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TORONTO, CANADA, JANUARY, 1911.

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By J. Duguid, Master Mechanic,
G.T.R. Montreal.

I have given this paper the above name so that I would have a big field to talk about and that I could not be accused of wandering away from the title. I am not going into the subject of high speed steel technically, but will give you my observations in using it, and also what I have read about it. High speed steel got its name no doubt from the fact that when it was first introduced, the only way to get the increased efficiency of it was to run the machines at a high speed, as the old style machines were not built to carry heavy cuts, the driving belts and cones being too narrow to transmit the necessary power, and it was found if you increased these, as was done in some cases, as shown on fig. 1, the other parts of the machine gave out under the strain. These parts then being strengthened up, it was then found that the whole machine frame was not rigid enough and caused the tools to break on account of the vibration, and in the face of these facts all that could be done was to carry about the same size cuts with the high speed steel as with the old carbon steel, but to speed up the machines. It was at this point that the manufacturers of machine tools saw the necessity of building more powerful and rigid machines, and to them should be given as much credit for the increased output of machines as the high speed steel manufacturers. Although the great majority of machine shops are using high speed steel at present, I venture to say that very few of them are getting over 75% of the total efficiency of the steel, principally for the following reasons:

1. The great number of old out-of-date machines and heavy work being done in them. They are therefore not carrying a heavy enough cut, neither can they be run to proper speed, and about 50% of the steel efficiency is all that is being got under these conditions. There are conditions, however, where old machines can be used to good advantage with the high speed steel, and that is on repair work, such as skimming up old piston rods, valve rods, &c.

2. The different shape of tools on uniform work. Workmen will grind machine tools in about the same way as ladies choose their hats, which is every shape, and some of these the most ridiculous. I believe if there was a uniform system in every shop for the grinding of tools, (such as some shops have adopted), that it would greatly increase the life of the steel, also the efficiency.

3. The different speeds and size of cuts on uniform work and material. This is

one of the most serious defects in the use of high speed steel or in fact any steel.

4. The use of belting not of proper tightness and belts that are worn out. I think you will agree with me that a great many manufacturers will use a belt until it all falls to pieces, although it may be decreasing the output of their high speed steel by 50%. All belting that is driving machine tools should be adjusted with spring clamps, as shown in fig. 2 so as to ensure proper tension and driving power.



A. Wilcox,
Superintendent District 1, Canadian Northern Railway.

5. The overhang of tools in tool rest, causing excessive chattering and consequent breaking of tools.

6. The use of dull tools, also the want of reforging. The use of dull tools causes excessive heating destroying them, and also a great loss on account of the extra power required to drive the machine.

7. The want of proper supply of cooling water used, thereby allowing the tool to become overheated and fail.

8. The want of variable speed enough on the machines to suit the different diameters of work.

9. The use of too light tools on heavy work.

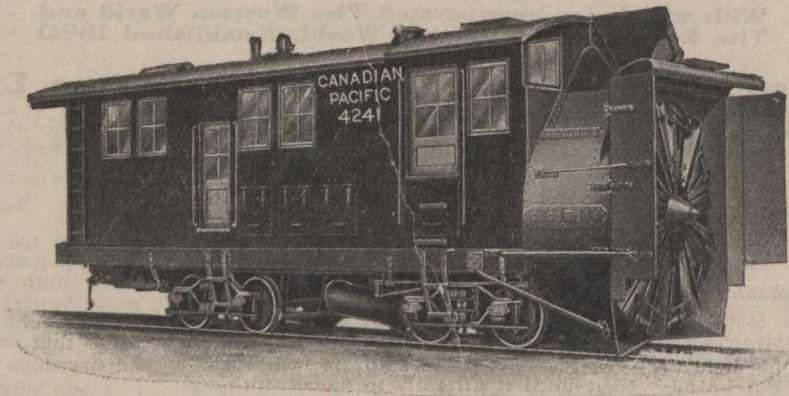
These are some of the reasons why we are not getting nearly the full efficiency from high speed steel, which must be quite apparent to those of us connected with machine shops. They are all defects that can be remedied with proper supervision.

I will now try to describe to you the action of a tool and its wear in cutting metal. A great many of us imagine that it is the sharp edge of the tool, the same as a razor, that is doing the work, such however, is not the case. Fig. 3 is an enlarged view of the action of a tool in cutting a chip from a forging at its proper speed, and it is therefore plain that in all roughing cuts the chip is torn away from the forging rather than removed by the action which we term cutting. The familiar action of cutting, as exemplified by an axe or knife removing a chip from a piece of wood, for instance, consists in forcing a sharp wedge (i.e., one whose flanks form an acute angle) into the substance to be cut. Both flanks of the wedge press constantly upon the wood, one flank bearing against the main body of the piece, while the other forces or wedges the chip or shaving away. While a metal cutting tool looks like a wedge, its cutting edge being formed by the intersection of the "lip surface," and "clearance surface," or flank of the tool, its action is far different from that of the wedge. Only one surface of a metal cutting tool, the lip surface, ever presses against the metal. The clearance surface, as its name implies, is never allowed to touch the forging. Thus "cutting" with a metal cutting tool consists in pressing, tearing or shearing the metal away with the lip surface of the "wedge" only under pressure, while in the case of the axe and other kinds of cutting, both wedge surfaces are constantly under pressure.

The enlarged view of the chip, tool and forging, shown in fig. 5, represents with fair accuracy the relative proportions which the shaving cut from a forging of mild steel finally assumes with relation to the original thickness of the layer of metal which the tool is about to remove. Some may think this theory is all wrong, because they have noted that the cutting they have taken off a forging was of the same size as the depth of cut and the feed used, but that only shows that they were not using a heavy enough feed and not running at a proper speed.

In experiments made to show the pressure of the chip on the tool cutting a chip of uniform size it was found that the pressure varied with wave-like regularity and that the smallest pressure was about two-thirds the maximum pressure. This is the reason that the old light machines will not handle the

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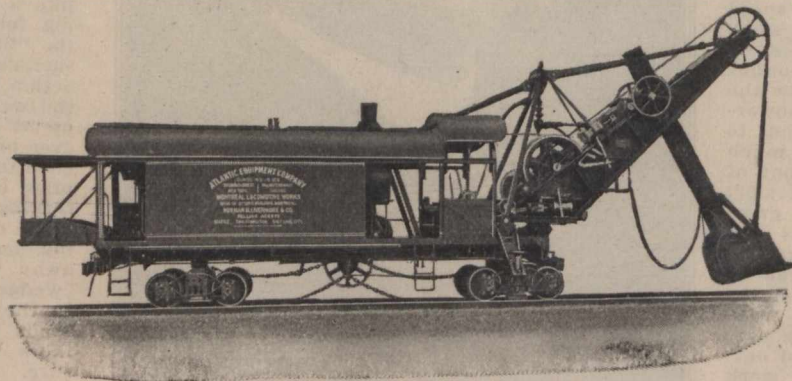
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heavy cuts of high speed steel. The cause of these variations in pressure is the breaking of the chip in sections. It would appear that the chip is torn off from the forging at a point above the cutting edge of the tool and this tearing off action leaves the forging in all cases more or less jagged or irregular at the exact spot where the chip is pulled away from the forging as shown to the left of A. An instant later the line of the cutting edge, or more correctly speaking, the portion of the lip surface immediately adjoining the cutting edge, comes in contact with these slight irregularities left on the forging owing to the tearing action, and shears these lumps off, so as to leave the receding flank of the forging comparatively smooth. The cutting edge of the tool is continually in action, scraping or shearing off or rubbing away these small irregularities left on the forging, yet that portion of the lip surface close to the cutting edge constantly receives much less pressure from the chip than the same surface receives at a slight distance away from the cutting edge. This allows the tool to run at higher cutting speeds than would be possible if the cutting edge received the same pressure as does the lip surface close to it.

There are many things which indicate this tearing action of the tool. For example, it is an every-day occurrence to see cutting tools which have been running close to their maximum speeds and which have been under cut for a considerable length of time, guttered out at a little distance back of the cutting edge, as shown in fig. 5. The wear in this spot indicates that the pressure of the chip has been most severe at a little distance back from the edge. Still another manner in which in many cases the tearing

action of the tool is indicated is illustrated in fig. 6, in which a small mass of metal is shown to be stuck fast to the lip surface of the tool after it has completed its work and been removed from the lathe. When broken off, however, and carefully examined, this mass will be found to consist of a great number of small particles which have been cut off or scraped off the forging, as above described, by the cutting edge of the tool. They are then pressed down into a dense little pile of compact particles of steel, or dust stuck together and to the lip surface of the tool, almost as if they had been welded. In the case of the modern high speed tools, when this little mass of dust or particles is removed from the upper surface of the tool the cutting edge will in most cases be found to be about as sharp as ever, and the lip surface adjacent to it, when closely examined, will show in many cases the scratches left by the emery wheel from the original grinding of the tool.

With roughing tools made of old-fashioned tempered steel, and which have been speeded close to their standard speeds, in most cases after removing this dust pile from the lip surface, the cutting edge of the tool will be found to be distinctly rounded over, and in cases where the tool has been cutting a very thick shaving, the edge will be found to be very greatly rounded over, as shown in the enlarged view of the nose of a tool in fig. 7. With carbon steel tempered tools at standard speeds the cutting edge begins to be injured almost as soon as the tool starts to work, and is entirely rounded over and worn away before the tool finally gives out, but the tool works well in spite of its cutting edge being damaged. With

high speed tools at standard speeds, the cutting edge remains in almost perfect condition until just before the tool gives out, when even a very slight damage at one spot on the cutting edge will usually cause the tool to be ruined in a few revolutions.

Carbon tempered tools and also, to a considerable extent, the old fashioned self-hardening tools (such as Mushet), when run at their standard speeds, pass through the following characteristic phases as they progress toward the point at which they are finally ruined: Rounding of the cutting edge, mounting of the steel upon the lip, and the rubbing away beneath the cutting edge. Long before the tool is ruined the fine particles of steel or dust scraped off by the cutting edge begin to weld or stick to the lip of the tool and mount upon it sometimes from 1-16 to 1/4 inch in height as shown in fig. 6, as stated above, in the case of modern high speed tools, the damage caused to the tool through the action of cutting is confined almost entirely to the lip surface of the tool.

Doubtless also, the metal right at the cutting edge of the tool remains harder than it is directly under the centre of pressure of the chip, because the cutting edge is next to and constantly rubs against the cold body of the forging, and is materially cooled by this contact.

Whether the lip surface be ground away at high speeds or at slower speeds, the nose of the tool is generally ruined in a very short time after the cutting edge has been so damaged that it fails to scrape off smoothly even at one small spot the rough projections which have been left on the body of the forging by tearing away the chip. The moment the body of the forging begins to rub against the clearance flank of one of

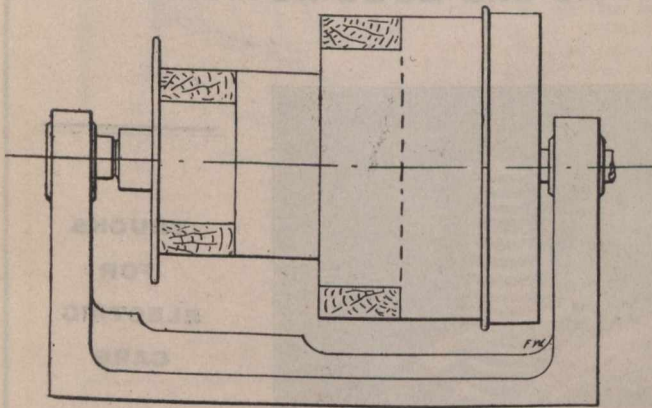


Fig. 1.

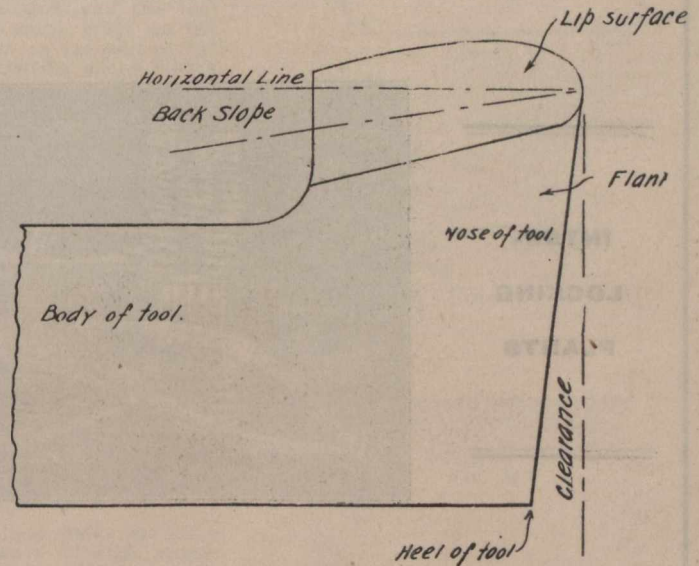


Fig. 10.

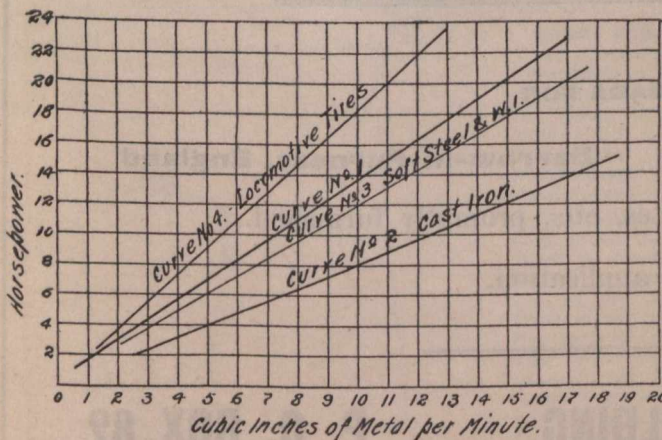


CHART OF HORSEPOWER REQUIRED TO REMOVE METAL

FIG. 14.

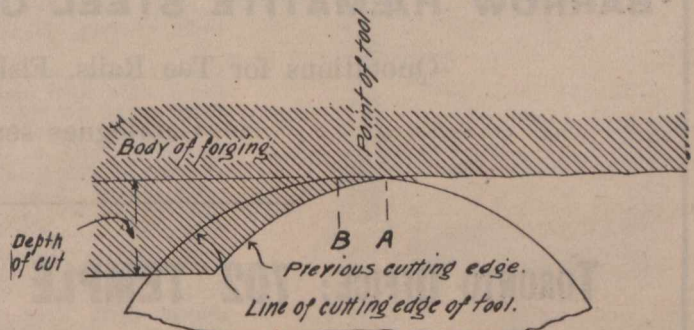


Fig. 11.

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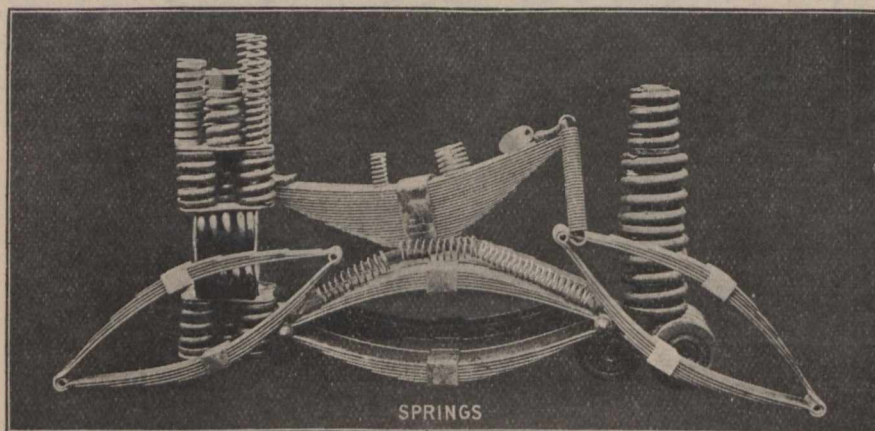
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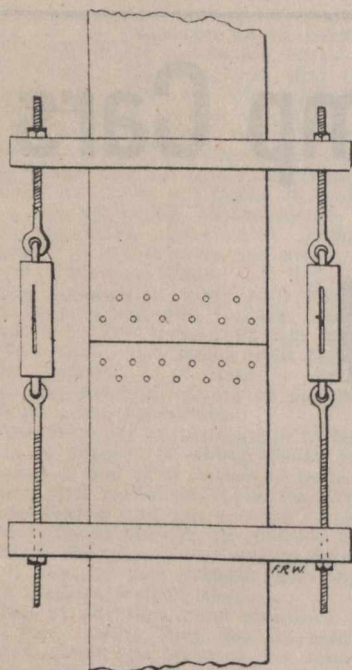


Fig. 2.

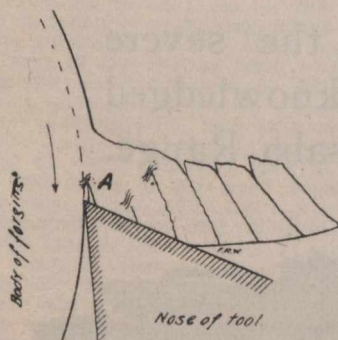


Fig. 3.

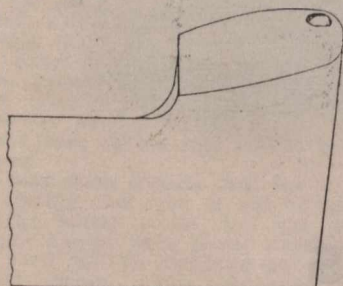


Fig. 5.

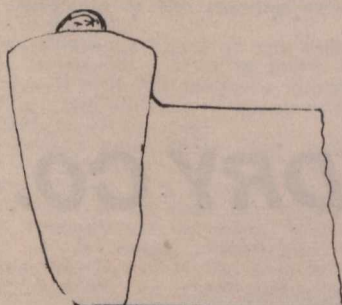


Fig. 6.

these high-speed tools at or just below the cutting edge even at one small place, the friction at this point generates so high a heat as to soften the tool very rapidly. After a comparatively few revolutions, the cutting edge and the flank of the tool beneath it will be completely rubbed and melted away, as shown in fig. 8. A tool which was still in fair condition when removed from the lathe although showing some slight signs of ruining is shown in fig. 9. The above characteristic of holding their cutting edges in practically perfect condition while running at economical speeds up to the ruining point is a valuable property of the high speed tools, since it insures a good finish, and the maintenance throughout the cut of the proper size of the work without the constant watchfulness required on the part of the operator in the case of old slow-speed tools with their rounded and otherwise injured cutting edges, which when run at economical speeds were likely at any minute to damage the finish of the work. But when one of these high speed tools is nearing its ruining point a very trifling nick or break in the line of the cutting edge will be at once noticed by its making a very small but continuous scratch, projecting ridge or bright streak on the forging, that is, upon that part of the forging from which the spiral line of the chip has just been removed, thus warning the operator of the impending breakdown of the tool.

Regarding the proper speed to run high speed steel. There can be no uniform standard for the speed, for the reason that even on the same class of material there is a wide variation in the speed that it can be economically worked and then again a forging of large dimensions can be cut at a greater number of feet per minute than a small one, on account of its capacity for carrying off the heat generated, and the tool is not cutting on the same point on the circumference so often on account of the larger diameter. A cutting speed which will cause a given tool to be ruined at the end of 80 minutes is about 20% slower than the cutting speed of the same tool if it were to last 20 minutes. On the whole, it is not economical to run roughing tools at a cutting speed so slow as to cause them to last for more than one and a half hours without being re-ground. This of course refers to working on ordinary machinery steel.

High speed can be used on forgings up to 110 ft. per minute, but only on short cuts and lighter feeds on such work as bolts, pins, etc., but when working on heavy rigid forgings that require heavy reduction to bring them to the desired size, it is more economical to increase the feed to the limit of the machine capacity and reduce the speed to suit, as it will be found that by reducing the speed 25%, the feed can be increased 50%.

Heavy cuts and heavy feeds have become specially necessary because superintendents of shops have found it more economical to reduce forging to size by the heavy modern tools and high speed steel than under the hammers in the forge shop, and are therefore having much more material to remove than they formerly did.

The following are some tests I have seen from time to time with high speed steel: 1. Locomotive driving axle, speed 75 ft. per minute, reduction in diameter 1-5, 16 in., feed 3-16. 2. Old locomotive steel tires, two tools, depth of cut 1/2 in., feed 5-16 in., speed 28 ft. per minute, metal removed, 155 lbs. in 12 minutes. 3. Six pairs of old and 2 pairs of new 63 in. locomotive driving tires turned in 5 hours, 50 minutes, average time, 43.75 minutes each; average cutting time, 35.87 minutes each pair; speed, from 14 to 21 ft. per minute; 5-16 feed,

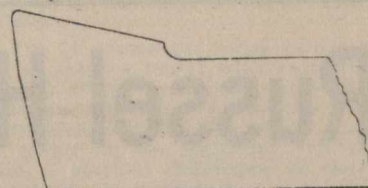


Fig. 7.

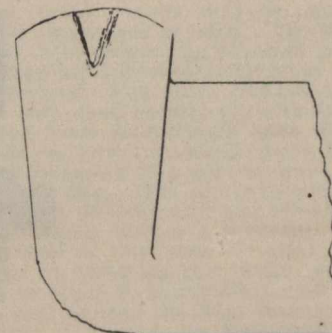


Fig. 8.

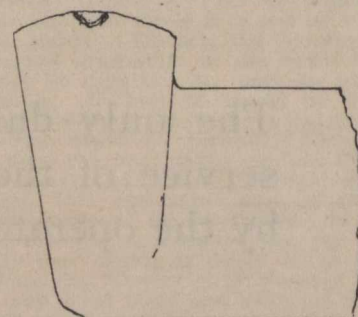


Fig. 9.

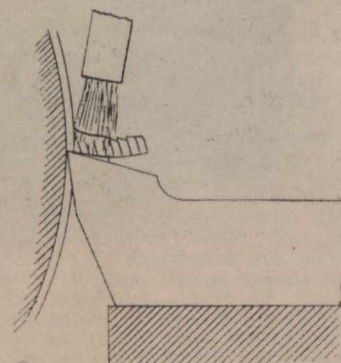


Fig. 12.

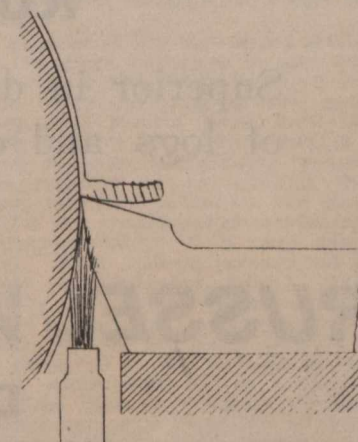
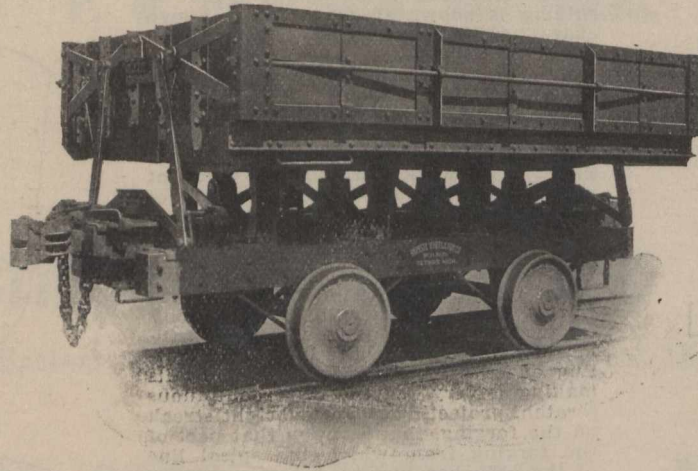
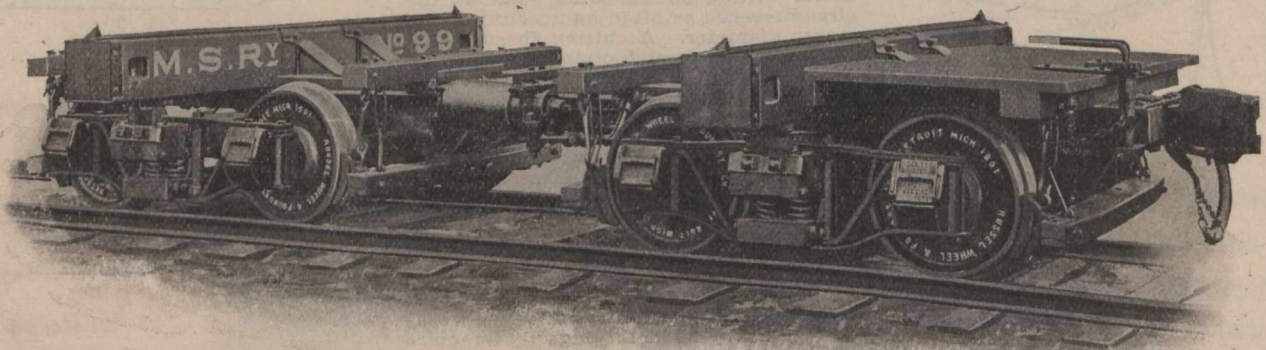


Fig. 13.

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depth of cut, 3-8 in. 4. Forged steel shaft, 16 in. diameter, 13 ft. long, feed 3-8, depth of cut, 1-1-16 in.; speed, 50 ft. per minute. The tool took this cut the entire length with one slight grinding.

Regarding the shape of turning tools, in this paper I have only referred to standard roughing tools. The shape of tools is of just as much importance as the material they are made of, and must have the following requirements: 1. To have the work true and sufficiently smooth. 2. To remove the metal in the shortest possible time. 3. To do the largest amount of work with the lowest cost of grinding and forging. 4. To be adapted to the largest variety of work. 5. To remove the metal with the lowest horse power. 6. It must be shaped to have the point as strong as possible and cutting edge supported.

One difficulty in practice is to have always a supply of sharp tools for the machinist and it is better to have a few shapes and plenty of tools, than to have many shapes and not enough of any one kind. These should be ground to templates, if they must be done by hand; but an automatic tool grinder will pay even in a moderate-sized shop.

Fig. 10 shows a good standard roughing tool. Note that the lip surface is raised above the body of the tool. This is to increase the life of the tool before being reformed and also to reduce the grinding to a minimum.

The curved-edge cutting tool is best for roughing in all cases for the reason that it removes a shaving which varies in its thickness at all points, and that the part of the cutting edge which finishes the cut is removing so little metal that it remains sharp even though most of the cutting edge has been worn or broken away. The effect of this is shown in fig. 11. This indicates that the accuracy and finish of the work depends on that part of the edge from A to point B, remaining sharp and uninjured. The curved face as shown in fig. 11, also puts the heaviest part of the cutting back from the point and where the tool is heavy and can carry off the generated heat.

Standard tools should have a clearance angle of 6 degrees for all classes of material—a back slope of 8 degrees for all material, and a side slope of 14 degrees for cast iron and hard steel, and 22 degrees for medium and soft steel. The lip angle is determined by making it just blunt enough to stand the cut without crumbling or spalling. A sharp side slope is better than a sharp back slope, because the tool can be ground more often without weakening it, the chips run off better, the strain is more on the base of the tool and it is easier to feed.

It may seem strange that the lip angle for cutting cast iron is not as keen as for the softer steels, but the highest cutting speeds with equal depth of cut and feed can be obtained by using the angles given. The thickness of the shaving has the most important effect of the cutting speed, much more so than the depth of the feed. This is the reason for the advantage of the large curve on the cutting edge, as this decreases the thickness of the shaving as can be seen in fig. 11.

The clearance angle of any tool is the most important. If it is more than 6 degrees it will not properly support the cutting edge which will break and cause a fracture of the tool.

I believe more tools are ruined by careless grinding than by any other means and it is a peculiar fact that while high speed steel can be run at a high temperature in work without injury, it is easily destroyed on an emery wheel, and if the tool is pressed firmly against the wheel and allowed to heat up, small cracks will start in the steel. In a great many shops high speed

tools are ground on a dry wheel. I think this is a mistake. Again, when a wet wheel is used there is not a sufficient amount of water used. Experience has shown that not less than four gallons of water per minute should be used. Automatic grinders should be used for heavy grinding on all high speed tools, as the pressure on the wheel is uniform—the shape of the tools is kept uniform, and much better results will be obtained in turning out work.

Water used on high-speed steel increases its capacity in every case and the gain is practically the same for all qualities of steel, and for removing thin or thick chips. With high speed tools a gain is made by using water on cast iron, contrary to most beliefs. A heavy stream of water should be thrown directly on the chip, as shown in fig. 12 and not up under the chip as in fig. 13, even though this might seem the correct way. Experience has shown that throwing it on the chip takes away the heat fastest. A guide to the amount of water to be used is that three gallons a minute is right for tools 2 by 2½ inches, and less

and 30 ft. per minute, required 75 horse power.

Fig. 14 shows the horse power required to remove metal with roughing tools of the shape mentioned previously. It must be remembered that the shape not only increases the life of the tools and is easier on the machine, but there is also a marked difference in the power required.

For forging high speed steel an ordinary forge fire will serve; though, indeed, better results may be expected if better apparatus is used. The principal thing is to secure the required heat, and to keep air currents away from the tool in heating. For small tools of the simpler sort good results are sometimes obtained from an ordinary open fire. The result is, however, much more likely to be satisfactory if a sort of hood is built over the fire. This serves to prevent the radiation of heat and the circulation of air currents, and is a necessity in heating tools of any size. It also makes it easier to bring up the heat gradually, and to apply it uniformly on all sides of the tool, so that the heat penetrates uniformly. This is an important point. Unless the mass of steel to be wrought is uniformly hot throughout it will work unevenly in forging, with the result that internal strains are set up which may ruin the tool when it is put at work, if not before. Though the heating is to proceed gradually, in the sense that it must be regular, it may go on quite rapidly. In fact, it should be done as rapidly as may be without burning projecting edges or corners. Unless this is done the heat soaks up into the neck or shank, and when hardening takes place, this important part of the tool loses some of its toughness. However, the fire must not be too hot, for in that case the outside is likely to be burned before the interior is thoroughly heated. In any event there is a likelihood that the tool smith may be deceived into thinking the whole mass properly heated, when in fact, only the outside is hot enough for forging. If the interior has not reached a bright red heat or 1800 degrees F., it is not ready for hammering. Of course, it is impossible to know the condition of the interior, except through its behavior under the hammer after removal from the fire, and it is largely a matter of experience to determine the proper time during which a tool is to be heated. The extent to which the heating is to be carried for hardening may vary within narrow limits, just short of melting point. The steel will then be at a dazzling white, and just beginning to flux. Some brands reach this point somewhat short of the extreme white color. Where this is the case care must be taken that sharp edges and angles of the tool are not melted down. As in forging, it is necessary to see that the heating process proceeds uniformly and reaches through the entire mass of metal.

As most of the high speed steels harden by mere exposure to air, little apparatus is absolutely required in addition to the heating furnace, and some very good results have been obtained with none at all. The hardness of the steel depends considerably, however, on the rapidity of the cooling, therefore mere exposure to the air and slow cooling is not always satisfactory—for many purposes, indeed, it is very unsatisfactory. Most makers recommend the air blast for hardening, and as this furnishes a continuous supply of cool air in rapid motion, the result is generally good. Since part of the latent heat in the air is extracted in the process of compression, compressed air is better for purpose than that from a blower for convenience and simplicity of this where available, recommends it.

When high speed steel was first

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for smaller tools. The gain in efficiency by the use of water is given as 40% with modern high speed tools, 30% with old style, self-hardening tools, 20% with carbon tempered tools, 16% in cutting cast iron.

In some shops various cutting compounds or lubricants, (as they are called), are used on lathes and planers but there is no extra efficiency using this material on an engine lathe or planer except that it does not rust the machine. However, these compounds give first class results on drills, screw-cutting machines and turret lathes, but with these both a cooling and lubricating mixture is required, whereas on ordinary turning all that is required is cooling.

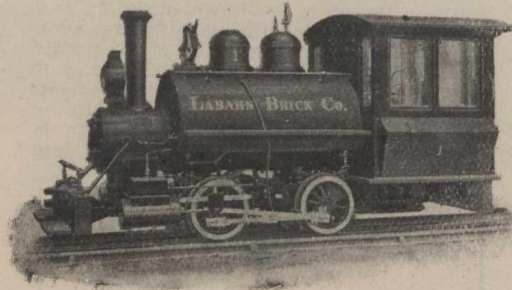
With the advent of high speed steel the power required to drive the machines to their maximum increased enormously, for example, a 12 in. lathe increased from 1 to 4 horse power; a 30 in. lathe increased from 5 to 20 horse power; a 72 in. lathe increased from 15 to 50 horse power, and in a test, a 72 in. lathe with a cut 1½ in. deep, ¼ in. feed

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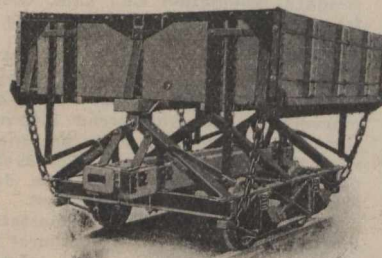
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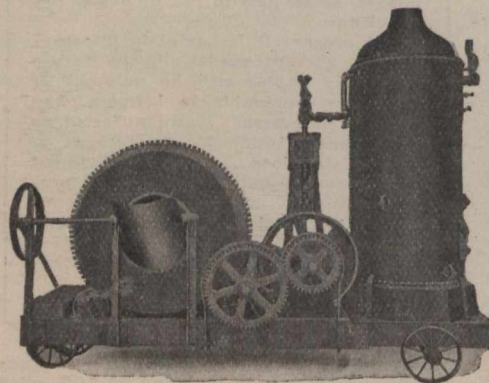
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roduced users were of the opinion that it was only fit for roughing tools. This was a fact at that time, as the edges of the tools would not keep sharp enough for the finer classes of tools. However, since that time the manufacturers of high speed tools have improved it so that at present it can be used, and is used, for milling cutters, reamers, cold saws, and in fact all machine shop tools, with good success, and a great increase of efficiency over carbon steel, and it is also used for the very finest of tools, even razors. High speed steel is also used extensively for twist drills, and good results can be obtained with these, providing they are used on heavy castings or forgings, but if used for light work it must be securely bolted to the drill table, otherwise too many drills will be broken, as high speed twist drills will not stand quick torsion strains. For all classes of rough work I have found that flat drills made from high speed steel give better results than twist drills, as the points can be forged thick and will not break, even with severe usage.

On account of the high price of high speed steel, care should be taken that short ends of tools are not scrapped or mixed up with other pieces of carbon steel, as these short ends can be used up for special cutters or drawn out for smaller sized tools than the original. The best method of marking is by planing or milling a small concave groove the whole length of the tool, then the steel can be distinguished, no matter how short a piece it is.

The foregoing paper was written for presentation before the Central Railway and Engineering Club.

January Birthdays.

- Many happy returns of the day to:—
- W. U. Appleton, Assistant to Superintendent of Motive Power Intercolonial Ry., Moncton, N.B., born there Jan 29, 1878.
- A. H. Bears, Master of Bridges and Buildings C.P.R., Saskatoon, Sask., born at Charlottetown, P.E.I., Jan. 6, 1857.
- F. X. Belanger, General Freight and Passenger Agent Temiscouata Ry., Riviere du Loup, Que., born at Chlorydormes, Que., Jan. 20, 1876.
- R. H. Bell, Commercial Agent Canadian Northern Ry., Pittsburg, Pa., born at Toronto, Jan. 13, 1865.
- G. McL. Brown, European Manager C.P.R., London, Eng., born at Hamilton, Ont., Jan. 29, 1866.
- W. H. Burr, Traffic Manager Dominion and Western Express Companies Toronto, born at Bloomington, Ill., Jan. 19, 1864.
- C. A. Cotterell, Chief Train Dispatcher District 1, British Columbia Division C.P.R., Revelstoke, B.C., born at Ender, Eng., Jan. 18, 1877.
- W. A. Cowan, Resident Engineer C.P.R., Farnham, Que., born at Galt, Ont., Jan. 22, 1877.
- J. E. Dalrymple, Assistant Freight Traffic Manager G. T. Pacific Ry., Winnipeg, born at Montreal, Jan. 1, 1869.
- Sir Sandford Fleming, K.C.M.G., Director C.P.R., born at Kirkcaldy, Scotland, Jan. 7, 1827.
- Gordon Grant, Chief Engineer National Transcontinental Railway Commission, Ottawa, born at Dufftown, Banffshire, Scotland, Jan. 2, 1865.
- H. V. Harris, ex-General Manager Midland Ry. of Nova Scotia, Truro, N.S., now of Toronto, born at Devonport, Devonshire, Eng., Jan. 16, 1857.
- G. F. Hichborn, formerly Agent Great Eastern Fast Freight Line, New York City, born at Boston, Mass., Jan. 13, 1875.
- Carl Howe, Manager New York Central Fast Freight Lines, Buffalo, N.Y., born at Berrien Springs, Mich., Jan. 11, 1870.

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

W. J. Hunter, Division Freight Agent G.T. Pacific Ry., and Commercial Agent G.T.R., Winnipeg, born in Toronto, Jan. 10, 1864.

H. G. Kelley, Chief Engineer G.T.R., Montreal, born at Philadelphia, Pa., Jan. 12, 1858.

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

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

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

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

W. Phillips, General Eastern Agent Canadian Northern Ry., and General Freight and Passenger Agent, Canadian Northern Ontario Ry., Toronto, born at Toronto, Jan. 31, 1870.

W. Pratt, Superintendent Sleeping and Dining Cars C.N.R., Winnipeg, born at Sibbertoft, Northamptonshire, Eng., Jan. 18, 1870.

J. Pullen, Assistant Freight Traffic Manager G.T.R., Montreal, born at Shepton Mallet, Somersetshire, Eng., Jan. 23, 1863.

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

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

J. R. Steele, Freight Claims Auditor C.P.R., Montreal, born at St. John's Newfoundland, Jan. 14, 1856.

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

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

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

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

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

T. H. White, Chief Engineer in charge of C.N.R. surveys in British Columbia, Vancouver, B.C., born at St. Thomas, Ont., Jan. 27, 1848.

Legislation Affecting Railways.

A bill which was given a second reading in the Senate, Dec. 1, proposes to change the entire procedure for the incorporation of companies having for their object the building of railways. The first section provides that not less than seven persons of full age may form themselves into an association for the purpose of building a railway, and upon complying with the provisions set out in subsequent sections, may obtain letters patent creating them and their successors a corporation with all the powers and privileges, and subject to all the obligations and restrictions contained in the Railway Act, Revised Statutes, chap. 37, and in any other general act relating to railways. The agreement of association shall contain the name of the corporation, the terminal points, route and gauge of the proposed line, the capital, etc., of the company. Notice of incorporation is to be given by advertisement and to clerks of counties and municipalities through which the line is proposed to be built. After these notices have been given and proved, the

company may make surveys, and on the completion of the making of the plans, but within 12 months of the publication of the notice of incorporation, the company may apply to the Board of Railway Commissioners for a certificate that the public interest requires that a railway should be constructed as proposed. If the Commissioners do not see fit to issue this certificate, the company may make a further application within a further period of a year. The Commissioners are empowered to determine various matters which are not specifically mentioned in the Railway Act, but set out in sec. 9 of the bill. Sec. 13 provides that no corporation created under it "shall amalgamate with, or enter into any agreement for making a common fund or pooling earnings or receipts with, or leasing any part of its line to, or any other railway owning a parallel or competing line. Every such amalgamation or arrangement shall be null and void," the only exceptions being agreements as to interchange of traffic, running rights and other purposes authorized by sec. 364 of the Railway Act. It is proposed that the bill shall be made to apply to existing companies only in so far as to extensions which have not been authorized by special acts at the time of the passing of this measure.

The object of the bill, introduced in the Commons by E. A. Lancaster and read a first time Nov. 21, is to require all Dominion railways, in case of any person being killed on a train or on the property of the company, to cause an inquest to be held by the nearest coroner forthwith.

It is proposed by a bill introduced in the Commons by W. M. Martin and read a first time Nov. 23, to amend sec. 259 of the Railway Act, chap. 37, Revised Statutes of Canada, by adding the words "and all workmen, day laborers, or other persons employed by the company in the operation of its railway" after the words "such construction," in the fourth line; to add a clause providing that wages shall not be withheld; and a section providing that these provisions shall apply to all arrears due at the time of the coming in force of the act.

There was read in the Commons for the first time, Dec. 1, a bill, introduced by A. Meighen, to amend the Railway Act, sub-sec. 3, sec. 254, and subsec. 4, sec. 294. Under the provisions of this section the railway company is made prima facie liable for loss caused by animals getting on the railway right of way, except in case the company is able to prove that the animal got at large through the negligence or wilful act of the owner. This exception was added last session, and this bill proposes to alter the nature of the proof required by compelling the company to prove that the animal got on to the right of way without negligence on its part, and without violation of the provisions of the law. It also provides for an amendment of subsec. 2, by compelling the railway companies to submit the nature, dimensions and construction of their cattle guards to the Board of Railway Commissioners for approval. The effect of the amendment, Mr. Meighen explained, would be that if the companies comply with the specific dimensions prescribed by the Board, they will be absolved, and if they fail to comply they will not be able to throw back the liability on some one who was more remotely negligent.

A bill, introduced by F. F. Pardee, was read in the Commons a first time Dec. 5, for the purpose of "providing for the safety of employes and travellers on railways" by providing for the inspection of boilers for locomotives when completed, by an inspector general working under the supervision of the Board of Railway Commissioners.

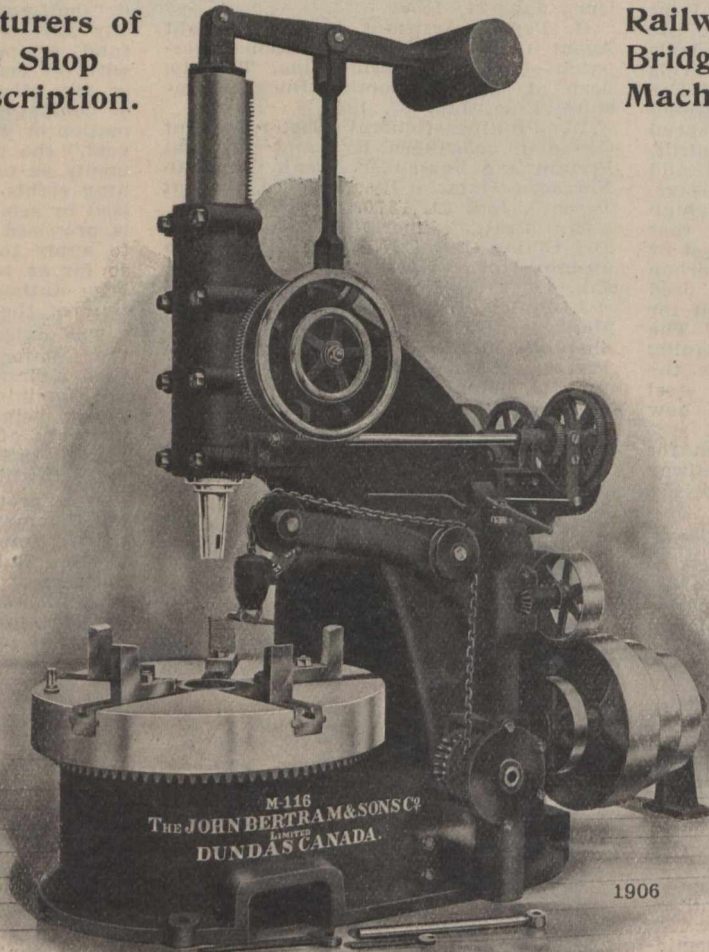


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Driving Spiral Tunnels on the C. P. R.

One of the most interesting of the many grade reduction works that have been undertaken by railways on this continent is that of the C.P.R. between Field and Hector, B.C., in the valley of the Kicking Horse River. The original distance was four miles, with a grade of 4.5% (compensated) for about three miles, and 3.5 to 4% for the remainder of the distance. For safety, three spring switches or catch sidings were introduced, which were normally closed to divert a train on to the spur and opened only when the engineman of a descending train signalled to the switchman that his train was under control. Owing to the increase in traffic and in train loads it became very desirable to eliminate these extreme grades, but it was a difficult matter to find room for the necessary development of length along the steep sides of this valley. The location finally adopted forms three lines in the valley, connected by loops, and the only way in which these loops could be made was by means of tunnels in the mountain side. The grade is reduced to 2.2% (compensated) and the length is increased to 8.2 miles. The compensation for curvature is 0.04% per degree, but this is increased to 0.06% in the tunnels on account of the liability of damp rails reducing the adhesion. The general character of this work was described in *The Railway and Marine World* in the issues of Sept. 1907, and Sept. and Oct. 1909. It was shown that while on the old line it required four 154-ton consolidation (2-8-0) engines to haul a train load of 710 tons up the grade, it was estimated that one of these engines would handle 930 tons on the new line.

Fig 1 shows the old and new locations, together with the positions of the tunnels, etc. The contract for this stretch of grade reduction work was awarded to Macdonald, Gzowski & Co. of Vancouver, B.C. Their work included the grading of 8.25 miles of line, two spiral tunnels, one short straight tunnel (710 ft.) and four bridges over the Kicking Horse River. The grading was the average heavy rock work. Fig. 3 shows one of the cuts in solid rock, the material being handled out by stone boats on a log track.

The most interesting work was the driving of the spiral tunnels. These are on loop curves of 10 degs. (or 573 ft. radius), with a grade (as reduced by compensation) of 1.6%. Tunnel 1 is 3,200 ft. long, and turns an angle of about 234 degs.; the difference in elevation of its portals is about 48 ft. Tunnel 2 is 2,890 ft. long, turning an angle of about 232 degs., and having a difference in elevation of about 45 ft. at the two portals. Figs. 2 and 5 show both por-

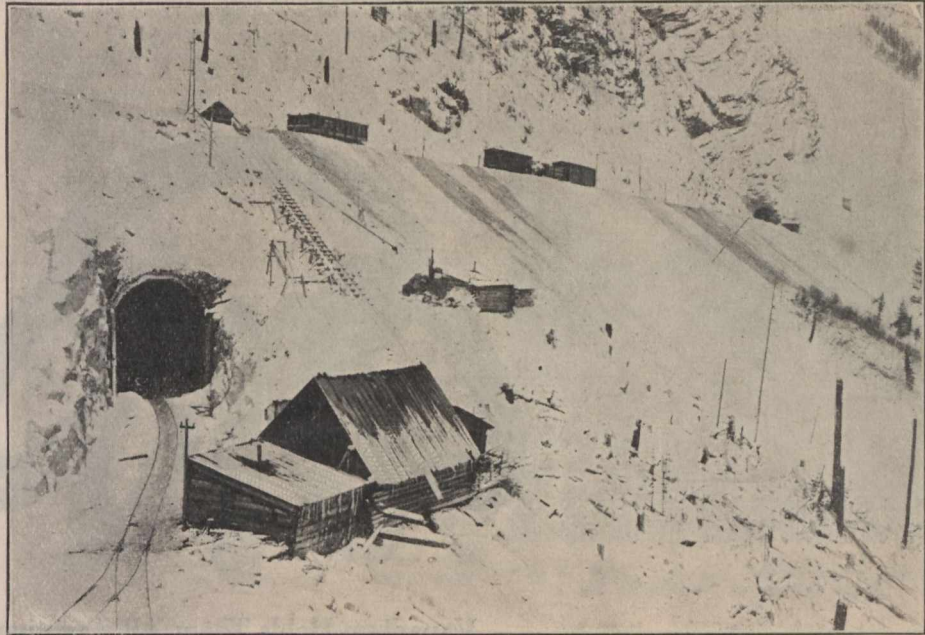


Fig. 2. Upper and lower portals, spiral tunnel No. 1.

tals of tunnels 1 and 2. Fig 4 is a cross section of the tunnels.

For the following information as to the details of the construction work on the two spiral tunnels we are indebted to C. S. Gzowski, of the contracting firm. There was a camp and plant for each tunnel, and the equipment for each plant was practically the same. Table 1 shows the principal equipment of the plant for both tunnels. The location of the plant for camp 1 was put on the old line about 250 ft. in elevation below the portal of tunnel 1, and about 800 ft. distant from it. The plant was located at this point as there was a small bench on the mountain side which enabled the machinery for the compressor, etc., to be handled conveniently from the old railway line. Another reason was that water for operating the plant was obtainable there by digging wells and catching the seepage.

The plant at camp 2 was located on the Kicking Horse River about ¼ mile beyond tunnel 2 and on about the same level as that tunnel, or 150 ft. below the old railway line. The plant for this camp was unloaded off the old line and let down a skidway to its location.

The first operation that of excavating both portals of each tunnel was conducted by hand labor while the machinery at each camp was being installed. By the original plan of operation it was intended to use compressed air drills and do the mucking by hand from a

jumbo car. After a short trial of this method it was decided to use power shovels (operated by compressed air) at each working end of both tunnels. This necessitated doubling the capacity of the air compressors as well as the boiler capacity.

TUNNEL DRIVING.

The driving of the tunnels was through crystallized limestone very much distorted and in places (where badly crushed) timbering had to be used. About 25% of the length of each tunnel was permanently timbered and enlarged to a sufficient size to allow of a concrete lining being put inside at some future time. In fact, in the untimbered portion, after the character of the ground had been well determined, it was decided to enlarge this also, to permit of a future concrete lining.

The method of driving the rock section which did not require timbering, was to drive a full top heading, keeping it about 10 or 12 ft. ahead of the bench (which was kept as vertical as possible) and to shoot the heading and bench at the same time. After a shot was completed, the drillers mucked back from the heading sufficient to set up their drill columns, and then set up and started the drilling. In the meantime, the shovel (run by air) was moved up and started mucking out the last shot. This shovel gang would get cleaned up about the time the drillers had the heading

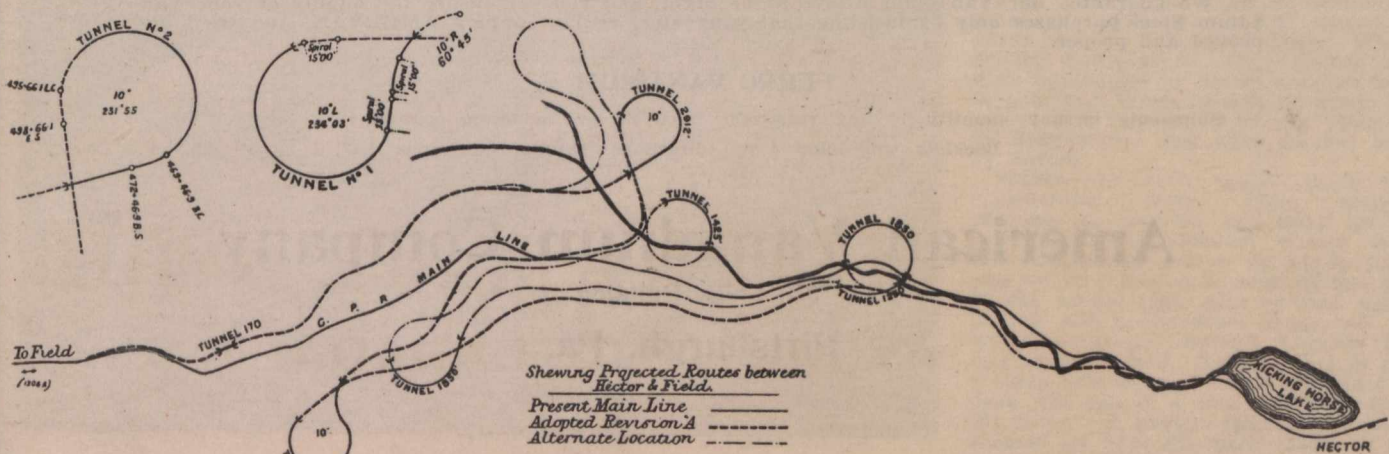


Fig. 1. C.P.R. grade reduction work between Field and Hector, B.C., showing the two spiral tunnels.



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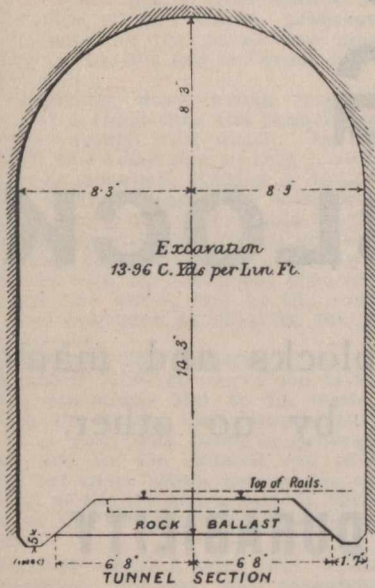


Fig. 4. Cross section of spiral tunnels.

drilled and the down holes of the bench finished. The shovel was then moved back about 150 ft. The drillers then drilled lifter holes in the bench.

When all the drilling was finished, the drills, hose lines and fittings were all moved back. While this was being done, the cut holes in the heading were being loaded for springing. These cut holes were sprung and then fired. Then the side rounds and lifters of the heading, as well as all the bench holes, were shot at one time. This method of keeping the bench close up to the heading allowed the greater part of the muck of each shot of the heading to be thrown back with the bench muck, which was removed directly by shovel. When the timbering had to be carried as the heading was driven, the bench was left about 50 ft. back. The heading was shot and then mucked by hand, the material being carried to the bench in cars, and then dumped. The permanent timber plates were put in and each segment trimmed off, and then lagged and wedged up. The bench was always kept as vertical as possible. Before shooting

the bench, the wall plate was well supported by blocking up, and the last full-length post protected by old timbers. Just enough bench was shot in each round to allow another full post to be put in, and then this muck together with the muck coming from the heading was cleaned up with the power shovel.

DRILLING.—The arrangement of the drill holes was varied somewhat from time to time as the character of the ground changed. The stratification of the rock as encountered in the different parts of the tunnels varied from nearly horizontal (sometimes dipping up, down or to one side) to practically vertical and parallel to the direction of the tunnel. The formation of the ground at tunnel 1 was somewhat uniform, in regard to its stratification, lying with a plane dipping about 20 degs. to the northeast, but as the tunnel made the best part of a circle this was encountered at all angles in the face. The stratification of the ground at tunnel 2 had not the same general uniformity as that on the other side of the valley. The hardness of the rock, the distortion and other conditions changed every few feet.

The general plan of the drill holes in the heading was to put in two rows of cut holes about 12 ft. deep and sloped so as to nearly meet. The side holes and lifters were about 10 ft. deep. The distance of the side holes from the tunnel line was judged by the character of the ground. These were varied as much as 2 ft. in line. The bench had a row of down holes on the top about 8 ft. back from the edge and about 10 ft. deep; also a row of lifter holes in from the bottom of the face, 12 ft. deep, so pointed as to go 1 ft. below grade. The aim was to break 8 ft. of heading and the same amount of bench each round. It was found necessary to change the number of holes very largely as the rock changed. In tight ground the round of the heading would not break back within sometimes 2 ft. or more of the bottom of the holes, while in other ground it might go practically to the bottom.

