traffic Manager, G.T.R., Chicago, Ill., was born Sept. 20, 1872, and entered railway service in 1894, since when he has been, to May 1, 1896, consecutively, clerk in Local Freight Agent's office, Central Vermont Ry.; clerk in Division Freight Agent's office, Ogdensburg Transit Co., and clerk in Division Freight Agent's office, Central Vermont Ry., Ogdensburg, N.Y.; May 1 to Sept. 1, 1896, clerk in Commercial Agent's office, Central Vermont Ry., New York City; Sept. 1, 1896 to Feb. 1, 1900, Travelling Freight Agent, Central Vermont Ry., New London, Conn.; Feb. 1, 1900 to Aug. 1, 1905, Commercial Agent, Central Vermont Ry., New York City; Aug. 1, 1905 to May 1, 1908, General Freight Agent, Central Vermont Ry., St. Albans, Vt.; May 1, 1908 to Oct. 16, 1911, Assistant General Freight Agent, G.T.R., Chicago, Ill.

John Pullen, who has been appointed President, Canadian Express Co., was born at Shepton Mallet, Eng., Jan. 23, 1863, and entered G.T.R. service, 1877, since when he has been, to 1878, in various capacities in the Assistant General Freight Agent's office, Sherbrooke, Que.; 1878 to 1880, in General Freight Department, Montreal; 1880 to 1890, secretary to Traffic Manager, Chicago, Ill.; 1890 to 1896, Agent, West Shore Fast Freight Line and subsequently Agent, Reading Despatch, Chicago, Ill.; 1896 to 1897, Division Freight Agent, Stratford, Ont.; 1897 to May 1, 1899, Division Freight Agent, Hamilton, Ont.; May 1, 1899, to May 1, 1900, General Freight Agent, Central Vermont Ry., St. Albans, Vt.; May 1, 1900 to Aug. 14, 1905, General Freight Agent, G.T.R., Montreal; Aug. 14, 1905, to Oct. 2, 1911, Assistant Freight Traffic Manager, G.T.R., Montreal.

J. E. Dalrymple, who has been appointed Vice President, G.T.R., Fourth Vice President, G.T.P.R., and Vice President, Central Vermont Ry., Montreal, in charge of traffic, was born at Montreal, Jan. 1, 1869, and entered G.T.R. service, July 1, 1883, since when he has been, to 1890, in various capacities in the Treasurer's office, Montreal; Apr. 1, 1890, to Feb. 1, 1896, secretary to Traffic Manager, Chicago, Ill.; Feb. 1, 1896, to May 1, 1899, secretary to General Traffic Manager, Montreal; May 1 to Aug. 1, 1899, Division Freight Agent, Hamilton, Ont.; Aug. 1, 1899, to May 1, 1900, Division Freight Agent, Detroit, Mich.; Manager, G.T. Despatch Fast Freight; May 1, 1900 to 1902, General Freight Agent, Central Vermont Ry.; 1902 to 1903, Assistant to General Manager, G.T.R., Montreal; 1903 to Aug. 14, 1905, General Freight Agent, Central Vermont Ry.; Aug. 14, 1905, to

Apr., 1908, General Freight Agent, G.T.R., Montreal; Apr., 1908, to Oct. 2, 1911, Assistant Freight Traffic Manager, G.T.P.R., Winnipeg.

George Bury, who has been appointed Vice President and General Manager, Western Lines, C.P.R., and whose portrait appears on the first page of this issue, was born at Montreal, Mar. 6, 1866, and entered C.P.R. service in 1883, since when he has been, to 1887, clerk in Purchasing Department, and in General Manager's office; 1887 to 1889, secretary to Vice President and afterwards to President; 1889 to Mar., 1890, acting Superintendent, Dining, Sleeping and Parlor Car Service; Mar., 1890, to Sept., 1899, successively Assistant Superintendent at Chalk River, Ont., and Superintendent at North Bay, Ont.; Sept., 1899, to Feb., 1901, Superintendent at Fort William, Ont.; Feb., 1901, to Feb., 1902, Superintendent, Crows Nest Pass line, Cranbrook, B.C.; Feb. to May, 1902, Assistant General Superintendent, Lake Superior Division, North Bay, Ont.; May, 1902, to 1905, General Superintendent, Lake Superior Division, North Bay, Ont.; 1905 to Feb., 1907, General Superintendent, Central Division, Winnipeg; Feb., 1907, to Mar. 1, 1908, Assistant General Manager, Western Lines, Winnipeg; Mar. 1, 1908, to Oct., 1911, General Manager, Western Lines, Winnipeg.

C. A. Hayes, who has been appointed Freight Traffic Manager, G.T.R., Montreal, was born at West Springfield, Mass., Mar. 10, 1865 and entered railway service in 1882, since when he has been, to 1884, clerk, Freight Auditor's office, Connecticut River Rd., now Boston and Maine Rd.; 1884 to Oct. 1887, similar position, Boston and Lowell Ry., Boston, Mass.; Oct. 1887 to Nov., 1890, clerk, General Freight Agent's office, Boston and Lowell Ry., and its successor, Boston and Maine Rd.; Nov. 1890, to June 1892, General Freight and Passenger Agent, Central New England and Western Ry., Poughkeepsie, N.Y.; June to Oct. 1892, Division Freight Agent, Philadelphia and Reading Rd., while it had control of the C.N.E. and W.R., Hartford, Conn.; Oct., 1892 to June, 1896, New England Agent, National Despatch Line, Boston, Mass.; June 1896 to July, 1899, New England Agent and acting General Manager, National Despatch Line, Boston, Mass.; July, 1899, to May, 1903, Manager, National Despatch-Great Eastern Line, Buffalo, N.Y.; May, 1903, to Apr. 1908, Assistant General Freight Agent, G.T.R., Chicago, Ill.; Apr., 1908, to Oct. 16, 1911, General Freight Agent, G.T.R., Montreal.

H. G. Kelley, who has been appointed Vice President, G.T.R., in charge of Construction, Transportation and Maintenance Departments, Montreal, was born at Philadelphia, Pa., Jan. 12, 1858, and entered railway service in 1881, since when he has been, to 1884, Assistant Engineer on location, construction and bridge construction, Northern Pacific Ry., Western and Pacific Divisions; 1884 to 1887, engaged in mining; 1887, to Jan., 1890, Resident Engineer and Superintendent of Bridges and Buildings, St. Louis Southwestern Ry. System, including the St. Louis Southwestern Ry. of Texas; Jan., 1890, to Mar., 1898, Chief Engineer, same road; Mar., 1898, to July, 1907, Chief Engineer, Minneapolis and St. Louis Rd., and from July, 1900, to July, 1907, also Chief Engineer, Iowa Central Ry., and from Mar. 1898, to Mar., 1899, also Consulting Engineer, St. Louis Southwestern Ry.; July, 1907, to Oct. 2, 1911, Chief Engineer, G.T.R. He is a member of the Institute of Civil Engineers of Great Britain, of the Canadian Society of Civil Engineers, and of the American Society of Civil Engineers, and served two terms as President of the American Railway

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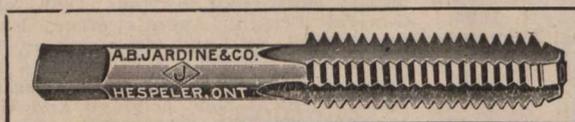
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## Engineering and Maintenance of Way Association

J. G. Sullivan, who has been appointed Chief Engineer, Western Lines, C.P.R., Winnipeg, was born at Bushnell's Basin, N.Y., Jan. 11, 1863, and graduated C.E., at Cornell University, June, 1888. He entered railway service in July, 1888, since when he has been, to Mar., 1889, rodman, Great Northern Ry.; Apr., 1889, to Aug., 1890, rodman, instrument man and assistant engineer, Spokane Falls and Northern Ry.; Aug., 1890 to May, 1893, Assistant Engineer, Great Northern Ry. coast lines; July, 1893 to Feb., 1894, Assistant Engineer, Alberta Ry. and Coal Co.; July to Oct., 1894, section foreman, Northern Pacific Ry.; Oct. 1894, to Apr. 1895, Locating Engineer, Butte, Anaconda and Pacific Ry.; Apr. to Dec., 1895, Division Engineer, Kaslo and Slokan Ry.; Dec. 1895, to Feb., 1901, Locating and Reconnaissance Engineer and Engineer in Charge of Construction, Columbia and Western Ry.; Feb. 1901, to Sept., 1905, Division Engineer of Construction, Western Lines, C.P.R.; Sept. 1905 to Feb., 1907, Assistant Chief Engineer, Panama Canal; Feb. 1907, to Sept. 15, 1908, Manager of Construction, Eastern Lines, C.P.R., Toronto; Sept. 15, 1908, to Jan. 1, 1911, Assistant Chief Engineer, Eastern Lines, C.P.R., Montreal; Jan. 1, to Oct. 9, 1911, Assistant Chief Engineer, Western Lines, Winnipeg.

Grant Hall, who has been appointed Assistant General Manager, Western Lines, C.P.R., Winnipeg, was born at Montreal, Nov. 27, 1863, and entered railway service as an apprentice in the G.T.R. shops, Montreal. He has been from Mar. to July 1888, Master Mechanic, International Ry., Sherbrooke, Que.; Aug. 1888 to June 1889, Locomotive Foreman, C.P.R., Megantic, Que.; July 1889 to March 1890, Locomotive Foreman, C.P.R., Brownville Jct., Me.; Apr. 1890 to Feb. 1893, Locomotive Foreman, C.P.R., Windsor St., Montreal; Mar. 1893 to Aug. 1898, General Foreman, Intercolonial Ry., Moncton, N.B.; Sept. to Dec. 1898, Locomotive Foreman, C.P.R., Windsor St., Montreal; Jan. 1899 to Jan. 1901, General Foreman, C.P.R., McAdam Jct., N.B.; Feb. to June, 1901, General Foreman, C.P.R., Winnipeg; July 1901 to Nov. 1902, Master Mechanic, Pacific Division, C.P.R., Revelstoke, B.C.; Dec. 1902 to Feb. 1904, Assistant Superintendent of Rolling Stock, C.P.R., Montreal; Mar. to Sept. 1904, Assistant Superintendent of Motive Power, C.P.R., Montreal; Oct. 1904 to Jan. 1908, Assistant Superintendent of Motive Power, C.P.R., Winnipeg; Jan. 1908, to Oct. 1911, Superintendent of Motive Power, C.P.R., Winnipeg.

E. H. Fitzhugh, who has relinquished the duties of First Vice President, G.T.R., in consequence of his appointment as President, Central Vermont Ry. Central Vermont Transportation Co., Southern New England Rd. Corporation, Southern New England Ry., and Montreal and Southern Counties Ry., was born in Montgomery county, Mo., Feb. 1, 1853, and entered railway service in 1873, since when he has been, to 1889, successively, clerk in Master Car Builder's office, St. Louis, Kansas City and Northern Ry., in car mileage office, same road, and chief clerk to Superintendent, Western Division, Wabash, St. Louis and Pacific Ry.; 1889 to Jan., 1896, Master of Transportation, Wabash Rd., Moberley, Mo.; Jan., 1896, to May, 1899, Superintendent, Middle Division, G.T.R., Toronto; May, 1889, to Mar., 1901, Vice President and General Manager, Central Vermont Ry.; Mar. to Dec., 1901, Assistant to President, Southern Pacific Co.; Feb., 1902, to Dec., 1904, Vice President and General Manager, Central Vermont Ry., St. Albans, Vt.; Jan. 1, 1905, to Jan. 7, 1910, Third Vice Presi-

dent, G.T.R., Montreal; and Vice President, Central Vermont Ry.; Jan. 7, 1910, to Oct. 2, 1911, First Vice President, G.T.R., and to July 27, 1911, Vice President, Central Vermont Ry., at which date he was appointed President C.V.R.

Harry Robinson Safford, who has been appointed Chief Engineer of the Grand Trunk Railway System, was born at Madison, Ind., in 1875, and was educated in a course of civil engineering at Purdue University in that State, graduating from that institution in 1895. Previous to graduation, he had had active service in his profession, being employed with an engineering corps operating on the Pennsylvania lines west of Pittsburgh in 1893. Immediately after graduation, he entered the service of the Illinois Central Railroad, and was continually with it until May, 1910. During the first year of service he was employed as a rodman, since when he has been consecutively, 1896 to 1897, Resident Engineer; 1897 to 1900, Assistant Engineer; 1900 to 1901, Roadmaster of Amboy Division; 1901, Roadmaster Freeport Division; 1902, Roadmaster, St. Louis Division; 1903 to 1905, Principal Assistant Engineer; 1905 to 1907, Assistant Chief Engineer. In 1907 to 1910, Chief Engineer of Maintenance of Way; 1910 to 1911, Assistant to the President, Edgar Allan Manganese Steel Co.; 1911, Chief Engineer, George B. Swift Co. He is a member of the American Society of Civil Engineers and a charter member also of the American Railway Engineering Association, and has been very active in the work of the latter body, having served as chairman of the committee on records and accounts for a number of years.

W. Wainwright, who has been appointed Vice President, G.T.R., Montreal, was born at Manchester, Eng., Apr. 30, 1840, and entered railway service, Jan., 1858, with the Manchester, Sheffield and Lincolnshire Ry., now the Great Central Ry., serving successively as junior clerk in the Chief Accountant's office, senior clerk in the same office, secretary to Assistant General Manager, and secretary to General Manager. In 1862 he joined the G.T.R. staff, serving one year as senior clerk in the Accountant's office, three years as secretary to the Managing Director, six years as senior clerk to the Managing Director and in charge of the car mileage department, eight years and five months as General Passenger Agent; May, 1881, to May, 1890, Assistant Manager; May, 1890, to May, 1896, Assistant General Manager; from Apr., 1883, to Sept., 1895, also General Manager, North Shore Ry.; May, 1896, to July, 1907, General Assistant; Dec., 1900, to July, 1907, also Comptroller; July, 1907, to Jan. 7, 1910, Fourth Vice President; Jan. 7, 1910, to Oct. 2, 1911, Second Vice President, also Second Vice President, G.T.P.R. He is a director of the Guarantee Co. of North America, director, Montreal Telegraph Co., Vice President, Richelieu and Ontario Navigation Co., Vice President, Grand Trunk Insurance and Provident Society, director, Canadian Express Co., and of various G.T.R. subsidiary lines. He was for eight years in command of a company of artillery in the old Grand Trunk Brigade, and retired with the rank of captain on its disbandment.

**Quebec Central Ry.**—Gross earnings for July, \$125,106.47; expenses \$81,252.84; net earnings, \$43,853.63, against \$123,947.37 gross earnings; \$80,592.21 expenses; \$43,355.16 net earnings for July, 1910.

The Intercolonial Ry. has ordered 1,500 car wheels from the Nova Scotia Car Works, Halifax, to be delivered within one year.

## Great Northern Ry. Lines in Canada.

**Midland Great Northern Ry. or Midland Ry. of Manitoba.**—Track is reported to have been laid from St. James Jct., to the river, about two miles, on the company's line into Winnipeg. It is said that as soon as the bridge over the river is completed track laying will be resumed on the remaining mileage to a junction with the Canadian Northern Ry. line to Emerson.

It is said that the C.N.R. will, for the present, operate through freight over the C.N.R. line from Emerson as far as the junction and then over its own line to its own terminals. It is reported that an arrangement has been made by which the G.N.R. passenger trains will be run over the C.N.R. into Fort Garry station, Winnipeg, and that this arrangement will be put into effect as soon as it has received parliamentary sanction.

**Crows Nest Southern Ry.**—J. M. Gruber, General Manager, and other G.N.R. officials, went over this line Sept. 26, and local reports state that in addition to business connected with the annual inspection of the company's lines in Canada, the question of extending the line along the Elk Valley in the direction of Calgary was under consideration.

**Vancouver, Victoria and Eastern Ry. and Navigation Co.**—Tracklaying is reported to be in progress beyond Princeton, B.C., through the Tulameen canyons. About five miles of track has been laid, and three bridges are being built. It is expected that track will be laid to Coalmount, 14 miles from Princeton, early in November. As soon as this is finished the bridge over the Similkameen River west of Maplehurst, will be built.

The General Manager and a party of officials visited Vancouver Oct. 9, and looked over the work in progress at the new False Creek terminals. It is said that it has been decided to transfer the handling of the local traffic from the present yards on Pender St., to the south side of False Creek and that tracks for this purpose will be laid at once.

**Victoria Terminal Ry. and Ferry Co.**—The Victoria city council is applying to the Provincial Government to compel the V.T.R. and F. Co., to observe the agreement with the city as to the laying of tracks and the operation of trains. It is alleged that tracks have been laid since 1909 without authority, and that the tracks do not conform to the grade of the streets.

**Victoria and Sidney Ry.**—It is reported that arrangements have been made to operate the car ferry now running from Victoria to New Westminster, between Victoria and Port Guichon. The change, it is said, will enable the ferry to make five additional round trips a month. (Oct., pg. 939.)

**A Railway to Hudson Bay.**—It was reported Oct. 17, that the Department of Railways had notified the J. D. McArthur Co., which has the contract to build 185 miles of this line from Pas Mission, Sask., to delay further operations for time being. Up to the present time the contractor has only been taking in plant and supplies. A later report Oct. 23, stated that after an interview with the Minister, Mr. McArthur was given authority under which he will be able to proceed with certain portions of the work. (Oct., pg. 921.)

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

**Quebec, New Brunswick and Nova Scotia Ry.**—A Quebec press report states that the projected extension of the Canadian Northern Ry. from Quebec to Fredericton, N.B., and the Atlantic coast in Nova Scotia, for which the company holds a charter with the above title, will be abandoned if a satisfactory agreement can be made for operating rights over the Intercolonial Ry.

**Canadian Northern Quebec Ry.**—The Board of Railway Commissioners has authorized the company to carry its lines across Ontario, Valois, Chambly and Nicolet streets, Montreal, the crossing of the last two streets being by a double track. The company had started operations on Valois St., Sept. 23, but had to stop upon the city council obtaining an injunction pending the order of the Board, which was made Sept. 30. This crossing is being made in connection with the enlargement of the freight yards.

Upon a recent trip to Montreal, Sir Donald Mann, is reported to have said he expected to see the C.N.R. transcontinental line completed in three years. With regard to the position of Montreal, the company would have a central terminal station in the heart of the city. The question of a union station with the G.T.R. had never been discussed. An announcement as to the terminal plans, etc., would be made in due time. He favored the tunnel approach, of the feasibility of which he was assured. The plans for all this work, however, would have to be approved by the city.

Application is being made to the Dominion Parliament to incorporate the Canadian Northern Montreal Tunnel and Terminal Co. to construct and operate a railway tunnel from some point in Montreal generally westerly under Mount Royal with the necessary approaches and works: to build the necessary lines of railway to connect the tunnel with the C.N.Q. Ry., the C.N. Ontario Ry., and with the Montreal Harbor Commissioners' tracks, the undertaking to be for the general advantage of Canada.

Press reports say the C.N.R. interests are desirous of purchasing the St. James Methodist church property in Montreal, for terminal purposes. The property has an area of 77,550 sq. ft. with four frontages. The trustees announced Oct. 9 that they would consider an offer of \$2,000,000 for the property, and this amount is said to have been put up by those desirous of making the purchase.

The Board of Railway Commissioners has authorized the building of a bridge across the main channel of Riviere des Prairies, at mileage 40 on the new line from Montreal to Hawkesbury.

The Dominion Parliament is being asked to extend the time within which certain lines authorized to be built in 1907 may be constructed.

**Canadian Northern Ontario Ry.**—The first section of 100 miles of the Toronto-Ottawa line was opened for traffic Oct. 9. It branches off from the Toronto-Sudbury line in the Don Valley, extending to Trenton, Ont., where a junction is effected with the Central Ontario Ry., which is under C.N.R. control. The Board of Railway Commissioners authorized the opening of the line for traffic Sept. 30, the inspecting engineer of the Department of Railways having approved the line Sept. 24. The construction of the remaining mileage into Ottawa is being proceeded with at a satisfactory rate.

The matter of the route from the Don Valley along the north part of Toronto in the direction of Hamilton, etc., has been before the Board of Railway Commissioners on several occasions lately. On Sept. 30, the Commissioners approved

location plans from mileage 0 to 10.97 from Yonge St., and through part of York and Etobicoke tps. On Oct. 14, after a lengthy argument the Board ordered the C.N.R. and the C.P.R. to prepare and file plans by Dec. 31, for the elimination of all grade crossings from Avenue Road westward to Dufferin St. This order was made on the C.N.O.R. application for a final approval of its location across North Toronto, the C.P.R. being opposed to the utilization of a portion of its right of way by the C.N.O.R.

Ottawa press reports, Oct. 18, state that the C.N.R. proposes to build car shops on the large areas of land purchased by the C.N.R. around Merivale, about three miles from the Experimental farms and that options were taken on half a dozen farms, which have been closed.

The Dominion Parliament is being asked to extend the time within which certain already authorized lines may be built, and to give power to build the following additional lines: from Chisholm tp. southeasterly, to a junction with the Central Ontario Ry., and from near the head of Long Lake, northwesterly to a junction with the National Transcontinental Ry.

The Ontario and Ottawa Ry., which is a subsidiary of the C.N.R., is applying to the Dominion Parliament to extend the time for the building of the line authorized in 1910, and to authorize the construction of a line from Lake Couchiching westerly to Georgian Bay.

Sir William Mackenzie was reported as stating Oct. 1, that the Dominion guarantee of bonds in respect of the building of the Ottawa-Port Arthur line, has been fully settled. The Board of Railway Commissioners has approved revised location plans for the line through Boulter, Chisholm, and Himsworth tps., mileage 316.74 to 328.13; from mileage 89.78 to 94.97, and from mileage 101.52 to 110.14 from Sudbury Jct.

The construction of what is called the Sudbury-Port Arthur line is being carried out from both ends, one district having its engineering headquarters at Sudbury, with E. T. Agate as District Engineer, and the other its headquarters at Port Arthur, with H. T. Hazen as District Engineer. There are eight divisional engineers in the Sudbury district, each of whom has a staff of resident engineers under him. Following are the names and offices of the Division Engineers, with the names of their resident engineers:— Division A, G. Scott, Gowganda Jct.; G. F. Harrison, Division B, G. Scott, Gowganda Jct.; H. W. Perkins, Division C, Geo. Scott, Gowganda Jct.; Sect. 1, G. Taylor; Sect. 2, H. P. Thompson; Sect. 3, C. G. Brook; Sect. 4, A. B. Manson; Sect. 5, C. B. Price. Division D, F. G. Mackie, Bisco; H. Knifton, J. B. McLachlan, J. S. McIntosh, B. B. Hill. Division E, L. F. McCoy, Bisco; R. H. Duff, H. H. Blackwell, C. R. Needs. Division G, G. I. Root, Missanabi; E. W. Delano, P. Hone, C. M. Ainslie, R. Ridge. Division H, S. L. Whelham, Missinabi; W. L. Young, A. B. Churchill. Division I, W. M. Wilkie, Hobon; R. B. Jennings, J. A. Baird, E. L. Frost, F. C. Hay. There are four division engineers in the Port Arthur district, with 17 resident engineers stationed as follows:—Division A, A. P. Wenzell, Port Arthur; C. R. Schulb, B. H. Dow, T. C. Kanter, E. R. Griffin, C. D. Ashbrooke. Division B, E. L. Dorsett, Nipigon; W. K. Tanner, Pearl, Ont.; K. G. Polybank, Dorion, Ont.; C. H. West, Hurket, Ont.; R. M. Magnus, Coglin, Ont.; C. B. Croasdale, Nipigon, Ont.; Division C, C. T. Delamere, Nipigon; K. C. McFarland, L. E. Purvis, O. R. Lundbland, R. W. McKenney, W. A. Loomis. Division D, A. J. Isbister, Nipigon; H. C. Nelson, O. D. Jones.

It was reported, Oct. 12, that over 3,000 men were at work along the line.

One of the most important pieces of work on the contract is the diversion of the Nipigon River, which is being done under contract awarded by the late Government. The river sweeps around a curve with such force as to eat away about 10 ft. of the bank in a year, and in order to make the permanent way possible a canal or cut-off is necessary, which when finished will divert the waterway nearly half a mile from its present channel.

**Duluth, Winnipeg and Pacific Ry.**—The tunnel at Short Line Park, Duluth, Minn., was reported completed, Sept. 26, and track has been laid through it. The tunnel is 50 ft. long, with a bore 17½ by 26 ft., with a 1% gradient, and is on a seven degree curve. The reconstruction of the bridge at 49th Ave., Duluth, is reported practically complete.

**Canadian Northern Ry.**—A contract is reported to have been signed under which Barnett and McQueen will build an extensive addition to the coal docks at Port Arthur, Ont. The addition will be 3,000 by 500 ft. It is expected to start construction in Jan., 1912.

The Board of Railway Commissioners has authorized the International Bridge and Terminal Co., which is one of the C.N.R. subsidiaries, to build a bridge over the Rainy River, at Fort Frances, Ont. This work is in connection with the company's line to Duluth, the final section of which, under the charter of the Duluth, Winnipeg and Pacific Ry., is approaching completion.

In connection with the extension of the Bird's Hill branch in the direction of Fort Alexander, it was reported, Oct. 12, that the company had acquired about 3,000 acres of land near Bird's Hill, and it is conjectured that it is proposed to locate shops there.

Plans were submitted to the city council of St. Boniface, Man., Oct. 7, for the company's terminals at that point. The members of the council subsequently went over the ground which it is proposed to lay out.

The extension of the Oakland branch from near Totogan, Man., for 17 miles was opened for traffic Oct. 3, the authorization of the Board of Railway Commissioners having been signed, Oct. 2. Totogan is at the head of navigation on Lake Manitoba and is one of the oldest settlements in the province.

The relaying of the old Qu'Appelle, Long Lake and Saskatchewan Ry. with heavier steel, has been practically completed between Regina and Saskatoon. A spur from the main line at Clarkboro is under construction into Saskatoon, where a store house is being built for locomotive and other supplies. At Warman, where the main line crosses the Q.A., L.L. and S. Ry., considerable additional siding accommodation is being provided.

Engineers are reported to be at work making surveys for a line from Canora, Sask., on the main line, northerly to a junction with the Thunderhill line at Stanhope.

The Board of Railway Commissioners has approved location plans for a C.N.R. line through tp. 11, range 5, west of the 3rd meridian, mileage 77.27 to 97.

The plans for the C.N.R. line into Moose Jaw were before the city council, Sept. 30, and it was reported that the track laying gang had completed its work to about three miles south of Moose Jaw.

The Cowan Construction Co.'s grading outfit was delivered at Macleod, Alta., Oct. 10, and work was at once started about a mile south of the town. The route located proceeds southerly via Wellsville, then easterly to Eveline and on to Pincher Creek. H. L. Vercoe, one of the company's engineers, was in

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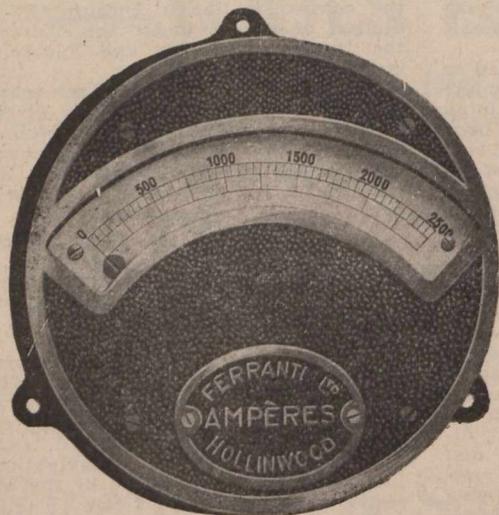
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Macleod completing the arrangements for the work, Oct. 3. A Pincher Creek dispatch, Oct. 13, stated that the route had been approved from Macleod to a point nine miles southeast of Pincher Creek. This line, it is said, will form the continuation either of the line now being built from Maryfield westerly, or of that now being built to Moose Jaw.

The Board of Railway Commissioners has authorized the opening for traffic of the branch line from Vegreville to Warden, Alta., 109 miles, and a train service was put on Oct. 12. The construction of the line is being pushed on to Calgary, at which point, Sir Wm. Mackenzie, President, recently stated, a station, roundhouse and machine shop will be built this fall. It is said that the line will be extended southerly to a junction with the line near Standoff mentioned in the last paragraph.

From this Vegreville-Calgary line a branch is being built from Stettler to Rocky Mountain House. Track laying is reported to have been completed to Poplar Ridge, where a bridge is being built. Grading has been completed on the Medicine River, where another bridge is being built.

The Alberta Legislature is being asked to pass an act amending chap. 48 of the statutes of 1910 (second series) respecting the Canadian Northern Western Ry., by authorizing the building of the following additional lines of railway: from the Edmonton and Slave Lake Ry. between the southern boundary of tp. 61 and Athabasca Landing, generally northeasterly to Fort McMurray on the Athabasca River; from near Edmonton northerly and northeasterly passing west of Lac la Biche to a junction with the Fort McMurray line; from between Stony Plain and Wabamum Lake on the Edmonton, Yukon and Pacific Ry. southwesterly to tp. 49, range 8, west of the 5th meridian; from between Ladyminster and Minburn on the C.N.R. southerly to Medicine Hat; from between Cochran and Nanton on a previously authorized line southerly to Pincher Creek; from near Brule Lake on the C.N. Alberta Ry. northerly to a junction with one of the already authorized lines of the C.N.W.R.

Another notice states that the C.N.W.R. will ask the Alberta Legislature to authorize the building of the following lines: from Athabasca Landing to Fort McMurray; from some point on this line to Lac la Biche; from Edmonton on the north side of the North Saskatchewan River to the eastern boundary of Alberta; from Bruderheim to Vermillion and thence to the southern boundary of the province; from near Wabamum Lake to tp. 4-9, range 8, west of the 5th meridian; from near Brule Lake, for 35 miles northwesterly; from Brule Lake northerly to a junction with a C.N.R. line; from Little Smoky River to Lesser Slave Lake; from near Medicine River southerly to Pincher Creek; from near Camrose to the eastern boundary of Alberta; from Athabasca Landing northerly to Peace River Landing; from near Big River or Stettler to the Saskatoon-Calgary line; from Calgary for 70 miles northerly; from Strathcona for 50 miles southwesterly.

Track laying is expected to be completed into Athabasca Landing, Alta., by Dec. 30, and for a considerable mileage on the line being built out from Onoway. Reports state that the whole of the extension from Onoway to the British Columbia boundary is under contract, and that steel had been laid to the Sturgeon River. The sub-contractors working on the line are reported to be: Phelan and Shirley, McMillan Bros. and Kenny, D. F. McArthur, and Jas. O'Connor. Work will be continued through the winter.

Application is being made to the Dominion Parliament to authorize an extension of time within which certain already authorized lines in Saskatchewan and Alberta, under the acts of the C.N. Ry., the Saskatchewan North Western Ry., the Saskatchewan Midland Ry. and the Alberta Midland Ry. may be built.

**Canadian Northern Pacific Ry.**—With respect to the revision location survey of the line from Kamloops, B.C., to the summit of the Rocky Mountains in the Yellowhead Pass, at the British Columbia-Alberta boundary, we are officially advised that the distance between the two points is 250 miles. A level location was made in 1910 which showed that it was possible to obtain less than a 1% gradient over the worst section, which lies between the lower end of Moose Lake and 150 miles above Kamloops. Going west from the summit a gradient of 0.7% is obtained to Albreda summit, the divide between the Fraser and the North Thompson water, and it is expected that this gradient will not be exceeded between there and down to within 125 miles of Kamloops, to which point there is a 0.4% gradient from the coast. That is, there will be a gradient of 0.4% from the coast for 375 miles east, and it is expected that the gradient will not exceed 0.7% for the remaining 125 miles to the Yellowhead Pass. This 125 miles is not yet all definitely located, but three survey parties are at work, and it is expected to have the location furnished during the winter.

The contract for this section—from Kamloops to the Yellowhead Pass—has been let to the Northern Construction Co. and Cowan, and we are officially advised that construction gangs are at work on the first 40 miles out of Kamloops, and it is expected to have the next 60 miles under sub-contract immediately. There are no serious difficulties in the way of construction above Kamloops, and for the first 85 miles the work will be, for the most part, light and only comparatively heavy for the remainder of the distance to the summit. There are no long tunnels and little heavy bridging.

**Vancouver Island Lines.**—Press reports state that tenders will shortly be asked for a second section of the line on Vancouver Island. The section which will be put under contract will extend from mileage 60 to 100, near the north-west corner of Cowichan Lake. It will include some heavy work. Location surveys are reported to have been completed to Alberni, about 53 miles from the Cowichan summit.

**Canadian North Eastern Ry.**—A regular train service is being placed in operation from Stewart to Red Cliff, B.C. The ballasting of the spur line to the Red Cliff mine was reported to be practically finished Sept. 30. A turntable is being put in at Red Cliff.

Plans of the preliminary survey for an extension of the line through the Bear River Pass to the Meziadin Lake have been prepared. They show a route passing through a tunnel 2008 ft. long at the pass, and along the north-eastern shore of the lake. A survey party in charge of C. Hoard is reported to be working from the Meziadin Lake easterly, with the view of joining up the surveyed route with a line which is being run by a party working west from the Rocky Mountains. This latter party was reported to be working in the vicinity of Fort Connolly, Sept. 29. (Oct. pg. 953.)

**Alberta Central Ry.**—The Board of Railway Commissioners has approved location plans for the line between mileage 64.5, and 71.3 west of Red Deer; and between mileage 160 and 194.6 east from Red Deer, Alta. (Oct. pg. 935.)

### Dominion Atlantic Railway Annual Meeting.

The annual meeting was held at the new head office, C.P.R. Windsor St. Station, Montreal, Oct. 13, the previous fourteen annual meetings having been held in London, Eng. Following are extracts from the report:

There has been a healthy increase in passenger business during the year, to which both railway and steamers have contributed. Freight business, however, shows a large decrease, there being a shrinkage of £20,474 in earnings under this head. The principal cause of the decreased freight earnings was the failure of the apple crop, which alone accounted for a falling off of nearly £15,000 in receipts. Both in quantity and quality the crop was the poorest Nova Scotia has had for many years, it being only about one-third of that of the previous year. With their receipts for apples thus reduced the spending power of the population in the territory served by the company was severely curtailed, with the result that the earnings in nearly all other commodities were adversely affected.

The balance available for the year, including £1,597 10s. 7d. brought forward from last year, is £42,503 6s. 10d. Against this, interest charges amount to £44,047 13s. 4d. The sale of investments held by the company, which stood in the books at £17,500, realized £16,280 7s., a loss of £1,219 13s. The total deficiency on net revenue account is £2,763 19s. 6d., and this has been charged to suspense account, which now stands at £33,039 3s. 2d. The proportion of working expenses to gross receipts was 84.3%, or an increase of 5.6% compared with the previous year.

There was no capital expenditure during the year. By the sale of the company's investments a reduction of £16,280 7s. was effected in the amount of temporary loans. A further sum of £9,000 was contributed from the company's general funds. This item now stands at £73,719 13s., compared with £99,000 at June 30, 1910.

The directors have arranged with the Canadian Pacific Ry. Co. to lease this company's railways and their appurtenances to that company for 999 years upon terms and conditions contained in lease which will be submitted for approval. As practically the whole of the preference and ordinary stocks are now held in Canada, the head office of the company has been transferred to Montreal. On July 12, at the special meeting of the stockholders, Sir Thomas G. Shaughnessy and D. McNicoll were elected additional directors. For the reason mentioned above H. W. Bilks and F. W. Taylor have tendered their resignations. In accordance with the bylaws all the directors retire at this meeting, and Sir Thomas G. Shaughnessy, D. McNicoll and T. Skinner offer themselves for re-election. To fill the vacancies created by the resignation of Messrs Birks and Taylor, it is proposed to elect R. B. Angus and I. G. Ogden. In consequence of the transfer of the head office to Montreal, the auditors, Drury, Thurgood & Co., of London, and Cunningham & Co., of Ottawa, do not seek re-election. John Leslie, of Montreal, will be nominated as auditor.