The rock was of such character that the drilling throughout almost the entire length of both tunnels was most difficult. The formation being crystallized, it was brittle; and having been distorted by upheaval it was in a semi-fractured state. This condition made

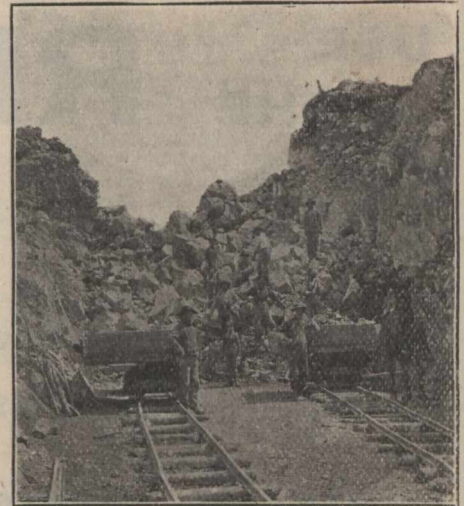


Fig. 3. Solid rock cut, debris being removed by stoneboats on a log track.

small wedge-shaped pieces break off in the holes behind the bits of the drills and jam them. Various shaped drill bits were tried, but none of them overcame the difficulty. The old trick of throwing small bits of iron into the hole was the most effective. The progress of the work was very considerably retarded by the bad conditions for drilling, and although the number of drills was increased to as many as space would permit of working, the desired progress was never attained.

MUCKING.—The shovels were the standard no. 20 Marion shovels, with special short booms and dipper arms, and rock dippers with Panama teeth. The compressed air was delivered into the boiler, which acted as an additional receiver. The shovels were set as close to one side of the tunnel as possible and had each a special short jack arm to support it on the inner side. There were four shovels, one on each end of both tunnels.

A track of 2-ft. gauge was used for the cars, and a double track was run in the whole length of the tunnel to a switch, which was kept close up to the shovel. The empty cars came in on one track and the loaded cars went out on the other. The cars were built on the ground and held about 4 cu. yds. One car was switched alongside the shovel and loaded then run out and replaced by another. It took only about a minute for a loaded car to be run out and another empty switched in place as the switch was kept as close as possible to the shovel.

The tunnels being on a continuous grade one end was being driven up grade and the other end down. Where driving down grade the loaded cars were hauled out by horses and ran back by gravity. When driving up grade the loaded cars ran out by gravity (manned by brakemen), and were hauled back by horses.

WATER.—In each tunnel there was considerable water from seepage through the crevices, and small springs were struck in different places. With the ends being driven up grade there was no difficulty as a ditch at the side of the tunnel took care of this water. In the end going down grade, all the water naturally drained towards the face of the tunnel. To take care of this a sump hole about 3 ft. square and 3 ft. deep was put in a few feet back from the face. A pump operated by compressed air kept the water down in the sump hole, discharging out of the tunnel through a 4-in. wooden pipe. A new

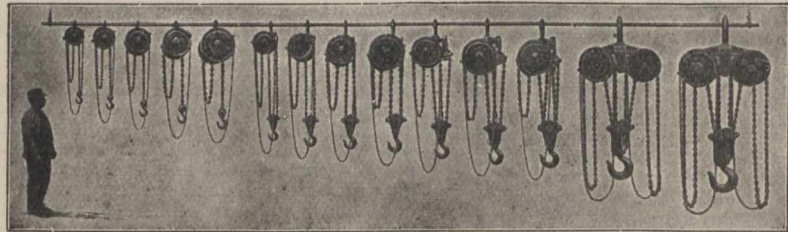
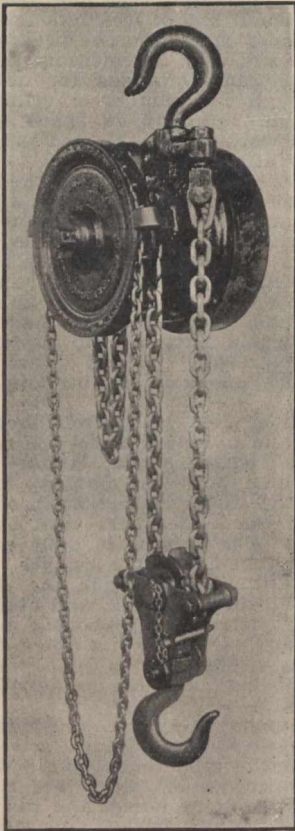


Fig. 5. Upper and lower portals spiral tunnel No. 2.

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sump hole was put in from time to time as the face of the tunnel progressed, and occasionally the pump was moved forward as the lift got too great for the suction end.

If anything went wrong with the pump for a short time the tunnel would fill very rapidly with water. In order to avoid the delay due to this, a second pump was installed, making a duplicate system, so that if anything went wrong with one pump the other could be turned on by merely opening the valves. In the winter considerable trouble was experienced with the discharge pipe freezing near the outlet end in the tunnel. This was overcome by covering the pipe with manure.

ELEVATION.—The elevation of the work being about 5,000 ft. above sea level, a certain allowance had to be made in figuring the steam and compressed air plant. A gain was made in generating the steam, and on the exhaust end of the steam, but there was a loss on the compression of the air and a gain on the exhaust of the air drills and other machines.

WEATHER.—During very cold weather considerable difficulty was experienced with the freezing up of the air supply pipe lines from the compressor houses to the tunnels. This was due of course, to the freezing of the moisture condensed from the compressed air. Where the pipes leading away from the compressors were going up a considerable grade there was no trouble experienced, because the moisture condensing out of the compressed air would run back to a warmer part of the pipe. Where the pipes were nearly level or running down grade, they were continually freezing in different places during the very severe snaps. Additional air receivers were put on the air lines close to the compressors to further cool off the air and further condense out the moisture and also small blow-off cocks put at intervals along the pipe. These methods somewhat reduced the freezing trouble, but did not altogether overcome it.

METHOD OF GIVING LINE AND GRADE.—A base line was established between the two portals, which intersected with the tangents (or tangents produced) of the curves, on which the tunnel was driven. From this base line all alignment was given by setting out calculated deflections and distances. As a proof of the correctness of these calculations previous to starting the work these lines were run out on the prairie and they checked practically exactly. Centres were given from time to time in the tunnels 20 ft. centres as a rule. A table of offsets from the productions of these short chords was given the foreman, who was thus able to get his centre at any time from the last two centres. The centres were marked in the roof as well as on the bottom. The levels, of course, did not need any particular plan of action, being carried as in ordinary work, but with great care. The final result when the headings met was practically exact, the alignments closing within ¼-in. and the grade within a few hundredths.

PROGRESS RECORDS.—Table 2 shows the monthly progress at each tunnel. At first sight the record does not appear to be very good. As a matter of fact, however, it is considered to show very good progress under the adverse conditions due to difficulties in the drilling, troubles with water, the timbering and the very cold weather in winter.—Engineering News.

TABLE 1.—PLANT FOR DRIVING SPIRAL TUNNELS.

- 1 American-Rand cross-compound air-compressor capacity, 1,050 cu. ft. of free air per min. Air cylinder 22 and 13 × 16 ins.; steam cylinders, 14 and 24 × 16 ins.
- 1 Ingersoll-Rand straight-line air compressor;

- 1,100 cu. ft. per min. Cylinders, 20 and 20 × 30 ins.
- 1 Ingersoll-Sergeant straight-line air compressor; 1,425 cu. ft. per min. Cylinders, 24 and 26½ × 30 ins.
- 8 Fairbanks-Morse duplex pumps; 6 × 4 × 6 ins. to 8 × 5 × 12 ins.; 6 ram pattern, 2 piston plunger pattern, 5½ × 3½ × 5 ins.
- 1 Atlantic pump, 7 × 4½ × 6 ins.
- 9 boilers; 2 return tubular, 100 h.p.; 4 locomotive type, 80 h.p.; 2 locomotive type, 100 h.p.; 1 100 h.p.
- 2 engines: (1) 7 × 10 ins., 25 h.p.; (1) 4 × 5 ins.
- 1 hoist; cylinders 5 × 7 ins.
- 1 hoisting engine with boiler; 25 h.p.; cylinders, 7 × 10 ins.
- 1 d.c. generator, 25 kw., 250-volt, 100 amperes.
- 2 Westinghouse d.c. compound-wound generators, 6 kw., 125-volt, 48 amperes.
- 4 Marion steam shovels (operated by compressed air).
- 22 Canadian-Rand Little Giant rock drills.
- 6 rock drills.

TABLE 2.—RECORD OF PROGRESS ON SPIRAL TUNNELS AT FIELD.

Month.	Tunnel 1.	Ft.	Tunnel 2.
1908. Ft.			
Jan. 34	started one end.	..	
Feb. 198	started other end.	35	started one end.
Mar. 206		111	only one end.
Apr. 226		122	started other end
May 277		157	
June 244		118	trouble with water and bad ground.
July 180		153	
Aug. 158		107	
Sept. 173	trouble with smoke and water.	219	
Oct. 165		301	
Nov. 158		277	
Dec. 200		252	
1909.			
Jan. 156	trouble with frost	244	trouble with frost
Feb. 150		216	
Mar. 215		251	
Apr. 197		287	
May. 170	finishing	63	
June. 75		..	
	3,184 ft.		2,912 ft.

G. T. P. R. Rotary Snow Plow.

The Grand Trunk Pacific Ry. as mentioned in our last issue ordered from the Montreal Locomotive Works recently a rotary snow plow, 12 ft. cut, scoop wheel. The engine consists of two horizontal cylinders, 18 x 26 inches each, cast with half saddle, and rigidly bolted together and to the frame. Steam is distributed to the cylinders by slide valves actuated by Walschaert valve gear, so arranged that the pistons of the two cylinders operate in opposite directions. Each cylinder is connected to a cross shaft, on the end of which is a bevelled gear pinion which meshes with the bevelled gear on the end of the wheel shaft. The boiler is of the locomotive type, with Belpaire firebox, and carries a pressure of 190 lbs. Steam is conveyed from the dome of the boiler to the steam chests by means of outside wrought iron pipes, one on either side of the boiler. The throttle valve is of the balanced type, so designed that steam enters from the top only.

The wheel of the rotary consists of 10 hollow cylindrical cone shaped scoops, fastened by T-irons to the hub of the wheel, and to the steel plate disc which forms the back of the wheel. Each scoop is open on the front side its entire length, through which the snow is taken in. The openings in the scoop are of ample width to admit the snow cut by the knives, thus preventing choking or clogging of the wheel. The knives, which are of cast steel, are hinged one on each side of the opening, and are so arranged that they automatically adjust themselves into cutting position. Each pair of adjacent scoops is tied together at their outer ends, where the force is greatest, by a rod, making the periphery of the wheel practically one solid piece. The wheel is encased in a drum with a rectangular front or hood. The bottom of the front or hood is cut away in the shape of a V, so that on the sides it projects only slightly

in advance of the cutting blades of the wheel; while at the centre, the knives are the first to encounter the snow. In consequence, the hood presents no dead surface to be forced into the snow, but practically the whole front of the rotary is a sharp cutting edge. The top of the hood is provided with a spout fitted with a movable cover. The wheel can be made to rotate in either direction, to throw the snow to one side of the track or the other and the cover of the spout may be turned to suit the direction in which the wheel is rotating. A feature of the rotary is a pneumatic gear for operating the cover of the spout, which has been added to the hand wheel operating device of the older design, and greatly facilitates handling of the plough.

Another feature of the rotary is the hood lifting device. In pulling the rotary back out of a drift, over cleared snow, particularly when the snow is wet or heavy, or at places where the ice cutters could not be operated, such as in yards, where the frogs and switches make this impossible, it sometimes happens that the loose snow will be scraped up and packed up under the hood, lifting the plow. To obviate this difficulty, the hood-lifting device has been applied; by means of which the front end of the shovel can be raised a maximum height of seven inches by means of power operated ball bearing jack screws. Power is derived from the rotary wheel shaft, the device being thrown in or out of gear by means of a friction clutch mounted on the wheel shaft, and operated by a lever. The power is transmitted by means of a chain from the wheel shaft to a longitudinal shaft which drives the jack screws through a system of bevelled gears, worms and worm wheels mounted on a transverse shaft. A signal is placed in the pilot house, operated by a lever fulcrumed in the plow frame, which indicates when the high and low stops are reached, and also the intermediate heights of rise in inches between these two points.

The plow is carried on two four wheel plate frame trucks, especially designed to carry a maximum of strength with the minimum of weight. Ice cutters and flangers are applied as a safeguard against derailments. The ice cutters which are composed of two parts, the wing and the cutter, are secured to a wrought iron frame supported by bearings on the front of the frame of the forward truck. When in working position, the wing projects over the rail, and the cutter point projects down below the rail on the inside directly in front of the forward wheels. The flanges are secured to a wrought iron frame supported by bearings on the rear axle of the front truck. A pneumatic operating gear under the control of the pilot is provided, by which the ice cutter and flangers may be simultaneously raised or lowered. The frame is constructed of I beams and channels.

In the design of the cab, care has been taken to provide one of strong construction. It is partitioned off in front of the boiler, the forward part being the pilot house, and the rear the engineer's cab. The rotary is equipped with a Westinghouse E.T. No. 6 brake equipment. Following are the principal dimensions:

Total weight	200,000 lbs.
Total wheel base	22 ft.
Cylinders	18 x 26 ins.
Boiler	Belpaire type
Boiler pressure	190 lbs.

Edmund Wragge, C.E., of Toronto, at one time Local Manager G.T.R. there, was married on Dec. 5 to Miss Maud Kingsmill, second daughter of Nicol Kingsmill, K.C., Canadian Solicitor Michigan Central Rd.

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CHARLES MILLER,

PRESIDENT

D. B. Hanna at Halifax.

The inauguration of the Canadian Northern Steamships, Ltd. winter service between Bristol, Eng., and Halifax, N.S., was marked by a dinner on the s.s. Royal Edward at Halifax, Dec. 6, at which a large number of prominent men from Nova Scotia, New Brunswick and Prince Edward Island were present. D. B. Hanna, Second Vice President C.N.S., who presided, said in part:—

It is a matter for regret that owing to important appointments made before this dinner was arranged, neither Mr. Mackenzie nor Mr. Mann is present with us tonight. It does, however, give me an opportunity of saying some things regarding them and the large enterprises they represent, which could not be as freely mentioned in their presence. I have the unique distinction of being the first appointed officer of the enterprises identified under the general name of Mackenzie and Mann. In 1896 it was my privilege as an officer of the Manitoba and North Western Ry., to frequently meet Mr. Mann in connection with construction for the Lake Manitoba Railway and Canal Company, which was the nucleus of the Canadian Northern Railway. I remember in one of our discussions, Mr. Mann suggesting a change in my position—to withdraw from the M. and N.W.R., now owned by the C.P.R., to take charge of the operations of his 100 miles of road. Subsequently I accepted his offer and became Superintendent. Incidentally I may say I was also train dispatcher, road master, treasurer, auditor, general freight and passenger agent, and any other departmental chief that may occur to a railroad man. In fact, it was essentially a one man's position. That was exactly 14 years ago this week. On Dec. 12, 1896, if my memory serves me, I made the first trip over the road with Mr. Mann. I confess that although I had lived in Western Canada for 10 years, I did not form a very high opinion of the traffic prospects of the line. The country was new and settlement was scarce, for the immigration which afterward flowed in such large numbers had not begun. Mr. Mann intended sailing for Europe the following week, and with that caution and thriftiness which is said to be characteristic of the Scotch, I arranged for a line of credit. I am glad to say, however, I had no occasion to use the credit, and I can say with absolute truthfulness, that from that day until now the gross revenues from our lines west of Port Arthur have always been sufficient to meet operating charges and fixed charges. The development of our system in the past 14 years has often been referred to, and at the risk of too much repetition, I propose to repeat a few of the facts.

Perhaps there is not one fact more illuminating than this, that whilst the company operated 100 miles in 1897, it is today operating, or has in course of construction, 7,135 miles. This does not include the British Columbia section of some 500 miles, or the gap still to be constructed between Sudbury and Port Arthur of 600 miles. But it includes all of our lines in Ontario, Quebec and Nova Scotia, so that by the end of 1914, when we hope to see the various gaps filled in, the Canadian Northern and its allied lines, all in Canada, with the exception of a few miles, will operate not less than 10,000 miles of railway. This, I submit, is a unique achievement that may perhaps never be duplicated by any other two men. A pay roll that in 1896 was \$650 a month, reaches over a \$1,000,000 a month in 1910. A gross revenue from the 100 miles of road in 1897 of \$60,000, has grown to over \$18,000,000 in 1910, from the C.N.R. and its allied railways. A staff of 13 men

and a boy in 1896 reaches 48,400 in 1910. But it is proper to state in respect to the number of employes, I have included those of the subsidiary undertakings of my principals, which are in many respects identified with the C.N.R. proper. Whether it is in mining of coal, or iron ores, or in lumbering, or in grinding flour, or the making of cement, or salt, or in the electric business, or in iron products, in steamships, in the hotel business, or the grain elevator business, I want to make it perfectly clear that the governing principle of it all is the creation of traffic for the C.N.R.

We have not been content to build railways with the help of the Government; but we have taken all kinds of steps to develop commerce, with the result that not a cent has been called for from any Government under any guarantee that has been given. If my principals had no other object in view but that of making money for themselves, there were ample facilities at their command; but the dominating factor in the development of the C.N.R. has been to give to it every auxiliary, which makes for its own development and for the confidence of those who have invested in it. Thus, Mr. Mackenzie and Mr. Mann might have retained to themselves the land grant, which is valuable today, also the express, telegraph and sleeping car business subsidiary companies for these sources of revenue. They did neither. All the benefits accruing from these subsidiary services belong to the C.N.R. without cost to itself. Whilst the C.N.R. has been developing with such giant strides, the same story is true of Western Canada and the Dominion of Canada as a whole. I think we may claim some share of credit for this, if for no other reason than that in the construction of so much new mileage new continents have been opened up for settlement. At present there are 535 cities, towns and towns in embryo on the C.N.R. Sixty of these towns have a population of over 500, and 85 places have been given transportation facilities within the past 4 months.

In the Province of Alberta alone one new school has opened every school day, and during the year 1900 over 20,000 acres of land were settled upon daily. In opening up so much new territory it became an essential part of our policy to link up the old road with the new. With that directness which always characterized the work of Mackenzie and Mann, steps were taken to secure steamships. To have waited the construction of the type boat we had in view meant at least two years before we could become factors in the ocean travel. Therefore, when an opportunity offered for the purchase of the two boats now known as the Royal Edward and Royal George, we took advantage of it, and our company are now as much at home on the ocean as they are on land. Not many years ago the Dominion Government offered a very substantial subsidy for a 20 knot service. Today Canada is enjoying such a service, and I regret to say, without the subsidy accruing to us. I need not discuss the appointments of these boats. You can judge for yourselves and we have every reason to hope that, in conjunction with the other Canadian ocean liners, a larger measure of British travel will flow through Canadian ports rather than by way of New York and Boston. In association with the steamship service we have inaugurated a very extensive immigration scheme, and today in the old land there are at least a score of active Canadian men and women on the C.N.R. staff preaching the gospel of emigration to Canada. I believe we have the support of the provinces of Nova Scotia and New Brunswick in these enterprises. I believe, with the facilities which we are able to offer the immigrant and the set-

tlar, that we shall enjoy a substantial share of this class of travel, and it will be a great pleasure to us to learn that so long as the steamers have their terminus at Halifax a steady stream of travel will pass through the port.

Why do I tell you these things? The answer, I think, is not far to seek. We believe the Maritime Provinces and the port of Halifax need us as much as we need them. The development of Canada is going on from sea to sea; and if the eastern part of the Dominion is to enjoy its full measure of the western development, and if the western provinces are to enjoy all the advantages of expansion in the East, and particularly its port facilities, such as we have here, there must be a close rail connection between the East and the West. I do not propose to say how this shall be done. You have the Intercolonial Ry., with its terminus in Montreal, but without any hold of its own on business with Ontario and the four great western provinces. I submit to you that there is no question of more vital importance than a frank and full discussion of how the I.C.R. can be linked up with the C.N.R. The C.P.R. has its terminus in St. John, the G.T.P. proposes to have its terminus in the east, and I ask you whether a connection for the C.N.R. into Halifax would not be advantageous to all concerned.

Great Northern Ry. Lines in Canada.

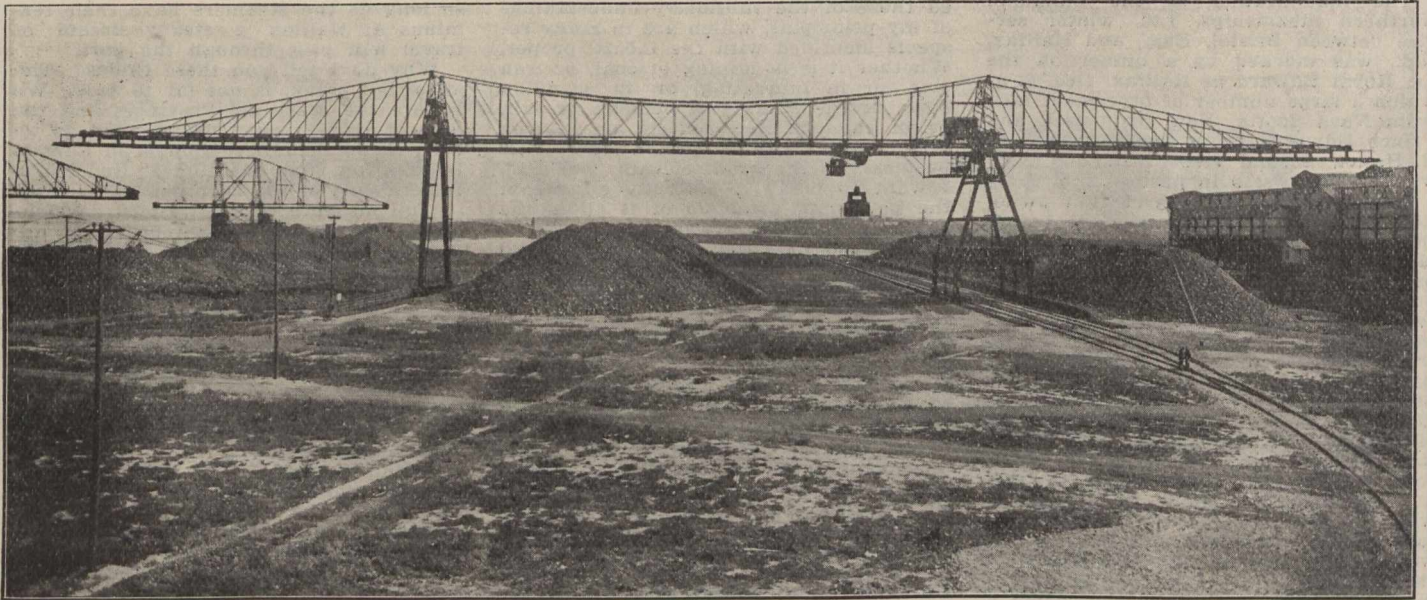
Manitoba Great Northern Ry.—Alderman Douglas, Winnipeg, stated Dec. 10, after an interview with J. Fisher K.C., who is solicitor for the G.N.R. in Winnipeg, that he had been advised from St. Paul, Minn., that no further progress would be made with the company's projects in Winnipeg and Manitoba at present.

Kaslo and Slocan Ry.—A. H. MacNeill, Solicitor for the G.N.R. in Vancouver, had a conference with the Premier of British Columbia, Nov. 29, respecting the question of the restoration of the K. & S. Ry. track and the resumption of train service on the line. A Kaslo dispatch Dec. 3, states that the G.N.R. is not anxious to operate the line at all, and another press dispatch, states that, "what is left of the line" will be "transferred to the C.P.R. and that the line will be rebuilt and operated next year."

Vancouver, Victoria and Eastern Ry. and Navigation Co.—Work has been suspended on the line in the vicinity of Princeton, B.C., for the season. Grading has been completed to Cardiff, and tunnel work at the entrance to Princeton was completed Nov. 30, 1910. It is said work will be resumed in June.

The Board of Railway Commissioners has authorized the building of an industrial track from False Creek to Powell St., Vancouver, paralleling the company's present track on Boundary St. Application is being made to the Board for permission to build two additional industrial tracks in the city.

Plans have been laid before the Board of Works of the Vancouver city council, showing the bridges which the company proposes to erect over the cut in Grandview at Broadview and Lakeview Drive. The plans were disapproved as they did not conform to the stipulations concerning similar structures in the city. The plans which the company is working out contemplate the laying down of two extra tracks in the Grandview cut, which will be widened all the way through the city. Three industrial spur lines are also contemplated in the same vicinity. The plans for the laying out of the land to be reclaimed at False Creek are being prepared, and these show that it is intended to lay at least 20 tracks. (Dec., 1910, pg. 1047.)



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C. P. R. Elevator at Victoria Harbor.

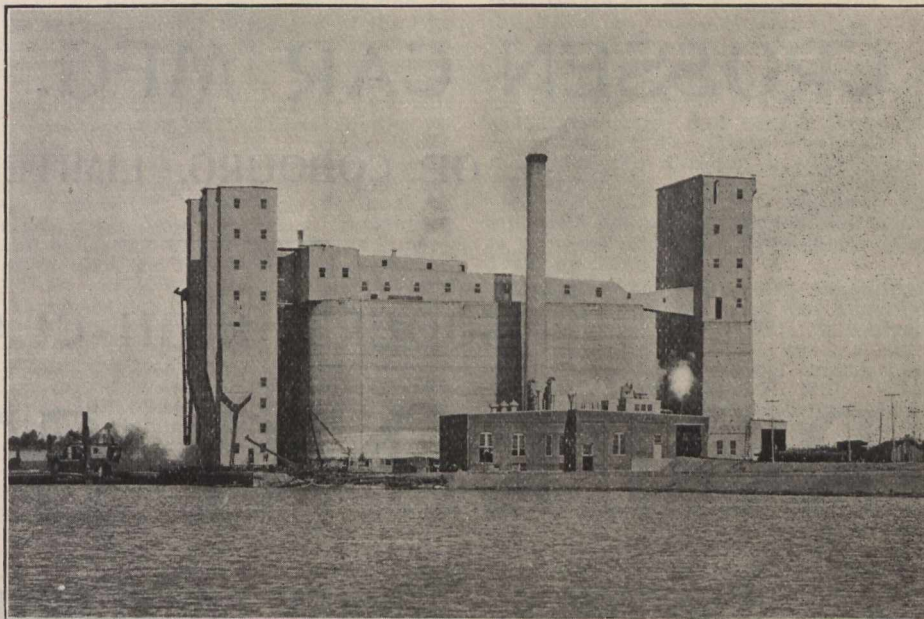
The Canadian Pacific Railway, which is in possession of large elevators at the head of Lake Superior, found it necessary to provide additional facilities at the eastern end of the lake haul, where its numerous grain vessels could be readily unloaded and the grain either stored or reloaded into railway cars for shipping eastward to Canadian territory. Hence it obtained a site at Victoria Harbor, Ont., at the extreme eastern end of Georgian Bay. With an island for a foundation, the company will have an ideal site for its terminal, after the extensive dredging and filling operations now under way are completed.

The new elevator plant has just been completed, consisting of two marine towers for unloading lake vessels, a 2,000,000 bush. storage house, a working house for loading cars and a 1000 k.w. power plant to supply the necessary power for operating the machinery. Each marine tower is 150 ft. in height, built of structural steel, covered with corrugated iron and mounted on 40 heavy car wheels. Steel stairs are provided from bottom to top and the roof and all the floors are of concrete. Each tower is self-propelling, travelling independently on the double track between the storage house and the slip, and can thus work to its full capacity regardless of the spacing of the hatches and different capacities of the various holds in the boats. The marine legs are specially designed so that they can enter passenger boats as well as freighters. Each marine leg will elevate 20,000 bush. of grain per hour on the dip, and a complete set of air-operated ship shovels and clean-up shovels is provided to bring the grain to the legs as rapidly and economically as possible. The marine legs deliver the grain to 1,000 bush. scales, after which it is elevated to the top of the towers and by an arrangement of spouts and conveyors dropped into any bin of the storage or working-house.

The storage house consists of 32 cylindrical reinforced concrete bins 33 ft. inside diameter and 31 interspace bins, each of which holds about a fourth of the capacity of a cylindrical bin. All the bins have hoppers bottoms, so are self-emptying. The present total capacity of the storage house is 2,000,000 bush, and the plant is so arranged that future extensions may be added to raise the capacity to 10,000,000 bush. With extension of the storage, additional marine towers are also contemplated.

The working house or shipping elevator, is also of concrete to the top of the bins and has a structural steel cupola covered with corrugated iron. All of the floors and roof are of concrete. The storage capacity of the workinghouse is comparatively small, being about 85,000 bush., as this part of the plant is intended principally for weighing and shipping the grain to railway cars. For this purpose are provided two 2,000 bush. scale hoppers, each on a 120,000 lbs. scale. Four car-loading spouts lead to two loading tracks one on each side of the house, each running through a track shed. This house will be able to load 200 cars in a 10 hour day. When necessary the cars can also be unloaded in the working house and boats or barges can be loaded by a special boat-loading spout on one of the towers. All of the machinery in the elevator plant is driven by electric motors. The working house may be readily extended to twice the present size with double the present equipment of legs and scales; so when business increases to require faster loading the shipping house will be enlarged to supply the demand.

To provide power for all this machin-



Canadian Pacific Ry. Elevator at Victoria Harbor, Ont.

ery and light for the buildings and yards, a modern power plant has been built. This is equipped with four 250 h.p. Babcock & Wilcox water-tube boilers which supply steam at 160 pounds pressure to two 500 k.w. Westinghouse-Parsons turbo-generators. The smokestack is of reinforced concrete 160 ft. high. A system of 750 incandescent lamps and 12 arc lamps makes the operation of the entire elevator plant as easy at night as in the day time. There are also installed a complete system of telephones, electric signal lights and bells and dust collectors. The entire plant is absolutely fireproof as with the exception of transmission ropes there is nothing combustible in it. Wire glass is used in all of the windows and the electric wiring is all in metal conduit. As an extra precaution for the protection of cars and boats, a fire pump has been provided which supplies water to a number of hydrants around the elevator. A concrete wharf 240 ft. long, carried down to a depth to provide for 25 ft. of water, was built along the front of the elevator.

In addition to the new elevator plant just completed, three-quarters of a mile of wharf, 800 ft. of flour shed, and 700 ft. of freight shed are now under construction. The entire work of elevator plant wharves and sheds, is being done under the direction of J. G. Sullivan, Assistant Chief Engineer, C.P.R., with Resident Engineer G. G. Ommanney in general charge at Victoria Harbor. All of the work is being executed by John S. Metcalf Co., grain elevator engineers, of Montreal and Chicago. The total expenditure for this construction will be in the neighborhood of \$1,100,000.

Demurrage Rules.—The Interstate Commerce Commission, in the matter of the investigation and suspension of certain demurrage schedules, reported recently, recommending that for six months following Dec. 1, 1910, the free time upon lumber and forest products, coal, grain, and grain products be extended from 48 hours to 72 hours, provided, however, that the application of the average rule shall only be allowed upon a 48 hour basis. Before the expiration of that period the Commission will be able to intelligently determine what commodities, if any, should be given a longer free time than the standard 48 hours.

Alberta Railway and Irrigation Co.

The reports for the year ended June 30 show a total revenue from railways, colliery, canals, profits on land sales, etc., after providing for depreciation, of \$389,216. After deducting interest on prior lien, and 5% debenture stock, there was a surplus of \$269,066, from which a dividend of 5% on the share capital was declared, absorbing \$162,500, leaving \$106,566 to be carried forward to the current year's accounts. The gross earnings of the railway were \$378,128, against \$320,936 for the previous year. The coal sales were 239,623 tons, an increase of 12,931 tons over the previous year. The land sales were 74,545 acres, and realized \$805,491, the average price being \$44.03 an acre for irrigated lands and \$6.43 an acre for non-irrigated lands. There was also sold, 1,121 acres, in which the company has an interest with the C.P.R., the company's profit being \$3,026 or equal to \$2.70 an acre. The profit from sale of town lots was \$146,900, the estimated profit from the sales being \$611,700, but only profit received during the year from lands free from the trust viz.—\$116,400, is included in the revenue account. The amount in reserve in connection with land sales is \$1,643,478, and in connection with C.P.R. lands, \$108,340. On June 30 the company had 221,425 acres remaining unsold, in addition to some town lots in Lethbridge Raymond Milk River, New Dayton and Chinn.

Railway Lands Patented.—Letters patent were issued during Oct., 1910, in respect of railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acre
Calgary and Edmonton Ry.	493.15
Canadian Northern Ry.	6,174.79
Canadian Pacific Ry. grants	820.31
Canadian Pacific Ry. Souris Branch...	510.40
Canadian Pacific Ry. roadbed and station grounds	724.17
Grand Trunk Pacific Ry.	44.61
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	592.32
Total	9,359.75

G. H. Phillips, Superintendent, Ottawa & New York Railway, Ottawa, Ont., in remitting his renewal subscription to the Railway and Marine World, says, "I wish your valued publication continued success."

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ROLLING STOCK

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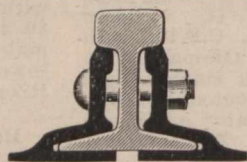
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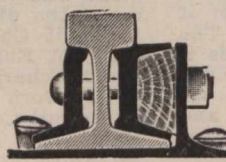
HIGHEST AWARDS

Paris, 1900;
Buffalo, 1901; St. Louis, 1904



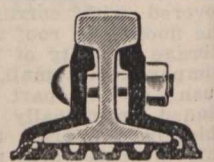
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RAILWAY DEVELOPMENT.

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta and Great Waterways Ry.—A bill confirming the Provincial guarantee for the bonds issued in 1909 for the building of this projected railway, under the special legislation of 1908, was read a second time by the Legislature, Dec. 4. The principal feature of the bill, however, is that it declares the proceeds of the bond issue, now deposited in three banks, is to "form part of the public revenue fund of the province, free and clear of any claims by the A. and G.W. Ry. Co., its successors or assigns, and the province shall indemnify and save, harmless, the railway company, its assets and its undertakings from any and every claim made under said bonds or any of them."

W. R. Clark, of Kansas City, Mo., President of the company, has appealed to the Dominion Government to look into the matter, and to the U.S. Government to see what steps can be taken to look after the interests of the shareholders, who are almost without exception, citizens of the U.S. The bond issue was made through J. P. Morgan & Co., New York.

The plans for the railway which were submitted to the late government, and which were not to be found when wanted, were discovered behind some shelves in a cupboard in the Speaker's room in the Legislature building at Edmonton, Dec. 11. They were not signed as having been approved by the Premier. (Nov., 1910, pg. 909.)

Algoma Central and Hudson Bay Ry.—In an interview at Toronto, Dec. 3, W. C. Franz, General Manager, Lake Superior Corporation, said the company was pushing construction on the line between its present northerly terminus and the C.P.R. transcontinental line at Hobon, Ont., at four points, and that 30 miles of track had been laid. There were, he said, 2,000 men engaged in the work, and it was expected to have it completed by the end of 1911. As soon as this work was completed it was intended to go on with extending the line from Hobon to a junction with the National Transcontinental Ry., 115 miles. Survey parties were in the field locating a route for this line.

The work at present in hand is the clearing of the right of way graded several years ago, and its completion from the end of steel to Hyde Park Jct., the present terminus of the Michipocoten branch, and the construction of the line from that point to Hobon. The gangs are at work northerly from near Pangassin, the present end of track, north and south from Hyde Park Jct., and southerly from Hobon.

We were advised Dec. 12 that very good progress was being made with the construction of the extension from Hawk Lake Junction to Hobon, on the C.P.R. transcontinental line, and from Hawk Lake Jct., southerly to the present end of steel on the main line. On this latter section of the line, track had been laid to mileage 68 from Sault Ste. Marie, and track has now been laid to the first bridge north of the Batchawana River, about mileage 82. The bridge at this point is being built, after which the track laying will be proceeded with, and it is expected that steel will be laid to the Montreal River by about April. This is a large bridge, the contract for the superstructure of which has been let to the Canadian Bridge Co., Walkerville, Ont. Timber has been delivered at Agawa Bay on Lake Superior, which is opposite mile 100 on the main line, and the construction of the large bridges at this point

will be gone on with during the winter, so as to permit of rapid tracklaying in the spring. At the north end of the line track is laid through to the Michipocoten River about 19 miles south of Josephine Jct., and the contractors' forces are now engaged in building the bridge over this river and other small bridges in the vicinity. It is expected to lay track as far south as mileage 144 this winter. North from Hawk Lake Jct. it is expected that the contractor will have finished the grading by June 15, when tracklaying and ballasting will be started. It is hoped to have the line completed to Hobon by the end of the year. The Magpie branch, which starts at mileage 18 on the Josephine branch, and extends north and west for nine miles to Magpie min., is also well under way. Track has been laid to the crossing of the Magpie River, about 5.50 miles, and the bridge across this river is under construction.

North from Hobon one survey party is in the field running a line to a connection with the National Transcontinental Ry., and it is expected that with the beginning of the year two additional parties will be put in the field to locate the line. It is the company's intention to have this line built as early as practicable.

Atlantic, Quebec and Western Ry.—At a recent meeting in London, Eng., of the depositors in the Charing Cross Bank, which holds the company's bonds, it was stated that if money can be found to complete the line it is highly probable it will become a valuable asset. The line, it was stated, was a very costly one to build, owing to the very large number of bridges across rivers and streams. The country through which the line passed was sparsely inhabited, but large sums had been expended in opening up the timber resources, and it was expected there would be a considerable timber traffic. (Dec., 1910, pg. 1027.)

Burrard Inlet Tunnel and Bridge Co.—Soundings and surveys of the Second Narrows have been completed by the company, and preparations have been made for the making of borings to ascertain what work it will be necessary to do to get a secure foundation for the abutments and piers of the proposed bridge. Cleveland and Cameron, Vancouver, B.C., are the engineers.

A petition is being signed asking the Dominion Parliament to grant a subsidy towards the building of the bridge. It is pointed out in the petition that the company is being financed chiefly by the municipalities interested, that the Provincial Government has granted \$250,000, and that a private corporation, to which Parliament granted a subsidy some years ago, has failed to do anything to earn it. It is suggested that not less than \$300,000 be granted towards the building of the bridge and \$10,000 a mile towards the railway connections. (Dec., 1910, pg. 1013.)

Burrard, Westminster Boundary Ry. and Navigation Co.—Application is being made to the Dominion Parliament to extend the time within which the company may build the lines authorized by chap. 68 of the statutes of 1907, as amended by chap. 50 of the statutes of 1909. Tupper and Griffin, Vancouver, B.C., are solicitors for applicants. (July, 1909, pg. 475.)

Canada and Gulf Terminal Ry.—We are advised that the section of the line from St. Flavie to Matane, Que., has been completed, and that arrangements have been completed for the placing of a train service in operation over it, on receipt of an order from the Quebec Public Utilities Commission. Survey parties are in the field to locate a line from St. Flavie westerly to a junction with the National Transcontinental Ry. near Lake Temiscouata, and easterly from Matane along the valley of the Ma-

tane River towards Gaspé Basin. The total length of the line as projected from the N.T.R. to Gaspé Basin will be about 300 miles. The route proposed to be followed is through the rear portions of Temiscouata and Rimouski counties and the centre of Gaspé Peninsula, through rich agricultural and timber lands, the route through the Gaspé Peninsula being practically through a virgin forest. The section of the line completed has been built to the N.T.R. standard, and laid with 80 lb. steel, which standard it is proposed to follow throughout. (Oct., 1910, pg. 825.)

Canadian Inter-Mountain Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build the following lines: from Coutts, at the International boundary, northerly to Milk River, thence westerly to Cardston, thence southwesterly to the western boundary of Alberta, at the summit of Kishemench Pass, thence westerly in British Columbia, to the Flathead River, and thence northerly to the C.P.R. Crow's Nest Pass line at Fernie; from Milk River easterly to Estevan, Sask., with branch lines, of which the following are specifically mentioned: from the confluence of Calder Creek and Flathead River to Elko; from Cardston to Lethbridge; from tp. 3, range 1, west 4th meridian, to Lethbridge; from tp. 4, range 19, west 3rd meridian, to Swift Current, Sask.; from tp. 6, range 29, west 2nd meridian, to Moose Jaw, Sask. Taylor, Harvey and Baird, Vancouver, B.C., are solicitors for applicants.

The Canadian Western Ry. Co., we are advised, is applying for an extension of time for construction. For some time nothing has been done in the way of pushing arrangements for building the line owing to the situation created by the enquiry into the Alberta and Great Waterways charter. At the time the question affecting this company came up, the C.W.R. had completed its surveys for a line from Calgary by way of Pincher to the International boundary, and had received a promise from the Alberta Government that the Legislature would be asked to vote a subsidy. (Dec., 1910, pg. 1013.)

Chicago, Milwaukee and Puget Sound Ry.—It is expected that early in the spring a through passenger and freight service will be operated over this line, which is the extension to the Pacific coast at Seattle, Wash., of the Chicago, Milwaukee and St. Paul Ry. The annual report of this latter company reports upon the progress of construction of the main line and branches. Of these branches the one which is of importance so far as Canadian interests are concerned, is that from Warden, Wash., which has been completed for 47.5 miles northeasterly to Hamlin. If this line were continued northeasterly it would reach Metalline, Wash., from which point the Idaho and Washington Northern Ry. proposes to build a line to the International boundary south of the Salmon River, B.C. (See Chicago, Milwaukee and St. Paul Ry., Dec. 1910, pg. 1013. See also Salmon River to Peace River.)

Graham Island Ry.—Application is being made to the British Columbia Legislature to incorporate a company with this title to build a railway from Skidegate Inlet on Graham Island through the centre of the eastern portion of the island to Masset village, or the shore of Masset Inlet. H. W. R. Moore, Victoria, is solicitor for applicants. (Sept., 1910, pg. 725. See also Skidegate to Indian Village.)

Halifax and Eastern Ry.—Press reports state that practically all the arrangements have been completed between the company and the Nova Scotia Government for the beginning of con-

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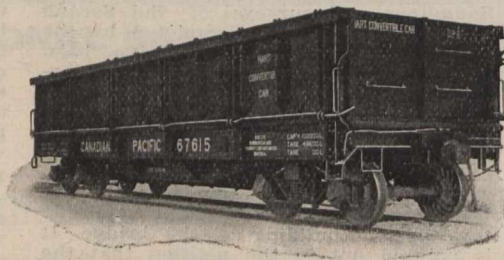
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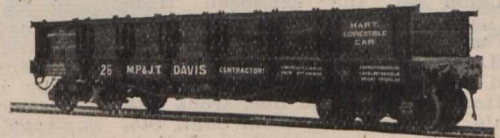
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MONTREAL

struction in the spring. (Nov., 1910, pg. 911.)

Imperial Traction Co.—The Dominion Parliament is being asked to incorporate a company with this title, with power to build railways as follows: from Hamilton to Guelph, Guelph to Berlin, Berlin to Stratford, Stratford to St. Marys, St. Marys to London, London to Ingersoll, Ingersoll to Woodstock, Woodstock to Brantford, Brantford to Hamilton, with an extension from the latter line to Niagara Falls, and a branch from the Stratford-St. Marys line to Lake Huron, and following the shore to Sarnia. Harding and Owens, Stratford, Ont., are solicitors for applicants.

Indian River Ry.—Application is being made to the Dominion Parliament to extend the time within which the company may build the line authorized by sec. 1, chap. 95 of the statutes of 1907. L. A. Cannon, 139 St. Peter St., Quebec, is the solicitor. (Dec., 1910, pg. 1013.)

International Ry. of New Brunswick.—The line from Campbellton, on the Baie des Chaleurs, across New Brunswick to St. Leonards, 113 miles, has been completed and passed for traffic. A connection with the C.P.R. has been made at St. Leonards, and freight trains have been running for some time. A passenger service was started early in Dec. A connection will be made with the National Transcontinental Ry. near St. Leonards. T. Malcolm, the contractor, stated in Montreal recently, that the station buildings, etc., were being erected, and that next year the road would be in first class shape for handling traffic. Nothing had, it is said, been decided as to connecting the line with U.S. lines at Van Buren Me. across the St. John river from St. Leonards, or with the old Atlantic and Lake Superior line, on the Quebec side of the Restigouche River. (Sept., 1910, pg. 727.)

Kettle Valley Lines.—It is reported that the valuator have agreed on a figure of approximately \$62,000 as the price which the K.V.R. will pay for the right of way which was graded between Midway and Rock Creek, B.C., by the old Midway and Vernon Ry., and that the amount will be utilized to pay off claims filed against that company so far as it will go. The right of way has been cleared between Midway and Rock Creek, 10 miles, and the track was reported to have been laid on this distance Dec. 10. It was expected to complete the tracklaying on a further distance of about 10 miles by Dec. 31. Grading gangs are working westerly from Rock Creek, and easterly from Merritt, there being about 1,000 men at work. (Dec., 1910, pg. 1015.)

Kootenay and Alberta Ry.—A press report states that this company's immediate project is to build a line from the Beaver Creek coal mines to Pincher Creek, and thence southeasterly to the International boundary and on to Butte, Mont. We are officially advised that the Mont. We are officially advised that tenders will shortly be called for for the building of a line which will start from about a mile west of Pincher station on the C.P.R., on a course 16 miles southwest to Beaver Creek colliery, and that work will be commenced thereon during the current winter. A press report from Pincher Creek, Alta., stated that tenders were received Dec. 10, for the building on the line. The engineering party has moved its headquarters to the Milk River, near Mountain Mill, and is continuing its survey work southerly. L. B. Merriam, C.E., is in charge of construction. The company is controlled by the Western Coal and Coke Co.

Following are the officers and directors for the current year of the Western Coal and Coke Co., which controls the

K. & A. R.:—President, E. B. Greenshields, Montreal; Vice Presidents, Hon. R. Mackay, Montreal, and J. B. Ferguson, St. Catharines, Ont.; other directors, H. A. Lovett, J. W. McConnell, Montreal; J. N. Lake, J. E. Woods, Toronto. (Dec., 1910, pg. 1015.)

Lethbridge Collieries Co.—A spur line of about a mile has been located and is being built by the C.P.R., from the C.P.R. Crow's Nest Pass line these collieries.

Following are the officers and directors for the current year:—President, E. B. Greenshields, Montreal; other directors, Hon. R. Mackay, H. A. Lovett, J. W. McConnell, N. Curry, Montreal; J. S. Hough, D. B. Adams, I. Cockburn, C. H. Campbell, Winnipeg. (Nov., 1910, pg. 911.)

Lloydminster to Fort MacMurray.—Application is being made to the Dominion Parliament to incorporate a company to build a line from Lloydminster, Sask., via St. Paul de Metis, and Lac La Biche, to Fort MacMurray, near the junction of the Clearwater and Athabasca rivers. It is also desired to have power to build the following branch lines: from south of the Saskatchewan River, via Brudenheim to Edmonton, Alta.; from Lloydminster southerly via Medicine Hat to the International boundary, near the Milk River, Alta.; from Lloydminster or a point on the last mentioned line, southwesterly via Buffalo Lake to Blackfields and Red Deer, Alta.; from near Lloydminster, southeasterly via Manitou Lake and Scott, to Saskatoon; from Lloydminster, or a point on the main line northerly via Cold Lake to Lac La Loche and the headwaters of the Clearwater River; from Lloydminster via Elbow, near Fort Pitt, via Dore Lac and Lac La Ronge to Hudson Bay, or a point on the railway to Hudson Bay. The notice of application is signed by H. B. Hall and H. C. Lisle.

Mantoulin and North Shore Ry.—Tenders will be received to Jan. 2 for the grading of the roadbed and the erection of all structures on the following sections of the line: from Crean Hill, mileage 22.7 west of Sudbury, to a connection with the present line at Espanola, and from Espanola southerly to mileage 61.

We are advised that excellent progress is being made with the 18 mile section of the line from Little Current, northerly. The section of the line for which tenders are being received to Jan. 2, extends from Crean Hill, to White Fish Bay.

New Brunswick and Prince Edward Island Ry.—A branch line in Sackville, N.B., is being surveyed by Professor Crowell. As far as possible the line will run along the boundary line of the Fawcett property, crossing Main st., by the Fawcett foundry, and up the hill to the quarry. There will be a good deal of curvature on the line, and a heavy gradient to the quarry.

Peace River Great Western Ry.—The provisional directors named in the bill now before the Alberta Legislature for the incorporation of a company with this title are: R. A. Grant, R. H. Percival, W. J. Cook, C. E. Johnston, Winnipeg; G. Cochrane, Moredon, Man. (Dec. 1910, pg. 1015.)

Portland Canal Short Line Ry.—Track is reported to have been laid from Stewart, B.C., to a point about four miles inland, and that about 75% of the whole work on the line to Bear River has been completed. (Nov., 1910, pg. 911.)

Reid Newfoundland Ry.—Grading was reported to have been completed on the Bonavista branch Nov. 30, and track was reported to have been laid to beyond Trinity East. Between Catalina and Bonavista there is a stretch of marsh land extending for about a mile and a half, which will require considerable

filling before track can be laid across it. Ballasting was proceeded with until prevented by the frost. (Dec., 1910, pg. 1015.)

St. John Valley Ry.—Recently engineers representing the Mackenzie, Mann & Co. interests and the G.T. Pacific Ry., and F. C. Dunn, a New York engineer, have been in Fredericton, N.B., looking over the plans of the surveys made for this projected railway by the Provincial Government engineering staff. The Provincial authorities decline to say anything as to the purpose of these negotiations. (Dec., 1910, pg. 1017.)

Salmon River to Peace River.—The British Columbia Legislature is being asked to incorporate a company with this title to build a railway from Salmon River, Dean Channel, Bella Coola or other points near, on the western boundary of the province to Siguita Lake, to Kivalcho Lake, along the Uhalghart River to Entiaco Lake, along the Entiaco River to Natulks Lake, along the Upper Nechaco River to Fraser Lake, thence easterly to the point where the Peace River crosses the eastern boundary of British Columbia. Elliott, McLean and Shandley, Victoria, are solicitors for applicants.

In connection with this project U.S. papers state that the Idaho and Washington Northern Ry., which at present has its terminus at Metalline, 11 miles south of the International boundary, proposes to extend northerly along the Salmon River Valley. A route is reported to have been surveyed along the valley to Salmo, thence along the Beaver Valley to Trail, and other points in British Columbia. The I. and W.N.R. is reported to be working in conjunction with the Chicago, Milwaukee and St. Paul Ry. (See Chicago, Milwaukee & Puget Sound Ry.)

Simcoe, Grey and Bruce Ry.—The Dominion Parliament is being asked to incorporate a company with this title to build a railway from Southampton, easterly to Owen Sound, easterly and south-easterly, passing Meaford, Thornbury, Collingwood and Orillia, to the Canadian Northern Ontario Ry., east of Orillia, Ont. Mackay, Telford and Macdonald, Owen Sound, are solicitors for applicants.

Skidegate to Indian Village.—The British Columbia Legislature is being asked to incorporate a company to build a line on Graham Island, Queen Charlotte group, from Skidegate Inlet northerly to opposite Gambus Island across Gambus Island and Masset Inlet, northwesterly, touching the east end of In-Tsua Lake, across Naden River and around the western shore of Naden Harbor to the old Indian Village. Power is also asked to build branch lines, and more particularly one from opposite Gambus Island, parallel with the shore line of Masset Inlet to Masset village, thence northeasterly to between Cape Fife and Rose Point. C. F. Davie, Victoria, B.C., is solicitor for applicants.

Sydney and Louisburg Ry.—The question of the construction of a subway under the tracks at McQuarrie's crossing, Sydney, N.S., is under consideration. The city engineer in his report urges that efforts be made to reduce the gradients of the approaches to the subway, so as to be more favorable for traffic, which was approved. The company has under construction a short spur from McKeegan's point to Dixon's platform, about a mile, and is reconstructing the line between mileage 30 and 31. Surveys are being made for a branch from Balls Creek, for 2.4 miles, to the limestone quarries, and from Morin station for 2.25 miles to the Birch grove collieries. (June, 1910, pg. 453.)

Temiskaming and Northern Ontario Ry.—An order-in-council was passed by

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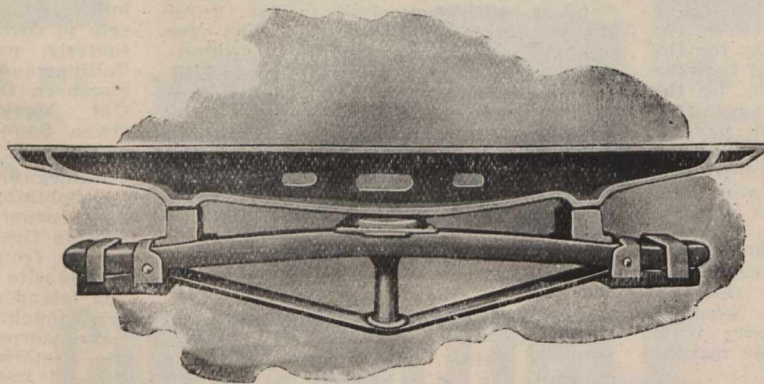
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the Ontario Government Nov. 30, authorizing the building of a branch line from near Kelso to the Porcupine district, about 32 miles, at an estimated cost of \$450,000.

The Government early in 1910 made an agreement with a private company to build such a line, it being understood that a charter would be given by the Legislature at the 1911 session. This agreement subsequently passed under the control of interests represented by E. A. Wallberg, Montreal, who is interested in power development plants on the Metagami and other rivers. While surveys have been made no actual construction has been done, and the Government has taken the position that the company has forfeited its right to further consideration. The charter has been cancelled and the order-in-council passed authorizing the building of the line under the general authority for the building of branch lines by the T. and N.O. Ry. Commission. J. L. Englehart, Chairman of the Commission, in an interview subsequently, said: "Our engineers are out on the survey work from Kelso, and work will be begun at once. We expect to have the line in operation by June 1." The line will, it is said, be built across a sandy plain to Night Hawk Lake, which will be crossed by a bridge, and by an easy route to the Porcupine River, which will also be crossed, about 1.5 miles north of the Crombie townsite, thence through the centre of Tisdale tp. to the Metagami River. Steam will be used for hauling trains at first, but press reports state that the line will ultimately be operated by electricity.

We were advised, Dec. 12, that the branch is being built by the Commission direct, and that though actual surveys are not yet completed, everything possible will be done this winter, the intention being to complete the line and have trains running by July 1. J. M. Bourke, C.E., has been appointed Superintendent of Construction. (Dec., 1910, pg. 1015.)

Timagami and Ontario Northern Ry.—Application is being made to the Dominion Parliament to extend the time within which the company may build its projected railway from Sturgeon Falls, Ont., northerly. The notice of application is signed by J. Craig, President, Sturgeon Falls, Ont. (Aug., 1910, pg. 631.)

Toronto, Hamilton and Buffalo Ry.—A press report states that the company has acquired some 23 acres of land close to Cline's Park, Hamilton, for additional yard space. (Dec., 1910, pg. 1017.)

Vancouver to Winnipeg.—A letter has been addressed by the Minister of Public Works for British Columbia to the Premiers of Alberta, Saskatchewan and Manitoba, suggesting that the four provinces should unite for the purpose of building a scenic railway from Vancouver to Winnipeg.

Station Location Plans.—The Board of Railway Commissioners has directed that in future whenever it is the intention of a railway company to construct a permanent station, and an application is to be made to the Board for its approval, a copy of the application and plan be served on the municipal authority of the district in which the station is to be erected; or if there is no municipal authority, then on the Government or other authority having control over the district.

T. H. White, Chief Engineer, Canadian Northern Pacific Ry., in writing from Vancouver in answer to an enquiry respecting progress of work says, "I am glad to help with the Railway and Marine World, which we all admire and enjoy."

Canadian Northern Ry. Earnings, Etc.

Gross earnings, working expenses and net profits from July 1, 1910, with increases over, or decreases from, those of 1909-10:

	Earnings.	Expenses.	Net Earnings.	Net Increase
July	\$ 1,225,100	\$876,900	\$348,200	\$118,600
Aug.	1,093,000	830,000	263,000	58,600
Sept.	1,279,900	898,700	381,200	69,700
Oct.	1,627,800	1,047,300	580,500	99,300
	\$5,225,800	\$3,652,900	\$1,572,900	\$346,700
Inc.	\$1,114,200	\$ 767,500	\$ 346,700	.....

Approximate earnings for Nov., \$828,300, and for two weeks ended Dec. 14, \$621,100, against \$807,400 and \$580,700 for same periods 1909.

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

Gross earnings, working expenses, net profits, increases or decreases over 1909-10, from July 1, 1910:

	Earnings.	Expenses.	Net Profits.	Net Increase
July	\$8,869,214.32	5,384,594.73	\$3,484,619.50	1,004,748.86
Aug.	9,255,331.67	5,563,659.34	3,691,672.33	727,614.46
Sept.	9,315,213.07	5,403,614.03	3,911,599.04	479,710.47
Oct.	10,229,370.77	5,724,210.25	4,505,160.52	118,863.33

\$37,669,130.48 \$22,076,078.35 \$15,593,052.08 \$2,330,937.12 Inc. \$5,034,340.98 \$2,703,403.86 \$2,330,937.12

Approximate earnings for Nov., \$4,874,000, and for two weeks ended Dec. 14, \$3,872,000 against \$4,675,000 and \$3,651,000 for same periods 1909.

DULUTH, SOUTH SHORE AND ATLANTIC RY.—Operating revenue for Oct., \$280,052.15; expenses, \$189,786.49; net revenue, \$90,265.66, against \$308,233.87 operating revenue; \$200,500.67 expenses; \$107,733.20 net revenue for Oct., 1909. Aggregate operating revenue for four months ended Oct. 31, \$1,227,668.75; expenses, \$781,745.12; net revenue, \$445,923.63, against \$1,212,410.17 aggregate operating revenue; \$791,793.98 expenses; \$420,616.19 net revenue for same period 1909. Approximate earnings for Nov., \$132,093, and for two weeks ended Dec. 14, \$11,743, against \$127,759 and \$101,180 for same periods 1909.

MINERAL RANGE RD.—Operating revenue for Oct., \$64,374.13; expenses, \$56,913.74; net revenue, \$7,460.39, against \$73,725.16 operating revenue; \$65,842.15 expenses; \$7,883.01 net revenue for Oct., 1909. Aggregate operating revenue for four months ended Oct. 31, \$252,158.91; expenses, \$252,678.57; net revenue, \$519.66, against \$298,657.05 aggregate operating revenue; \$248,482.65 expenses; \$50,174.40 net revenue for same period 1909. Approximate earnings for Nov., \$31,657, and for two weeks ended Dec. 14, \$27,530, against \$40,221 and \$30,522 for same periods 1909.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RY.—Operating revenue for Oct., \$1,269,067.55; expenses and taxes, \$780,513.96; operating income, \$488,553.59, against \$1,915,981.22 operating revenue; \$835,702.09 expenses and taxes; \$1,080,279.13 operating income for Oct., 1909. Aggregate operating revenue for four months ended Oct. 31, \$4,951,867.94; expenses and taxes, \$3,051,224.40; operating income, \$1,900,643.54, against \$5,934,041.26 aggregate operating revenue; \$3,098,764.76 expense and taxes; \$2,835,276.50 operating income for same period 1909. Approximate earnings for Nov., \$2,004,761, and for two weeks ended Dec. 14, 1910, \$811,955, against \$2,121,624 and \$723,247 for same periods 1909.

CHICAGO DIVISION.—Operating revenue for Oct., \$819,508.24; expenses and taxes, \$627,313.62; operating income, \$192,194.62, against \$802,660.25 operating revenue; \$525,352.08 expenses and taxes; \$277,308.17 operating income for Oct., 1909. Aggregate operating revenue for four months ended Oct. 31, 1910, \$3,227,484.60; expenses and taxes, \$2,328,105.99; operating income, \$899,378.61, against \$2,983,469 aggregate operating revenue; \$1,952,653.47 expenses and taxes; \$1,030,815.53 operating income for same period 1909.

Grand Trunk Ry. Earnings, Expenses, Etc.

The following figures show the earnings, expenses, etc., of the G.T.R., C.A.R., G.T. Western Ry., and D.G.H. & M.R. for Oct., 1910, and 1909, respectively:

GRAND TRUNK RAILWAY.			
	1910.	1909.	
Earnings	\$3,251,700	\$3,130,000	
Expenses	2,331,300	2,181,000	
Net earnings	\$ 920,400	\$ 949,000	

CANADA ATLANTIC RAILWAY.			
	1910.	1909.	
Earnings	\$ 203,800	\$ 203,000	
Expenses	157,800	149,000	
Net earnings	\$ 46,000	\$ 54,000	

GRAND TRUNK WESTERN RAILWAY.			
	1910.	1909.	
Earnings	\$ 542,500	\$ 526,000	
Expenses	464,300	421,500	

DETROIT, GRAND HAVEN AND MILWAUKEE RY.			
	1910.	1909.	
Earnings	\$ 201,900	\$ 184,700	
Expenses	150,300	140,200	

Net earnings \$ 51,600 \$ 44,500
Approximate earnings for Nov., \$2,043,460, and for two weeks ended Dec. 14, 1910, \$1,664,238, against \$2,013,293 and \$1,577,972 for same periods 1909.

TRAFFIC RECEIPTS OF THE SYSTEM.
Aggregate from July 1 to Nov. 30:—

	1910.	1909.
Grand Trunk Ry.	£3,095,556	£3,043,937
Canada Atlantic Ry.	173,608	193,362
G.T. Western Ry.	501,754	531,609
D.G.H. & M. Ry.	178,103	176,856
Total	£3,949,021	£3,945,764

Quebec Central Railway.

The report for the year ended June 30 shows gross earnings \$1,105,867; expenses \$759,556; net operating earnings, \$346,311; interest earned \$5,675; net income \$351,986, against \$1,021,682 gross earnings; \$724,918 expenses; \$296,764 net operating earnings; \$9,176 interest earned; \$305,940 net income for the year ended June 30, 1909. Added to the balance brought forward from 1909 \$46,232, there was a balance on hand at June 30, of \$398,218, from which is deducted, interest on 4% debenture stock \$116,525; interest on 3% debenture stock, \$49,348, and interest on 7% income bonds \$115,545, leaving a balance of \$117,200, of which \$15,000 has been transferred to the reserve contingent fund bringing the amount to the credit of this fund to \$80,000. Out of the surplus of \$102,200, a dividend of 2% for the year was declared, absorbing \$55,607, and the balance of \$46,593 was carried forward to the current year's accounts. During the year there was an issue of £75,000 of 4% debenture stock for capital purposes raising the amount outstanding at June 30, to £604,837. The general balance sheet shows assets of \$10,290,150.92, the liabilities of \$10,008,457.90. The rolling stock owned at June 30, is given as follows: 23 locomotives, 13 first class cars, 6 second class cars, 3 baggage cars, seven baggage and passenger cars, one official car, two dining cars, 308 box cars, 325 flat cars, 74 stock cars, six refrigerators cars, 20 drop bottom coal cars, five gondola hopper bottom coal cars, 35 Hart convertible cars, seven vans, one ballast spreading car, four snow plows, one steam shovel, one steam shovel tank car and six miscellaneous cars.

At the annual meeting in London, Eng., Oct. 19, E. Dent, President, said that this was the first time that the Board had felt justified in declaring a dividend. He also pointed out that the increased train loads necessitated the use of stronger bridges and culverts and the use of heavier ballasting, and stated that the laying of 80 lb. rails was being continued. The extension of the line to St. Justine, was practically completed by June 30, and the returns from operating have been included in the current year's earnings. The report was carried unanimously, and the directors re-elected for the current year, as follows: E. Dent, F. Grundy, A. Bremner, T. Lindley, and F. H. Norman. F. Grundy, Vice-President died since the meeting was held.

J. H. Corbett and J. M. Floesch, contractors for the construction of the first 50 miles from Moncton, N.B., of the National Transcontinental Ry., were entertained to dinner by the city, Dec. 7, on the completion of their contract.

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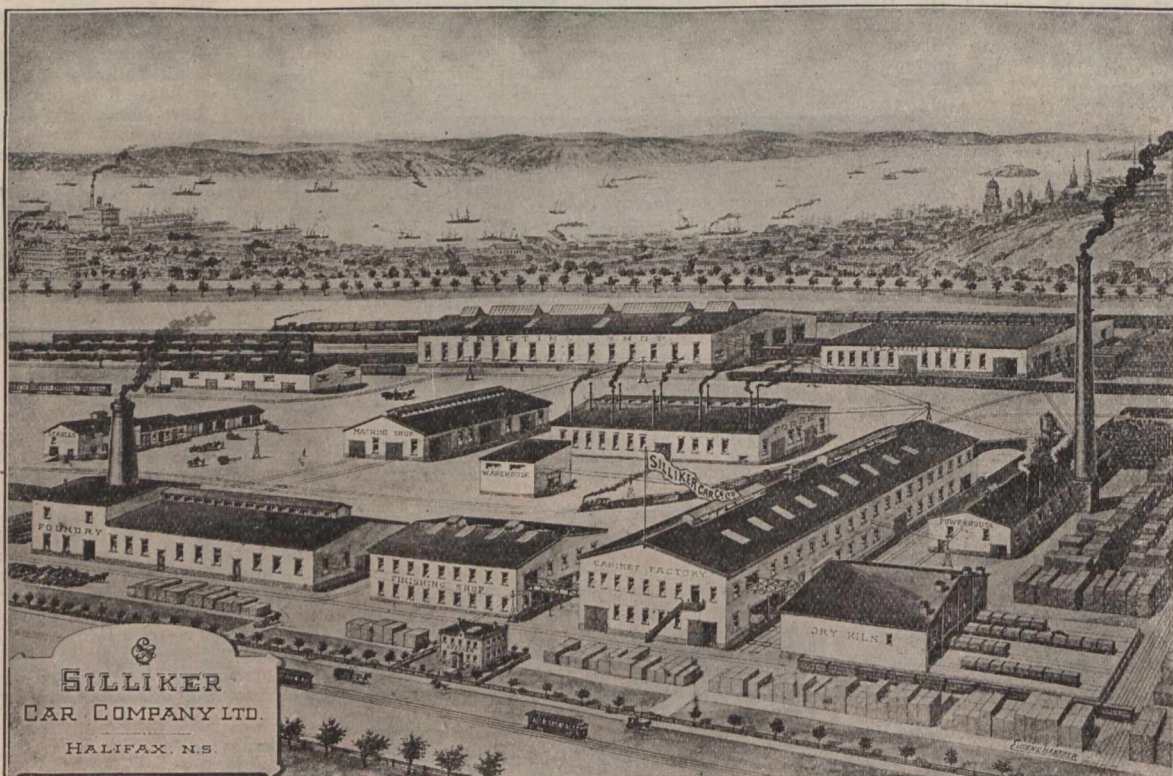
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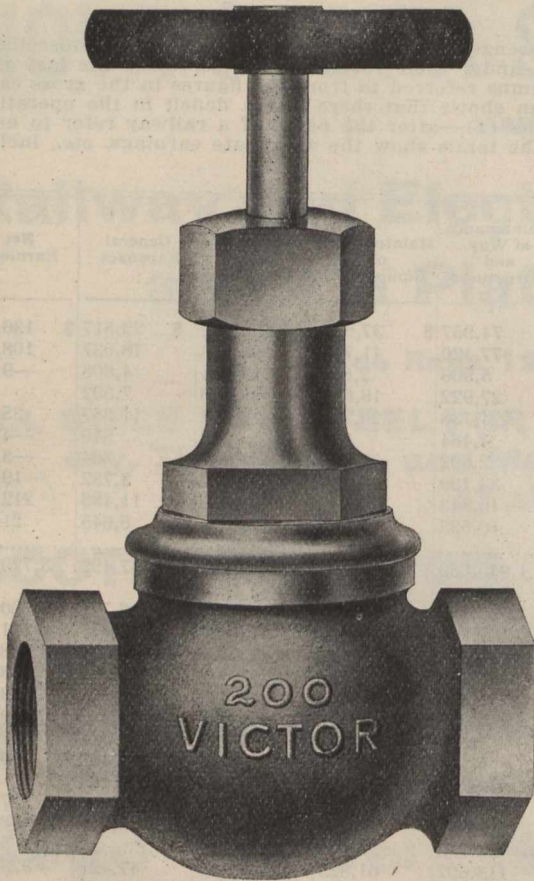
RAILWAY, FREIGHT AND PASSENGER CARS OF ALL KINDS

STEAM RAILWAY STATISTICS FOR YEAR ENDED JUNE 30, 1910

In the following table the column headed gross earnings includes passenger and freight earnings, as well as miscellaneous earnings; the next four columns give the operating expenses classified under their various headings, while the last gives the net earnings, which is arrived at by deducting the totals of the four columns referred to from the figures in the gross earnings column. The minus mark (—) before figures in the net earnings column shows that there was a deficit in the operations of the line to the extent of the figures given. The numbers in brackets—thus (1)—after the name of a railway refer to notes on page 29. The cents have been omitted in all cases, and the figures in the totals show the aggregate earnings, etc., including the cents, omitted from the detailed items.

Name of Railway	Mileage	Passenger Earnings	Freight Earnings	Gross Earnings	Maintenance of Way and Structures	Maintenance of Equipment	Traffic Transportation Expenses	General Expenses	Net Earnings
Alberta Ry. & Irrigation Co.....	111.82	\$ 111,202	\$ 244,292	\$ 377,453	\$ 74,957	\$ 37,508	\$ 105,470	\$ 22,517	\$ 136,999
Algoma Cent. & Hudson Bay (2) ..	89.64	20,605	233,546	396,079	77,420	41,712	150,826	18,037	108,082
Atlantic, Quebec & Western (3) ..	35.00	5,663	10,887	16,571	5,906	2,634	13,294	4,608	—9,872
Atlantic & Lake Superior (3).....	100.00	33,626	47,806	85,921	27,922	16,653	33,200	7,392	752
Bay of Quinte (4).....	89.37	40,088	121,792	167,735	24,138	20,293	76,897	11,357	35,046
Bedlington & Nelson (5).....	15.30	160	1,050	1,210	4,464	316	648	546	—4,764
Bessemer & Barrys Bay	5.00	.....	3,710	3,710	2,092	432	4,204	264	—3,283
Brandon, Sask. & Hudson Bay ...	69.45	33,338	41,990	75,465	33,189	8,614	49,537	3,732	—19,610
British Yukon (6).....	90.32	78,283	206,547	328,994	40,543	14,048	51,588	11,483	212,329
Brockville, Westport & N.W. (32)	45.00	32,199	27,653	59,863	10,533	2,855	17,876	6,645	21,952
Bruce Mines & Algoma	17.28	.....	.....	.....	.....	.....	.....	.....	.....
Canada Southern (23).....	382.19	2,634,309	6,167,553	8,833,944	1,045,650	1,007,292	3,022,744	137,499	3,720,756
Canadian Gov't Railways—									
Intercolonial (7).....	1,450.37	3,234,156	6,181,392	9,515,545	1,755,106	1,867,711	4,985,731	206,718	700,277
Prince Edward Island	269.33	168,175	148,926	318,031	121,811	79,120	212,866	15,415	—111,182
Canadian Northern (8).....	3,281.30	2,631,993	10,105,206	13,833,061	2,047,830	1,761,641	5,022,365	362,671	4,638,551
Canadian Northern Ont. (8).....	342.20	151,944	341,212	510,989	101,880	73,568	274,672	27,101	33,765
Canadian Northern Que (8).....	348.67	283,002	647,448	940,646	233,408	110,697	505,681	37,501	53,357
Canadian Pacific (9).....	10,000.00	27,557,231	59,243,881	88,317,122	13,653,938	12,567,493	27,861,838	1,684,269	30,549,581
Carlton & Grenville.....	13.00	1,287	64	2,143	1,857	1,033	1,769	42	—2,557
Cape Breton	31.00	5,000	2,271	7,293	5,522	1,096	7,797	2,402	—9,524
Cararaq (10).....	84.78	18,309	34,961	53,271	19,136	7,422	22,216	4,463	31
Central Ontario (11).....	149.73	89,382	209,761	306,796	54,889	16,854	89,198	7,911	137,942
Crows Nest Southern (5).....	74.18	23,774	133,340	158,483	89,308	23,276	77,000	6,943	—38,046
Cumberland Ry. & Coal Co. (12)	32.00	16,207	32,729	48,937	12,793	3,365	27,224	.....	5,553
Dominion Atlantic (13).....	278.87	397,509	437,189	837,377	113,007	61,529	291,995	47,421	323,423
Eastern British Columbia.....	16.00	4,072	25,526	29,659	10,319	5,407	12,276	1,017	639
Edmonton, Yukon & Pacific (8)	4.50	.....	.....	.....	.....	.....	.....	.....	.....
Elgin & Havelock.....	28.00	3,908	6,686	10,594	5,765	371	4,820	802	—1,166
Esquimalt & Nanaimo (9).....	78.00	.....	.....	.....	.....	.....	.....	.....	.....
Grand Trunk (15).....	3,094.96	10,772,106	20,244,172	31,342,500	4,292,685	5,985,397	11,485,579	771,834	8,807,004
G.T.R. (Canada Atlantic) (15).....	456.26	460,425	1,532,650	2,035,805	382,558	253,289	972,931	56,572	368,372
Grand Trunk Pacific (14).....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Halifax & South Western (8).....	369.81	209,403	204,491	412,013	87,100	47,913	191,172	19,130	66,696
Hampton & St. Martins.....	30.00	6,139	12,469	18,838	6,150	1,025	7,414	1,083	3,165
Hereford (16).....	52.18	18,205	47,055	66,802	34,102	16,127	43,066	3,608	—30,102
International of N B. (17).....	80.00	.....	.....	.....	.....	.....	.....	.....	.....
Irontdale, Bancroft & Ottawa	48.00	7,310	20,449	27,990	12,269	3,255	11,253	3,623	—2,411
Inverness Ry. & Coal Co. (8).....	60.91	22,487	168,808	192,602	30,278	22,845	44,203	7,303	87,972
Kaslo & Slocan (5).....	23.37	3,026	14,964	17,991	16,248	5,072	12,938	698	—16,967
Kent Northern	34.00	8,303	9,043	17,346	3,625	250	5,625	1,790	6,056
Kettle River Valley.....	18.50	415	1,839	2,254	2,499	901	1,829	676	—3,652
Kingston & Pembroke (31).....	103.40	59,325	130,940	185,922	55,084	24,084	71,253	9,545	25,954
Klondike Mines.....	31.81	11,553	41,806	54,032	17,217	4,564	20,516	10,767	965
Lake Erie & Detroit River (18)....	198.81	155,437	2,295,157	2,457,620	273,589	322,842	853,265	50,885	957,035
Liverpool & Milton	6.00	462	10,179	10,641	1,360	875	4,413	595	3,395
London & Port Stanley	23.66	39,524	83,995	124,228	18,827	17,139	85,351	4,604	—1,695
Lotbiniere & Megantic	30.00	6,159	28,955	35,487	7,793	4,540	10,368	9,773	2,994
Magnetawan River	1.91	.....	.....	.....	.....	.....	.....	.....	.....
Manitoulin & North Shore (2).....	22.70	3,063	76,432	81,012	11,214	8,564	21,667	7,326	32,239
Maritime Ry. & Coal Co. (19).....	15.00	7,834	58,017	65,869	7,930	6,131	27,018	2,741	22,047
Massawippi Valley (20).....	35.46	68,443	128,667	197,963	31,510	20,468	92,156	4,346	49,482
Midland of Manitoba (5).....	91.77	8,439	61,778	70,272	37,216	8,612	35,655	3,620	—14,832
Montreal & Atlantic (9).....	163.40	202,626	712,832	933,112	261,453	132,945	399,318	26,479	112,905
Montreal & Province (15).....	58.60	54,740	48,667	105,041	28,612	1,002	32,796	1,903	40,726
Montreal & Vermont Jct. (15).....	23.60	64,349	39,835	104,276	12,211	889	43,234	4,313	43,627
Moncton & Buctouche	32.00	9,772	18,430	28,202	10,203	1,813	8,519	2,282	5,383
Morrissey, Fernie & Michel (21)....	10.85	10,681	99,841	110,522	10,825	14,381	35,413	18,224	31,677
Napierville Jct. (26).....	27.06	5,062	57,234	62,381	5,340	6,697	21,126	1,655	27,560
Nelson & Fort Sheppard (5).....	55.42	29,540	42,055	74,483	69,716	7,698	39,309	3,478	45,719
New Brunswick Coal & Ry. Co. (22)	58.00	15,425	41,573	65,543	20,166	15,919	32,144	9,610	—12,297
New Brunswick Southern.....	82.35	23,187	20,939	44,356	33,975	10,278	27,577	4,906	—32,381
New Brunswick & P.E.I.....	36.00	9,738	21,046	30,888	9,548	4,890	10,327	1,353	4,768
New Westminster Southern (5).....	24.10	14,547	24,922	39,605	12,438	2,925	9,745	1,222	13,273
North Shore (24).....	8.63	199	3,269	3,468	949	120	2,220	64	113
Nosbonsing & Nipissing.....	5.50	.....	.....	.....	.....	.....	.....	.....	.....
Nova Scotia Steel & Coal Co.....	12.50	1,893	3,058	4,951	3,692	1,037	5,765	.....	—5,544
Orford Mountain .....	.....	5,739	16,780	22,609	13,415	3,068	14,851	2,523	—11,259
Ottawa & New York (23).....	56.90	72,873	76,462	152,150	45,867	17,151	80,837	6,798	1,495
Phillipsburg Ry. & Quarry Co.....	6.00	5,492	5,492	3,110	2,382
Pontiac & Renfrew (32).....	4.25

(Continued on page 29)



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Hard Metal Globe Valve

Suitable for Working Steam Pressure of 200 lbs.

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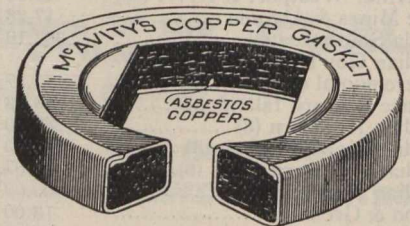
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For Jenkins' Valves or valves of similar type.



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Finest Roadbed in Canada. Modern and Luxurious Trains. Courteous Employees. Beautiful Scenery. The Best of Everything on this Popular Route.

4 FAST TRAINS, TWO EXPRESS AND TWO LIMITED

BETWEEN MONTREAL AND TORONTO, EACH WAY, DAILY

THROUGH TRAINS between BOSTON (via Boston & Maine R.R. and Cent. Vermont Ry.) MONTREAL, TORONTO and CHICAGO.

THROUGH TRAINS between NEW YORK, TORONTO and CHICAGO via Lehigh Valley R. R. and Niagara Falls.

Dining and Parlor-Library-Cafe Cars on Day Trains.

Pullman Sleeping Cars on Night Trains.

THE “INTERNATIONAL LIMITED”

The “Railway Greyhound of Canada,” the finest and fastest train in the Dominion, runs every day in the year between Montreal and Chicago.

The Lines of this Great System reach all the Principal Cities and Towns in Quebec and Ontario

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

G. W. VAUX, Gen. Passenger Agent, MONTREAL

Steam Railway Statistics for the Year Ended June 30, 1910—(Continued from page 27)

Name of Railway	Mileage	Passenger Earnings	Freight Earnings	Gross Earnings	Maintenance of Way and Structures	Maintenance of Equipment	Traffic and Transportation Expenses	General Expenses	Net Earnings
Princeton Branch (W.C. Ry.)	5.10	7,429	15,038	22,467	2,808	1,659	5,931	367	11,700
Quebec Central.....	222.00	367,967	729,873	1,104,682	162,970	133,524	395,146	68,914	345,127
Quebec Ry. Light & Power Co.(25)	27.00	14,041	44,028	62,787	6,092	5,147	26,997	10,061	14,488
Quebec & Lake St. John (8).....	286.50	237,473	335,350	581,061	118,416	118,536	277,568	32,455	34,144
Quebec, Montreal & Southern (66)	191.91	120,021	158,123	278,471	65,217	52,138	122,186	15,760	23,167
Red Mountain (5)	9.59	3,867	11,014	15,446	16,612	1,747	22,400	1,869	-27,283
Rutland & Noyan (23).....	3.39	9,421	4,166	13,587	1,358	1,652	5,947	459	4,169
Salisbury & Albert.....	45.00	11,790	22,471	35,476	13,510	5,173	14,189	1,670	932
Schomberg & Aurora (8)	14.40	4,659	5,527	10,186	8,377	753	3,484	348	-2,777
S. anstead, Shefford & Chambly (14)	43.00	36,739	41,098	78,135	22,368	2,575	45,147	1,875	6,169
St. Clair Tunnel (14)	2.25	.....	287,004	287,004	42,051	13,386	54,565	3,197	173,804
St. Lawrence & Adirondack (23) ...	46.12	194,697	320,022	515,101	68,516	34,051	184,321	7,095	221,114
Spokane & British Columbia	3.70	99	3,157	3,274	2,508	776	1,238	639	-1,887
Sydney & Louisburg (27).....	62.86	19,531	293,133	315,101	58,885	87,437	131,410	16,070	21,294
Temiscouata.....	113.00	76,646	151,270	231,625	51,936	26,994	75,286	14,658	62,748
Temiskaming & N. Ontario (28) ...	266.14	693,657	966,707	1,737,065	337,001	140,746	594,827	69,634	594,855
Thousand Islands.....	6.33	11,913	23,060	37,361	5,270	2,904	19,185	3,549	6,450
Toronto, Hamilton & Buffalo (29)	80.15	290,014	719,850	1,018,417	122,993	86,485	354,539	24,544	429,845
Vancouver Copper Co. (32).....	12.00	.....	.....	.....	.....	.....	.....	.....	.....
Vancouver, Victoria & Eastern (5)	219.40	196,433	436,237	637,932	265,739	66,276	315,206	17,862	-27,153
Victoria & Sidney (5)	16.26	20,793	25,465	46,565	7,236	1,840	15,356	2,832	19,298
Victoria Term. Ry. & Ferry Co.(c)	1.14	2,034	2,163	4,220	539	135	1,149	400	1,994
Wabash (30) .....	.....	667,447	1,726,648	2,399,685	202,768	474,249	1,026,115	89,455	607,105
Wellington Colliery Co.....	10.75	3,245	70,252	73,498	9,893	36,257	17,347	.....	10,000
York & Carleton.....	10.50	2,419	3,448	5,868	1,455	165	2,195	50	2,003
Totals.....	24,724.46	52,956,218	117,494,484	173,956,217	27,035,603	26,002,301	63,294,346	4,073,188	53,550,776

Notes to Steam Railway Statistics.

(1) The Alberta Ry. and Irrigation Co.'s lines include the lines of the Alberta Ry. and Coal Co., and the St. Mary's River Ry. It has trackage rights over 1.60 miles of C.P.R. tracks.

(2) The Algoma Central and Hudson Bay Ry. and the Manitoulin and North Shore Ry. are owned by the Lake Superior Corporation.

(3) The Atlantic, Quebec and Western Ry. has under construction an additional 70 miles. It has trackage rights over 1.75 miles of the lines of other companies. The Atlantic and Lake Superior Ry. has been acquired by the Quebec Oriental Ry., a subsidiary of the A. Q. & W. Ry.

(4) The Bay of Quinte Ry. has trackage rights over 19 miles of another company. The Thousand Islands Ry. is also owned by the same interests. Since the date covered by the statistics the B. of Q. Ry. has been acquired by the Mackenzie-Mann interests.

(5) The Great Northern Ry. owns and operates the following lines in Canada: Brandon Saskatchewan and Hudson Bay Ry.; Midland Ry. of Manitoba; Crow's Nest Southern Ry.; Kaslo and Slovan Ry.; Red Mountain Ry.; Nelson and Fort Sheppard Ry.; Vancouver, Victoria and Eastern Ry. and Navigation Co.; New Westminster Southern Ry.; Victoria Terminal Ry. and Ferry Co.; and Victoria and Sidney Ry. The Midland Ry. of Manitoba has trackage rights over 0.99 mile of another company's line. The Bedlington and Nelson Ry. mileage includes 8.67 miles operated under lease. The Nelson and Fort Sheppard Ry. mileage includes 5.42 miles of leased lines. The New Westminster Southern Ry. and the Vancouver, Victoria and Eastern Ry. have each trackage rights 1.48 miles over the Fraser River Bridge owned by the British Columbia Government.

(6) The British Yukon Ry. is the Canadian portion of the line operated as the White Pass and Yukon Route, connecting with steamers on the Yukon River to Dawson in the summer, and with stages in the winter.

(7) The Intercolonial Ry. mileage does not include the Windsor branch 32 miles, operated by the Dominion Atlan-

tic Ry. It has 16 miles of second track. It operates its trains into Montreal over the G.T.R., its trackage rights over foreign lines being 40.36 miles.

(8) Mackenzie, Mann & Co. (Ltd.), interests own or control and operate the following railways: Canadian Northern Ry.; Canadian Northern Ontario Ry.; Canadian Northern Quebec Ry.; Edmonton, Yukon and Pacific Ry.; Halifax and South Western Ry.; Inverness Ry. and Coal Co.; Quebec and Lake St. John Ry. and the Schomberg and Aurora Ry. The Canadian Northern Ry. figures include the statistics relating to traffic over the Manitoba Ry., which it operates under a lease from the Government of Manitoba. The lines included in the Manitoba Ry. are the Northern Pacific and Manitoba Ry., Winnipeg Transfer Ry., Portage and North Western Ry., and Waskada and North Eastern Ry. Its earnings, etc., also include those of the Qu'Appelle, Long Lake and Saskatchewan Ry., and of the Edmonton, Yukon and Pacific Ry., which report mileage separately. The Canadian Northern Quebec Ry. has trackage rights over 58.65 miles of other companies' lines. The Canadian Northern Ontario Ry. has trackage rights over 3.80 miles into the Union Station Toronto. The Halifax and South Western Ry. has 2.30 miles of trackage rights over the Intercolonial Ry. into Halifax.

(9) The Canadian Pacific Ry. mileage includes 2,909.5 miles of main lines owned, 3,020.60 miles of branches and spur lines owned; 2,576.10 miles of lines of proprietary companies; 1,309.80 miles of lines operated under lease; 184 miles of lines operated under contract, and 37.30 miles of lines operated under trackage agreements. It has 397.50 miles of second track, on lines owned, and 155.90 miles on leased lines. The C.P.R. returns include the earnings and expenses of the Esquimalt and Nanaimo Ry. The lines operated by the C.P.R. include the Montreal and Atlantic Ry., which has 6.40 miles of second track, and a leased line—Lake Champlain and St. Lawrence Junction Ry. The C.P.R. also owns with the New York Central and Hudson River Rd., the Toronto, Hamilton and Buffalo Ry.

(10) The Carquet Ry. operates the Gulf Shore Ry.

(11) The Central Ontario Ry. operates the line owned by the Marmora Ry. and Mining Co., (formerly the Ontario, Belmont and Northern Ry.).

(12) The Cumberland Ry. and Coal Co. also owns the Springhill and Oxford branch, 14 miles which is not being operated.

(13) The Dominion Atlantic Ry. operates under agreement the Windsor branch of the Intercolonial Ry., 32 miles, which is included in the D.A.R. mileage, but not in that of the I.C.R. It has also trackage rights over 14.42 miles of other lines.

(14) Grand Trunk Pacific Ry. is reported to be under construction, although it is being operated between Winnipeg and Edmonton.

(15) The G.T.R. mileage includes the Buffalo and Lake Huron Ry., 161.30 miles, leased and partly owned. The G.T.R. figures include the earnings, etc., of the Magnetawan River Ry. It has 706.48 miles of second track, and has trackage rights over other lines totalling 13.71 miles. It also owns the Canada Atlantic Ry., and the St. Clair Tunnel Co., which report separately, and the G.T. Pacific Ry., which reports 945 miles of track laid, but does not report any earnings or expenses for the year under review. It also controls the Central Vermont Ry., which operates the Montreal and Province Line; the Montreal and Vermont Jct. Ry. and the Stanstead Shefford and Chambly Ry. The Canada Atlantic Ry. mileage includes the Ottawa, Arnprior and Parry Sound, Ry.; it also operates under lease the Central Counties Ry., and the Pembroke Southern Ry., which report mileage separately.

(16) The Hereford Ry. is owned and operated by the Maine Central Rd. which also owns the Princeton branch, Washington County Ry.

(17) The International Ry. of New Brunswick was originally known as the Restigouche and Western Ry. Although 80 miles are reported completed it had not been opened for public traffic.

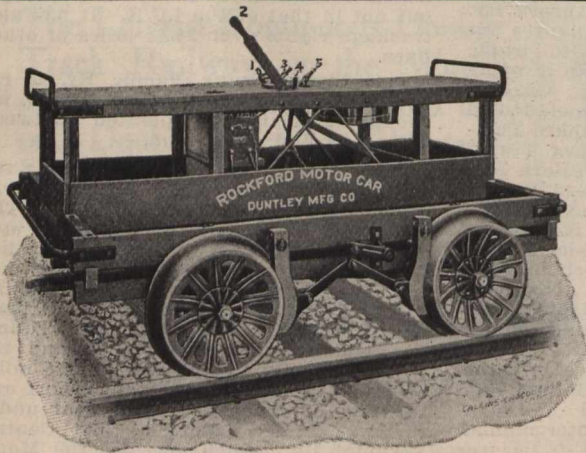
(18) The London and Port Stanley Ry., practically owned by the City of London, Ont., is leased to the Lake Erie and Detroit River Ry., which is owned

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



SAVE MONEY

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MOTOR CARS**

Workmen are taken to and from work in one third of the time.

All of their energy is saved for track work.

WHERE WE EXCEL

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MUSSENS LIMITED

MONTREAL

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DUNTLEY MANUFACTURING COMPANY

CHICAGO, ILL., U.S.A.

and operated by the Pere Marquette Rd., a U.S. company. The P.M.R. has trackage rights over 136.57 miles of other Canadian lines.

(19) The Maritime Ry., Coal and Power Co., owns the line formerly owned by the Canada Coals and Ry. Co.

(20) The Massawippi Valley Ry. has trackage rights over 2.95 miles of another company's lines. It is operated by the Boston and Maine Rd.

(21) The Morrissey, Fernie and Michel Ry. includes 5.03 miles of leased lines. It is owned by the Crow's Nest Pass Coal Co.

(22) The New Brunswick Ry. and Coal Co. owns and operates the old Central Ry. of New Brunswick. It is operated by a commission appointed by the New Brunswick Government.

(23) The New York Central and Hudson River Rd. owns the Ottawa and New York Ry., and the St. Lawrence and Adirondack Ry. It also controls the Toronto, Hamilton and Buffalo Ry.; the Rutland Rd., which owns the Rutland and Noyan Ry.; and the Michigan Central Rd., which controls the Canada Southern Ry. This line has 226.18 miles of second track on main lines, and 16.80 miles of second track in branches and spurs. The Ottawa and New York Ry. operates 1.90 miles under trackage rights. The St. Lawrence and Adirondack Ry. mileage includes 13.30 miles of leased lines, and it has also trackage rights over 8.92 miles of other companies' lines.

(24) The North Shore Ry. owns the line formerly known as the Beersville Coal and Ry. Co.'s line.

(25) The Quebec Montmorency and Charlevoix Ry. reports as to the section of the Quebec Ry., Light and Power Co.'s lines upon which steam trains are operated. There are 6.00 miles of second track and three miles operated under contract.

(26) The Quebec, Montreal and Southern Ry., includes the old East Richelieu Valley Ry., the United Counties Ry. and the South Shore Ry. It is owned by the Delaware and Hudson Co., which also owns the Napierville Jct. Ry.

(27) The Sydney and Louisburg Ry. is owned by the Dominion Coal Co. It operates 1.09 miles of line owned by a proprietary company and has trackage rights over 1.20 miles of other lines.

(28) The Temiskaming and Northern Ontario Ry. is owned by the Province of Ontario and is operated by a Commission.

(29) The Toronto, Hamilton and Buffalo Ry., is owned by the New York Central and Hudson River Rd., and the C.P.R. It has 2.04 miles of second track and has trackage rights over 4.36 of foreign lines.

(30) The Wabash Rd. does not own any track in Canada, but operates over G.T.R. tracks under lease.

(31) The gross earnings of the Kingston and Pembroke Ry. are given as less than the totals of the figures given in the columns for passenger and freight earnings. In the column of the statistical tables for other earnings from operation the figures for the company are preceded by "Cr." and the amount of the figures, \$4,342, deducted from the total freight and passenger earnings give the total gross earnings.

(32) The Bruce Mines and Algoma Ry., Pontiac and Renfrew Ry., and Vancouver Copper Co.'s line are not being operated.

Norton Griffiths and Co., Ltd., has been incorporated under the Dominion Companies Act, with a capital of \$1,000,000, and office at Winnipeg, to carry on the business of general contractors, for the construction and equipment of tramways, docks, harbors, piers, wharves, canals, etc., and to assist in the promotion of companies for their operation.

Railway Commissioners' Traffic Orders.

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

RATES ON RICE FROM MONTREAL.

12275. Nov. 17, 1910.—Re application of Mount Royal Milling & Manufacturing Co., of Montreal, complaining (a) that the G.T.R. and C.P.R. unjustly discriminate against rice manufactured in the province of Quebec by giving preferential rates to cleaned rice from Great Britain, arriving at Montreal by ocean steamships, and reshipped from Montreal wharf in competition with product of complainant's mills to the same Canadian destinations; (b) that the rates on cleaned rice from Montreal are unreasonably high in comparison with the rates from Boston to the said destinations in Canada, through Montreal:

It is ordered that rice, not otherwise specified, in packages, in less than carloads, be included in the first Supplement to the Canadian Classification no. 15 at fourth class, instead of at third class, as at present classified, on the understanding that the said supplement be submitted for the approval of the Board within two weeks following the issuing of this order.

RATES ON BRITISH COLUMBIA LUMBER.

12290. Sept. 8, 1910.—Re application of Fullerton Lumber & Shingle Company, Ltd., of Vancouver, B.C.: (1), complaining of the rate of 6c. per 100 lbs. charged by the G.N.R. on lumber from Tynehead to Cloverdale, B.C., 7.1 miles, as excessive and unreasonable; (2), asking that order 6612, Feb. 23, 1909, be varied so as to include Winnipeg in the list of places covered by the joint tariff issued by the G.N.R., pursuant to the provisions of the order; and (3), complaining of the practice of the C.P.R. and G.N.R. regarding minimum weight for carloads. It is ordered:

1. That the Great Northern Ry. be directed to adopt, not later than Jan. 1, 1911, the rates and minimum weights of the C.P.R. Special Mileage Tariff, C.R.C. no. W. 1112, effective Feb. 20, 1909, to apply on lumber, etc., on the New Westminster Southern Ry., and also on the other railways owned, controlled or operated by it in B.C., to the extent required by the mileages of the said railways.

2. That the application to vary the order 6612, to include Winnipeg in the list of places covered by the joint tariff issued by the G.N.R. (Vancouver, Westminster & Yukon Ry.), pursuant to the provisions of the said order, be refused.

3. That leave be granted the complainant to file another application with the Board regarding the practice of the C.P.R. and the G.N.R. in connection with minimum weight for carloads.

EXPORT RATES ON LUMBER.

12301. Sept. 20, 1910.—Re application of Canadian Lumbermen's Association and Montreal Board of Trade Transportation Bureau, complaining that the railway companies in increasing the export rates on lumber which previously existed, have not complied with order 10528, April 19, 1910; and applying for an order directing the railway companies to carry out the provisions of the said order and issue tariffs on lumber, for export, to comply therewith:

It is ordered that the C.P.R., the G.T.R. and the C.N.Q.R. publish and file tariffs, to be made effective not later than Jan. 1, 1911, reducing the export rates to Montreal on lumber from points in the Province of Quebec, north and east of Montreal, so that the same difference shall exist between the present domestic rates on lumber to Montreal and the said rates for export, as existed between the old domestic rates and the old rates for export.

W. E. & L. S. R. RY. PASSENGER FARES.

12308. Nov. 16.—Re application of residents of Kingsville, Cottam and Essex, Ont., alleging unjust discrimination in passenger fares by the Windsor, Essex and Lake Shore Rapid Ry.:

It is ordered that the discrimination complained of as to the fares between Cottam and Essex, and Cottam and Kingsville will be removed by advancing the one-way fare between Cottam and Essex from 10c to 15c, and reducing the one-way fare between Cottam and Kingsville from 20c to 15c.

Cumberland Railway and Coal Co.

The control of this company has been acquired by interests connected with the Dominion Steel Corporation, and at a meeting held Dec. 1, J. H. Plummer, President D.S.C. was elected President, and H. McInnes, Vice President of the C. Ry. and Coal Co.

The C. Ry. and Coal Co. owns a number of collieries and a coal handling plant at Springhill, N.S., a railway of 32 miles extending from the collieries to Springhill Junction on the Intercolonial Ry., and a branch of 14 miles from the collieries to Oxford on the I.C.R. Oxford and New Glasgow branch, which has not been used for traffic for some years. It has also 16 miles of yard track and sidings, which, with the main line, is laid with steel rails. There are only a few small bridges and culverts on the line. It owns six locomotives, seven passenger cars, 520 freight cars, and two cars used for the company's service. It has outstanding \$1,000,000 of common stock, and received \$39,850 subsidy from the Dominion Government and \$173,650 from the Nova Scotia Government, there being unearned \$4,950 of the Dominion subsidy voted, and \$10,800 of the subsidies voted by the Nova Scotia Legislature. The net earnings for the year ended June 30, 1909, the latest figures available, were \$53,322.82.

C. P. R. Pitch Tank Cars.

The C.P.R. is having built in the U.S. 60 steel tank cars, specially designed for carrying pitch. They are of 50-ton capacity, with steel underframes and standard trucks.

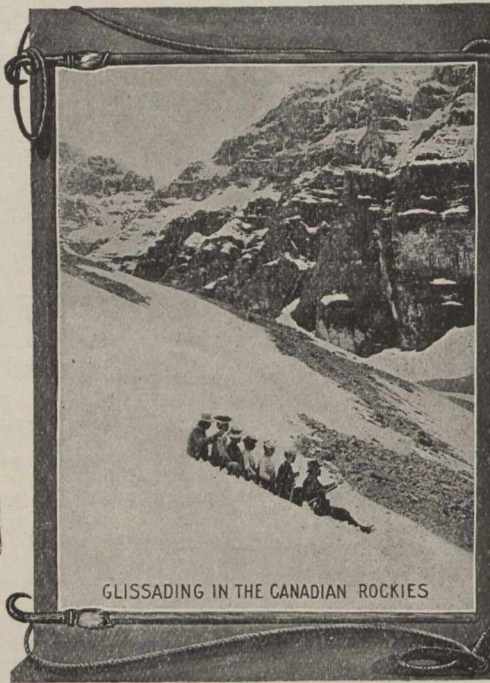
The tank shell is double rivetted and strong throughout. The pitch will be admitted to the tank through the dome opening in the top, which has a cover without screw heads or parts liable to be clogged with the pitch.

The discharge valve is simply constructed to provide an easy outflow with as little obstruction as possible, and is made to suit a 4 in. pipe connection for carrying away pitch. The discharge valve is also steam jacketed to assist in the rapid outflow of the pitch.

The heating system is designed to heat the pitch very rapidly, and all fittings in connection therewith are located on the outside of the tank, where they can be easily got at without disturbing the contents of the tank.

The tanks have good provision for sealing them against loss of contents. They are fitted with friction draw gear, and hand and air brakes, and should on the whole prove very serviceable for the purpose for which they are designed.

The Imperial Engineering Co., Ltd., has been incorporated under the Dominion Companies Act, with a capital of \$100,000, and office at Montreal, to carry on a general engineering business, and to manufacture and deal in machinery, air brakes, tools and machinery supplies.



GLISSADING IN THE CANADIAN ROCKIES

50 SWITZERLANDS IN ONE

THE CANADIAN ROCKY MOUNTAIN NATIONAL PARK

The Largest Park in the World. 5,732 Miles in Extent.

Pre-eminent Natural Grandeur. | A Paradise for Mountaineers,
Splendid Hotel Accommodation. | Naturalists, Geologists and
Luxurious Train Service. | Minerallurgists.
Most delightful place in the world for a vacation.

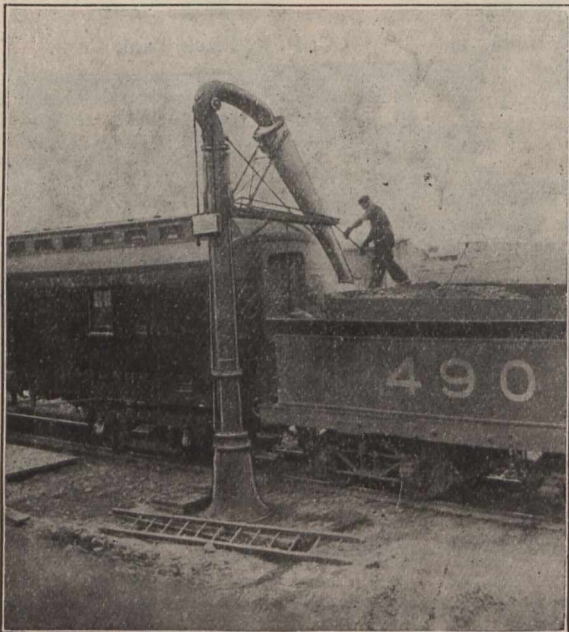
Write for copy of "Challenge of the Mountains."

R. L. THOMPSON,
District Passenger Agent,
TORONTO

Or any agent of the company.

Reached
by the

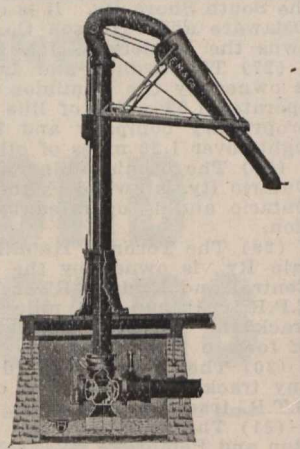
CANADIAN PACIFIC RAILWAY



Sheffield-Johnson Flexible Spout Standpipe Installed on C.P.R. at St. Clet, P.Q.

SHEFFIELD- JOHNSON

The Ideal Standpipe



Showing Telescopic Spout Lowered.

It meets with the approval of practical railway men and its popularity is assured. It has a range of flexibility of 5 ft. or over as desired and the spout can be introduced directly into the highest as well as the lowest tender. Nothing could be simpler, more easily operated or more convenient than the type of telescopic spout shown. This, in connection with our horizontal main valve and other special features, makes a combination that is far ahead of all other standpipes on the market. Locks automatically and positively parallel with tracks when not in use. Revolves in complete circle. Operated entirely by one man. Self-draining—cannot freeze. Equipped with relief valve.

The Canadian Fairbanks Co., Limited

Fairbanks Scales, Fairbanks-Morse Gas Engines,

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

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

Dominion Atlantic Ry.—C.P.R. engineers have completed an inspection of the bridges on the D.A.R. It is proposed to strengthen a number so as to enable heavier trains to be run and to build a new bridge near Digby, on the location made by the old Western Counties Ry. This will enable the company to abandon a portion of the present route which includes two bridges, and will give a shorter and better approach to Digby. A deputation waited on the management at Montreal, Dec. 7, in connection with a proposal to extend the line to Bear River.

St. John Improvements.—C. Murphy, General Superintendent of Transportation, on a recent visit to St. John, N.B., stated that an announcement would shortly be made with respect to the plans for utilizing the property recently acquired on Mill and Main streets.

St. Stephen, N.B.—Press reports from Calais, Me., state that some move is being made in that vicinity towards the extension of the C.P.R. line, now terminating in St. Stephen, N.B., to Calais, and thence to Mattawamkeag, Me. The company's yard accommodation at St. Stephen has been largely increased and the tracks now terminate at the landing place, opposite Calais.

Bridge at St. John's, Que.—Five spans are reported to have been completed by the Dominion Bridge Co., of the new bridge across the Richelieu River at St. John's, Que. It was expected to have the bridge completed by Dec. 31.

Place Viger Improvements, Montreal.—The steel work of the viaduct to carry Notre Dame St., across the C.P.R. lines at Place Viger station is being erected. The viaduct will be 1,006 ft. long and 52 ft. wide. Except where the three tracks entering the station will pass the space under the viaduct will be utilized as freight sheds. The station building itself will be four stories, instead of two, as originally proposed. The steel work is to be started at once, and it is expected that the building will be completed by June 1.

Windsor Street Station, Montreal.—Rapid progress is being made with the erection of the additions to this station, and it is expected that the entire work will be completed by the end of 1912. It is reported that over 1,000 tons of steel has been got into position, and that the whole of the steel skeleton will be completed by April 1.

Lachine Bridge.—Replying to a question in the House of Commons, Dec. 6, the Minister of Railways stated that he had discussed with the President of the C.P.R., the question of building a traffic addition to the bridge across the St. Lawrence River, at Lachine, now being rebuilt by the C.P.R. He had been informed that a traffic bridge could be built separately for less cost than would be required to make over the railway bridge as suggested.

Hawkesbury to Cornwall.—It was unanimously decided at a meeting held recently to gather all the necessary information as to routes and traffic possibilities for a line from Cornwall to Hawkesbury, and to ask the C.P.R. to build and operate it.

Ottawa Tunnel Proposals.—The Minister of Railways told a deputation from Kingston, Ont., Dec. 8, that the Government not been asked to consider the proposal to close up a portion of the Rideau Canal in Ottawa, in order that the C.P.R. might utilize it as a tunnel.

It would be a pretty large order to ask the Government to do this, and without committing the Government in any way, he would say that there was a history about the old canal that would

make him not very ready to interfere with it. If a company came and offered an alternative route it might be a different matter. The Ottawa city council has referred the whole matter back to the Board of Control for consideration.

Campbellford, Lake Ontario and Western Ry.—The route plan approved by the Minister of Railways shows a line starting from west of Cobourg, Ont., and running north of the G.T.R. through Port Hope and practically paralleling until near Newcastle, when a turn is taken northerly touching the north eastern corner of Newcastle townsite, and then continuing easterly, to Bowmanville, then south-westerly through that town, and on to the boundary of Darlington and Whitby townships, where the route again approaches the G.T.R. The route then takes a northerly turn, runs through Oshawa, touches the north east corner of Whitby townsite, and then south-westerly to the boundary of Scarborough and York townships, where a northerly turn is taken to a junction with the Toronto, Montreal line east of the Don River.

The Georgian Bay and Seaboard Ry.—has been built from Victoria Harbor to Coldwater Jct., on the Toronto-Sudbury line, and construction is being proceeded with between Coldwater Jct., and Bethany siding on the C.P.R. Toronto-Montreal line. The original route map approved by the Minister of Railways, showed a line through Orillia and Lindsay to Peterboro, but a revised location has been approved from Lindsay to Bethany Village, and a plan showing the location between Bethany Village and the Toronto-Montreal line has been filed and is awaiting approval. The route plan shows that the Lindsay and Bobcaygeon Ry. will be used in Lindsay town, and south of the G.T.R. tracks, and the route will be south easterly through Ops and Manvers tps., reaching the Toronto-Montreal line just inside the boundary of Cavan tp. The principal bridge on the line will be that across Distillery Creek, Lindsay. The general contract, for the sections of the line now under construction, was let to the Toronto Construction Co., and sub-contracts have been let to Johnson Bros., for the section between Lorneville and Cambray, and to Perry and Stewart, for the section between Cambray and Lindsay.

West Toronto Yard Extensions, etc.—Some preliminary work is being done in preparation for the building of the new bridge across the Weston road at the West Toronto station. Preparations are also being made for rebuilding the station, which is not only inconveniently situated for the public but the accommodation for the company's staff is utterly inadequate. In connection with the yard extensions towards Lambton, the Board of Railway Commissioners has made an order for the building of a 32 ft. subway under Jane St., instead of the 26 ft. one proposed by the company.

Additional Western Lines.—The C.P.R. is applying to the Dominion Parliament for authority to build the following lines, from or near Wilkie on its Pheasant Hills branch southerly and southeasterly to a junction with its Moose Jaw branch in tp. 30, r. 16 or 17, w. 3 m. Sask.; from at. or near Kerr Robert on its Moose Jaw branch, northeasterly and easterly to a junction with the line described first mentioned in tp. 38 or 39, r. 19 or 20, w. 3 m., Sask.

Hamiota to Birtle.—The route of this projected line will be north westerly from Hamiota, crossing the Canadian Northern Ry. near Debar, and on to Birtle, Man., 32.7 miles. We are advised that the company has not yet reached a definite decision as to when this line will be built.

Bulyea Branch.—The Board of Railway Commissioners has approved of the revised location of this branch from mileage 0 on the Pheasant Hills branch to mileage 18.49, in sec 33, tp. 20, range 22, west of the second meridian, Sask.

Edmonton Station, Etc.—We are officially advised that the company's engineering department is considering plans for the yards and station at Edmonton Alta. No construction will be put in hand until after the completion of the bridge across the North Saskatchewan River which it was expected would be completed by the end of 1910. The company has purchased a building in the city, which, after renovation, will be occupied as offices by the company's ticket, telegraph and city freight departments, as well as by the Dominion Express Co.

Kootenay Central Ry.—The Board of Railway Commissioners is being asked for a recommendation to the Governor-in-council to sanction a lease of the K.C.R., now under construction, to the C.P.R., for 999 years from Jan. 1, 1911. The route plan for this projected line was approved by the Minister of Railways, Dec. 1.

Westminster Jct., B.C.—A press report states that the C.P.R. has acquired an area of 1,800 acres of land at Westminster Jct., B.C., for terminal purposes.

Esquimalt and Nanaimo Ry.—The extension of the line under construction from Wellington to Alberni, has been completed for the first 30 miles and opened for traffic. There are stations at Nanoose Bay, McBride Jct., Coombs and Cameron Lake. For the present one train is run each way on Tuesdays, Thursdays and Saturdays.

Good progress is being made with the grading of the remaining section of the line into Alberni, and it is stated that the contractors expect to have the work completed to Alberni by Jan. 31, that track laying will be gone on with at once, and that the whole line will be ready in April. (Dec., 1910, pg. 1025.)

Board of Railway Commissioners.

The fifth annual report of the Board of Railway Commissioners, just issued, covers the year ended Mar. 31, 1910. After noticing the amendments made in the Railway Act last session of Parliament, the report states that the Board held 78 public sittings, at which 533 applications were heard. The places at which the Commissioners held public sittings were:—Ottawa, Toronto, Fort William, Sudbury, Bracebridge, Ont.; Montreal, Que.; Winnipeg, Brandon, Man.; Regina, Saskatoon, Prince Albert, Sask.; Edmonton, Calgary, Alta.; Vancouver, Victoria, Nelson, B.C. A few of the more important matters which came before the Commissioners are dealt with.

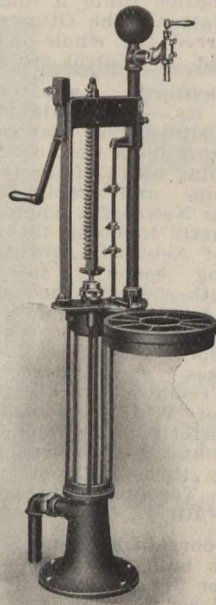
The record department reports formal applications, complaints, filings, etc., as follows:—No. of applications made, 3,921; no. of informal complaints, 494; no. of reports of accidents, 892; no. of reports of crossings, 331; no. of reports on condition of stations, 487; no. of files made during the year, 6,125, against 3,479 in 1908-09; no. of filings during year, 30,900, against 27,383 in 1908-09; no. of orders issued during year, 3,310, against 2,249 in 1908-09. The report of the Chief Engineer showed that 397 inspections had been made in various parts of the Dominion; that of the Chief Operating Officer, that 282 cases of accident had been investigated and reported upon.