The following are the directors for the current year: President, Sir Thomas G. Shaughnessy; Vice President, D. McNicoll; other directors, T. Skinner, I. G. Ogden; Secretary, H. Campbell Oswald.

The Board of Railway Commissioners has approved the G.T.P.R. standard freight mileage tariff between Prince Rupert and Vanarsdol, B.C., effective Oct. 10.

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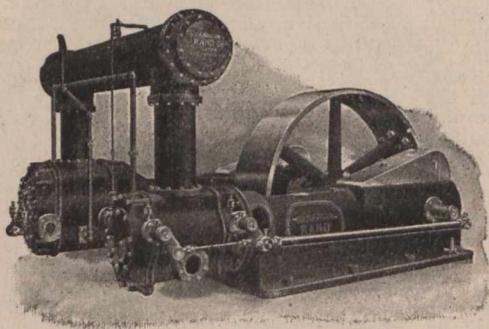
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### National Transcontinental Railway Construction, Etc.

Tenders will be received by the Commissioners to Nov. 8, for the construction and erection complete of two 150 h.p. horizontal return tubular boilers and boiler room equipment in the engine houses at Napadogan, and Edmondston, N.B., and three similar boilers at Cochrane, Ont.

We are officially advised that the contract for the building of the terminal station at Quebec has been let to Jos. Gosselin, Levis, Que. The ex-Minister of Railways stated Oct. 2, that the contract had been awarded to the lowest tenderer for \$745,015. A description and plans of the building were given in our Sept. issue.

The new Minister of Railways, Hon. F. Cochrane, issued an order Oct. 16, directing that contractors engaged on contracts in connection with the railway entered into since the dissolution of Parliament, are to cease work. The reason for this order is that there is no money on hand to pay progress estimates, on these works, the necessary supplies not having been voted prior to dissolution. The order does not affect work being done on contracts entered into prior to dissolution, for which supplies had been voted. As a result of a further consideration of the matter the contractors are allowed to proceed with foundations on station and other buildings. This permission does not extend to the contractor for the terminal station at Quebec.

It was recently reported in Fort William, that track had been laid easterly for about 100 miles from Superior Jct., Ont., and it was expected that the steel laying gang would reach Lake Nipigon by the end of the year. (Oct., pg. 941.)

The shops at Transcona, Man., it is reported, will be completed in about six weeks, and the repair of locomotives, etc., will be started with the new year.

F. J. McIntosh, Assistant District Engineer, St. Boniface, Man., stated Oct. 12 that there was no truth in the reports that the piers of the bridge over the Seine River were sinking because of the weakness of the foundations. The two piers and abutments were completed during the summer and the steel work is practically completed. There has, he says, been absolutely no movement of the bridge since the concrete was placed.

A later dispatch states that the foundation for the report as to the state of the bridge, lies in the fact that one of the approaches was built over a sewer at Archibald St., which caved in, and caused a crack in the west wing wall.

### Grand Trunk Pacific Railway Construction, Etc.

The excavation for the foundations of the company's hotel at Winnipeg, is being rushed forward, and it is expected to have it completed by Dec. 1. The general contractors, Geo. A. Fuller Co., Ltd., sublet this part of the work to Rigby and Kellett, Winnipeg. The permit issued by the city of Winnipeg puts the cost of the building at \$1,300,000.

The Board of Railway Commissioners has approved the location of a branch line in Saskatchewan from the east line of sec. 9, tp. 33, r. 11, to the south line of sec. 11, tp. 31, r. 25, w. 3rd m. mileage 50.23 to 77.13.

Reports state that in addition to the completion of the branch from Melville into Regina, Sask., work has been done to Sept. 30, as follows:—Grading 95% completed on the 130 mile branch from Regina to the International boundary; grading has been completed for 30 miles on the branch from Regina to

Moose Jaw, Sask.; 50% of the grading has been completed on the 48 mile branch from Moose Jaw northwesterly; grading has been completed on 86 miles and track laid for 67 miles on the branch from Young to Prince Albert; 70% of the grading has been completed on the Battleford branch; 50 miles of grading on the branch from Biggar towards Calgary has been completed and the remaining 52 miles is under contract; the grading on the Vegreville-Calgary branch is 75% completed beyond the point to which track was laid in 1910, and tracklaying is in progress; 60% of the grading has been completed and six miles of track laid on the Alberta coal branch.

Local reports state that a large block of property between Namayo and Kinistino streets, Edmonton, Alta., has been bought by the G.T.P. Ry. upon which it is intended to erect freight sheds. The owners of some portions of the property have received notice to vacate it at once. The question of the construction of subways on Namayo and other streets in the vicinity, for which the Board of Railway Commissioners has issued orders, is being reconsidered by the city council in connection with the project.

We are advised that the shop to be built at Edson, will be a small one, 130 by 50 ft.

Tenders have been asked for the excavation and grading necessary for the station, and roundhouse sites, the clearing of the yards, etc., at Prince Rupert, B.C. (Oct., pg. 941.)

A. W. Smithers, Chairman of the Board, G.T.R., on returning to Montreal, after having been over the entire system, said the G.T.P. Ry. was running trains over 1,800 miles of line, the financing had been completed for the building of the line through to the Pacific coast; contracts for all the work had been let and it was expected to have the work done by the fall of 1914. The line had been opened for traffic from Prince Rupert to Haslemere, B.C., 100 miles, and the grading had been completed to Aldermere, 245 miles from Prince Rupert. The contract for grading the line between Aldermere and Tete Jaune Cache, had been let to Foley, Welch and Stewart, and work was already in progress from both ends.

Considerable information as to the progress of construction is given in the report presented at the company's recent annual meeting, which appears on another page.

### Railway Finance, Meetings, Etc.

**Alberta Ry. and Irrigation Co.**—Notice has been issued that the company will, on Jan. 1, 1912, pay off and redeem its 5% debenture stock, outstanding on that date. The transfer books relating to this stock will be finally closed Dec. 4, and as soon as possible afterwards a notice will be sent to each stockholder regarding the steps to be taken for paying off the stock. Interest will cease to accrue on and from Jan. 1, 1912.

The annual meeting of shareholders will be held at the C.P.R. offices, Montreal, Nov. 1. In addition to ordinary business it is proposed to submit a bylaw reducing the number of directors to five.

Application is being made for the ratification by the Governor General of an agreement leasing this railway to the C.P.R. for 99 years from Jan. 1, 1912.

**Brockville, Westport and Northwestern Ry.**—An order has been made in the action against this company by the trustee for the bondholders directing the sale of the property by auction at Osgoode Hall, Toronto, on Dec. 14. The property will be offered in one lot and will consist of 45 miles of railway from Brockville to Westport, Ont., with all its

property, rights, powers and franchises. A reserve price has been placed on the property.

**Canadian Northern Alberta Ry.**—There has been deposited with the Secretary of State at Ottawa, a trust mortgage dated Mar. 22, securing the company's 3½% 50-year debenture stock, guaranteed by the Dominion to the amount of £647,260. 5s. 6d., upon certain lines of railway in Alberta.

**Canadian Northern Ontario Ry.**—There was deposited with the Secretary of State at Ottawa, Oct. 4., a trust deed securing an issue of 3½% 50-year debenture stock of the company to the amount of £7,493,835 12s. 4d., guaranteed by the Dominion upon the line now under construction between Ottawa and Port Arthur, Ont.

**The Canadian Pacific Ry. Co.** is applying to the Dominion Parliament for power to acquire the debenture and other stock of railway companies the principal and interest of which has been guaranteed by the C.P.R., in the same way that it can now acquire mortgage bonds, by the issue of C.P.R. 4% debenture stock.

**Central Ry. of Canada.**—The final instalment of 20% of the recent issue of £600,000 5% bonds is due and payable in London, Eng., Nov. 1.

**Dominion Atlantic Ry.**—Gross earnings for Aug., \$173,200, against \$160,676 for Aug. 1910. Aggregate for two months, ended Aug. 31, \$333,800 against \$309,108 for same period 1910.

**Quebec Central Ry.**—Gross earnings for Aug., \$138,995.80; expenses, \$82,444.96; net earnings \$56,550.84, against \$132,376.89 gross earnings; \$78,477.06 expenses; \$53,899.83 net earnings for Aug. 1910. Aggregate gross earnings for two months ended Aug. 31, \$264,102.27; expenses \$163,697.80; net earnings \$100,404.47, against \$256,324.26 aggregate gross earnings; \$159,069.27 expenses; \$97,254.99 net earnings for same period, 1910.

Cables from London, Eng., state that at the annual meeting of shareholders held Oct. 18, the accounts showed a surplus of \$160,415, out of which a dividend of 3% was declared. The report referred to the provisional arrangement which had been entered into for leasing the line to the C.P.R. for 999 years. Some shareholders disapproved of the proposed lease, but the report was adopted. The formal meetings to ratify the lease will be held at some future date.

**Temiscouata Ry.**—Profit on operation for July, \$6,372, against \$4,646 for July, 1910. Aggregate profit for seven months ended July 31, \$27,546, against \$26,474 for same period, 1910.

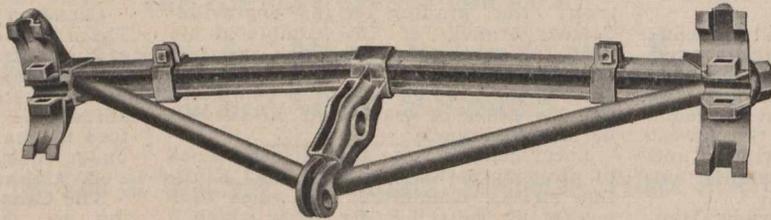
**Temiskaming and Northern Ontario Ry.**—Gross earnings for Aug., \$190,329.33; expenses \$122,585.46; net earnings, \$67,743.87; ore royalties \$3,779.68; net income \$71,527.55; less hire of equipment \$4,223.74; net result \$67,299.81.

**St. Mary's and Western Ontario Ry.**—A meeting of the representatives of the municipalities holding second mortgage bonds was held at Embro, Ont., Oct. 12, at which it was decided to decline the recent offer of the C.P.R. to give 25% of the face value of the bonds for the release of the mortgage. It was further decided to submit an offer to the company.

**Vancouver, Victoria and Eastern Ry. and Navigation Co.**—Following are the directors and officers for the current year elected at the annual meeting in Vancouver, Oct. 11: President, L. W. Hill, St. Paul, Minn.; other directors: W. H. Barker, E. E. Evans, F. J. Bayfield, K. J. Burns, Vancouver; Judge Brown, Seattle, Wash. K. J. Burns is General Agent of the Great Northern Ry. in Vancouver.

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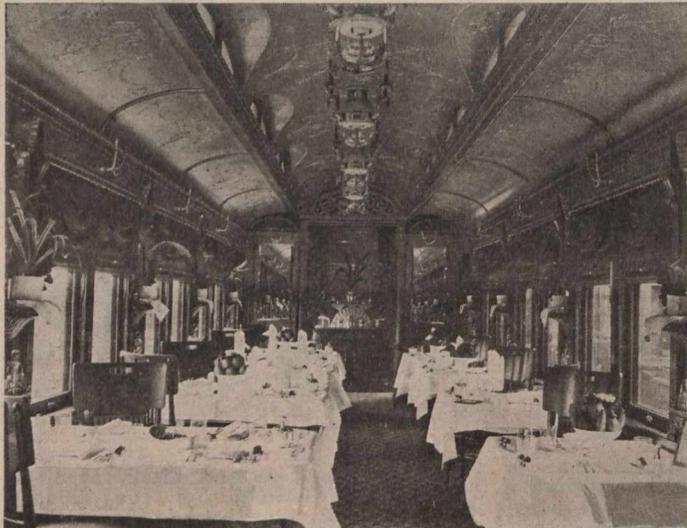
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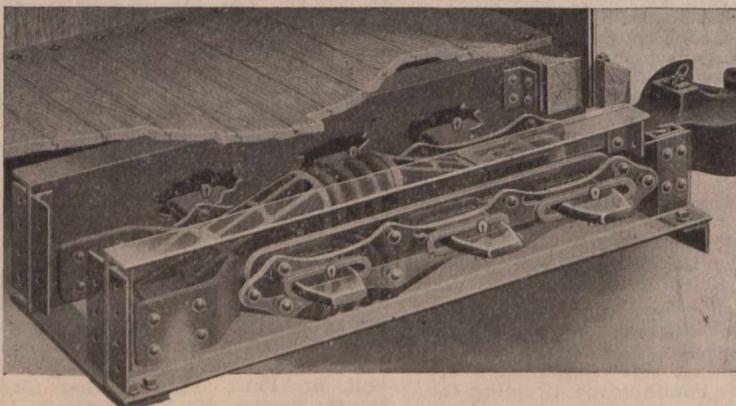
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### Canadian Pacific Railway Construction, Betterments, Etc.

**St. John, N.B., to Digby, N.S.**—Local reports state that the question of the operation of a car ferry for freight between the C.P.R. at St. John, N.B., and the Dominion Atlantic Ry. at Digby, N.S., is under consideration.

**Second Track Reports.**—A press report states that arrangements are being made to build a second track from Adirondack Jct., via St. Johns to Farnham, Que.

**Windsor St. Station.**—It was stated, Oct. 18, that the office section of the extension to the Windsor St. station will be ready for occupation in May, 1912, and that the remainder of the building will be ready for occupation about a month later. There is a 20 ft. space between the present building and the addition, which will not be connected up until the offices in the south of the present structure are removed.

**Place Viger Improvements.**—The viaduct along Notre Dame St., over the C.P.R. yards at Place Viger, which has been under construction for the past two years, was opened for traffic Oct. 17. It extends from Berrj St. to Montcalm St., 1,200 ft. On the surface a double track electric car line has been laid, with ample room for vehicular and pedestrian traffic, while underneath is the company's bonded warehouse. Considerable progress has been made with the work of laying out the new yards. The inbound and outbound sheds are situated between the viaduct and the river. They are 1,000 and 1,200 ft. long respectively and they are separated by a 1,000 ft. covered transfer platform. All three sheds are of concrete and steel construction and are equipped with fire walls, sliding doors and all the latest weighing appliances. The total capacity of the freight tracks is about 900 cars. For the outward bound shed there are four tracks, with a capacity of 122 cars. For the inward bound shed there are three tracks, with a capacity of 75 cars, and for the bonded shed there are two tracks. The storage and teamway tracks have a capacity of about 600 cars.

**Second Track Ste. Therese-Quebec Jct.**—The second track work being done at Montreal at present extends from Ste. Therese to Quebec Jct., 7.22 miles. It is expected to have the grading completed this fall, but the finishing of the work and the building of the second track on the bridge at Ste. Rose, will not likely be gone on with before next year.

**Smith's Falls-Glen Tay Second Track.** The second track work between Smith's Falls and Glen Tay, Ont., has been practically completed and is being ballasted.

**Georgian Bay and Seaboard Ry.**—The Board of Railway Commissioners has authorized the company to connect the tracks of this line at mileage 88 from Victoria Harbor with the line between Montreal and Toronto at mileage 38.57 from Havelock, Ont. The contract for the erection of stations, freight sheds, water tanks, etc., along the line is reported to have been let to G. T. Martin, of Smiths Falls, Ont.

The last rail on this line was laid Oct. 18, and the ballasting is being pushed as fast as possible. It is expected that it will be ready for traffic by the end of the year. The line is in operation from Coldwater Jct., on the Toronto-Sudbury line to Victoria Harbor, where large terminal facilities are under construction. The extension easterly from Coldwater Jct., 88 miles, joins the Montreal-Toronto line near Bethany Siding, Ont. The Toronto Construction Co. had the contract.

The C.P.R. has given a contract to

John S. Metcalf Co., Ltd., Montreal, for 700 ft. of cribbed wharf with reinforced concrete superstructure at Victoria Harbor, Ont., in addition to the 6,500 ft. of wharf already built and under construction by the Metcalf Co., at Victoria Harbor.

**South Ontario Pacific Ry.**—The Board of Railway Commissioners is being asked to recommend the Dominion Government to sanction a lease of the line now under construction from Guelph Jct. to Hamilton, Ont., to the C.P.R. for 99 years from Jan. 1, 1912. The board has approved plans for the building of bridges at mileage 12.46 in West Flamboro tp., and over the G.T.R., near Hamilton.

The Dominion Parliament is being asked to extend the time within which the line, now under construction, may be built, and to authorize the company to enter into an agreement with the C.P.R. for any purpose specified in sec. 361 of the Railway Act.

**Entrance to Stratford, Ont.**—J. W. Leonard, Assistant to the Vice President, met members of the city council and of the board of trade, Oct. 10, to discuss the plans for the route of the company's projected line through the city. Several suggestions were made, and Mr. Leonard promised to have them looked into by an engineer. The company desires to have a route through the city along the river, but this is being opposed by the citizens on the ground that it would destroy the park, etc.

**London Station.**—Work was started on the new station on Quebec St., London, Ont., Oct. 1, and it is expected that it will be completed by the end of the year. The station building will have a total length of 121 ft., the main building being 65 ft. long and a story and a half high, while the single story sheds at each end will be 28 ft. long. The main waiting room, in the east end of the building, will be 26 by 17 ft. deep, and adjoining it will be ladies' rooms with lavatory accommodation. In the other parts of the building there will be offices for the agent, rooms for the operators, caretakers, etc., and the baggage and express rooms will be in the sheds at the ends. Upstairs will be offices for the district superintendent, etc. The building, which will cost about \$10,000, is being built by the company's staff.

**Branch at Byng Inlet.**—The Board of Railway Commissioners has authorized the building of a branch line and a Y at Byng Inlet, Ont., on the Toronto-Sudbury line.

**Northern Colonization Ry.**—The Dominion Parliament is being asked to extend the time within which the extension of the railway to a junction with the Ottawa and North Western Ry. at Maniwaki, Que., may be built.

**Ottawa and North Western Ry.**—The Dominion Parliament is being asked to extend the time within which the lines authorized to be built by the company's acts of 1899 and 1900, may be built.

**Campbellford, Lake Ontario and Western Ry.**—Press reports state that a choice will be made at an early date from among the routes surveyed, for the projected line from between Blairton and Ivanhoe to between Locust Hill and Leaside Jct., on the existing line between Montreal and Toronto, the new line being projected to serve the lake front towns as far as possible.

**West Ontario Pacific Ry.**—The Dominion Parliament is being asked to extend the time within which the line authorized by the acts of 1906 may be built.

**Subway at Fort William.**—Tenders were received to Oct. 16 for the construction of a subway at Syndicate Ave., Fort William, Ont.

### Winnipeg-Brandon Second Track.

The second track work into Brandon, Man., has been completed, and the first passenger trains were operated over it to and from Winnipeg, Oct. 10.

**Shops at Neepawa.**—We are officially advised that it is not the intention to erect new shops and a roundhouse at Neepawa, Man., as reported in daily papers.

**Shops at Weyburn.**—We are officially advised that it is not the intention to erect locomotive and car repairing shops at Weyburn, Sask., as reported in daily papers.

**Regina to Bulyea.**—The new line connecting Regina and Bulyea, Sask., is expected to be opened for traffic early in Nov.

**Manitoba and North Western Ry.**—Application is being made to the Dominion Parliament to authorize the building of a line from Harrowby, south-easterly and southerly to near Hamiota, Man., and to extend the line for the building of lines from Churchbridge to Cutarm Creek, Sask.; from Theodore to a junction with the Russel branch in tp. 20 or 21, range 28, west of the 3rd meridian, Sask. and Man.; from Butte to Hamiota, Man.; and from Russell to the mouth of Shoal River on Lake Winnipegosis, Man.

**Calgary Shops.**—The Calgary city council approved an agreement with the C.P.R. in connection with the location of the proposed new shops there, at a meeting held Oct. 14. The agreement provides that the company shall have free use of the city sewers and shall give a site for disposal works; water rates for the shops to be the same as for other industrial concerns; the street railway to be extended to the shops; operation to be started on the building of shops within 30 days after the ratification of the agreement; the city to maintain certain grade crossings, and to sell electric power upon terms to be arranged between engineers representing the company and the city. These terms were arranged after a discussion of the matter with F. W. Peters, Assistant to the Vice President, Oct. 13. There are some small points of difference between what the company asked and what the city is prepared to grant, but it is expected that these will be settled, in time to permit the bylaw to be submitted at the next municipal elections.

**Lacombe Easterly.**—The Board of Railway Commissioners has authorized the opening for traffic of the Lacombe branch, of the Calgary and Edmonton Ry., from Castor to Coronation, Alta., 25 miles.

**Strathcona-Edmonton High Level bridge.**—The concrete substructure of the high level bridge over the Saskatchewan River, on the new line to connect Strathcona with Edmonton, Alta., is reported to have been completed. The erection of the steel work is expected to be commenced early in Nov. Track has been laid from Strathcona to the bridge to facilitate the work of getting in the steel superstructure.

**Western Lines.**—Application is being made to the Dominion Parliament to authorize the building of the following branch lines; from range 10, 11 or 12, on the Estevan-Forward branch to a junction with the Weyburn-Lethbridge branch in range 24, 25 or 26, west of the 2nd meridian, Sask.; from near Sedgewick southerly to a junction with the Lacombe branch in tp. 35, 36 or 37, range 10, 11 or 12, west 4th meridian, Alta.; from north of the Battle River on the last mentioned line northwesterly to a junction with the Wetaskiwin branch in ranges 17, 18 or 19, west 4th meridian, Alta. An extension of time for the building of the following lines is also

asked; from Osborne to a point between Cartwright and Boisvein, Man.; from Otterbourne to Stuartburn, Man.; from the Icelandic River northwesterly for 100 miles in Manitoba; from Killam to Strathcona, Alta.

**Rocky Mountain Water Powers.**—A recent press report stated that the water power of the Adams River, which flows into the South Thompson River, near the west end of Shuswap Lake, had been secured in the name of J. S. Dennis, Manager Irrigation and Land Interests in Alberta and British Columbia, and that the purchase had been made with the view of preparing for the operation of certain of the C.P.R. lines in the vicinity, by electricity. Mr. Dennis wrote us on Oct. 21, that as far as he knew the company had not taken any steps to acquire a water power at that point.

**Coquitlam Yards, Etc.**—Local press reports state that arrangements are being made for clearing the land acquired at Coquitlam, B.C., for yard and other purposes.

**Vancouver Station.**—We are officially advised that it is not likely the plans for the proposed new station building at Vancouver, B.C., will be ready for some little time.

**Esquimalt and Nanaimo Ry.**—It is expected that the extension to Alberni, will be opened for traffic early in Nov. The grading of the extension to Cowichan is going ahead rapidly, and the steel for laying the first 25 miles has been delivered.

Application is being made to the Dominion Parliament for an extension of time for the building of certain lines authorized by the company's acts of 1884 and 1906. (Oct., pg. 945.)

### Investigation of Fire Precautions in British Columbia.

The Board of Railway Commissioners recently issued an order providing for the investigation of fire appliances with which locomotives of railway companies subject to the Board's jurisdiction and operating in British Columbia, are equipped, and also the condition of the companies' right of way, as to whether it is free from dead grass, weeds and other combustible matter. By arrangement with the Forestry Branch of the Interior Department, the services of fire wardens, already engaged in fire preventive work, will be utilized. The instructions relative to the order have been given by the Board's operating officers and report of the investigations will be made to them. The following fire wardens have been detailed for the work: Supervisors of Fire Wardens, W. H. McGregor, Nelson, and W. C. Gladwin, Vancouver; Assistant Supervisor of Fire Wardens, W. F. Loveland, Nelson; Division Fire Wardens, G. B. Watson, Cranbrook, R. J. Long, Nelson, W. A. Wilmot, Fernie, M. V. Allen, Vernon, F. D. Markland, Victoria, J. K. McLean, Revelstoke, and W. H. Smith, Vancouver; Fire Wardens, R. E. Allen, New Denver, and G. A. Kerr, Kitselas.

H. H. Vaughan, Assistant to the Vice President, C.P.R., Montreal, accompanied by Mrs. Vaughan, sailed from Quebec, on the s.s. Empress of Ireland, for England, for a holiday, intending to be absent about five weeks.

W. S. Painter, who has resigned as Chief Architect, C.P.R., is reported to have entered into partnership with F. H. Swales, a London architect, with offices at Montreal and Vancouver, B.C. It is said that Mr. Painter will be retained by the C.P.R. in a consulting capacity, especially in regard to western work.

### Railway Rolling Stock Notes.

The Canadian Northern Ry. has ordered six snow ploughs from the Canadian Car and Foundry Co., Montreal.

The Intercolonial Ry. has added two vans to its rolling stock, since Sept. 18, both having been built in its Moncton shops.

The Temiskaming and Northern Ontario Ry. has received three parlor-cafe cars, named Sesequinika, Tetepaga and Wasaksima, from the Canadian Car and Foundry Co., Montreal.

The Grand Trunk Ry. has ordered 25 first class cars and 25 baggage-express cars from the American Car and Foundry Co., and 25 first class cars and 25 baggage-express cars from the Pullman Co., for delivery towards the end of the year.

The C.P.R., between Sept. 13 and Oct. 13, placed orders at its Angus shops, Montreal, for the following rolling stock,—90 box cars, 15 stock cars, three vans, two refrigerator cars, freight, 31 colonist cars, 30 baggage and express cars, 25 suburban cars, 15 first class cars, and 15 first class and smoking cars.

The Canadian Northern Ry., between Sept. 15 and Oct. 15, ordered one dining car and six snow ploughs from the Canadian Car and Foundry Co., Montreal, and two passenger and mail cars and three second class passenger and baggage cars from the Preston Car and Coach Co., Preston, Ont.

In our July issue it was stated that the G.T.R. had ordered 1,000, 36-ft. steel under frame box cars from the Canadian Car and Foundry Co., Montreal, and in September we received a communication from a G.T.R. official about a similar 1,000 cars, mentioned as having been ordered from the Canadian Car and Foundry Co. This latter information was taken as referring to an additional order, and was so treated in our October issue. Enquiry has shown that only one order has been placed.

The Canadian Northern Ry., between Sept. 15 and Oct. 15, ordered the following rolling stock,—1,500 box cars, 300 steel underframe flat cars and 15 first class cars, from the Canadian Car and Foundry Co., Montreal; 400 Hart convertible cars, from the Hart-Otis Car Co., Montreal; 200 flat cars, 300 box cars, 12 baggage cars, 12 baggage and mail cars and 20 cabooses from the Crossen Car Manufacturing Co., Cobourg, Ont.; 1,000 box cars from the Nova Scotia Car Works, Halifax, and 50 flat cars.

The Canadian Northern Ry. has ordered 1,500 box cars from the Canadian Car and Foundry Co., Montreal:—  
Length inside body ..... 33 ft. 10½ ins.  
Width inside body ..... 8 ft. 6¼ ins.  
Height top of floor to bottom of carlin ..... 8 ft.  
Length over end sills ..... 36 ft. 9¾ ins.  
Width over side sills ..... 9 ft. 0¾ in.  
Width at eaves ..... 9 ft. 7¾ ins.  
Height over all ..... 14 ft.  
Truck centres ..... 26 ft. 9¾ ins.  
Door opening ..... 7½ by 6 ft.  
Bolsters and brake beams ..... Simplex  
Draft springs ..... M.C.B. 6¼ by 8 ins.  
Air brakes ..... Westinghouse K.C. 812  
Trucks ..... Arch bar type  
Journal boxes ..... M.C.B. cast iron  
Axles ..... Steel  
Wheels ..... Cast iron, 33 ins.  
Brake shoes ..... Steel back

O'Brien, McDougall and O'Gorman, railway contractors, have ordered 15 Hart convertible cars, from the Hart-Otis Car Co., Montreal. Following are the chief details:—

Capacity ..... 80,000 lbs.  
Length over side sills ..... 8 ft. 10 ins.  
Length inside, as hopper ..... 20 ft. 10 ins.  
Length inside, as gondola ..... 34 ft. 8 ins.  
Width, inside ..... 8 ft. 8 ins.  
Width overall ..... 10 ft. 2½ ins.  
Width at top ..... 9 ft. 10 ins.  
Height from rail to top of floor ..... 4 ft. 4¼ ins.  
Height from rail to top of car ..... 8 ft. 1¾ ins.

Height inside ..... 3 ft. 9¾ ins.  
Truck centres ..... 26 ft. 8 ins.  
Wheel base of truck ..... 5 ft. 4 ins.  
Length of hopper door opening ..... 16 ft. 8½ ins.  
Width of hopper door opening ..... 2 ft. 9 in.

The C.P.R., between Sept. 13 and Oct. 13, received the following additions to rolling stock,—445 wooden box cars, 45 vans, two baggage and smoking cars, three second-class cars, one baggage and express car, four compartment sleeping cars, seven switching locomotives, and four D.10 locomotives from its Angus shops, Montreal; 15 D.10 locomotives and three N.3 locomotives from the Montreal Locomotive Works; seven N.3 locomotives from the Canadian Locomotive Co., Kingston, Ont.; 571 steel frame box cars from the Canadian Car and Foundry Co., Montreal, and 695 steel frame box cars and 343 steel coal cars from the United States.

The Edwardsburg Starch Co., Cardinal, Ont., has ordered one four-wheel saddle tank switching locomotive from the Montreal Locomotive Works. Following are the chief details:—

Cylinders ..... 13 by 18 ins.  
Driving wheels, diar. ..... 36 ins.  
Boiler, diar. ..... 46 11-16 ins.  
Boiler, pressure ..... 165 lbs.  
Firebox ..... 47½ by 36½ ins.  
Tubes, no. and diar. ..... 100; 2 ins.  
Tubes, length ..... 10 ft.  
Heating surface, tubes ..... 524 sq. ft.  
Heating surface, firebox ..... 53 sq. ft.  
Heating surface, total ..... 577 sq. ft.  
Grate area ..... 11.9 sq. ft.  
Weight in working order ..... 56,000 lbs.  
Maximum tractive power ..... 11,851 lbs.  
Capacity, coal ..... 900 lbs.  
Capacity, water ..... 1,000 galls.  
Wheel base ..... 6 ft. 3 ins.

Following are chief particulars of the four dining cars which the Canadian Northern Ry. is having built by the Canadian Car and Foundry Co., Montreal:—

Length over end sills ..... 72 ft. 6 ins.  
Length over buffers ..... 80 ft. 6¼ ins.  
Width over side sills ..... 9 ft. 10½ ins.  
Width over all at eaves ..... 10 ft. 2¾ ins.  
Width between deck sills ..... 5 ft. 6 ins.  
Height, top of sill to bottom of plate, 6 ft. 8½ ins.  
Height over roof board ..... 14 ft. 2¾ ins.  
Body bolsters ..... Cast steel double  
Vestibules ..... Pullman wide, type O  
Platforms ..... Standard Steel Co. type A3  
Heating ..... Gold combination steam and hot water  
Air brakes ..... Westinghouse L.N. 1812  
Trucks ..... C.N.R. standard 6-wheel, 80,000 lbs. capacity wood passenger trucks  
Wheels ..... Steel tired, 36 ins.  
Axles ..... M.C.B. 5 by 9 ins.

P. Lyall and Sons, Montreal have ordered one four wheeled saddle tank locomotive from the Montreal Locomotive Works. Following are the chief details:

Weight ..... 56,000 lbs.  
Wheel base ..... 6 ft. by 3 ins.  
Cylinder, diar. and stroke ..... 13 by 18 ins.  
Wheels, diar. ..... 36 ins.  
Boiler, type ..... Straight top.  
Boiler, pressure ..... 165 lbs.  
Boiler, diar. at front end ..... 41-11-16 ins.  
Firebox ..... 47-11-16 by 36¾ ins.  
Tubes, no. and diar. ..... 100-2 ins.  
Tubes, length ..... 10 ft.  
Heating surface, tubes ..... 524 sq. ft.  
Heating surface, firebox ..... 53 sq. ft.  
Heating surface, total ..... 577 sq. ft.  
Grate area ..... 11.9 sq. ft.  
Tank capacity ..... 1,000 galls.  
Maximum tractive power ..... 11,850 lbs.

The Reid Newfoundland Co., which is building at its St. John's shops, a number of locomotives, details of which we gave in our last issue, is also building three sleeping cars, 49 ft. long, 8½ ft. wide, 6 ft. 4½ ins. wall, with steel platforms, with eight sections and drawing room; four first class day cars, 47 ft. long, 8½ ft. wide, 6 ft. 5½ ins. wall; six second class cars, same dimensions as the first class; two baggage cars, 52½ ft. long, 8½ ft. wide, 6 ft 5½ ins. wall; two dining cars, 41 ft. long, 8½ wide, 6 ft. 4½ ins. wall, to seat 18 passengers; 50 box cars, 30 ft. long, 8 ft. wide, 6 ft. 4 ins. wall, 40,000 lbs. capacity; two snow ploughs, all equipped with air brakes and Tower couplers.

Roger Miller and Son, Toronto, have ordered two four wheeled saddle tank locomotives from the Montreal Locomotive Works. Following are the chief details:

Weight, total	39,000 lbs.
Wheel base	14 ft. 9 ins.
Cylinder, diam. and stroke	11 by 16 ins.
Wheels, diam.	33 ins.
Journals	5 by 6 ins.
Boiler, type	Straight top.
Boiler, pressure	165 lbs.
Boiler, diam. at front end	35 1/2 ins.
Firebox	40 1/2 by 33 ins.
Tubes, no. and diam.	85-2 ins.
Tubes, length	8 ft. 3 1/2 ins.
Heating surface, tubes	367 sq. ft.
Heating surface, firebox	41 sq. ft.
Heating surface, total	408 sq. ft.
Grate area	9.3 sq. ft.
Tank capacity	750 galls.
Maximum tractive power	8,230 lbs.

The Canadian Northern Ry., between Sept. 15 and Oct. 15, received the following additions to rolling stock,—28 flat cars, 136 box cars, two first class cars and three baggage cars, from the Canadian Car and Foundry Co., Montreal; 47 refrigerator cars and six cabooses from the Crossen Car Manufacturing Co., Cobourg, Ont.; two second class passenger and baggage cars from the Preston Car and Coach Co., Preston, Ont.; 195 box cars from the Nova Scotia Car Works, Halifax; five consolidation locomotives from the Baldwin Locomotive Works, Philadelphia, Pa., five ten wheel locomotives from the American Locomotive Co., and 150 flat cars for the Duluth, Winnipeg, and Pacific Ry.

The use of gas-electric motor cars on the Central Ontario Ry. between Trenton and Picton, Ont., is said to be under the consideration of officials of the Canadian Northern Ry., which now controls the C.O.R. The prime mover in these cars is a gas engine, the energy from which is transmitted to the driving wheels by an electric drive, thus avoiding any direct mechanical gearing. The engine is direct coupled to an electric generator forming a compact power plant. The electric motors under the car are standard railway motors. A number of these cars are in operation on the Buffalo, Rochester and Pittsburg Ry. and the Southern Ry., and some have been built recently for the St. Louis and San Francisco Rd.

The Toronto, Hamilton and Buffalo Ry. has ordered two consolidation locomotives, equipped with superheaters, from the Montreal Locomotive Works. Following are the chief details:—

Cylinders, diam. and stroke	23 by 28 ins.
Driving wheels, diam.	55 ins.
Boiler, outside diam., at front end	64 1/4 ins.
Boiler, pressure	180 lbs.
Firebox	96 by 75 1/4 ins.
Tubes, no. and diam.	202-2 ins; 28-5 1/2 ins.
Tubes, length	15 ft.
Heating surface, tubes	2162 sq. ft.
Heating surface, firebox	168 sq. ft.
Heating surface, total	2330 sq. ft.
Grate area	50.2 sq. ft.
Wheel base, driving	17 ft.
Wheel base, engine	57 ft. 3 ins.
Weight on leading truck	28,000 lbs.
Weight on driving wheels	175,000 lbs.
Weight, total	203,000 lbs.
Weight, tender	140,000 lbs.
Tractive power	41,200 lbs.