The Board's staff includes:—**TRAFFIC DEPARTMENT.**—Traffic expert, J. Hardwell; chief clerk, G. A. Brown; nine clerks. Total salaries, \$14,950.

ENGINEERING DEPARTMENT.—Engineer, G. A. Mountain; Assistant Engineers, T.

Oil Storage in a Signal Tower

is not hampered by space limitations when the Bowser Outfit No. 126 is used. A floor space of less than two square feet is sufficient for the pump, and the tank is kept outside, buried underground near the track where it can be conveniently filled direct from supply cars. This outfit exemplifies the



thoroughness with which every detail in

Bowser Oil Storage Systems

(adopted by nearly 150 railroads)

has been thought out and applied to conditions such as they exist. The pump can be adjusted to fill exactly different sized lamps, at a single stroke of the pump. An accurate half-gallon, quart or pint can also be discharged at each stroke, as may be desired.

Drop a postal for our Booklet No. 18, on railroad oil storage.

S. F. Bowser & Co. Ltd., 66-68 Fraser Ave., Toronto

TURRET LATHES

—“WARNER & SWASEY”—

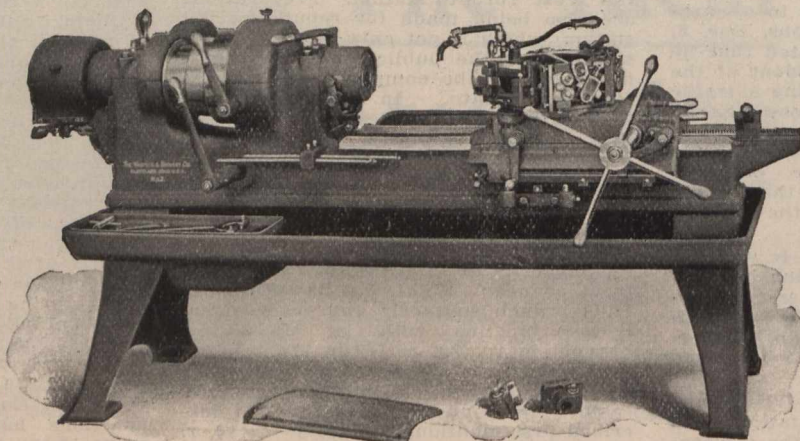
They are the simplest, most efficient Turret Lathes on the market—modern in every detail. We sell all sizes from the small 5-8 in. up to the 35-8 in. For railroad shop use the Hollow Hexagon Turret Lathes have all the facilities known to modern practice. This type is a most efficient machine for Bar Stock or Forging work. There are three sizes of Hollow Hexagon Turret Lathes each capable of handling a wide range of work. ∴ ∴

—SIZES—

- No. 1—Turns Diameters
1½ ins., Lengths 18 ins.
- No. 2—Turns Diameters
2¼ ins., Lengths 24 ins.
- No. 3—Turns Diameters
3½ ins., Length 36 ins.

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**Turret Lathes
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Machines and
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for
Railway and
Machine Shops
Planing Mills
Saw Mills
Pulp and Paper
Mills, Etc., Etc.**

WILLIAMS & WILSON, MONTREAL

L. Simmons, H. A. K. Drury, N. Canelion; Electrical Engineer, J. Murphy; one clerk and one stenographer. Total salaries, \$15,750.

RECORD DEPARTMENT.—Record officer, E. W. McNeill; seven clerks. Total salaries, \$7,750.

SECRETARY'S DEPARTMENT.—Assistant Secretary, E. A. Primeau; Chief Clerk, A. E. Ecclestone; chief clerk and accountant, A. Lapointe; seven clerks and stenographers. Total salaries \$9,900. The salary of the Secretary, A. D. Cartwright, is not included in this, being provided separately.

OPERATING DEPARTMENT.—Chief operating officer, A. J. Nixon; Assistant chief operating officer, A. F. Dillinger; Inspectors, E. C. Lalonde, Jas. Ogilvie, M. J. McCaul, W. S. Blyth, Jas. Clark, J. H. Shinnick. One clerk and one stenographer. Total salaries, \$18,350.

LAW DEPARTMENT.—Law Clerk, A. G. Blair; stenographer and librarian, Miss Larose. Total salaries, \$3,400.

The staff also includes R. Richardson, private secretary to the Chief Commissioner, \$2,000; four stenographers, whose salaries total \$2,650; three messengers with salaries totalling \$1,950, and a cook for the private car Acadian. During the last fiscal year eight clerks and stenographers were employed temporarily, the total amount paid them being \$770.

P. E. I. Railway Round House.

The Prince Edward Island Railway shops at Charlottetown were described in our issue of July 1910. The 20-stall round house with turntable, which was completed last year, occupies the whole of the area between Water St., on the north, the car shops to the south, Prince st., on the west, and the general block of shops on the east, taking in practically the whole area of the old house, with a larger area to the south and east. In order that there might be no interference with the housing and cleaning of locomotives one-third of the south side of the old engine house was removed, so enabling one half of the new building to be put up before the rest of the old building was torn down. The old turntable was only removed on the completion of the new building and the new turntable so far as to enable the northern half to be used. The foundations of the building are of concrete, piles, capped with concrete, being used for the turntable. This is 57 ft. and the engine pits are each 52 ft. long, and 3 ft. wide inside, and are all provided with drainage pipes, catch basins, piping for hot air heating, etc. The walls are 17 ft. high at the outside and 21 ft. high to the turntable. The roof is of tar and gravel laid on grooved spruce planks, with 4 by 14 in. joists laid to two, three and four foot centres; standard cast iron sunken jacks are fitted over each pit. Office and store room accommodation, and a room for the enginemen are provided. The building is heated with direct steam heat, and lighted by electricity. The installation consists of 63 incandescent lamps of 16 c.p. each, with 19 extension cords inside and five 32 c.p. incandescent lamps outside, with all necessary switches. The building was erected from plans prepared by W. B. Mackenzie, Chief Engineer Government Railways.

The Canadian Renard Road Train Co., Ltd., of Vancouver, B.C., is said to be establishing a road train service on the Cariboo route from Ashcroft to Barkerville. The train consists of an automobile with motor of 100 h.p., and four trailer cars, each with a capacity of 10 tons. The speed will be about six miles an hour, and the cost of the train is said to be \$35,000.

G.T.R. Betterments, Construction, Etc.

New England Southern Ry.—The extensions of this line, which is a subsidiary of the Central Vermont Ry., which in turn is controlled by the G.T.R., intended to provide an outlet to the ocean at Providence, R.I., will, it is said, be put under contract in the spring. All the surveys are reported to have been completed in Rhode Island, Massachusetts and Vermont. Application is being made by the New York, New Haven and Hartford Rd., for authority to build a line between South Vernon and Brattleboro, paralleling the C.V.R., "to condemn and take over such C.V. stations and terminals" and utilize such portions of the C.V.Ry. right of way as may be required.

Level Crossings, Montreal to Lachine.—The Board of Railway Commissioners had under consideration Dec. 1, the question of the level crossings between Montreal and Lachine. The Board directed the filing of plans by Montreal West, Lachine, and St. Pierre, showing all crossings of highways and railways together with any suggestions with regard to the elimination of the crossings or protecting the same. The matter will come up for consideration again early in the new year.

Ottawa Station Chimney.—A special system of lightning protection is being installed at the new station in Ottawa. The cable is of pure copper braided 28 strand wires, with a capacity of about 220-900 c.m. cross section and 1/2 in. in diameter, made of seven strands. Large arrow points are to be placed equidistant apart on the conductor encircling the top of the chimney and extending 3 ft. about it. Each point is of specially prepared copper, gold plated, hand burnished, with pores filled. At the terminal of each down lead, two large ground reservoirs are to be set. All fasteners are of 94% pure copper and all connections are interwoven or braided in splices. M. M. Campbell C.E., is the inspector.

Ottawa, Rideau Valley and Brockville Ry.—Press reports state that C.W. Morse, and some other engineers are working in the vicinity of Smiths Falls, Ont., in connection with surveys for this projected line. The surveys being made in that vicinity are with a view of reaching some deposits of iron ore to the north.

Guelph Station.—At a conference between the company's representatives and the city council, Dec. 9, it was decided that the company pay \$9,000 for Jubilee Park, and provide a foot passageway under the tracks at Neeve St. The park property is being acquired for a site for a new station, and for additional yard space.

Holmedale Switch, Brantford.—The agreement between the company and the city council of Brantford, Ont., with respect to the building of the Holmedale switch, has been signed. The plans which have been filed show that the line will leave the G.T.R. main line just east of the overhead bridge at the Institute for the Blind, proceed diagonally across the grounds, curving across the tennis ground, then by a straight line to Chestnut Ave., the route will then enter city property at the old Buck farm, and continue direct across the water works property, passing the water works a little to the west and continuing straight to the river. The company will bridge the river some distance north of D'Aubigny Creek and will cross the Burford road connecting near the pork factory with the present Brantford and Tillsonburg branch. The Ontario Government has signified its willingness to grant the right of way through the Institute for the Blind grounds upon cer-

tain terms which the mayor says the council will accept. U. E. Gillen Superintendent Middle Division, was in the city Dec. 3, when he said the construction of the line would not be started until the spring. (Dec. 1910, pg. 1035.)

Canadian Car and Foundry Co., Ltd.

Following is the financial statement for the first fiscal year ended Sept. 30, 1910:—

ASSETS.	
Capital Assets:	
Real estate, buildings, plant, machinery, patents and goodwill.....	\$10,534,207.19
Less—Proportion of surplus of merged companies set up at organization applied in reduction thereof	612,645.74
	\$9,921,561.45
Investments (at cost)	50,153.90
Current Assets:	
Inventories of manufactured products, materials and supplies, at or below cost	\$2,465,245.66
Accounts receivable	1,976,450.23
Car trust notes (less reserve for unearned interest)	158,028.47
Bills receivable	17,082.08
Deposits on Government contracts	43,663.33
Cash in banks and on hand	89,053.00
	\$4,749,522.77
Deferred Charges to Operations:	
Rental, taxes and insurance paid in advance..	31,882.91
	\$14,753,121.03
LIABILITIES.	
Capital Stock:	
Authorized—125,000 shares of \$100 each	\$12,500,000.00
Issued and outstanding:	
Preferred—7% cumulative	5,000,000.00
Common	3,500,000.00
	\$8,500,000.00
First mortgage 30 year 6% sinking fund gold bonds, due 1939:	
Authorized—\$7,500,000.00 ..	
Issued	3,500,000.00
Purchase money notes	500,000.00
Current liabilities:	
Bank advances	\$626,743.90
Bills payable	10,096.75
Accounts payable and pay rolls	801,917.13
Rentals, taxes, and interest accrued	82,282.03
Reserve for preferred dividend (declared Oct. 1, 1910)	87,500.00
	1,608,539.81
Reserve funds:	
Depreciation funds	\$88,437.83
Contingent and miscellaneous operating funds ..	44,446.73
	132,884.56
Proportion of surplus of merged companies set up at organization	\$612,645.74
Less—Applied in reduction of capital assets	612,645.74
Profit and loss account:	
Profit for 11 months ended Sept. 30, 1910, after deducting bond interest ..	832,529.99
Deduct—Dividends on preferred stock	320,833.33
	511,696.66
	\$14,753,121.03

Sir Thos. G. Shaughnessy, President C.P.R., and Lord Strathcona, R. B. Angus and C. R. Hosmer, directors C.P.R., have been re-elected directors Bank of Montreal.

The Government claim against the C.P.R. for alleged unpaid customs duties, is again before the Exchequer Court at Montreal. The claim, which was originally for \$320,000, now stands at \$60,000, and recalls the case where D. Hobbs, in the C.P.R. service, was sentenced some few years ago for fraud in connection with these customs payments by the C.P.R. The Government does not claim that the company attempted to avoid payment, but that the amounts were not received by the Customs authorities.

Pintsch Light

Steam Heat

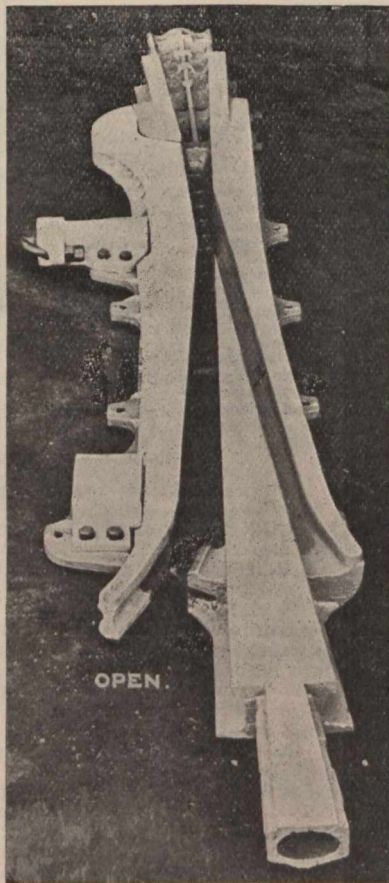
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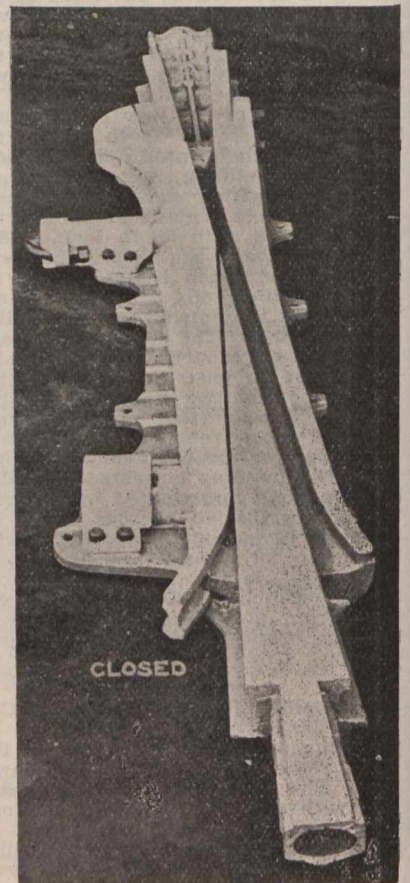
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CLOSED

National Transcontinental Railway.

The report of the Commissioners for the construction of the line from Moncton to Winnipeg, covering the year ended Mar. 31, 1910, contains some additional particulars to those given in the report of the Department of Railways as quoted in our last issue. The total contracts for steel superstructures, bridges and viaducts awarded to Mar. 31, 1910, amounted to 38,984 tons, of which the bridges completed equalled 12,975 tons, leaving 26,009 tons of steel in bridges then under construction. There are 23 steel bridges on the line in New Brunswick, five of which were completed, 17 in process of construction and one—the crossing of the Salmon River at Chipman,—which had not been started at the date of the report. All the bridge work in the district is now reported to be completed. In District B., which takes in 507.22 miles, east and west of the Quebec River there are 44 steel bridges, of which 25 had been completed, 11 were in progress and 8 had not been started at Mar. 31, 1910. Eight steel bridges were in progress and the four were to be built on District D. The 16 bridges on District F, have all been completed since the date of the report. No contracts have been let for steel bridges in Districts C., and E.

C. O. Foss, District Engineer District A., is reported to have stated Nov. 30, that the big viaduct over the Salmon River at Chipman was about two-thirds completed and that it was expected to have the steel work completed by Dec. 30. The Commissioners recently completed an inspection of the sections of the line completed west of Quebec. Track-laying has been completed for about 100 miles west of Cochrane Ont. the point of junction with the Temiskaming and Northern Ontario Ry. West of the end of this track there has been laid 10 miles on the O'Brien contract, which carries the line to the Metagami River. Thirty miles of grading has been completed beyond the river.

Replying to questions in the House of Commons, Dec. 1, the Minister of Railways said that during the summer of 1909, borings were made at the site of the Quebec Bridge, 10 holes being drilled on the south side, and nine on the north side, down to the solid rock. The north main pier is founded on solid rock, and the south main pier is on a solid foundation 79 ft. below ordinary water level. The Board of Engineers had not made any tests of the velocity of the wind at the site of the bridge, but the designs of the structure are based on calculations, including strains due to wind having a velocity of 100 miles an hour in any direction. Answering a further question Dec. 2, the Minister said the matter of the Quebec Bridge and terminals had been discussed in an informal way with the various railway companies interested, but further action at the present time was considered premature. The Minister had a conference with the Board of Engineers in New York, Nov. 26, when matters connected with the substructure were under discussion. Nothing has been announced as to the letting of a contract for the superstructure and it is not expected that any definite announcement will be made until after Jan. 30.

S. N. Parent, Chairman of the Commissioners in an interview Dec. 8, said the plans and specifications for the terminals and union station in Quebec were being prepared. The station would be over 300 ft. long and 100 ft. wide, and would cost about \$500,000. The shops would in all probability be located at Cap Rouge, in the vicinity of the Quebec bridge.

The Minister of Railways replying to questions in the House of Commons,

Dec. 12, said the percentage of the contracts completed, the amounts paid contractors, and the amounts reserved on Oct. 31, 1910, were as follows:

Table with columns: Contractor, Through mileage, Estimated cost of contract, Percent of work done, Amount paid to reserved, Amount reserved.

Tenders will be received to Jan. 24, for the supply of 61,200 gross tons of 80-lb steel rails with the fastenings for same.

GRAND TRUNK PACIFIC RAILWAY.

The construction of branch lines from the Winnipeg-Edmonton line is being pushed. The first line being built is at Melville, Sask., one section running northerly to Yorkton, and during last season it was extended to Canora, where it will terminate for the present.

We are advised in connection with recent press reports respecting the company's plans for a line to Hudson Bay, that there has been no change in its intention, as reported in our Oct. issue, that when connection is made with the projected Dominion Government line to Hudson Bay, it will be by an extension of its line from Melville, Sask.

To the south of Melville the branch has been built to Balcarres and the extension into Regina is under construction. Negotiations for the entrance into Regina have been completed and it has been agreed between E. J. Chamberlin, V.P. and G.M., and the city authorities, that the station will be located at the corner of 16th Ave. and Albert St., and the freight sheds east of the fair grounds, on lands given by the city. It was stated at a meeting of the city council Nov. 23, that a line would be built from Regina northerly and westerly to Edmonton. The laying out of the yards and the building of the station and freight sheds will be gone on with as quickly as possible. Southerly from Regina a line is being built to the International boundary on which considerable progress has been made.

The next line being built is the Battleford branch, which will have a length of 48 miles and on which approximately

45% of the grading has been completed. The third branch starts from west of Watrous, Sask., and will extend to Prince Albert. On this line about 85% of the grading is done, and track laying has been begun.

The fourth branch starts at Tofield, Alta., and runs southerly to Calgary. Track has been laid to mileage 47, and grading has been completed to Red Deer, while clearing and other preliminary work has been done between Red Deer and Calgary.

The company is asking the Minister of Railways to approve plans for a line from Moose Jaw to the elbow of the Saskatchewan River, but as several towns want to have the route changed so that they may be served the consideration of the matter has been adjourned to see what could be done.

The company is reported to have acquired land on McDougall Ave. south of Jasper St., Edmonton, on which it is proposed to erect a large hotel.

The members of the Alberta Legislature were taken over the line west of Edmonton on a special train Dec. 4. Track has been laid for some distance beyond Edson and the grading to the Yellowhead Pass is reported to be well forward. B. B. Kelliher, Chief Engineer, is quoted as stating that if the present rate of progress is maintained a contract will be let in the spring for the section between Tete Jaune Cache and Aldermere, the only section of the line not under contract. It is expected to have track laid to the Yellowhead Pass by Jan. 31. Some of the construction gangs closed down their camps for the season, Nov. 30, but those engaged on the heavy earth work and the rock work will remain out all winter. The construction engineering department has moved its headquarters from Edmonton to Fitzhugh.

With respect to the situation at Fort George, B.C., the company has filed its plans with the Provincial Government locating the station grounds on the Indian Reservation there. This is the point from which a branch line is to run to Vancouver, and for which surveys are about completed. Three parties are in the field and will remain until the work is completed.

Track has been laid easterly from Prince Rupert to Newtown, B.C., mileage 100. Steam shovels are at work at Kitsumkalum taking out ballast, for the line. In the Kitselas Canyon three tunnels are being driven through the rock, and these are expected to be completed in the spring, which will enable track to be laid as far east as Hazelton.

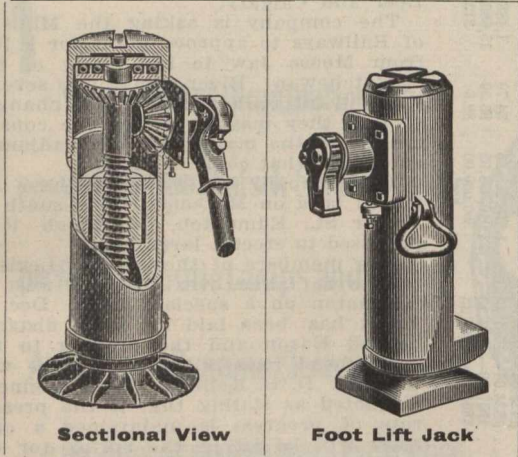
In Prince Rupert, work is well forward on the preparation of the site for the yards and sidings. The work has included the removal of 400,000 cubic yards of solid rock, which has been used to fill up at other points, thus making an embankment along the water front between the present wharf and Morse Creek, a distance of 0.75 mile. The total mass of rock cleared away was 1100 ft. long, 180 ft. wide, and reaching in places to a height of 68 ft. The work has been in hand for two years and a half, the contract having been sublet by Foley, Welch and Stewart, to Ross and McColl.

Application is being made to the Dominion Parliament for an act extending the time within which the Pacific Northern and Omineca Ry. company may build the lines authorized by chap. 90 of the statutes of 1902 as amended by Chap. 141 of the statutes of 1906.

An unconfirmed press report says the C.P.R. may shorten its Toronto-Winnipeg line by building a new line from Nepigon, 70 miles east of Fort William, to Savanne, 71 miles northwest of Fort William.

NORTON JACKS

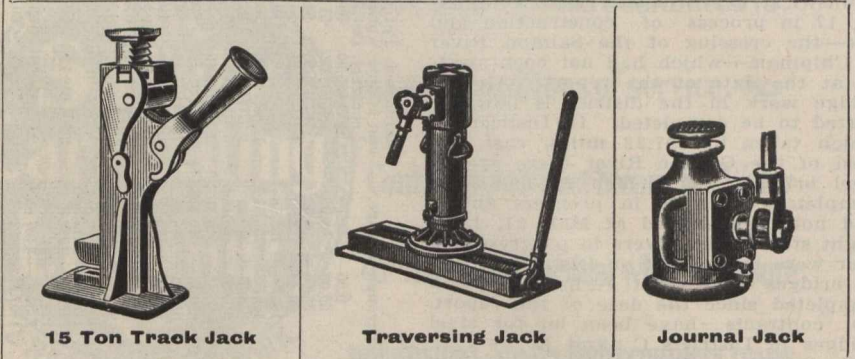
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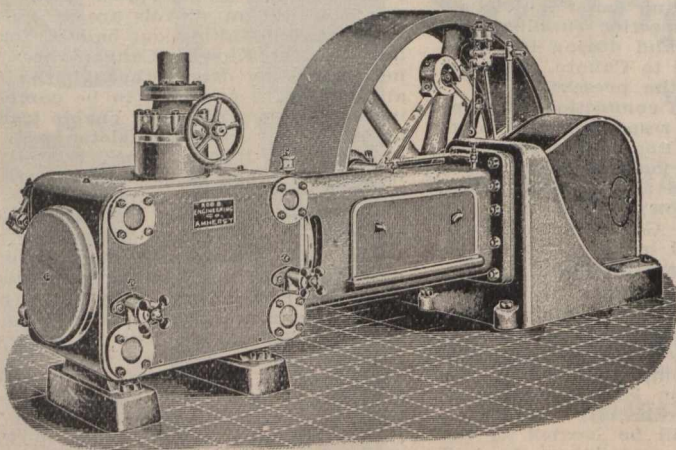
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A Railway to Hudson Bay.

The question of whether Hudson Bay is sufficiently free from ice to permit of safe navigation, is one of the things which will determine the success of the railway to Hudson Bay, as a factor in trade between Western Canada and Europe. That vessels of large burden have entered the bay with cargoes, and having discharged them have returned safely to ports in Canada and in Europe, is conceded, but the question to be decided is the length of the season of navigation and the safety of the channels to the port, which will be reached by the railway. During the summer of 1910 six vessels passed into the bay, and of these the *Adventurer*, which arrived at the southern extremity of James Bay, Ont., July 27, reports that she did not meet much ice. The Stanley's experience was similar, at a little later period, while the *Earl Grey* did not meet with any ice. The *Christie* Thomas got stuck in the ice, and was towed to Fort Nelson by the Stanley. The *Adventure* and the Stanley encountered considerable ice on their return trips in Sept. The *Discovery* and the *Pelican* are Hudson's Bay Co.'s vessels, and reports as to their experience is not available. A number of navigators state that navigation can only be carried on for about six weeks, while the *Adventure's* officers say that there is safe navigation only between July 15 and September 30.

Replying to questions in the House of Commons, Dec. 5, the Minister of the Interior stated that no land has been sold on special account of Hudson Bay railway construction. Under the authorization of 1908, there have been sold as homesteads and pre-emptions, to Oct 10, approximately 6,375,200 acres, on which there had been received \$627,738.26, on homesteads and \$667,412.52 on pre-emptions. The approximate amounts due were \$1,100,317.74 on homesteads, and \$21,678,717.48 on pre-emptions. The revenue collected on this account had been deposited to the credit of the Consolidated Fund on account of Dominion Lands Revenue.

Replying to questions in the House of Commons, Dec. 1, the Minister of Railways said the contract for the substructure of the bridge over the Saskatchewan River at Pas Mission, had been let to Mackenzie, Mann & Co., at schedule prices, the estimated amount being \$104,870. A contract had also been let for the superstructure of the bridge to a bridge building company at schedule prices, the estimated amount being \$171,500. The Government had not entered into any negotiations or contracts with any person or persons with a view of leasing the line to any person or company upon completion, neither had any decision been arrived at as to the policy on which the line will be operated upon completion.

Press reports state that tenders will be asked early in the year for the section of the line from the Pas to Split Lake 150 miles. Representatives of several contracting firms have recently gone over the route.

A very large deputation of farmers, principally from the western provinces, with some from Ontario, waited on the Government at Ottawa, Dec. 16, and presented resolutions upon various matters in reference to this projected railway. The resolution was to the effect that the railway and all terminal facilities should be owned and operated in perpetuity by the Dominion Government under an independent commission. The Premier said the Government was in a position to undertake construction at once, and that the matters referred to in the resolution would receive attention.

A press dispatch from Prince Albert,

Sask., Dec. 15, states that Mackenzie, Mann & Co., who have the contract for the substructure for the bridge at the Pas, Sask., have failed to find a satisfactory bottom for the bridge piers after having bored for a depth of 250 ft., and that they have abandoned the work.

A Saskatoon, Sask., dispatch of Dec. 20 contradicts the Prince Albert report, and says the contractors have not abandoned work on the bridge, and that a good foundation was found at 50 ft.

Dominion Atlantic Railway.

Following are extracts from the report for the year ended June 30, 1910:—

GROSS REVENUE.		EXPENDITURE.	
1909.	1910.	1909.	1910.
Passengers, mails, etc.	£162,210 0 8	Maintenance charges	35,863 12 11
Merchandise, etc.	111,433 7 8	Operating and general charges	83,564 17 11
	£267,023	Steamer expenditure	90,950 11 5
	£273,643 8 4		215,379 2 3
		Net revenue	£58,264 6 1

Passenger business on both railways and steamers has yielded a slight increase during the year, and the effect of the depression which followed so severely on the financial crisis in the U.S. during the previous year is now passing away. A good apple crop contributed largely to the freight earnings, and, in spite of the fact that a very mild winter prevented the usual prosecution of the timber industry, the earnings under this head are some £6,689 above the previous record. The falling off in miscellaneous receipts is due to the absence of charters for any of the steamships during the year. Gross receipts for the year show an increase of £6,620, while expenditure has also increased by £2,960, resulting in an increased net revenue of £3,660. There is an available balance for the year, including £1,388 5s. 10d. brought forward from the previous year, of £59,652 11s. 11d. From this there falls to be deducted £45,055 1s. 4d. for interest charges, leaving a balance of £14,597 10s. 7d. The suspense account, which is a provision for the depreciation of steamers, and which stood at £22,803 2s. 8d. on June 30, 1909, is being increased by £13,000, making it £35,803 2s. 8d., leaving £1,597 10s. 7d. to be carried forward. The proportion of working expenses to gross receipts during the year has been 78.7%, compared with 79.5% the previous year, a decrease of 0.8%. There has been no capital expenditure during the year. Temporary loans, which on June 30, 1909, stood at £117,000, were reduced during the year to £99,000, and have since been reduced to £90,000.

Under date of May 12, 1910, a circular was addressed by the Bank of Montreal to all stockholders then on the register, making an offer for the purchase of the preference and ordinary stocks. As announced in the recently published report

of the Canadian Pacific Ry. Co., almost all the preference and ordinary stocks of the Dominion Atlantic Co. have been acquired by friends of the former company in accordance with the terms of the circular of May 12. Under the arrangement then made the former directors retired, and T. Skinner, H. W. Birks and F. W. Taylor have been elected.

After many years' devoted service in the company's interests, R. L. Campbell has retired from the office of Secretary under a special pension. O. F. Walford, who has long been in the service of the company, has been appointed his successor.

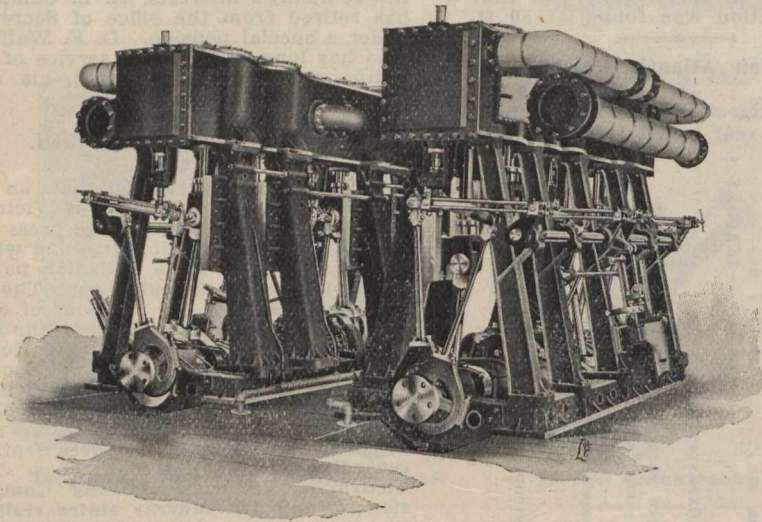
Thomas Tait's Resignation.

We are officially advised that, on the attention of the Premier of Victoria, Australia, being called to the press dispatch cabled from Melbourne, and which was published in some Canadian papers on September 22, alleging that Thomas Tait had resigned on account of accidents on the Victorian railways; the Premier immediately requested the Reuter agency to send the following dispatch: "Hon. Mr. Murray, Premier of Victoria, emphatically contradicts certain villifying press reports from Australia published in some Canadian papers Sept. 22, regarding resignation of Thos. Tait, Chairman Victorian Railway Commissioners, and Mr. Murray states resignation not only entirely voluntary but greatly regretted by Government."

D. H. Ross, Canadian Trade Commissioner, wrote from Melbourne, Nov. 21, to The Toronto Globe as follows: "In a number of Canadian papers, issued on Sept. 22nd last, there appeared a cable from Australia in which the resignation of Thos. Tait, Chief Commissioner of the Victorian Railways, was attributed as the outcome of recent railway accidents near Melbourne. Months before the Richmond accident occurred (through the errors of signalmen), Mr. Tait confidentially informed the State Government that, owing to private reasons, it was imperative for him to leave Australia before the end of this year. When his resignation was announced in Parliament, the Premier and many members eulogized the services rendered to the State by Mr. Tait, and regret was expressed at his departure. The railways have proved a profitable investment under his administration, when previously they were worked under a heavy annual loss. The Victorian passenger trains are now the best in Australia, and would be creditable to any country. Concurrent with the splendid profits recently earned, the rolling stock, track equipment and station buildings have been greatly improved. It is a regrettable incident that such aspersions on Mr. Tait's Australian career should have been cabled to Canada. His resignation was purely voluntary and is deeply regretted by the Government and throughout the State."

Railway Bylaws, Rules and Regulations.—The Secretary of the Board of Railway Commissioners has issued the following circular:—"I am directed by the Board to call your attention to the requirements of sec. 310 of the Railway Act, as follows:—"All bylaws, rules and regulations, except such as relate to tolls and such as are of a private or domestic nature and do not affect the public generally, shall be submitted to the Governor in Council for approval." The Board directs that you inform it, as soon as possible after the receipt of this circular, whether your company has complied with the requirements of said section and, if not, your company should take immediate steps to do so. If any application is filed for approval it should be accompanied by not less than five copies of the rules and regulations in question."

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Railway Rolling Stock Notes.

The Canadian Northern Ry. has ordered 20 consolidation locomotives.

Haney, Quinlan and Robertson have received a four-wheeled locomotive from the Montreal Locomotive Works.

The G.T.R. has recently added to its rolling stock, 245 box cars, built by the Canadian Car and Foundry Co., Montreal.

The Black Lake Consolidated Asbestos Co. has received a four-wheeled locomotive from the Montreal Locomotive Works.

The Michigan Central Rd. has received eight consolidation and two Pacific locomotives from the Montreal Locomotive Works, details of which we have already published.

In referring to the receipt, by the G.T.P.R. of four ten-wheeled locomotives, nos. 620 to 623, in our Dec., 1910, issue, we inadvertently mentioned the builders as the Montreal Locomotive Works instead of the Canadian Locomotive Co., Kingston, Ont.

The Ha Ha Bay Ry., has added two electric motors to its rolling stock, which at present consists of two locomotives, one steam shovel, 52 flatcars, 13 construction dump cars, six box cars, two passenger coaches, one snow plow, and two electric track motors.

The G.T.P.R., has received three dining cars, nos 4,000 to 4,002; nine refrigerator cars, nos. 340,237 to 340,246, and 62 flat cars, nos. 361,376 to 361, 437, from the Canadian Car and Foundry Co., Montreal, and six 10-wheel locomotives, completing order for 10, from the Canadian Locomotive Co., Kingston, Ont.

The Intercolonial Ry., between Nov. 17 and Dec. 17 placed orders at its Moncton shops for one Pintsch gas car, four stock cars, one refrigerator car, and one official car (replace), and received three colonist cars from the Silliker Car Co., Halifax, N.S.

The Canadian Northern Ry., between Nov. 15 and Dec. 15, 1910, received the following additions to rolling stock: two baggage cars and three first class coaches, from the Canadian Car and Foundry Co., Montreal; 20 refrigerator cars and 75 box cars, from the Crossen Car Manufacturing Co., Cobourg, Ont., and 25 box cars from the Silliker Car Co., Halifax, N.S.

The C.P.R., between Nov. 15 and Dec. 15, received the following additions to rolling stock: three first class cars, one second class car, 33 horse cars, and six D.10 locomotives, also 20 flat cars and two vans for the Esquimalt and Nanaimo Ry., from its Angus shops, Montreal; 35 steel coal cars and five ore cars, from the Canadian Car and Foundry Co., Montreal.

The C.P.R., between Nov. 15 and Dec. 15, ordered the following rolling stock: 88 box cars, 10 flat cars, 13 stock cars, 51 freight refrigerator cars, 51 passenger refrigerator cars, one steel coal car, 53 vans, 10 switching locomotives, one hump switching locomotive and six D.10 locomotives from its Angus shops, Montreal; 2,000 steel frame box cars from the Canadian Car and Foundry Co., Montreal; 10 consolidation locomotives from the Montreal Locomotive Works, and 20 consolidation locomotives from the Canadian Locomotive Co., Kingston, Ont.

The Powell River Lumber Co. has ordered one Columbia type locomotive from the Montreal Locomotive Works, of which the following are the chief details:—

Weight in working order	80,000 lbs.
Weight on drivers	58,000 lbs.
Weight on trailers	13,000 lbs.
Weight on engine truck	9,000 lbs.
Wheel base, driving	7 ft.
Wheel base, engine	22 ft. 6 ins.

Cylinders	14x22 ins.
Boiler, type	Straight top.
Boiler pressure	165 lbs.
Tubes, number and diameter	106, 2 ins.
Tubes, length	11 ft. 8 ins.
Brakes	Westinghouse.
Tank capacity	1,200 U.S. gals.

The Quebec Contracting Co. has ordered one mogul locomotive from the Montreal Locomotive Works, of which the following are the chief particulars:

Weight in working order	131,000 lbs.
Weight on drivers	113,500 lbs.
Weight on engine truck	17,500 lbs.
Weight on tender	102,500 lbs.
Wheel base, driving	12 ft. 6 ins.
Wheel base, engine	20 ft. 6 1/2 ins.
Wheel base, engine and tender	50 ft.
Cylinders	19x26 ins.
Boiler, type	Extended wagon top.
Boiler pressure	180 lbs.
Tubes, number and diameter	275, 2 ins.
Tubes, length	10 ft. 5 1/4 ins.
Brakes	Westinghouse American.
Tank capacity	5,000 imp. gals.

Following are the chief details of the 2,000 steel frame box cars which the C.P.R. is having built by the Canadian Car and Foundry Co., Montreal:—

Length inside	36 ft. 0 in.
Length, centre to centre of trucks	26 ft. 10 in.
Length over buffer blocks	38 ft. 1 1/4 in.
Width inside	8 ft. 6 1/2 in.
Height inside	8 ft. 0 in.
Height top of rail to eaves	12 ft. 7 9-16 in.
Height, top of rail to top of running board	13 ft. 4 3/4 in.
Journal boxes	McCord
Journal bearings	Canadian Bronze Co.
Bolsters and brakebeams	Simplex
Side bearings	Susemihl

As Viewed by a Railway Superintendent.

Morley Donaldson, Superintendent Ottawa Division Grand Trunk Ry, who has been a subscriber for many years, writes:—

"I have always read the Railway & Marine World with pleasure, and believe it to be a necessity in our Canadian railway life. I find the news accurate and complete in details we all want to know. If continued in its present form, its future success is assured."

Axles	Steel
Axles, tender	5 1/2 in. by 10 in.
Axles, engine truck	6 in. by 10 in.
Axles, radial truck	7 in. by 14 in.
Wheels	Cast iron, C.P.R. standard
Air brakes	Westinghouse
Couplers	Simplex

The Canadian Northern Ry. has ordered 200 latest type Hart convertible cars from the Hart-Otis Car Co., Montreal, which will be built at the Canadian Car and Foundry Co.'s Turcot Works. Following are chief dimensions:—

Capacity	80,000 lbs.
Width 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 over all	10 ft. 2 1/2 ins.
Width at top	9 ft. 10 ins.
Height from rail to floor	4 ft. 4 1/4 ins.
Height from rail to top of car	8 ft. 1 3/8 ins.
Height inside	3 ft. 9 1/4 ins.
Truck centres	26 ft. 8 ins.
Wheel base of truck	5 ft. 4 ins.
Length of hopper door opening	16 ft. 8 1/2 ins.
Width of hopper door opening	2 ft.

Following are the chief details of the 12 G.1 and G.2 locomotives, which the C.P.R. is having built at the Montreal Locomotive Works, as mentioned in our last issue:—

Weight on drivers	135,999 lbs.
Total weight	215,000 lbs. (G.1) 214,800 lbs. (G.2)
Weight of tender loaded	134,000 lbs.
Capacity, water	5,000 imp. gals.
Capacity, coal	10 tons
Heating surface, firebox	183 sq. ft.
Heating surface, tubes	2,777 sq. ft.
Heating surface, total	2,960 sq. ft.
Heating surface, superheater	539 sq. ft.
Grate area	45.6 sq. ft.
Tubes, no. and diar.	193 2 1/4 in., 22 5 in.
Wheel base, driving	13 ft. 0 in.

Wheel base, total engine	33 ft. 7 in.
Wheel base, engine and tender	59 ft. 6 3/4 in.
Boiler, type	Extended wagon top, radial and cross stayed
Boiler pressure	200 lbs.
Superheater	Vaughan and Horsey
Cylinders	21 in. by 28 in.
Driving wheels, diar.	69 in.
Valve gear	Walschaert
Valve, type	Piston 11 in.
Axles, main	9 1/2 in. by 12 in.
Axles, others	9 in. by 12 in.

Following are the chief details of the 20 consolidation locomotives which the C.P.R. is having built by the Canadian Locomotive Co., Kingston, Ont.:—

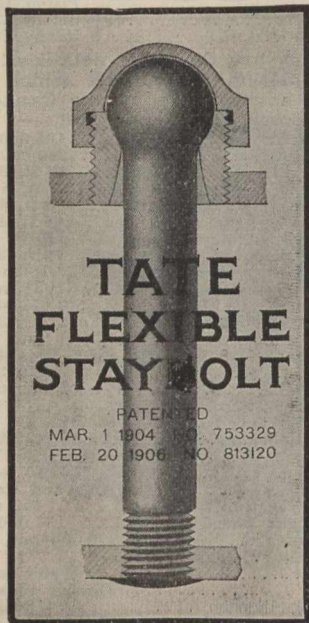
Weight on drivers	195,000 lbs.
Weight, total	220,000 lbs.
Wheel base, rigid	16 ft. 6 ins.
Wheel base, total engine	25 ft. 5 ins.
Wheel base, engine and tender	55 ft. 8 ins.
Length over all, engine and tender	66 ft. 4 ins.
Width over all, engine and tender	10 ft. 1 in.
Height over all	15 ft. 2 ins.
Heating surface, firebox	180 sq. ft.
Heating surface, tubes	2,631 sq. ft.
Heating surface, total	2,811 sq. ft.
Driving wheels, diameter	63 ins.
Driving wheel centres	Cast steel.
Driving journals—Main	10x14, others 9 1/2 x14 ins.
Cylinders	24x32 ins.
Boiler, type	Extended wagon top.
Boiler pressure	180 lbs.
Tubes, number and diameter	—270 2 in., 24 5 in.
Tubes, length	15 ft. 2 3/4 ins.
Brakes	Westinghouse ET.6.
Grate area	49 sq. ft.
Superheater	Vaughan and Horsey.
Superheater, heating surface	450 sq. ft.
Tender, weight loaded	134,000 lbs.
Capacity, water	5,000 imp. gals.
Capacity, coal	12 tons.
Tank, type	Water bottom.
Truck, type	Outside equalized.
Truck wheel, diameter	36 1/4 ins.
Wheel, type	Cast steel centres with retaining rings.
Journals	5 1/2 x10 ins.
Brake beams	Simplex high speed.

Victorian State Railway.

The report of the Victorian, Australia, State Railways for the year ended June 30, issued recently, is the last complete year for which the Commission of which Thomas Tait was chairman, is responsible. The gross revenue was \$21,626,059, and the working expenses, including special payments, into railway accident and fire insurance fund of \$364,987, and the rolling stock replacement fund of \$827,305 were \$13,195,734, leaving a net revenue of \$8,430,325. The net revenue of the St. Kilda and Brighton Electric St. Ry. was \$9,855, making the total net revenue \$8,440,180. The interest charges and expenses were \$7,167,946, and the pensions and gratuities \$517,455, which, deducted from the total net revenue, left a surplus for the year of \$754,779. As compared with the figures for the year ended June 30, 1909, the surplus shows a decrease of \$388,537. A general comparison of the results of the operation of the lines for the seven years since June 30, 1903, and the seven years preceding that date shows an increase in gross revenue of £31,339,296; in working expenditures of £13,366,732, and in net revenue of £17,972,564. There was an increase of £2,617,009 in the amounts for special expenditures and charges in liquidation of extraordinary liabilities, in the interest charges and expenses (charges for pensions and gratuities, appear in the years 1908-9 and 1909-10 only) of £1,491,996. The general results show that in the seven years prior to June 30, 1903, there was a total deficit of £9,304,982; in the seven years ended June 30, 1910 there was a total profit of £4,558,577.

The total capital expenditure on the line has been £43,200,941, an increase of £600,564 during the year. Of lines constructed, 47.96 miles, costing £392,741, have been abandoned, and there has been expended upon lines not constructed £342,898. The interest on these two amounts is being charged against the railways.

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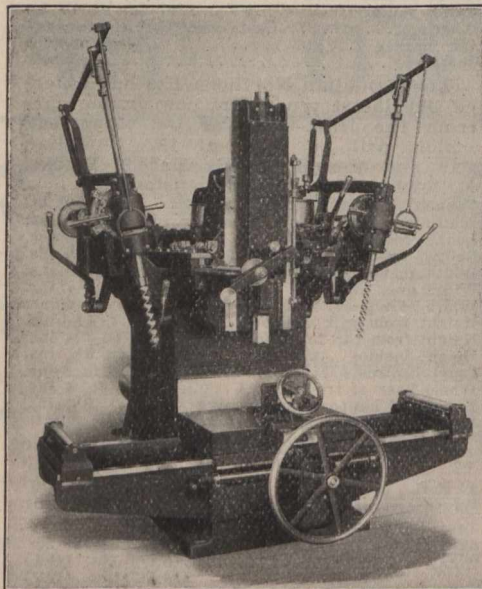
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MODERN DESIGNS FOR MOTOR CONNECTION

Canadian Northern Ry. Construction, Etc

Canadian Northern Quebec Ry.—The Board of Railway Commissioners has authorized the opening for traffic of the branch from Hedleyville Jct., to the Montmorency Lumber Co.'s pulp mill, 7.62 miles.

James Bay and Eastern Ry.—The Board of Railway Commissioners has authorized the company to build across the public road between lots 19 and 20, range one, Ashuapmouchouan tp., Lake St. John County, Que.

Canadian Northern Ontario Ry.—Orders have been issued by the Board of Railway Commissioners to cross and divert public road in lots 275 and 276, St. Benoit parish, to divert and cross by a bridge the public road at station 656-56 St. Andrew's parish; and to build across the public road between lots 15 and 16, Junction Gore, Gloucester tp.

At a session of the Board of Railway Commissioners held at Ottawa, Dec. 6, the matter of the proposed temporary entrance of the C.N.O.R. into Ottawa across Hurdman road, was further adjourned until the city council had time to consider the matter. The Chief Commissioner said the understanding was that the tracks, if laid across the road, are to be used for freight purposes only for two years, and that if used for any other purposes, the Board will compel their removal.

The work on the line between Toronto and Ottawa so far as it has been put under contract, is reported to be well forward. The grading as far as Trenton is practically complete, tracklaying is well advanced and some ballasting has been done. The station buildings are being erected, and the work of connecting up the different sections will be completed as soon as the steel work on the several bridges under construction is completed.

Plans showing a portion of the company's proposed line in North Toronto have been filed with the Minister of Railways. The section for which approval is asked extends from Poplar Plains Road to west of Leaside Jct., the line paralleling the C.P.R.

The location plans for the line to connect up the Toronto-Sudbury line with the C.N.R. at Port Arthur, between mileage 500 and mileage 525, came before the Board of Railway Commissioners, Dec. 7. Owing to difficulties it is necessary to secure permission to use portions of the C.P.R. right of way, and the consideration of the plans was postponed in order to enable the C.P.R. to be consulted.

Canadian Northern Ry.—The contract for the erection of the train shed at the C.N.R.-G.T. Pacific-National Transcontinental Ry station in Winnipeg, has been let, and work will be gone on with at once. The shed will be 800 ft. long, covering six tracks, but arranged so that it may be extended to cover an additional six tracks. It is expected that the building will be completed by the fall.

Press reports state that 176 miles of the branch line from Vegreville towards Calgary, Alta., have been completed, and that it has been decided not to operate a train service on the section recently completed until the spring. It is proposed to complete the erection of some steel bridges on the line during the winter.

In connection with the branch from this line starting from Stettler and proceeding by way of Red Deer to Rocky Mountain House and the Brazeau River district, the company's representatives, Dec. 7, withdrew the plans from the consideration of the Board of Railway Commissioners. A considerable amount of grading has been done on this line, but it was laid down by the Board that

location plans will not be approved for any portion of a railway where grading has been done before approval has been obtained. The Alberta Central Ry. also opposed the company's application to the Alberta Legislature for authority to build this and other lines, having a total estimated length of about 700 miles, but the bill was approved by the Railway Committee and read a second time. The title of the company proposed to be formed in Alberta is the Canadian Northern Western Ry. The lines authorized to be built are: from Edmonton or Strathcona to the boundary between Alberta and British Columbia, near the Pine or Peace River Pass: from some point on the line between Edmonton and Calgary to Rocky Mountain House, thence to the Brazeau and Macleod Rivers, and on to a junction with the C.N.R. west of Edmonton, with power to build branch lines. We are advised that the Alberta Legislature has passed an act providing a subsidy by way of guarantee of bonds for the building of the first 50 miles of a line into the Peace River and Grand Prairie districts. The company has its engineers in the field but the work has not progressed sufficiently to enable any definite decision to be made as to the route which will be followed. A press report states that the Northern Construction Co. is preparing to begin grading on the line to Peace River in the spring.

In a recent interview at Edmonton, D. D. Mann, Vice-President, is reported to have said he was able to give the Premier of the Province a definite assurance that the line to Athabasca Landing will be completed in 1911 and that 300 miles of steel will be laid on the lines guaranteed by the province; that the line into Calgary will be finished and about 75 miles of grading done south of Calgary; that 200 miles of grading would be done on the line west towards the Pacific coast; and that progress would be made on the line to connect up Edmonton with Pas Mission via Lac la Biche, Battleford and Prince Albert.

Canadian Northern Pacific Ry.—We are officially advised that the original contract of the Northern Construction Co. for building 60 miles on the Lower Fraser River, has been extended to cover an additional mileage, to Hope, about 15 miles above Chilliwack Village. The clearing is finished on the first contract, and the bridging and grading about half done. Ties are being delivered, and it is expected that the first lot of rails for the line will be delivered about Mar. 1. The wharf at Port Mann is under construction, and will be sufficiently far advanced to permit the landing of the rails in March. The rock work on the line is being rapidly proceeded with, but the weather prevents much of the other work being done to advantage.

Speaking in New Westminster Nov. 29, D. D. Mann, Vice President, is reported to have said that the establishment of terminal facilities at Port Mann would in no way interfere with the announced plans for freight and passenger terminals in New Westminster. Mr. H. McLeod, General Manager and Chief Engineer, Canadian Northern Ry., accompanied Mr. Mann, and together they went over the route of the line in New Westminster and on to Port Mann.

Two survey parties have just come out of the field from the Thompson River district, on account of the ice and snow making the work impracticable, and three other parties are expected to give up work almost immediately. It is expected that contracts will be let for some of the heavier work in the Fraser Canyon in the near future.

Vancouver Island.—A line has been located for 100 miles from the gorge at Victoria to Barkley Sound and has been

approved for the first 10 miles. The gradient is 1% compensated; the curvature is fairly heavy and in some cases has been sacrificed in order to obtain this gradient. The highest summit is 800 ft.

A Victoria dispatch, Dec. 19, says tenders have been asked for the first section of the Vancouver Island line, the work to be completed in 1911. (Dec., 1910, pg. 1031.)

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 Tallman Brass and Metal Co., Hamilton, Ont., has got out an Arctic Metal watch fob.

The Montreal Steel Works, Ltd., is paying 10% dividend on its common stock for 1910, the highest previous dividend being 7%.

The Dominion Wire Rope Co., Ltd., Montreal, incorporated under the Canada Joint Stock Companies Act, has been licensed to carry on its business in Manitoba, with S. C. Dunn, Winnipeg, as its agent.

The Canadian Westinghouse Co., has issued circular 1098, describing and illustrating various types of switchboard indicating meters, direct current indicating meters, alternating current indicating meters and type K indicating meters for direct and alternating current, etc.

Taylor & Arnold, Ltd., railway material and supplies, Montreal, have opened an office in the Scott Block, Main Street, Winnipeg, with G. C. Walker in charge, to look after all the company's western interests.

The Westinghouse companies have issued a neat pocket diary for 1911, containing interesting data and formulae relating to electrical and other engineering matters, and giving, amongst others, a condensed description of the electric locomotives supplied for the G.T.R. St Clair tunnel.

A. W. Wheatley, heretofore Manager Montreal Locomotive Works, having been appointed Manager of the American Locomotive Co.'s plant at Dunkirk, N.Y., Percy Webb, heretofore Engineer of Construction, has been appointed Manager Montreal Locomotive Works, and D. W. Fraser, heretofore Superintendent, has been appointed Works Manager.

Robert W. Hunt and Co., Ltd., has been incorporated under the Dominion Companies Act, with a capital of \$50,000 and office at Montreal, to carry on the business, in all its branches, of civil mechanical, mining and electrical engineers, analysts, metallurgists, surveyors, assayers, examiners and inspectors, to take over the Canadian business of Robt. W. Hunt and Co., and also to acquire the business and carry out the contracts of the Standard Inspection Bureau Ltd., incorporated under the Ontario Companies Act.

The C.P.R. has taken offices in the newly built Liver Building, situated on the water front, opposite the Princes Landing stage, Liverpool, Eng., and we are officially advised that all its Liverpool offices will be concentrated there about May 1.



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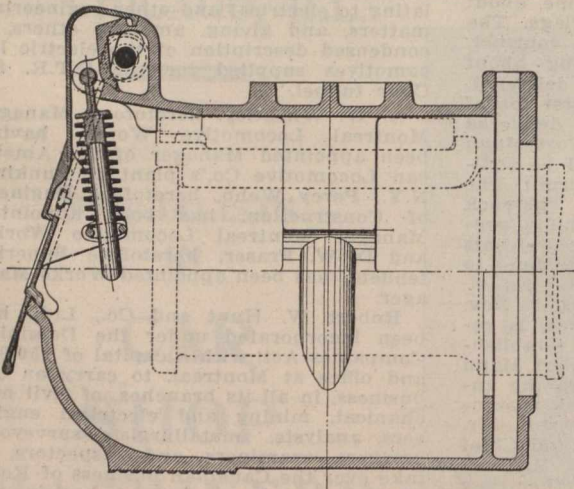
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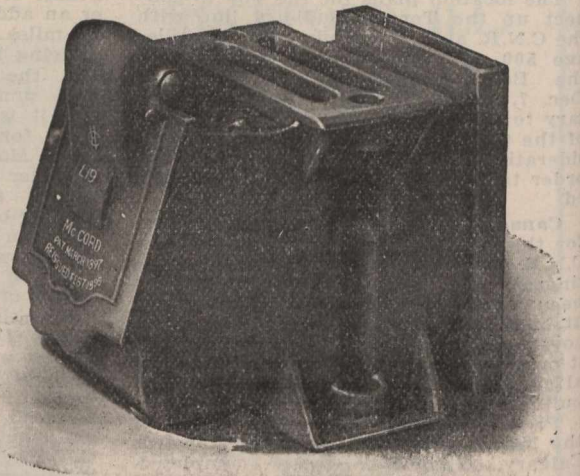
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How the Foreman Can Promote Shop Efficiency.

By E. T. Spidy, Instruction Card Inspector
C. P. R. Angus Shops, Montreal.