The Titanium Alloy Manufacturing Co. calls attention to statistics issued by the American Iron and Steel Association respecting the tonnage of steel treated with various alloys during 1910. Out of a total of 567,819 gross tons, 326,316 were treated with Titanium.

The Supreme Court gave judgment at Ottawa, Oct. 5, in the appeal against the Exchequer Court decision in E. A. Walberg's action for extras on the contract for building the new shops for the Intercolonial Ry. at Moncton, N.B. The court reduces the amount fixed by the Exchequer court to that named by the referee.

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 Northern Ontario Ry.—J. W. Kelly** has been appointed Car Foreman in charge of all work pertaining to the Car Department. Car inspectors will send all correspondence to him and work will be under his supervision. Office, Parry Sound, Ont.

**Canadian Northern Quebec Ry., Quebec and Lake St. John Ry.—L. P. McGee** has been appointed acting Bridge and Building Master, vice J. W. Phair, accidentally killed on the Q. & L. St. J. R., near Chambord Jct., Que., Oct. 11. Office, Joliette, Que.

**Canadian Northern Ry.—J. D. Sinclair**, heretofore Contracting Freight Agent, Toronto, has been appointed Travelling Freight Agent, Toronto, vice G. D. Lindsay, resigned.

**I. L. Healy**, heretofore in Freight Traffic Department, Toronto, has been appointed Contracting Freight Agent,



H. R. Safford,

Chief Engineer, Grand Trunk Railway.

Toronto, vice J. D. Sinclair, promoted.

**S. J. Lupton** has been appointed General Foreman Boilermaker, with jurisdiction over boiler inspecting, testing and repair work generally at all points, vice P. Spence, Boiler Inspector, assigned to other duties. Office, Winnipeg.

**P. Spence** has been appointed Locomotive Foreman at Saskatoon, Sask., vice P. H. Neville, assigned to other duties.

**Canadian Pacific Ry.—W. B. Brown**, heretofore Trainmaster and Chief Dispatcher at St. John, N.B., has been appointed Assistant Superintendent, District 1, Atlantic Division, the dispatching office at St. John having been consolidated with that at Brownville Jct., Me., on the adoption of the telephone dispatching system on the division. Office, St. John, N.B.

**A. W. Horsey**, heretofore District Master Mechanic, District 1 and Montreal Terminals, Eastern Division, Farnham, Que., has been appointed District Master Mechanic, District 1, Eastern Division, Office, Farnham, Que.

**G. A. Balfour** has been appointed Assistant to the General Superintendent, Eastern Division, Office, Montreal. This is to relieve F. P. Gutelius of much of the detail work, which has increased greatly on account of the larger volume of business now being done.

**John Burns**, heretofore District Master Mechanic, London, Ont., has been appointed Master Mechanic, Eastern Division, succeeding J. B. Elliott, who is retiring on well earned pension after faithfully serving the company from its formation. Office, Montreal.

**H. A. Pepler** has been appointed District Master Mechanic, District 2 and Montreal Terminals, Eastern Division, Office, Montreal.

**W. S. Painter**, Chief Architect, has resigned to carry on private practice.

**J. M. Burke**, heretofore District Master Mechanic, Districts 2 and 4, Eastern Division, Smiths Falls, Ont., has been appointed District Master Mechanic, District 4, Eastern Division. Office, Ottawa, Ont.

**M. G. Murphy**, heretofore General Travelling Passenger Agent, Montreal, has been appointed District Passenger Agent, Toronto, vice R. L. Thompson, resigned. Office, 16 King St. East.

**A. J. Downing**, heretofore chief clerk to agent, has been appointed city ticket agent, C.P.R., and agent Dominion Ex. Co., Woodstock, Ont., vice G. A. Joyce, resigned.

**R. T. Moran** has been appointed Chief Dispatcher at Sudbury, Ont., vice J. O'Meara.

**F. Nowell**, heretofore Locomotive Foreman at Ottawa, has been appointed District Master Mechanic, District 2, Lake Superior Division, vice J. A. Carroll, resigned to enter other service. Office, White River, Ont.

**E. T. Wright** has been appointed Storekeeper at Schreiber, Ont.

**George Bury**, heretofore General Manager, Western Lines, has been appointed Vice President and General Manager Western Lines, vice Sir William Whyte, Vice President, who has retired from active service. Office, Winnipeg.

**Grant Hall**, heretofore Superintendent of Motive Power and Car Department Western Lines, has been appointed Assistant General Manager, Western Lines in charge of matters pertaining to operation and maintenance. Office, Winnipeg, Man.

**J. G. Sullivan**, heretofore Assistant Chief Engineer, Western Lines, has been appointed Chief Engineer, Western Lines. Office, Winnipeg. The position of Assistant Chief Engineer has been abolished.

**C. H. Temple**, heretofore Assistant Superintendent of Motive Power, Western Lines, has been appointed Superintendent of Motive Power, vice Grant Hall, promoted. Office, Winnipeg.

**C. A. Davis** has been appointed Locomotive Foreman at Rogers Pass, B.C., vice G. R. Steeves, assigned to other duties.

**G. Donley** has been appointed Assistant Foreman of Repair Track at Vancouver, B.C.

**W. Woodhouse** has been appointed Assistant Coach Yard Foreman at Vancouver, B.C. This is a new position.

**Capt. C. D. Neroutsos**, heretofore in command of the C.P.R. s.s. Princess Royal, has been appointed Marine Superintendent, B.C. Coast Steamship Service. Office, Victoria, B.C.

**A. L. Sauve** has been appointed City Passenger Agent, Detroit, Mich., succeeding G. G. McKay, transferred to Chicago as City Passenger Agent.

**Central Vermont Ry.—See Grand Trunk Ry.** for particulars respecting the President of the C.V.R., etc.

**J. E. Dalrymple**, Vice President, G.T.R., and Fourth Vice President, G.T.

P.R., has also been appointed Vice President, C.V.R., in charge of traffic Office, Montreal.

**Grand Trunk Pacific Ry.**—J. E. Dalrymple, heretofore Assistant Freight Traffic Manager, Winnipeg, has been appointed Fourth Vice President, in charge of Traffic Office, Montreal.

D. E. Galloway, heretofore private secretary to the President, G.T.R. and G.T.P.R., has been appointed Assistant to the President, G.T.R. and G.T.P.R., vice R. S. Logan, appointed Vice President, G.T.R. Office, Montreal.

In our October issue mention was made of a report that J. H. Hanna, at one time Division Freight Agent, G.T.R., Hamilton, Ont., had been appointed City Passenger Agent, G.T.P.R., Calgary, Alta. We are advised that the report is incorrect.

The following agents have been appointed: Pope, Man., F. J. Brande; Rea, Man., A. G. Ridford; Atwater, Sask., N. Fizer; Bangor, Sask., R. W. Esty; Birmingham, Sask., C. A. Swan; Ituna, Sask., H. S. McClelland; Balcarres, Sask., C. McMahon; Hinton, Alta., F. R. Harrison.

**Grand Trunk Ry.**—In order to relieve the President of the more important detail work, which has heretofore been largely centralized, the directors have approved the reorganization of the executive staff of the G.T.R. and affiliated companies.

E. H. Fitzhugh, heretofore First Vice President, G.T.R., having been elected President Central Vermont Ry., Central Vermont Transportation Co., Southern New England Rd. Corporation, Southern New England Ry. and Montreal and Southern Counties Ry., has relinquished his duties in connection with his former position to devote his time to the affairs of the companies named. He will also perform such duties in connection with other G.T.R. subsidiary lines as may hereafter be assigned to him. Office, Montreal.

The practice of designating the several vice presidents by numbers has been discontinued.

W. Wainwright, heretofore Second Vice President, has been appointed Vice President. Office, Montreal.

M. M. Reynolds, heretofore Third Vice President, in charge of Financial and Accounting Departments. Office, Montreal.

H. G. Kelley, heretofore Chief Engineer, has been appointed Vice President, in charge of Construction, Transportation and Maintenance Departments. Office, Montreal.

J. E. Dalrymple, heretofore Assistant Freight Traffic Manager, G.T. Pacific Ry., Winnipeg, Man., has been appointed Vice President, G.T.R., in charge of Traffic Office, Montreal.

R. S. Logan, heretofore Assistant to the President, G.T.R. and G.T.P.R., has been appointed Vice President, G.T.R., in charge of Land, Tax, Claims and Mail Departments. Office, Montreal.

D. E. Galloway, heretofore private secretary to the President, G.T.R., and G.T.P.R., has been appointed Assistant to the President, G.T.R. and G.T.P.R., vice R. S. Logan, appointed Vice President, G.T.R. Office, Montreal.

H. R. Safford, M. Am. Soc. C.E., at one time Chief Engineer of Maintenance of Way, Illinois Central Rd., has been appointed Chief Engineer, G.T.R., vice H. G. Kelley, promoted. Office, Montreal.

J. W. Loud, Freight Traffic Manager, after 40 years continuous service with the G.T.R. and affiliated lines, has retired under the provisions of the Pension Fund. President Hays, in the circular announcing the retirement, said: "It is a pleasure to testify to the faithful and efficient manner in which

he has discharged his duties in the various positions occupied.

John Pullen, Assistant Freight Traffic Manager, Montreal, has resigned on his appointment as President, Canadian Express Co., in succession to C. M. Hays, elected Chairman of the Board of Directors.

C. A. Hayes, heretofore General Freight Agent, Montreal, has been appointed Freight Traffic Manager, vice J. W. Loud, retired. Office, Montreal.

H. C. Martin, heretofore Second Assistant General Freight Agent, Chicago, Ill., has been appointed General Freight Agent, vice C. A. Hayes, promoted. Office, Montreal.

A. F. Read, heretofore Foreign Freight Agent, Montreal, has been appointed General Foreign Freight Agent. Office, Montreal. This is a new position.

F. J. Watson, heretofore Division Freight Agent, Montreal, has been appointed Assistant General Freight Agent. Office, Montreal.

G. T. Pettigrew, heretofore Division Freight Agent, Stratford, Ont., has been appointed Division Freight Agent, Montreal.

W. H. Tool, heretofore Inspector of Bridges and Buildings, Allandale, Ont., has been appointed Master of Bridges and Buildings, Northern Division, vice E. Brown, resigned. Office, Allandale, Ont.

R. J. S. Weatherston, heretofore chief clerk, Division Freight Agent's office, Hamilton, Ont., has been appointed Division Freight Agent, Stratford, Ont.

F. Dearing, heretofore Car Distributor at Stratford, Ont., has been appointed Car Distributor at London, Ont., vice E. R. Harwood, promoted.

E. R. Harwood, heretofore Car Distributor, London, Ont., has been appointed chief clerk to Master of Transportation, with entire charge of freight car distribution. Office, London, Ont.

J. E. Van Kauren has been appointed Car Distributor at Stratford, Ont., vice F. Dearing, transferred.

S. E. Dewey, heretofore Soliciting Freight Agent, New York City, has been appointed Commercial Agent, Pittsburgh, Pa., vice E. F. Flinn, promoted.

R. L. Burnap, heretofore Assistant General Freight Agent, Chicago, Ill., has been appointed Assistant Freight Traffic Manager, vice John Pullen, resigned on his appointment as President, Canadian Express Co. Office, Chicago, Ill. Mr. Pullen's office was at Montreal.

E. F. Flinn, heretofore Commercial Agent, Pittsburgh, Pa., has been appointed Division Freight Agent, Chicago, Ill.

S. L. Strauss, heretofore chief clerk, Tariff Department, Chicago, Ill., has been appointed Chief of Tariff Bureau. Office, Chicago, Ill.

James Waugh, heretofore Travelling Freight Agent, Philadelphia, Pa., has been appointed Commercial Agent, Omaha, Neb., vice A. Wallace, resigned.

The following agents have been appointed: Coteau Jct., Que., W. J. Ferguson; Noyan Jct., Que., F. X. Landry; Kirkfield, Ont., E. M. Ellis; Concord, Ont., H. O. McLean; Severn, Ont., J. W. Wiggins; Milton, Ont., B. Sine; London East, Ont., R. E. Taylor; Brucefield, Ont., E. A. Pattison; Pembroke, Ont., J. R. Pilson; Edington, Ont., H. W. Lora.

**Great Northern Ry.**—R. J. Smith, heretofore General Agent at Cincinnati, Ohio, has been appointed District Freight and Passenger Agent at Grand Forks, B.C., vice V. Kistler, transferred.

W. R. Dale heretofore chief clerk to Assistant Traffic Manager, Seattle, Wash., has been appointed Agent at Victoria, B.C., vice E. R. Stephen, resigned to enter private business.

**National Transcontinental Railway Commission.**—R. W. Leonard, M. Can. Soc. C.E., of St. Catharines, Ont., has been appointed Chairman, N.T.R. Commission, vice S. N. Parent, resigned.

**Temiscouata Ry.**—G. G. Grundy, General Manager, has also been appointed Secretary, vice D. B. Lindsay, deceased. Office, Riviere du Loup, Que.

**Temiskaming and Northern Ontario Ry.**—S. H. Ryan, heretofore Chief Dispatcher, has been appointed Trainmaster. Office, North Bay, Ont.

J. J. Campbell, heretofore second trick dispatcher, has been appointed Chief Dispatcher, vice S. H. Ryan, promoted. Office, North Bay, Ont.

**Toronto, Hamilton and Buffalo Ry.**—W. T. Kuhn, heretofore Assistant Master Mechanic, Lake Erie and Western Ry., Lima, Ohio, has been appointed Master Mechanic, T.H. & B.R. Office, Hamilton, Ont.

**White Star-Dominion Line.**—J. W. Wilkinson and G. D. Lindsay have been appointed Travelling Freight Agents, for Ontario, to assist M. A. Overend, recently appointed Freight Agent to succeed the late G. W. Torrance. Office, 28 Wellington St. East, Toronto.

**Southern New England Ry.**—Following are the directors of this company, a subsidiary of the Central Vermont Ry., which is controlled by the G.T.R.: E. H. Fitzhugh, H. G. Kelley, Montreal; G. C. Jones, C. W. Witters, St. Albans, Vt.; T. W. Kennefick, Palmer, Mass.; J. S. Murdoch, Providence, R. I.

**Victoria Terminal Ry. and Ferry Co.**, Victoria and Sidney Ry.—Following are the officers and directors for the current year: President, A. H. MacNeill, Vancouver, B.C.; Vice President, F. V. Brown, Seattle, Wash.; Secretary-Treasurer, A. M. Thomas, Seattle, Wash.; other directors, F. Van Sant, Victoria, B.C. and John L. Snapp, Seattle, Wash.

**Wabash Rd.**—Following are the directors elected at the meeting of the stock and bondholders held in Toledo, Ohio, Oct. 10:—G. J. Gould, Jay Gould, H. Gould, F. A. Delano, E. T. Jeffrey, E. T. Welles, H. Bludgett, S. C. Reynolds, R. B. Clowry, T. H. Hubbard, J. J. Slocum, E. B. Pryor, R. McCallaway. Frank Gould has been dropped from the board.

**Toronto Union Station Plans.**—The Board of Railway Commissioners, after a hearing extending over a couple of days directed, Oct. 14, that an order should be issued directing the preparation of new plans for the projected union station in Toronto. These plans are to be based upon a design submitted to the Board by the Toronto Board of Trade, which the commissioners and the C.P.R. favored in preference to the plans prepared by the G.T.R. The Chief Commissioner suggested that in the plans to be submitted 15 tracks be provided. Five through tracks and ten local tracks, or two sets of five tracks with the concourse between. The G.T.R. is given two weeks in which to prepare the amended plan.

P. E. Ryan, father of P. E. Ryan, Secretary, National Transcontinental Railway Commission, died at Ottawa, recently, aged 76.

The Western Union Telegraph Co.'s agreement with the Newfoundland Government gives the company the right to land cables on the island on as favorable conditions as those granted for other cables, either now landed, or to be landed except as regards any special privileges now enjoyed by the Anglo-American Telegraph Co. It is also provided that the company shall not compete with government lines. The amount fixed for landing the cables is \$4,000 a year for each cable, and the company shall not be charged for more than five cables.

# ELECTRIC RAILWAYS

## Canadian Street Railway Association

PRESIDENT, James Anderson, General Manager Sandwich, Windsor and Amherstburg Ry.; VICE PRESIDENT, P. Dubee, Secretary Montreal St. Ry.; SECRETARY-TREASURER, Acton Burrows, Managing Director Railway and Marine World.

ASSOCIATION'S OFFICE, 70 Bond St., Toronto. EXECUTIVE COMMITTEE.—E. P. Coleman, Manager of Railways, Dominion Power and Transmission Co.; H. M. Hopper, General Manager, St. John Ry.; J. E. Hutcheson, Superintendent, Ottawa Electric Ry.; C. B. King, Manager, London St. Ry.; D. McDonald, General Manager, Montreal St. Ry.; M. N. Todd, President, Galt, Preston and Hespeler St. Ry.

ASSISTANT SECRETARY, Aubrey Acton Burrows, Secretary and Business Manager Railway and Marine World.

OFFICIAL ORGAN, THE RAILWAY AND MARINE WORLD.

## The Repainting of Electric Cars, its Frequency, Method and Cost.

In compliance with a request for information on this subject, we have obtained the following interesting and valuable facts from a number of electric railway companies:—

### BRITISH COLUMBIA ELECTRIC RY.

Our cars are touched up and revarnished eight months after being painted. The car is then brought into the shop every 12 months, cleaned and revarnished until it has received four varnishings. After it has received the fourth varnishing it is brought in the barn after 12 months and repainted. This means that the car is repainted every four years and eight months, and is revarnished four times during that time. The average cost of painting the cars is about \$40 and the cost of touching up and varnishing, inside and out, about \$30.

### CAPE BRETON ELECTRIC CO.

The work in our painting department divides itself into three classes, namely: touch up, cut in with color, and burning off and repainting jobs. The cars come into the shop in the interim between burning off and repainting jobs for touch up or a recoloring. The average car mileage between burning off and repainting jobs is 590,208. The car mileage between touching up and revarnishing jobs is 262,314. Cost of retouching and varnishing jobs, painting, stock, and labor is approximately \$50. Touch up jobs include cleaning, touching up scratches, etc., with color, and revarnishing. Cut in with color jobs include cleaning, coloring the car all over, and revarnishing. Burning off and repainting jobs include all the necessary steps to practically repaint the car. We give below a summary of the different methods in detail.

### BURNING OFF AND RE-PAINTING JOBS.

1. Burn off all the old paint.
2. Clean up the surface with sandpaper.
3. Apply a coat of lead, allow one day to dry.
4. Apply a coat of same lead.
5. Putty next day with putty.
6. Apply a coat of knifing lead, and when it has commenced to set, the surface is gone over with a broad putty knife to eliminate all brush marks and irregularities.
7. The surface is gone over with no. ½ sandpaper.
8. Apply a coat of color, tinted in the direction of body color, only a shade lighter.
9. The surface is gone over with fine sandpaper.
10. Apply a coat of body color thinned with turpentine only.
11. Apply a coat of finishing varnish colored with body color, about 2 oz. of color to 1 lb. of varnish, allow one day to dry.
12. Do all the necessary striping and lettering.
13. Apply one coat of exterior body varnish.

CUT IN WITH COLOR JOBS.—1 Remove one coat of varnish with ammonia. 2. Go over surface with fine sandpaper. 3. Apply a coat of body color thinned with turpentine and given an extra binder of exterior finishing varnish, about one gill of varnish to one pint of the thinned color. 4. Apply a coat of exterior finishing varnish colored with body color, 2 oz. of color to 1 lb. varnish. 5. Do all necessary striping and lettering. 6. Apply a coat of exterior finishing varnish.

TOUCH-UP JOBS.—1. Wash surface with soap and water in connection with powdered pumice, about 1 lb. soap to 3 gals. water. 2. Touch up scratches, etc., with color. 3. Apply a coat of exterior railway finishing varnish.

### GALT, PRESTON & HESPELER STREET RAILWAY COMPANY.

We run our cars between 5,500 and 6,000 miles before putting in the shop for general repairs. We have no standard method, but what we do is to consider what is best for each particular car according to the length of time it can be held in the shop. The general practice to date has been to wash down, and light rub the old surface, touch up when necessary and in some cases, one complete coat of color, then two coats exterior varnish, and one coat inside, as well as painting of the roof, floors and trucks. We endeavor to have the car put in twice a year, once for a coat of varnish and the next time for painting. If the equipment is allowed out until it is in bad condition, lead and oil is certainly the best process.

### HALIFAX ELECTRIC TRAMWAY CO.

Our cars make an average of 175,000 miles between painting. The method adopted in painting a car is to first burn off old paint to the wood, sand paper to a surface, then one coat primer followed by three coats surfacer, which is rubbed to a surface with pumice, etc. One coat color-ground, one coat color, striped and lettered, one coat varnish, rubbed, one coat finishing varnish. Cost of above about \$100 a car. This is good for about eight years.

At or before the beginning of each season, other than the one in which the repainting is done, cars are washed, touched up and varnished one coat. Floors and roofs, one coat paint of their respective colors. This will cost about \$25 a car.

### HULL ELECTRIC COMPANY.

Our cars are painted every 2½ years and varnished every year. The old paint is rubbed down, but not burned off. Painting single truck cars costs \$35 and double truck cars \$70.

### LEVIS COUNTY RAILWAY.

We do not keep a mileage record of the painting of cars. We varnish our cars every year and paint every three years. The average cost of varnishing is \$25 a car. The average cost of painting and varnishing is \$50 a car.

### LONDON STREET RAILWAY.

Our mileage between painting of cars is from 50,000 to 60,000. The method of painting the car body, where painted above window rail, is to put on one priming coat of white lead and oil, three coats of white paint, each rubbed down, one coat of color varnish and two coats of finishing varnish. For painting the car body outside where finished in cherry, below window rail, we use one coat of boiled oil rubbed down, one coat of stain, one coat of shellac, one coat of rubbing varnish and two coats of finishing varnish. The car body inside is stained same as above and given one coat of finishing varnish. The floor gets two coats of lead paint and the roof

two coats of roof paint. For our cars which are 31 ft. 7 ins. long over bumpers, with body 22 ft. 7 ins. long outside and 8 ft. wide outside, the height from roof to bottom of sill being 9¼ ft., with front vestibule closed, the average cost of material is \$28.05 and labor \$42.62, a total of \$70.67.

### OTTAWA ELECTRIC RAILWAY.

Average mileage between painting of cars, 37,000. Method, hand labor. Average cost per car per year, \$70. Cars washed and varnished every year, painted every second year.

### QUEBEC RY., LIGHT & POWER CO.

Average mileage between painting of cars, 85,140 miles. Method, burning off with blow torch and repainting. Average cost for painting cars, closed \$50, open \$45.

### SANDWICH, WINDSOR & AMHERSTBURG RAILWAY.

We do not keep track of mileage between painting of cars, but whenever a car requires to be painted we have it done. The cost is from \$60 to \$125 a car, according to size.

### TORONTO & YORK RADIAL RY.

We have not a fixed rule governing how often we paint. We have tried, as far as our business would permit, to paint every three years, with two coats of varnish during that time. Our method of painting is to clean off all paint and varnish and start with lead coat or size, and completely repaint, putting on six coats altogether, including color varnish and finishing varnish. Our average cost is \$195 for painting, varnishing, etc., for our big cars complete.

## Grouse Mountain Scenic Incline Railway.

The object which the promoters of the company have in view in projecting the construction of a scenic railway to the summit of Grouse Mountain on the north shore of Vancouver harbor, B.C., is to add to the transportation conveniences provided for tourists and the public generally. The company has been incorporated by the B.C. Legislature, the provisional directorate consisting of W. J. McGuigan, L. C. Mills, W. H. May, W. J. Manson, W. H. R. Collier. The officials are: Consulting Engineers, Waddell and Harrington; Solicitor, T. O. Townley; Auditor, M. B. Cotsworth; Secretary, H. J. Cave.

The project consists first of an electric railway, extending across the canyon of the Capilano River, for about 8,000 ft., to the foot of the incline line; second, an incline railway of about 7,440 ft. long, operated by a steel cable and having a rise of 2,330 ft. in its length; and third, an electric railway of about 3,600 ft. long, skirting the crest of the mountain. The three lines will form a continuous route extending from the top of the mountain down across the canyon on the Capilano river, to a junction with a proposed extension of the B.C. Electric Ry. The line as located at the foot of the mountain, after crossing the Capilano river, will wind about in order to obtain the most satisfactory gradients, till it reaches a point where the rising gradient is too steep for satisfactory operation by the usual methods. The cable line will rise to the top of the mountain on gradients varying from 17 to 60%. The line on the top of the mountain will wind along the crest of the mountain on a roadbed very largely cut from solid rock and on fairly steep gradients.

The electric line will be of ordinary

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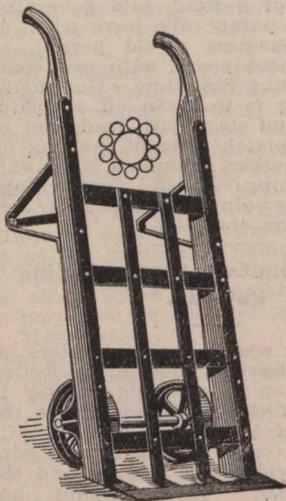
A. D. HANNAH & D. HOGG,  
 PROPRIETORS

ARTHUR M. GRANT,  
 MANAGER

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 And Other Large Companies



For Railroad and Steamboat

This truck has many **SPECIAL** features over the old style, and is made Strong and Heavy, to withstand the abuse to which it is subject. The Roller Bearings reduce friction to a minimum, thereby **Doubling** the **Life** of the **Truck**.

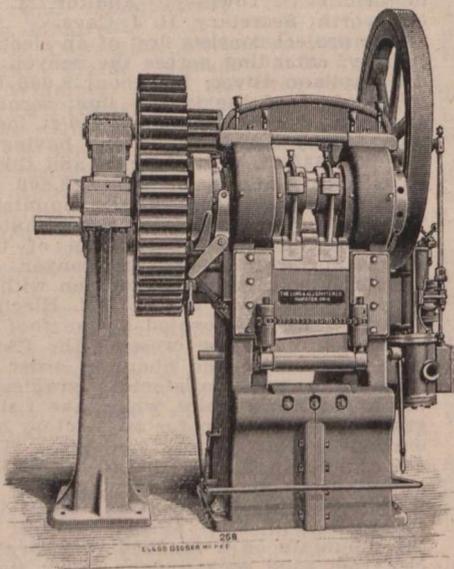
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Write for Catalogue if interested. Correspondence invited.

construction, necessitating some timber truss work and a good deal of rock cutting. The Capilano canyon will be crossed by a steel bridge erected as a cantilever, because the depth of the canyon, 280 ft., prohibits the use of false work. The bridge will be built on concrete pedestals resting on the solid rock at the edges of the gorge. The line on the top of the mountain will follow the crest of a steep declivity and will be provided with a heavy guard rail on the outside of the track to prevent accident in case of derailment. The cable line as surveyed will traverse some very rough ground, requiring some heavy rock cutting, some timber trestles, and thorough anchorage of the track on the steep stone incline, and considerable sidehill cutting is also encountered. The general plan is to construct a two car, three rail line consisting of three lines of heavy timbers beneath the rails, anchored to the rock and extending from end to end of the line, across ties drift bolted to these timbers; three lines of rails spiked to the ties and at intervals, bolted to the track to prevent them from creeping downhill, and heavy outside guard timbers bolted to the ties. At the middle of the line the centre to centre spacing of the tracks will be increased and four rails will be used to facilitate the passing of the cars.

The cable line will be provided with two cars, each of which will seat about 60 passengers, and on each end of a plough steel wire cable, which between the cars, will be wound over two grooved steel drums which will be actuated through a train of gears by two electric motors. The two drums will be placed in tandem with the line and the cable will make four turns about the pair, thus providing for the continuous winding on or off of the cable without traverse along the drum. The grip of the rope as wound on the drums will be equal to the total strength of the cable, and slipping will be impossible. Gum wood rollers will support the cable as it drops to the track behind the car and decrease friction and wear. The motors will be provided with limit switch and solenoid brakes to bring the cars to a stop without jar at the end of their travel. Hand brakes will also be provided. A plough steel cable, 1.25 in. in diameter, will be provided to haul up and lower the cars, and a safety cable will also be employed. Automatic brakes will clamp the car to the guard rail should a cable break. There will thus be two independent safeguards pro-

seats or platforms that will so adjust themselves that they will always be level, notwithstanding the changes in the gradients.

The power and stationhouse will be adequately equipped, and shelter houses and platforms will be provided. Provision will be made in the power house for a motor generator set to transform high potential alternating current to direct at about 600 volts. The power will be supplied by the B.C. Electric Ry.

The estimated cost of construction is: line at foot of mountain, \$71,870; cable line, \$191,615; line at top of mountain, \$73,085; electric supply, \$11,000; cars, \$15,000; power house, etc., \$13,200; engineering and incidentals, \$30,230. Right of way and incorporation expenses not included.

#### Montreal Tramways Co., Organization.

At a meeting of shareholders of the Montreal St. Ry. Co., Oct. 5, a resolution was passed by a vote of 61,391 shares to 3,627 to convey all the properties of the M.S. Ry., the Montreal Park and Island Ry., the Montreal Terminal Ry. and the Public Service Corporation to the Montreal Tramways Co., which was incorporated at the Quebec Legislature last session. The terms of the transfer are that \$89.50 shall be paid in cash, and there shall be allotted \$160 in 5% debenture stock and \$20 in common stock of the Montreal Tramways Co., for each share of M.S. Ry. held. It was stated that as an alternative, arrangements would be made by which shareholders could receive \$250 in 5% debenture stock and \$20 in common stock in case they did not wish any cash. It was elicited during the meeting that the company had arranged for the sale of \$10,000,000 of 5% bonds at 95 net, with accrued interest, to N. W. Harris and Co. Boston and New York.

The M.S. Ry. at present owns the Montreal Park and Island Ry. the Montreal Terminal Ry. and the Public Service Corporation, but each of them is carried on as a separate corporation. An agreement for the transfer of the M.P. & I.R. property to the M.S. Ry. was signed Sept. 22, and a meeting of shareholders of the selling company to approve the transfer was called to be held Oct. 23. The agreement provides as a consideration for the sale that the M.P. & I Ry. Co., will be released from all indebtedness to the M.S.R., which company undertakes to

Ry. and the Montreal St. Ry., for the conveyance to the latter of the former company's undertaking in whole for the following considerations:— (1) A release of the indebtedness of the M.T. Ry. to the M.S. Ry., and (2) a covenant on the part of the M.S. Ry. to pay all M.T.R. debts, liabilities and engagements.

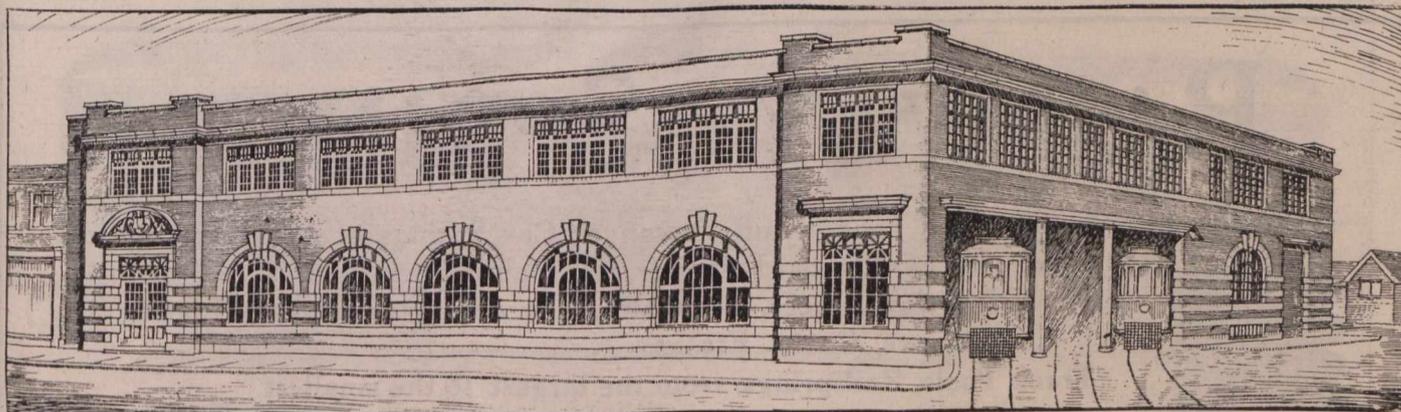
The Montreal board of control has had the matter of the amalgamation of the companies under consideration, and carried the question before the Quebec Public Utilities Commission, Oct. 10. The position taken by the city is that the several companies should be completely merged, and arrangements made so that there should be only one franchise granted. The consideration of the matter was adjourned, an arrangement being made by which the parties should discuss the basis of a settlement.

The Montreal Tramways Co., issued a circular to shareholders of the M.S. Ry. Oct. 14, announcing the terms of the transfer, and inviting those shareholders who desired to accept the shares of the new company without any cash payment, to notify the company at once. The shares in the new company will be allotted after the expiration of 15 days from the date of the circular.

#### Moncton Tramways, Electricity and Gas Company, Ltd.

Rapid progress is being made with the construction of the part of the electric railway called for by the agreement with the city and it is expected to be ready this month. This section is about two miles of single track, extending from the hospital on King St. to the I.C.R. shops on John St. The complete scheme includes about 6½ miles of track, which is to be proceeded with next spring.

The company is an English organization, formed for the distribution of the gas from the nearby natural gas fields. The electric railway is but a part of a comprehensive plan of public utilities being developed. The English officials are Dr. J. A. S. Henderson, President, and E. A. Mitchell, Consulting Engineer, both of London; the officials in Moncton are F. W. Sumner, Vice President; J. P. Chalmers, Secretary, and W. G. Ritchie, Resident Engineer. The company has taken over the charter of the street railway company which operated in the town for three or four years some 15 years ago. The charter has 39 years to run.



British Columbia Electric Railway New Offices and Passenger Station at New Westminster, which was described in our October issue, pg. 973.

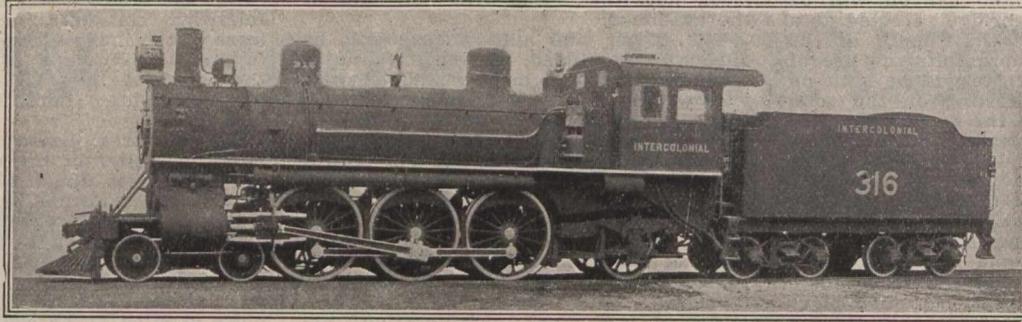
vided. Both telephone and signal bells will enable the conductors on the cars, to communicate with the operator in the machinery house at any time.

On the lines at the top and bottom of the mountain eight wheel cars of the city type will be provided, but equipped with heavy motors and air brakes. The cable cars will be fitted with swinging

discharge all liabilities and to indemnify the M.P. and I. Ry. Co. against damages from any claims that may be made against it, and to pay to shareholders, other than those held for the M.S. Ry. \$100 a share.

Application is being made to the Dominion Parliament to ratify the agreement between the Montreal Terminal

A unique construction of roadbed has been introduced by the company's engineers. Apprehending difficulty from frost under the roadbed causing the track to upheave, and profiting by the experiences of other companies in this vigorous northern climate, the construction of the roadbed is decidedly different from that to be found elsewhere. The



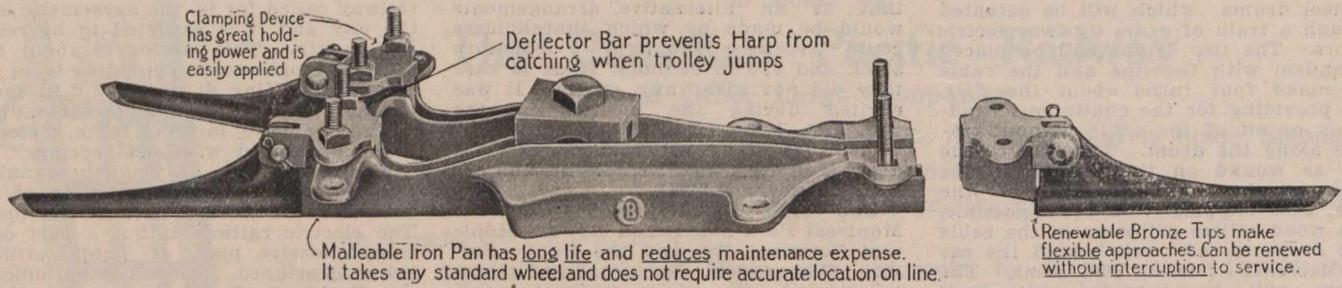
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hard road surface, after being removed to the desired depth, is dressed smooth, and on this level surface, two-inch creosoted planks are laid lengthwise. It is believed that this will eliminate all difficulty from frost. Over this planking, there is a layer of sand ballast to the depth of about 2 ins., on which the ties, spaced 2½ ft. apart, are laid and ballasted between. This construction is in the nature of an experiment, but the engineer believes it will prove satisfactory. A deep girder rail is being laid. The overhead construction will use copper wire of the figure 8 section, supported by mechanical clamps.

Four small single-truck cars of 24-passenger capacity and a snow sweeper have been delivered for the initial operation.

**British Columbia Electric Railway Interurban Cars.**

The B.C. Electric Ry. purchased recently from the G.C. Kuhlman Car Co., Cleveland, Ohio, three closed vestibule motor cars for interurban traffic, exterior and interior views of which are given on this page. The following are the chief particulars:—

- Length over bumpers ..... 53 ft 6½ ins.
- Length over each vestibule ..... 4 ft. 8½ ins.
- Length of body over corner post. . 42 ft. 9½ ins.
- Width over sills, including sheathing. . 8 ft. 3 ins.
- Width over all ..... 8 ft. 4¾ ins.
- Width inside walls of car body ..... 7 ft. 9¼ ins.
- Width of jamb opening car body end door ..... 34 ins.
- Width of jamb car body partition door. . 24 ins.

They are equipped with anti-climber bumper, radial M.C.B. draw bar and locomotive type petols. The glass is Pullman sash cathedral in four parts and deck sash cathedral; roof monitor; deck coach hoods; hood, steam coach; interior finish, mahogany; ceiling, empire deck; seats, rattan, 37¼ ins. over all; 18 in. aisle; Westinghouse A.M.M. air brakes; motors, G.E. 204; trucks, No. 27 M.C.B., 3 trucks; 6½ wheel base, 34 in. draw wheels, 4½ ft. track gauge; radius of curve, 35 ft.

**Electric Railway Finance Meetings, etc.**

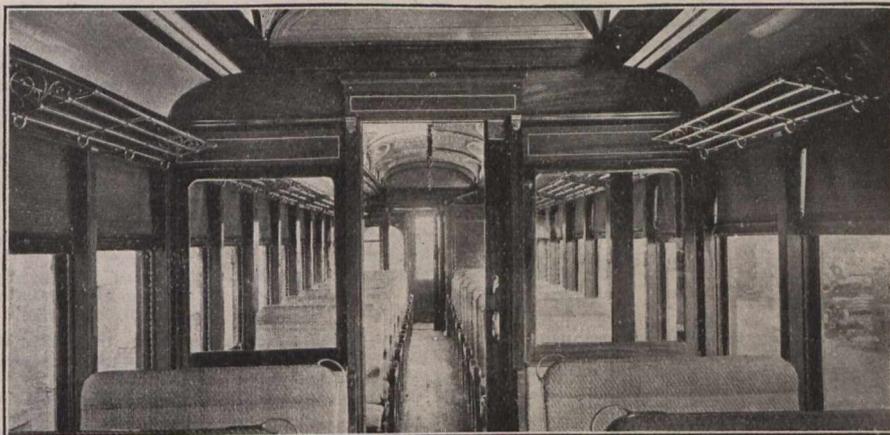
**British Columbia Electric Ry.**—Gross earnings for Aug., \$436,520; operating expenses, \$278,513; net operating earnings, \$158,007; renewal funds \$37,935; net earnings, \$120,072; approximate income from investments, \$25,000; net income \$145,072, against \$302,121 gross

earnings, \$283,125, against \$585,656 gross earnings and \$239,277 net earnings for same period, 1910.

**Cape Breton Electric Co.**—Gross railway revenue for 12 months ended July 31, \$332,935; operating expenses, \$171,736; net revenue, \$161,199; fixed charges

nual meeting, Oct. 2:— Chairman, S. T. Willett; President, E. H. Fitzhugh; Vice President and General Manager, W. B. Powell; Treasurer, Frank Scott; Secretary, H. W. Cooper.

**Quebec Ry., Light and Power Co.**—Gross earnings for the year ended June



British Columbia Electric Railway Co.'s Interurban Car. Interior.

\$73,759; net income, \$87,440, against \$310,680 gross revenue; \$169,178 operating expenses; \$141,502 net revenue; \$74,048 fixed charges; \$67,454 net income for same period, 1909-10.

**Chatham, Wallaceburg and Lake Erie Ry.**—Gross earnings for the past year, \$103,282.78, of which \$52,159.62 was derived from passengers and \$42,315.09 from freight, the balance being received from sundry operations. After providing for all expenses and bond interest, there is a surplus of \$21,170.42. Following are the officers and directors for the current year:— President, D. A. Gordon, M.P.; Vice President, U. M. Fell; other directors, N. H. Stevens, C. Hadley, E. F. Kiser, G. R. Hill and M. P. Murray.

**Grand Valley Ry.**—Press reports, Oct. 12, stated that President Verner was in New York, in connection with negotiations for the merging of the G.V.R. and its allied companies—the Brantford St. Ry. and the Woodstock, Thames Valley and Ingersoll Ry.—with some other companies, with the object of connecting and extending them to form a line from Toronto to Detroit.

**Halifax Electric Tramway.**—Receipts

30, \$1,380,126; operating expenses, \$661,907; net earnings \$718,219; fixed charges \$445,219; surplus \$273,000, against \$1,127,952 gross earnings; \$644,563 operating expenses; \$483,388 net earnings; \$442,644 fixed charges; \$40,744 surplus for same period 1909-10.

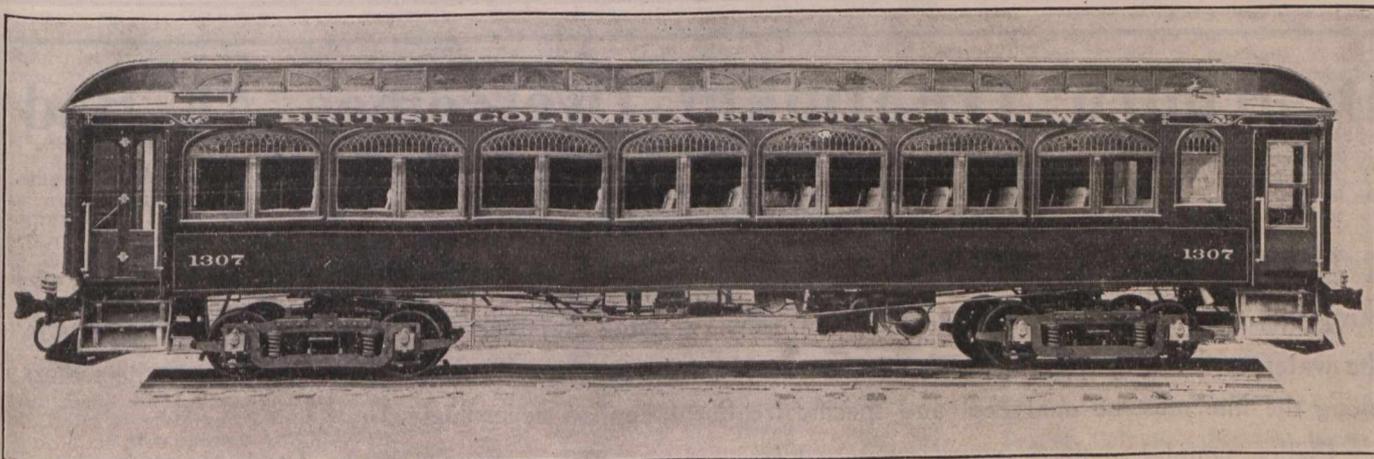
**Quebec Ry., Light, Heat and Power Co.**—The annual meeting, which was adjourned from Sept. 12, was held Oct. 3. The resignation of J. W. McConnell, was accepted, and it was announced that in view of the heavy French holdings, it had been decided to elect three Paris men as directors.

The regular quarterly dividend of 1% was paid Oct. 16, to shareholders of record at Sept. 30.

**Regina St. Ry.**—Gross earnings for Aug., \$7,718; operating expenses \$3,328; net earnings \$4,390.

**St. Thomas Street Ry.**—Passenger receipts for Sept., \$1,361.79 against \$1,333.02 for Sept., 1910. Passengers carried 39,498, against 38,040 in Sept. 1910.

**Sherbrooke Ry. and Power Co.**—We are advised that the railway department of the company did remarkably well during the four months ended Sept. 30, in comparison with the corresponding



British Columbia Electric Railway Co.'s Interurban Car.

earnings; \$170,083 operating expenses; \$132,038 net operating earnings; \$22,626 renewal funds; \$109,412 net earnings; \$22,000 approximate income from investments; \$131,412 net income for Aug. 1910. Aggregate gross earnings for two months ended Aug. 31, \$845,859; net

for Sept., \$24,864.20, and for two weeks ended, Oct. 14, \$8,356.11, against \$21,141.04, and \$10,407.87 for same periods, 1910.

**Montreal and Southern Counties Ry.**—The following officers were elected for the current year, at the adjourned an-

period in former years. The returns show 34% increase in the gross earnings, and a corresponding increase in the net earnings. The proportion of operating expenses to gross earnings during the four months averaged 52%.

**Edmonton Radial Ry.**—Revenue for

## A HISTORY OF THE PAY-AS-YOU-ENTER CAR AND ITS LESSON

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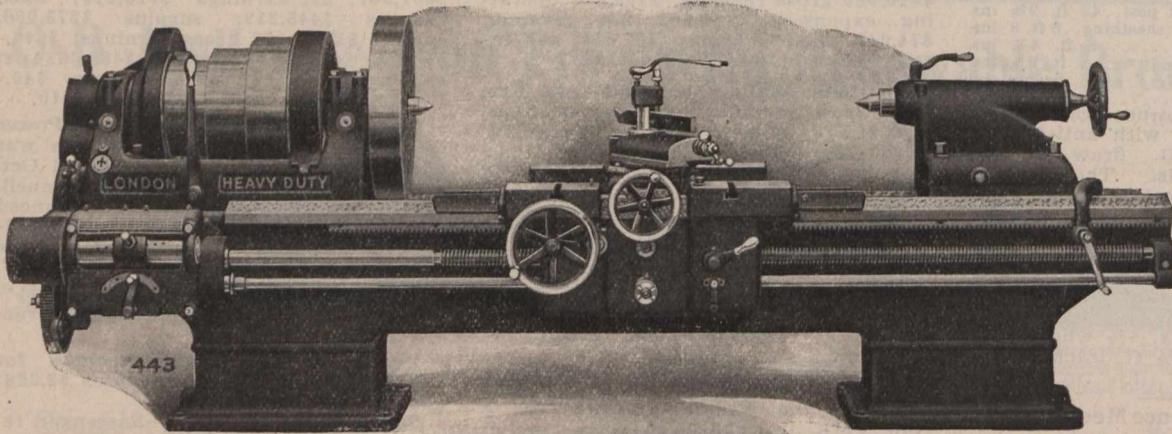
### THE LESSON

taught by this widespread use of Pay-As-You-Enter Cars is obvious. Increased Revenue, Accident Elimination and Schedule Improvement have been demonstrated in every case. Isn't all this sufficient to show that it always pays to operate the Pay-As-You-Enter Car? Why not remodel some of your present cars?

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Sept., \$182,380, against \$112,368 for Sept., 1910. Passengers carried in Sept., 4,356,327, against 2,612,599 in Sept., 1910.

**London St. Ry.**—Gross earnings for Sept., \$27,766.69; expenses, \$16,251.20; net earnings, \$11,515.49; deductions, \$2,409.35; net income \$9,106.14; against \$26,045.64 gross earnings; \$15,470.80 expenses; \$10,574.84 net earnings; \$2,363.05 deductions; \$8,211.79 net income for Sept., 1910. Aggregate gross earnings for nine months ended Sept. 30, \$209,181.14; expenses, \$144,450.13; net earnings, \$64,731.01; deductions, \$21,571.09; net income, \$43,159.92, against \$190,724.93 aggregate gross earnings; \$134,856.98, expenses; \$55,867.75 net earnings; \$21,503.45 deductions; \$34,364.30 net income for same period, 1910. At a meeting of directors, Oct. 24, it was decided to increase the capital stock from \$552,000 to not exceeding \$750,000. The new capital will, it is said, be used for extensions, which the city will shortly call for under a clause in the company's franchise.

**Toronto Ry.**—Gross earnings for Sept. \$467,814.19; expenses \$214,898.25; net earnings \$252,915.94, against \$428,580.07 gross earnings; \$201,379.49 expenses; \$227,200.58 net earnings for Sept. 1910. Aggregate gross earnings for nine months ended Sept. 30, \$3,520,782.26; expenses \$1,766,276.37; net earnings \$1,754,505.89, against \$3,189,938.01 ag-

gregates to Winnipeg and vicinity, have been purchased by the E. R. Reese Engineering Co., a United States concern backed by large capital. Final papers will be signed this week, part of the purchase price having been paid over last week. The company will build rural lines throughout the provinces."

Enquiries in Toronto, Oct. 25, failed to elicit any information in regard to the matter, one of the W.E. Ry. directors stating positively that there was nothing in the report.

**A New Car-Window Ventilator.**

A ventilator of a new and rather ingenious design has recently been invented by M. Power, Master Car Builder, Toronto Railway, and on account of its adaptability to car window use it is here illustrated and described.

The illustration clearly shows its construction. The frame A of a width equal to that of the window and about half the window depth, is set into the window slide on its lower edge B, the window itself lowering on to the upper edge C of the ventilator frame. This ventilator frame is fitted with a very fine mesh brass wire screening similar to that used in sleeping car screen-ventilators which this new type is intended to replace.

Hinged to the lower edge of the ventilator frame, there is a swinging win-

**Electric Railway Projects, Construction, Betterments, Etc.**

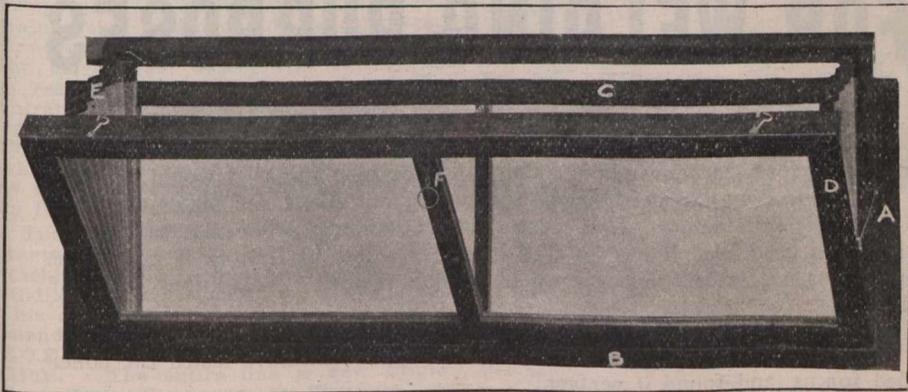
**Alberta Electric Ry.**—The promoters advise us that since the act incorporating the company was extended to July 21, representatives of the company have been actively canvassing the municipalities through which the lines are projected. The total mileage authorized under the act is 1,200, but it is proposed to build it in sections. The line is authorized to be built along the main highways, but the company is being offered every facility for acquiring a private right of way at a minimum cost, so that it is probable very little, if any, portion of the line will be built on the highways. The ten sections authorized radiate from Calgary, west, northeast, east, southeast, and south, and will, if built, serve such places as Banff, Strathmore, Bassano, and Brooks, in one direction; Rocky View, Yankee Valley, Irricana and Red Deer to the north; Bennett, Gladys, Brant, Long Coulee and Medicine Hat to the southeast. From the Medicine Hat line it is proposed to build lines to Taber, Lethbridge and Macleod, and another line is proposed from Macleod to Pincher Creek. The cost of construction on the highways will, it is claimed, be about one-third of that of the steam railways. It is proposed to operate the line by individual unit cars, the plan being: a car about 60 ft. long, containing first, the compartment for the 200 h.p. kerosene motors, and the driver in charge; second, compartment containing room for baggage, parcels and smoking; the main portion of the car containing seats for 50 or 60 persons. This car would have sufficient power to haul two freight cars, and, as the gauge would be the standard steam railway gauge, it is proposed to haul ordinary railway cars in addition to the company's own lighter cars for market produce, milk, cattle and such like. With the low cost of construction, low operating charges, and other things, it is hoped to put the rates low enough to make an extensive business not only possible, but easy.

Application is being made to the Dominion Parliament for an act authorizing the company's name to be changed to that of the Alberta Inter-Urban Ry., and to replace sec. 3 of the present act by one declaring that the capital shall be \$10,000 a mile of the total mileage, actually constructed or under contract, the total capital not to exceed \$10,000,000. (Oct., pg. 973.)

A general meeting of shareholders has been called to be held in Calgary, Alta., Nov. 8, to elect directors, consider a contract with the Land Traction Co. for the building of the projected lines, and to authorize the directors to issue bonds and to execute a mortgage as security for the bond issue. The notice is signed by G. E. Wood, chairman of the provisional board of directors.

**Brandon, Man.**—The first spike of the municipal electric railway was driven by the mayor, Oct. 9. The line is being built by the city council, but nothing has been decided as to its operation. The question is under consideration on the basis of a draft agreement submitted June 26, by J. D. McGregor. (Oct., pg. 973.)

**British Columbia Electric Ry.**—While the company is carrying out a number of improvements, on the lines in Vancouver and the surrounding municipalities, and is considering the building of a number of additional lines, the question of the unification of the various franchises is the most important matter under consideration. The municipality of Burnaby is submitting a bylaw to the ratepayers confirming franchises



A New Car-Window Ventilator.

gregate gross earnings; \$1,634,760.20 expense; \$1,561,177.81 net earnings for same period 1910.

The Toronto Power Co. is preparing to issue on the London, Eng., market £821,197 4½% consolidated guaranteed debenture stock at 96. The issue is guaranteed unconditionally as to principal and interest by the Toronto Ry. Co.

**Winnipeg Electric Ry.**—Gross earnings for Aug., \$299,615; operating expenses, \$137,825; net earnings, \$161,790, against \$247,046 gross earnings; \$124,719 operating expenses; \$122,327 net earnings, for Aug. 1910. Aggregate gross earnings for eight months ended Aug. 31, \$2,503,972; net earnings, \$1,257,983, against \$2,031,256 aggregate gross earnings; \$1,009,468 net earnings for same period, 1910.

The special committee having under consideration the question of the purchase of the W.E.R., decided, Oct. 6, to recommend to the city council that negotiations be deferred. This report was adopted by the council Oct. 10.

R. J. Mackenzie is quoted as having stated Oct. 11, that a bid of \$300 a share has been made for the company's whole capital stock by a Montreal-New York syndicate in which F. Morton Morse and the Manitoba Power Co. are interested.

An unconfirmed Winnipeg press dispatch of Oct. 23 says: "All holdings of the Winnipeg Electric Ry., which supplies gas, power and street railway ser-

vice, when closed, fits up against the main pane very snugly. The ends are kept closed at all times by pieces E made of leatherette; these open and close with the window. The position of this window D is regulated by the chain F in a slot. The circulating air coming through the screen is deflected upward at an angle, refreshing the air, but doing away with the draft incidental to the ordinary form of ventilator.

This ventilator is especially adapted to keeping out cinders, and any such foreign material as does enter is precipitated to the pocket at the bottom by the inclined window, thereby freeing travelling from one of its disagreeable features. The screen pane has felt-covered spring edges for fitting into the window sash snugly.

A number of these ventilators have been given trials under varying circumstances, and so successful has their use been that the Perfect Ventilator Co., Ltd., 48 George St., Toronto, has been formed for their manufacture. Patents have been allowed both in Canada and the United States.

The Board of Railway Commissioners issued a circular, Oct. 12, requesting that all railway companies file, within thirty days, a list showing the location of all draw bridges on their lines, and the manner of production provided for them.

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granted, and providing for the construction of additional lines. The city of Vancouver desires to increase its boundaries, but finds that one of the difficult matters to be adjusted is the street railway franchises. The Vancouver Board of Trade and city council, and the councils of the other municipalities are discussing the matter, and it is expected that the ratepayers will be asked to decide whether steps should be taken or not to acquire the whole of the rights and franchises of the company for street railway purposes in the interests of the people.

The Westminster road extension in Vancouver has been completed and cars are being operated over it. Tenders are under consideration for rebuilding Kitsilano bridge on the Lulu Island line, with the exception of the draw span. The new bridge will be a double track one, as a second track is being built from King Edward Ave., Vancouver, to near the B.C.E.R. station in Eburne, about four miles. A second track is also being built on the line to Kitsilano Beach.

An addition, 240 by 104 ft., is to be built at the present car works on Twelfth St., New Westminster.

As the British Columbia Electric Ry. Co.'s interurban cars are being sent to the shops for repairs, alterations are being made to the equipment of each by the installation of the Westinghouse multiple unit control. This change is being made in anticipation of two car trains being operated next year between Vancouver and New Westminster when the cut-off just outside the latter city is ready for service, the grade at the entrance to the city being thereby reduced from 12% on one stretch to 2%. The control being installed is of the type which automatically shuts off the power as soon as the motorman's hand is taken from the lever.

The company has awarded two contracts in connection with the double-tracking of the branch of its system extending from Vancouver to Eburne. This stretch forms a part of the Lulu Island Ry. and is operated by the B.C.E.R. Co. under a lease from the C.P.R. The entire line is now single track from Vancouver to Steveston as well as the branch line along the north arm of the Fraser River to New Westminster. Settlement is proceeding rapidly in the suburban area along the line adjacent to the city necessitating the double-tracking of this stretch. The contracts awarded are to G. H. Webster, M. Can. Soc. C.E., of Vancouver, for grading four miles of the line in readiness for track laying and ballasting, this work including the stretch between Twenty Fourth Ave. Point Grey and Eburne, and to Armstrong, Morrison & Co., of Vancouver, for the reconstruction of the bridge over False Creek used in approaching the central district of Vancouver. The bridge is about 1,500 ft. long, of trestle construction. It will be double-tracked throughout with the exception of the drawspan, Australian hardwood piles being used, the work covering a complete reconstruction of the bridge. In connection with the double-tracking the company will improve the line by using 60 lb. rails throughout. The new track will be laid just to the east of the present track, following practically the same line and grade as now exists. While the contractor is proceeding with grading, the company will complete the double-tracking of the line from 24th Ave. to the Vancouver terminal, as well as similar work on the city extension of the line from the south end of False Creek bridge to Kitsilano.

The company is reported to have purchased 200 acres of land at Cadboro Bay for park purposes. (Oct., pg. 973.)

**Calgary Municipal Ry.**—The taxpayers of Calgary, Oct. 4, passed a bylaw, authorizing the issue of \$375,000 debentures for the extension of the street railway, and for the purchase of additional rolling stock and power house equipment.

The extension of the line to Tuxedo Park has been completed; a project is under consideration for the building of a line in the south-eastern section of the city. (Oct., pg. 973.)

**Coteau Power Co.**—We are advised that the charter rights and the franchises, etc., of this company have been acquired by Mackenzie, Mann & Co., Ltd. Sir Wm. Mackenzie, accompanied by T. H. White, Chief Engineer, Canadian Northern Pacific Ry. recently went over the routes of the proposed electric railways in the Okanagan Valley, B.C., and it is said that arrangements are being made for starting construction in the near future. (Oct., pg. 973.)

**Edmonton Radial Ry., Strathcona Radial Ry.**—The ratepayers of Edmonton and Strathcona, Alta., passed bylaws, Sept. 27, providing for the amalgamation of the two cities, and the Legislature will be asked to ratify the same. The agreement for amalgamation provides for various extensions of the electric railways in Strathcona, and for the erection of a low level bridge to connect the two cities. The S. R. Ry. is controlled by the E. R. Ry., which is owned by the Edmonton city council. (Sept., pg. 877.)

**Hull Electric Co.**—Press reports state that the company is considering tenders for the erection of a new carhouse at Hull, Que. (July, pg. 683.)

**Lethbridge, Alta.**—The City Engineer recently presented a report to the city council upon the building of an electric railway in the city. He recommended the building of 11.1 miles reckoned as single track, at a cost of about \$300,000. It is expected that a start will be made on construction early in 1912. In the meantime the grading and paving work upon certain streets is being carried out in such a way that the railway construction work will be facilitated. (Sept., pg. 879.)

**London St. Ry.**—The London, Ont., city council passed a resolution, Oct. 16, directing its street railway committee to consider the whole question of the service given by the L.S.Ry., the betterments necessary in order to provide more adequate service, and the extensions to which the city is entitled under the franchise by reason of the increase of population. (June, pg. 555.)

**Moncton Tramways, Electricity & Gas Co.**—E. A. Mitchell, Consulting Engineer, who inspected the work in progress Oct. 13, reports that satisfactory progress has been made with the work. About a mile of track has been laid, and a good deal of the overhead work is ready. The car shed is completed, and the power house is well advanced. Four cars and a snow sweeper have been delivered. He expected that cars would be in operation by the end of the year. (Oct., pg. 975.)

**Montreal and Southern Counties Ry.**—Application was made to the Montreal city council, Oct. 10, for permission to build lines from Youville Square along Grey Nun St., by St. Paul St. to Inspector St., Chaboillez Square, Cathedral St., and Metcalfe St., to St. Catherine St. West. The application is under consideration. (Sept., pg. 879.)

**Montreal St. Ry.**—The city council passed a resolution, Oct. 16, directing its law department to do everything necessary to protect the interests of the city in the rearrangement of the charters held by the company, and to prevent the present obligations to the city being

got rid of in the amalgamation of the several companies under the title of the Montreal Tramways Co. (Oct., pg. 975.)

**Morrisburg and Ottawa Electric Ry.**—The shareholders were called upon to pay to the Secretary, R. A. Bishop, Ottawa, by Oct. 23, a call of 10% of the amount of the stock subscribed for by them, in accordance with the resolution of a special meeting of shareholders held Sept. 12. (Sept., pg. 879.)

**Nanaimo, B.C.**—The city council, Sept. 26, authorized its tramway committee to take the necessary steps to secure a charter for the building of an electric railway in this city. This was in accordance with the recommendation of the committee which has been, for some time, considering applications from financial and construction companies for franchises. (Oct., pg. 975.)

**Nipissing Central Ry.**—The spur line connecting the old line of the N.C.R. at North Cobalt, Ont., with the Temiskaming and Northern Ontario Ry., was completed Oct. 11. The line between Cobalt and Halleybury is being rebalanced at certain points. Three routes are under consideration for the extension of the line from Halleybury to New Liskeard, and a bylaw is being prepared for submission to the taxpayers in the latter town, renewing the franchise and designating the streets on which the line is to be run. (Oct., pg. 975.)

**Ottawa, Smiths Falls and Kingston Ry.**—Press reports state that surveys for this projected railway have been completed between Smiths Falls and Manotik, Ont., and that the engineering party is now going over the route between Smiths Falls and Kingston. (Oct., pg. 975.)

**Owen Sound, Ont.**—The mayor of Owen Sound has proposed that an electric railway be built in the town to be owned and operated by the municipality. It is suggested that six miles of track be built by an initial estimated cost of \$100,000.

**Regina Municipal Railway.**—The ratepayers voted Oct. 5, in favor of a bylaw authorizing the city council to raise \$400,000 in connection with the construction of an electric railway in the city.

Rapid progress is reported to have been made with the building of the electric railway lines and the chairman of the committee having charge of the work, stated at the last meeting of the council, that he expected nine miles would be completed by the time operations would have to be suspended for the season. (Oct., pg. 975.)

**Rural Ry. of Manitoba.**—Nothing has been done by the company in the way of building lines in the municipality of St. Vital, which were to form part of a belt line round the outskirts of Winnipeg, and connecting with the city lines at all points. The municipalities interested are considering what action to take in the matter, and it is reported that the Winnipeg Electric Ry. may take over the charter rights and franchises of the Rural Ry. (June, pg. 557.)

**St. John's, (Nfld.), Electric Ry.**—The question of the extension of the electric railway owned by the Reid Newfoundland Co., in St. John's, Nfld., is under consideration. The city council desires that some new lines be laid, and that the routes be re-arranged so as to enable a better service to be given.

**The Sherbrooke Ry. and Power Co.** is devoting practically all its attention at present to the extension of its power plant. A transmission line which it is expected to have completed by Dec. 1, is being built to Derby Line, Vt. This will supply light and power to Lennoxville, Capleton, Eustis, Waterville,

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Titanium Alloy purifies molten steel by removing harmful gases and solid impurities. It also counteracts the harmful effects of sulphur and phosphorus. It makes open-hearth rails tough and ductile. It removes brittleness and increases durability to a remarkable degree. Increased cost of Titanium rails ranges from \$1 to \$5 per ton, depending upon amount of alloy used.

Leading steam and electric roads in the United States use Titanium rails. Illustration shows Titanium Rails in electric zone leading to Grand Central Station, New York City.

Booklet No. 30 tells all about Titanium Alloy and its effect on iron and steel.

Titanium Alloy is made for Canadian consumption by Electro Metals, Ltd., Welland, Ont.

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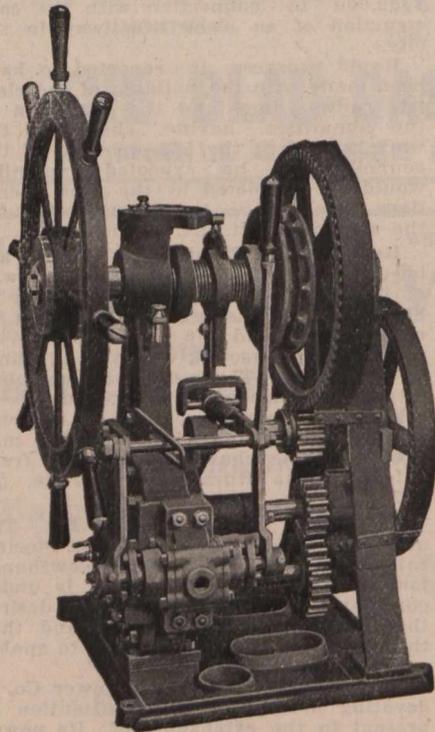
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**DAKE ENGINE CO., Grand Haven, Mich.**

Compton, North Hatley, Massawippi, Ayer's Cliff, Boynton, Smith's Mills, Beebe Jct., Beebe Plain, Rock Island, Stanstead, Que., and Derby Line, at the Quebec-Vermont boundary. At North Hatley the company recently acquired the 400 h.p. electric installation, which will be absorbed into the system on the completion of the new transmission line. (Aug., pg. 785.)

**Saskatoon, Sask.**—Under the bylaw passed in July last, confirming the agreement between the city council of Saskatoon, Sask., and H. M. E. Evans, regarding the supply of power to, and the construction of an electric railway in the city, the contractor undertakes to obtain from the Legislature a confirmation of the charter of the Saskatchewan Power Co., and authority to build the electric railway. We are advised that no construction will be done this year on the railway part of the undertaking, but it is expected that a start will be made early in the spring. A site has been secured for the power plant, and work is being proceeded with for the development of the water power under the provisions of the Dominion Act incorporating the Saskatchewan Power Co.

The lines to be built under the agreement have their centre opposite to the C.P.R. station, one line running to the Caswell Hill addition, thence to Albert Ave., on to Boundary Drive, along 7th Ave., Princess St. and 2nd Ave. to 19th St., crossing the river by the traffic bridge to the corner of Broadway and Spruce streets, where a divergence is made, one line running to the University grounds, and another to the fair grounds. A line from the C.P.R. along 23rd St. connects with the line on 2nd Ave.; and a third runs along 20th St. to St. Mary's Hospital, a branch running from opposite the 20th St. school to 16th St.

The present organization for handling the project, we are advised, is the Saskatoon Power Tramways Construction Syndicate of London, Eng. The directors of this organization are—J. S. F. Samborne, R. N. Grenfell, and W. C. Burton. H. M. E. Evans, of Edmonton, Alta., being the Canadian representative. The engineering work is in the hands of J. G. White & Co., New York.

**Stratford Street Ry.**—A number of the directors had an interview with J. W. Leonard, Assistant to the Vice President, C.P.R., in Stratford, Ont., Oct. 11. M. Williams, stated on the following day that the interview was a most satisfactory one and that as a result the building of the electric railway was assured. The route by which the C.P.R. would enter the city was immaterial, as the street railway would be connected with it under any circumstances. An agreement was in course of settlement for the street railway to handle the C.P.R. traffic. (June, pg. 557.)

**Three Rivers, Que.**—Property owners in Three Rivers, Que., voted Oct. 16, in favor of authorizing the city council to arrange for the building and operation of an electric railway in the city.

**Toronto Eastern Ry.**—It is said that the management is considering the use of gas-electric motor cars instead of trolley cars and that this is one of the reasons why construction has not been started this season.

**Vancouver and Grouse Mountain Scenic Incline Ry.**—The final location surveys are being made and it is expected that some alterations will be made which will effect a considerable saving on the incline section of the projected line.

**Welland, Ont.**—A press report states that grading on a line under the Niagara, Welland and Lake Erie Ry. charter, was started in Welland, Ont.

Sept. 20, and on Oct. 3. The mayor drove the first spike. Arrangements are being made to extend the line to Port Colborne, on the east side of the Welland canal.

**Windsor, Essex and Lake Shore Rapid Ry.**—The Board of Railway Commissioners has approved plans for passenger shelters to be erected in Sandwich South tp., Ont. (May, pg. 455.)

**Winnipeg Electric Ry.**—During the construction season now concluded 9.155 miles of new lines have been laid in Winnipeg, in addition to a number of switches, loops, etc. All these lines are expected to be completed for traffic early in Nov.

It is stated that owing to the failure of the Rural Ry. to carry out work under the franchise granted it in St. Vital, Man., the W.E. Ry. will be asked to build lines in that municipality. (Oct., pg. 975.)

**Levis County Railway.**

The report for the year ended June 30, presented at the annual meeting at Montreal, Oct. 18, shows gross receipts \$66,656.98; expenses \$57,755.03; net earnings, \$8,901.95. Following is the balance sheet:—

ASSETS.			
Property account	...	\$608,778.44	
Track, roadway, and machinery	.....	3,737.23	
		<u>\$612,515.67</u>	
Sale of land	\$1,800.00		
Less costs ..	32.35		
	<u>\$1,767.65</u>		
Elevator fire	6,000.00	7,767.65	\$604,748.02
Stores	.....	3,391.60	
Stock sundries	.....	1,458.73	
Cash in bank and on hand	.....	3,087.10	
National Trust Co. in trust	.....	7,800.00	
Accounts receivable	.....	656.68	
Profit and loss balance	.....	32,213.11	
		<u>\$653,355.24</u>	
LIABILITIES.			
Bond account	.....	\$151,100.00	
Preferred stock	.....	132,600.00	
Common stock	.....	250,000.00	
Loan account	.....	85,600.00	
Accounts payable	.....	8,042.07	
Accrued bond interest	.....	26,013.17	
		<u>\$653,355.24</u>	

Following are the officers and directors for the current year:—President, S. H. Ewing; Vice President, Hon. R. Turner; Secretary-Treasurer, E. A. Macnutt; other directors, J. A. Richardson, John Forman, Col. C. E. Allen-Jones and J. C. Blouin.