The shop foreman's success in this direction depends, to a large extent, on the limits to which he can exercise his power to make alterations in the shop and its methods of working, and the amount of co-operation he receives from his superiors, as well as from the men under his charge. A foreman is in reality the pivot upon which the smooth running of the shop depends. He has to bear the load laid on him by his superiors in his responsibility for efficient output, and he has also to keep his men "well oiled" in order to ensure the smooth running of the inner working of the shop. This double responsibility must always be kept in view. The situation is governed by two words which are the keystones of all efficient shop management. They are system and co-operation. Bear in mind that when you have a system that ensures the co-operative efforts of the men, and gives them confidence in your acting right towards them, so surely will your output be increased.

The following discussion is intended to be helpful to the foreman who intelligently desires to make the most of the machinery in his care. The questions and suggestions are based on an average machine shop, where all the machinery may not be of latest type, but where the best possible efficiency is desired. The questions are not arranged in order of importance, for it would be difficult to decide which was the most important.

"Is my piecework system in good condition—can I improve it in any way?" The foreman is often called upon to set a price for a piece of work. Considering the multifarious duties he has to perform, it is almost beyond reason to expect that all the prices he makes are good, either from the employer's or employe's point of view, and his knowledge as to what a job is worth is often left to the workman's honesty on the first piece, or to his own judgment in comparing it with similar jobs. A foreman does not get the time to study each job sufficiently. The time has come when uncertain methods like this have to be abandoned and more accurate information on the subject obtained. The situation may be improved by the setting apart of a man, whose duty it should be to study the work, the machine, the man, and the conditions under which he works, and also to set the price. This man will be responsible for any information the foreman should require with reference to the work and must be on hand when the foreman approves of the price submitted. Not only will this man relieve the foreman of a vast amount of work, but in a short time he will be of great value to him. He will be able to not only supply the foreman with details as to the condition of the machines, but also to suggest new tools, jigs, etc. He will become an expert in this line. In selecting him the best possible judgment must be used, for the success of the system will depend largely on him. He must be a man of average experience, fairly well educated and a good workman, a man of activity and energy, and one not afraid of the feeling he will at first arouse. More than likely the workmen will be prejudiced against him at first, but he must work to gain their confidence, so that finally with their co-operation the best results or maximum efficiency will be attained. His success in obtaining the co-operation of the men will do more toward efficiency than any driving system that exists or ever did exist.

"Have I machines that are overburdened or doing a class of work for which they are not suited?" It may not be possible to rearrange the machines in the

shop, but as it is the foreman's duty to assign the work to them he should be careful that it is proportioned equitably and not to have a light machine doing a class of work beyond the range it was designed for. He should be on the lookout to avoid congestion. More machine failures are to be traced to the unsuitability of the work operated on than from any other cause, and this may often be obviated by a little discretion in assigning the work to the machines.

"In what condition are the machines? Are they in a state of good repair?" This is a point too often neglected and often a couple of men may be seen around the shop continually "patching up" the machines. To maintain efficiency it is necessary to keep up a high standard of repair, and when anything goes wrong to have it repaired properly rather than to "patch it up for the time being," for it pays in the long run in the life of the machine.

"Do any machines require re-speeding?" The progress made during the past few years in high-speed steel, and the cutting speeds possible with it, as compared with ordinary carbon steel, have made it necessary to revise the speed of the machines in order to take full advantage of its properties. There is little gain in using high-speed steel tools unless they are operated at their maximum cutting speed. Certain machines may have a large enough range to cover this, but many will be found deficient. Drilling machines require attention especially in shops where they are not of modern type. While in the case of lathes, boring mills, etc., feed and depth of cut may be easily increased, a fast feed on a drill necessitates a high cutting speed for efficient work, and a machine is required to run up to 300 r.p.m. to keep in tune with modern high-speed drills.

"Am I using the best steel obtainable? Do I know what the best steel is?" This is a question well worth studying and will pay well, for a large item on the expense account depends on it. It is admittedly more the work of a specialist, but the foreman should know, as so many new and different steels are at present on the market, all of which claim to be the best. No doubt many have special features worth consideration, and they should be tested to find which one is best suited to each class of work and the machines. No definite rule can be laid down as conditions vary greatly, so experiment is the only satisfactory method of obtaining any reliable information.

"Are my tool standards correct?" All shops nowadays have tool standards in some condition or other, and it will not be necessary to emphasize having a standard shape for grinding cutting tools. Standardization may be carried too far, however, because good practice shows that work of large diameter requires different cutting lip angles on the tools from that required by average work. Much information on this point may be obtained from grinding machine manufacturers and although too much reliance must not be placed on it, yet modified by results of experiments, a considerable saving may be effected.

"Do the men receive their tools in a satisfactory way?" This question of distribution is important, for in order that a machine may pay the best dividends it must be in constant use. Therefore when tools require replacing they should be collected from the men and new tools delivered to them, thus avoiding the necessity of their walking to the tool stores to wait about or otherwise waste time. A man may be permitted to grind his tool when it only requires touching up, but when he has any amount of metal to grind away it should be sent to the tool grinding department. A sufficient number of grindstones should be in the shop and should be well placed to avoid the men congregating at them.

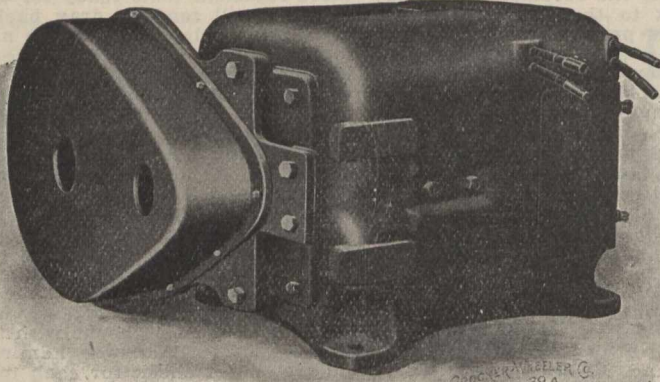
"How is the tool room stocked? Are

there sufficient tools ready for delivery?" Nothing will tend to drag back a shop more than a deficiency in the number of tools. Having decided what steel is best, have a quantity of tools made so that the workman will not have to slow down his machine because he is obliged to use an inferior tool. Firms are naturally slow about buying a lot of high-speed steel on account of its high price, but first decide if it is worth it, and, if it is, get enough tools made to be of use to you and not enough to go on with. The expense of the more elaborate tools, such as milling cutters, jigs, etc., requires that a system of checking be adopted that the tool may be traced if needed urgently anywhere else. Small metal checks with the men's number on will answer admirably, the man giving a check for each tool he receives, the check being placed where the tool was taken from. Obviously there must be a systematic arrangement of tools in the tool room to operate this system successfully.

"Do the men have trouble in getting their work?" It is the foreman's duty to see that the men are supplied with work, but apart from seeing that the work is suitable to the machine, he must employ a method by means of which the men know what is to be done next, and not to have them waiting on him or any of the gang bosses for information. It is not possible without an extensive system of instruction to entirely eliminate this difficulty, but much may be done by careful forethought. This matter is receiving much attention from some of the more progressive concerns, and card systems of instruction to the men are being developed to a high degree.

"What kind of hoist service have the men at their machines for individual use?" The individual hoist service a man has at his command has much to do with his output. The position of the machine and the roof construction of the shop are the main factors in determining the overhead rail arrangement applicable. Compressed air hoists of the cylindrical type are being gradually recognized as superior for this purpose, although not always applicable by reason of their length, but a power hoist of some description should be used in preference to hand blocks. Where machines are arranged in lines, end to end, a continuous overhead rail is economical as it will not be necessary to supply a hoist to each machine. This system is also good in connection with heavy bench work, where the work may be transported from the vise to the shop trucks or anywhere required. When machines are separated a radial crane track is very serviceable, or, where this type is undesirable, a semi-circular rail suspended from the girders and serving two or three machines is often good. The foreman should have little difficulty in finding the type best suited to his requirements.

In Conclusion.—Many foremen may say that they have not the time to study these questions in the detail, but let them remember that unless they do give thought to these details they will progress little beyond their present state. It is in considering the details that progress is to be obtained, for it is the little parts that make the whole. Much may even be attained by the judicious placing of apprentices. See that the men are provided with sufficient light. See that there is an adequate supply of water or cutting compound; a system of overhead supply to each machine with a return flow to the pump beneath the floor is worth considering. Belts should be looked after and an indicator system should be employed to enable the workman to locate the belt-lacer when required. This indicator system may also be employed for other officials, if considered necessary. If the foreman has not the time to look to these details, then it is up to the management to give him such assistance that he may be in the position to con-



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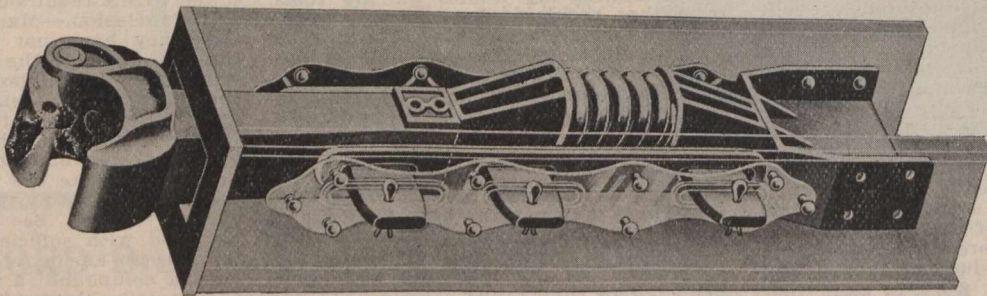
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sider them. There must be harmony in the management and, although somewhat difficult to obtain, the co-operation of the workmen. When combined with systematic organization, no doubt remains as to ultimate results.—*Railway Age Gazette.*

Railway Finance, Meetings, Etc.

Alberta Ry. and Irrigation Co.—Approximate net profits from all sources, exclusive of land sales, for Oct. 1910, \$35,712, against \$52,722 for Oct. 1909. Cumulative net profits for four months ended Oct. 31, 1910, \$108,493. Approximate railway receipts for Nov. 1910, \$35,333, against \$40,860 for Nov. 1909.

Atlantic and Lake Superior Ry.—Judgment has been given in the Quebec courts against the company, in favor of Z. Perrault and E. Gervais, contractors, for \$33,219.23 and interest for work done in building the line.

Canadian Pacific Ry.—A Montreal dispatch says that of the 24,000-odd shareholders in the C.P.R., Sir Thos. G. Shaughnessy recently stated that about 2,500 were Canadians.

Dominion Atlantic Ry.—Gross earnings for Oct., 1910, \$115,400, against \$136,615 for Oct., 1909. Aggregate gross earnings for four months ended Oct. 31, 1910, \$588,800, against \$611,817 for same period 1909.

Esquimalt and Nanaimo Ry.—A meeting of shareholders was held at Victoria, B.C., Dec. 29, to sanction the creation and issue of bonds, and authorize and approve the form of mortgage to be given to secure the payment of them.

Guelph Junction Ry.—The directors have authorized the issue of bonds for the increased stock which the city of Guelph now holds, since the private shareholders were relieved of their shares. The company has issued \$150,000 of stock, which is all held by the city.

Lake Superior Corporation.—A press dispatch from Philadelphia, Pa., states that the directors are considering an issue of 4% bonds for the purpose, among other things, of retiring the present income bonds.

New Brunswick Southern Ry.—The Board of Railway Commissioners is being asked to recommend the Governor-in-council to sanction the lease of this line to the C.P.R. for 999 years, from Jan. 1.

Quebec and Lake St. John Ry.—Total earnings for Nov. 1910, \$55,124.86, against \$53,251.05 for Nov., 1909. The mileage open during the two periods mentioned, was 285.4, earning an average of \$193.11 per mile, and 285, earning \$186.84, respectively. Aggregate total earnings for 11 months ended Nov. 30, 1910, \$560,454.36, mileage operated 285.4, earnings per mile, \$1,975.09, against \$550,984.11 aggregate total earnings; 285 miles operated, and \$1,939.82 earnings per mile, for same period, 1909.

Quebec Central Ry.—Gross earnings for Sept., \$105,400.74; expenses, \$68,732.97; net earnings, \$36,667.77, against \$102,442.35 gross earnings; \$64,910.83 expenses; \$37,531.52 net earnings for September, 1909. Gross earnings, for Oct., 1910, \$100,405.87; expenses, \$66,136.36; net earnings, \$34,269.51, against \$101,485.82 gross earnings; \$68,917.43 expenses; \$32,568.39 net earnings for Oct., 1909. Aggregate gross earnings for four months ended Oct. 31, 1910, \$461,684.05; expenses, \$292,495.69; net earnings, \$169,188.36, against \$413,161.42 aggregate gross earnings; \$265,670.72 expenses; \$147,490.70 net earnings for same period 1909.

St. Maurice Valley Ry.—The Board of Railway Commissioners is being asked

to make a recommendation to the Governor-in-council to sanction the leasing of this line to the C.P.R. for 999 years from Jan. 1.

St. Mary's and Western Ontario Ry.—A meeting of the bondholders was held at Embro, Dec. 6, at the request of the town of St. Mary's, to consider what steps should be taken in view of the fact that the interest on about \$80,000 of bonds, held by a number of townships through which the railway passes, is over two years in arrears. The bonds are secured by a second mortgage on the property, and representatives of the company, stated that the revenue was not sufficient to meet the interest on the first mortgage, so that there was nothing available for the second mortgage, and that there was no prospect of any substantial increase of revenue, unless some further extension of the road were made.

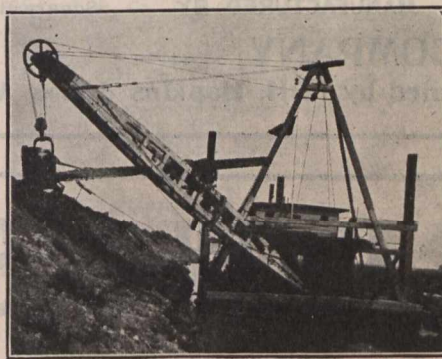
Temiscouata Ry.—Profits on operation for Sept., 1910, \$3,736, and for nine months ended Sept. 30, 1910, \$34,768.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—Following are the officers and directors for the current year:—President, L. M. Hill, St. Paul, Minn.; Vice President, F. B. Brown, Seattle, Wash.; Chief Engineer, A. H. Hogeland, St. Paul; Assistant Chief Engineers, A. Stuart, Seattle, Wash., and J. H. Kennedy, Grand Forks, B.C.; other directors, A. H. MacNell, K.C., W. H. Parker, Vancouver, B.C.; A. M. Thomas, F. M. Studley, Seattle.

Dipper Dredge for Railway Embankment.

By F. N. Smith, Resident Engineer B. C. Electric Railway, Abbotsford, B. C.

It may be of interest to some of your readers to learn of the building of a large embankment from side-borrow on the B.C. Electric Ry.'s Fraser Valley branch, across Sumas Prairie in the southern part of British Columbia. The Fraser Valley branch is a 60-mile electric line in the valley of the Fraser River, connecting New Westminster and Chilliwack and touching the international boundary at Huntingdon. There is nothing out of the ordinary in any of



the construction, with the exception of the three miles across Sumas Prairie, about 15 miles from Chilliwack. This prairie is flooded every year by the back water from the Fraser during the June freshets, so it was necessary to build an embankment three miles long and 17 ft. high to be above this flood water.

The contract was let Aug., 1909. The contractors used 3 cu. yd. drag scrapers operated from towers, the material being dumped between the towers and the borrow pit. While about 50% of the material was put in place this way the contractors were unable to complete the dump owing to the soft condition of the clay soil when mixed with water. The contract was relet in April, 1910, to Ironside, Rannie, Campbell & Pike, of

Vancouver, and they have successfully completed the work, using floating dredges, thereby handling the material as dry as possible. The accompanying illustration shows one of the dredges at work, where the top of the dump is 22 ft. above the water. The boom is 75 ft. long and the dipper has a capacity of 2 1/2 cu. yds. This dredge has put up 2,000 cu. yds. per day of two 8-hr. shifts, using four men to a shift. It was built by J. N. Pike, of the contracting firm, and the machinery was furnished by the Marion Steam Shovel Co.

White Pass and Yukon Railway

The balance-sheet for the year ended June 30, 1910, shows that there was a balance brought forward from the previous year, of £57,932, from which were paid, to sinking fund, £18,162; dividends, £27,500, leaving £12,270, which, with the profit for the year added, £40,894, leaves a balance to be dealt with this year of £53,164, against £57,913 for the previous year. During the year the number of passengers carried was 14,846; freight, 22,969 tons, against 12,192 passengers, and 24,617 tons of freight in the previous year.

S. H. Graves, President of the local companies, in speaking on the report at the recent annual meeting in London, Eng., said that the year had been a trying one. The chief feature was the shipment of heavy machinery, and although these plants had displaced a large population of hand miners, and in consequence reduced the traffic from passengers and the importation of food-stuffs, he looked forward to history repeating itself, which showed that in the long run the substitution of machinery for hand power tended to increase rather than diminish employment. Another feature was the damage to property, and dislocation to service on both the railway and the river occasioned by the abnormal climatic conditions. The year had, however, been one of substantial progress as regards the development of the Yukon. In the Klondike new and important installations had been completed and others inaugurated, which gave promise of continued activity in the future. One of the dredges built this year in the Klondike was the largest in the world, some of the single pieces of its machinery weighing nearly 30 tons. Work upon various quartz properties in the Klondike had been prosecuted during the year, with varying results, and some of the owners appear confident as to the future. In the White Horse district the ore branch of the railway had been extended some five miles, and ore shipments commenced in September. But the delay in the completion of the ore branch, caused by the floods already mentioned, coupled with the shortage of labor which prevailed this year on the Pacific coast, so retarded mining operations that further development was still necessary before ore shipments could be steadily maintained on the contemplated scale. Meanwhile, until a steady tonnage was assured, the cost of keeping the ore branch open through a Yukon winter would hardly be justified, and for this winter it was thought better not to incur the expense. In the Windy Arm district work had been prosecuted with renewed activity on some of the most promising of the properties, and ore shipments from them were increasing. The Atlin district had also been active throughout the season and increased its output. None of the mining districts which are served by the line had failed to show material progress during the year.

The Boston and Maine Rd. is said to be trying to buy the Quebec Central Ry.

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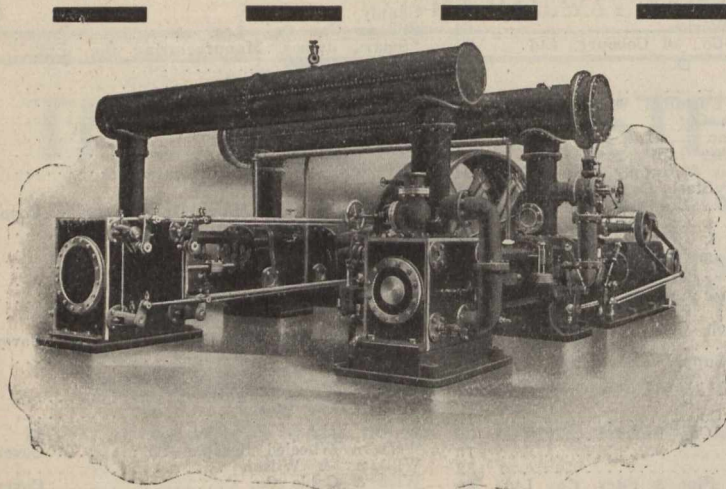
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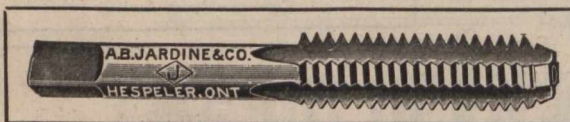
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The dates given of orders, immediately following the numbers, are those on which the hearing took place and not those on which the orders were issued. In many cases orders are not issued for a considerable time after the date assigned to them.

12383. Nov. 25.—Authorizing Tillsonburg, Lake Erie and Pacific Ry. to build spur for Ingersoll Nut Co., Ingersoll, Ont.

12384. Nov. 24.—Approving proposed work in connection with drain to be built along and under C.N.O.R. right of way, in L'Orignal.

12385. Nov. 26.—Authorizing C.N.Q.R. to open for traffic its Montmorency branch from Hedleyville Jct., to the Montmorency Lumber Co.'s pulp mill 7.62 miles.

12386. Nov. 26.—Authorizing Montreal and Southern Counties Ry. to open for traffic, the portion of its line from St. Denis St., St. Lambert, to Longueuil, Que., 3½ miles.

12387, 12388. Nov. 25.—Authorizing Ontario Hydro-Electric Power Commission to erect wires across Woodstock, Thames Valley and Ingersoll Ry., in Woodstock, and across Bell Telephone Co.'s wires at lot 1, con. 14, London tp.

12389. Nov. 25.—Authorizing Western Canada Power Co. to erect wires across C.P.R. between Pitt River and Westminster Jct., B.C.

12390. Nov. 21.—Approving Edmonton, Yukon and Pacific Ry. right of way plan through west half of block 13 of Hudson's Bay Co.'s reserve, Edmonton, Alta., reducing the width from 49½ ft. on north side of centre line to 25 ft.

12391. Oct. 13.—Authorizing C.P.R. to operate trains over G.T.R. spur to Horse shoe Quarry Co.'s premises, St. Marys, Ont., and to build spur for Horseshoe Quarry Co., to connect with G.T.R. spur, to be completed within three months.

12392. Nov. 28.—Authorizing Western Canada Power Co. to erect wires across C.P.R. New Westminster Branch, B.C.

12393. Nov. 26.—Authorizing C.N.O.R. to build between lots 15 and 16, Junction Gore, Gloucester tp.

12394. Oct. 26.—Approving location and detail plans of proposed G.T.R. station building at corner of McGill and Youville Sts., Montreal.

12395.—Nov. 28.—Authorizing C.P.R. to build temporary spur for Algoma Steel Bridge Co. across Winnipeg Electric Ry. and to join same at Louise Bridge, and ordering that all C.P.R. trains before making crossing be brought to a stop and flagged over crossing, the spur to be built within three months.

12396. Nov. 28.—Authorizing C.N.O.R. to divert and cross by a bridge, public road in St. Andrew's parish.

12397.—Nov. 28.—Authorizing C.P.R. to build within three months, an industrial spur for Boyd and Fordham, Vancouver, B.C.

12398. Nov. 28.—Authorizing C.P.R. to build spur for W. H. Wortman, between Saskatchewan and Dublin Aves., Winnipeg.

12399. Nov. 28.—Ordering C.P.R. within 90 days to install improved electric bell at crossing of Princess Ave., Lachute, Que.

12400. Nov. 28.—Authorizing city of Woodstock, Ont., to lay water pipes under C.P.R. at Tecumseh St.

12401. Nov. 26.—Authorizing Canadian Light and Power Co. to erect wires across Bell Telephone Co.'s wires at Melocheville, Que.

12402. Nov. 14.—Ordering Vancouver, Fraser Valley and Southern Ry. to insert diamond where it crosses Vancouver, Victoria and Eastern Ry., and that crossing be protected by interlocking plant, derails, and home and distant signals on both lines on each side of crossing.

TURN RULE
12403. Sept. 6.—Authorizing V.V. & E. Ry. & Nav. Co. to carry spur over B.C. Electric Ry. and certain streets in Vancouver B.C.

12404. Nov. 28.—Authorizing town of Oshawa Ont., to lay sewer across lands and under G.T.R. at lot 7, east Whitby tp.

12405. Nov. 28.—Ordering Central Ontario Ry. to provide farm crossing for E. Lynch, Maynooth, under railway bridge where line crosses his farm.

12406.—Nov. 14.—Authorizing C.N.O.R. to cross and divert public road in lots 275 and 276, St. Benoit parish.

12407. Nov. 26.—Authorizing James Bay and Eastern Ry. to build between lots 19 and 20, r. 1, Ashuapmouchouan tp., Que.

12408. Nov. 29.—Authorizing Ontario Hydro-Electric Power Commission to erect

wires across Tillsonburg, Lake Erie and Pacific Ry. (C.P.R.), in North Oxford tp.

12409.—Nov. 29.—Authorizing C.P.R. to build spur for Provincial Reformatory, Guelph tp., Ont.

12410. Nov. 28.—Authorizing G.T.R. to build siding and spur to premises of Railway Signal Co. of Canada, Ltd., Lachine parish, Que.

12411. Nov. 30.—Approving revised location of C.P.R. Puleya branch from mileage 0 to 18.49 on Pheasant Hills branch, Sask.

12412. Nov. 28.—Authorizing C.N.Q.R. to build spur to Montreal Steel Works, Ltd., Montreal.

12413. May 12.—Declaring, in complaint of G. Taylor, of Winnipeg, that rate properly chargeable by C.N.R. on grain from Buchanan, Sask., to Headingly, Man., was 17c. per 100 lbs. We were officially advised, Dec. 19, that this order had been recalled, and would probably be cancelled.

12414. Nov. 30.—Authorizing Tillsonburg, John Morrow Screw Co., Ingersoll, Ont.

12415. Nov. 30.—Adding Quebec, Montreal and Southern Ry. as party to application of W. A. Stewart, Napierville, Que., and village of St. Cyprien, complaining of inadequate accommodation and unsatisfactory train service furnished by Napierville Jct. Ry.

12416. Dec. 1.—Extending to June 1, period during which North American Telegraph Co. may charge telephone tolls which it was previous to July 13, 1906, authorized to charge.

12417, 12418. Dec. 1.—Extending to June time within which contract forms of National, American, Canadian and Dominion Ex. Co.'s are approved.

12419. Dec. 1.—Extending to June 1 time within which forms of money and freight receipts of Maritime Ex. Co. are approved.

12420. Dec. 1.—Extending to June 1 period during which Bell Telephone Co. may charge tolls which it was authorized to charge previous to July 13, 1906.

12421. Dec. 1.—Extending to June 1 time within which contract forms of United States and Great Northern Ex. Cos. are approved.

12422. Dec. 1.—Authorizing C.P.R. to build temporary bridge to carry Notre Dame St. over tracks leading to its Place Viger terminal, Montreal, pending completion of permanent bridge.

12423, 12424. Dec. 1.—Extending to June 1 time within which C.P.R. and G.N.W. Telegraph Cos. may be allowed to charge tolls authorized under 7-8 Ed. 7, chap. 61.

12425. Dec. 1.—Extending to June 1 time within which White Pass & Yukon Ry. may be allowed to charge tolls authorized under 7-8 Ed. 7, chap. 61.

12426. Dec. 1.—Authorizing Montreal Terminal Ry. to build siding across Victoria Ave., Montreal East.

12427. Dec. 1.—Amending order 12249, Oct. 12, 1910, authorizing T.H. & B.R. to build spurs from Grant Ave. to Wentworth St., Sherman Ave. and Prospect St., Hamilton, Ont.

12428, 12429. Dec. 1.—Authorizing Canadian Niagara Power Co. to erect wires across Bell Telephone Co.'s wires at two points in Bridgeburg, Ont.

12430. Dec. 2.—Approving proposed change in location of Georgian Bay and Seaboard Ry. (C.P.R.) in Orillia, Ont.

12431. Sept. 26.—Authorizing C.P.R. to build spur and four sub-spurs in Brandon, Man.

12432, 12433. Nov. 30, Oct. 10.—Authorizing G.T.P.R. to build on Main, Walsh, Harold and Hardisty Sts., Fort William, Ont.

12434. Dec. 2.—Adding city of Montreal as party re highway crossing on C.P.R. known as Pacific Ave., St. Louis du Mile End, and ordering C.P.R. to place day and night watchman there.

12435. Oct. 14.—Dismissing application of Michigan Sugar Co. for order against Chatham, Wallaceburg & Lake Erie Ry. re rate on sugar beets.

12436. Dec. 3.—Authorizing G.T.R. to build siding from its Lachine canal bank branch on Lachine canal reserve to a point opposite Canadian Light & Power Co.'s property.

12437. Dec. 3.—Authorizing G.T.R. to build branch to Canadian Bag Co.'s premises, Toronto.

12438. Sept. 17.—Authorizing C.P.R. Co. to build spur to Great West Lumber Co.'s premises Red Deer, Alta.

12439. Sept. 21.—Dismissing C.N.R. application for authority to build a temporary spur and branches in Regina, Sask.

12440. Dec. 2.—Authorizing Ontario Hydro-Electric Power Commission to erect wires across Bell Telephone Co.'s wires in Brantford tp.

12441. Dec. 3.—Authorizing C.P.R. to build spur for Weidman & Co., Winnipeg.

12442. Dec. 6.—Authorizing Shawinigan Water and Power Co. to erect wires across

Farmer Lumber Co.'s switch from C.P.R. loop, Wabasso branch, Three Rivers, Que.

12443. Dec. 1.—Adding town of Lachine, Lachine parish, and Montreal West as parties to application on behalf of town of St. Pierre, Que., complaining of closing by G.T.R. of Simplex St., Lachine.

12444. Dec. 1.—Dismissing application of W. Raymond, Ste. Agathe des Monts, Que., for order directing C.P.R. to build farm crossing on lot 36, r. 10, Morin Canton, Terrebonne co.

12445. Dec. 1.—Dismissing application of A. Heroux, St. Maurice de Champlain, Que., for order directing C.P.R. to build farm crossing lot 417.

12446. Dec. 1.—Extending to July 1 time for completion of work in connection with deviation of water main under Central Vermont Ry., St. Alexandre parish, Que.

12447. Dec. 1.—Ordering C.P.R. to file before Jan. 15, plans for erection of gates, giving details of location and layout, to be installed at Westminster Ave., Montreal West; gates to be installed and work completed before June 15.

12448. Dec. 1.—Ordering Maine Central Rd. to place snowfence, at present obstructing view on west side of crossing at Main Road, Eton parish, Que., in such location and condition as the Board's Engineer may direct, and erect and maintain electric bell, to be approved by the Board.

12449. Dec. 1.—Adding Canada Paper Co. as party to application re G.T.R. crossing of public road leading to St. Francis River bridge, Windsor Mills, Que.

12450. Dec. 1.—Adding city of Montreal as party to application of town of Notre Dame de Grace, Que., for order amending order 8208, Sept. 14, 1909.

12451. Dec. 1.—Ordering C.N.Q.R. to build farm crossings for A. Paquette, St. Sauveur parish, Que., before May 15, 1911.

12452. Dec. 2.—Dismissing application of St. Maurice & Champlain Telephone Co. for order directing Portneuf Telephone Co. to abide by provisions of agreement dated Mar. 6, 1907.

12453. Dec. 1.—Extending to May 15 time within which city of Montreal may build tunnel under C.P.R. at St. Lawrence Boulevard crossing.

12454. Sept. 16.—Authorizing city of Calgary, Alta., to build subway at Eighth St. west; work to be completed Sept. 1, 1911.

12455. Dec. 1.—Ordering that G.T.R. cease from interfering with siding on its property adjoining that of D. McManamy, Sherbrooke, Que., and to leave a passage-way 10 ft. wide for entrance to his building, also to leave grain-carrier for carrying grain to his building.

12456. Dec. 2.—Ordering C.N.Q.R. to fence its property and tracks at Hochelaga terminals, Montreal, equip ends of house-tracks with modern stop-blocks, install gates at Moreau and Prefontaine Sts., with tower near Moreau St., and install gates at St. Germain St., with day and night watchman.

12457. Dec. 6.—Authorizing town of Warton Ont., to lay sewer under G.T.R. where its two switches leading to Crown Portland Cement Co., cross Brown St.

12458 to 12461. Dec. 6.—Authorizing Ontario Hydro-Electric Power Commission to erect wires across T. H. & B. Ry. and Hamilton Radial Electric Ry. at two points in Hamilton and across Bell Telephone Co.'s wires in Downie tp.

12462 to 12465. Dec. 6.—Authorizing Shawinigan Water & Power Co. to erect wires across St. Maurice Valley Ry., Wabasso branch at four points in Three Rivers, Que.

12466. Dec. 7.—Authorizing Quebec Ry., Light, Heat & Power Co., to erect wires across C.N.Q.R. on Charlesbourg Road, near Quebec.

12467 to 12468. Dec. 6.—Authorizing Water Commissioners for London, Ont., to erect wires across Bell Telephone Co.'s wires at two points.

12469. Dec. 7.—Extending to June 1, 1911, time for approval of Canadian Northern Telegraph Co. tolls, and allowing it to charge tolls authorized under 7-8 Ed. 7, chap. 61.

12470. Dec. 7.—Authorizing C.P.R. to build branch joining its Portal and Stoughton to Weyburn branches, across road allowance on west boundary of n.w. ¼ sec. 15 and road allowance on west boundary of s. w. ¼ sec. 22, tp. 8, r. 14, w. 2, m., Weyburn, Sask.

12471. Dec. 7.—Authorizing C.P.R. to build spur for Contractors' Supply Co. of Toronto, at mileage 20, on its Owen Sound sub-division, Caledon tp., Ont.

12472. Dec. 7.—Authorizing C.P.R. to build spur for Gibson, McCormack, Irvin Co. West Toronto, Ont.

12473. Dec. 7.—Authorizing C.P.R. to build spur for Redcliffe Manufacturing Co., Redcliffe.

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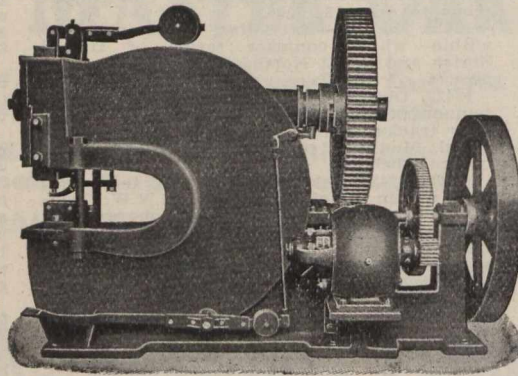
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THE LESSON

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MAINLY ABOUT PEOPLE.

12474. Dec. 6.—Rescinding order 12209, Nov. 7 1910, made upon application of C.P.R. to build spur for the Gres Falls Co., at mileage 2.22 from Piles Jet., Que.
 12475. Dec. 6.—Authorizing C.P.R. to build spur for Canadian Tube & Iron Co., Montreal.
 12476, 12477. Dec. 7.—Authorizing James Bay & Eastern Ry. to cross and divert public road in Indian Reserve, Loke St. John County.
 12478. Dec. 7.—Authorizing C.P.R. to reconstruct bridge 11.9, over Assiniboine River at Headingly, Man.
 12479. Dec. 7.—Extending to June 1, 1911, time for approval of G.T.P. Telegraph Co.'s tolls.
 12480. Dec. 7.—Authorizing C.N.O.R. to cross and divert Broken Front St., Sidney, tp.
 12481. Dec. 7.—Approving road diversion in s.e. ¼ sec. 14, tp. 53, r. 5, w. 5, m. North Alberta District.
 12482. Dec. 7.—Dismissing application of Grand Forks, B.C., for order directing Kettle River Valley Ry. to carry out terms and conditions of agreement, and forthwith to build its railway so as to afford proper and adequate facilities for traffic from Grand Forks to 50 miles up north fork of Kettle River.
 12483, 12484. Dec. 7.—Authorizing C.P.R. to build spurs for Canadian Fairbanks Co., Saskatoon, and Outlook, Saskatchewan Flour Mills Co., Outlook, Sask.
 12485. Dec. 7.—Authorizing Ontario Hydro-Electric Power Commission to use its transmission wires at 47 points.
 12486, 12487. Dec. 6.—Dismissing application of Nepean tp., Ont., for leave to build crossing at Magee Ave., across Ottawa Electric Ry., and authorizing it to build highway crossing over Ottawa Electric Ry. at Strathcona Ave.
 12488. Dec. 6.—Ordering C.N.Q.R. to place interlocking plant where it crosses Montreal St. Ry. near Valois Ave. and Ontario St. in proper shape within 10 days.
 12489. Dec. 9.—Authorizing C.P.R. to build two spurs for city of Calgary, Alta., in Victoria Park.
 12490. Dec. 9.—Authorizing C.N.O.R. to build across side road in lot 35, con. 1, Sidney tp.
 12491. Dec. 9.—Authorizing North Bay Light, Heat and Power Co., to erect wires across C.P.R. at Ninth St., North Bay Ont.
 12492. Dec. 9.—Authorizing Dufferin Light and Power Co. to erect wires across C.P.R. at Centre St., Orangeville, Ont.
 12493. Dec. 9.—Authorizing Gres Falls Co. to erect wires across C.P.R. at Three Rivers, Que.
 12494. Dec. 9.—Authorizing Dufferin Light & Power Co. to erect wires across C.P.R. one mile west of Orangeville, Ont.
 12495. Dec. 9.—Authorizing Stratford Light and Heat Commission to erect wires across G.T.R. at Ontario St., Stratford Ont.
 12496, 12497. Dec. 10.—Authorizing Ontario Water Co., of Niagara Falls, to erect wires across Niagara, St. Catharines and Toronto Ry. at two points in St. Catharines.
 12498. Dec. 10.—Authorizing city of Winnipeg to lay water main under C.P.R. at Alfred Ave.
 12499. Dec. 10.—Authorizing C.P.R. to build spur for Great West Felt Co., Elmira, Ont.
 12500. Dec. 10.—Authorizing C.P.R. to build spur for University of Saskatchewan, at Sutherland.
 12501. June 22.—Dismissing application of C.P.R. and Montreal Terminal Ry. for order interpreting certain provisions of order 4988, July 8, 1908.
 12502. Dec. 10.—Authorizing C.N.O.R. to connect with G.T.R. at Cobourg
 12503. Sept. 21.—Dismissing application of Prudential Exchange Co., Lang, Sask., alleging discrimination by C.P.R. in rates on coal from Fort William and Port Arthur to Lang, as against Moose Jaw and Regina.

Passenger Meetings at Rochester.—

The Niagara Frontier Summer Rate Committee will meet at the Seneca Hotel, Rochester, N.Y., on Jan. 17, 18 and 19. The rate clerks will meet on Jan. 17 and 18 at 9 a.m., and the general meeting will be held on Jan. 19, at 11 a.m. The Great Lakes and St. Lawrence River Rate Committee will meet at the same place on Jan. 19, immediately after the adjournment of the Niagara Frontier Committee meeting.
 The International Water Lines Passenger Association will meet at the same place, on Jan. 19, at 9 a.m.

John Galt, consulting engineer, formerly of Toronto, died at Vernon, B.C., Dec. 18.

H. D. Reid, Vice President Reid Newfoundland Co., arrived in Montreal from St. John's, Nfld., Dec. 7.

Hugh A. Allan, of the Allan Line, was in Montreal early in Dec., for a few days, and later returned to England.

Mrs. Yates, widow of the late Henry Yates, railway contractor, died at Brantford, Ont., Dec. 22, aged 82.

H. P. Dwight, President Great North Western Telegraph Co., celebrated his eighty second birthday in Toronto, Dec. 23.

Mrs. Hayter Reed, wife of the Manager in Chief C.P.R. Hotels, arrived in Montreal from England early in December.

A. R. Creelman, General Counsel C.P.R., and Mrs. Creelman returned to Montreal early in December from England.

G. Bury, who died in Montreal, Dec. 16, aged 69, was father of G. J. Bury, General Manager Western Lines C.P.R., Winnipeg.

R. Marpole, General Executive Assistant C.P.R., Vancouver, B.C. sailed from St. John, N.B., Dec. 2, for a three months holiday in Great Britain.

R. Shaver, sub-contractor on the Esquimalt and Nanaimo Ry. Alberni extension, was married at Alberni, B.C., recently, to Miss M. Gibson.

Lord Strathcona contributed \$5,000 towards the fund of \$41,000 just raised in Winnipeg, to clear off the debt on the Y.M.C.A. building there.

Jas. Osborne, General Superintendent Ontario Division C.P.R., returned to Toronto, Dec. 12, from Great Britain, where he spent a six weeks holiday.

Col. Rathbun, President of the Rathbun railways and steamboat lines, and Mrs. Rathbun returned to Deseronto, Ont., early in December from England.

Barlow Cumberland, Vice President Northern Navigation Co., has been elected a fellow and corresponding member of the Literary and Historical Society of Quebec.

E. R. Gossett was presented with a cabinet of silver by the head office staff of the Canadian Northern Ry., Toronto, on his marriage, Dec. 7, to Miss H. M. Lee.

I. W. Hutchins was presented with a pair of gold cuff links by the G.T.R. advertising office employes, Montreal, Dec. 6, on leaving the company's service.

Mrs. A. Gendron, who died in Quebec recently, was mother of Mrs. S. N. Parent, wife of the Chairman of the National Transcontinental Railway Commissioners.

W. Hunt, for many years connected with the Panama Rd., who died in New York recently, formerly resided in Hamilton and Montreal, at which latter place he was buried.

W. D. Power, heretofore chief clerk Freight Department C.P.R., Vancouver, B.C., has been appointed Traffic Officer, Vancouver Board of Trade Transportation Bureau.

J. E. Davis, formerly a machinist in the G.T.R. shops at Stratford, Ont., is reported to have been appointed Master Mechanic of the Hocking Valley Ry., Columbus, Ohio.

C. M. Hays, President G.T.R. and G.T.P.R., was a guest at the annual dinner of the Dominion Commercial Travelers Association at Montreal, Dec. 19, when he spoke on transportation.

Martin Gower, Supervisor of Appren-

tices C.P.R., Montreal, was present at the recent meeting of the Society for the Promotion of Industrial Education, at Boston, Mass.

A. C. Shaw was presented with a diamond pin by his railway friends in Chicago, Ill., on his removal to Winnipeg, Man., as C.P.R. Assistant General Passenger Agent there.

C. B. Foster was presented with a gold watch by the C.P.R. passenger staff at Vancouver, B.C., on the occasion of his recent promotion as General Passenger Agent at Winnipeg.

R. Ivers, who resigned his position as locomotive foreman C.P.R., at Moose Jaw, Sask., a short time ago, on account of ill health, is undergoing treatment at the Sanitarium at Gravenhurst, Ont.

W. Whyte, Vice President C.P.R., and H. Sutherland, Executive Agent Canadian Northern Ry., have been elected directors of the Winnipeg Industrial Exhibition for the current year.

C. C. Wellerman was presented with a fur-lined overcoat by the members of the railway branch of the Y.M.C.A., Sarnia, Ont., on leaving to take up similar duties at the general Y.M.C.A., Matawa, Ont.

Lt.-Col. A. H. Macdonald, K.C., Secretary Guelph Junction Ry., Guelph, Ont., has been appointed a member of the parole board of the Provincial reformatory there, by the Ontario Government.

Hon. Angus McDonnell, who is railway contracting on the Esquimalt and Nanaimo Ry., Vancouver Island, left Nov. 26 for a holiday, which he is spending with his father and mother, the Earl and Countess of Antrim, in Ireland.

Neil Keith, a well known railway contractor, latterly engaged on the C.P.R. Weyburn-Lethbridge branch, disappeared from the camp at Ogeman, Sask., towards the end of November. His frozen body was found Dec. 14, several miles from the camp.

W. D. Power was presented with a travelling bag and silk umbrella by the C.P.R. freight department staff, Vancouver, B.C., recently, on leaving the service to become traffic officer for the Vancouver Board of Trade Transportation Bureau.

J. L. Englehart, Chairman of the Temiskaming and Northern Ontario Ry. Commission, has presented his house and grounds, valued at \$50,000, to the town of Petrolea, Ont., for use as a hospital, as a memorial of his wife, who died recently.

W. J. Shepperd, President of the Northern Navigation Co. of Ontario, and J. Playfair, of the Inland Navigation Co., have been elected directors of the Spanish River Pulp and Paper Mills, Ltd., which has taken over the Spanish River Pulp and Paper Company's business.

R. G. Harvey, railway contractor, who built the Brockville, Westport and Sault Ste. Marie Ry. (recently acquired by the Mackenzie, Mann interests), and the Halifax and Yarmouth Ry. (now part of the Halifax and South Western Ry.) died in Brockville, Ont., Nov. 27.

H. Williams, at one time in the service of the old Great Western Ry. and subsequently with the Canada Southern Ry. and its successor, the Michigan Central Rd., being Chief Dispatcher at St. Thomas, Ont., on retiring from active work, died at Winnipeg recently, aged 63.

Miss Mackenzie and the Misses Ethel and Grace Mackenzie, daughters of Wm. Mackenzie, President Canadian Northern Ry., left Toronto Dec. 14, for London,

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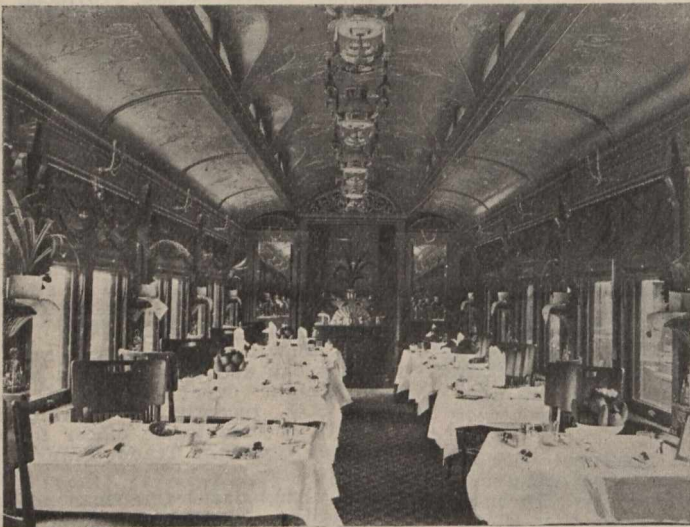
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Eng., where Miss Grace Mackenzie will be married to Count de Lesseps in January. Mr. and Mrs. Mackenzie will probably leave for England about the middle of January.

G. R. Fairhead, who has been appointed Commercial Agent Canadian Northern Ry., Hamilton, Ont., was born in Toronto, Mar. 6, 1882, and entered railway service in 1897, since when he has been, to 1902, clerk offices of Division Freight Agent, and Assistant Foreign Freight Agent G.T.R., Toronto; 1902 to Dec., 1910, in office of General Eastern Agent Canadian Northern Ry., Toronto.

W. Stitt, General Passenger Agent Eastern Lines C.P.R.; W. E. Davis, Passenger Traffic Manager; G. T. Bell, Assistant Passenger Traffic Manager; and W. Vaux, General Passenger Agent, and H. R. Charlton, General Advertising Agent G.T.R., were present at Boston, Mass., Dec. 21, at a dinner given to N. E. Weeks and G. H. Watson, Chairman and Secretary respectively, of the New England Passenger Association.

E. J. Hebert, who has been appointed First Assistant General Passenger Agent Eastern Lines C.P.R., Montreal, was born there, June 18, 1864, and entered railway service Oct., 1879, since when he has been, to July, 1882, in General Office, G.T.R., Montreal; July, 1882, to May, 1905, in General Passenger Department C.P.R., Montreal; May, 1905, to Dec. 1, 1910, General Agent Passenger Department C.P.R., Montreal.

R. S. Logan, Assistant to the President G.T.R., John Pullen, Assistant Freight Traffic Manager G.T.R., R. Bickerdike and C. A. Jaques, both connected with various marine interests in Montreal, are interested in the formation of the Country Club of Montreal, Ltd., recently incorporated under the Quebec Companies Act, with a capital of \$50,000, and office in Montreal, for the promotion of outdoor exercise and social intercourse.

Sir H. Montagu Allan, of the Allan Line; R. B. Angus, director C.P.R.; E. T. Galt, President Alberta Ry. and Irrigation Co.; C. M. Hays, President G.T.R.; C. R. Hosmer, director C.P.R.; Sir Thos. G. Shaughnessy, President C.P.R.; H. Paton, President Shedden Forwarding Co., and Jas. Ross, formerly President Dominion Coal Co., are interested in the incorporation of the Winter Club, Ltd., under the Quebec Companies Act, with a capital of \$149,000, and office at Montreal, to maintain a club house for recreation and social intercourse.

In giving some biographical data referring to D. Crombie, in our last issue, we mentioned that he entered railway service in 1883, instead of in 1882, and also stated that from July, 1900, to Apr., 1906, he was Superintendent of Transportation Pere Marquette Rd., Detroit, Mich., and from Apr., 1906, to Oct., 1907, Master of Transportation G.T.R. Middle Division, London, Ont. He left Pere Marquette Rd. service early in 1903, and from then to early in 1907 he was engaged in private business, entering G.T.R. service early in 1907.

T. Hoben, Assistant Superintendent Canada Eastern Division Intercolonial Ry., who was visiting Chicago, Ill., died there suddenly, Dec. 4. His retirement, which was announced in our last issue, was to take place Dec. 31, and he was to be placed on the superannuation list, as from Jan. 1. In his early days he was associated with Alex. Gibson in the construction of the railway along the eastern side of the St. John River, now part of the C.P.R., and was later connected with the construction of the Canada Eastern Ry., now part of the Intercolonial Ry.

G. C. Wells, whose appointment as Assistant to Passenger Traffic Manager C.P.R., Montreal, was announced in our

Dec., 1910, issue, was born at Brockville, Ont., Apr. 15, 1866, and entered railway service Mar. 6, 1882, since when he has been, to May 13, 1892, in General Passenger Department G.T.R., Montreal; May 13, 1892, to June, 1895, rate clerk Passenger Traffic Department C.P.R., Montreal; June, 1895, to Jan., 1898, chief rate clerk same office; Jan., 1898, to Nov. 22, 1904, Chief Clerk Passenger Traffic Department C.P.R., Montreal; Nov. 22, 1904, to Oct. 29, 1910, Assistant General Passenger Agent C.P.R. Eastern Lines, Montreal.

A. C. Shaw, whose appointment as Assistant General Passenger Agent C.P.R. Western Lines, Revelstoke and east, at Winnipeg, was announced in our last issue, was born at Detroit, Mich., of Canadian parentage, and entered railway service in 1880, since when he has been, to Mar., 1886, in city ticket office Great Western Ry. (now G.T.R.), Toronto; entering C.P.R. service in the District Passenger Office, Toronto, in Mar., 1886, he was later in the same year, transferred to the General Passenger Department, Montreal, where he filled various positions, until 1900, when he was appointed General Agent Passenger Department at Chicago, Ill., in which position he remained to Nov. 1, 1910.

G. A. Lizotte, whose appointment as General Agent Canada Gulf and Terminal Ry., is announced on another page, was born at Quebec, Nov. 1, 1863, and entered railway service in Apr., 1880, since when he has been, to Sept., 1881, telegraph operator Quebec, Montreal, Ottawa and Occidental Ry., now part of the C.P.R.; Sept., 1881 to Oct., 1882, operator Troy, Greenfield and Hoosac Tunnel; Oct., 1882, to July, 1883, operator C.P.R.; Aug., 1883 to May, 1885, Chief Train Dispatcher Construction Department C.P.R.; June, 1885, to July, 1895, Chief Train Dispatcher Quebec and Lake St. John Ry.; July, 1895, to Nov., 1903, Auditor Freight and Passenger Receipts Pontiac Pacific Jct. Ry. and Ottawa and Gatineau Ry.; Aug., 1903, to 1905, Secretary Ha Ha Bay Electric Light Co.; Aug., 1905, to July, 1908, controller of train crews G.T.R.; July, 1908, to Oct., 1910, C.P.R. Telegraph Department.

A. Wilcox, whose portrait appears on the first page of this issue, was born at Kincardine, Ont., Jan. 2, 1865, and entered railway service in 1881, since when he has been, to 1883, successively, operator, ticket, and freight clerk Toronto, Grey and Bruce Ry., Owen Sound, Ont.; 1883 to 1887, operator and agent at various points and relieving dispatcher C.P.R. at Winnipeg; 1887 to 1890, train dispatcher C.P.R., Moose Jaw, Sask.; 1890 to 1903, Chief Train Dispatcher C.P.R. Moose Jaw, Sask.; 1903, Chief Train Dispatcher C.P.R. Cranbrook, B.C.; July, 1903, to July, 1904, Chief Train Dispatcher Canadian Northern Ry., Port Arthur, Ont.; July, 1904, to Jan., 1908, Superintendent District 2, C.N.R., Winnipeg; Jan., 1908, to May, 1909, Superintendent District 1, C.N.R., Port Arthur Ont.; May to Nov., 1909, Superintendent District 3, C.N.R., Dauphin, Man.; Nov., 1909, he was transferred to Port Arthur, Ont., as Superintendent District 1, which position he still holds.

E. A. Evans, who has resigned the position of Chief Engineer Quebec Ry. Light, Heat and Power Co., and Quebec Ry. Light and Power Co., was born in Kensington, London, Eng., Feb. 26, 1855, and between 1875 and 1883 was engaged as engineer on construction for the Cheshire Lines Committee (composed of the Midland, Great Northern and Great Central Rys.), and for the Lancashire and Yorkshire Ry. Coming to Canada in 1884, he was, in that and the following year, engaged on surveys for the

projected Port Rowan and Lake Shore Ry., and the Pontiac, Pacific Jct. Ry., and for about a year, to Mar., 1886, was with the Geological Survey of Canada. Since then he has been, successively, Mar., 1886, to Jan., 1889, engineer Pontiac, Pacific Jct. Ry., Gatineau Valley Ry., and on surveys for the St. Lawrence bridge at Quebec; June, 1889, engineer in charge of re-alignment and improvement of grades, ballasting and general completion of the Quebec and Lake St. John Ry. from Whitehorse trestle to Roberval, 178 miles, and in charge of construction of branch line from Chambord Jct. to Chicoutimi; on the completion of this he was appointed engineer in charge of construction of Quebec city electric railway, and General Manager on the opening of the line. The company has since developed into the Quebec Ry., Light and Power Co., and has built a suburban line along the north shore of the St. Lawrence River to Ste. Anne de Beaupre and Cap Tourment, and also carries on a lighting and power business, with a large power development plant at Montmorency Falls; he held the position of General Manager and Chief Engineer until the end of 1909, when, on the absorption of some other light and power companies, he was appointed Chief Engineer. He is a member of the Canadian Society of Civil Engineers, was one of the founders of the Engineers' Club, Montreal, and took an active part in establishing the Canadian Street Railway Association, in which he has served as member of the executive committee, Vice President, and in 1908, President.

Natural Gas Lighting on the C.P.R.—The C.P.R. has adopted the use of natural gas for lighting purposes, on its trains running north and south of Calgary, Alta. The gas will be transported from Brooks, about 114 miles east of Calgary, where the cars will be charged from the tanks. The medium of transportation consists of a flat car, on which are mounted 36 forged steel gas flasks, 18 of which are 10 ft. by 9¼ in. diam., and 18 15½ ft. by 9¼ ins., and are capable of carrying 100 atmospheres. They are equipped with reducing valves for charging the cars at reduced pressure.

The Interstate Commerce Commission issued orders Dec. 21 reducing the price heretofore exacted by the Pullman Co. for upper berths in sleeping cars. An order also was issued providing that after Feb. 1 certain specified reductions in the charges for lower berths northwest of Chicago shall be made by the Pullman Co.

La Compagnie de Pulpe de Chicoutimi has been re-incorporated under the Quebec Companies Act, with a capital of \$1,000,000, and office at Chicoutimi, to manufacture and deal in pulp, paper, etc., and in connection therewith to build and operate tramways, wharves, docks, steam and other vessels, etc. The provisional directors are Hon. N. Garneau, G. Lemoine, J. A. Couture, Quebec; I. N. Belleau, Levis; W. Hanson, Montreal; F. X. Gosselin and J. E. A. Dubuc, Chicoutimi.

During Sept. and Oct., 1910, 35 employees were killed and 39 injured in the course of their work on Canadian railways. Of the fatalities, 19 were due to being run over, four to dynamite explosions, three to being caught between cars, two each to collisions and to falls, one each to derailment, to falling material, to a gunshot wound, to drowning, and to the explosion of a locomotive; while of the other accidents, 12 were due to being run over, seven each to being caught between cars and to falls, four to collisions, three each to falling material and to derailments, two to being struck by locomotives, and one to machinery.