**Electric Railway Notes.**

The Montreal St. Ry. has ordered 70 G.E.2 trucks, without wheels, in the United States.

The B.C. Electric Ry. has added six new cars to its rolling stock in Victoria, B.C.

The Hull Electric Co. is in the market for six double truck, semi-convertible, pay-as-you-enter cars.

J. W. Williams, Detroit, Mich., has been appointed Secretary, London St. Ry., London, Ont., vice G. H. Bentson, deceased.

The Winnipeg Electric Ry. is building 2 new cars at its own shops. There have been 23 new cars placed on the lines already this year.

The British Columbia Electric Ry. has ordered one heavy double broom electric snow sweeper from the Ottawa Car Co., Ottawa, Ont.

The Moose Jaw Electric Ry. has ordered two 21 ft. cars, 31½ ft. long over all, mounted on 21-E trucks, from the Ottawa Car Co., Ottawa, Ont.

The British Columbia Electric Ry. is considering the operation of two-car

trains on its Vancouver-Westminster interurban lines, instead of single cars as at present.

The North Toronto council is preparing an indictment against the Metropolitan Ry. (Toronto and York Radial Ry.), for maintaining a common nuisance in the loading and unloading of freight cars.

The Montreal city council is applying for a mise en demeure against the Montreal Terminal Ry., claiming that the company has broken its agreement not to send freight over its tracks on certain lines in Longue Pointe.

A. J. Dacres, cashier, Quebec Ry., Light and Power Co., Quebec, was presented with a locket and chain, Oct. 8, by the office staff, on his leaving the service, to enter the employ of the Jonquiere Pulp, Co., Jonquiere, Que.

The Moose Jaw, Sask., town council, has called the Moose Jaw Electric Ry.'s attention to the fact that it is operating its cars on Sundays, without first having obtained the sanction of the ratepayers, which, it is claimed, is required by law.

The Edmonton, Alta., city commissioners received tenders, Oct. 19, for three and five years, for advertising privileges on the street railway cars. There are now being operated 30 semi-convertible cars, carrying about 20,000 passengers daily.

G. McLeod, Electrical Engineer, Sandwich, Windsor and Amherstburg Ry., has also been appointed Superintendent, with authority over all motormen and conductors. M. Brocklebank, heretofore Superintendent, will continue as his assistant. Office, Windsor, Ont.

The St. John Ry., St. John, N.B., increased the wages of its motormen and conductors on Oct. 2, one cent an hour all round, making the present rates as follows: 1st year, 18½ c.; 2nd year, 19½ c.; 3rd year, 20c.; 4th year, 20½ c.; 5th year, 21c. Three cents extra on Sundays.

F. B. Griffith, heretofore claims Agent and Superintendent of Shops, Dominion Power and Transmission Co., Hamilton, Ont., has been appointed Claims Agent and Superintendent of Interurban Lines, vice A. J. Clarke, Superintendent of Interurban Lines, resigned. J. O. Binkley succeeds him as Superintendent of Shops.

The ratepayers of Kildonan, Man., voted on Oct. 7, on the question of permitting the operation of street cars within the municipality on Sundays. The vote stood 119 for and 11 against, but as the total vote polled was 50 less than the three-fifths of the electorate necessary to secure the passing of the bylaw, nothing further will be done at present.

The Calgary city council has arranged to purchase 18 new cars. Six cars, 46½ ft. long, have been ordered from the Ottawa Car Co., and the remainder from the Preston Car and Coach Co. Of these latter, six will be 46½ ft. long, and six will be smaller. These orders are for car bodies only, the trucks and motors being provided by the city. A sprinkler has also been ordered from the Preston Car and Coach Co.

The electrification of the Swiss national railways will, it is said, be by the use of the single-phase overhead-conductor, 15,000-volt system. The construction will be patterned after that on the London, Brighton & South Coast Ry., in England. The first work will be on the St. Gothard line, gradually extending to the whole Federal system of 1,830 miles. The cost is reported to be estimated at \$13,140,000 and the running expenses are estimated at 10% less than the present cost of steam operation.

The Toronto and York Radial Ry. has a large milk business and operates spe-



# Kalamazoo Reinforced Pressed Steel Wheels

## For Hand and Push Cars

They always wear much longer than others, giving fully 100 per cent. greater service than any other wheel of similar design or weight.

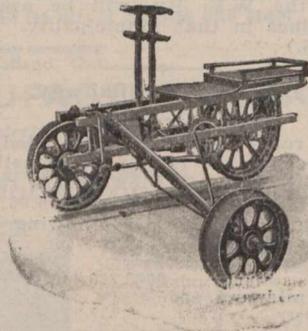
Kalamazoo Wheels are strongest where other wheels are weakest—in the throat of the flange (See sectional cut).

Made in three sizes, 16 in., 20 in., 24 in.

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The Kalamazoo idea is to provide the proper velocipede for each different need. No difference what you want or for what purpose, we have it

We also build Hand Cars, Push Cars, Inspection Cars, and Gasolene Motor Cars, in many styles and sizes.

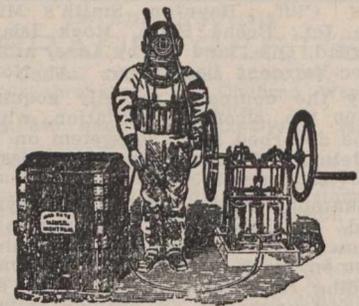


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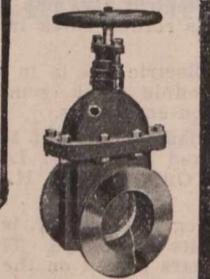
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HIGH GRADE.  
TESTED &  
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VALVE AND HYDRANT MANUFACTURERS  
WALKERVILLE, ONT.

cial milk cars which are provided with chain hung shelves for increasing the load capacity. These are folded up out of the way when not needed. Milk is handled at the rate of 10c. per 8-gal. can up to 20 miles, and 15c. from 21 to 30 miles. Much of it is delivered at the freight terminal on the outskirts of the city, but a portion is delivered by the company's express wagons and gasoline trucks, for which a charge of 2c. per 100 lbs., with a minimum of 20c., is made.

Jas. Roosevelt, heretofore General Superintendent, Third Avenue Ry., New York City, has been appointed Manager of the Transportation and Sales Department, British Columbia Electric Ry., with office at Vancouver. This office covers a new field, viz., the supervision of the company's tram systems, both urban and interurban, on the mainland and Vancouver Island, as well as the control of the sale of light and power at all points of the company's territory. In the operating department, he assumes the duties heretofore carried out by F. R. Glover, formerly Assistant General Manager, now General Executive Assistant.

S. B. Thompson has been appointed Mechanical Superintendent, British Columbia Electric Ry., Vancouver. This is a new position in the division of the company's work, its creation having become necessary owing to the rapid development now going on over the territory served. He will have supervision of rolling stock and electrical equipment at all points on the Mainland and Vancouver Island. Prior to going to Vancouver, he was in charge of the operating department of Sanderson and Porter, Consulting Engineers, New York City, and was formerly connected with electrical railways at Baltimore, Youngstown, Ohio, and Anderson, Ind., as well as with several steam railways.

Edward P. Coleman, whose portrait appears on this page, was born at Taunton, Mass., June 14, 1867, and educated at the public schools there. He was, from Feb. 9, 1885, to Feb. 9, 1896, in the draughting room of Hubec Printing Press, at the shops of the Taunton Locomotive Manufacturing Co., with which his father and grandfather had been associated for many years; Jan. 1, 1896, to Sept. 1, 1900, Treasurer and General Manager, Attleboro Steam and Electric Co., Attleboro, Mass.; May 5, 1898, to Mar. 31, 1899, in United States service during the Spanish war as Second Lieutenant and Battalion Adjutant, 5th Massachusetts Infantry; July 1, 1899 to Sept. 1, 1900, General Manager, Plymouth Electric Light Co., Plymouth, Mass.; Sept. 1, 1900 to June 1, 1905, Vice President and General Manager, Consolidated Lighting Co., Montpelier, Vt.; June 1, 1905 to Mar. 1, 1907, in practice as consulting engineer, general, electric light, power, railway and quarry work, and Treasurer and Manager, Wetmore and Morse Granite Co., Montpelier, Vt.; Mar. 1, 1907 to Jan. 1, 1909, General Manager, Great Northern Power Co., Duluth, Minn.; and since Mar. 1, 1909, Manager of Railways, Dominion Power and Transmission Co., Ltd., Hamilton, Ont.

The C.P.R. Telegraph Department has opened offices at Pictou, N.S.; Lochalsh, Nestleton and Staffordville, Ont.; Arnaud, Genest, Headingly and Niverville, Man.; Ogema and Pangman, Sask.; Beiseker, Alta.

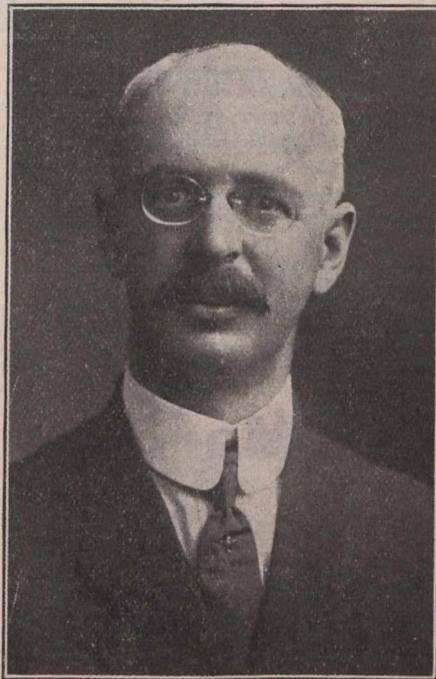
The Great North Western Telegraph Co.'s annual meeting was held at Toronto, Sept. 28. Following are the officers and directors for the current year: President, H. P. Dwight; Vice President, Adam Brown; other directors, W. C. Matthews, Jas. Hedley, Hon. J. K. Kerr, A. E. Jarvis, F. B. Hayes, Toronto; J. B. VanEvery, N. Carlton, New York.

### Telegraph and Cable Matters

The Superintendent of Newfoundland postal telegraphs has announced that communication has been established with offices on the Burin branch line and all offices in Trinity, Bonavista and Notre Dame Bays, also offices on the west and northwest coasts to Port aux Basques and Port Saunders, via Cuckold's Cove, Canso and Port aux Basques.

Jas. Kent, Manager of Telegraphs, accompanied by B. S. Jenkins, General Superintendent of Telegraphs, Western Lines, C.P.R., recently completed the annual inspection trip through the west. During the past year the company has strung 12,000 additional miles of wire, 80% of which is copper, and it is anticipated that almost as much will be strung next year.

The Temiskaming and Northern Ontario Ry. is erecting two additional telegraph wires between North Bay and Englehart. It is said to be the intention to handle local business mainly on the new wires, through business having the right of way over the existing wires.



E. P. Coleman,  
Manager of Railways, Dominion Power and  
Transmission Co., Ltd.

Complaints had been made regarding poor service, and it is believed that the new wires will take care of all the business offering.

A number of representatives of the G.T.R. telegraph operators from various parts of Canada and the United States, met in Toronto recently to discuss a general wage and time schedule. It was reported that the G.T.R. schedules were behind those of the C.P.R., and that some steps would probably be taken in the near future to discuss the matter with the company, with a view to bringing the G.T.R. into line with the other companies. The minimum monthly wage of the G.T.R. operator, for a week of seven days, was quoted as \$50, against \$53 a month, for a week of six days, on the C.P.R.

B. S. Jenkins, General Superintendent, C. P. R. Telegraphs, Western Lines, Winnipeg, has recently completed 30 years of continuous service with the company. He was concerned in the organization of the department in 1883, when a single wire, east to Port Arthur and west to Medicine Hat, was sufficient to carry

the business. There are now, on the Western Lines, 7,320 miles of poles, 44,251 miles of wire, and 525 offices. He was born at Richmond Hill, Ont., Apr. 8, 1859, and entered C.P.R. service Sept. 21, 1881, as telegraph operator at St. Boniface, Man.; transferred to Brandon, Apr. 1882; appointed Superintendent of Telegraphs, Western Division, July 1883, and General Superintendent of Telegraphs, Western Lines, Dec. 1899.

The Pacific Cable Board's report for of £29,334, towards meeting the amount the year ended Mar. 31, shows a balance of £77,544 in respect of interest and sinking fund. The balance is an increase of £11,378 over the previous year. The deficit is paid by the British, Canadian and Australian Governments. The Canadian land line service was taken over by the board in Sept., 1910, the results being quite satisfactory, the average time for transmission between Great Britain and Australia having been reduced nearly 18 minutes, in addition to an improvement in accuracy. The number of messages handled during the year was 129,154, representing 1,849,613 words. A system of deferred messages at reduced rates will be adopted shortly.

### Among the Express Companies.

Four employes of the Dominion Ex. Co., are under arrest at Calgary, Alta., on charges of theft of money, forgery, and embezzlement.

A. J. Downing, heretofore chief clerk, at Woodstock, Ont., has been appointed agent, Dominion Ex. Co., and ticket agent, C.P.R., there, vice G. A. Joyce, resigned.

The Dominion Ex. Co. has issued a circular announcing the withdrawal of its service over the Central Ontario Ry. It will, however, retain its offices at Marmora and Bannockburn.

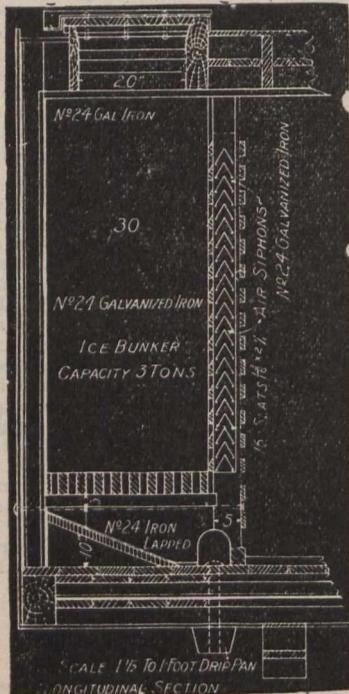
The Board of Railway Commissioners has fixed the limit for the delivery and collection of parcels by express companies, in Brandon, Portage la Prairie and St. Boniface, Man., and Regina, Sask.

The Canadian Ex. Co., is being sued at Levis, Que., for \$1,116, claimed as damages for the loss of two maps delivered by the company to wrong parties in Montreal, by whom they were destroyed. The company offered \$100 in settlement of the claim.

John Pullen, heretofore Assistant Traffic Manager, G.T.R., has been appointed President, Canadian Ex. Co., in charge of all the company's affairs, vice C. M. Hays, who has been elected Chairman of the board of directors. Office, Montreal.

The Board of Railway Commissioners has defined the limits for the collection and delivery of express parcels, for Port Arthur and Fort William, Ont.; Winnipeg, Selkirk and St. Boniface, Man.; Watrous, Saskatoon, Prince Albert, Weyburn and Moose Jaw, Sask.; Edmonton, Alta., and Vancouver, New Westminster and Victoria, B.C.

The express companies' tariff for merchandise to points in Manitoba, Saskatchewan and Alberta, from Winnipeg, remodelled on the basis of the judgment of the Board of Railway Commissioners, Dec. 24, 1910, has been issued. The basis adopted is \$5 per 100 lbs., per 1,000 miles, as against \$3 in Eastern Canada. In some few cases, the new rate is a reduction on the old one, in others it is the same, while in a majority of cases the rate is slightly increased. The Winnipeg board of trade has protested to the Board of Railway Commissioners as to the basis of the rate.



Longitudinal Section of Car.

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FOR REFRIGERATORS AND DINING CARS

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| Illinois Central R. R. Co.                      | Pennsylvania R. R. Co.                     |
| Great Northern R. R. Co.                        | Chicago, Rock Island and Pacific R. R. Co. |
| Northern Pacific R. R. Co.                      | And many others.                           |
| Barney & Smith Car Co.                          |  |

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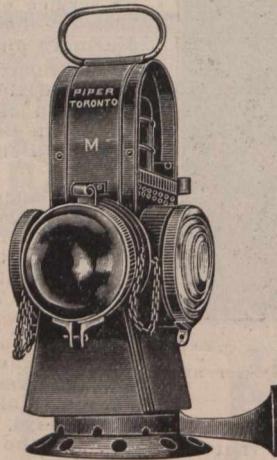
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TRAVEL IN COMFORT

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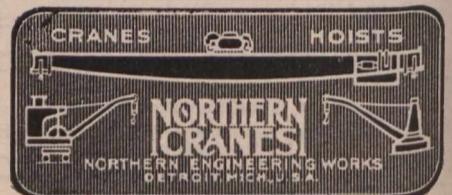
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CHAIRMAN, E. E. Horsey, Kingston, Ont. SECRETARY, Jas. Morrison, Montreal.

## International Water Lines Passenger Association.

PRESIDENT, W. M. Lowrie, New York. SECRETARY, M. R. Nelson, New York.

## The Shipping Federation of Canada.

PRESIDENT, A. A. Allan, Montreal; MANAGER, AND SECRETARY, T. Robb, 526 Board of Trade, Montreal.

## Ship Masters' Association of Canada.

GRAND MASTER, Capt. J. H. McMaugh, Toronto, Ont.; GRAND SECRETARY-TREASURER, Capt. H. O. Jackson, 376 Huron St., Toronto.

## The C.P.R. Steamship Princess Alice.

The departure of this vessel, the latest addition to the C.P.R.'s British Columbia coast service, from Newcastle-on-Tyne, on Sept. 22, for Vancouver, was noticed in our last issue. Prior to this she completed a series of exhaustive trials at sea off the mouth of the River Tyne. A high speed was maintained and the machinery and boilers worked to the entire satisfaction of the owners, who were represented by Capt. Mowatt, Marine Superintendent. The Princess Alice is about 300 ft. long and 46 ft. broad. The plans of the ship and her construction were supervised by the C.P.R.'s steamship representatives in England. She has been built to fulfil the requirements of the Canadian Government for Pacific coast and channel service, and she carries the highest class of Lloyds registry.

An interesting feature is that she is the first of the C.P.R. fleet that has been specially built to carry oil fuel for raising steam in the boilers, though oil burning apparatus has been fitted into several of its other vessels. The furnaces are so constructed that either coal or liquid fuel can be used. The installation of the oil burning apparatus is extremely simple, the oil being forced into the furnaces through a specially constructed nozzle in a conical spray, when it at once becomes ignited. When burning liquid fuel on this system all brickwork is entirely removed from the furnace, and the system is so perfect that complete combustion takes place within a foot or two of the furnace front. From the moment of lighting up there is no smoke whatever to be seen from the ship's funnel. Among the numerous advantages of burning liquid fuel may be mentioned that firemen are dispensed with; there is no handling of ashes, and no coal dust or dirt in stokehold—in fact, the boiler room can be made the cleanest part of the ship. Furthermore, all the discomfort and inconvenience of loading a ship with coal in the ordinary way is entirely obviated.

The main propelling machinery consists of a four cylinder triple expansion engine with four cranks balanced, which successfully eliminates vibration, thereby greatly adding to the comfort of the passengers. The engine builders also constructed the four single ended boilers, each with three furnaces.

The passenger accommodation embodies all that the experience of the

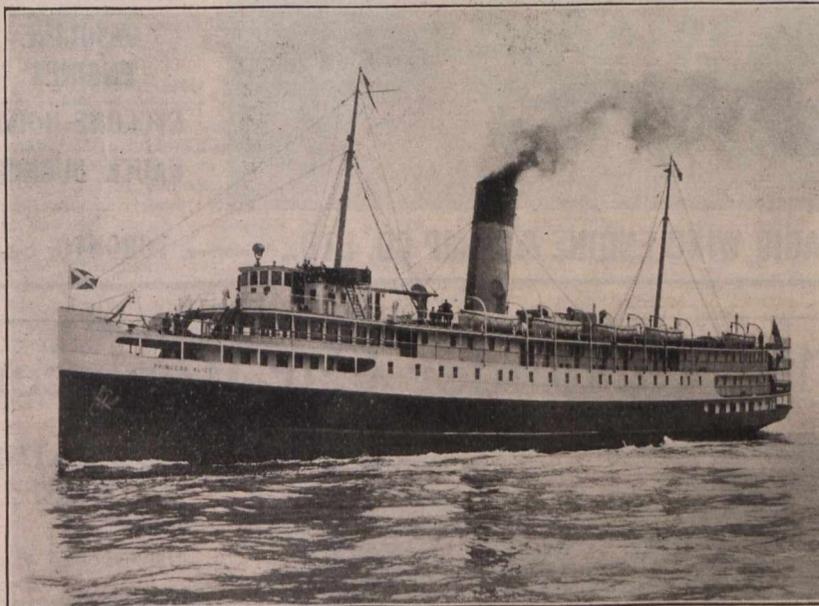
owners and skill of the builders could devise, and the ship will be one of the handsomest in her service. On the promenade deck the observation room is placed forward, and the smokeroom aft, both of these comfortable saloons having large plate glass windows, so as to give passengers an uninterrupted view of the splendid scenery of the coasts along which the ship will pass. The observation room is handsomely panelled in mahogany and the smokeroom in fumed oak, relieved by hammered copper panels depicting ancient totem poles of North American Indians, and also specimens of Canadian trees, fruit and grain. The furniture and upholstery in both these rooms and throughout the ship have been very carefully studied and will make her extremely comfortable. The corridors between the observation and smoke rooms are of polished mahogany with inlaid panels, and lead to a succession of comfortable deckhouse staterooms. A notable feature of the corridors is that they are surmounted by a cambered roof with a clerestory, giving a feeling of great height and spaciousness, together with ample light and ventilation. From the promenade deck, handsome staircases lead down to the upper deck, which is chiefly occupied by a series of first-class staterooms, including several suites of bridal chambers. On this deck there are also two social halls or music rooms.

On the main deck aft is the dining saloon, a handsome apartment panelled in beautiful Italian walnut. A noticeable feature in this room is the provision of specially large plate glass windows. The saloon is arranged with small tables, those at the sides being ensconced in bays. At the after end of

## Grounding of s.s. Carrigan Head.

Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Capt. F. Nash and C. Raymond, formerly a director of the Quebec Corporation of Pilots, as nautical assessors, held an investigation at Quebec, Sept. 1, into the cause of the stranding outward bound on July 14 of the s.s. Carrigan Head, a steel built vessel of 10 knots, whose net tonnage is 2,715. She carries a crew of 35, with three properly certificated officers, and carries general cargo and occasional passengers between Montreal and Quebec and Belfast and Cardiff.

The Pilot Simard, declared that he boarded the vessel at Quebec and proceeded without incident, steering the usual courses, and that upon passing Green Island on an east northeast compass course on which he allowed three degrees westerly deviation, he estimates that at 8.05 p.m., on July 14 he passed Bic Island, whose light was distinctly visible at a distance of three miles, and that upon bringing Bic Island abeam the course was altered to east by south, by compass, or, east three-quarters south magnetic, after allowance being made for the three degrees deviation. Although there seemed to be a haze over the land, it was clear surrounding the ship and the vessel proceeded at her full speed of ten knots on an east three-quarters south magnetic course. It is estimated that as it was the last of the ebb and the consequent ineffectual current that the vessel traversed 15 miles between 8.05 and 9.30, but after the pilot had proceeded a supposedly sufficient distance from Bic without discerning the Father Point Light, he ordered a



The C.P.R. s.s. Princess Alice, for British Columbia Coast Service.

the dining room is the pantry and behind that the galley. Underneath the dining room is the first class restaurant where meals may be taken a la carte.

During August, 20 employes were killed, and four were injured in the course of their work in connection with Canadian navigation. Of the fatal accidents, 18 were due to drowning, one to a fall, and one to fire.

cast of the lead, which was taken and 12 fathoms found. The pilot relied absolutely upon this single cast and proceeded on his course at full speed, but not many minutes elapsed before his ship took the ground, gliding, it would appear, on to a soft bottom without apparent tremor. The pilot held unwaveringly to the belief that Bic Island was three miles distant when abeam, and that he steered precisely the same

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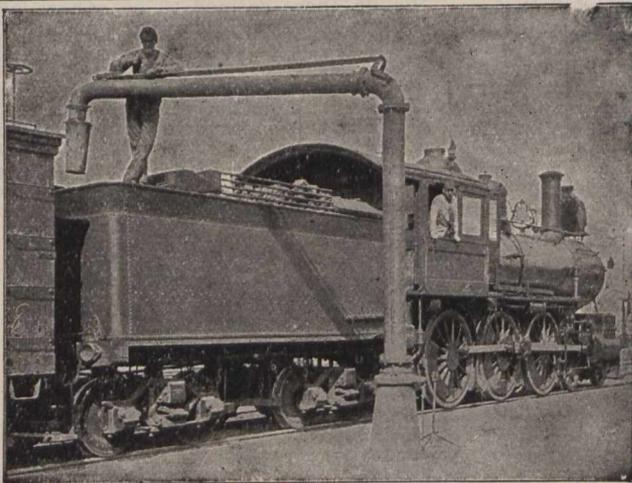
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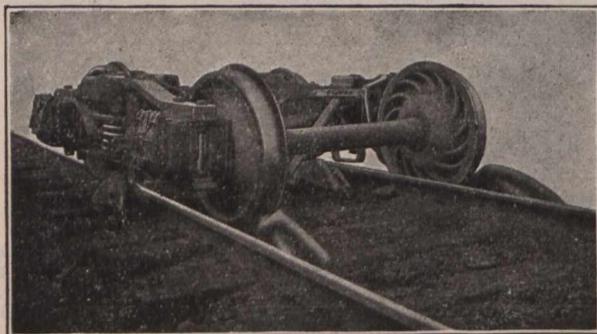
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course on this occasion as has been his custom for years, and that the vessel must have gone on an unchartered shoal.

Captain Evers deposed that he was on deck when the vessel passed Green Island and Bic Island was passed at a distance of from three to three and one half miles and that the usual course of east three-quarters south, magnetic, was steered. He corroborated the pilot's testimony regarding the weather conditions, and declared that the light and variable wind was of insufficient strength to affect the vessel's course, and that upon failing to discern the Father Point light, as expected, the third officer was instructed to take a cast of the lead and that 12 fathoms were found.

The third officer, A. Bingham, declared that he had been acting in this capacity on Carrogan Head for nine months and that the courses given by the pilot had been accurately steered, that he had endeavored to put into effect the instructions given by the master to take cross and four point bearings of points of land, but on both occasions his attempts were frustrated by the course being changed. The ship was supplied with three compasses, one of which was in the wheelhouse, another on top of it, and another on the bridge. The cost of the lead which he took recorded 12 fathoms and the ship, according to his calculation, took the ground at 9.47 and was still fast when his watch terminated at 12.

The court finds that the pilot's method of placing absolute reliance upon former courses steered, without repeated verification on each particular voyage, cannot be accepted as safe navigation. The Father Point light being usually visible for 15 miles, it is held that when it was not discerned after passing Bic Island, the estimated distance of which was placed by usual observation alone at three miles, that the speed of the vessel should have been reduced and a chain of soundings taken to ascertain its position, instead of relying absolutely upon a single cast of the lead. The court considers that the pilot committed an error in judgment, but owing to his previous clean record, it confines itself to issue a warning to him to exercise more discretion in future, and to inform him that it is his duty upon passing points of land and lights to verify the position of his ship and not rely absolutely upon previous courses steered, and a single cast of the lead as he did in this particular instance. The master and third officer are exonerated, but the master is advised that for the safe navigation of the vessel, he should insist upon frequent soundings being taken, as it requires a chain of soundings to establish the position of a ship with accuracy.

#### Stranding of the s.s. Belcarra.

Following is a summary of the judgment of Justice Martin, concurred in by Capt. Reed and Collington, delivered at Victoria, B.C., recently, regarding the stranding of the s.s. Belcarra, off Dempsey's Camp in Agamemnon channel, Sept. 17, 1910: The court is satisfied, after hearing the explanation of the master, J. E. Fulton, that the customary light on the float at the camp was not burning, and that he was deceived in making landing by mistaking another light further inland, and no blame should be attached to him in this respect. In the course of the evidence, however, it became apparent that though the vessel had shortly before undergone her annual inspection, her compass was sluggish, and from want of proper compensation, unreliable. A new compass had been taken from an-

other vessel, but its hand had not been placed in position, owing to lack of necessary fittings, nor had it been adjusted to local conditions on the vessel, and therefore the master was entitled to disregard it. This does not, however, relieve the owners, the Sechelt Steamship Co., from their duty to install and keep adjusted a proper compass, and had the accident been caused by their negligence in this respect their responsibility would have been a grave one. As to the navigation of the vessel, the master admitted in evidence that he was sailing through the narrow channel, averaging a mile in width, at seven knots, the vessel's full speed, in a dense fog. This was clearly a violation of art. 16, and the master being obviously guilty of reckless navigation is censured.

#### Fuel Oil on Canadian Pacific Railway B.C. Coast Steamships.

After very careful consideration of the subject during last year, the C.P.R. management decided to equip a few of its vessels on the British Columbia coast, for the purpose of testing the efficiency of oil as compared with coal for fuel. Before doing this the various aspects of the question, as to speed, efficiency, supply and cost, were discussed, and the result of this inquiry together with the experience of others, indicated clearly a decided advantage in the use of oil.

The first vessel to be equipped was the Princess May, which was undergoing extensive repairs. While the reports were being made two oil tight bulkheads were erected in the hull, these bulkheads running from side to side of the ship. Two fore and aft divisions were placed in compartment form, thus giving three complete and independent oil tanks. Great care was exercised in the execution of the work, as it is found more difficult to make steel work tight for oil than for water. The work was done by the B.C. Marine Railways Co., and has proved an entire success.

The Princess May has three boilers, with three furnaces each. These furnaces were fitted with the Cyclone burner. The principle of the system is an extension front on the furnaces suggestive of the old-time Dutch oven effect, and each front is fitted with a burner, the oil being atomized by a steam jet, and the form of the jet is such as to set up centrifugal action, thus breaking up the oil into small particles. It distributes the oil and therefore the flame, following the corrugated furnace in circular form, thus utilizing the entire surface, bottom and all.

The oil used, in order to comply with the Government requirements, is very heavy, and before passing through the burner, is pumped through a heater, raising the temperature to about 160 degrees. This liquifies the oil, and allows a thorough atomization, and with a careful adjustment of the admission of air, the fires burn with a very clear, bright flame, and the boilers steam freely.

In former years, when burning coal, this vessel was unable to make the desired speed at all times. There were losses through cleaning of fires and the handling of ashes, and on a voyage where tides form such an important feature, due to the necessity of passing through certain channels at certain stages of the tide, if the vessel fails to catch the tide, it becomes necessary to anchor, and thus lose still further time. It will therefore be readily seen how important it is to be able to secure the speed when called for, and this advantage has been gained in the Princess May by the use of fuel oil. It is now

found that she can maintain an average speed with two boilers, just about equal to what she had before with three boilers burning coal.

One of the great advantages in the use of oil is the steady steam throughout the watch, and in fact from day to day. With coal it is up and down, and the operation of cleaning fires has an injurious effect on the boilers, while with oil there is no cleaning of fires, and the temperature remains the same at all times.

The company's vessel, Princess Charlotte, has also been fitted for oil, the fuel being carried in her double bottom, no special tanks being required. She has six boilers with three furnaces in each. They have all been fitted with Cyclone burners, and this vessel is showing very good results.

It is found that 3.75 barrels of oil will do the work of one ton of Vancouver Island coal.

One of the great advantages in the use of oil is its cleanliness and the great saving in labor. No coal trimmers are required, no gangs of men to put the coal on board; or the ashes overboard, the number of firemen is very much reduced, and their work is now comparatively easy. The decks are not covered with cinders and smut, and the time required for taking fuel on board each day is more than cut in two.

The company has constructed a large tank in Vancouver with a capacity of 55,000 barrels of oil. There has been placed near the wharf another tank of 1,000 barrels. The oil is transferred from the large tank to the smaller one by means of a steam pump, and from the smaller one direct to the vessel's tanks by an electric driven pump of sufficient capacity to deliver about 1,000 barrels an hour on board.

The company's officers are very much pleased with the results so far, and there is little doubt that the greater number of the company's vessels on the coast will soon be fitted for this fuel.

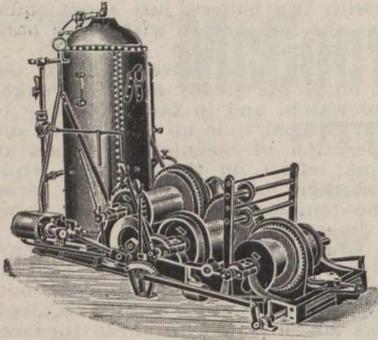
We are indebted for the foregoing very interesting article to Sir William Whyte, at whose request it was prepared by Capt. J. W. Troup, Manager, B. C. Coast Service, C.P.R., Victoria.

#### Obstruction by Tows on the St. Lawrence River.

Acting upon a complaint made by the Shipping Federation of Canada, the Department of Marine ordered that an enquiry be conducted as to the alleged misconduct of the master of the Alaska, who, it was claimed, shaped a course with a tow of 20 barges on Aug. 21, which barred the channel to the extent of compelling the pilot of the s.s. Ionian to reverse and detain his vessel, thus averting the collision which seemed imminent. The investigation was conducted in Montreal Sept. 19, by Capt. L. A. Demers, Dominion Wreck Commissioner, with L. Z. Bouille, a member of the Pilotage Association of Montreal, as assessor.

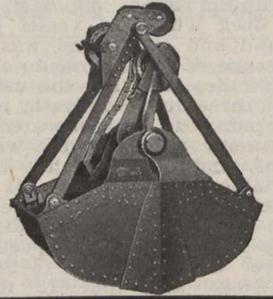
Capt. Eastway, of the Ionian declared that upon hearing the telegraph rung astern, he hastened to the deck and observed that a tow was strung out from the north to south intersecting the channel ahead of his ship, and that although her headway was being gradually diminished with her engines full astern, the Ionian nevertheless approached to within 50 feet of the second last barge in the tow, and a collision was averted through the prompt action of the pilot and the power of the vessel's twin screws.

Pilot T. Hamelin declared that when in the vicinity of Vercheres, the weather being clear with a light south west breeze, he perceived a tug with a tow, while considerably to the north-



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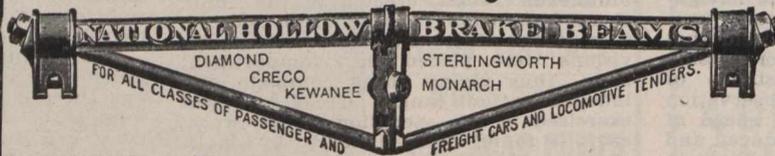
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ward of the latter he noticed a barge with full set sail coming down. He perceived that the tug, which was recognized as the Alaska, the property of the Sincennes-McNaughton Co., was crossing with its tow from north to south, or from the Ionian's starboard to port bow, without signalling notification of such action, the progress of the Ionian being

so obstructed that a collision seemed imminent, whereupon the witness promptly resorted to the only alternative of reversing the engines, but despite this the tow of 20 barges and one schooner was of such length that the Ionian's headway was only lost when she had approached to within 50 feet of the second last barge.

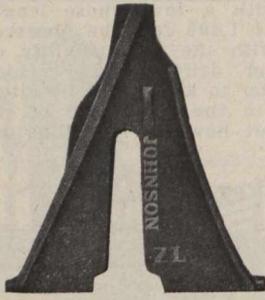
Capt. C. Lavalee, of the Alaska, deposed that while proceeding from Sorel to Montreal with a tow whose length he estimated at 1,400 feet, he observed a sail barge with the wind slightly on her port quarter, drifting towards him, and that in order to keep clear he altered his course to the southward of the channel, without however signalling his

LIST OF STEAM VESSELS REGISTERED IN CANADA DURING AUG. AND SEPT., 1911.

Name	No.	Where and When Built.	Engines, etc.	Length	Breadth	Depth	Gross Tons	Reg. Tons	Port of Registry	Owners
Adjie	130,329	Kingston, Ont., 1911	screw 5 n. h. p.	45.0	8.3	3.9	17	11	Kingston, Ont.	J. H. Davis, Kingston, Ont.
Albert C.	126,855	Three Rivers, Que., 1911	" 3	43.5	12.0	4.2	17	10	Sorel, Que.	J. D. Chenard, Berthierville, Que.
Andante	190,745	Vancouver, B.C., 1911	" 1	31.6	9.1	4.2	10	7	Vancouver, B.C.	G. B. Ehrenborg, Vancouver, B.C.
Beulah W.	130,726	Lunenburg, N.S., 1905	" 1	40.3	10.2	5.2	12	11	Lunenburg, N.S.	C. Wilson et al Tancook, N.S.
Capt. Hemans	130,330	Buffalo, N.Y., 1902	" 2 1/2	50.5	10.6	3.8	35	22	Kingston, Ont.	M. B. Paisley, Ottawa, Ont.
Choctaw	130,234	Collingwood, Ont., 1911	" 6 1/2	75.0	16.3	7.7	53	36	Port Stanley, Ont.	C. F. Stanton and P. L. Glover, Port Stanley, Ont.
Dalhousie	130,312	" " "	" 115 1/2	199.8	37.0	20.7	1256	750	Toronto	Mackenzie Mann & Co., Toronto
Damara	129,494	Linthouse, Scotland, 1910	" 425	401.8	52.2	27.3	4983	3219	Vancouver, B.C.	California Steamship Co., Vancouver, B.C.
Delemon	130,621	Wedgeport, N.S., 1911	" 1	37.6	10.7	4.6	10	9	Yarmouth, N.S.	J. R. LeBlanc, Wedgeport, N.S.
Le Blanc	130,532	Bayonne, N.J., 1907	" 3	56.5	10.1	4.4	23	16	Montreal	S. Carsley, Montreal
Delilah C.	130,708	Steveston, B.C., 1911	" 1	35.8	9.0	4.0	10	7	Vancouver, B.C.	R. Kawmara, Denman Island, B.C.
Denman	130,707	Castlegar, B.C., 1911	" 20	84.8	16.5	5.9	55	30	" "	Edgewood Lumber Co., Castlegar, B.C.
Elco	111,964	Collingwood, Ont., 1911	" 184	219.6	42.0	10.4	2105	1469	Picton, Ont.	Ontario & Quebec Navigation Co., Picton, Ont.
Geronia	130,631	Saunderstown, R.I., 1907	" 53	140.0	39.2	12.0	582	395	St. John, N.B.	City of St. John, N.B.
Governor	130,747	Vancouver, B.C., 1911	" 1	26.5	8.6	3.2	7	5	Vancouver, B.C.	W. W. Monnie, Vancouver, B.C.
Carleton	126,410	Port Clyde, N.S., 1911	" 3	54.0	12.0	4.0	15	13	Yarmouth, N.S.	C. J. O'Hanley, Yarmouth, N.S.
Hesquiat	130,744	Seattle, Wash., 1910	" 2 1/2	40.5	12.0	4.8	20	13	Vancouver, B.C.	P. P. Fewings et al, Vancouver, B.C.
Hippolyta	130,533	Brockville, Ont., 1911	" 2 1/2	34.0	4.8	2.5	3	2	Montreal	R. J. Hopper, Westmount, Que.
Improver	130,632	St. John, N.B., 1911	" 14	58.2	16.2	7.3	58	36	St. John, N.B.	J. S. Gregory, St. John, N.B.
Irne II	130,699	Port Blakeley, Wash., 1893	" 3 1/2	38.2	12.9	6.1	11	10	Vancouver, B.C.	F. G. T. Lucas, Vancouver, B.C.
James S.	126,960	Victoria, B.C., 1911	" 3 1/2	48.0	12.6	5.8	25	15	Victoria, B.C.	W. S. Chambers, Victoria, B.C.
Gregory	130,603	Narada, Wash., 1910	" 1	29.6	8.0	4.0	7	6	" "	M. B. Jackson, Victoria, B.C.
Kyrielle	130,604	Golden, B.C., 1911	" 4	80.5	19.0	3.5	113	62	" "	Columbia River Lumber Co., Golden, B.C.
Miawa	130,380	Hastings, Ont., 1910	" 2 1/2	31.0	8.2	3.0	9	6	Peterboro, Ont.	A. Scrivers, Hastings, Ont.
Narada	130,651	Buctouche, N.B., 1911	" 2 1/2	34.6	10.0	5.0	10	6	Chatham, N.B.	J. D. Irving, Buctouche, N.B.
Narada	130,703	Vancouver, B.C., 1911	" 1	22.8	6.6	3.0	3	2	Vancouver, B.C.	R. C. Spinks, Vancouver, B.C.
Nowitka	130,700	" " "	" 1	31.0	8.4	4.0	3	2	" "	P. L. Hogg, Vancouver, B.C.
Ott	129,472	Bowling, Scotland, 1910	" 103	185.3	29.6	10.9	905	540	Prince Rupert, B.C.	Grand Trunk Pacific Development Co., Montreal
O. U. Buffalo	130,706	United States, 1907	" 2 1/2	35.0	9.1	3.0	12	8	Vancouver, B.C.	P. J. Trotter, Vancouver, B.C.
P. D. Q.	130,488	Vancouver, B.C., 1911	" 2 1/2	49.6	12.0	3.9	19	11	" "	St. Mungo Canning Co., New Westminster, B.C.
Permyan	126,854	Sorel, Que., 1911	" 2	80.0	15.0	4.6	61	23	Sorel, Que.	R. Paul, Montreal
Prince John	130,709	Utsalady, Wash., 1897	" 2	39.6	13.1	4.7	16	11	Vancouver, B.C.	W. Johnston, Vancouver, B.C.
Q. J. T.	130,526	Govan, Scotland, 1911	" 177	275.3	40.0	14.9	2777	1864	Montreal	Richelieu & Ontario Navigation Co., Montreal
R. H. A.	130,710	Steveston, B.C., 1911	" 1 1/2	44.0	13.0	5.9	26	17	Vancouver, B.C.	H. C. Nixon, Denman Island, B.C.
R. Paul	130,704	Vancouver, B.C., 1911	" 2	34.4	9.4	6.0	13	9	" "	C. B. B. Jack, Vancouver, B.C.
R. Paul	129,556	Scotland, 1911	" 85	175.0	22.6	12.3	608	277	Windsor, N.S.	J. A. Farquhar, Halifax, N.S.
Reef	130,724	Tancook, N.S., 1908	" 4	40.4	10.4	4.4	12	11	Lunenburg, N.S.	A. Levy, Cross Island, N.S.
Saguénay	130,652	Port Hawkesbury, N.S., 1911	" 1	53.7	13.2	7.0	37	29	Chatham, N.B.	A. Loggie, M.O., Dalhousie, N.B.
Sal Lal	130,534	Barrow, Eng., 1911	" 196	180.0	26.6	12.1	354	10	Montreal	Montreal Harbor Commissioners
Sea Bee	130,340	Point Sapin, N.B., 1909	" 1	35.5	9.8	5.2	11	11	Chatham, N.B.	H. A. Murdock, Loggieville, N.B.
Seal	130,487	Steveston, B.C., 1911	" 1	33.2	8.0	3.4	6	4	New Westminster, BC	Y. Nishii, Steveston, B.C.
Sealer	130,531	Lachine, Que., 1909	" 1	24.5	5.4	2.2	2	2	Montreal	J. A. Bonnet, Montreal
Seldomin	126,870	Owen Sound, Ont., 1901	" 1 1/2	30.0	8.4	3.2	9	6	Sault St. Marie, Ont.	R. Byers, Spanish River, Ont.
Sir Hugh	130,741	Vancouver, B.C., 1911	" 1	40.0	9.0	5.0	13	9	Vancouver, B.C.	H. Simmons, Vancouver, B.C.
Allan	130,601	" " " " 1907	" 1	28.5	9.8	3.8	6	4	Victoria, B.C.	G. V. Cuppage, Victoria, B.C.
Skidoo	130,377	Chatham, Ont., 1907	" 1	20.0	4.8	2.0	1	1	Peterboro, Ont.	C. Ruthertford, Peterboro, Ont.
Soya	130,605	Seattle, Wash., 1910	" 1 1/2	34.0	11.6	6.6	12	8	Victoria, B.C.	I. Mair, Hill Island, B.C.
Spes	130,525	Dorval, Que., 1911	" 1 1/2	31.5	6.5	2.5	4	3	Montreal	G. A. Mooney, Montreal
Stanley Byers	130,743	Whatcom, Wash., 1908	" 4	45.6	10.4	4.4	13	9	Vancouver, B.C.	F. H. Chappell, Vancouver, B.C.
Talapus	130,311	Buffalo, N.Y., 1875	" 8 1/2	61.2	14.6	6.6	39	20	Toronto	Randolph Macdonald Co., Toronto
Talapus	130,530	Montreal, 1906	" 1	31.7	6.8	2.0	3	2	Montreal	E. A. Whitehead, Montreal

LIST OF SAILING VESSELS AND BARGES REGISTERED IN CANADA DURING AUG. AND SEPT., 1911.

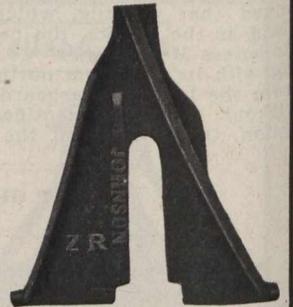
Name	No.	Where and When Built	Rig	Length	Breadth	Depth	Reg. Tons	Port of Registry	Owners
Bessie A.P.	130,679	Blandford, N.S., 1910	Schr.	40.4	10.5	5.3	11	Lunenburg, N.S.	M. Publicover, Blandford, N.S.
Bridget Dunphy	130,368	South Ingonish, N.S., 1911	"	39.0	12.0	6.0	11	Sydney, N.S.	J. W. Dunphy, South Ingonish, N.S.
C. A. Waters	130,680	Lunenburg, N.S., 1906	"	39.4	10.2	5.2	11	Lunenburg, N.S.	C. R. Walters, Middle La Have, N.S.
Clarence Trahan	126,809	Meteghan, N.S., 1911	"	47.9	16.2	7.0	25	Yarmouth, N.S.	G. M. Trahan, Meteghan, N.S.
Dorothy G. Snow	126,879	Shelburne, N.S., 1911	"	98.0	23.0	9.8	98	Digby, N.S.	J. E. Snow, Digby, N.S.
F. A. George	112,354	Tonawanda, N.Y., 1874	Barge	204.6	35.2	14.6	751	Brockville, Ont.	A. Windling, Brockville, Ont.
Fort Alexander	130,273	Selkirk, Man., 1911	"	142.0	30.0	7.6	316	Winnipeg	Northwest Navigation Co., Winnipeg
George E. H.	130,723	Tancook, N.S., 1905	Schr.	39.8	9.9	5.3	10	Lunenburg, N.S.	G. Heisler, Tancook, N.S.
Herb Curwin	130,663	Richibucto, N.B., 1911	"	32.0	10.5	4.4	10	Richibucto, N.B.	J. Curwin, Richibucto, N.B.
Ivetta	130,364	Dingwall, N.S., 1911	"	50.2	12.3	5.3	17	Sydney, N.S.	W. O'Brien, Victoria, B.C.
J. C. No. 9	130,702	New Westminster, B.C., 1911	Scow	60.2	26.2	6.3	91	Vancouver, B.C.	J. Crane, New Westminster, B.C.
J. C. No. 11	130,679	" " "	"	65.2	26.0	6.4	108	" "	" "
Jardineville	130,662	Rexton, N.B., 1908	Schr.	34.0	11.0	4.6	10	Richibucto, N.B.	A. J. Arsenean, Jardineville, N.B.
Julia Murphy	126,869	Shelburne, N.S., 1911	"	69.8	24.0	5.5	103	Sault St. Marie, Ont.	H. R. Swim, M.O., Lockport, N.S.
Julie Opp	126,670	Richards Landing, Ont., 1911	Dredge	55.5	17.8	7.9	38	Shelburne, N.S.	J. L. Kennedy, Garden River, Ont.
Lottie M. Blanche	130,688	Tancook, N.S., 1911	Schr.	40.8	10.1	5.4	12	Lunenburg, N.S.	D. Moland, M.O., East Chester, N.S.
M. T. Williams	130,366	Ingonish, N.S., 1911	"	38.0	12.3	7.4	16	Sydney, N.S.	W. C. Williams, Ingonish, N.S.
Mary E. Burton	130,365	Aspy Bay, N.S., 1910	"	56.7	18.0	6.4	47	" "	A. Burton, Aspy Bay, N.S.
P. R. & G. Co. 17	130,602	Victoria, B.C., 1911	Barge	88.8	30.1	8.0	174	Victoria, B.C.	Producers Rock and Gravel Co., Victoria, B.C.
Paul V.	126,580	Pleasant Bay, N.S., 1911	Schr.	43.8	12.2	6.7	14	Hawkesbury, Ont.	P. V. Boudreau, Cheticamp, N.S.
Powell River No. 1	130,701	New Westminster, B.C., 1911	Scow	65.8	25.8	6.8	105	Vancouver, B.C.	H. Stead, New Westminster, B.C.
Rosanna T.	130,689	Lunenburg, N.S., 1908	Schr.	42.6	10.6	5.5	11	Lunenburg, N.S.	L. Tanner, Eastern Points, N.S.
T. H. 28	130,705	New Westminster, B.C.	Scow	61.3	26.0	6.9	102	Vancouver, B.C.	T. Y. Hebron, Vancouver, B.C.
Tacoma	130,722	Tancook, N.S., 1906	Schr.	40.2	10.0	5.2	11	Lunenburg, N.S.	C. P. R. Co., Tancook, N.S.
Transfer No. 3	130,606	Esquimalt, B.C., 1911	Barge	250.0	42.0	10.8	927	Victoria, B.C.	C. P. R. Co., Montreal
Vina Evelyn	130,423	Swans Island, Me., 1894	Sloop	37.6	13.6	6.6	14	St. Andrews, N.B.	F. M. Calder, Campobello N.B.
William Thomas	130,367	Ingonish, N.S., 1911	Schr.	39.4	12.5	7.0	14	Sydney, N.S.	P. Doyle, Ingonish, N.S.
Winnifred Marr	130,721	Tancook, N.S., 1911	"	44.8	12.6	6.6	17	Lunenburg, N.S.	M. Meagher, Canso, N.S.



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intention, and that the tow in consequence involuntarily impeded the progress of the Ionian. He admitted that it is difficult to control a tow of such length and that while the schooner was being steered the 20 barges were left unattended.

The court finds that the statement of the master of the Alaska on the one hand and the pilot and master of the Ionian on the other as to the direction of the wind are contradictory, and if the court accepts the statement of the pilot of the Ionian, that the wind was south west, which it does, it precludes the necessity on the part of the Alaska of altering her course so materially to southward to avoid the sail barge which it has been averred was at a safe distance to the north of the tow. But even admitting that such a course was essential, it is held that the master of the Alaska should have complied with the rule of the road and sounded two blasts to indicate his intention, and for his failure in this respect and consequent placing of valuable property in jeopardy, he is severely censured by the court and is warned that should he reappear following a similar complaint his certificate will be dealt with.

The court deprecates the system which permits of tows of ungovernable lengths to ply the narrow stretches of the River St. Lawrence, as they constitute a menace to navigation, and as the shipping interests have frequently found cause to complain heretofore, the court accepts it as a duty to point out to the proper authorities the necessity of enacting laws and regulations limiting the length of tows, thereby minimizing the danger of casualty, prevailing under the present unrestricted conditions.

#### Hero-Chieftain III. Collision.

Following is a summary of the judgment, recently delivered, as a result of the enquiry by L. A. Demers, Wreck Commissioner, assisted by Capt. A. Reid and F. Nash and W. Gauthier, as assessors, into the cause of the collision between the steamboats Hero and Chieftain III., in the River St. Lawrence, near St. Antoine, Que., Aug. 20, resulting in the foundering of Chieftain III., and the loss of four lives.

The court finds that reliance cannot be placed on the calculations made by the pilot on Chieftain III., who, by his own admission, is ignorant of the most elementary rules of navigation, and accepts the corroborated testimony of the Hero's witnesses. The court comes to the conclusion that an improper lookout was kept on Chieftain III., and that the pilot, in porting, while his vessel was green to green, committed a flagrant transgression of the rules of the road. As the pilot holds neither a certificate nor a pilot's license, it is beyond the court's jurisdiction to inflict a penalty for his gross and unpardonable ignorance, but he is held to be in default and responsible for the casualty. The engagement of Onesime Hamelin, as pilot, was effected contrary to the bylaw which permits the master or member of a crew to pilot an exempted vessel, but exacts that if a pilot be engaged, he must possess a license. Therefore the owners of Chieftain III., through whose instrumentality this engagement was effected, are held to be indirectly responsible, while to the Chieftain's mate, who was on watch with the pilot, no blame can be attached, as being without certificate, he is viewed in the light of a deck hand and therefore irresponsible. The captain of the Chieftain III., acting in accordance with the faulty system endorsed by owners of this class of vessel, for the master to keep watch and watch, nevertheless lacked an adequate conception of his responsibilities in leav-

ing the fate of his vessel to such incompetent hands. Furthermore, the persons he carried in addition to his crew, must be considered as passengers, and as the certificate he held precluded the carrying of passengers, he violated the Shipping Act, and the court being of opinion that he is indirectly responsible for the disaster, suspends his certificate as master for two years from Aug. 30, and in the meantime grants him a certificate as mate for a tug boat on minor waters. Regarding the pilot of the Hero and the second officer, they are exonerated from all blame, but are advised that when reversing they should indicate such action by sounding the regulation blasts. The captain of the Hero is also exonerated, but the court cannot condone his indifference subsequent to the casualty. He should have anchored his vessel and made vigorous search for those known to be in jeopardy, but he ignored the common claim of humanity and is severely censured for his action, which will be reported to the Norwegian authorities. It is ordered that the costs of the investigation be paid by the owners of Chieftain III., the Calvin Co., Kingston, Ont. The Hero is owned by Kjaer and Isdahi, Bergen, Norway, and is under charter to the Intercolonial Coal Mining Co., carrying coal between Sydney, N.S., and Montreal.

#### Bonds on Steamship Yorkton.

The Mathews Steamship Co., Ltd., has issued \$55,000 first mortgage 6% gold bonds due July 1, 1921, secured by a first mortgage on the s.s. Yorkton, which was built last year at Sunderland, Eng. Following are extracts from the prospectus, issued by Æmilius Jarvis & Co., Toronto:—

The Yorkton is constructed entirely of steel according to the designs and specifications of the owners, based on long experience in the shipping trade on the Great Lakes. She is classed A1, in Lloyds Inland Register and is 250 ft. long, 42½ ft. beam, and 18½ ft. deep. She is designed to have the greatest carrying capacity (85,000 bush.) of any steamer capable of passing through the St. Lawrence canals. On the Upper Lakes her carrying capacity is 100,000 bush. She is of the latest design in every respect, is lighted with electricity, heated by steam, and has steam steering gear. She has a double bottom, and is double decked, and cost in cash over \$115,000. The \$55,000 bonds offered constitute the entire bonded debt of the steamship, and in addition to being secured by a first mortgage on the steamship, they are an obligation of the Mathews Steamship Co., Limited, in its entirety. Under the mortgage protecting the bonds, the company is obligated to keep the steamer and its appurtenances covered by the mortgage amply insured against loss or damage by fire, and against all marine risks and disasters, all collision liability, general and particular average, and against liability for injuries to persons.

The company's statements show that from 1906 to 1910 their boats Edmonton and Haddington averaged annual net earnings of \$25,938.50, and that in 1910 their boats earned \$26,458.65 net. This year to Sept. 7, they earned \$18,587.63 net, while the Yorkton (operating only two months after completion and arrival from England) earned \$2,631.77 net. This shows total net earnings of \$21,218.43 to September, and with the three busiest months to be added, the company estimates over \$39,000 net earnings for 1911. All earnings mentioned are net after paying insurance. The company's statement shows assets of \$288,091.10 as at Jan. 31, 1911, not

including the Yorkton, valued at \$130,000. Adding this the assets total \$418,091.10.

#### Canadian Notices to Mariners.

The Department of Marine has issued the following:—

101. Sept. 20. 273. Ontario, Lake Ontario, Bay of Quinte, Minnie Blakely shoal, gas buoy established. 274. Ontario, Lake Erie, Port Burwell, bell buoy discontinued. 275. Ontario, St. Joseph channel, Wislon channel, Chiora shoal and middle ground, buoys discontinued. 276. Ontario, Lake Superior, Porphyry island, Porphyry point, light improved. 277. Ontario, Lake Nipissing, South bay, South river mouth, change in position of light. 278. United States of America, Lake Huron, Detour passage, change in characteristic of submarine signal. 279. United States of America, Lake Superior, Two Harbors light station, characteristic of light changed.

102. Sept. 22. 280. New Brunswick, Bay of Fundy, Grand Manan island, Flag cove, Net Rock ledges, bell buoy established. 281. New Brunswick, south coast, Bay of Fundy, off Negro Head, bell buoy established. 282. Nova Scotia, Bay of Fundy, Long island, Pettit passage, Boars head, hand fog alarm at light station. 283. Nova Scotia, Cape Breton, Lower L'Ardoise, bell buoy established, hydrographic notes.

103. Sept. 28. 284. Nova Scotia, Bay of Fundy, Hall harbor, position of lighthouse. 285. Nova Scotia, south west coast Cape Sable, rock westward of. 286. Nova Scotia, Cape Breton, Lennox passage, Ouetique island lighthouse, character of illuminating apparatus. 287. Nova Scotia, Cabot strait, St. Paul island, permanent light. 288. Quebec, River St. Lawrence, Escoumains, light established on wharf. 289. Newfoundland, west coast, Ste. Genevieve bay, existence of shoals. 290. Newfoundland, west coast, Old Ferolle harbor approach, existence of shoals.

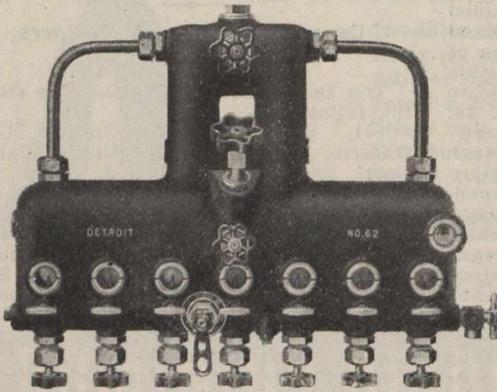
104. Oct. 3. Quebec, Chaleur Bay, Port Daniel West lighthouse, color of lantern. 292. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, above St. Antoine, wreck marked by gas buoy. 293. Quebec, River St. Lawrence, Montreal harbor, buoys established.

105. Oct. 4. 294. Ontario, Lake Ontario, west end, Burlington channel front range lighthouse, hand fog horn for occasional use. 295. Ontario, Lake Erie, Long Point lighthouse to Port Rowan, telephone line. 296. Ontario, Lake Erie, Port Burwell, breakwater under construction, temporary light. 297. Ontario, Lake Superior, Thunder bay, Port Arthur, position of wireless telegraph station.

106. Oct. 12. 298. New Brunswick, south coast, Bay of Fundy, St. John harbor, off Negro point, change in position of gas buoy. 299. Nova Scotia, Bay of Fundy, Lurcher shoal, lighthouse replaced on her station. 300. Prince Edward Island, west coast, Miminegash, range lights increased in height. 301. Prince Edward Island, north coast, Savage harbor, change in position of front range light.

107. Oct. 16. 302. Nova Scotia, Cape Breton, Cape St. Lawrence lighthouse, lower light discontinued. 303. Nova Scotia, south coast, Little Liscomb harbor, Redman head, hand fog horn at light station. 304. Quebec, Gulf of St. Lawrence, Gaspe coast, Grand River wharf, hand fog bell at light station. 305. Quebec, Magdalen islands, House harbor entrance, change in character of buoy. 306. Quebec, Lake St. John, Ile au Belier, back range light.

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**Vessels Removed From the Register.**

The following vessels were removed from the Canadian register during August and September, for the reasons assigned:—Steam—Amethyst, Montreal, 894 tons, stranded; Eliza Williams, Port Arthur, Ont., 34 tons, broken up; Kaminstiquia, Port Arthur, Ont., 72 tons, burnt; Neptune, St. John, N.B., 48 tons, broken up; Norseman, Goderich, Ont., 400 tons, sold to United States; Seheldt, Vancouver, B.C., 71 tons, lost; Zoa H., Lunenburg, N.S., 16 tons, sold to foreigners; Salling—Blue Wave, Parrsboro, N.S., 37 tons, stranded; Carib II., Shelburne, N.S., 195 tons, sold to foreigners; Confidence, Lunenburg, N.S., 35 tons, transferred to Newfoundland; Coryl, Parrsboro, N.S., 59 tons, broken up; Frank, Charlottetown, P.E.I., 30 tons, sold to foreigners; Foster Rice, Annapolis Royal, N.S., 17 tons, wrecked; Gaza, Parrsboro, N.S., 71 tons, broken up; General Laurie, Shelburne, N.S., 198 tons, transferred to Barbadoes; Georgie E., Weymouth, N.S., 95 tons, wrecked; Kohinoor, Charlottetown, P.E.I., 77 tons, wrecked; L'Etoile, Port Hawkesbury, N.S., 48 tons, wrecked; Lottie S., Shelburne, N.S., 42 tons, lost; M.D.S., Windsor, N.S., 190 tons, transferred to Newfoundland; Madona C., Magdalen Islands, 21 tons, sold to foreigners; Marion T., Weymouth, N.S., 30 tons, condemned; Olga, Parrsboro, N.S., 79 tons, broken up; Robert Kerr, New Westminster, B.C., 1,123 tons, wrecked; Rose, Quebec, Que., 79 tons, stranded; Rush Light, Sydney, N.S., 51 tons, broken up; Secret, Lunenburg, N.S., 76 tons, stranded; Stella, Arichat, N.S., 14 tons, broken up; Stranger, Lunenburg, N.S., 540 tons, transferred to Barbadoes; Tay, St. John, N.B., 125 tons, wrecked; W. N. Zwicker, Lunenburg, N.S., 398 tons, transferred to Barbadoes.

**Atlantic and Pacific Ocean Marine.**

The Cunard Line s.s. *Ausonla* will be partially remodelled during the winter season, an additional deck being made, providing accommodation for a further 100 passengers.

The vessel which the Union Steamship Co., of New Zealand, is having built at Glasgow, Scotland, for the Canadian mail service, and which was launched recently, has been named *Maunganui*. She is 430 ft. long by 55 ft. beam.

G. M. Bosworth, Vice President, C.P.R., has denied that the C.P.R. will operate a line of steamships between Boston, Mass., and Rotterdam, Holland, in connection with the New York, New Haven and Hartford Ry., as reported in the daily press.

It is reported that the Cunard Line proposes to add two vessels to its Montreal-London service, in the spring of 1912. It is stated that the company will either build vessels for the service, or transfer two of its vessels from the Mediterranean route.

Reports brought to Vancouver by the Harrison Line s.s. *Crown of Castile*, state that the company is having built for the direct service between Glasgow and Vancouver two vessels to be named *Crown of Toledo* and *Crown of Adalusia*, each of about 10,000 tons gross.

The Donaldson Line s.s. *Letitia*, which is under construction at Glasgow, Scotland, will, it is expected, be ready for service between Glasgow and St. John in Feb., 1912. She will be 10,000 gross tons, and will have accommodation for about 275 second class and 1,000 third class passengers.

The Canadian Mexican Pacific Steamship Co. has chartered the s.s. *Strathdene* for its Mexican service, to replace

the s.s. *Henley*, which has been released. She commences the new service in November. The s.s. *Beckenham* has also been chartered for this service, and will sail from Vancouver in December.

The C.P.R. s.s. *Mount Temple* was reported to have been damaged in collision with the s.s. *Osterly* at Tilbury, Eng., Oct. 16, after which she was docked at Millwall for examination and repairs. Montreal officials are reported to have stated, Oct. 18, that they had no report of such an accident, but if such a collision had taken place, the damage must have been slight.

Press reports state that arrangements have been made for the operation of a steamship line between Vancouver, Victoria, Seattle, San Francisco and Bristol, Eng. The line will use the vessels which have recently been managed by Evans, Coleman and Evans, Vancouver, and will be known as the *Maple Leaf Line*. The vessels chartered are the *Harmattan*, *Oceania*, *Queen Alexandra* and *Queen Amelie*.

The steamships which the C.P.R. recently ordered for its Trans-Pacific steamship service, one of which was illustrated in our last issue, will be named *Empress of Asia* and *Empress of Russia*. Their dimensions will be length, 570 ft.; beam, 68 ft.; moulded depth, 38 ft.; tonnage, about 15,000 gross. They will be equipped with two steel quadruple turbines, and the price of each, delivered and complete, will be £500,000.

The Allan Line has invited tenders for the building of two steamships, each about 520 ft. long, equipped with twin screw reciprocating engines, for a speed of 18 knots an hour. Special attention will, it is said, be given to first and second class passenger accommodation. When completed, early in 1913, it is said that the new vessels will replace two at present on the Liverpool route, which will be transferred to the Glasgow route.

Salvage operations have been continued on the C.P.R. s.s. *Empress of China*, which was recently wrecked off the Japanese coast. It is stated that a considerable amount of rock is to be blasted, which, if successful in clearing the after hold, will be followed by an attempt to raise her by means of compressed air. It is feared that, on account of bad weather, and the position in which she is lying, the attempt will be unsuccessful, and that she will be a total loss.

Manchester Liners, Ltd., operating vessels between Montreal and Manchester, Eng., with which Lord Furness, of Furness, Withy and Co., and the Richelleu and Ontario Navigation Co., is intimately connected, reports a trading profit of £57,000 for the year ended June 30. This is an increase of £19,600 over the previous year. A full year's dividend of 5% was paid on the preference shares, thus clearing off accumulations of dividend to Dec. 31, 1905. The report states that should the present improvement in shipping be maintained, the regular payment of preference interest will be resumed.

C. M. Hays, President, G.T.R., and G.T.P.R., on his recent return to Montreal, after a trip over the system to the Pacific coast, is reported to have said that in the near future, not only will the G.T.P.R. have a steamship line operating to the Orient, but also to Great Britain, from the Pacific coast, via the Panama canal. The vessels, it is said, will be built in England, under the supervision of the G.T.R. board of directors, and they will be specially designed for grain carrying by the Panama route. The proposals in connection with this scheme involve the erection of grain elevators at Prince Rupert and other points and considerable harbor extensions.

Referring to the much-talked-of all red route, between Great Britain and Canada, a recent press dispatch from England states that the project, which, among four other ones, appears to have most chance of success, is one in which the Canadian Northern Steamships, Ltd., and C. T. Bowering & Co., are interested. The former operates the Royal Line from Bristol, and the latter runs steamships between Liverpool, New York, Halifax, N.S., and St. John's, Nfld. An essential part of the scheme is the operation of car ferries between Holyhead, Wales, and Kingstown, Ireland, but so far as this is concerned, the great difficulty would be the difference in gauge between the English and Irish railways, which are 4 ft. 8½ ins. and 5 ft. 3 ins., respectively.

G. W. Stephens, Chairman, Montreal Harbor Commission, has issued a pamphlet giving arguments in connection with the rates of insurance on vessels operating on the St. Lawrence route. It is shown that the rates are based on conditions which existed in 1900 before the channel was improved by widening to 30 ft., and the replacement of the old signals and oil lights by submarine bell stations, telephones, wireless telegraph, acetylene gas installations and modern lighting equipment, which, with the remodelled pilotage system has brought the route up to a high state of efficiency. The floating dry dock, under construction, is also dwelt upon, and the fact that today, vessels of 15,000 tons can safely navigate the channel by day or night, whereas ten years ago, only vessels of about 5,000 tons could safely undertake the journey to Montreal. He claims that in view of what has been accomplished, a reasonable reduction of marine insurance rates is not only possible, but justified by the physical condition of the route and the actual loss experienced in the business. He also proposes that the British North America clause in the policies be removed. This clause excludes all vessels except regular lines from trading with Canada, without paying an extra premium for so doing, and acts as a restriction so powerful that no outside tonnage can be chartered for single voyages, as the extra insurance premium demanded is prohibitive.

**Maritime Provinces and Newfoundland.**

The Newfoundland Government has appointed a commission of five members to supervise the pilots of the port of St. John's. The number of pilots has been fixed at 12.

The Newfoundland Marine Insurance Co. has been incorporated by the Newfoundland Legislature with a capital of \$150,000 and office at St. John's, Nfld.

Smith's Fish Market, Ltd., has been incorporated under the New Brunswick Companies Act, with a capital of \$10,000 and office at St. John, N.B., to carry on a general wholesale and retail fish business and in connection therewith, to operate steam and other vessels, wharves, etc.

Press reports from St. John, N.B., state that the car ferry service, which the C.P.R. proposes to operate between St. John and Digby, N.S., will be taken in hand next year. It is said that plans have been prepared, and a site for the proposed dock has been looked over by C.P.R. officials.

The steamship *Senlac* Co.'s s.s. *Senlac*, managed by Wm. Thompson and Co., St. John, N.B., has been sold by auction for \$7,500. She was built at St. John in 1904, and is screw driven by engine of 66 n.h.p. Her dimensions are: length 182.4 ft., breadth 33 ft., depth 16.1 ft.; tonnage, 1,011 gross, 615 register.

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Application has been made to the New Brunswick Government for the incorporation of a company with the title of John McDonald, Jr., Ltd., to carry on a general produce and cold storage business, and in connection therewith, to operate ships, dredges and dredging equipment. The office will be at St. John, N.B., and the capital \$20,000.

The harbor master at St. John's, Nfld., has given notice that owing to neglect by owners certain old schooners lying in the harbor are likely to sink and be a menace to navigation and an obstruction in the harbor, and that if no arrangement is made regarding them, they will be towed out to sea and sunk.

The Newfoundland Produce Co. is receiving a subsidy of \$500 a round trip for a steamship service between St. John's and Change Island and other ports in the Fogo district, from the Newfoundland Government. The agreement, which is for 12 years, provides that 38 weekly trips between May 1 and the end of the season, each year.

The Marine Railway Dock Co., registered in St. John's, Nfld., with power to build a marine railway dock at Harbor Grace, has been granted a free site by the Government. By way of further aid, the Government covenants to pay the amount by which the annual net dividends shall be less than 5% on the actual paid up cash capital, for 15 years, the amount to be paid by the Government, in no case, to exceed \$2,500 in any one year.

**Province of Quebec Marine.**

The steamboat Turret Bell has been libelled at the instance of G. T. Davie and Sons, Quebec, on a claim of \$2,500 for necessaries and repairs.

The Dominion Public Works Department has awarded the contract for the construction of a wharf at Papineauville to T. and J. Moran, Arnprior, Ont.

G. W. Stephens, Chairman, Montreal Harbor Commission, addressed the McGill Canadian Club, Montreal, Oct. 16, on the port of Montreal, comparing it very favorably with any other port on the continent.

The statue of the late Hon. John Young, four times Chairman of the Montreal Board of Harbor Commissioners, and known as the father of the Port of Montreal, which has been erected in Custom House Square, Montreal, was unveiled by Earl Grey, Oct. 4.

F. W. Cowie, Chief Engineer of the Montreal Harbor Commission, recently stated that the work on the construction of the new elevator is in such a condition that everything will probably be ready for operation in the spring. The completion of the concrete work has been somewhat delayed owing to the installation of extra machinery for driving the concrete piles, but it will be completed before frost interferes, and during the winter the interior work will be proceeded with.

**Ontario and the Great Lakes.**

The Dominion Public Works Department has awarded the contract for the lock work on the St. Peter's canal, to W. H. Weller, St. Catharines.