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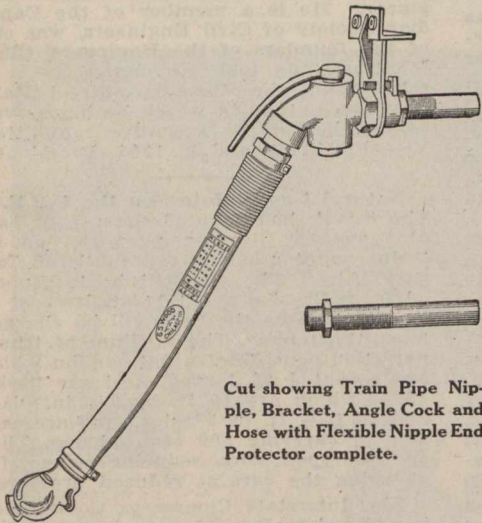
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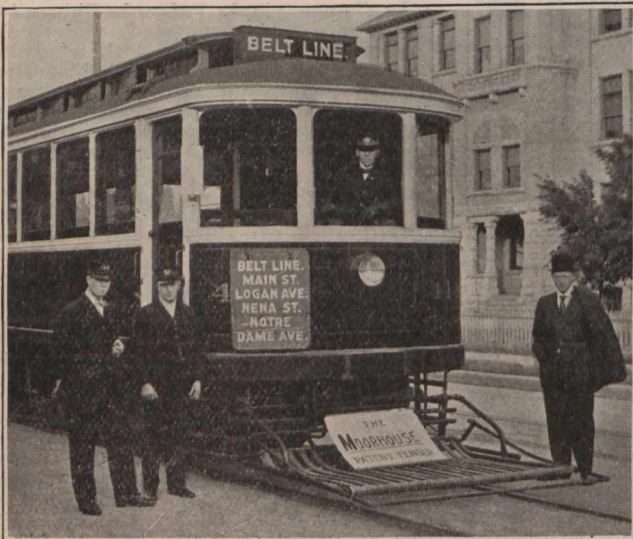
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will absolutely stop shifting and leaking of air-brake train pipes. All M.C.B. requirements are obtained and maintained.

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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.

Government Railways Managing Board.—J. B. T. Caron has been appointed a member of the Board, in charge of the legal work connected with the Government railways, and with office at Moncton, N.B.

Canada and Gulf Terminal Ry.—J. R. Cassidy has been appointed Superintendent. Office, St. Flavie, Que.

G. A. Lizotte has been appointed General Agent. Office, Matane, Que.

Canadian Northern Ry.—We are officially advised that G. H. Shaw, Traffic Manager, will have his office transferred from Winnipeg to Toronto early in February, and that his jurisdiction will be extended to include the Mackenzie, Mann and Co.'s eastern lines as well as the western, and also the Canadian Northern Steamships Ltd.

The position of Superintendent of Publicity and Advertising, heretofore held by A. Hawkes, has been abolished. R. Croasdel, heretofore chief clerk, has been appointed Advertising Agent. Office, Toronto.

H. Logan, heretofore City Freight Agent, Toronto, has been appointed Travelling Freight Agent there, vice G. R. Fairhead, appointed Commercial Agent at Hamilton, Ont.

G. R. Fairhead, heretofore Travelling Freight Agent, Toronto, has been appointed Commercial Agent, Hamilton, Ont. Office, Federal Life Bldg.

C. H. Green, heretofore Travelling Freight Agent at Toronto, has been transferred to the Commercial Agent's office, at Hamilton, Ont.

Canadian Pacific Ry.—E. J. Hebert, heretofore General Agent Passenger Department, Montreal, has been appointed First Assistant General Passenger Agent Eastern Lines. Office, Montreal.

F. O. Hopkins, heretofore chief clerk to General Passenger Agent, has been appointed Assistant General Passenger Agent Eastern Lines. Office, Montreal.

A. W. Porter, heretofore Superintendent Sleeping, Dining and Parlor Cars and News Service, District 5, Vancouver, B.C., has been appointed Superintendent same service, District 3, Winnipeg, vice E. W. Kolb, transferred to other duties.

W. K. P. Kennedy, heretofore Superintendent's Accountant, North Bay, Ont., has been appointed Inspector of Time-keeping Western Lines. Headquarters, Winnipeg.

T. Fawcett, heretofore Trainmaster, Calgary, has been appointed General Fuel Agent Western Lines, vice C. Hood, appointed Trainmaster Calgary Terminals. Office Winnipeg, Man.

E. W. Duval, heretofore Trainmaster, Maintenance and Operation Calgary Terminals, Calgary, Alta., has been appointed Superintendent District 1, Saskatchewan Division, vice J. M. Cameron transferred to Medicine Hat, Alta. Offices Moose Jaw, Sask.

E. B. Paterson has been appointed locomotive foreman at Wilkie, Sask., vice G. Andrews, assigned to other duties.

J. McQuarrie has been appointed locomotive foreman at Sutherland, Sask., vice M. W. Boucher, transferred.

A. Morrison has been appointed locomotive foreman at Wynyard, Sask.

J. S. Dennis, heretofore Assistant to the Vice President, has been appointed Manager of the Company's Irrigation and Land Interests in Alberta and British Columbia, and will perform such other duties as may be assigned to him

from time to time by the President. Office, Calgary, Alta.

C. W. Peterson, who has been General Manager Canadian Pacific Irrigation Colonization Co. since 1906, has been appointed Superintendent of Irrigation. He has charge of the maintenance and operation of the Irrigation Canals and the Distributing System, and of Agricultural Development and Colonization of the Irrigation Block. Office, Calgary, Alta.

C. Hood, heretofore General Fuel Agent, Western Lines, Winnipeg, has been appointed Trainmaster Maintenance and Operation Calgary Terminals, vice E. W. Duval promoted to be Superintendent at Moose Jaw, Sask. Office Calgary, Alta.

J. M. Cameron, heretofore Superintendent, District 1, Saskatchewan Division, Moose Jaw, Sask., has been appointed Superintendent, District 1, Alberta Division, vice J. G. Taylor transferred to Eastern Lines. Office Medicine Hat, Alta.

F. W. Green, formerly General Roadmaster at Calgary, Alta., has been appointed Roadmaster Thompson sub-division and Nicola branch, Pacific Division, vice G. Munro, retired. Headquarters, Kamloops, B.C.

The position of Assistant Trainmaster at Kamloops, B.C., heretofore held by A. Houghton, has been abolished.

H. C. Ganson has been appointed Superintendent Sleeping, Dining and Parlor Cars and News Service, District 5, Vancouver, B.C., vice A. W. Porter, transferred.

A. J. Davis has been appointed acting foreman painter, Vancouver car shops, during the absence of A. Parker on six months leave.

Delaware and Hudson Co.—F. B. Moffitt, heretofore Travelling Passenger Agent, Albany, N.Y., has been appointed Canadian Passenger Agent. Office, 160 St. James St., Montreal.

W. H. Henry, heretofore Canadian Passenger Agent, has been appointed City Passenger Agent, Montreal. Office, 286 St. James St.

W. F. Sheehan has been appointed Travelling Passenger Agent, Albany, N.Y., vice F. B. Moffitt, promoted.

Grand Trunk Pacific Ry.—The following agents have been appointed:—Justice, Man., R. L. Harrop; Pope, Man., C. McMahon; Lazare, Man., T. J. Shields; Gerald, Sask., L. Saunders; Tate, Sask., A. E. Hofferd; Bradwell, Sask., H. E. Henshaw; Yorkton, Sask., S. C. McDonald.

Grand Trunk Ry.—J. Duguid, heretofore General Foreman Toronto shops, has been appointed Master Mechanic Eastern Division, vice J. C. Garden, transferred to Battle Creek, Mich. Office, Montreal.

W. C. Sealey, heretofore erecting shop foreman at Stratford, Ont., has been appointed General Foreman, Toronto shops, vice J. Duguid, promoted.

W. Davis, heretofore charginer, has been appointed erecting shop foreman at Stratford, Ont., vice W. C. Sealey, promoted.

H. MacDougall, heretofore agent at Brampton, Ont., has been appointed Travelling Freight Agent. Headquarters, Stratford, Ont.

J. C. Garden, heretofore Master Mechanic Eastern Division, Montreal, has been appointed Master Mechanic Battle Creek shops, Mich., vice J. T. McGrath, who has been appointed Superintendent of Rolling Stock, in charge of the Chicago & Alton Rd.'s locomotive and car shops and terminals at Bloomington, Ill.

G. W. Gillespie, heretofore Chief Train Dispatcher, Durand, Mich., has been appointed Master of Transportation West-

ern Division, vice R. Doyle, resigned. Office, Durand, Mich.

H. J. Tobin has been appointed Chief Train Dispatcher, Durand, Mich., vice G. W. Gillespie, promoted.

The following agents have been appointed:—Emsdale, Ont., J. E. Bell; Angus, Ont., A. M. Clark; Stayner, Ont., C. K. Clark; Brampton, Ont., C. B. McCollum; Alma, Ont., F. Anguish; Rose Point, Ont., M. J. Mullin; Henrysburg, Que., J. O. Prefontaine; St. Louis, Que., J. W. Marchand; Brighton, Ont., outside, T. C. Lockwood; Richwood, Ont., outside, A. Richardson; Durham, Ont., outside, J. R. Gun.

Intercolonial Ry.—We are officially advised that the Government Railways Managing Board has taken no action with reference to the resignation of G.R. Joughins, Superintendent of Motive Power, and that he still continues to occupy the position.

Michigan Central Rd.—L. W. Landman, heretofore General Passenger Agent Lake Erie & Western Rd., is reported to have been appointed General Passenger Agent, Michigan Central Rd., vice P. W. Ruggles, resigned on account of ill health. Office, Chicago, Ill.

New York Central and Hudson River Rd.—West Shore Rd., Boston and Albany Rd.—W. R. Barnett has been appointed Assistant General Passenger Agent. Office, Grand Central Terminal, New York.

Portland Canal Short Line Ry.—M. M. Curran has been placed in charge of construction, W. H. Grant, Manager of Construction, having had to return to Toronto on account of illness.

Our Inland Seas.—The history of the discovery and the development of navigation on the great inland seas of North America is treated of in a volume of 380 pages, illustrated by 70 engravings. The writer, J. C. Mills, of Saginaw, Mich., deals in a most complete and interesting manner with the history of the three centuries elapsing from the first discovery of the French-Canadian voyageurs, when their sole means of navigation were "pirogues" or dugouts, and the birch bark canoes of the Indians, to the present day, when steel ships of over 600 ft. in length steam along at the rate of over 20 miles an hour. Chap. 19 is specially devoted to the Canadian mercantile marine of the present day, but the information given in it is not quite so up-to-date as is that given in the chapters specially devoted to U. S. vessels. For instance, whilst the Hamonic is mentioned among Canadian vessels, reference is not made to the Turbinia, the first turbine driven steamer on the inland lakes, and some of the larger Canadian lake freighters; nor any reference to the G.T.R. car-ferry service on Lake Ontario. Several chapters are devoted to the building of a lake freighter, and the concluding chapter deals with the economies of lake navigation. The price of the volume is \$1.75 net, the publishers are A. C. McClurg & Co., Chicago, Ill. It may be obtained through The Railway and Marine World's Book Department.

Blue Book of American Shipping for 1910.—The fifteenth annual volume of this marine directory has been issued by the Penton Publishing Co., Cleveland, Ohio. It has been carefully revised to date, and the various lists of vessels are arranged under such headings as will enable ready reference being made. The general and statistical information is also full and complete. The volume contains practically everything that those engaged in navigation business on the Great Lakes should know, and much information of value for those engaged in shipping on the coastal waterways of North America. It is issued at \$5 and may be obtained through The Railway and Marine World's book department.

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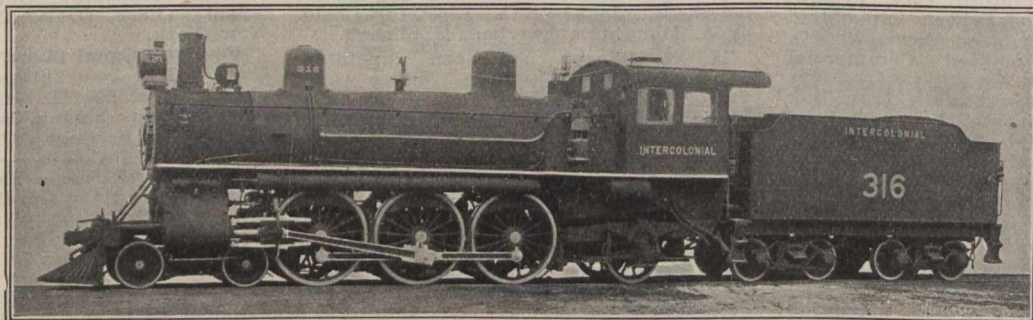
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I. C. R. Blacksmith Shop, Moncton.

By Arthur Rochell, Foreman Blacksmith, I.C.R.

This shop is 375 by 76 ft., and 40 ft. high, giving a floor space of 28,500 sq. feet and a total space in shop of 1,140,000 cubic feet. It is built of reinforced concrete and has three large doors capable of taking in a load of material; the windows are of the three decker type. The lower ones are pulley balanced and can be raised up and down at the same time, that is one pushes up and the other comes down. The top ones are arranged to push out and in, causing a complete inflow of fresh air and at the same time an out go of gas and smoke that may escape from the fires. The roof is slightly pitched and has 12 longitudinal skylights. In the skylights are 6 sashes that can be raised up, giving an opening space for ventilating the roof, 9 by 6 ft. This gives ample roof ventilation as well as roof light.

The fuel for furnace purposes is water gas made by a special plant. It gives good results. The motive power is electric and all machines have an independent motor to drive them. There are 12 double fires, placed at an angle of 45 degs., with a floor space for each double fire of 5.25 sq. ft. There are 7 single fires for heavy work. There are 6 steam hammers, 5 power hammers, ranging in size from a 4,000 lb. steam hammer to a 250 power hammer, and 5 sets of shears that will cut any size iron from 16 x 2 ins. down.

The iron rack is placed at one end of the shop, is 126 by 42 ft., so that a car can be run and loaded under cover and placed at the spot required for use. The iron is placed in the rack from the outside at the back. Sliding doors are provided so that any section can be used with the rest closed up. This is necessary here to keep the snow out. The heavy work at the furnace is done at this end of the shop, and all the machines are also at this end, so the iron taken from the rack, is sheared to length, made on the particular machine required and moved straight up the shop when done, without going back an inch, thus giving great economy in handling. The shop has a track down the middle that will take two narrow or one broad gauge trolleys which are used to bring in iron from the rack or to carry out finished material.

Smoke is disposed of by the much abused down draft system, but it is one that we devised ourselves, and is a great success and makes the shop practically dustless and smokeless. It consists of a graduated underground concrete duct 5 ft. sq., at the exhaust end and tapering from this point to the farthest off fire so that at the extreme ends it is 16 ins. in diameter. Each fire has a 10 in. pipe with a 36 in. hood over the fire. The hood telescopes into the pipe and can be raised or lowered at the will of the smith. The smoke duct is supplied by an 8 ft. dia. by 4 ft. wide exhaust fan speeded at 260 revolutions a minute. This discharges the smoke, gas and dust with the heat, through the stack that reaches above the roof and which is capped with a weather vane that turns easily with the wind so that the mouth is always turned away from the direction of the wind.

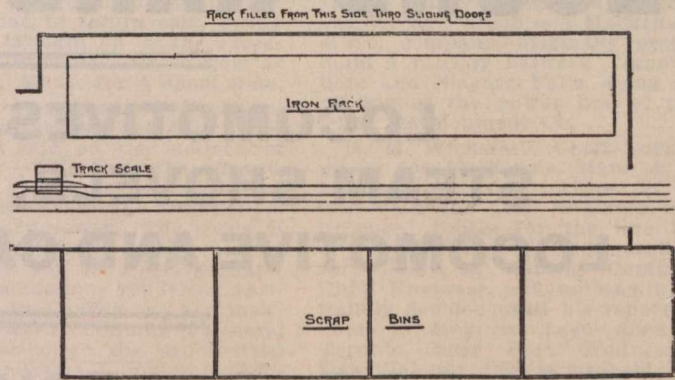
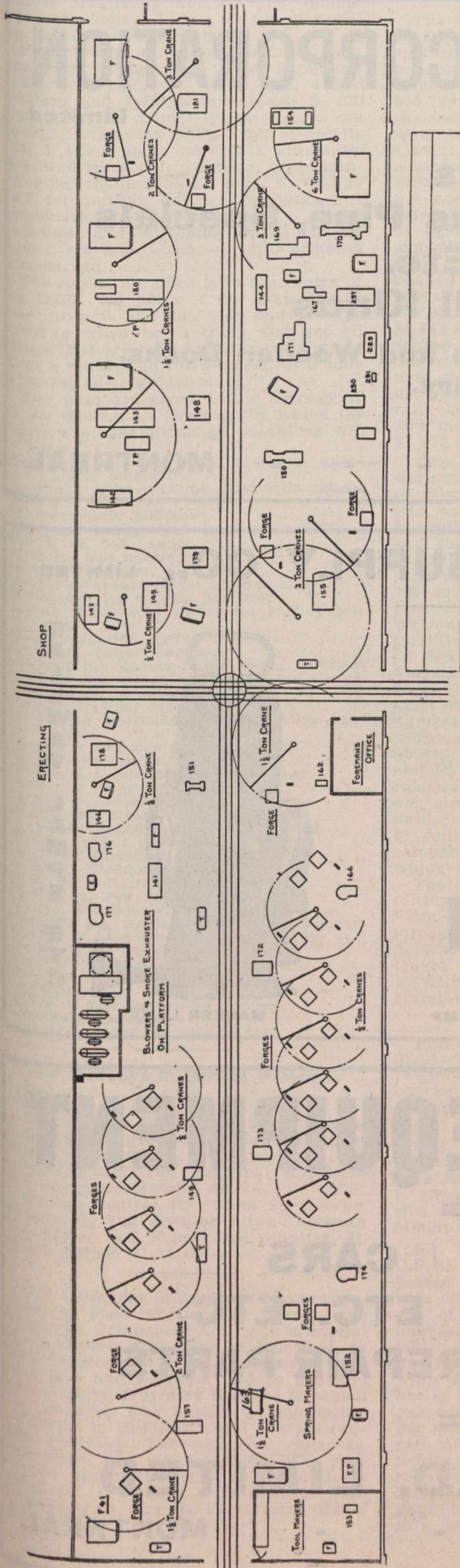
The fan blast for the forges is placed on a platform by the side of the wall and is 12 ft. above the floor. There are three fans of 6 oz. blast that supplies the fires with a great blast. These are underground out of the way, giving the shop a clear space overhead for the cranes to swing clear round.

The cranes are self-balancing pyramids, and are so placed that on the double fires one crane will serve both fires. There are 25 cranes, ranging from 6 tons down to half a ton.

Under the fan platform is a rack to hold hex. bolts and such material for locomotive work and as they are required, they are cut to length and supplied.

The tool dresser's corner is placed down by the machine shop door and is partitioned off from the rest of the shop so that he is not bothered by men standing around. He has a power hammer and furnace, air blast for tempering, and all other appliances for the dressing of tools speedily.

The spring maker's section contains a combination spring machine for punching and slotting, shearing plates and rolls for drawing down the points if required, and also a 60-ton hydraulic buckling and stripping machine, with a 1½ ton crane that swings clear round to serve all points as may be needed. There is also a pneumatic riveting machine for putting on drawbar yokes.



The above small plan is a continuation of the larger one at the left side of the page. The iron rack and scrap bins are at the right hand end of the blacksmith shop as shown in the other plan. There was not room to give the whole plan in one section.

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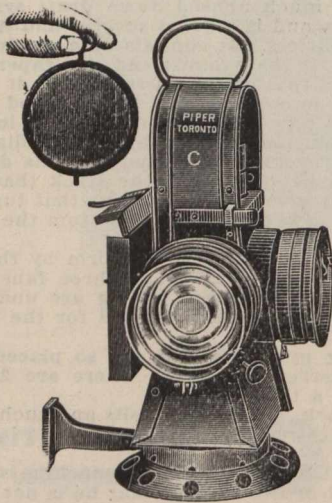
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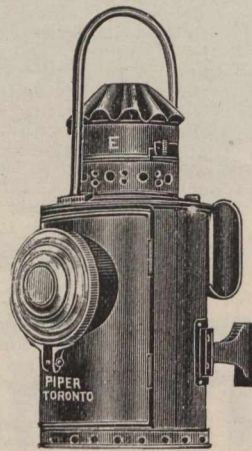
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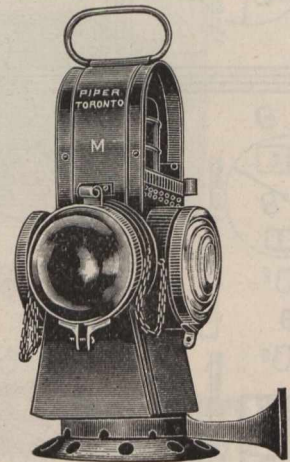
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The shop has plenty of working space. It is equipped with modern machinery, and is practically dustless and smokeless. We believe it has no superior and few equals on this continent.

Following is a list of tools: 6 steam hammers; 5 Champion power hammers; 5 box iron shears; 3 bulldozers; 4 bolt headers and forging machines; 2 nut makers; 1 file cutter and grinder; 1 eye bender; 1 tapering rolls; 1 hot saw, 6 in. cut; 1 track spike maker; 1 automatic rivet and track bolt machine; 2 air hammers for welding brake rods; 1 riveting bull for putting on drawbar yokes; 1 combination spring machine; 1 spring buckling and stripping machine; 31 forges; 16 gas furnaces with grinding wheels, etc.

The foreman's office is in the centre of the shop. All parts of the shop can be seen from it and the men can see the foreman when he is there and get all things that are necessary for their work, from a requisition for material or a blue print for their guidance.

The numbers given below correspond to the number on the plan by which the location of the principal machines will be seen:

- 141—Track bolt and rivet machine, automatic action.
- 142—Track spike machine, automatic action.
- 143—No. 6 bulldozer.
- 144—Pneumatic bulldozer.
- 145—3 in. header and forging machine.
- 146—1½ in. bolt header.
- 147—1 in. bolt header.
- 148—6 in. hot saw, high speed.
- 149—Scrap shears, 2 in. stroke.
- 150—Shears for cutting bar iron.
- 151—No. 4 bar iron shears for cutting bolt iron.
- 152—Combination spring machine.
- 153—Small power hammer.
- 154—4,000 lbs. double frame steam hammer.
- 155—1,800 lbs. steam hammer, frame maker.
- 157—1,200 lb. steam hammer.
- 162—Air drawbar riveter.
- 163—60 ton hydraulic spring buckling machine.
- 166—No. 9 Beaudry power hammer.
- 167—1¼ eye bender.
- 169—No. 6 Gullotine bar iron shear.
- 171—No. 3 taper forging bolts.
- 172—600 lbs. steam hammer.
- 173—600 lbs. steam hammer.
- 174—No. 11 Beaudry Champion hammer.
- 170—1½ in. hot pressed nut maker.
- 176—No. 7 Champion hammer.
- 177—No. 9 Champion hammer.
- 178—2 in. bolt header.
- 179—2¼ in. bolt shears.
- 180—No. 9 bulldozer.
- 181—2,000 lbs. single frame steam hammer.
- 289—No. 2 Lion file cutter.
- 290—No. 1 file grinder and stripper.
- 291—File knife whetting machine.
- 297—1 in. nut maker, hot pressed.
- F—Furnaces.
- F—No. 1 case hardening furnace.
- F.P.—Face plates.
- T.—Water tanks for cooling iron.

New Railways in Quebec Province.

The Quebec Public Utilities Commission has authorized the opening for passenger traffic of the following lines: Canada and Gulf Terminal Ry. from Ste. Flavie to Matane, Que. Quebec Central Ry., from St. George, Beauce, to the dividing line between Dorchester and Bellechasse counties, St. Irline parish, 31.34 miles.

The Canadian Mono-Rail Corporation, Ltd., has been incorporated under the Dominion Companies Act, with a capital of \$2,000,000, and office at Montreal, to manufacture and deal in mono-rail railway cars and supplies, and to promote any industry, providing it is one to which the company may supply transportation facilities; to build, own and operate railway switches, harbors, piers, wharves, and steam and other vessels. The provisional directors are, L. A. David, J. H. Brittle, J. J. Robson, G. Salmon, C. J. E. Charbonneau and C. E. Guerin, Montreal.

Central Vermont Railway

The report for the year ended June 30, 1910, shows gross receipts \$4,088,411.03; operating expenses, \$3,145,562.35; net receipts, \$942,848.68, to which are added \$9,068.59 from parlor cafe car service; \$33,720 interest on securities held by the company, making \$985,637.27, and from which are deducted: taxes, \$133,125.12; rentals, etc., \$21,615.02; hire of equipment, \$85,084.72, and fixed charges, \$721,038.35; total, \$960,863.21, leaving a net result of \$24,774.06, showing a net increase in the receipts from all sources of \$293,078.76, and a net increase in expenditure of \$577,951.22. During the year the following amounts were expended in improvements, and included in operating expenses:—New bridges, \$10,560.99; new tracks, sidings and spurs, \$5,742.29; new fuel and water stations, engine houses and turntables, \$6,886.30; new stations and warehouses, \$8,351.82; new steel rails, difference between values of old steel rails taken and new steel rails laid down, \$22,522.19; new tools and machinery, \$760.44; new crossings, \$7,807.42; total, \$62,631.45.

Two miles of new 80 lb. steel rails were laid near Richmond, and 19 miles of released sawn 80 lb. steel rails were laid between Stafford and Willimantic, 6½ miles in district 3, 1½ at Richmond, and four miles between Oakland and St. Albans; 19½ miles released 72 lb. rails were laid on the Richford branch; 3¼ miles of released 56 lb. rails were laid in district 2, and five miles on the Williamstown branch. Industrial spurs, totalling 5,963 ft., and a siding for public delivery, 525 ft., were built at South Vernon. New stations were built at South Vernon and South Franklin, and extensive repairs were carried out on a number of others. New steel bridges were erected at Norwich Town and South Coventry, Conn., Palmer, Mass., and East Granville, Vt., and repairs carried out on six others. Four flat cars, one stores car and six cabooses were built in the St. Albans shop, and added to rolling stock during the year. The company owns 536.4 miles of railway, of which 99.4 miles are in Canada.

The officers and directors for the current year are:—President, C. M. Hays; Vice President, E. H. Fitzhugh; other directors, G. C. Jones, E. C. Smith, W. S. Webb, J. W. Stewart, J. G. McCullough, E. H. Baker, C. W. Witters, S. E. Kilner, A. Tuttle, C. P. Smith, E. L. Marston.

Press reports state that a telephone dispatching system will be installed between St. John and McAdam Jct., N.B., on the C.P.R., and that it will be ready for operation by the spring.

W. H. Grant, who left Toronto last spring for Stewart, B.C., as Manager of Construction of the Portland Canal Short Line Ry., has had to return east, owing to rheumatism brought on by the excessive rainfall at Stewart. He is now at Mount Clemens, Mich., for a short time.

Sir Thos. G. Shaughnessy, President C.P.R., while in the U.S. recently, is reported to have said on the subject of rate conditions:—"We have the advantage of having rate matters settled by one body, a Government commission, which has plenary power. The scope of its decisions affects the entire people, while in the U.S. you have a large number of State commissions rendering various decisions. In Canada we are making no effort toward obtaining a general rate advance, although the proceedings before your Interstate Commerce Commission are being watched with keen interest. However, any declaration of your commission is not likely to result in a rate advance on the C.P.R."

Too Late for Classification.

Alberta and Great Waterways Ry.—A bill was introduced in the Alberta Legislature, Dec. 16, for the purpose of raising \$7,400,000 upon the credit of the revenues of the province. The introduction of the bill has to do with the straightening out of the difficulties arising out of the contract with the A. and G. W. Ry. for the building of a line to Fort McMurray, for which the Province guaranteed the bonds, and which contract is referred to in the preceding paragraph.

Nipigon to Savanne, Ont.—A press dispatch dated Dec. 22 states that the C.P.R. has placed engineers in the field to locate a cut off from near Nipigon to Savanne, Ont., which will shorten the distance between Montreal, Toronto and other eastern points, and Winnipeg, Man., by about 50 miles. If the cut off is built through traffic between Winnipeg and Montreal or Toronto will not go through Fort William, as at present.

Ha Ha Bay Ry.—A contract has been let to Boulianne and Boulianne, for the building of a branch line from La Terriere Jct. to near Riviere du Moulin bridge, about eight miles. The contractors, we are advised, have started work and it is expected that this branch will be ready for operation about June 1.

In connection with the progress of construction on the main line, we are advised that the ballasting upon the first 19 miles has been completed from St. Alphonse to Chicoutimi, or the Quebec and Lake St. John Ry., and that a train service is being operated. A branch is also being operated to Port Arnault, Que.

The company has purchased the electric railway owned by La Compagnie du Port de Chicoutimi, about a mile in length, and extending from the Chicoutimi Pulp Mill yard to the wharf. (June, 1910, pg. 449.)

Hamilton to Port Dover.—G. S. Lynch-Staunton, K.C., Hamilton, Ont., announces that people for whom he is acting have applied for a charter to build an electric railway between Hamilton and Port Dover, Ont., and that if terminal arrangements in Hamilton can be made with the Dominion Power and Transmission Co., work will be started in the spring.

Kootenay and Alberta Ry.—The route plans for this projected railway are before the Minister of Railways for approval. We are advised that tenders will be called for in a few weeks and construction work will be in charge of L. B. Merriam as Chief Engineer.

Toronto, Niagara and Western Ry.—The plans being filed in Brantford and various other places between Hamilton and Windsor, credited in press reports to the Canadian Northern Ontario Ry., are in reality being filed by the T., N. and W. Ry., which is a Mackenzie, Mann & Co. company, originally projected to build a railway between Toronto, Hamilton and Niagara Falls, along the right of way of the power line of the Electrical Development Co.

H. M. Wicksteed, Chief Locating Engineer for Mackenzie, Mann & Co., was in Hamilton early in Dec. in consultation with the City Engineer as to the proposed routes for the line into that city from Toronto. This question is before Board of Railway Commissioners' Chief Engineer, and nothing will be definitely decided until his report is made. Some grading has been done at West Toronto, near Port Credit, and near Oakville, but this is probably only for the purpose of keeping the charter alive until the company's construction plans are fully matured. (Nov., 1910, pg. 965.)

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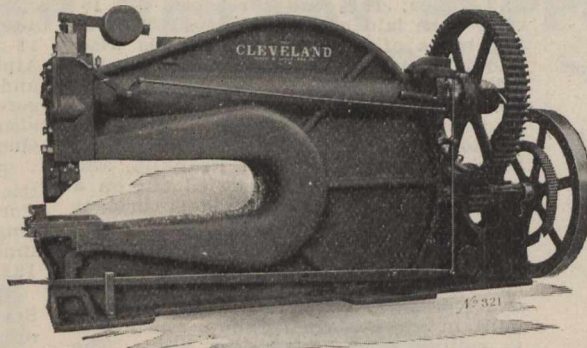
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- Straightening Rolls
- Rotary Planers
- Gate Shears
- Radial Drills
- Bar Shears



Railway Shop Flush Front Shear

- Vanadium Alloy Rivet Sets
- Chisel Blanks
- Hand Rivet Sets
- Hand Backing Out Punches
- Rivet Busters
- Standard Punches and Dies

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The Cleveland Punch & Shear Works Co.
 CLEVELAND, OHIO

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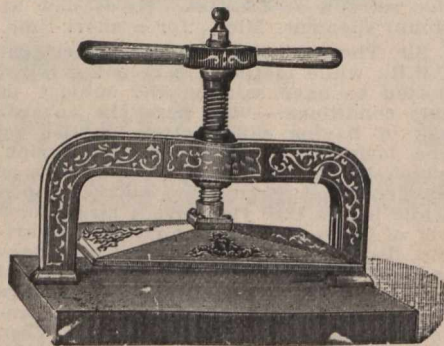
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Apportioning Cost of Crossings Protection.

At a sitting of the Board of Railway Commissioners in Montreal recently, when the question of the protection of level railway crossings was under consideration, the solicitor for the city contended that where it was shown that the conditions such as they exist today were senior, so far as the city was concerned, that the person who disturbed these conditions, who aggravated the servitude or the danger, should pay for the protection of the public.

Chief Commissioner Mabee said in reply: "We do not apply any such principles anywhere, and never have. To get rid of some 10 or 12 level crossings from the union station out of Toronto to the east we compelled the city of Toronto to make a contribution of a third. They are paying a third to eliminate level crossings out of the union station to the west along the G.T.R. We have asked every municipality to assist where we have furnished protection. We cannot do anything else. If we commenced to load upon the railways all of the capitalization of these protective appliances, we would have the companies out of business in five years, or else you would be paying a good deal higher freight and passenger rates. The municipalities themselves contribute to these dangers. The cities and towns are growing, there is more traffic on the streets to be protected, and so why should not the municipalities in fairness contribute? There is no use in arguing against not paying anything, because the municipalities have got to pay. Living in this enlightened age, we have to pay for this protection and these improvements. The march of civilization requires it, and we have to get down into our pockets and help."

Q. and L. St. J. Ry. Freight Rates.

In the case of Proteau and Carignan vs. the Quebec and Lake St. John Ry. the Quebec Public Utilities Commission has given the following decision:—The plaintiffs complain that the rates for the carriage of merchandise, and principally on the brewery products, are too high on the Q. & L. St. J. Ry., and that the rates are higher than those of other railways for the same or longer distances. They also complain that the Q. & L. St. J. Ry. has broken a special agreement made in 1904, by which the company granted to brewers a special rate, lower than that established for all railways and covered by the Canadian Freight Classification, approved by the Board of Railway Commissioners. At the hearing of their complaint, the plaintiffs produced a comparative statement showing the rates from Quebec to St. Raymond, Lake Edward, Roberval and Chicoutimi, and the rates for equal or longer distances on the C.P.R., I.C.R. and C.N.Q.R. To this the respondent company replied that its rates are reasonable, having regard to the conditions under which its railway is operated; that they are not higher than on other railways operating under similar conditions, and that there was no reason for keeping in effect a special tariff, different from the uniform classification established and recognized by all railways. With regard to this latter point the commission is advised that the Q. & L. St. J. Ry. was within its rights in abolishing the special tariff and in following the uniform classification established and recognized.

In making comparisons between the rates charged by the Q. & L. St. J. Ry. and by other railways, it is necessary to take into account the peculiar conditions under which this road is operated. It is a colonization railway crossing a

mountainous country. On a very considerable portion of its length from Riviere a Pierre to Chambord, 120 miles, the population is very scant, and only gives a slight revenue to the railway. On this part of the railway, between Allen's Mills and Riviere a Pierre, there are grades of 106 ft. to the mile, as well as very sharp curves, which increase greatly the cost of operation and limit the weight of trains running on this section. Finally it is notorious that the company is not prosperous and that there is no reason for exacting from it reduced rates unless it is proved that they are illegal or unjust. The commission has compared the Q. & L.S.J.R. with those of certain C.P.R. branches which present similar conditions, such as the Nominique, Waltham and Temiskaming lines, and has found that the rates charged are practically the same. Taking as an example the rates for beer shipped in quantities less than carloads (3rd class) here are some figures:—

	Rate per Miles.	100 lbs.
Q. & L. St. J.—Quebec to Raymond	35	.15
C.P.R.—Montreal to St. Lin	36	.15
C.P.R.—Montreal to St. Jerome	33	.15
C.P.R.—Montreal to Shawbridge	42	.17
C.P.R.—Montreal to St. Hermas	37	.17
C.P.R.—Montreal to Wyman	36	.17
C.P.R.—Mattawa to Temiskaming	39	.17
Q. & L. St. J.—Quebec to Lake Edward	112	.29
C.P.R.—Montreal to L'Annonciation	113	.24
C.P.R.—Petawawa to Temiskaming	113	.29
Q. & L. St. J.—Quebec to Koberval	188	.35
C.P.R.—Montreal to Davidson	189	.35
Q. & L. St. J.—Quebec to Chicoutimi	227	.36
C.P.R.—Ottawa to Temiskaming	233	.38

The Commission is of the opinion that the comparisons shown in the above statements are more just than those submitted in the plaintiffs' statement, which refers to points such as Cap Sante, Portneuf, Montmagny, Joliette, Riviere du Loup and St. Jerome, which are located on lines built and operated under conditions which differ greatly from those which exist for the Q. & L.S.J.R. The Commission is therefore of the opinion that there is no reason at present, on the proof produced, to justify the complain of the plaintiffs, and the complaint is dismissed.

Canadian Government Telegraphs.

During the year ended Mar. 31, 1910, 31 miles of new telegraph lines were strung in Cape Breton, N.S., from Enon to Gabarus, 63.5 miles from Strathlorne to Whycomogah, N.S.; 27 miles in Quebec, and 70 miles of a line from Athabasca Landing, towards Peace River Landing, Alta. This line will have when completed, a total length of 290 miles. The Government telegraph lines have now a total mileage of pole lines of 7,748.5 miles. D. H. Keeley, General Superintendent, in his report, gives details of the work done on each line, and of the work done by the cable steamer Tyrian. The Government owns a line of 14 miles in Newfoundland, from Cape Ray lighthouse to Port au Basque, where a connection is made with the Anglo-American Telegraph Co.'s land line system, by which company it is operated under an arrangement. The line was strung in connection with the Dominion Government signal service. The total expenditure for the fiscal year was \$422,665.96, and the total income \$136,747.31. The signal service, meteorological service and fisheries bulletins are handled free of tolls. The number of offices along the Government lines is 479. A complete list of tolls for messages over the different lines is appended, and also reports from the local superintendent.

Following is a list of the staff having charge of the operation of the lines:—

Headquarters at Ottawa. D. H. Keeley, General Superintendent; M. W. Crean, J. E. Gobeil, Technical Assistants to Superintendent.

GENERAL INSPECTORS:—A. B. McDonald, North Sydney, Cape Breton, lines in Nova Scotia and New Brunswick; J. S. Macdonald, Edmonton, Alta., lines in Northwest and south British Columbia.

SUPERINTENDENCIES:—E. Pope, Quebec, Dist. Supt., North Shore and G.N.W. traffic; J. C. Tache, Dist. Supt., Chicoutimi district and North Shore to Bersimis; E. H. Tetu, Long Point of Mingan, Dist. Supt., North Shore, East Bersimis; P. Pouliot, Dist. Supt., Quarantine Line, etc., to Grosse Isle; A. Malouin, Dist. Supt., West Point, Anticosti Island; A. Le Bourdais, Grindstone, Dist. Supt., Magdalen Islands; D. C. Dawson, St. John, N.B., Dist. Supt., Cape Breton system; Mrs. C. C. Seely, Grand Manan, N.B., Dist. Supt., Bay of Fundy system; J. McR. Selkirk, Leamington, Ont., Dist. Supt. Pelee Island system; R. C. Macdonald, Edmonton, Alta., Dist. Supt., Northwest Territories; Wm. Henderson, Victoria, Dist. Supt., British Columbia south; C. S. Stevens, Summerland, B.C., Supt., Penticton line; J. T. Phelan, Vancouver, B.C., Supt., Yukon system; H. Gilchen, Whitehorse, Y.T., Dist. Supt., Atlin-Boundary.

Telegraph and Cable Matters.

The Great North Western Telegraph Co. has moved its Vancouver offices to new premises in Cope Block.

T. N. Vail, President American Telephone and Telegraph Co., has been elected President Western Union Telegraph Co., vice R. C. Clowry, resigned.

W. Marconi, of the Marconi Wireless Telegraph Co., recently announced that a wireless telegraph station had been established at Coltano, Italy, and messages exchanged with the stations at Clifden, Ireland, and Glace Bay, N.S.

W. J. Camp, Electrical Engineer C.P.R. Telegraph, Montreal, attended the recent meeting of the Eastern Division of the Association of Railway Telegraph Superintendents at New York.

The Board of Railway Commissioners has extended to June 1, the time during which the North American Telegraph Co. may charge the telephone tolls, which were authorized prior to July 13, 1906.

The Pacific Cable Co. has installed new receiving and transmitting apparatus between Bamfield, B.C., and Fanning Island. This is a recent invention, and it is claimed, will materially increase the speed of receiving and transmitting messages.

The Marconi Wireless Telegraph Co. is erecting a wireless telegraph station on the Magdalen Islands, with a view to securing constant communication with Charlottetown, P.E.I., as communication between the islands and the mainland by cable is frequently interrupted.

The Board of Railway Commissioners has extended to June 1, the time within which the C.P.R., G.N.W. Telegraph Co., and Canadian Northern Telegraph Co., may be allowed to charge tolls, as authorized by 7-8 Edward 7, chap. 61, and has extended the time to the same date for approval of G.T.P.R. telegraph tolls.

Cable reports from England state that there is a movement on foot for the laying of a state owned cable across the Atlantic to Montreal, where connection would be made with C.P.R. and Pacific Cable Co.'s leased wires. The route mentioned is from the north of Scotland, by way of Faroe Islands, Iceland, Greenland and Labrador.

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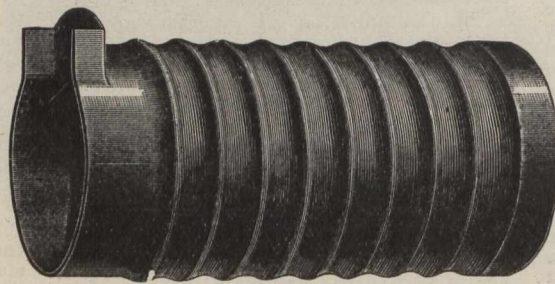
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J. Milward, Manager Pacific Cable Co., is reported to have stated, in Victoria, recently, that the negotiations for lower rates on deferred messages were proceeding favorably, and it was expected that a rate of 1s. 6d. a word on messages delivered within 48 hours would come into effect early in the year. The present rate of 3s. a word would be maintained for messages for immediate delivery.

The G.T.P. Telegraph Co. has now in operation its line from West Fort William, Ont., through Winnipeg and Edmonton, to Edson, Alta., about 1,400 miles. This line is being continued westerly through the Yellowhead Pass to Tete Jaune Cache, which point it was expected would be reached by Dec. 31. From Prince Rupert easterly, the telegraph line has been erected to milepost 100, and the material has all been placed along the route to Aldermere, 245 miles east of Prince Rupert. During 1910, in addition to the completion of the lines mentioned, 23 new offices were opened between Fort William and Winnipeg, and telegraph lines were erected on the following branch railway lines:—Yorkton Branch, Melville to Canora, Sask., 55 miles; Prince Albert Branch, from Young, Sask., northerly for 30 miles; Regina Branch, Melville to Balcarres, Sask., 31 miles; Calgary Branch, Tofield to Red Deer, Alta., 87 miles. The whole of the work has been carried out under the supervision of A. B. Smith, Manager G.T.P. Telegraphs.

Grain Elevator Notes.

It was reported early in Dec. that there was over 1,000,000 bush. of grain in the two G.T.R. elevators at Portland, Me.

The Saskatchewan Milling and Elevator Co.'s recently built flour mill, with a capacity of 1,000 barrels a day, at Saskatoon, was opened for business recently.

The La Riviere Farmers' Elevator Co., Ltd., passed a resolution, Nov. 30, to dispose of its elevator, to wind up its affairs, and to apportion its assets among the contributories.

T. Horn who has been acting as Dominion Grain Inspector, Winnipeg, since the resignation of his brother, D. Horn, and pending the confirmation of his appointment by the Governor-in-council, died there, Dec. 19.

The Thunder Bay Elevator Co., is being proceeded against by the Dominion Warehouse Commissioner, on charges of rendering incorrect statements of the quantities of various grades of wheat in store in its warehouse at Fort William, Ont., for the week ended Dec. 10, 1909.

The G.T.R. elevator at Port Dalhousie, Ont., was destroyed by fire Dec. 7, the loss is estimated at \$30,000. The elevator, which was built about 50 years ago, has not been utilized to any great extent for some time, and it is stated that there is no intention of rebuilding there.

The Goderich Elevator and Transit Co.'s annex to its elevator at Goderich, Ont., was opened for business towards the end of Nov. It is being used chiefly for winter storage purposes at present. The whole work of erecting, including the construction of the pontoons supporting the structure on the waterfront, was completed within eight months.

The Alberta Pacific Elevator Co., is reported to have purchased a site on the north bank of the Fraser River, between Pitt River and the C.P.R. Hammond station Vancouver, in connection with its project for shipping grain from that port. It is stated that an elevator will be erected on this site, and another one on the south shore of Burrard Inlet.

The Grain Growers Grain Co. is applying to the Dominion Parliament for incorporation, with power to take over and carry on the business of the Grain Growers Grain Co., Ltd., incorporated under the Manitoba Joint Stock Companies Act, upon such terms as may be agreed upon between the shareholders of the new and old companies, and with the same powers as are possessed by the old company. Bonnar, Trueman and Co., Winnipeg, are solicitors for the applicant.

D. W. McCuaig, Chairman Manitoba Elevator Commission, is reported to have said, at Portage la Prairie, Dec. 5, that the commission had operated a large number of elevators during the season. In southern Manitoba, conditions were very bad, two of the elevators had not received a bushel of wheat, and had been closed, and quite a number of others had scarcely received any wheat. These were not a success but were being kept open in fairness to those who supported them. At many points they were patronized, and at others, where large petitions were sent in, nearly all the farmers loaded over platforms. On the northwestern line at certain points, the elevators were a great success.

In response to the recent deputation of western farmers to Ottawa, respecting, among other things, the Government control of terminal elevators, the Dominion Premier, pointed out that the Government had a bill on the subject already prepared, and he considered that it would not be sufficient to look after the elevators at Fort William and Port Arthur, as the same operations complained of, could take place elsewhere. The problem, he said, would be solved, if the carriage of grain on the St. Lawrence could be so improved that it would not be possible to divert it to other channels, which improvement could only be carried out in two ways, by improving the St. Lawrence, and by providing, also, a route through the Ottawa River, which is the shortest route between west and east.

Among the Express Companies.

The Western Ex. Co. has withdrawn its service from the Bellingham Bay and British Columbia Ry., and has closed its offices at the various points touched in the State of Washington.

The Dominion Ex. Co. has issued its local tariff C.R.C. 2491 regulating the return of proceeds of c.o.d.'s or collection originating in Europe and, cancelling its C.R.C. 2456.

The Board of Railway Commissioners has extended to June 1, the time within which the contract forms of the National, American, Canadian, Dominion, United States and Great Northern Ex. Cos. are approved, and also the Maritime Ex. Co.'s money and freight receipts.

The Dominion Parliament has before it, a bill, which was read a first time recently, to compel express companies to furnish a statement of unclaimed balances in their hands, and after a certain time, to transfer these unclaimed balances to the Government as trustees.

The Dominion Ex. Co. announces that the embargo against removing dogs out of the district west of the eastern boundaries of York and Simcoe counties, Ont., has been removed, and shipments of dogs may again be accepted, according to the rules in the governing classification, and may also be accepted for transportation to Montreal.

The Dominion Ex. Co.'s building, which is in course of erection in Montreal, will be occupied, on the ground floor and basement, by the Dominion Ex. Co. and the C.P.R. steamship ticket offices. The top floor has been special-

ly designed for the use of the Montreal Club, at present located in the C.P.R. Telegraph Building. The intermediate eight floors will be rented as offices.

The Dominion Ex. Co., in a recent circular to agents states that shipments of special traffic for points north of Vancouver, B.C., including Prince Rupert, Port Simpson, Port Essington, and intermediate points named in C.R.C. 2105, should be charged double rates, i.e., special traffic matter rates from origin to Vancouver or Victoria, in addition to special traffic rates between Vancouver or Victoria and destination.

The Canadian Ex. Co. has extended its service over the G.T.P. Steamship routes and in this connection has opened offices at Prince Rupert, Stewart, Vancouver, Victoria, B.C., and Seattle, Wash. All business from common points in the east, for Prince Rupert and Stewart, must be way-billed on Vancouver at existing through rate, and business from eastern exclusive points, must be way-billed on Sarnia, Ont., or Detroit, Mich., and all offices must consign business for any of these new offices, care of Great Northern Ex. Co., St Paul, Minn., and mark way-bills in the same manner.

The Canadian Northern Railway Express Co., Ltd., has been incorporated under the Dominion Companies Act, with a capital of \$1,000,000, and office at Toronto, to purchase, hold and dispose of shares in capital stock, bonds, debentures and debenture stock of the Canadian Northern Express Co., or of any other company authorized to carry on the express business, and to carry on any branches of such business in Canada and elsewhere. The incorporators are:—R. H. M. Temple, A. J. Reid, K.C., R. P. Ormsby, A. J. Mitchell, and J. B. Robertson, all connected with the Canadian Northern Ry., Toronto.

The Dominion Ex. Co. has issued a notice to its agents, instructing them that owing to the provisions of the Ontario Liquor Act, they must refuse shipments of intoxicating liquors, when destined to local option points, unless it is represented that they are for the consignees' personal or family use, which, agents are advised to have endorsed on the shipping bill by the shipper. In no case should such goods be sent to such points c.o.d. By a recent amendment to the act, the police are authorized to seize and remove liquor which is found in transit or in course of delivery, on the premises of an express company, and which they believe to be sold or kept for sale, contrary to the provisions of the act. Shipments which arrive at a station, billed as liquor, or which can be ascertained to be liquor without breaking the package in which it is shipped, may be seized by the authorities if they believe it is to be sold or kept for sale, contrary to the provisions of the act. A police officer has no authority to break open the companies' cars, offices or shed, for the purpose of making a search without a search warrant from a justice of the peace, but a constable, provincial officer or license inspector may, without warrant, peaceably enter and make searches upon the companies' cars, lands or buildings, for liquors which he suspects have been illegally shipped. When a shipment is seized, a receipt must be taken from the officer, and when a package is broken open under a search warrant, an acknowledgment should be taken from the officer. When a search warrant is being executed, the agent must accompany the officer while search is being made, after first examining the warrant, and prompt advice should be given by wire to the Superintendent of the seizure, or search, with a reference to the shipping bill, and any papers served on the agent should be forwarded to the Superintendent by the first train.

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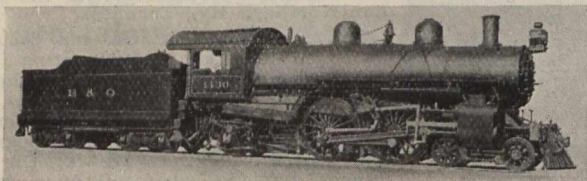
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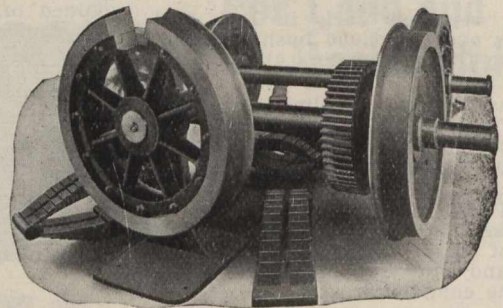
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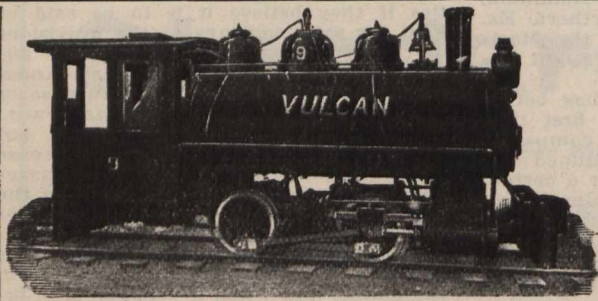
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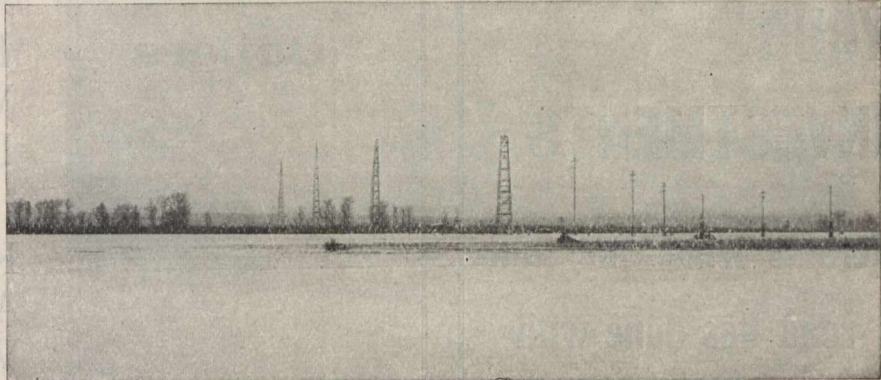
Canadian Street Railway Association.

PRESIDENT, D. McDonald, General Manager Montreal St. Ry.; VICE PRESIDENT, J. Anderson, Manager Sandwich, Windsor and Amherstburg Ry.; SECRETARY-TREASURER, Acton Burrows, Managing Director Railway and Marine World. ASSOCIATION'S OFFICE, 70 Bond St., Toronto. EXECUTIVE COMMITTEE.—C. E. A. Carr, General Manager Quebec Ry. Light, Heat and Power Co.; P. Dube, Secretary Montreal St. Ry.; H. M. Hopper, Secretary-Treasurer, St. John Ry.; J. E. Hutcheson, Superintendent and Purchasing Agent Ottawa Electric Ry.; C. B. King, Manager London St. Ry.; W. R. McRae, Superintendent Motor and Truck Department Toronto Ry. ASSISTANT SECRETARY, Aubrey Acton Burrows, Secretary and Business Manager Railway and Marine World. OFFICIAL ORGAN, THE RAILWAY AND MARINE WORLD.

British Columbia Electric Railway Co.

This corporation consists of two allied companies, the British Columbia Electric Railway Co., Ltd., and the Vancouver Power Co., Ltd. The latter was formed as a subsidiary concern in 1898 for the purpose of generating power by means of a hydro-electric plant at Lake Buntzen, on the North Arm of the Burrard Inlet, an arm of the Gulf of Georgia. The power developed by this plant is utilized and distributed by the B.C.E.R. Co., and employed for lighting, power, and street and interurban railway work on the lower mainland of British Columbia, especially in and around the city of Vancouver, the commercial capital of B.C.; New Westminster, the old capital of the mainland; North Vancouver, and the Fraser Valley, east of New Westminster. In addition there are two other branches of the industry on Vancouver Island, viz.: The Vancouver Island Power Co. and the Victoria branch of the B.C.E.R. Co., which operates in and around the city of Victoria, the capital of the province.

The history of the undertaking has been a marvellous record of almost unprecedented growth, unprecedented even



B.C. Electric Ry. transmission lines supplying light and power to the Lower Fraser District, including Ladners and the Delta.