Polson Iron Works, Ltd., launched at Toronto, Oct. 7, a lifeboat of a novel design. It is claimed by the inventor, that it is fireproof, unsinkable and absolutely self-righting.

We are officially advised that the recent press reports, to the effect that Canadian Northern Ry. interests had purchased the Rideau Navigation Co. are incorrect.

The Merchants' Mutual Line steamboat, H. M. Pellatt, which grounded at Iroquois, Sept. 19, was released Oct. 6, and proceeded to Montreal under her own steam.

The Montreal Transportation Co.'s barge Winnipeg, which ran aground in the Rapid du Plat, recently, with 11,000 tons of coal, was released, Oct. 15, without damage.

B. R. Hepburn, M.P., President and General Manager, Ontario and Quebec Navigation Co., stated at Picton, Oct. 8, that a sister vessel to the Geronia would be built in about a year.

The Dominion Public Works Department has awarded the contract for the construction of a breakwater at Port Stanley, at a cost of \$210,000 to M. J. Hogan, Port Colborne.

The Ontario and Quebec Navigation Co.'s s.s. Geronia, which had her machinery thoroughly overhauled, had a trial trip, Oct. 8, between Picton and Kingston, when she averaged 16 miles an hour.

The Canadian Northern Ry. has given a site for the erection of a sailors' institute at Port Arthur, Ont. The site has been granted on a 30 years lease, which is renewable. Building will be commenced in the spring.

The Canadian Lake Line steamboat Corunna, which ran ashore on Welcome Island, near Port Arthur, Oct. 6, was lightered and removed to the dry dock for examination and repairs. The damage both to cargo and vessel was slight.

The Inland Lines s.s. Emperor while anchoring in the Canadian canal at Sault Ste. Marie, Oct. 18, rode over her anchor, causing it to tear a hole in her bow, after which she sank, blocking the channel. She was released the next day, and, after temporary repairs were made, proceeded to Midland.

At a meeting of directors of the Richelieu and Ontario Navigation Co., in Montreal, Oct. 4, it was stated that there would in all probability be no change in the constitution of the Northern Navigation Co.'s board before that company's annual meeting, early next year, and it is possible, even then, that no changes will be made.

Coals Transportation Ltd., has been incorporated under the Dominion Companies Act, with a capital of \$200,000 and office at Toronto, to operate steam and other vessels, and to carry on a general shipowning and shipping business.

The incorporators are J. R. Corkery, J. M. Forgie, E. G. McMillan, H. Riley and W. B. Sturup, Toronto.

The schooner Azov, laden with lumber, while bound for Sarnia, became waterlogged in Lake Huron, Oct. 24, and capsized near Point aux Barques. The crew escaped in one of the boats. She was owned by J. McDonald, Goderich, and was built at Wellington Square, Ont., in 1866, her dimensions being, length 108.4 ft., breadth 23.7 ft., depth 10 ft.; tonnage, 195 register.

The steam tug Gordon Gauthier, owned in Port Arthur, and which has been engaged in hauling supplies along the north shore for Canadian Northern Ry. construction, was burned at Port Arthur, Oct. 10. She was built at Wallaceburg in 1884. Her dimensions were, length 52.7 ft., breadth 13.9 ft., depth 6.4 ft.; tonnage, 26 gross, 8 register. She was equipped with engine of 24 n.h.p. driving a screw.

The steamboat Joliette, which was sunk some time ago in the St. Clair River, near Sarnia, is considered to be a menace to navigation. It was recently stated that the wreck would be dynamited, but owing to the proximity of the St. Clair tunnel, this is not considered likely. It is reported that the Marine Department has the matter in hand and will shortly call for tenders for the vessel's removal.

G. S. Wright, formerly master of the steamboat, D. A. Gordon, who was recently charged at Toronto, with having obtained his master's certificate by false pretences, and making fraudulent use of same, was acquitted Oct. 5. Judge Winchester expressed the opinion that the false representations, if any, were the result of a misconception of the meaning of the term, mate, as used in the regulations laid down by the Marine Department, and were not intended to deceive.

Sir Robert Perks, who as a member of the firm of MacArthur, Perks & Co., is interested in the proposed Georgian Bay canal, and who was in Canada during October, is reported to have said that he had received an assurance from the Dominion Government that it would act immediately in the matter of financing the work. This work, he stated, will take 10 years to complete, and cost about \$150,000,000. Since this statement was made, a change of Government has taken place.

**SAULT STE. MARIE CANALS TRAFFIC**

The following commerce passed through the Sault Ste. Marie Canals in September:

ARTICLES	CANADIAN CANAL	U. S. CANAL	TOTAL	
Copper .....	Eastbound .....	Short tons .....	12,234	12,234
Grain .....	" .....	Bushels .....	1,665,197	1,828,744
Building stone .....	" .....	Short tons .....	230	230
Flour .....	" .....	Barrels .....	329,606	795,100
Iron ore .....	" .....	Short tons .....	3,597,931	1,871,319
Pig iron .....	" .....	" .....	2,006	5,806
Lumber .....	" .....	M. ft. B.M. .....	143	75,172
Silver ore .....	" .....	Short tons .....	4,855,662	2,109,048
Wheat .....	" .....	Bushels .....	4,741	16,975
General merchandise .....	" .....	Short tons .....	2,500	2,278
Passengers .....	" .....	Number .....		
Coal, hard .....	Westbound .....	Short tons .....	79,279	179,293
Coal, soft .....	" .....	" .....	467,513	1,496,343
Flour .....	" .....	Barrels .....		
Grain .....	" .....	Bushels .....		
Manufactured iron .....	" .....	Short tons .....	16,317	16,642
Iron ore .....	" .....	" .....		
Salt .....	" .....	Barrels .....	15,260	82,191
General merchandise .....	" .....	Short tons .....	67,307	83,032
Passengers .....	" .....	Number .....	2,766	1,627
Vessel passages .....	Number .....		899	1,760
Registered tonnage .....	Net .....		2,761,565	3,414,759
Freight—Eastbound .....	Short tons .....		3,817,854	1,711,756
—Westbound .....	" .....		632,596	1,787,638
Total freight .....	" .....		4,450,450	3,499,394

Short tons are tons of 2,000 pounds

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tidewater, for September, as follows:—Superior, 602.20; Michigan and Huron, 579.63; Erie, 571.53, and Ontario, 244.91. As compared with the average September levels for the past ten years, Superior was 0.69 ft. below; Michigan and Huron, 1.35 ft. below; Erie, 0.90 ft. below, and Ontario, 1.32 ft. below. During Oct., it was anticipated that Superior would remain stationary; Michigan, Huron and Erie would fall 0.2 ft., and Ontario, 0.3 ft.

The Detroit & Cleveland Navigation Co.'s steamboat, City of Detroit III., which was launched at Wyandotte, Mich., Oct. 7, is 500 ft. long, over all breadth molded, 55 ft.; breadth over guards, 100 ft.; depth molded, 22 ft.; depth at stem, 29.25 ft.; depth at stern, 25.25 ft.; depth at guard, 21.25 ft. The hull is built of steel with double bottom divided into 11 compartments by water-tight cross bulkheads, extending from the keel to the main deck. The bottom is divided at the centre line and athwartships into 15 water-tight tanks. There are two decks below the main deck and three above, the main deck and the housings on the main deck and orlop deck will also be of steel.

#### Manitoba, Saskatchewan and Alberta.

The traffic on the Red River, during the season just closing, is reported to have been about four times heavier than last year. The larger increases are in lumber, cordwood, sandstone, gravel and ice. Six barges have been built and put into service during the season.

S. A. Bentley, Athabasca Landing, Alta., who is interested in water transportation in the district, announces that he will operate a vessel next season between Athabasca Landing and Grand

Rapids, and that The Pelican, which was running on the river route during the past season, will be transferred to Wabasca.

At a meeting of the dockage and wharfage committee of the Winnipeg city council, Oct. 13, a sub-committee was appointed, representing Winnipeg and St. Boniface, to wait on the Minister of the Interior, on his next visit to the city, with the object of obtaining his consent to the introduction of a bill into the House of Commons, creating a

harbor commission for the two cities. The city solicitor is preparing a draft of a bill on the same lines as those creating harbor commissions in the east.

#### B.C. and Pacific Coast Marine.

The C.P.R. s.s. Princess Beatrice, engaged in the coast service, was reported ashore on Noble Island, Oct. 16. The damage is said to be considerable. She was built at Victoria in 1903.

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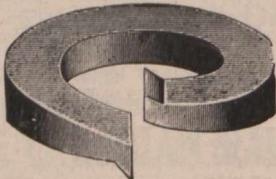
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The Union Steamship Co.'s s.s. Chelohsin, which has been built at Belfast, Ireland, sailed for Vancouver, Oct. 9. It is stated that she will, on arrival, be put on the northern run. On her trials she maintained a speed of 14 1/4 knots during eight hours, which is above her contract speed.

With reference to the press dispatch mentioned in our last issue, to the effect that J. C. Gore, Superintendent, C. P.R. British Columbia Lake and River Service, had inspected the steamboats International and Kaslo, controlled by G.N.R. interests, on Mirror Lake, with a view to purchase, we are officially ad-

vised that there is no intention on the part of the C.P.R. to purchase any steamboat equipment belonging to the G.N.R. in the district named.

The Dominion Government steam tug Point Grey, practically a sister vessel of the Point Ellice, was launched at North Vancouver, Oct. 10. The machinery which is being installed was made in Great Britain. Her dimensions are, length 110 ft., beam 24 ft., depth of hold 14 1/2 ft. She is equipped with engine having cylinder stroke of 27 ins. and the boiler is 14 by 14 ft. It is intended to utilize her in connection with the dredge Mastodon in the First Nar-

rows, where dredging is proceeding.

The C.P.R. has purchased the s.s. Queen Alexandra, heretofore operated in the passenger service on the River Clyde, Scotland. It is stated that she will be placed on the Vancouver-Nanaimo route in the spring, making two round trips daily. She is now being overhauled and altered at Dumbarton, Scotland, and is expected to leave for Vancouver, towards the end of November. She is a triple screw vessel, equipped with turbines and large double ended boiler. Her dimensions are, length 270 ft., beam 32.1 ft., depth 11 ft.; tonnage, 665 register.

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Babcock & Wilcox, Ltd. .... Montreal.  
Polson Iron Works, Ltd. .... Toronto.  
Robb Engineering Co., Ltd. Amherst, N.S.

**Boilers, Steam**  
Babcock & Wilcox, Ltd. .... Montreal.  
Polson Iron Works, Ltd. .... Toronto.  
Robb Engineering Co., Ltd. Amherst, N.S.

**Boilers, Water Tube**  
Babcock & Wilcox, Ltd. .... Montreal.  
Robb Engineering Co., Ltd. Amherst, N.S.  
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Canada Iron Corporation, Ltd. .... Montreal.  
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Am. Brake Shoe & Fdry. Co. Mahwah, N.J.  
Canada Iron Corporation, Ltd. .... Montreal.  
Dorner Railway Equip. Co. .... Chicago, Ill.  
Railway Materials Co. .... New York.

**Brass**  
C. H. Besly Co. .... Chicago, Ill.

**Brasses, Car**  
T. McAvity & Sons ..... St. John, N.B.

**Bridge Numbers**  
Acton Burrows, Limited ..... Toronto.

**Bridges**  
Canadian Bridge Co. .... Walkerville, Ont.  
Cleveland Bridge & E. Co. Darlington, Eng.  
Corbet Foundry Co. Ltd. Owen Sound, Ont.  
Dominion Bridge Co. .... Montreal.

**Bronze**  
American Vanadium Co. .... Pittsburgh, Pa.  
Titanium Alloy Mfg. Co. .... Pittsburgh, Pa.

**Buckets, Coal, Ore and Concrete**  
M. Beatty & Sons, Ltd. .... Welland, Ont.  
Brown Hoisting Machinery Co. .... Cleveland.

**Buildings, Steel**  
Canadian Bridge Co. .... Walkerville, Ont.  
Cleveland Bridge & E. Co. Darlington, Eng.  
Dominion Bridge Co. .... Montreal.

**Bumping Posts**  
Dominion Equip. & Supply Co. Winnipeg  
The Holden Co., Ltd. .... Montreal.  
McCord & Co., ..... Chicago, Ill.

**Buoys**  
International Marine Signal Co. .... Ottawa.

**Cables, Electric and Feeder**  
Canada Wire & Cable Co., Ltd. .... Toronto.  
Chapman & Walker, Ltd. .... Toronto.  
E. F. Phillips Electrical Works. .... Montreal.  
The Wire & Cable Co. .... Montreal.

**Capstans**  
Dake Engine Co. .... Grand Haven, Mich.

**Car Furnishings**  
Gullford S. Wood ..... Chicago, Ill.

**Car Movers**  
F. H. Hopkins & Co. .... Montreal.  
Mussens, Ltd. .... Montreal.

**Car Roofing**  
Franklin Railway Supply Co. .... New York.

**Cars**  
R. M. Burns & Co. .... Chicago, Ill.  
Crossett Car Mfg. Co. .... Cobourg, Ont.  
Canadian Car & Foundry Co. .... Montreal.  
Dorner Railway Equip. Co. .... Chicago, Ill.  
J. T. Gardner ..... Chicago, Ill.  
Hart-Otis Car Co., Ltd. .... Montreal.  
Ottawa Car Co., Ltd. .... Ottawa.  
Pay-As-You-Enter Car Co. .... Montreal.  
Preston Car & Coach Co., Ltd. .... Preston.  
Russel Wheel & Fdry Co. .... Detroit, Mich.  
Western Wheeled Scraper Co. Aurora, Ill.

**Car Signal Systems**  
Ohio Brass Co. .... Mansfield, Ohio.

**Cars, Logging**  
Russel Wheel & Fdry Co. .... Detroit, Mich.

**Castings**  
American Vanadium Co. .... Pittsburgh, Pa.  
Canadian Car & Foundry Co. .... Montreal.  
Crossett Car Mfg. Co. .... Cobourg, Ont.  
Lumen Bearing Co. .... West Toronto, Ont.  
Russel Wheel & Fdry Co. .... Detroit, Mich.  
Titanium Alloy Mfg. Co. .... Pittsburgh, Pa.

**Castings, Brass**  
Canada Iron Corporation, Ltd. .... Montreal.  
Canadian Bronze Co. .... Montreal.  
Corbet Fdry Co., Ltd. .... Owen Sound, Ont.  
Kerr Engine Co. .... Walkerville, Ont.  
Lumen Bearing Co. .... West Toronto, Ont.  
Tallman Brass & Metal Co. Hamilton, Ont.

**Castings, Car**  
Am. Brake Shoe & Fdry. 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.  
Corbet Fdry Co., Ltd. .... Owen Sound, Ont.  
Kerr Engine Co. .... Walkerville, Ont.  
Russel Wheel & Fdry Co. .... Detroit, Mich.

**Castings, Iron and Steel**  
Am. Brake Shoe & Fdry. Co. Mahwah, N.J.

**Castings, Malleable**  
Galt Malleable Iron Co. .... Galt, Ont.  
Pratt & Letchworth Co. .... Brantford, Ont.  
Taylor & Arnold, ..... Montreal.

**Castings, Manganese Steel**  
Canadian Steel Foundries, Ltd. .... Montreal.  
Lumen Bearing Co. .... West Toronto, Ont.

**Castings, Steel**  
American Vanadium Co. .... Pittsburgh, Pa.  
Canada Iron Corporation, Ltd. .... Montreal.  
Canadian Steel Foundries, Ltd. .... Montreal.  
W. Kennedy & Sons, Ltd. .... Owen S'd, Ont.  
Pratt & Letchworth Co. .... Brantford, Ont.  
Titanium Alloy Mfg. Co. .... Pittsburgh, Pa.

**Catenary Materials**  
Ohio Brass Co. .... Mansfield, Ohio.

**Chains**  
B. J. Coghlin & Co. .... Montreal

**Circuit Breakers**  
Geo. C. Royce ..... West Toronto, Ont.

**Closets, Car**  
Duner Co. .... Chicago, Ill.

**Coal**  
Nova Scotia S. & C. Co. .... New Glasgow, N.S.

**Compressors, Air**  
Allis-Chalmers-Bullock Ltd. .... Montreal.  
Canadian Rand Co. .... Montreal.  
The Holden Co., Ltd. .... Montreal.  
Mussens, Ltd., ..... Montreal.

**Concrete Mixers and Rock Crushers**  
F. H. Hopkins & Co. .... Montreal.  
Mussens, Ltd. .... Montreal.

**Contractors' Supplies**  
American Hoist & Der. Co. St. Paul, Minn.  
F. H. Hopkins & Co. .... Montreal.  
Rice Lewis & Son ..... Toronto.  
Russel Wheel & Fdry Co. .... Detroit, Mich.  
Western Wheeled Scraper Co. .... Aurora, Ill.

**Conveyors, Coal and Ash**  
Babcock & Wilcox, Ltd. .... Montreal.

**Copper**  
C. H. Besly Co. .... Chicago, Ill.

**Copying Presses**  
James Smart Mfg. Co. .... Brockville, Ont.

**Couplers, Car and Locomotive**  
Canadian Car & Foundry Co. .... Montreal.  
Canadian Steel Foundries, Ltd. .... Montreal.  
McConway & Torley Co. .... Pittsburgh, Pa.  
Ohio Brass Co. .... Mansfield, Ohio.  
Taylor & Arnold ..... Montreal.

**Couplers, Steam**  
Consolidated Car Heating Co. Albany, N.Y.

**Cranes**  
Brown Hoisting Machinery Co. .... Cleveland.  
Northern Engineering Wks. .... Detroit, Mich.

**Cranes, Electric**  
Babcock & Wilcox ..... Montreal.  
Dominion Bridge Co. .... Montreal.  
Mussens, Ltd. .... Montreal.  
Northern Engineering Wks. .... Detroit, Mich.

**Cranes, Locomotive**  
American Hoist & Der. Co. .... St. Paul, Minn.

**Cranes, Wrecking**  
Mussens, Ltd. .... Montreal.

**Crowbars**  
B. J. Coghlin & Co. .... Montreal

**Curtains and Fixtures, Car**  
The Holden Co., Ltd., ..... Montreal.  
Preston Car & Coach Co. .... Preston, Ont.

**Canadian Northern Montreal Tunnel and Terminal Company, Limited**

Notice is hereby given that the Canadian Northern Montreal Tunnel and Terminal Company, Limited, will apply to the Parliament of Canada at its next session for an Act:—

(a) Declaring the undertaking of the Company to be a work for the general advantage of Canada;

(b) Authorizing the Company to construct and operate a railway tunnel from some point in the City of Montreal, thence in a generally westerly direction under Mount Royal, with the necessary approaches and works;

(c) Authorizing the Company to construct and operate lines of railway connecting the tunnel and works of the Company with the lines and tracks of the Canadian Northern Ontario Railway Company, of the Canadian Northern Quebec Railway Company, and of the Harbor Commissioners of Montreal;

(d) Fixing the amount of the securities which the Company may issue in respect of its authorized lines of railway;

(e) Authorizing the Company to enter into agreements under sections 361, 362 and 363 of the Railway Act; and

(f) Providing for the acquirement by the Company of easements in respect of lands affected by its railway tunnel and lines and the granting or making by the Company of lands, interests in lands, or structures in mitigation of damages.

Toronto, October 17th, 1911.

GERARD RUEL,  
Chief Solicitor.

**Ontario and Ottawa Railway Company**

Notice is hereby given that the Ontario and Ottawa Railway Company will apply to the Parliament of Canada at its next session for an Act:—

(1) Extending the time within which the Company may commence and construct the line of railway authorized by section 7 of chapter 139 of the Statutes of Canada for 1910;

(2) Authorizing the Company to construct and operate a line of railway from a point at or near Lake Couchiching, westerly to the Georgian Bay; and

(3) Fixing the limit to the amount of the securities which may be issued in respect thereof.

Toronto, October 19th, 1911.

GERARD RUEL,  
Chief Solicitor.

**Canadian Northern Quebec Railway Company**

Notice is hereby given that application will be made to the Parliament of Canada at its next session for an Act extending the time within which the Canadian Northern Quebec Railway Company may construct and complete the lines, branches and extensions authorized by paragraphs (c), (e) and (f) of section 3 of chapter 73 of the Statutes of Canada for 1907; and authorizing the Company to enter into agreements under sections 361, 362 and 363 of the Railway Act.

Toronto, October 19th, 1911.

GERARD RUEL,  
Chief Solicitor.

JAMES THOMSON, Pres. and Mang. Director. J. G. ALLAN, Vice-President. JAMES A. THOMSON, Secretary

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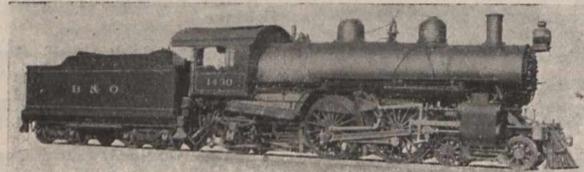
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Portland, Ore., 722 Spaulding Building

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**BUTTERFIELD & CO., ROCK ISLAND, QUE.**

HAND, MACHINE AND TAPPER TAPS, STAY BOLT TAPS, BOILER AND PATCH BOLT TAPS. QUALITY UNSURPASSED.

- Cuts**  
Acton Burrows, Limited .....Toronto.
- Cylinders**  
American Vanadium Co....Pittsburgh, Pa.  
Titanium Alloy Mfg. Co....Pittsburgh, Pa.
- Derricks**  
American Hoist & Der. Co..St. Paul, Minn.  
M. Beatty & Sons, Ltd. ....Welland, Ont.  
Mussens, Ltd. ....Montreal.
- Derricks, Car**  
American Hoist & Der. Co..St. Paul, Minn.
- Diaphragms, Vestibule**  
Guilford S. Wood .....Chicago, Ill.
- Dies**  
Butterfield & Co. .... Rock Island, Que.  
A. B. Jardine & Co. ....Hespeler, Ont.
- Ditchers**  
American Hoist & Der. Co..St. Paul, Minn.  
M. Beatty & Sons, Ltd. ....Welland, Ont.
- Diving Outfits**  
John Date .....Montreal.  
Mussens, Ltd. ....Montreal.
- Doors, Steel Rolling**  
Mussens, Ltd. ....Montreal.
- Door Signs**  
Acton Burrows, Limited .....Toronto.
- Draft Gear**  
The Holden Co., Ltd., .....Montreal.  
McCord & Co., .....Chicago, Ill.  
Standard Coupler Co. ....New York City  
T. H. Symington & Co. ....Baltimore, Md.
- Draughtsmen's Supplies**  
John A. Hart & Co. ....Winnipeg.
- Dredges**  
M. Beatty & Sons, Ltd. ....Welland, Ont.  
Polson Iron Works, Ltd. ....Toronto.
- Drills, Air**  
Canadian Rand Co. ....Montreal.
- Drills, Radial**  
Mussens, Ltd., .....Montreal.  
London Machine Tool Co., Ltd.Hamilton.
- Dry Goods**  
The Hudson's Bay Co. ....
- Dump Cars, Contractors'**  
Dominion Equip. & Supply Co..Winnipeg.  
F. H. Hopkins & Co. ....Montreal.  
Western Wheeled Scraper Co..Aurora, Ill.
- Dynamometers**  
Northern Electric & Mfg. Co....Montreal.
- Dynamo and Electric Castings**  
Am. Brake Shoe & Fdry. Co..Mahwah, N.J.
- Economizers**  
Babcock & Wilcox .....Montreal.
- Electric Apparatus**  
Allis-Chalmers-Bullock Ltd.....Montreal.  
Chapman & Walker, Ltd. ....Toronto.  
Northern Electric & Mfg. Co....Montreal.
- Electric Car Route Signs**  
Acton Burrows, Limited .....Toronto.  
Preston Car & Coach Co., Ltd...Preston.
- Electric Light Plant**  
Allis-Chalmers-Bullock, Ltd. ....Montreal.
- Elevators, Grain**  
John S. Metcalf Co. ....Montreal.
- Enameled Iron Signs**  
Acton Burrows, Limited .....Toronto.
- Engines, Automatic**  
Polson Iron Works, Ltd. ....Toronto.  
Robb Engineering Co., Ltd., Amherst, N.S.  
Russel Wheel & Fdry Co....Detroit, Mich.
- Engines, Corliss**  
Allis-Chalmers-Bullock, Ltd. ....Montreal.  
Robb Engineering Co., Ltd., Amherst, N.S.
- Engines, Gas**  
Allis-Chalmers-Bullock, Ltd. ....Montreal.
- Engines, Gasoline**  
Canadian Fairbanks-Morse Co., Ltd.....Montreal.  
Ontario Wind Engine & Pump Co. Toronto
- Engines, Hoisting**  
Allis-Chalmers-Bullock, Ltd. ....Montreal.  
American Hoist & Der. Co..St. Paul, Minn.  
M. Beatty & Sons .....Welland, Ont.  
Dominion Equip. & Supply Co..Winnipeg.  
Mussens, Ltd., .....Montreal.  
Polson Iron Works, Ltd. ....Toronto.  
Russel Wheel & Fdry. Co. ....Detroit, Mich.
- Engines, Stationary and Marine**  
Polson Iron Works, Ltd. ....Toronto.  
Robb Engineering Co., Ltd., Amherst, N.S.
- Engines, Stationary, Appliances**  
Nathan Manufacturing Co. ....New York.
- Engines, Steam**  
Allis-Chalmers-Bullock, Ltd. ....Montreal.
- Engineers, Consulting**  
Alfred Lovell, .....Philadelphia, Pa.
- Explosives**  
Curtis's & Harvey (Canada) Ltd..Montreal
- Express Office Signs**  
Acton Burrows, Limited .....Toronto.
- Ferro-Vanadium**  
American Vanadium Co. ....Pittsburgh, Pa.
- Files**  
Nicholson File Co. ....Port Hope, Ont.
- Fire Extinguishers**  
Miller Chemical Engine Co..Chicago, Ill.
- Flags**  
The Hudson's Bay Co. ....
- Flour**  
The Hudson's Bay Co. ....
- Forgings**  
American Vanadium Co. ....Pittsburgh, Pa.  
Canadian Car & Foundry Co....Montreal.  
Crossen Car Mfg. Co.....Cobourg, Ont.
- Nova Scotia S. & C. Co..New Glasgow, N.S.  
Steel Co., of Canada, Ltd., Hamilton, Ont.  
Titanium Alloy Mfg. Co....Pittsburgh, Pa.
- Foundry Appliances**  
C. H. Besly Co. ....Chicago, Ill.  
Ontario Wind Engine & Pump Co. Toronto
- Frogs**  
Can. Ramapo Iron Wks. ...Niagara Falls.  
Johnson Wrecking Frog Co..Cleveland, O.
- Furnaces, Corrugated**  
Continental Iron Works....Brooklyn, N.Y.
- Furnaces, Oil**  
Railway Materials Co. ....New York.
- Fuse Batteries**  
Curtis's & Harvey (Canada) Ltd..Montreal
- Fuse Detonators**  
Curtis's & Harvey (Canada) Ltd..Montreal
- Fuses, Electric**  
Curtis's & Harvey (Canada) Ltd..Montreal
- Gaskets**  
The Holden Co., Ltd., .....Montreal.  
McCord & Co. ....Chicago, Ill.
- Gates, Crossing**  
The N. L. Piper Ry Supply Co...Toronto.  
Whyte Railway Signal Co. ....Toronto.
- Gauge Cocks**  
Nathan Manufacturing Co....New York.  
Ohio Brass Co. ....Mansfield, Ohio.
- Gauges, Locomotive**  
Taylor & Arnold .....Montreal.
- Gauges, Water**  
Detroit Lubricator Co. ....Detroit, Mich.  
Nathan Manufacturing Co....New York.  
Ohio Brass Co. ....Mansfield, Ohio.
- Gears**  
American Vanadium Co. ....Pittsburgh, Pa.  
Titanium Alloy Mfg. Co....Pittsburgh, Pa.
- Gears, Machine Cut**  
Corbet Fdry Co., Ltd. ..Owen Sound, Ont.
- Generators, Electric**  
Dorner Railway Equip. Co....Chicago, Ill.  
Northern Electric & Mfg. Co. ....Montreal.
- Graders and Ditchers**  
Western Wheeled Scraper Co. Aurora, Ill.
- Grates, Shaking**  
Babcock & Wilcox .....Montreal.  
Polson Iron Works, Ltd. ....Toronto.
- Grinders, Disc, for Wood and Metal**  
C. H. Besly Co. ....Chicago, Ill.
- Groceries**  
The Hudson's Bay Co. ....
- Hammers, Cast Steel**  
Am. Brake Shoe & Fdry Co..Mahwah, N.J.  
James Smart Mfg. Co. ....Brockville, Ont.
- Handcars**  
Canadian Fairbanks-Morse Co., Ltd.....Montreal.  
Crossen Car Mfg. Co. ....Cobourg, Ont.  
Dominion Equip. & Supply Co..Winnipeg.  
F. H. Hopkins & Co. ....Montreal.  
Mussens, Ltd. ....Montreal.  
Rice Lewis & Son .....Toronto.  
Whyte Railway Signal Co. ....Toronto.
- Hardware**  
The Hudson's Bay Co. ....Toronto.  
Rice Lewis & Son .....Toronto.
- Headlights**  
Commercial Acetylene Co. ....Toronto.  
The N. L. Piper Ry Supply Co...Toronto.  
Pyle National Elec. Headlight Co. Chicago.
- Headlinings**  
Crossen Car Mfg. Co. ....Cobourg, Ont.
- Heaters, Feedwater**  
Robb Engineering Co., Ltd..Amherst, N.S.
- Heating, Car**  
Canadian Gold Car H'g & L'g Co.Montreal.  
Consolidated Car H'ting Co..Albany, N.Y.  
Safety Car Heating & L'ting Co.New York.  
United States Light & Heat Co..New York.
- Hoists**  
Dake Engine Co. ....Grand Haven, Mich.
- Hoists, Electric**  
American Hoist & Der. Co. St. Paul, Minn.
- Hoists, Pneumatic**  
Taylor & Arnold .....Montreal.
- Hooks**  
Steel Co. of Canada, Ltd..Hamilton, Ont.
- Hoppers, Car, Wet or Dry**  
Duner Co. ....Chicago, Ill.
- Hose, Air Brake and Steam**  
Guilford S. Wood .....Chicago, Ill.
- Hydrants**  
Canadian Fairbanks-Morse Co., Ltd.....Montreal.  
Kerr Engine Co. ....Walkerville, Ont.
- Hydraulic Equipment**  
R. D. Wood & Co.....Philadelphia, Pa.
- Illustrations**  
Acton Burrows, Limited .....Toronto.
- Injectors**  
T. McAvity & Sons .....St. John, N.B.  
Nathan Manufacturing Co....New York.
- Inspections**  
R. W. Hunt & Co. ....Montreal.  
Alfred Lovell .....Philadelphia, Pa.
- Insulators, Porcelain**  
Ohio Brass Co. ....Mansfield, Ohio.
- Insurance, Accident**  
Can. Casualty & Boiler Ins. Co....Toronto.  
Canadian Ry. Accident Ins. Co....Ottawa.  
Imp. Guarantee & Acc. Ins. Co....Toronto.  
London Guar. & Accident Co. Ltd.Toronto.
- Insurance, Boiler**  
Can. Casualty & Boiler Ins. Co....Toronto.
- Interlocking Plant and Signals**  
Canadian Steel Foundries, Ltd...Montreal.  
Saxby & Farmer, Ltd. ....Montreal.
- Iron and Steel Bars**  
Steel Co. of Canada, Ltd..Hamilton, Ont.
- Iron, Pig**  
Nova Scotia S. & C. Co..New Glasgow, N.S.
- Iron Signs**  
Acton Burrows, Limited .....Toronto.
- Jacks**  
Canadian Fairbanks-Morse Co., Ltd.....Montreal.  
Canadian Steel Foundries, Ltd..Montreal.  
Dominion Equip. & Supply Co..Winnipeg.  
H. & E. Lifting Jack Co..Walkerville, Ont.  
F. H. Hopkins & Co. ....Montreal.  
Mussens, Ltd. ....Montreal.  
A. O. Norton .....Coaticook, Que.  
James Smart Mfg. Co. ....Brockville, Ont.
- Japans**  
The Dougall Varnish Co., Ltd...Montreal.
- Journal Bearings**  
Canadian Bronze Co. ....Montreal.  
Crossen Car Mfg. Co. ....Cobourg, Ont.  
Kerr Engine Co. ....Walkerville, Ont.  
Jas. W. Pyke & Co. ....Montreal.
- Journal Boxes**  
The Holden Co., Ltd. ....Montreal.  
McCord & Co. ....Chicago, Ill.
- Lager Beer, Etc.**  
E. L. Drewry .....Winnipeg.
- Lagging and Covering, Locomotive**  
Can. H. W. Johns-Manville Co., Ld. Toronto  
Taylor & Arnold .....Montreal.
- Lamps, Arc**  
Northern Electric & Mfg. Co....Montreal.
- Lamps, Gas**  
Commercial Acetylene Co., ..... Toronto.
- Lamps, Incandescent**  
Canadian Westinghouse Co..Hamilton, Ont.
- Lamps and Lanterns**  
The Hudson's Bay Co. ....  
The Hiram L. Piper Co. ....Montreal.  
The N. L. Piper Ry Supply Co...Toronto.
- Lamps, Switch**  
The N. L. Piper Ry Supply Co...Toronto.
- Lathes**  
John Bertram & Sons Co. ....Dundas, Ont.  
Mussens, Ltd., .....Montreal.
- Lighting, Buoy**  
Blau-Gas Co. of Canada, Ltd...Montreal.  
International Marine Signal Co....Ottawa.  
Walter MacLeod & Co. ....Cincinnati, O.  
Safety Car Htg. & Ltg. Co....New York.
- Lighting, Car**  
Blau-Gas Co. of Canada, Ltd...Montreal.  
Canadian Gold Car H'g & L'g Co.Montreal.  
Commercial Acetylene Co. ....Toronto.  
Safety Car Heating & Ltg. Co..New York.  
United States Light & Heat Co..New York.
- Lighting, Signal**  
Commercial Acetylene Co. ....Toronto.
- Lights, Contractors' and Wrecking**  
F. H. Hopkins & Co. ....Montreal.  
Walter MacLeod & Co. ....Cincinnati, O.  
Mussens, Ltd. ....Montreal.
- Line Material**  
Ohio Brass Co. ....Mansfield, Ohio.
- Locomotives, Compressed Air**  
Baldwin Locomotive Works...Philadelphia.  
Canadian Locomotive Co...Kingston, Ont.  
International Marine Signal Co....Ottawa.  
Montreal Locomotive Works ....Montreal.
- Locomotives, Contractors'**  
Dominion Equip. & Supply Co..Winnipeg.
- Locomotives, Electric**  
Baldwin Locomotive Works...Philadelphia.  
Montreal Locomotive Works ....Montreal.
- Locomotives, Logging**  
Baldwin Locomotive Works...Philadelphia.  
Canadian Locomotive Co...Kingston, Ont.
- Locomotive, Rack**  
Baldwin Locomotive Works...Philadelphia.  
Canadian Locomotive Co...Kingston, Ont.  
Montreal Locomotive Works ....Montreal.
- Locomotives, Steam**  
Baldwin Locomotive Works...Philadelphia.  
Canadian Fairbanks-Morse Co., Ltd.....Montreal.  
Canadian Locomotive Co...Kingston, Ont.  
J. T. Gardner .....Chicago, Ill.  
Montreal Locomotive Works ....Montreal.  
Vulcan Iron Works .....Wilkesbarre, Pa.
- Lorries, Tracklaying**  
Crossen Car Mfg. Co. ....Cobourg, Ont.  
F. H. Hopkins & Co. ....Montreal.
- Lubricators**  
Detroit Lubricator Co. ....Detroit, Mich.  
McCord & Co. ....Chicago, Ill.  
Nathan Manufacturing Co....New York.  
Taylor & Arnold .....Montreal.
- Lumber**  
Imperial Timber & Trading Co. Vancouver.  
Parry Sound Lumber Co. ....Toronto.
- Machines and Plant, Contractors'**  
American Hoist & Derricks Co. ....St. Paul.  
M. Beatty & Sons .....Welland, Ont.  
R. M. Burns & Co. ....Chicago, Ill.  
Canadian Fairbanks-Morse Co., Ltd.....Montreal.  
J. T. Gardner .....Chicago, Ill.  
F. H. Hopkins & Co. ....Montreal.  
Mussens, Ltd. ....Montreal.
- Machines, Boring and Turning**  
John Bertram & Sons Co. ....Dundas, Ont.

## The Canadian Northern Railway Company

Notice is hereby given that application will be made to the Parliament of Canada at its next session for an Act extending the time within which the Canadian Northern Railway Company (hereinafter called the Company) may commence and construct the following lines of railway:—

- (1) The lines of railway authorized by paragraphs (a) to (k) inclusive of section 2 of chapter 80 of the Statutes of Canada for 1910;
- (2) The lines of railway authorized by paragraphs (e), (g), (i), (k) and (l) respectively of section 2 of chapter 92 of the Statutes of Canada for 1908, as renewed by section 6 of chapter 80 of the Statutes of Canada for 1910;
- (3) The lines of railway authorized by chapter 45 of the Statutes of Alberta for 1909, in respect of the Alberta Midland Railway Company, which has been amalgamated with the Company;
- (4) The lines of railway authorized by chapter 18 of the Statutes of Saskatchewan for 1908-1909, in respect of the Saskatchewan North-Western Railway Company, which has been amalgamated with the Company;
- (5) The lines of railway authorized by chapter 41 of the Statutes of Saskatchewan for 1909, in respect of the Saskatchewan Midland Railway Company, which has been amalgamated with the Company.

Toronto, Oct. 19th, 1911.

GERARD RUEL,  
Chief Solicitor.

NOTICE.—The Ottawa Northern and Western Railway Company will apply to the Parliament of Canada, at its next session, for an Act extending the time within which it may construct the railway extension and branches which it was authorized to construct by section 1 of chapter 84 of the Statutes of 1899, and by section 1 of chapter 72 of the Statutes of 1900, and for other purposes.

Dated at Montreal, this 19th October, 1911.  
H. C. OSWALD,  
Secretary.

Pringle, Thompson & Burgess,  
Ottawa Agents.

NOTICE.—The Esquimalt and Nanaimo Railway Company will apply to the Parliament of Canada, at its next session, for an Act extending the time within which it may construct the branches which it was authorized to construct by its Act of Incorporation, chapter 14 of the Statutes of British Columbia, 1884, and by section 2 of chapter 92 of the Statutes of Canada, 1906, and for other purposes.

Dated at Vancouver, this 19th October, 1911.

W. F. SALSBURY,  
Secretary.

Pringle, Thompson & Burgess,  
Ottawa Agents.

NOTICE.—The Manitoba & Northwestern Railway Company of Canada will apply to the Parliament of Canada, at its next session, for an Act:—

1. Authorizing it to construct a branch from a point at or near Harrowby south-easterly and southerly to a point at or near Hamiota, Manitoba;
2. Extending the time within which it may construct the following branch lines of railway:—
  - (a) From a point at or near Churchbridge to a junction with the Pheasant Hills Branch of the C.P.R. at or near Cutarm Creek, Saskatchewan;
  - (b) From Theodore to a junction with its Russell Branch in Township 20 or 21, Range 28, West 3rd Mer., Saskatchewan and Manitoba;
  - (c) From Birtle to Hamiota, Manitoba;
  - (d) From Russell to a point where Shoal River enters Lake Winnipegosis, Manitoba, and for other purposes.

Dated at Montreal, this 19th October, 1911.  
H. C. OSWALD,  
Secretary.

Pringle, Thompson & Burgess,  
Ottawa Agents.

## Canadian Northern Ontario Railway Company

Notice is hereby given that the Canadian Northern Ontario Railway Company will apply to the Parliament of Canada at its next session for an Act:—

1. Extending the time within which the Company may complete and put in operation the lines of railway authorized by section 2 of chapter 110 of the Statutes of Canada for 1900, as renewed by section 7 of chapter 72 of the Statutes of Canada for 1907, and the uncompleted portion of the line authorized by section 3 of chapter 90 of the Statutes of Canada for 1895, as renewed by section 3 of chapter 114 of the Statutes of Canada for 1900, and section 7 of chapter 72 of the Statutes of Canada for 1907;
2. Authorizing the Company to construct and operate the following lines of railway:—
  - (a) From near the head of Long Lake, north-westerly to a junction with the National Transcontinental Railway;
  - (b) From a point in the Township of Chisholm, south-easterly to a point on the Central Ontario Railway.
3. Fixing the limit to the amount of securities which the Company may issue in respect of such lines; and
4. Authorizing the Company to enter into agreements under sections 361, 362 and 363 of the Railway Act.

Toronto, Oct. 19th, 1911.

GERARD RUEL,  
Chief Solicitor.

NOTICE.—The South Ontario Pacific Company will apply to the Parliament of Canada, at its next session, for an Act extending the time within which it may construct the railways and bridges which it was authorized to construct by section 3 of chapter 85 of the Statutes of 1887, as enacted by section 1, of chapter 92 of the Statutes of 1887, as enacted by section 1 of chapter 92 of the Statutes of 1891, and authorizing it to enter into an agreement with the Canadian Pacific Railway Company, for any purpose specified under section 361 of the Railway Act, and for other purposes.

Dated at Montreal, this 19th October, 1911.  
H. C. OSWALD,  
Secretary.

Pringle, Thompson & Burgess,  
Ottawa Agents.

NOTICE.—The Dominion Atlantic Railway Company will apply to the Parliament of Canada, at its next session, for an Act extending the time within which it may construct the railway which it was authorized to construct by section 1 of chapter 101 of the Statutes of 1908, and increasing its bonding powers, and for other purposes.

Dated at Montreal, this 19th October, 1911.  
H. C. OSWALD,  
Secretary.

Pringle, Thompson & Burgess,  
Ottawa Agents.

NOTICE.—The West Ontario Pacific Railway Company will apply to the Parliament of Canada, at its next session, for an Act extending the time within which it may construct the railway which it was authorized to construct by section 1 of chapter 178 of the Statutes of 1906, and for other purposes.

Dated at Montreal, this 19th October, 1911.  
H. C. OSWALD,  
Secretary.

Pringle, Thompson & Burgess,  
Ottawa Agents.

NOTICE.—La Compagnie du Chemin de fer de Colonisation du Nord will apply to the Parliament of Canada, at its next session, for an Act extending the time within which it may construct the railways which it was authorized to construct by section 7 of chapter 62 of the Statutes of 1898, and for other purposes.

Dated at Montreal, this 19th October, 1911.  
H. C. OSWALD,  
Secretary.

Pringle, Thompson & Burgess,  
Ottawa Agents.

NOTICE.—The Canadian Pacific Railway Company will apply to the Parliament of Canada, at its next session, for an Act, authorizing it to construct the following branch lines of railway:—

- (a) From a point on its Estevan-Forward Branch in Range 10, 11 or 12, west 2nd M., to a junction with the Weyburn-Lethbridge Branch in Range 24, 25 or 26, west 2nd M., Saskatchewan.
- (b) From a point at or near Sedgewick southerly to a junction with the Lacombe Branch, in Township 35, 36 or 37, Range 10, 11 or 12, west 4th M., Alberta.
- (c) From a point north of the Battle River on the line described in paragraph (b) north-westerly to a junction with the Wetaskiwin Branch in Range 17, 18 or 19, west 4th M., Alberta.
2. Extending the time within which it may construct the following lines of railway:—
  - (a) From Osborne to a point between Cartwright and Boisvevain, Manitoba.
  - (b) From Otterbourne to Stuartburn, Manitoba.
  - (c) From a point on the Icelandic River, northerly and north-westerly 100 miles, Manitoba.
  - (d) From Killam to Strathcona, Alberta.
3. Amending the Statute relating to the company's power to issue four per cent. Consolidated Debenture Stock for the acquisition of mortgage bonds so as to make it apply also to the debenture stock and other securities of any other railway company, the principal or interest of which has been guaranteed by the company, and for other purposes.

Dated at Montreal, this 19th October, 1911.  
WALTER R. BAKER,  
Secretary.

Pringle, Thompson & Burgess,  
Ottawa Agents.

A meeting of the British Columbia Shipping Co., Ltd., Victoria, is called for Nov. 3, to consider the liquidator's accounts in connection with the winding up of the company.

The Boscowitz Steamship Co.'s s.s. Venture, which ran on Pender rocks, near the Seymour Narrows, recently, had her repairs completed, Oct. 10, and resumed her service to northern ports the following day.

A. Bassett, District Accountant, Hudson's Bay Co., Victoria, B.C., is reported to have been appointed Manager of the fur trade district and steamship service at Victoria, vice Jas. Thomson, appointed Land Commissioner, Winnipeg.

The Lake Winnipeg Shipping Co. is again applying to the Winnipeg city council for permission to proceed with the construction of a wharf at Water St. Permission was granted for the wharf in the spring, but there were some objections to the wording of the agreement, which stated that the wharf must be, to some extent, a public convenience.

The British ship Egeria, which has been utilized in hydrographic work on the Pacific coast for a number of years, was sold by auction at Victoria, Oct. 9. She was purchased on behalf of the Vancouver Branch of the Navy League, for \$6,800. It is the intention of the purchasers to take her to Vancouver, and anchor her in Burrard Inlet, as a training school for seamen.

It is announced that J. H. Welsford, of Liverpool, Eng., President, Union Steamship Co. of Vancouver, who was in Vancouver recently, has acquired a considerable interest in the Boscowitz Steamship Co., and that the two companies will be amalgamated, but that they will be operated under their respective names, as heretofore, with J. Barnsley, Manager, Boscowitz Steamship Co. as Manager of both. The Union Steamship Co. operates the steamships Camosun, Capilano, Cassiar, Cheslake, Comox, Coquitlam and Cowichan, while the Chelohsin, recently built at Belfast, Ireland, is now en route to Vancouver. The Boscowitz Steamship Co. operates the steamships Vadso and Venture, all in the coasting trade.

Machines, Car Shop  
Greenlee Bros. & Co. ....Chicago, Ill.  
Machines, Cement  
Jas. W. Pyke & Co. ....Montreal.  
Machines, Drilling  
John Bertram & Sons Co. ....Dundas, Ont.  
Machines, Earth and Stone Handling.  
Western Wheeled Scraper Co..Aurora, Ill.  
Machines, Hoisting  
American Hoist & Derrick Co. .St. Paul.  
Brown Hoisting Machinery Co..Cleveland.  
Machines, Logging  
Russel Wheel & Fdry. Co. .Detroit, Mich.  
Machines, Milling  
John Bertram & Sons Co. ....Dundas, Ont.  
Machines, Planing and Shaping  
John Bertram & Sons Co. ....Dundas, Ont.  
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, 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.  
Machine Tools  
John Bertram & Sons Co. ....Dundas, Ont.  
Mussens, Ltd., .....Montreal.  
Pratt & Whitney Co. ....Dundas, Ont.  
Machinists' Supplies  
C. H. Besly Co. ....Chicago, Ill.  
Manhole Frames and Covers  
American Brake Shoe & Fdry. Co.Mahwah.  
Canada Iron Corporation, Ltd...Montreal.  
Marine Repairs  
Corbet Fdry Co., Ltd. ..Owen Sound, Ont.  
Goldschmidt Thermit Co.....Toronto.  
Marine Supplies  
Rice Lewis & Son .....Toronto.  
Metal, Babbit  
Tallman Brass & Metal Co. Hamilton, Ont.  
Metals  
Goldschmidt Thermit .....Toronto.  
Metal Work, Structural  
Canadian Bridge Co. ....Walkerville, Ont.  
Cleveland Bridge & E. Co. Darlington, Eng.  
Corbet Fdry. Co., Ltd. ..Owen Sound, Ont.  
Dominion Bridge Co. ....Montreal.  
Jas. W. Pyke & Co. ....Montreal.  
Meters, Traction  
Geo. C. Royce, .....West Toronto, Ont.  
Milepost Numbers  
Acton Burrows, Limited .....Toronto.  
Mill Supplies  
C. H. Besly Co. ....Chicago, Ill.  
Motors  
Canadian Fairbanks-Morse Co., Ltd.....Montreal.  
McCord & Co. ....Chicago, Ill.  
Motors, Electric  
Allis-Chalmers-Bullock Ltd.....Montreal.  
Chapman & Walker, Ltd. ....Toronto.  
Northern Electric & Mfg. Co. .Montreal.  
Motor Generator Sets  
Allis-Chalmers-Bullock Ltd.....Montreal.  
Chapman & Walker, Ltd. ....Toronto.  
Motors, Turntable  
Taylor & Arnold .....Montreal.  
Nails, Cut and Wire  
Steel Co. of Canada, Ltd..Hamilton, Ont.  
Nickel  
The Orford Copper Co. ....New York.  
Nickel for Nickel Steel  
The Orford Copper Co. ....New York.  
Numbers  
Acton Burrows, Limited .....Toronto.  
Nut Locks  
Positive Lock Washer Co. .Newark, N.J.  
Oakum  
The Hudson's Bay Co. ....  
Office Fittings  
Can. Office & School Furn. Co....Preston.  
Office Signs  
Acton Burrows, Limited .....Toronto.  
Oil  
C. H. Besly Co. ....Chicago, Ill.  
Oil Cups  
C. H. Besly Co. ....Chicago, Ill.  
Detroit Lubricator Co. ....Detroit, Mich.  
Nathan Manufacturing Co. ....New York.  
Oils  
Galena Signal Oil Co..Franklin & Toronto.  
Packing  
Anchor Packing Co. of Can. Ltd..Montreal.  
Greene, Tweed & Co. ....New York.  
The N. L. Piper Ry. Supply Co....Toronto.  
Pile Drivers, Railway  
F. H. Hopkins & Co. ....Montreal.  
Mussens, Ltd. ....Montreal.  
Piles  
Harris Tie & Timber Co....Ottawa, Ont.  
Pinch Bars  
The N. L. Piper Ry. Supply Co....Toronto.  
Pipe, Culvert, Cast Iron  
Gartshore-Thompson Pipe & Fdry. Co....Hamilton, Ont.

Pipe, Gas, Cast Iron  
Gartshore-Thompson Pipe & Fdry. Co....Hamilton, Ont.  
Pipe, Sewer, Cast Iron  
Gartshore-Thompson Pipe & Fdry. Co....Hamilton, Ont.  
Pipe Stocks  
Butterfield & Co. ....Rock Island, Que.  
A. B. Jardine & Co. ....Hespeler, Ont.  
Pipe, Water, Cast Iron  
Gartshore-Thompson Pipe & Fdry. Co....Hamilton, Ont.  
Pipe, Wrought Lead and Galvanized  
Steel Co. of Canada, Ltd..Hamilton, Ont.  
Planers  
John Bertram & Sons Co. ....Dundas, Ont.  
Platorms, Steel  
Standard Coupler Co. ....New York.  
Ploughs, Contractors'  
Mussens, Ltd. ....Montreal.  
Western Wheeled Scraper Co..Aurora, Ill.  
Poles and Posts, Cedar  
Harris Tie & Timber Co....Ottawa, Ont.  
Porter  
E. L. Drewry .....Winnipeg.  
Preservative for Hose  
Gulford S. Wood .....Chicago, Ill.  
Presses  
R. D. Wood & Co. ....Philadelphia, Pa.  
Printing.  
Soutnam Press .....Toronto.  
Propeller Wheels  
W. Kennedy & Sons, Ltd.. Owen S'd, Ont.  
Pumps  
Canadian Fairbanks-Morse Co., Ltd.....Montreal.  
S. F. Bowser & Co., Ltd. ....Toronto.  
Ontario Wind Engine & Pump Co. Toronto  
James Smart Mfg. Co. ....Brockville, Ont.  
Pumps, Centrifugal  
M. Beatty & Sons .....Welland, Ont.  
R. D. Wood & Co. ....Philadelphia, Pa.  
Punches and Shears  
Long & Allstatter Co. ...Hamilton, Ohio.  
Mussens, Ltd., .....Montreal.  
Putty  
Steel Co. of Canada, Ltd..Hamilton, Ont.  
Rail Benders, Roller  
Canadian Steel Foundries Ltd...Montreal.  
Dominion Equip. & Supply Co..Winnipeg.  
F. H. Hopkins & Co. ....Montreal.  
Whyte Railway Signal Co. ....Toronto.  
Rail Bonds  
Ohio Brass Co. ....Mansfield, Ohio.  
Rail Drilling Machines  
A. B. Jardine & Co. ....Hespeler, Ont.  
Whyte Railway Signal Co. ....Toronto.  
Rails, New  
Dominion Iron & Steel Co....Sydney, N.S.  
Drummond, McCall & Co.....Montreal.  
J. T. Gardner .....Chicago, Ill.  
J. J. Gartshore .....Toronto.  
F. H. Hopkins & Co. ....Montreal.  
Rails for Relaying  
J. J. Gartshore .....Toronto.  
F. H. Hopkins & Co. ....Montreal.  
Mussens, Ltd. ....Montreal.  
Provincial Steel Co. Ltd. ....Cobourg, Ont.  
Jas. W. Pyke & Co. ....Montreal.  
Rail Joints  
Goldschmidt Thermit Co. ....Toronto.  
The Rail Joint Co. of Canada...Montreal.  
Whyte Railway Signal Co. ....Toronto.  
Railway Supplies  
Canadian Fairbanks-Morse Co., Ltd.....Montreal.  
Can. H. W. Johns-Manville Co., Ld. Toronto  
Corbet Fdry. Co., Ltd. ..Owen Sound, Ont.  
Franklin Railway Supply Co...New York.  
T. McAvity & Sons .....St. John, N.B.  
Burton W. Mudge & Co.....Chicago, Ill.  
The Hiram L. Piper Co. ....Montreal.  
The N. L. Piper Ry. Supply Co....Toronto.  
Rice Lewis & Son .....Toronto.  
Russel Wheel & Fdry. Co. .Detroit, Mich.  
Pratt & Letchworth Co. .Brantford, Ont.  
Whyte Railway Signal Co. ....Toronto.  
Reamers  
Butterfield & Co. ....Rock Island, Que.  
A. B. Jardine & Co. ....Hespeler, Ont.  
Refrigerators.  
Seeger Refrigerator Co....St. Paul, Minn.  
Replacers, Car and Locomotive  
Alexander Car Replacer Mfg. Co.Scranton.  
Dominion Equip. & Supply Co. Winnipeg.  
The Holden Co., Ltd. ....Montreal.  
F. H. Hopkins & Co. ....Montreal.  
Johnson Wrecking Frog Co...Cleveland, O.  
Whyte Railway Signal Co. ....Toronto.  
Riveters  
R. D. Wood & Co. ....Philadelphia, Pa.  
Rock Crushers  
Allis-Chalmers-Bullock Ltd.....Montreal.  
Western Wheeled Scraper Co..Aurora, Ill.  
Rope  
F. H. Hopkins & Co. ....Montreal.  
The Hudson's Bay Company  
Ropes, Derick  
Dominion Wire Rope Co. ....Montreal.  
Ropes, Switch  
F. H. Hopkins & Co. ....Montreal.  
Rubber Goods, Mechanical  
Gulford S. Wood .....Chicago, Ill.  
Scales  
Canadian Fairbanks-Morse Co., Ltd.....Montreal.

Safes  
J. & J. Taylor .....Toronto.  
Sanders, Pneumatic  
Ohio Brass Co. ....Mansfield, Ohio.  
Scows, Dump and Deck  
M. Beatty & Sons .....Welland, Ont.  
Scrapers, Wheel and Drag  
F. H. Hopkins & Co. ....Montreal.  
Mussens, Ltd. ....Montreal.  
Western Wheeled Scraper Co..Aurora, Ill.  
Screw Plates  
Butterfield & Co. ....Rock Island, Que.  
A. B. Jardine & Co. ....Hespeler, Ont.  
Screws, Wood and Machine  
Steel Co. of Canada, Ltd..Hamilton, Ont.  
Seats, Station  
James Smart Mfg. Co. ....Brockville, Ont.  
Semaphore Arms  
Acton Burrows, Limited .....Toronto.  
Semaphores  
The N. L. Piper Ry. Supply Co....Toronto.  
Saxby & Farmer, Ltd. ....Montreal.  
Shapers  
London Machine Tool Co. Ltd..Hamilton.  
Shears  
R. D. Wood & Co. ....Philadelphia, Pa.  
Shingles  
Imperial Timber & Trading Co.Vancouver  
Ships  
Polson Iron Works, Ltd. ....Toronto.  
Shop Equipment, Car and Locomotive  
London Machine Tool Co. Ltd. ....Hamilton.  
Shops  
The Hudson's Bay Company .....  
Signal House Numbers  
Acton Burrows, Limited .....Toronto.  
Signals  
Hall Signal Co. ....Chicago, Ill.  
The Hiram L. Piper Co. ....Montreal.  
The N. L. Piper Ry. Supply Co....Toronto.  
Saxby & Farmer, Limited .....Montreal.  
Union Switch & Signal Co..Swissvale, Pa.  
Whyte Railway Signal Co. ....Toronto.  
Signals, Fog  
International Marine Signal Co....Ottawa.  
Signs  
Acton Burrows, Limited .....Toronto.  
Skidders and Loaders  
Russel Wheel & Fdry. Co. .Detroit, Mich.  
Slack Adjusters  
Chicago Railway Equipment Co..Chicago.  
Sledges  
James Smart Mfg. Co. ....Brockville, Ont.  
Snow Ploughs  
Canadian Car & Foundry Co....Montreal.  
Crossen Car Mfg. Co. ....Cobourg, Ont.  
Solder  
Tallman Brass & Metal Co..Hamilton, Ont.  
Spikes, Railway, Ship or Pressed  
F. H. Hopkins & Co. ....Montreal.  
Nova Scotia S. & C. Co. New Glasgow, N.S.  
Steel Co. of Canada, Ltd....Hamilton, Ont.  
Spreader Cars  
F. H. Hopkins & Co. ....Montreal.  
Western Wheeled Scraper Co..Aurora, Ill.  
Spring Dampeners  
McCord & Co. ....Chicago, Ill.  
Springs  
American Vanadium Co. .Pittsburgh, Pa.  
Canadian Steel Foundries, Ltd..Montreal.  
B. J. Coghlin & Co. ....Montreal.  
F. H. Hopkins & Co. ....Montreal.  
Titanium Alloy Mfg. Co...Pittsburgh, Pa.  
Sprinklers, Electric  
Preston Car & Coach Co. ...Preston, Ont.  
Stand Pipes  
Corbet Fdry. Co., Ltd. ..Owen Sound, Ont.  
T. McAvity & Sons .....St. John, N.B.  
Staples  
Steel Co. of Canada, Ltd....Hamilton, Ont.  
Station Name Signs  
Acton Burrows, Limited .....Toronto.  
Staybolt Iron  
Mussens, Ltd., .....Montreal.  
Taylor & Arnold .....Montreal.  
Staybolts, Flexible  
Flannery Bolt Co. ....Pittsburgh, Pa.  
Staybolts, Locomotive  
Flannery Bolt Co. ....Pittsburgh, Pa.  
Staybolt Taps  
Butterfield & Co. ....Rock Island, Que.  
A. B. Jardine & Co. ....Hespeler, Ont.  
Steam Couplers  
Safety Car Heating & Ltg. Co..New York.  
Steam Hammers  
John Bertram & Sons Co. ....Dundas, Ont.  
Steam Shovels  
M. Beatty & Sons .....Welland, Ont.  
F. H. Hopkins & Co. ....Montreal.  
Montreal Locomotive Works ...Montreal.  
Mussens, Limited .....Montreal.  
Steamship Signs  
Acton Burrows, Limited .....Toronto.  
Steam Traps  
Consolidated Car Heating Co..Albany, N.Y.  
Steel  
Hermann Boker & Co. ....Montreal.  
Nova Scotia S. & C. Co. New Glasgow, N.S.  
Steel, Fire Box  
Taylor & Arnold .....Montreal.  
Steel for Axes  
Canadian Steel Foundries, Ltd..Montreal.  
Steel for Saws  
Canadian Steel Foundries, Ltd..Montreal.

**Steel for Springs**  
 Jas. Hutton & Co. ....Montreal.

**Steel Shafting**  
 Nova Scotia S. & C. Co. New Glasgow, N.S.

**Steel, Nickel, for Nickel**  
 The Orford Copper Co. ....New York

**Steel Plates**  
 Jas. W. Pyke & Co. ....Montreal.

**Steel, Tool**  
 Canadian Steel Foundries, Ltd. ....Montreal.

**Steering Gears**  
 Dake Engine Co. ....Grand Haven, Mich.

**Stokers, Mechanical**  
 Babcock & Wilcox .....Montreal.

**Storage Batteries**  
 T. A. Edison Co. Inc. ....Orange, N.J.

**Stoves**  
 Jas. Smart Mfg. Co. ....Brockville, Ont.

**Superheaters**  
 Babcock & Wilcox .....Montreal.

**Switchboards**  
 Geo. C. Royce .....West Toronto, Ont.

**Switches**  
 Can. Ramapo Iron Ws. Niagara Falls, Ont.  
 Canadian Steel Foundries, Ltd. ....Montreal.

**Switches, Electric**  
 Geo. C. Royce .....West Toronto, Ont.

**Switch Stands**  
 Can. Ramapo Iron Ws. Niagara Falls, Ont.

**Switch Targets**  
 Acton Burrows, Limited .....Toronto.

**Tacks**  
 Steel Co. of Canada, Ltd. ....Hamilton, Ont.

**Tanks and Tank Fixtures**  
 Ontario Wind Engine & Pump Co. Toronto  
 Polson Iron Works, Ltd. ....Toronto.

**Tanks, Oil**  
 S. F. Bowser & Co., Limited ....Toronto.  
 Corbet Fdry. Co., Ltd. ....Owen Sound, Ont.

**Tanks, Portable Acetylene, for Welding**  
 Commercial Acetylene Co. ....Toronto.

**Taps**  
 C. H. Besly Co. ....Chicago, Ill.  
 Butterfield & Co. ....Rock Island, Que.  
 A. B. Jardine & Co. ....Hespeler, Ont.

**Telegraph and Telephone Apparatus**  
 Northern Electric & Mfg. Co. ....Montreal.

**Telegraph and Telephone Office Signs**  
 Acton Burrows, Limited .....Toronto.

**Thermit**  
 Goldschmidt Thermit Co. ....Toronto.

**Ticket Cases**  
 Can Office & School Furn. Co. ....Preston.

**Tie Plates**  
 B. J. Coghlin & Co. ....Montreal  
 Nova Scotia S. & C. Co. New Glasgow, N.S.  
 Pratt & Letchworth Co. ....Brantford, Ont.  
 Steel Co. of Canada, Ltd. ....Hamilton, Ont.  
 Gullford S. Wood .....Chicago, Ill.

**Ties**  
 Harris Tie & Timber Co. ....Ottawa, Ont.  
 Parry Sound Lumber Co. ....Toronto.

**Timber, Railway and Bridge**  
 Harris Tie and Timber Co. ....Ottawa, Ont.

**Tires, Steel**  
 Jas. Hutton & Co. ....Montreal.  
 Jas. W. Pyke & Co. ....Montreal.

**Tools and Supplies**  
 Canadian Fairbanks-Morse Co., Ltd. ....  
 .....Montreal.  
 Jas. Smart Mfg. Co. ....Brockville, Ont.  
 A. B. Jardine & Co. ....Hespeler, Ont.  
 Pratt & Whitney Co. ....Dundas, Ont.

**Tools, Track**  
 John Bertram & Sons Co. ....Dundas, Ont.  
 Canadian Steel Foundries, Ltd. ....Montreal.  
 B. J. Coghlin & Co. ....Montreal.  
 F. H. Hopkins & Co. ....Montreal.  
 Mussels, Limited .....Montreal.

**Tools, Pneumatic**  
 The Holden Co., Ltd. ....Montreal.

**Tools, Cast Steel**  
 American Brake Shoe & Fdry. Co. Mahwah.

**Track Equipment**  
 Can. Ramapo Iron Ws. Niagara Falls, Ont.

**Tramway Equipment**  
 J. J. Gartshore .....Toronto.

**Transformers**  
 Allis-Chalmers-Bullock Ltd. ....Montreal.  
 Geo. C. Royce .....West Toronto, Ont.

**Transmission Appliances**  
 Canadian Fairbanks-Morse Co., Ltd. ....  
 .....Montreal.

**Trolley Guards**  
 Ohio Brass Co. ....Mansfield, Ohio.

**Trolley Poles, Steel**  
 Lorner Railway Equip. Co. ....Chicago, Ill.

**Trolley Wheels**  
 Tallman Brass & Metal Co. Hamilton, Ont.

**Trucks**  
 Corbet Fdry. Co. Ltd. ....Owen Sound, Ont.  
 Geo. C. Royce .....Brockville, Ont.

**Trucks, Electric Car**  
 Baldwin Locomotive Works. Philadelphia.  
 Canadian Steel Foundries, Ltd. ....Montreal.

**Trusses, Roof**  
 Canadian Bridge Co. ....Walkerville, Ont.  
 Cleveland Bridge & Eng. Co. Ltd. Cleveland  
 Dominion Bridge Co. ....Montreal.

**Tubes, Boiler**  
 Jas. W. Pyke & Co. ....Montreal.

**Turbines, Steam**  
 Allis-Chalmers-Bullock Ltd. ....Montreal.

**Turnbuckles**  
 Canadian Steel Foundries, Ltd. ....Montreal.  
 Canadian Bridge Co. ....Walkerville, Ont.  
 Dominion Bridge Co. ....Montreal.

**Typewriters**  
 Royal Typewriter Co. ....New York.

**Valves**  
 Consolidated Car Heating Co. Albany, N.Y.  
 Detroit Lubricator Co. ....Detroit, Mich.

**Valves, Angle and Globe**  
 Detroit Lubricator Co. ....Detroit, Mich.  
 Kerr Engine Co. ....Walkerville, Ont.  
 Nathan Manufacturing Co. ....New York.

**Valves, Brass Gate**  
 Detroit Lubricator Co. ....Detroit, Mich.  
 Kerr Engine Co. ....Walkerville, Ont.

**Valves, Check**  
 Nathan Manufacturing Co. ....New York.

**Valves, Iron and Brass**  
 Canadian Fairbanks-Morse Co., Ltd. ....  
 .....Montreal.

**Valves, Iron Gate**  
 Detroit Lubricator Co. ....Detroit, Mich.  
 Kerr Engine Co. ....Walkerville, Ont.

**Valves, Locomotive Pop**  
 T. McAvity & Sons .....St. John, N.B.  
 Taylor & Arnold .....Montreal.

**Valves, Steam**  
 Detroit Lubricator Co. ....Detroit, Mich.  
 Nathan Manufacturing Co. ....New York.

**Vanadium Steels**  
 American Vanadium Co. ....Pittsburgh, Pa.

**Varnishes**  
 The Dougall Varnish Co., Ltd. ....Montreal.

**Velocipedes**  
 Kalamazoo Ry. Sup. Co. Kalamazoo, Mich.

**Ventilators, Car**  
 Burton W. Mudge & Co. ....Chicago, Ill.

**Vessels**  
 Polson Iron Works, Ltd. ....Toronto.

**Wagons, Dump**  
 Western Wheeled Scraper Co. Aurora, Ill.

**Washers**  
 Steel Co. of Canada, Ltd. ....Hamilton, Ont.

**Waste**  
 B. J. Coghlin & Co. ....Montreal.  
 N. L. Piper Railway Supply Co. ....Toronto.

**Water Softeners**  
 Babcock & Wilcox .....Montreal.  
 L. M. Booth Co. ....Chicago, Ill.  
 Dearborn Drug & Chemical Co. ....Chicago.

**Welding**  
 Goldschmidt Thermit Co. ....Toronto.

**Wheelbarrows**  
 F. H. Hopkins & Co. ....Montreal.

**Wheels, Car**  
 Canada Iron Corporation, Ltd. ....Montreal.  
 Canadian Car & Foundry Co. ....Montreal.  
 Jas. W. Pyke & Co. ....Montreal.

**Wheels, Locomotive**  
 Canada Iron Corporation, Ltd. ....Montreal.

**Wheels, Re-inforced Pressed Steel**  
 Kalamazoo Ry. Sup. Co. Kalamazoo, Mich.

**White Lead**  
 Steel Co. of Canada, Ltd. ....Hamilton, Ont.

**Windlasses**  
 Dake Engine Co. ....Grand Haven, Mich.

**Windmills**  
 Ontario Wind Engine & Pump Co. Toronto

**Wire**  
 American Vanadium Co. ....Pittsburgh, Pa.  
 Titanium Alloy Mfg. Co. ....Pittsburgh, Pa.

**Wire and Wire Rope**  
 Canada Wire & Cable Co., Ltd. ....Toronto.  
 Dominion Wire Rope Co. ....Montreal.  
 Mussels, Limited .....Montreal.  
 The Wire & Cable Co. ....Montreal.

**Wire, Brass, Iron and Steel**  
 Steel Co. of Canada, Ltd. ....Hamilton, Ont.

**Wire, Copper**  
 Canada Wire & Cable Co., Ltd. ....Toronto.  
 E. F. Phillips Elec. Works, Ltd. ....Montreal.  
 The Wire & Cable Co. ....Montreal.

**Wire, Electric**  
 Chapman & Walker, Ltd. ....Toronto.  
 E. F. Phillips Elec. Works, Ltd. ....Montreal.  
 The Wire & Cable Co. ....Montreal.

**Wire Goods, Bright**  
 Steel Co. of Canada, Ltd. ....Hamilton, Ont.

**Wire, Insulated, Copper**  
 Canada Wire & Cable Co., Ltd. ....Toronto.  
 E. F. Phillips Elec. Works, Ltd. ....Montreal.  
 The Wire & Cable Co. ....Montreal.

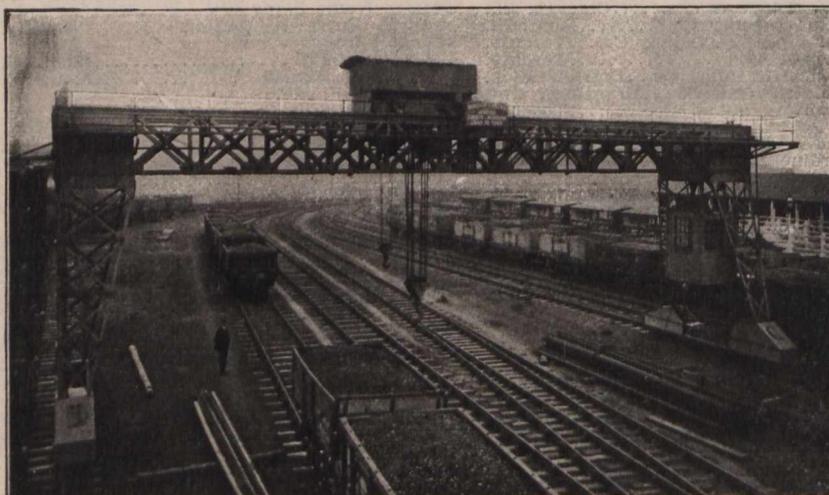
**Wire Rope Clips**  
 American Hoist & Derrick Co. ....St. Paul.

**Wire, Telegraph and Telephone**  
 Canada Wire & Cable Co., Ltd. ....Toronto.  
 Chapman & Walker, Ltd. ....Toronto.  
 E. F. Phillips Elec. Works, Ltd. ....Montreal.  
 The Wire & Cable Co. ....Montreal.

**Wire, Transmission and Trolley**  
 Canada Wire & Cable Co., Ltd. ....Toronto.  
 Chapman & Walker, Ltd. ....Toronto.  
 The Wire & Cable Co. ....Montreal.

**Wrenches, Cast Steel**  
 American Brake Shoe & Fdry. Co. Mahwah.

**Yachts**  
 Polson Iron Works, Ltd. ....Toronto.



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