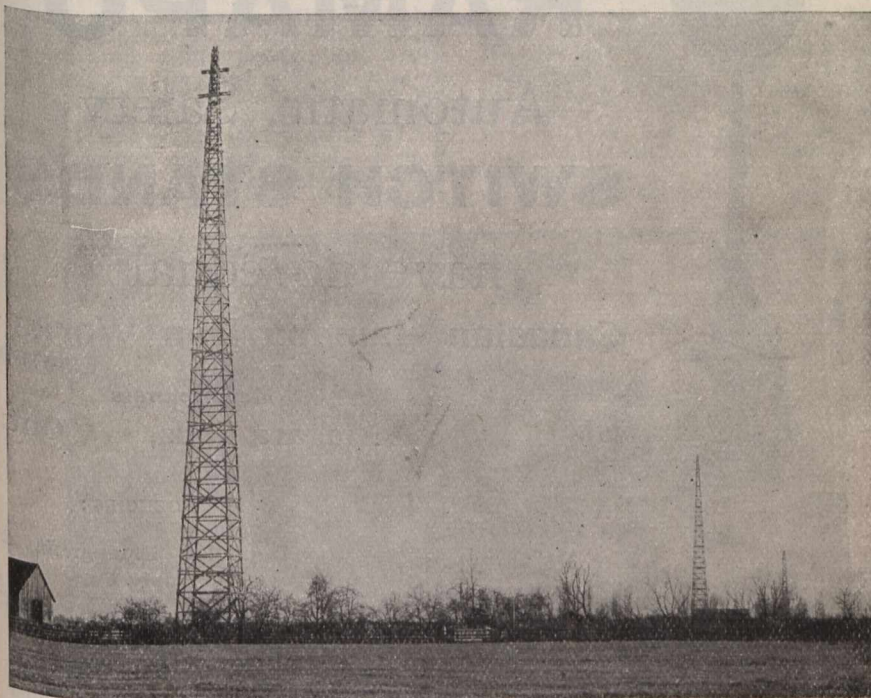
in that most rapidly developing branch of engineering—electricity. That such is the case may be judged by a brief survey of the following: In 1904 the street railway work of Vancouver city was handled by one 500 k.w. rotary converter, whilst today in the Vancouver substation alone there are one 1,000 k.w., one 500 k.w. and two 2,000 k.w. rotaries, a total of 5,500 k.w., and the company has in addition substations at four other points, and one portable substation. The total capacity of its substations at present is over 7,000 k.w., and new machines are being installed for over 2,000 k.w., all of which will be carrying full load almost as soon as installed. Such is the phenomenal development in street railway work alone. In the other branches, light and power, the story is the same—one of great and rapidly increasing growth. When it is considered that every part of the plant has been installed to take the place of out-of-date machinery in a short six years, it will be seen how great has been the develop-

ment which has taken place in this "last outpost" of the Empire. An auxiliary steam plant for two turbine units has recently been added for a stand-by and for emergency cases. In the lighting branch the company had in 1904 about 4,600 meters installed on the lower mainland, whilst now it has over 20,000 meters. In the power load it had in 1904, 1,200 h.p. of connected load, whilst in 1910 it has 11,000 h.p.

Four hundred feet above high tide is Lake Buntzen, named in honor of J. Buntzen, director of the company, and for several years its General Manager. This lake of 500 acres is fed by the waters of the eternal snows, but would be inadequate to supply a plant of this magnitude. It has, therefore, been connected by means of a tunnel to Lake Coquitlam, altitude 432 ft., area 2,300 acres, drainage area 100 sq. miles, whilst the rainfall amounts to 150 inches per year. This tunnel, 12,775 ft. in length, is the longest purely hydro-electric tunnel in the world, and of itself constitutes a work of no mean engineering character. A concrete dam 54 ft. high across the canyon (the outlet of Lake Buntzen) at once raises the water level of this lake, increases its storage capacity and contains the pipe intakes.

Like similar undertakings in other places, the history of the electrical industry in B.C. has been one of growth from small beginnings through various vicissitudes to a position of assured success, but in few places has this growth been so phenomenal or the success so marked as it has in B.C. The installation of electrical plant was inaugurated by the Vancouver Electric Illuminating Co., Ltd., in 1887, and in 1889 a second company, known as the Vancouver St. Ry. Co., Ltd., was formed to operate by animal traction. In 1890 the two companies were merged and the lines electrically operated. In 1890 there was also commenced the New Westminster interurban system and the Victoria, Vancouver Island system. These were again merged into one company, known as the Consolidated Railway Co., Ltd., and as such were operated until 1897, when the B.C. Electric Ry. Co., Ltd., was formed and purchased the amalgamated undertakings, which have been run continuously by this company ever since.

In 1905 the hydro-electric plant at Lake Buntzen was installed, and from that time to the present all power has been derived from this source. The site for the generating station has been blasted out of the solid rocks and cliffs,



B.C. Electric Ry. towers 1 and 2 across the Lower Fraser River, on the Ladners—Delta transmission line.

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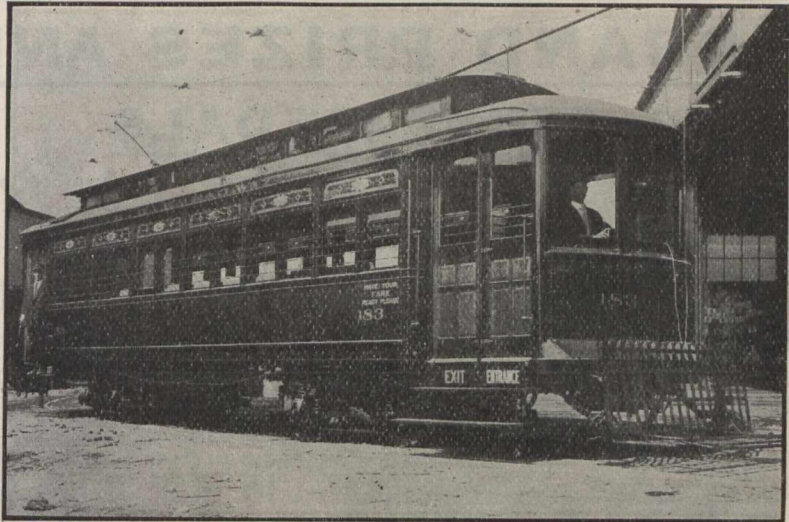
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and the buildings were erected from the granite so quarried. The within pictures of this plant and surroundings show the transformer houses, step-up stations and operators' dwellings. Immediately behind and above the power house an electric elevator in a concrete shaft serves as a means of quick conveyance from one to the other. To the right of the power house is a concrete warehouse and wharf built on concrete piers. Cars loaded with the heaviest machinery and freight are landed on this wharf over a drop apron, at any stage of the tide. The installation in the power house at present consists of six units, totalling 33,000 h.p. Four of the units are 3,000 h.p. each, the other two 10,500 h.p. each.

Two pole lines 80 ft. apart carry four distinct sets of high-tension transmission wires over a private right of way to the north shore of Burrard Inlet, opposite Barnet. Between two wooden towers on this north shore and two steel towers at Barnet on the south shore, a span of over 3,000 ft., these four high-tension sets of lines cross the salt water, giving a headway of 132 ft. for clearance of the masts of sailing vessels. From Barnet almost straight west one pole line, with two sets of transmission wires, continues to Vancouver city substation; the other almost straight south to Burnaby substation. The Vancouver substation and the Burnaby substation are interconnected along the company's private right of way, the Westminister-Vancouver Interurban Ry., by two independent sets of transmission wires, so that in case of trouble on any one line an uninterrupted service may still be maintained. From Burnaby substation two sets of transmission wires run out to New Westminister city substation and five new substations about twelve miles apart on the Fraser Valley branch to the city of Chilliwack, 64 miles from New Westminister. From Barnet a further high-tension transmission line leads directly east, dividing into two branches, one supplying Lake Coquitlam and the other the asylum farm substation, a Government institution, and New Westminister Junction. From the Vancouver substation two sets of transmission lines lead out towards the city of North Vancouver and its surrounding district, crossing the harbor at the Second Narrows on a set of high masts 190 ft. above tide water. The receiving substation for this line is located in the east end of this city; the other line follows the right of way of the Lulu Island Ry. to the substation on Lulu Island. A new and additional substation is now being erected along this line at Shaughnessy



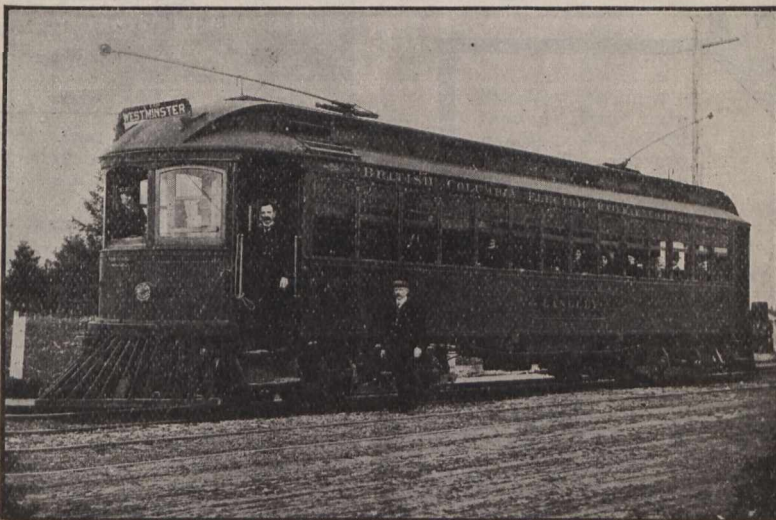
Type of city car built in B.C. Electric Ry. shops at New Westminister.

Heights, in Point Grey district, to take care of this rapidly growing suburb.

The Vancouver city substation naturally is the largest and most interesting. It supplies the business, residence and street lighting of the city, the suburbs of South Vancouver and Point Grey, the power for numerous industrial motors in these districts, and the city's extensive street railway system. Two six-phase 60-cycle rotaries, recently added to its equipment, are particularly interesting to the electrical engineer as being the largest of their kind in the world. Next to the Vancouver substation, the most important substation on the system is located at Burnaby, about nine miles from Vancouver, on the Vancouver-Westminister interurban line. It is the switching point for Westminister City-Vancouver, Westminister Interurban and Fraser Valley branches. Two 10,000-volt transmission lines distribute power over considerable distances to large sawmills on Burnaby Lake to the north and the Carbolineum works on the Fraser River to the south. The Lulu Island substation apparatus operates the Vancouver and Lulu Island Ry. and the Eburne-Westminister line, and also lights the residences of the farmers along and near these railways, the town of Steveston at the mouth of the Fraser, the town of Ladner on the south side of the Fraser River, the motors in the salmon canneries along the river bank, and the stables, barns and dairy houses of the farmers in this district. A portable sub-

station, mounted on trucks for hauling from place to place, is found very useful and convenient to assist in the moving of large crowds to the various parks both in Vancouver and Westminister, and to the exhibition grounds in both cities.

The electric railway system of the company, consisting of the mainland and the Vancouver Island (Victoria) systems, is fully shown on the map between pages 80 and 81 of this issue. It comprises 200 miles of track on the mainland and 25 miles in Victoria and its suburbs. All along the various interurban lines the company has extended its lighting and power circuits. These are greatly appreciated, and exceedingly well patronized by the residents and settlers of the districts traversed, giving them practically all city conveniences in their suburban homes, and even on the farm. Small electric motors for water pumping and other household duties are used quite extensively from these lines. For the improvement of the suburban roads, rock crusher motors are operated for various municipalities. Along the banks of the Fraser River from Point Grey (Eburne), through South Vancouver to Burnaby, a number of industries and factories have by this means been able to obtain a cheap and reliable power, available at all hours of the day, as well as a good and frequent railway service, with siding facilities for the handling of freight in carload lots. Into the timbered sections branch power lines have been built for the operation of sawmills and shingle mills, obviating the hauling of the unwieldy and ponderous logs, at the same time clearing up these districts for the settler and his plow. A number of plants of this kind have been installed in the timber between Vancouver and Westminister and near North Vancouver. All of these, when first connected and started up, were closely surrounded by timber, which is now receding in the distance before the onslaught of electrically-driven saws and planers. The lumber from these mills is again worked up in the numerous electrically-operated woodworking establishments, box factories, shipbuilding yards, etc., in the three cities. The car-building shops of the B.C.E.R. Co. in New Westminister is a good example of the use of the electric power. Since the extension of the company's power circuit to New Westminister and through its manufacturing and wholesale section, a number of very important industries have adopted the electric drive, among others a large can factory, an ice and cold storage plant,



Type of suburban car built in B.C. Electric Ry. shops at New Westminister.

2 GRAND PRIZES AND 5 GOLD MEDALS

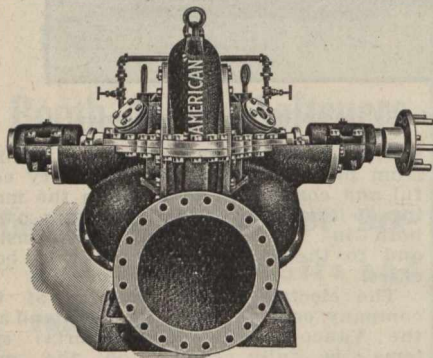
—more than was given to all other makes of pumps combined—were awarded by the Alaska-Yukon-Pacific Exposition to

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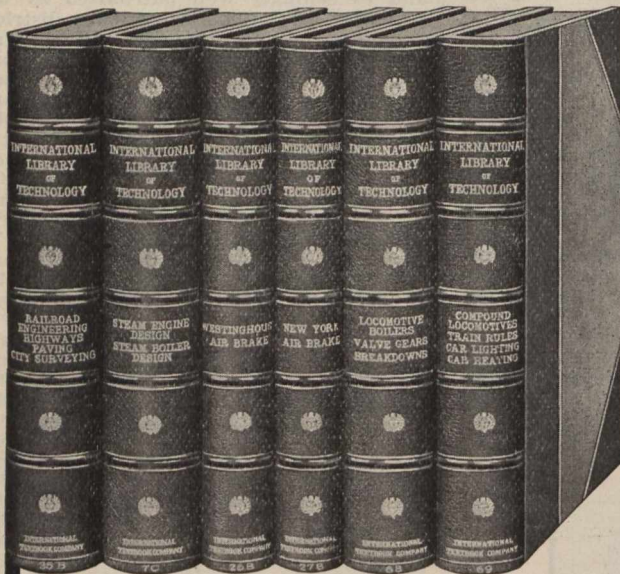
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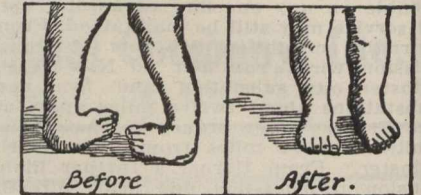
Appeals to Fathers and Mothers of Ontario on behalf of suffering children.

This Institution did more work in 1910 than ever before. Total In-Patients 1,224. Of these, 783 were from the city and 441 from the country.

Since its organization, the Hospital has treated in its cots and beds 16,837 children; 12,370 of these were unable to pay and were treated free.

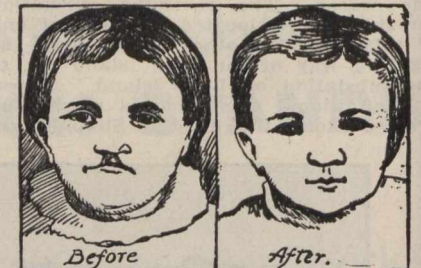
READY FOR MOTHER.

There were 60 cases of club feet corrected last year.



THE HOSPITAL IS A PROVINCIAL CHARITY.

The sick child from the most remote corner of Ontario has the same claim as the child living within sight of the great House of Mercy in College Street, Toronto. Our cause is the children's cause. Could there be one that has a stronger claim on the people of this Province?



Perfect results in Harelip cases. 18 infants were relieved of this terrible deformity last year.

If the Hospital is to continue its great work, it must appeal to your pocketbook as well as to your heart. Let your Dollars be messages of mercy to the suffering little children of Ontario.

Please send your contribution to J. Ross Robertson, Chairman, or to Douglas Davidson, Secretary-Treasurer, The Hospital for Sick Children, College St., Toronto.

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several machine and iron works, butcher shops and their cooling plants, bakeries, plumbing shops, printers, etc. The swings of the two bridges spanning the Fraser at New Westminster city are also operated by the current from this company's lines. All along the river front of this city power lines are now available for any industries intending to locate there. These same power lines are now being extended along the Fraser Valley line to Chilliwack, 64 miles, and have already reached Huntingdon, about 43 miles from New Westminster, serving towns and villages, farmers and sawmills, en route. On this line particularly the mill is taken to the timber instead of the timber to the mill. Many and varied are the uses to which the electric current supplied by the company is put. Its flexibility lends itself to almost any undertaking.

Projects, Construction, Betterments, Etc.

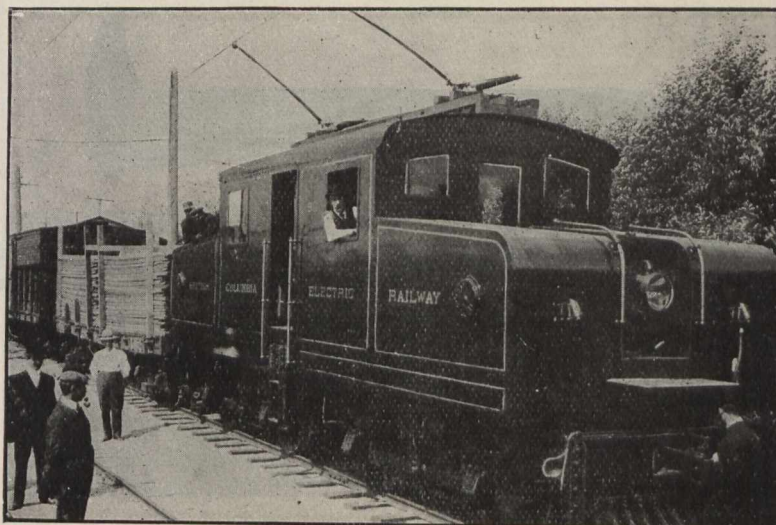
Alberta Electric Ry.—In addition to the powers applied for in the notice referred to in our last issue, this company is asking the Dominion Parliament for power to build the following lines:—From Calgary to Macleod, Alta.; from Calgary to Brooks, passing Windermere, Strathcona and Bassano, and also power to build branch lines from the said lines in the districts known as the C. P. Irrigation Blocks. (Dec., 1910, pg. 1065.)

Assiniboia, Man.—A proposition has been made to the municipality of Assiniboia, near Winnipeg, by a real estate company to build an electric railway on streets running north from Portage Ave.

Brandon, Man.—Application is being made by a Vancouver, B.C., financial corporation for a franchise for an electric railway in Brandon, Man. The Mayor, referring to the fact that petitions were being circulated favoring the granting of the franchise, said it had been the general policy of the council to refuse to grant any applications for such a franchise, believing that the city could not afford to give away so valuable a concession. (Dec., 1910, pg. 1065.)

British Columbia Electric Ry.—The city council of Vancouver, B.C., has under consideration the desirability of granting a new franchise for 23 years, covering greater Vancouver.

The Board of Railway Commissioners has ordered the Vancouver, Fraser Valley and Southern Ry., which is building the line through Burnaby tp. to insert a diamond where it crosses the Vancouver, Victoria and Eastern Ry..



Freight and passenger electric locomotive, B.C. Electric Ry.

and that the crossing be protected by interlocking plant, derails and home and distant signals on both lines on each side of the crossing.

The new interurban station which is being built in New Westminster will be of brick, two stories high, on concrete foundations. The roof will be supported on steel columns, so arranged that additional stories can be added as desired. The building will be 132 ft. square, with frontages on Columbia, Front and Eighth streets. On the ground floor, in addition to the accommodation for the public, there will be the offices for the dispatching staff of the company's entire interurban system. Three sets of tracks will pass diagonally through the building from Eighth St. to Front St., and passengers will only be allowed inside the part of the building devoted to the arrival and departure of cars. There will be also on this floor waiting rooms, ticket offices, parcel and express offices. On the second floor there will be offices for the Manager of the Interurban lines, the Local Manager, Divisional Engineer, Auditor, Trainmaster, Roadmaster, and rooms for the employees. In connection with the erection of the building yards will be laid out, and freight sheds, repair shops and other buildings erected. (Dec., 1910, pg. 1065.)

Cape Breton Electric Co.—The Sydney, N.S., city council passed a resolution Dec. 2, asking the company to ex-

tend its line to Waterford, along the shore, about 8.5 miles. (June, 1910, pg. 495.)

Galt, Preston and Hespeler Ry.—The question of an extension of this line from Guelph to Elmira, Ont., is under consideration, but it is said that the company has not reached any decision as to what it will do. The municipalities through which the projected extension will pass are anxious that the line should be built, but have not reached an agreement as to which of three suggested routes should be adopted. (July, 1909, pg. 491.)

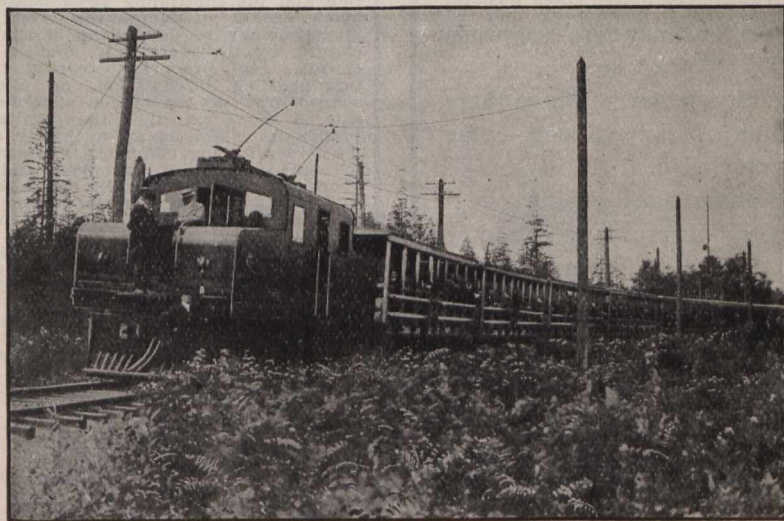
Hamilton, Waterloo and Guelph Ry.—J. Patterson, who is conducting the negotiations for the building of this projected electric railway, stated at Hamilton, recently on returning from London, Eng., that he was not in a position to make an authoritative announcement as to construction. He, however, expected shortly to be in a position to do so. (Oct., 1910, pg. 875.)

Huron and Ontario Ry.—Application is being made to the Dominion Parliament to extend the time within which the lines and branches authorized may be built. T. H. Kilgore, Confederation Life Building, Toronto, is Secretary of the company. The act of incorporation gives the company general power, but in endeavoring to arrange routes, etc., the company has proposed to build a line to be operated by electric power. (Dec., 1910, pg. 1069.)

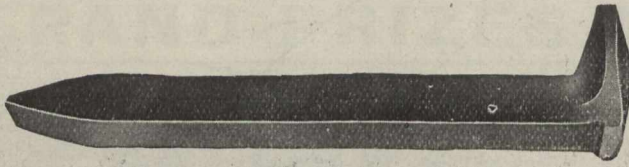
International Ry.—International Traction Railways.—Application is being made to the Dominion Parliament for an act "enabling the International Traction Railways to acquire and become possessed of all the estate property, name, rights, privileges and franchises of the International Ry. in Canada." The notice is given by A. M. Grier, Solicitor for the company, Niagara Falls, Ont. (Mar., 1910, pg. 231.)

London and North Western Ry.—D. A. Stewart advised the London, Ont., city council, Nov. 28, that it had been decided to withdraw the company's application for a guarantee of bonds for the present. (Dec., 1910, pg. 1069.)

London Street Ry.—London and Lake Erie Ry. and Transportation Co.—We are advised with respect to the press reports that a merger of these companies with the London Electric Co. was being arranged, that so far as the latter company is concerned there is no foundation for the reports. From another source we are informed that there have been some attempts to arrange for some such merger, but with what mea-



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THOS. C. IRVING,
Gen. Man. Western Canada, Toronto.

sure of success is not known. Other reports state that the merger, if it takes place at all, will include the Grand Valley Ry. and the lines associated with it, and that the whole will come under the control of the Mackenzie, Mann & Co. interests. (Dec., 1910, pg. 1069.)

Montreal and Southern Counties Ry.—Press reports state that an arrangement is being made by which the company's cars may be run over the Montreal Street Ry. beyond McGill St., in the same way as the Lachine cars.

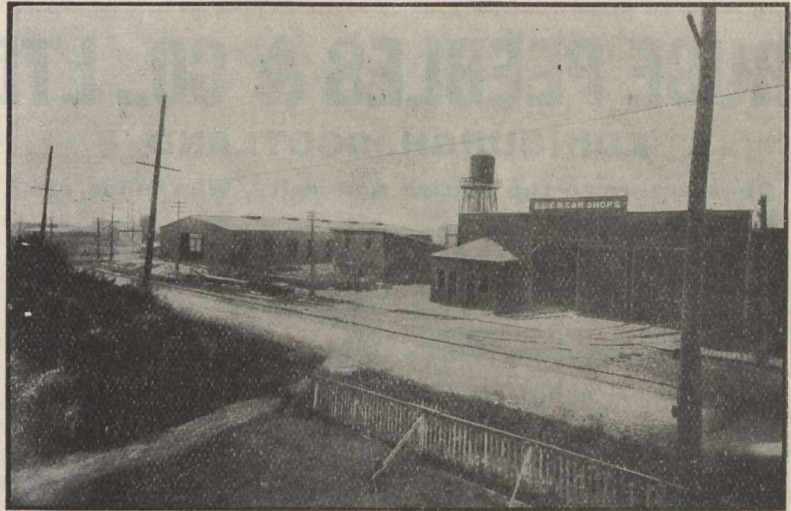
Plans have been approved by the Board of Railway Commissioners for the proposed station building at the corner of McGill and Youville streets, Montreal. An order has been issued by the Board of Railway Commissioners authorizing the opening for traffic of the line from St. Denis St., St. Lambert to Longueuil, Que., 3.5 miles. (Nov., 1910, pg. 965.)

Moncton Tramway, Electricity and Gas Co.—O. P. Boggs, Manager, has notified the Moncton, N.B., city council that it is proposed to lay tracks on a number of the streets in the city, and asking that the routes may be approved. The notice is under consideration. (Oct., 1910, pg. 875.)

Montreal Street Ry.—The city council received a letter from E. A. Robert, President, Dec. 10, stating that the existing agreement between the city and the company was not sufficiently broad to meet the requirements of the city, and suggesting that representatives of the city and the company get together and discuss the situation. The letter is under consideration. (Dec., 1910, pg. 1067.)

Moose Jaw Electric Ry.—Track has been laid on approximately three miles of paved streets in Moose Jaw, Sask., and for some distance on the unpaved streets. The power house and barns are to be located at the corner of Fourth Ave. and High St., where the company has purchased ten lots. The barns will have a capacity for 20 cars, but will be so arranged that they can be added to. It is hoped to have six miles completed by the middle of the year, when the line will be opened for traffic. (Oct., 1910, pg. 875.)

Nanaimo General Electric Ry.—This is the title of the company which it is proposed by the Dominion Stock and Bond Corporation to incorporate for the purpose of building an electric railway in Nanaimo, B.C. The taxpayers are being asked to pass a bylaw granting a franchise to the company, and authorizing the city council to guarantee \$300,000 of the company's 4½% bonds for 20 years. The city is to receive 10% of



B.C. Electric Ry. erecting shop, New Westminster.

the company's revenue. (Dec., 1910, pg. 1067.)

Niagara Falls, Welland and Dunnville Electric Ry.—Press reports state that final steps were taken towards the building of this projected electric railway at a meeting of the directors held Dec. 1. F. E. Misener, Marshville, Ont., is Secretary. (Nov., 1910, pg. 965.)

North Midland Ry.—A bylaw will be voted on Jan. 2 by the taxpayers of London, Ont., favoring the guarantee of the company's bonds for \$200,000. The company proposes to build a line from London to St. Marys and Stratford. A. E. Welch, who is associated with the Western Central Ry. is also connected with the directorate of this company. (Oct., 1910, pg. 875.)

Ottawa and Kingston Electric Ry.—A trip over the route of this proposed electric railway has been made by A. H. N. Bruce, C.E., Ottawa, preliminary to the application for a charter of incorporation. At a conference with the railway committees of the Ottawa Board of Trade and the city council, Nov. 23, Mr. Bruce stated that the route of the proposed line was quite feasible, and that sufficient power for its operation could be obtained at Ottawa. Nothing, however, can be done until the company has been incorporated, and parliamentary authority obtained for the building of the line. (Dec., 1910, pg. 1067.)

Peoples Ry.—The taxpayers of three townships and of one town will vote

Jan. 2 on bylaws authorizing the taking of preference stock in this projected railway. The places, together with the amount of stock proposed to be taken are:—Fergus, \$20,000; West Garafraxa, West Luther, \$30,000 each, and Proton, \$36,000.

Owing to the assignment of F. Maxwell, who had a grading contract between Berlin and Bloomingdale, and the sale of his plant by the bailiffs, the company has taken over the contract, and is continuing the grading under the charge of its Chief Engineer. (Dec., 1910, pg. 1069.)

Port Arthur and Fort William Electric Ry.—The taxpayers of Port Arthur, Ont., are being asked to approve a bylaw to raise \$75,000 to pay for 80 lb steel rails to be laid on Cumberland St., and to pave such portions of the street as are at present unpaved. The taxpayers of Fort William are being asked to pass a bylaw authorizing the raising of \$100,000 for street railway purposes. (Oct., 1910, pg. 875.)

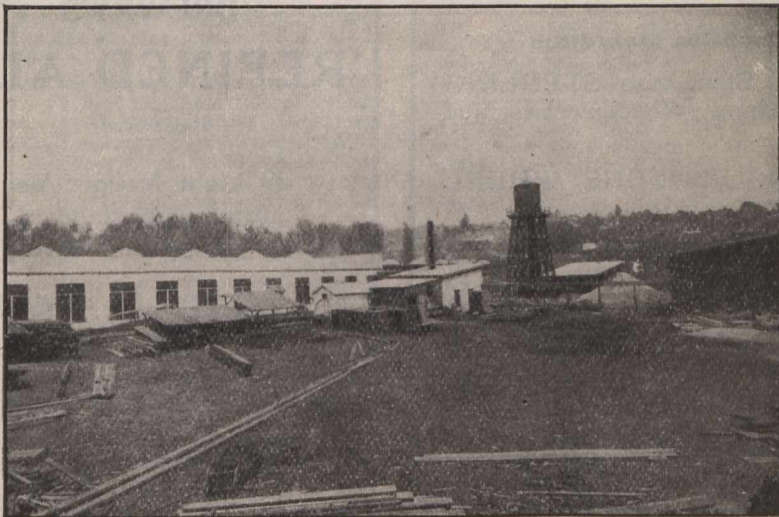
Saskatoon, Sask.—The city council decided at a recent meeting not to ask the taxpayers to pass a bylaw authorizing the building of a street railway at present. Two companies represented by W. S. Weeks, Edmonton, Alta., and —, McRae, Ottawa, are making applications for a franchise. (Dec., 1910, pg. 1069.)

Toronto and Eastern Ry.—The plans for the line through the towns of Oshawa, Whitby and Cobourg have been approved by the respective councils, and the company will in the near future apply to the Board of Railway Commissioners for approval of its location plans.

Western Central Ry.—The application being made to the Dominion Parliament for extension of powers, etc., has been amended by the addition of the following:—"Providing that its electric railway, authorized to be constructed from Toronto Ont., to London, Ont., with branches to Stratford, Woodstock and Wellesley may be extended from London to Windsor, and connecting therewith that ferries may be maintained across the Detroit River."

The company was originally incorporated by Ontario Legislature in 1905, and has secured extensions of time for construction at various times since. A. E. Welch, who was interested in the promotion of the old South Western Traction Co., is associated with this project, and also with that of the North Midland Ry. (Dec., 1910, pg. 1069.)

Watrous, Sask.—A press report states that the National Securities Corporation



Rear view, B.C. Electric Ry. plant, New Westminster.

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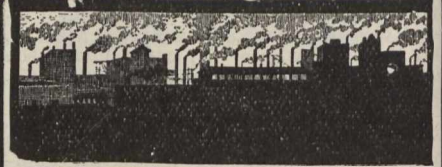
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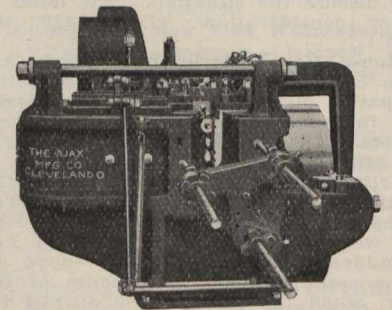
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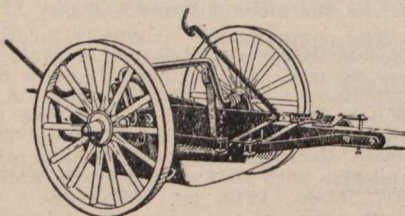
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Hand Steel Galvanized Wire or
Steel Gates, write for particulars.

The Owen Sound Wire Fence Co.
Owen Sound, Ont. Limited

is entering into an agreement for the installation of an electric railway from Watrous to Manitou Lake, Sask. The mineral springs at Manitou Lake are being developed as a health resort, and it is stated that a good deal of building is being done.

Electric Ry., Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for Oct. 1910, \$349,664; working expenses \$205,266; net operating earnings \$144,398; renewal funds \$25,417; net earnings \$118,981; approximate income from investments \$20,000; net income \$138,981, against \$264,306 gross earnings; \$131,679 working expenses; \$132,627 net operating earnings; \$16,394 renewal funds; \$116,233 net earnings; \$16,500 approximate income from investments; \$132,733 net income for Oct. 1909. Aggregate gross earnings for four months ended Oct. 31, 1910, \$1,247,122; net earnings \$531,577, against \$967,172 aggregate gross earnings, and \$454,296 net earnings for same period 1909.

Calgary St. Ry.—Gross earnings for Oct., \$20,501.30; expenses, \$10,853.77; net earnings, \$9,647.53; for Nov., \$19,857.01; expenses, \$10,170.58; net earnings, \$9,686.43. Aggregate gross earnings for 11 months ended Nov. 30, 1910, \$190,757.88; expenses, maintenance of way and structures, \$7,500; maintenance of equipment, \$11,015.06; transportation, \$75,597.63; general, \$7,509.36; interest and sinking fund, \$29,874.68; 5% contingent reserve, \$9,537.89; net profits, \$51,736.36.

Grand Valley Ry.—Action has been entered by the First National Bank of Birmingham, Pittsburg, Pa., to recover from the G.V. Ry., Brantford, Ont., \$1,023.42 on certain overdue bond coupons.

Halifax Electric Tramway.—Railway receipts for Nov., \$15,524.28, and for two week ended Dec. 14, 1910, \$7,176.41, against \$14,603.64, and \$6,900.92 for same periods 1909.

London St. Ry.—Gross earnings for Nov., 1910, \$20,644.79; expenses, \$15,494.46; net earnings, \$5,150.33; deductions, \$2,363.05; net income, \$2,787.28, against \$18,964.07 gross earnings; \$14,211.51 expenses; \$4,752.56 net earnings; \$2,363.05 deductions; \$2,389.51 net income for Nov., 1909. Aggregate gross earnings for 11 months ended Nov. 30, 1910, \$232,390.58; expenses, \$165,217.56; net earnings, \$67,173.02; deductions, \$26,308.25; net income, \$40,864.77, against \$221,685.18 aggregate gross earnings; \$154,361.38 expenses; \$67,323.80 net earnings; \$26,445.81 deductions; \$40,877.99 net income for same period 1909.

Montreal St. Ry.—Passenger earnings for Nov., 1910, \$355,586; miscellaneous earnings, \$10,512.34; total earnings, \$366,098.34; operating expenses, \$227,441.90; net earnings, \$138,656.44; city percentage on earnings, \$11,692.01; interest on bonds and loans, \$15,763.22; rent leased lines, \$552.90; taxes, \$4,000; surplus, \$106,643.31; expenses per cent. of earnings, 62.13, against \$323,446.50 passenger earnings; \$11,424.77 miscellaneous earnings; \$334,871.27 total earnings; \$200,137.56 operating expenses; \$134,733.71 net earnings; \$11,814.27 city percentage on earnings; \$14,471.85 interest on bonds and loans; \$498.67 rent leased lines; \$4,000 taxes; \$103,948.92 surplus; 59.76 expenses per cent. of earnings for Nov., 1909. Aggregate total earnings for two months ended Nov. 30, 1910, \$752,786; operating expenses, \$433,191.96; net earnings, \$319,594.04; total charges, \$64,011.14; surplus, \$255,582.90, against \$688,878.22 aggregate total earnings; \$374,872.53 operating expenses; \$314,005.69 net earnings; \$61,

864.27 total charges; \$252,141.42 surplus for same period 1909.

Toronto Ry.—Gross earnings for Nov., 1910, \$365,466.21; expenses, \$192,103.82; net earnings, \$173,362.39, against \$325,416.71 gross earnings; \$168,112.31 expenses; \$157,304.40 net earnings for Nov., 1909. Aggregate gross earnings for 11 months ended Nov. 30, 1910, \$3,941,125.10; expenses, \$2,033,438.42; net earnings, \$1,907,686.67, against \$3,515,684.40 aggregate gross earnings; \$1,786,491.36 expenses; \$1,729,193.04 net earnings for same period 1909.

Winnipeg Electric Ry.—Gross earnings for Oct. 1910, \$304,114; operating expenses \$151,782; net earnings \$152,332, against \$247,074 gross earnings; \$123,766 operating expenses; \$123,298 net earnings for Oct. 1909. Aggregate gross earnings for 10 months ended Oct. 31, 1910, \$2,602,499; net earnings \$1,296,958, against \$2,087,971 aggregate gross earnings, and \$1,044,926 net earnings for same period 1909.

Street Car Situation in Toronto.

The description of the Toronto Ry.'s latest type of standard convertible cars in our last issue contained the following sentence:—"The entrance to car is large on the outside of vestibule, making it very convenient for the pay-as-you-enter system, as all passengers have to pass over the entire platform in order to enter." We wish it to be clearly understood that this expression of opinion merely refers to the platform, which with a proper division by a railing might easily be made suitable for the p.a.y.e. system. We must not, however, be understood as expressing the opinion that the new cars, as a whole, are adapted for that system. They have only one rear door. In a city where the traffic is as dense as it is in Toronto, and where the cars are frequently unduly crowded, especially at the rush hours, we believe that two rear doors are necessary, one for entrance and one for exit, and that one exit only, at the front, is not sufficient.

The Toronto Ry. Co.'s bylaws respecting smoking, spitting, etc., and respecting closed motor and trailer cars, as published in our last issue, were approved by the Ontario Railway and Municipal Board Dec. 2. On the bylaw respecting closed motor and trailer cars the board was not unanimous, Chairman Leitch and Deputy Chairman Ingram being in favor of it, and H. N. Kitson dissenting on several points. The company at once proceeded to enforce the bylaws, and the p.a.y.e. system was within a few days put in operation on all the cars. The system proved so inconvenient, on account of specially adapted cars not having been provided, that very general opposition was aroused among the citizens, which culminated in a large mass meeting called by the Mayor, at which resolutions were adopted calling on the Ontario Railway and Municipal Board to reconsider its action, and also asking the Provincial Premier to interfere. After the meeting a mob interrupted the car traffic on a number of streets and did considerable damage by breaking windows, etc.

The matter again came before the Ontario Railway and Municipal Board, Dec. 9, when the city applied to have the p.a.y.e. system suspended. This was refused by the Board. Counsel for the company stated that conductors were to be allowed to exercise their judgment as to passengers going out by the rear doors when cars were crowded and when there was no crowd attempting to get on.

On Dec. 19, the Ontario Railway and Municipal Board went further into the question, and at the opening of the hearing, Chairman Leitch said the company

had fallen down in its attempt to give a p.a.y.e. service. After considerable discussion it was decided to suspend for a month the Board's former approval of the bylaw respecting closed motor and trailer cars, counsel for the Toronto Ry. stating that the company must not be considered as waiving any of its legal rights. The Board's decision permits the p.a.y.e. system to be continued for the month on the cars on which stationary fare boxes have been installed. On all cars not so equipped, passengers may enter the cars before paying. The company may proceed with alterations to its cars on the understanding that it assumes the risk of their not conforming to the standard which the Board may finally decide on.

The general consensus of opinion among street railway managements throughout Canada and the United States is that the p.a.y.e. system is in every respect the most satisfactory for handling passengers, but it cannot be said to yet be on trial in Toronto, for as before stated, specially adapted cars have not been provided. Where specially constructed cars are in use, as in Montreal, Ottawa, Hamilton, Calgary, Edmonton, New York, Baltimore, Buffalo, Cleveland, Chicago, St. Louis and a large number of other cities, the system is working admirably and with general public approval. In Philadelphia and Pittsburg, attempts to introduce the system without proper cars resulted in failure, which coupled with the experience in Toronto, shows that the system cannot be operated successfully except on the Montreal type of car. Many of the Toronto cars, which have short rear platforms, are not adapted for it and in all cases the rear platforms should be closed in on one side and at the back.

Levis County Railway.

Following are extracts from the report for the year ended June 30, 1910:

ASSETS.	
Property account	\$613,449.24
Added for year	2,037.99
	\$615,487.23
Less Sheriff	6,708.79
	\$608,778.44
Stores	3,820.18
Stock sundries	1,591.50
Cash, Imperial Bank	144.52
Cash, petty cash	230.00
	374.52
Accounts receivable	805.47
LIABILITIES.	
Bond account	\$151,100.00
Preferred stock	132,600.00
Common stock	250,000.00
Sun Life Ass. Co. loan account	\$67,950.00
Imperial Bank loan account	17,650.00
Sundry accounts payable	6,325.30
Bills payable	305.00
Bank British North America overdraft ..	256.76
Accrued bond interest and compound	17,569.63
	110,056.69
DEBIT.	
Surplus on operation for year	\$6,491.25
Interest Bonds and coupons	\$8,531.11
Interest, Loans, etc.	4,640.22
	13,171.33
Profit and loss balance debit	6,680.98
Profit and loss balance debit, July 1, 1909	21,706.50
	28,386.58
	\$643,756.69 \$643,756.69

The receipts for the year ended June 30, 1910, were \$62,977.10, and the expenses \$56,505.85.

The officers and directors for the current year are:—S. H. Ewing, President; Hon. R. Turner, Vice President; E. A. MacNutt, Secretary Treasurer; other directors, J. Ferman, J. A. Richardson, J. C. Blouin, G. E. A. Jones.

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STANDARD STEEL PLATFORMS

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Montreal Street Railway Accidents.

In our last issue a brief reference was made to an inquiry held by the Quebec Public Utilities Commission in reference to accidents on the Montreal St. Ry., and connecting lines, etc. The Commission made the following order:

1. That no further cars of the single truck pattern be placed in use upon any of the routes without special permission of the Commission and for cause shown.
2. That the number of such cars be reduced each year by 50 at least, and be replaced by larger and double truck cars. Upon application, and for reasons shown and satisfactory to the Commission, the use of such cars upon certain routes will be permitted and sufficient cars of the kind may be retained for the purpose.

3. That all cars 30 ft. or more in length and weighing 25,000 lbs. or over be equipped with air brakes in addition to hand brakes and proper sanding appliances. That cars operating upon routes where there are severe grades, such as the Guy street, be provided with an emergency brake as well as other brakes.

4. That all cars be equipped with an automatic mechanical drop wheel guard to be approved by the Commission. The apron to be attached to the truck. If this be not possible in some cases, then to the platform, as near to the truck as possible, and the wheels further protected by a wire rod screen in addition. This wire rod screen to be placed upon all single-truck cars in addition to the wheel-guard, in any event. The wheel-guards must have a manually tripped connection in addition to the automatic gate, so as to insure an additional safety should the automatic gate fail in its operation. That the tripping gate be placed not over 6 ins. from the ground and the apron of the wheel-guard not over 5 ins. Both tripping gate and apron will be so adjusted that in winter they may be kept the required height above the ice and snow. 5. As soon as cars are so equipped the fenders shall be removed. 6. Draw bars must not project beyond the platform of the car in any case and must be held firmly in place as near to the floor of the platform as possible when not in use. 7. All projecting iron or steel bumpers must be removed.

8. The speed limit of eight miles per hour must be adhered to. 9. All accidents occurring in which there is any injury done to persons, shall be reported to the Commission immediately after their occurrence, with the following particulars: Name and address of person injured or killed; date, time and locality where the accident occurred; number of the car, names of employes present and those of witnesses with addresses. Full particulars of how the accident occurred and of the age, sex, and condition of the person injured. Particulars of the appliances for safety upon the car, whether same were called into use, and how they operated. Rate of speed, route and direction of the car at the time. 10. Before a car is taken out, it must be examined by the motorman and conductor, and a report handed in to the company showing that the trolley, controller, trucks, wheels, motors, bearings, rheostat, fender (if any), wheelguards, brakes and lights, have been examined and are in order. This report to bear the car number, date and time, and be signed by both conductor and motorman. These reports shall be countersigned by the receiving official to denote receipt by him and kept on file. No car shall be taken out which is defective in any of the foregoing respects. If any accident occurs to any of the foregoing appliances while the car is out, the motorman shall report the injury in writing at the nearest station reached after the accident occurs.

A record of all complaints against conductors, motormen or inspectors shall be kept and summarized with the action taken thereon in a monthly report to the Commission.

The foregoing orders, three to 10 inclusive, shall apply to all cars operated over the lines of the Montreal St. Ry. Co., but the use of fenders shall be permitted in the city upon cars operating around the mountain or outside of the city limits and in every case when required by other competent authority.

The work and alterations as outlined above shall be carried out within the following delays: In respect of all double truck cars within four months. In respect of all other cars within 10 months. All work to be done to the satisfaction of the Commission's Engineer, and appliances maintained in thorough working order, subject to inspection and test at any time.

The order of the Commission respecting wheel-guards, brakes and inspection of cars shall apply to all electric railways and tramways under the jurisdiction of the Commission, unless for special reasons communicated to the Commission in writing within 30 days of the receipt of the order, some modification is allowed. Cars operating at over 10 miles per hour in any part are to be provided as well with a suitable fender, or other protection in front, approved by the Commission.

Electric Railway Notes.

The London St. Ry. has received one heavy double broom electric snow sweeper, from the Ottawa Car Co.

The Sherbrooke St. Ry. has received one heavy double broom electric snow sweeper from the Ottawa Car Co.

D. S. Barton has been appointed Consulting Electrical Engineer Quebec Ry. Light Heat and Power Co., on special duty.

The Moose Jaw Electric Ry. has ordered six pay-as-you-enter type cars from the Ottawa Car Co. for spring delivery.

The Regina city council is in the market for six motor cars for its line, construction of which will be started in the spring.

The Quebec Ry., Light and Power Co. has received two 18 ft. pay-as-you-enter cars, 30 ft. long over all, from the Ottawa Car Co.

The Hamilton St. Ry. has received two 31 ft. cars, 44 ft. long over all, mounted on 27-G-1 trucks, from the Ottawa Car Co.

The Calgary St. Ry. has ordered 12 single truck, single end pay-as-you-enter cars, 8 ft. wheel base, from the Preston Car and Coach Co., Preston, Ont.

The Calgary St. Ry. has received two 33½ ft. semi-convertible pay-as-you-enter cars, 46½ ft. long overall, mounted on 27-G-1 trucks, from the Ottawa Car Co.

The Port Arthur and Fort William Electric Ry. has ordered two 33½ ft. semi-convertible cars, 46½ ft. long over all, mounted on 27-G-1 trucks, for Port Arthur, from the Ottawa Car Co.

The Levis County Ry. passenger elevator was practically destroyed by fire, Dec. 5. It was built in 1901, costing about \$30,000, but has not been used very extensively.

The Edmonton Radial Ry. has ordered four double truck single end pay-as-you-enter cars, 31 ft. 10 in. bodies, mounted on 27-G-1 trucks, from the Preston Car and Coach Co., Preston, Ont.

The British Columbia Electric Ry. has erected a lecture room at Vancouver,

and given the use of equipment, in connection with the night school work carried on there, by a committee of the employes, the funds being supplied by the company.

The Quebec Public Utilities Commission has authorized the Quebec County Ry., a subsidiary of the Q.R., L. & P. Co., to open for traffic the portion of its railway from Maple Ave., Montcalm, northerly and westerly to the top of Sillery Hill.

The Edmonton Radial Ry. has ordered four 30½ ft. semi-convertible car bodies, 43½ ft. long over all, and has received two 28 ft. pay-as-you-enter cars, 44½ ft. long over all, mounted on 27-G-1 trucks, and one heavy double broom electric snow sweeper, from the Ottawa Car Co.

The Port Arthur and Fort William Electric Ry. has ordered two single end double truck pay-as-you-enter cars, 31 ft. 10 in. bodies, mounted on 27-G-1 trucks, for Port Arthur, and two double end, but otherwise similar cars for Fort William, from the Preston Car and Coach Co., Preston, Ont.

C. J. Pigot, heretofore Secretary and Roadmaster Quebec Ry., Light and Power Co., has been appointed Chief Engineer Quebec Ry. Light, Heat and Power Co., vice E. A. Evans, resigned. He will have charge of all construction work, (except electric), track and roadway, real estate and buildings, and general engineering.

The Montreal Tramway and Power Co. has been incorporated in London, Eng., with a total capitalization of \$20,000,000, to take over the Montreal Street Ry. and other concerns. The officers and directors are:—President, E. A. Robert; Vice President, J. W. McConnell; Secretary, H. R. Mattison; other directors, F. H. Wilson, J. G. Ross, H. A. Lovett, K.C.

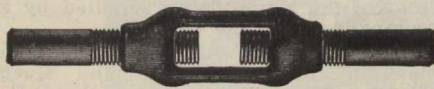
The Dominion Power and Transmission Co., Hamilton, Ont., has ordered from the Preston Car and Coach Co., Preston, Ont., for delivery by May 1, three interurban cars, 55 ft. 8 ins. over bumpers, 43 ft. 8 ins. over end posts, 8½ ft. wide over sills, mounted on Baldwin Locomotive Works trucks with steel wheels, and with Westinghouse electrical and air brake equipments.

The Quebec County Ry. was fined \$200, Dec. 6, by the Quebec Public Utilities Commission for laying tracks on the south side of the road from Maple Ave. to Sillery, for which permission had not been granted, instead of on the north side, for which permission had been granted. On the favorable report of the Board's engineer, the company was authorized to continue the laying of rails on the south side.

The arbitrators in the differences between the Winnipeg Electric Ry. and its employes, after a protracted hearing, brought in an award against the men, whose principal ground of complaint was that the company refused to reinstatement some employes who had been dismissed for having gone into public houses while in uniform. The men expressed dissatisfaction with the award and went on strike Dec. 17.

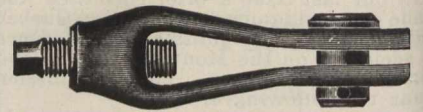
The British Columbia Electric Ry. during 1911 will build, at its own car shops at New Westminster, 30 city type steel frame, pay-as-you-enter, double truck, four motor cars; three interurban steel or wood frame pay-as-you-enter double truck four motor cars, and a number of box, flat and dump cars, and will place orders, tenders for which have been asked, for 30 city type steel frame pay-as-you-enter double truck four motor cars; 10 suburban, steel or wood frame pay-as-you-enter double truck four motor cars; two interurban, steel or wood frame pay-as-you-enter double truck four motor cars, and two electric locomotives.

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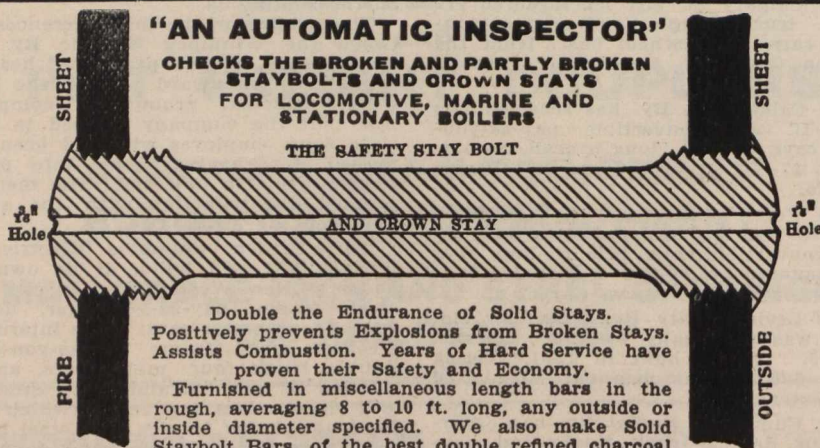
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loss from dishonest employees.

Write us if you need a Bond or
want an Accident Policy.

ELECTRIC RAILWAY STATISTICS FOR YEAR ENDED JUNE 30, 1910

The following abbreviations are used in the names of railways—E., electric; E.R., electric railway; E.S.R., electric street railway; Ry., railway; S.R., street railway. The minus mark (—) in the column for net income or deficit, shows that there was a deficit in the operations of the line to the extent of the figures given. The numbers in brackets—thus (1)—after the name of a railway refer to notes below.

Name of Railway	Mileage	Gross Earnings	Operating Expenses	Taxes, Interest, etc.	Net Income or Deficit	Passenger Car Mileage	Freight Car Mileage	Fare Passengers Carried
Berlin & Waterloo S.R. (1)	3.12	\$ 31,750	\$ 24,313	\$ 5,436	\$ 1,999	90,000	7	673,514
Berlin & Bridgeport Ry. (1)	2.40	6,307	5,237	960	73	34,400		150,648
Brantford & Hamilton E.R. (2)	23.00	98,748	67,913	59,771	—28,936	233,733	32,978	372,905
British Columbia E.R. (3)	100.79	1,912,121	1,210,855		701,266	5,623,439	146,883	33,417,659
Calgary Municipal E.R.	12.00	144,244	87,263	22,860	34,120	500,622		3,329,697
Cape Breton E.R.	11.58	93,332	54,771		54,923	324,821		1,698,723
Chatham, Wallaceburg & L. Erie (4)	32.85	74,626	46,439	30,277	—2,091	238,761	32,075	269,469
Cornwall S.R.	4.00	25,759	20,700		5,058	192,445	13,731	357,166
Galt, Preston & Hespeler S.R. (5)	17.81	140,280	75,891	8,288	56,193	219,977	35,266	823,167
Leased Preston & Berlin (5)								
Grand Valley Ry. (6)	38.29	75,589	70,012	3,014	2,562	358,953		1,026,354
Guelph Radial Ry. (7)	6.00	29,149	22,626		6,522	187,000	5,500	605,476
Halifax E. Tramway (8)	9.90	198,459	116,275	46,672	161,334	888,024		4,465,308
Hamilton & Dundas S.R. (2)	7.00	46,883	34,442	15,074	161	110,381	795	511,344
Hamilton, Grimsby & Beamsville E.R. (2)	22.00	105,301	82,422	9,891	12,987	291,212	50,692	508,091
Hamilton Radial Ry. (2)	25.00	135,484	101,756	72,557	—38,830	472,236	21,390	1,135,291
Hamilton S.R. (2)	22.00	367,400	230,914	73,172	63,313	1,647,524		9,123,669
Hull E. Co. (5)	12.86	94,957	84,870	869	46,414	736,660	35,175	1,391,677
International Transit Co. (9)	3.68	54,194	34,301	28,214	4,434	305,170		1,159,787
Kingston, Portsmouth & Cataraqui E.R.	8.00	30,807	31,508	3,495	—2,994	199,680		721,212
Levis County R.	10.25	62,997	55,870	13,806	—6,680	320,220		1,368,258
London S.R. (10)	25.73	248,556	168,540	34,636	45,656	1,421,735		6,718,735
London & Lake Erie R. & Transportation Co. (11)	27.50	105,062	69,311	904	34,958	310,195	35,458	553,133
Montreal Park & Island Ry. (12)	29.18	320,661	221,603	144,882	—45,824	1,165,812	9,920	4,006,245
Montreal S.R. (12)	76.29	4,145,849	2,337,907	547,501	1,369,902	15,134,852	162,691	102,377,543
Montreal Terminal (12)	18.22	132,313	104,931	40,660	—13,279	626,072	53,486	1,787,654
Montreal & Southern Counties R.	7.20	24,744	39,899		—15,111	70,935		319,778
Niagara Falls Park & River R. (13)	11.91	153,339	82,842	32,867	44,325	350,512		1,295,485
Niagara, St. Catharines & Toronto R. (14)	40.06	268,173	173,866	69,959	24,347	701,016	36,318	2,565,262
Nipissing Central R.	5.10	13,845	3,971	698	9,175	23,500		149,980
Oshawa R.	7.81	79,679	49,237	5,495	26,257	34,578	22,983	138,686
Ottawa E.R. (15)	23.40	716,594	466,530	50,484	199,578	3,924,542	25,727	15,987,849
Peterborough Radial R.	5.10	32,315	26,272	4,151	2,609	257,063		710,853
Pictou County R.	7.90	40,588	26,021	31,271	9,814	138,634	4,893	839,369
Port Arthur & Fort William S.R. (16)	10.00	130,664	74,373		56,290	491,766		2,832,426
Quebec Ry. Light & Power Co. (17)								
Citadel Division	17.22	302,974	208,643		94,331	1,602,453		7,169,245
Montmorency Division	25.10	160,063	106,087		53,975	330,562		1,269,348
Sandwich, Windsor & Amherstburg R. (21)	35.06	191,400	104,917	31,103	84,040	854,794		3,031,244
Sarnia S.R. (22)	8.35	43,184	31,276	4,245	7,661	143,990		723,566
Sherbrooke S.R.	7.00	31,176	32,593	6,637	—8,054	288,020		734,319
St. John R. (18)	12.50	172,222	154,099	51,551	56,782	978,134		3,878,521
St. Stephen S.R. (19)	7.00	29,660	25,991	5,570	—1,901	183,960		587,538
St. Thomas S.R. (20)	7.50	17,451	26,421		—8,970	236,328		409,685
Sydney & Glace Bay R. (23)	20.98	111,291	65,508	23,440	22,717	246,761	20,740	2,038,754
Toronto R. (24)	52.58	4,132,003	2,114,092	877,890	1,140,021	15,391,301		103,480,724
Toronto Suburban R.	9.84	52,535	28,623	9,533	14,631	227,113		1,047,191
Toronto & York Radial R. (24)	72.43	372,509	216,067	110,099	46,342	1,018,299	87,916	3,794,219
Windsor, Essex & L. Shore Rapid R.	36.16	106,225	72,827	54,882	—21,484	240,779	54,936	296,280
Winnipeg S.R. (25)	65.50	1,212,669	630,891	372,982	1,082,648	4,892,661		28,814,161
Yarmouth S.R.	3.00					98,340		225,906
Totals	1049.07	\$17,076,123	\$10,121,780	\$2,953,759	\$5,577,434	64,359,605	889,561	360,964,876
					—194,158			
					\$5,383,276	65,249,166		

Notes to Electric Railway Statistics.

The various lines carried 99,227,824 transfer passengers, bringing the total number of passengers carried to 460,192,700, and the twenty lines carrying freight reported that 852,294 tons had been transported.

(1) The Berlin and Waterloo St. Ry. is owned by the town of Berlin, Ont. It leases the Berlin and Bridgeport Ry. from a company.

(2) The Dominion Power and Transmission Co., owns or controls the Brantford and Hamilton Ry., Hamilton and Dundas Ry.; Hamilton, Grimsby and Beamsville Electric Ry.; Hamilton Radial Ry.; and Hamilton St. Ry.

(3) The British Columbia Electric Ry. operates local lines in Vancouver, New Westminster and Victoria, and interurban lines radiating from Vancouver. It has 13.44 miles of second track, and operates over 21 miles of leased lines.

(4) The Chatham, Wallaceburg and

Lake Erie Ry. added \$9,300 to reserves and special charges, and paid \$14,040 in dividends out of net income.

(5) The Galt, Preston and Hespeler Ry. which also operates the Preston and Berlin Ry. under lease, has 1.36 miles of second track. It is operated in connection with the C.P.R. under a lease. The C.P.R. also owns the Hull Electric Co. This company has 11.51 miles of second track and operates over 1.82 miles of leased track.

(6) The Grand Valley Ry. mileage includes the lines of the Brantford St. Ry., the G.V. Ry., and the Woodstock, Thames Valley and Ingersoll Ry., which were reported separately in previous years.

(7) The Guelph Radial Ry. is owned by the city of Guelph.

(8) The Halifax Electric Tramway Co. has 3.09 miles of second track. It paid \$84,000 in dividends out of net revenue.

(9) The International Transit Co.'s

line, owned by the Lake Superior Corporation at Sault Ste. Marie, Ont., connects with the Trans St. Mary's Ry. at Sault Ste. Marie, Mich., owned by the same company.

(10) The London St. Ry. has 6.79 miles of second track. It paid \$33,120.00 in dividends out of net income.

(11) The London and Lake Erie Ry. and Transportation Co. is the old Southwestern Traction Co. It has trackage rights over the St. Thomas St. Ry. 2.28 miles.

(12) The Montreal St. Ry. has 57.18 miles of second track, and operates over 8.58 miles of leased tracks. It reports a surplus of \$2,591,365.46 after adding \$200,000 to reserves and paying \$999,573 in dividends. It owns the Montreal Park and Island Ry., which has 14.61 miles of second track, and paid \$18,900.00 dividend out of the latter's net income. It also owns the Montreal Terminal Ry., which has 4.66 miles of second track.

(13) The Niagara Falls Park and

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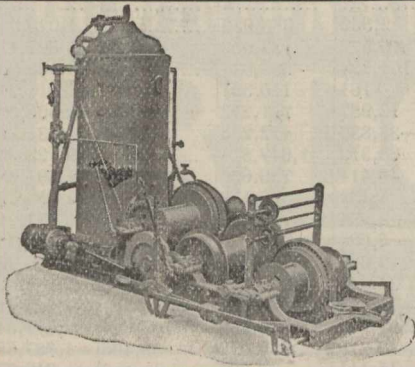
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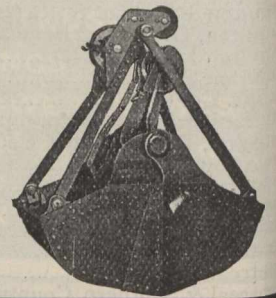


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River Ry. has 9.31 miles of second track. It is owned by and operated in connection with the International Ry. of Buffalo, N.Y.

(14) The Niagara, St. Catharines and Toronto Ry. mileage includes the Niagara Falls, Wesley Park and Clifton Ry., and the Port Dalhousie, St. Catharines and Thorold Electric St. Ry, formerly reported separately.

(15) The Ottawa Electric Ry. has 20.64 miles of second track, and operates over 2.22 miles of leased track. It paid \$149,724 in dividends out of net income.

(16) The Port Arthur St. Ry. has 9.00 miles of second track. It is operated by a commission appointed by the city councils of Port Arthur and Fort William, Ont.

(17) The Quebec Ry., Light and Power Co. has 6.30 miles of second track on its Monmorency Division. A steam freight service is operated over the Montmorency Division, the returns for which are given in the steam railway statistics.

(18) The St. John Ry. has 6.50 miles of second track. It paid \$48,000 in dividends out of net income.

(19) The St. Stephen S.R. operates over 3.00 miles of leased track.

(20) The St. Thomas St. Ry. is owned by the City of St. Thomas, Ont.

(21) The Sandwich, Windsor, and Amherstburg Rv owns and operates the Windsor and Tecumseh Electric Ry. The S.W. and A. Ry. is in turn owned by the Detroit United Ry.

(22) The Sarnia St. Ry. paid \$5,375.96 in dividends out of net income.

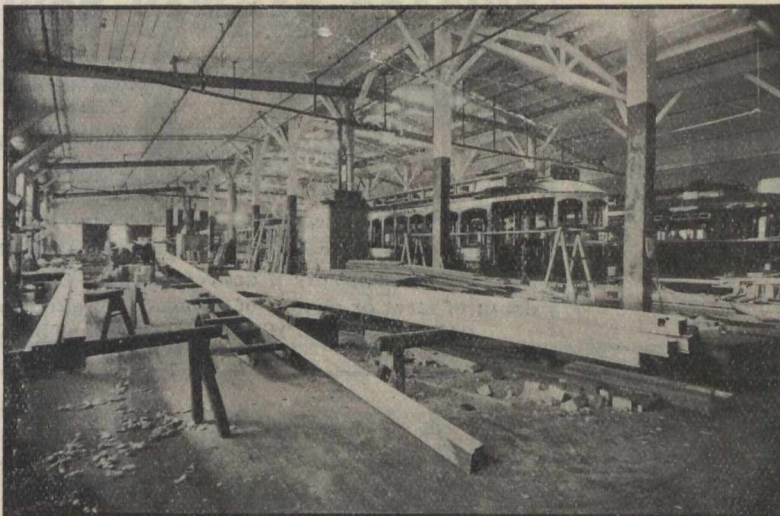
(23) The Sydney and Glace Bay Ry. added \$4,400 to reserves and special charges out of net income. It is owned jointly by the Cape Breton Electric Co. and the Dominion Coal Co.

(24) The Toronto Ry. reports 52,587 miles of "first main track," and 49,805 of "second main track." It added \$150,000 to reserves and special charges account, and paid \$560,000 in dividends out of net income. The T. Ry. owns the Toronto and York Radial Ry.

(25) The Winnipeg St. Ry. paid \$674,076.15 in dividends out of net earnings.

G. P. and H. Street Railway Electric Locomotive.

The Galt, Preston and Hespeler Street Ry. Company operates some 30 cars on a standard gauge interurban line of about 20 miles, connecting the above points, and also Berlin and Waterloo, Ont. The power station and repair shops are located at Preston. The railway traverses a farming country and does a thriving business in both local and through passenger and freight service. Several years since the G.P. & H.R. purchased a Westinghouse quadruple equipment, consisting of four no. 93A direct-current motors with a nominal rating of 60 h.p. each, at 600 volts, for a locomotive similar to the one illustrated here-



Interior B.C. Electric Ry. shop, New Westminster.

with, but of smaller capacity. Much has been said about the impracticability of electric freight haulage, but the steadily increasing sales of slow speed electric locomotives especially designed for freight service and the invariably favorable reports of operation is affirmative evidence of the most forceful nature. There are many interurban electric roads tapping sparsely settled farming districts and outlying towns not favorably located on main steam trunk lines, which could develop a highly profitable express and freight traffic with the aid of a suitable electric locomotive.

The accompanying illustration shows an electric locomotive for freight service recently built by the Baldwin Locomotive Works for the G.P. & H.S.R. The mechanical parts of this locomotive were finished and assembled at the Baldwin Works, and the machine was then shipped to the Westinghouse Electric and Manufacturing Co., by which the electrical equipment was made and applied. This locomotive is of double swivelling truck type, with rigid frame and centrally located cab. The trucks are of the equalized pedestal type, with square wrought iron frames and semi-elliptic springs. Each axle carries a motor, which is wound for 550 volts. The wheels have cast iron centres, with steel tires bolted on. The flanges, journals, and boxes are M.C.B. standard. The wheels were furnished by the Standard Steel Works.

The longitudinal frame sills consist of four 10-inch channels the width over the outside sills being 92 in. The end bumpers are of cast iron. They have heavy lugs which are riveted to the longitudinal sills, and carry M.C.B. automatic couplers.

Steps are provided at each end. The

frame bolster truss members consist of wrought iron plates, 1 3/4 by 15 ins., which are strongly braced. The entire frame construction is most substantial.

The cab is of wood, and is roomy and convenient, with four windows in each side. These, with additional windows in the ends, give the operator an unobstructed view in all directions. Hoods at either end of the cab cover the resistance and other electrical equipment.

The locomotive is fitted with a hand brake on all the wheels, also with the Westinghouse air brake, schedule ET, with motor driven compressor. Sand boxes, with pneumatic sanders, are provided at each end. The equipment also includes a bell and whistle.

The gear ratio of 16.57 gives a normal speed of 8.25 m.p.h., at which speed a tractive effort of 18,200 lbs. is developed. The maximum tractive effort is 25,000 lbs. The locomotive carries a quadruple equipment consisting of four no. 308 B2 interpole direct current railway motors having a nominal rating of 100 h.p. each, or a total of 400 h.p. at 600 volts. These motors are fitted with special windings, adapting them particularly for slow speed locomotive service. Standard nose suspension is used.

The Westinghouse unit switch control is provided. Two master controllers are supplied, one in each end of the cab. These controllers carry only the very small current from a storage battery, for exciting the electro-magnetically actuated needle valve, which admits air at 70 lbs. pressure to the air cylinders of the unit switch. The action of each switch is therefore positive and independent of fluctuations of the line voltage. It not infrequently happens on interurban and stub-end lines that the voltage at points far distant from trolley feeders is as low as 200 volts when the motors are in operation. Under such extreme or even less severe conditions solenoid operated contactors, depending upon the line voltage for their contact pressure, are very apt to give trouble, due to looseness and arcing at the contacts. With air operated switches all such possibilities are eliminated and the greatest reliability under all conditions assured.

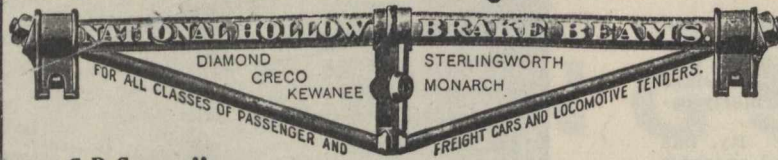
The principal dimensions are as follows:—

Gauge of track	4 ft. 8 1/2 ins.
Wheel base of each truck	7 ft. 4 ins.
Wheel base, total of locomotive	29 ft.
Diameter of driving wheels, outside	36 ins.
Diameter of driving wheels, centres	31 ins.
Journals	5 x 9 ins.
Width	9 ft.
Height to top of cab	12 ft.
Length	36 ft.
Weight	100,000 lbs.



Galt, Preston and Hespeler St. Ry. Electric Locomotive

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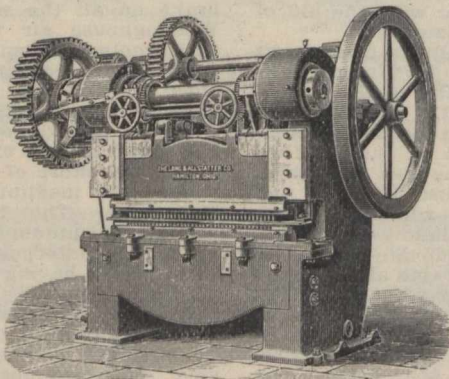
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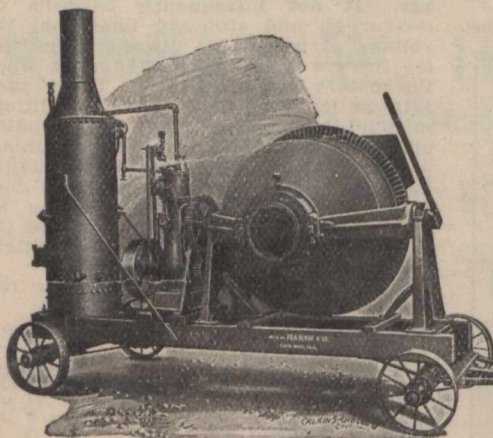
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Harbor and River Works, 1909-'10.

The total expenditure of the Department of Public Works for the year ended Mar. 31, 1910, was \$11,342,365.29. Of this sum there was expended on harbors and rivers \$3,207,233.59; on dredging, plant, etc., \$3,669,030.18; and on telegraphs, \$448,649.70, the remainder being on public works, other than those affecting transportation interests. The total revenue received was \$485,884.96, of which \$45,816.92 was from graving docks, and \$136,747.31 from telegraph lines.

The expenditure on dredging, which covers the provision, maintenance and repairs of dredging plant as well as the actual work done in harbors and along channels, now amounts to nearly one-third of the department's total expenditure. The usual method heretofore used for deepening channels has been that of excavation, and this is the only method in the case of maritime harbors. On the inland lakes and rivers, however, considerable study has recently been given to a more economical and better method; that is, to raise the surface of the water by means of dams and controlling works at the outlets, thus establishing reservoirs for the storage of the surplus water which comes down in the spring, so that later they may be gradually released to increase the low water flow in time of deficiency. The Department has in hand at a number of points improvements of this nature. Comparatively few years ago 14 ft. navigation was ample for all needs, but now 20, 22 and in the larger ports 25 ft. are required. In addition to the ordinary silting in of harbors and rivers, larger vessels, both passenger and freight, of much deeper draught, are being built. Much additional dredging has been rendered necessary through the lowering of the water level, especially on Lake Huron. Although to some extent this is due to the diversion of the Chicago drainage canal, in all probability the main cause is to be found in the improvements which have been made in the Detroit River. Among the places where work has been carried on special mention may be made of the progress of the improvements under way at Fort William, Victoria Harbor, and Tiffin, Ont. At Fort William, access can now be had to the Grand Trunk Pacific Ry. 3,500,000 bush. elevator; the channel leading to the C.P.R. elevator at Victoria Harbor is 125 ft. wide and 1,600

ft. long, while the channel to the G.T.R. elevator at Tiffin has been completed to the required width and depth for its entire length. A new dredge—the Nereus—was acquired for the Maritime Provinces, and after being overhauled at Halifax, she was set to work at Bathurst, N.B. The dredging plant now owned by the Department consists of 42 dredges, six stone lifters, one snag boat and 21 tugs.

The principal expenditures on harbor and river works were made in Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia. Of the works in these provinces the more important have been:—The preparation of several additional shipping berths, the extension of the Sand Point wharf and the erection thereon of a warehouse at St. John, N.B.; the erection of a wharf at Pointe a Carcy, the preparation for slips on the St. Charles River, and building of a deep water wharf at Levis, Que.; the construction of a new western entrance to Toronto harbor, which, when completed, will consist of two parallel piers 220 ft. south of the present western entrance, having a length of 2,200 and 2,500 ft. respectively, between which there will be a depth of 18 ft. of water. For the maintenance of water levels, the principal work in hand is on the Ottawa River. One dam is under construction at the foot of Lake Timiskaming, a second at the outlet of Lake Kipawa, the plans for a third at Gordon creek, another outlet of Lake Kipawa, and plans are in preparation for a fourth at Lake la Quinze.

Winnipeg—Edmonton Navigation.

The possibilities of the development of water transportation in the three prairie provinces has been receiving the attention of the Public Works Department. In the early pioneer days, prior to the advent of the railways, a number of flat-bottomed sternwheel vessels were built and operated on the Saskatchewan River with considerable success. Their operation covered a period from 1875 to 1886, when vessel carriage was gradually abandoned, it having been found cheaper to ship by rail. Very little consideration was given to the opening up of commercial waterways in the Northwest from that time until the fall of 1909, when the Department gave instructions that a careful study of conditions should be begun, and provision made to carry out the necessary surveys and investigations to enable a definite conclusion to be reached as to what was possible in that direction, and to form a fairly approximate estimate of the cost.

In the fall of 1909 a preliminary investigation was made of the Saskatchewan River between Lake Winnipeg and The Pas, a stretch of 146 miles, the most difficult portion to be improved. In the last 23 miles the fall is 101 ft., to improve which will necessitate the construction of two dams and five locks, giving a 9 ft. draught at low water as far as the end of Cedar Lake, which would be the head of deep water navigation and the point of transfer. The approximate estimate of the cost of these improvements is \$3,000,000. An important feature in connection with the scheme outlined is that at one of the proposed dams a water power of some 80,000 h.p. would be created, which would be of immense importance in the establishment of local industries on the

possible milling of wheat and grinding of pulp on the line of the projected railway to Hudson Bay.

Early in the summer of 1910 the investigation of the Saskatchewan River above The Pas was continued, and seven parties were placed in the field under the direction of L. R. Voligny. The work directed to be done consists of a reconnaissance survey of the river from The Pas to Edmonton, 752 miles, and four level parties, two transit parties, and one contour party have been engaged on it. Each level party set out to cover 188 miles of the river, to ascertain the accurate river slope; the transit parties undertook the necessary topographical and hydrographic work in portions of the river requiring special consideration. The greater part of the work of improvement will be required at La Colle falls, some 23 miles below Prince Albert, the work extending 12 miles below to The Forks, where the north and south branches of the Saskatchewan meet. This stretch of the river is very crooked and narrow, containing no less than 15 rapids, and it is the most difficult and dangerous part of the North Saskatchewan River to navigate. Other portions of the river requiring improvement will be the Cadotte, Nipawin and Tobin rapids. The work, which, it is hoped to complete during the season, is to complete the levels of 530 miles of the river, and the making of special local surveys to ascertain what wing dams or other structures will be necessary to procure a navigable channel. The Saskatchewan River is an alluvial stream of rapid flow, and is obstructed by shifting sandbars; the latter presenting the greatest impediment to navigation. Above Cedar Lake, the river seems to be adapted for only shallow draught navigation of from four to five feet. This, however, will be sufficient for vessels of the stern-wheel type, and it is thought that the cost of securing navigation for such craft will not be very great.

An important link in this chain of water communication, says the Deputy Minister, has already been secured by the construction of the St. Andrews lock and dam, on the Red River, below Winnipeg, and 28 miles above Lake Winnipeg, which were formally opened for traffic July 14. This lock and dam afford, at periods of lowest water observed, uninterrupted navigation for vessels drawing up to nine feet of water between Winnipeg and points on Lake Winnipeg, which has an area considerably larger than that of Lake Ontario. The lock has an effective length of 200 ft. and a width of 45 ft., large enough for a vessel of 1,600 tons capacity. The maximum lift will be 21 ft. at the period of lowest water. The lock possesses all the latest features, including automatic self-balanced opening and filling valves, which are being used for the first time in Canada. The lift is obtained by the construction of a movable dam, consisting of a fixed substructure or dam of concrete and a series of steel truss bridges resting on piers, from which are operated a number of frames on which roll curtains of wooden laths. This movable dam is the first of its kind to be built on the continent. "With the development of navigation on the Saskatchewan," the Deputy Minister says in conclusion, "Canada would stand unique among the countries of the world in the matter of water transportation; 30 ft. navigation (soon to be 35) from the sea to Montreal, a distance of nearly 1,000

miles; 14 ft. from Montreal to Fort William, somewhat over 1,200 miles; 9-ft. navigation from Winnipeg to the head of Cedar Lake, and from there to the Rocky Mountains, from 4 to 5-ft. navigation, over a distance of 1,100 miles, a total of approximately 3,300 miles of actual inland waterway, traversing the greater part of the northern half of this continent, the only break in the chain being the 400 mile stretch from Fort William to Winnipeg."

In connection with the question of the building of a railway to Hudson Bay, the Department made an investigation to determine the possibility of establishing navigation on the Nelson River between Lake Winnipeg and Hudson Bay. The report shows that although perfectly feasible, it would be an undertaking of considerable magnitude, very much like the proposed Georgian Bay canal. This proposed waterway has a length of 440 miles, with a fall of 758 ft., whereas the Nelson River channel would be 430 miles long, with a fall of 700 ft.

The St. Lawrence Navigation Season.

The Montreal Harbor Commission revenue for the 1910 season was \$404,233.13, against \$350,883.65 for 1909. Of these amounts \$256,500 was received from imports, \$89,000 from exports, and \$58,733.13 from local traffic, in 1910, against \$202,500 from imports, \$93,500 from exports, and \$54,833.65 from local traffic, in 1909. There was an increase in the number and tonnage of vessels using the port, the figures being 747 vessels with a tonnage of 2,234,722 for 1910, against 669 vessels and 1,906,922 tonnage for 1909. The season opened Apr. 11, and closed Dec. 2, the steamboat Carleton passing through to Quebec on that date, while the last ocean-going vessel was the s.s. Bornu, on Dec. 1.

A number of improvements were completed during the year, the chief being the grain elevator opposite the Jacques Cartier pier, and an extension of the grain conveyor system. The elevator is 314 by 100 ft., with a height above wharf level of 220 ft., and with concrete foundations 23 ft. below the wharf level. It has a capacity for 1,772,000 bush., and can receive grain from seven cars at a time on each of the four tracks running through the elevator, making 240 cars a day of 10 hours. The reconstruction of the Victoria wharf, making it a high instead of a low level wharf, the elevation of the railway tracks from Bonsecours market to Molson's creek, and a large amount of dredging work were also completed.

The C.P.R. reports that about 15,000 passengers were carried eastward on its vessels, and about 46,000 westward, a considerable increase, while in the freight department, 363,392 tons were carried, against 376,300 tons in 1909. The Allan Line carried 14,342 passengers eastbound and 62,785 westbound, against 14,843 eastbound and 37,141 westbound in 1909. In freight it carried 235,766 tons outward and 150,389 inward in 1910, against 251,850 tons outward and 127,541 inward in 1909. The Canadian Northern Steamships carried 9,428 passengers westbound and 4,135 eastbound, the two vessels run making seven round trips each. The White Star-Dominion Line carried about 15,000 more passengers than in 1909, and made an increase in its westbound freight business, but a decrease in eastbound traffic. The Donaldson and Thomson Lines, and Head Line also report considerable increases over previous seasons in westbound traffic, but the eastbound traffic has shown a slight decrease in each case.

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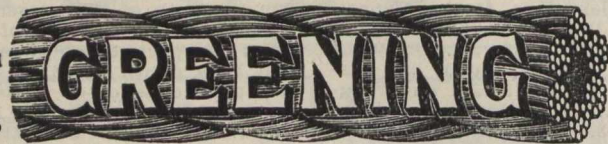
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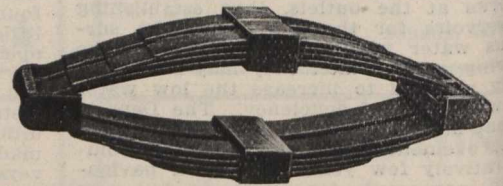
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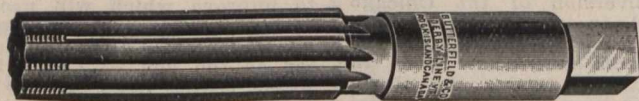
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St. Lawrence and Chicago Steam Navigation Co.

This company has declared a dividend of 3% for the year 1910, payable Jan. 2, 1911, the reduction being attributed to the unsatisfactory earnings during the year.

Previous yearly dividends from 1901 to date have been as follows: 1901, 15%; 1902, 26 2-3%; 1903, 10%; 1904, 8%; 1905, 1906 and 1907, 10% yearly; 1908, 7%; 1909, 8%.

In 1909 the steamship earnings were \$112,062.44, and interest \$868.36, total, \$112,930.80. The cost of management was \$13,507.07, leaving net earnings of \$99,423.73, deducting the 8% dividend, \$68,800, left \$20,623.73, which added to \$102,383.55 brought forward Jan. 2, 1909, made a balance of \$133,007.28 at credit of profit and loss Jan. 2, 1910.

Canadian Marine Investigations.

An English marine paper has recently criticized the way in which official investigations into shipping casualties are conducted in Canada, especially in cases in which ships registered in the United Kingdom and officered by men holding Board of Trade certificates are concerned. It alleges that when a preliminary enquiry is ordered by the Government, the wreck commissioner goes aboard a vessel and holds a sort of informal enquiry, getting statements from officers and men, though not under oath. It further alleges that when the time comes for the real official enquiry to be held, the same official, who has already held the informal enquiry, is found to

be sitting on the bench of the court, and, with the assistance of two assessors, acting as judge in the matter. The Mercantile Marine Association has taken the matter up in England, and, having referred it to the Board of Trade, that body asked to be provided with specific instances in which the irregularities complained of occurred. In reply, the association quoted the cases of the s.s. Aoea and the s.s. Montezuma, and in both instances it is alleged that Capt. L. A. Demers, Wreck Commissioner, not only held the preliminary enquiry, but also afterwards acted as arbiter of the points in dispute.

The practice complained of is not of at all a serious nature, even if there is any valid objection at all which can be urged against it. The preliminary informal enquiry referred to is merely for the information of the Minister of Marine, to guide him as to whether an informal investigation should be held or not. As a matter of fact, it often happens that other competent officials are not available to make the preliminary enquiries. Possibly when they are available it would be better to have the informal enquiry and the later investigation in which judgment is given not both participated in by the same official, but there does not appear to be any evidence that any injustice has resulted from the practice complained of and the complaints has probably been made by some dissatisfied individual.

Atlantic and Pacific Ocean Marine.

The Canadian Northern Steamships' s.s. Royal Edward, created another rec-

ord recently, in arriving in Halifax, N.S., from Bristol, Eng., in 5 days and 10 hours.

The All-Red Steamship Co., of Montreal, is seeking Dominion legislation to empower it to operate vessels from any Canadian ports on the Atlantic and Pacific.

Press reports from the West Indies state that all the local Governments are opposed to the discontinuance of the direct steamship line with Great Britain, and the substitution of a line by way of Canada.

The steam tug Gopher, which has been built at Garston, Eng., for the C.P.R., for use in connection with its vessels while in the Mersey, recently underwent her trials there, with satisfactory results.

A St. John, N.B., press report states that the Allan Line Siberian, will shortly be offered for sale, and if not sold, she will be scrapped, together with a number of other Allan Line vessels. Her place on the Newfoundland service has been taken by the s.s. Numidian.

A. Piers, Manager C.P.R. steamships, left Canada for Liverpool, Eng., Dec. 20, after a conference with the company's officials, regarding the proposed additional vessels, for its ocean fleet. It is reported that the two vessels which the company has in contemplation will be placed in the Pacific service, and that construction will be commenced at once.

The Uranium Steamship Co. was recently chartered at Halifax, N.S., with having wilfully and knowingly attempted to land 15 passengers in Canada, suf-

LIST OF STEAM VESSELS REGISTERED IN CANADA DURING NOVEMBER, 1910.

Name	No.	Where and When Built.	Engines, etc.	Length	Breadth	Depth	Gross Tons	Reg. Tons	Port of Registry	Owners
Accommodation	126,460	Sorel, Que., 1910.	Screw 48 n. h. p.	151.5	36.2	7.4	409	278	Sorel, Que.	H. Beauchemin, Sorel, Que.
Annacis	126,790	New Westminster, B.C., 1910	" 16 "	63.4	17.5	6.9	56	81	New Westminster, B.C.	J. Wm. Pike, New Westminster, B.C.
B. White (1)	126,274	Ballard, Wash., 1908	" 2 "	42.9	8.9	2.7	14	10	" "	H. Rushton, New Westminster, B.C.
Bawatin (2)	126,867	Detroit, Mich., 1875	" 28 "	110.0	29.0	11.4	246	167	Sault Ste. Marie, Ont.	International Transit Co., Sault Ste. Marie, Ont.
Edward Alfred	126,923	Chicoutimi, Que., 1910	" 32 "	85.5	21.0	7.5	139	51	Quebec, Que.	La Cie. Generale du Port de Chicoutimi, Que.
Emma Mac	130,266	Kippewa, Que., 1910	" 24 "	78.8	18.0	5.6	57	36	Ottawa, Ont.	J. Lumsden, Ottawa, Ont.
Flying Spur	126,788	Peterboro, Ont., 1909	" 18 "	38.8	8.8	4.0	10	7	New Westminster, B.C.	L. C. York, Steveston, B.C.
Harwood	130,372	Douglastown, N.B., 1910	" 2 "	36.0	9.0	3.4	23	14	Peterboro, Ont.	Minister of Railways and Canals, Ottawa
J. C. Miller	126,610	Winslow, Wash., 1907	" 12 "	54.0	14.9	5.0	33	15	Chatham, N.B.	J. C. Miller, Millerton, N.B.
Kleetsa (3)	130,301	Margaretville, N.S., 1910	" 3 "	43.8	10.5	5.7	18	12	Vancouver, B.C.	E. P. Davis, Vancouver, B.C.
Margaretville	126,804	Margaretville, N.S., 1910	" 19 "	93.3	20.8	8.6	107	39	Annapolis Royal, N.S.	Margaretville Steamship Co., Margaretville, N.S.
Mio	126,792	Steveston, B.C., 1910	" 10 "	34.4	8.0	3.0	6	4	New Westminster, B.C.	B. Hamade, Steveston, B.C.
Motor Queen	(4) 130,322	Alexandria Bay, N.Y., 1904	" 10 "	50.4	10.8	4.8	20	17	Kingston, Ont.	Queen City Oil Co., Toronto
Nishiu	126,787	Steveston, B.C., 1908	" 15 "	38.5	9.3	3.0	8	6	New Westminster, B.C.	J. Stevens, Salt Spring Island's, B.C.
Peach	130,303	Vancouver, B.C., 1910	" 4 "	39.6	10.4	5.3	18	12	Vancouver, B.C.	G. H. Deighton, Van Anda, B.C.
Prince Rupert	124,260	Dumbarton, Scotland, 1908	" 170 "	249.0	43.0	19.5	1908	1172	Kingston, Ont.	Kingston Shipping Co., Kingston, Ont.
Scotsburn	123,903	Mahone Bay, N.S., 1910	" 32 "	116.8	22.2	9.9	224	119	Halifax, N.S.	Halifax and Glace Bay Steamship Co., Halifax, N.S.
Soras	124,793	Eburne, B.C., 1910	" 10 "	28.5	7.9	2.5	6	4	New Westminster, B.C.	H. R. Andrews, Eburne, B.C.
Stormalong	130,392	Lachine, Que., 1910	" 3 "	28.0	6.0	2.5	3	2	Montreal	E. G. Hurtubise, Grand Piles, Que.
Syra	130,302	Vancouver, B.C., 1910	" 1 "	30.0	8.5	4.6	8	6	Vancouver, B.C.	P. H. Crause, Vancouver, B.C.
Tsaru	126,784	Steveston, B.C., 1910	" 15 "	39.0	9.3	3.0	9	6	New Westminster, B.C.	G. Isomura, Steveston, B.C.
Uashimo	126,789	" " " " " "	" 21 "	35.3	10.4	4.9	12	8	" "	Crescent Oyster Co., Vancouver, B.C.
Vaquero	130,300	Vancouver, B.C., 1910	" 2 "	31.8	7.7	4.6	9	6	Vancouver, B.C.	A. H. Nichol, Vancouver, B.C.

(1) Formerly Lillian. (2) Formerly Clansman. (3) Formerly Fortune. (4) Formerly Supply.

LIST OF SAILING VESSELS AND BARGES REGISTERED IN CANADA DURING NOVEMBER, 1910.

Name	No.	Where and When Built	Rig	Length	Breadth	Depth	Reg. Tons	Port of Registry	Owners
Alda E.	122,039	Middle West Pubnico, N.S., 1908	Sloop	31.0	14.0	6.6	10	Weymouth, N.S.	P. O. Doucet, West Pubnico, N.S.
Alika P.	130,332	Lameque, N.B., 1910	Schr.	36.0	12.0	5.0	15	Chatham, N.B.	Z. G. J. Paulin, Lameque, N.B.
Dredge Barnston	126,791	New Westminster, B.C., 1910	Dredge	60.0	20.0	4.7	52	New Westminster, B.C.	S. Huff, M.O., Ladner, B.C.
F. L. No. 1.	130,393	Pictou, N.S., 1902	Scow	52.0	22.0	6.4	76	Montreal	F. Lemoine, Montreal, Que.
F. L. No. 2.	130,394	St. Pierre, Miquelon, 1901	"	46.0	20.0	6.8	64	"	" " "
F. L. No. 3.	130,395	" " " " " "	"	46.0	20.0	5.7	53	"	" " "
F. C. Lockhart	126,018	Annapolis Royal, N.S., 1910	Schr.	125.0					
Floating Crane No. 1.	126,770	Barrow, Eng., 1908	Scow	200.5	43.1	9.2	268	Annapolis Royal, N.S.	F. W. Pickels, M.O., Annapolis Royal, N.S.
L. C. & S. No. 7.	130,396	Montreal, 1910	"	49.0	16.0	4.6	37	Montreal	Harbor Commissioners of Montreal
Maggie Swift	130,333	Point Sapin, N.B., 1907	Schr.	32.0	10.0	5.0	16	Chatham, N.B.	L. Cohen, Montreal, Que.
Malden	130,381	Chatham, Ont., 1886	Scow	77.6	20.0	5.0	65	Chatham, N.B.	A. A. McGrath, Escuminac, N.B.
Nellie J. Banks	126,663	Allendale, N.S., 1910	Schr.	57.3	17.8	7.0	35	Amherstburg	J. S. McQueen Amherstburg, Ont.
W. M. Richard	126,598	Port Greville, N.S., 1910	"	139.4	33.6	11.5	323	Shelburne	A. M. Banks, Halifax, N.S.
Westonneau	130,391	Grand Piles, Que., 1910	Barge	42.0	7.4	1.8	6	Parrsboro	A. D. Mills & Sons, Annapolis Royal, N.S.
William C. Smith	126,818	Lunenburg, N.S., 1910	Schr.	104.8	26.0	10.6	99	Montreal	E. G. Hurtubise, Grand Piles, Que.
								Lunenburg	W. C. Smith, M. O., Lunenburg, N. S.

fering from trachoma. The Uranium Steamship Co., operates the Canadian Northern Steamships' s.s. Volturmo, under charter.

With regard to the recent report appearing in the London, Eng., press, and copied to a considerable extent in Canada, that "the Grand Trunk Ry. of Canada are stated to have placed an order with a Glasgow ship builder for a fast and powerful steamer," we are officially advised that there is no foundation whatever for the report.

The White Star-Dominion Line's s.s. Laurentic, which recently arrived at Portland, Me., on her first western trip since the closing of the St. Lawrence, has been transferred to the Liverpool-New York route for the winter. The service between Great Britain and Portland, Me., via Halifax, N.S., is being continued by the s.s. Megantic and other of the company's vessels.

The Donaldson Line has awarded a contract for the building of another vessel, on the Clyde, Scotland, for its Canadian service. She will be 470 ft. long, 55 ft. wide, with accommodation for 300 cabin and 600 steerage passengers. She will be equipped with a wireless telegraph system, and all modern facilities for cold storage, and the rapid handling of cargo. It is expected that she will be ready for service by Jan 1912, when a weekly passenger service between Montreal and Glasgow will be inaugurated.

The Allan Line announces the purchase of the Holland-America Line's s.s. Statendam, which it has decided to re-name Scotian, and which will replace the s.s. Pretorian on the Montreal-Glasgow route. The latter vessel will replace the Pomeranian on the London and Havre service. The Statendam was built at Belfast, Ireland, in 1898, and is equipped with two triple expansion engines, with cylinders 27½, 45½ and 75½ ins. diam., by 54 ins. stroke, developing 1126 h.p., and driving twin screws. Her dimensions are, length, 515.3 ft., breadth, 59.8 ft., depth 23.8 ft.; tonnage, 10,491 gross, 6,701 register.

The Kosmos and Jebsen Steamship Cos. have announced their withdrawal from the British Columbia-Mexico service in connection with the Tehuantepec Ry., leaving the route clear for the Canadian Mexican Pacific Steamship Co., which was organized last year, and which has a Government subsidy for such service. This company is the successor of the Canadian Mexican Steamship Co., which operated the steamships Georgia and Lonsdale, under charter, on the route, for two years. Since the organization of the present company, with Capt. T. H. Worsnop as Manager, the s.s. Lonsdale has been purchased and the s.s. Henley has been chartered, both now being operated between Vancouver and Salina Cruz. Press reports state that the company is negotiating for the purchase of another vessel, owing to the increase in the traffic.

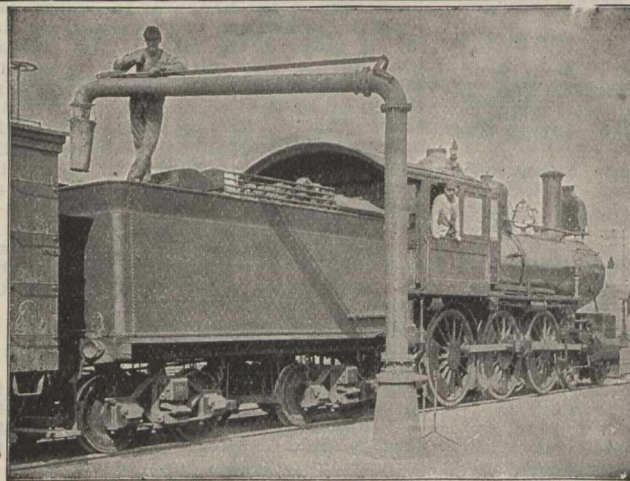
Maritime Provinces and Newfoundland.

Capt. D. McKinnon, a well known sailing captain, died at Halifax, N.S., recently, aged 72.

The Department of Public Works will receive tenders to Jan. 4, for the building of an extension to the breakwater at Margaree harbor, N.S.

The Halifax Graving Dock Co. is reported to have decided to lengthen its dry dock by 50 ft., at an approximate cost of \$400,000. This, it is stated, will enable the company to apply for an increased subsidy from the Government.

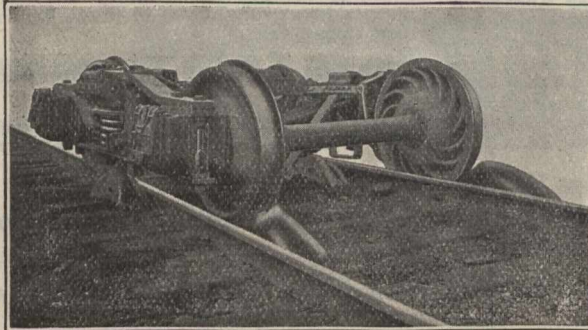
The s.s. Anticosti, which is being built at Sunderland, Eng., for the Dominion Steel Corporation charter, was launched



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there recently. She has been specially designed for the steel trade, and is 389 ft. long by 52 ft. beam.

The St. John Steamship Co., recovered \$120.30 from the Star Line Steamship Co., at St. John, N.B., Dec. 7, for breach of agreement and wharfage and dockage dues, and judgment was also entered for defendant on a counterclaim for \$18.

The Dominion Government has placed the order for the construction of a steamboat for the lighthouse and buoy service in the St. Lawrence, at Collingwood, Ont. A full description of this vessel was given in our Nov., 1910, issue.

The Margaretville Steamship Co., has registered its steamship Margaretville, which was built at Margaretville, N.S., in 1910. Her dimensions are, length 93.3 ft., breadth 20.8 ft., depth 8.6 ft.; tonnage, 107 gross, 39 register. She is equipped with engine of 19 n.h.p., driving a screw.

The Dartmouth, N.S. city council has decided to award the contract for the construction of a third ferry steamer, to Mackie and Baxter, Glasgow, Scotland, on either of two estimates, which the special committee may decide. The new vessel will be of the type, but on more up to date plans, of the ferry steamer Chebucto. Larger propellers and a stronger shaft are to be used.

The Grand Falls Co. has been incorporated under the Dominion Companies Act, for the purpose of developing electric power at Grand Falls, N.B., to distribute power, and to carry on lumbering and other businesses in connection therewith, including the operation of steam and other vessels, or to hold shares in vessels or navigation companies. The capital is \$1,200,000, and the offices at Grand Falls, N.B. The provisional directors are:—Sir Wm. C. Van Horne, H. S. Holt, Montreal; R. Proctor, Proctor, Vt.; G. F. Underwood, B. E. Kingman, New York City; J. Robinson, Millerton,

The Sydney, N.S., city council adopted a resolution, Dec. 9, to enter into an agreement with A. C. Ross, of Sydney, for the construction of a floating dry dock with a capacity for lifting vessels of at least 15,000 tons, at a cost of not less than \$1,000,000; a ship repair and building shop and berth for man-of-war or merchant vessels up to 10,000 tons capacity, at a cost of not less than \$750,000; a modern wrecking plant, at a minimum cost of \$175,000. The city, on its part, agrees to assess the company on \$100,000, exclusive of school and sewer rates for 20 years and supply water at 6c. per 1,000 gallons, and also to pay a bonus at the rate of 1½% on the cost, up to \$1,500,000, including cost of site, each year for 20 years. The carrying out of the agreement is subject to the granting of a Government subsidy under the act granting aid in the construction of such works.

Province of Quebec Marine.

The appeal in the name of W. J. Ray, against the judgment of the lower courts, that the agreement between the city of Quebec and the Levis Ferry Ltd., was drawn up according to the statute and the city bylaws, was heard during December.

The steamboat City of Toronto, plying on the Richelieu River, between Montreal and Chambly, which ran aground at Longue Pointe, towards the end of Nov. after being refloated was taken to the canal dry dock, where repairs will be undertaken during the winter.

Capt. H. St. G. Lindsay, Chief Examiner of Masters and Mates, recently made arrangements in Montreal for the establishment of a school of instruction

there, and it is said that a room will be located for the purpose in the Technical School, now about completed.

A deputation from the Quebec Board of Trade waited on the Dominion Premier recently to urge that the dredging of the St. Charles River be undertaken at an early date, and that the Marine Department's Quebec depot be moved from the present site to the St. Charles River, and a wharf and new buildings erected there.

On the appeal of the Quebec and Levis Ferry Co., and W. J. Thompson, Manager of the Company, against the recent judgment condemning the company to a fine of \$500, and W. J. Thompson to 48 hours imprisonment and a fine of \$100, for contempt of court, the Judges of Appeal at Quebec, have decided that the fines must be paid, and the sentence of imprisonment has been quashed.

The Government dredge Rideau, which has been working on a channel through Sawlog Bay on the Rideau River, was taken off the work towards the end of Nov. for the season. When completed, the channel will reduce the distance between Poonahamalee locks and the Rideau ferry by about two miles. It is expected that the work will be finished early in the spring.

The Montreal Harbor Commissioners' programme for the winter includes the completion of negotiations for the construction of dry docks, etc., the preparation and submission of plans for four additional sheds on the Tarte pier, and for the upper roadways and elevators on the upper floors of the permanent steel sheds, and the adjusting of some disputes with the city relating to the Elgin sewer, and police and fire protection at the wharf.

The annual trip to the island and outer ports of the Gulf of St. Lawrence, hitherto undertaken by the Government s.s. Montcalm, has, this winter been taken by the Government s.s. Montmagny. She sailed from Quebec, Dec. 9 with mails and supplies for Seven Islands, Clarke City, Ellis Bay, East Point, Anticosti, Harrington, and Magdalen Islands, and on completion of the

trip, went to Halifax, where she was berthed for the winter.

The claim of the Canadian Electric Light Co., against the s.s. Crown of Aragon, for \$10,000 for damages caused to its cable near Quebec, by the dragging of the vessel's anchor, was dismissed in the Quebec Admiralty Court, recently. The judgment declared that the company obtained permission to lay the cable at its own risk, and that the lowering of the anchor was not only within the rights of the vessel, but in order to prevent a collision, it was a duty.

In reply to questions in the House of Commons, Dec. 5, relating to recent reports connected with the proposed dry dock at Levis, the Minister of Public Works stated that detailed drawings for the construction of a dry dock at Levis had been filed, but that the company's application for a subsidy was not, in accordance with the provisions of the statute, and it had been informed that the Government was ready, at any time, to enter into a contract with the company, under the terms of the Dry Dock Subsidy Act.

The Fraserville Navigation Co., which has been operating the steamboat Canada, on the Gaspé and Campbellton route under a contract with the Dominion Government, has gone into liquidation. In reply to questions in the House of Commons, Dec. 1, the Premier said the contract did not expire until 1912, and was for \$15,000 a year for a full service. During 1909-10, there was deducted \$2,125, and in the current year there had already been deducted for inefficient service \$2,000. Complaints had been made as to the carrying out of the contract and the company had been notified that the conditions must be altered.

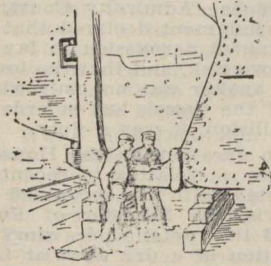
The Governor in Council has approved the Quebec Harbor Commissioners bylaw 109, in place of bylaw 100, which has been repealed. The new bylaw provides that the wintering tariff on vessels of every description shall be at the rate of ½c. a square foot, space to be measured by the registered measurements, where available, or by actual size. The wintering season will commence Dec. 1, each year, and will end, not

Lake Grain Shipments, 1910 Crop.

The following statement, prepared by F. E. Gibbs, Grain Inspector, Fort William, Ont., shows the bushels of grain shipped from the different elevators at Fort William and Port Arthur of the 1910 crop, from Sept. 1 to close of navigation, Dec. 6, 1910, with ports of destination. The last two figures in each column after the period, represent lbs.

	SCREENINGS.	WHEAT	OATS	BARLEY.	FLAX
CANADIAN PORTS					
Collingwood		608,241.10			
Depot Harbor		460,000.00	317,465.10		
Goderich	1,145.40	3,102,528.40	486,393.32	24,500.00	26,824.55
Hamilton		80,896.00			
Kingston		4,104,913.40	890,545.33	128,281.41	27,473.51
Montreal		2,190,912.20	1,385,949.05	95,108.26	94,588.05
Midland		436,854.00	50,169.13		
Meaford		380,000.00			
Owen Sound		677,976.20	967,846.00	25,000.00	
Prescott		27,878.20			10,443.82
Port Colborne		2,027,864.50			
Port Edward		1,298,702.00	512,958.20	44,001.08	63,091.13
Port Stanley		99,693.20	30,360.00		
Quebec			87,190.23		
Tiffin		5,782,040.20	359,916.17	359,916.17	
Thorold		229,339.20			
Victoria Harbor		906,957.50	244,878.06	244,878.06	
Walkerville		232,811.50			
	1,145.40	22,607,610.00	5,834,673.23	406,802.37	302,421.44
FOREIGN PORTS					
Buffalo		13,374,667.30	429,324.28	455,667.47	1,744,686.33
Cleveland					80,000.00
Chicago	510,580.20				6,662.48
Duluth	75,883.10				
Erie		251,885.00			
Port Huron		612,595.40			22,835.32
		587,559.10	36,846,758.10	5,763,993.17	862,470.36
		284,967.40	23,371,662.20	5,438,492.30	406,802.37
		302,591.30	13,475,095.50	325,505.21	455,667.47
					1,751,349.25
CANADIAN VESSELS.					
FOREIGN VESSELS.					
1910	587,559.10	36,846,758.10	5,763,993.17	862,470.36	2,076,606.45
1909	330,639.50	42,886,355.50	9,520,550.17	1,847,576.10	2,016,180.16

LARGE MARINE REPAIRS EXECUTED BY CONTRACT



We can usually execute the repairs without removing the broken sections from their position. All our appliances are light and portable and may be brought to the job. The only outside power required is a small supply of compressed air for the operation of the pre-heating torch.

Quotations promptly rendered on receipt of a blue print or sketch showing exactly what is to be done.

Write for Pamphlet No. 20-N, which gives full information.

Goldschmidt Thermit Co.

W. C. CUNTZ, GENERAL MANAGER.
 103 Richmond St., W., Toronto, Ont.
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GRAIN ELEVATORS

CONCRETE—STEEL—WOOD

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CHICAGO, ILL.

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Locomotive Packings

Throttle Sets

Air Pump Sets

Cold, snappy weather does not show up escaping steam where Anchor Packing is used because "THE ANCHOR HOLDS."

The Anchor Packing Co., of Canada
 LIMITED

404 St. James St.,

MONTREAL, P.Q.

NOTICE.—The Canadian Pacific Railway Company will apply to the Parliament of Canada, at its present session, for an Act authorizing it to construct the following lines of railway:—

1. From a point at or near Wilkie on the company's Pheasant Hills Branch in a southerly and southeasterly direction to a junction with the company's Moose Jaw Branch in Township 30, Range 16 or 17, west 3rd Meridian, Saskatchewan.
2. From a point at or near Kerr Robert on the company's Moose Jaw Branch in a northeasterly and easterly direction to a junction with the line described in paragraph 1 in Township 38 or 39, Range 19 or 20, west 3rd Meridian, Saskatchewan, and for other purposes.

W. R. BAKER,

Secretary.

Dated at Montreal, 1st December, 1910.
 Andrew T. Thompson,
 Ottawa Agent.

IMPERIAL BANK OF CANADA

Capital Authorized\$10,000,000.00
 Capital Subscribed 5,890,000.00
 Capital Paid Up 5,550,000.00
 Reserve Fund 5,550,000.00

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AGENTS—London, Eng., Lloyds Bank Limited; New York, Bank of the Manhattan Co.

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SAVINGS DEPARTMENT—Interest allowed on deposits from date of deposit.



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FOR SALE

30-ton Electric Locomotive, standard gauge, good order; Baldwin 8-wheel Locomotive, standard gauge, cyls. 16x24, air, good order; 42-ton Shay Locomotive, standard gauge, fine order; Davenport No. 8-ton Dinkey, built 1904; 42-in. Gauge Dinkey Locomotive, cylinders 10x14; 24-in. Gauge Locomotives and Ore Cars; 5 New Return Tubular Boilers, 150 h.p.; Several Lake Dredges. All above Canadian delivery. Write us if you want to buy or sell.

THE MALES CO.,

1508 First National Bank Bldg.
 CINCINNATI, O.

NOTICE is hereby given that the Pacific Northern and Omineca Railway Company will apply to the Parliament of Canada, at the present session thereof, for an Act extending the time within which it may construct the lines of railway which it has been authorized to construct by chapter 90 of the Statutes of Canada, 1902, as amended by chapter 141 of the Statutes of Canada, 1906, and for other purposes.

W. H. BIGGAR,

Solicitor for applicants.

Dated at Montreal, this 26th day of November, A.D. 1910.

later than Apr. 30. Vessels berthing in the Louise dock, or other docks under the Commissioners' control, must have their positions assigned by the harbor master, and occupy the same at their own risk, and must not be cut out without consent in writing.

Revillon Bros., Ltd., is applying to the Dominion Parliament for re-incorporation under the name of Revillon Bros. Canada, Ltd., to carry on a general trading business.

La Compagnie Generale du Port de Chicoutimi has registered its steamboat Edward Alfred, which was built at Chicoutimi in 1910. She is a screw driven vessel with engine of 32 n.h.p. Her dimensions are: length 85.5 ft., breadth 21 ft., depth 7.5 ft.; tonnage, 139 gross, 51 register.

Ontario and the Great Lakes.

C. Quackenbush, one of the oldest tug captains on the Welland Canal, died at Port Dalhousie, recently, aged 67. He had been engaged on tugs for 40 years.

During the past season, 2,656 vessel passages were recorded through the Welland canal. This is an increase of nearly 600 over the previous year, which was a record.

We are officially advised that there is nothing whatever in the report that the Merchants' Mutual Line will operate passenger vessels, between the head of the lakes and Montreal, next season.

The amount of grain received at Kingston, during the 1910 season was 14,953,418 bush., of which, 13,889,560 bush. were for Montreal. This is stated to be a season's record for the port.

Application is being made to the Ontario Legislature for confirmation of the city of Kingston's bylaw, passed Mar. 28, 1910, to partially exempt the Kingston Shipbuilding Co.'s property from taxation.

The Northern Navigation Co.'s s.s. Harmonic, during the past season, made 31 trips to the head of the lakes, and completed 41,200 miles, which is claimed to be a record.

The Toronto Ferry Co.'s tender for the lease of the ferry wharves, for the year, at \$5,050, and the Turbine Steamship Co.'s tender for its wharf, at \$2,000, have been accepted by the Toronto board of control.

The Montreal city council recently passed a resolution in favor of the proposed Georgian Bay canal and calling upon Parliament to carry out "this essentially national enterprise with the shortest possible delay."

The Hamilton, Ont., city council has petitioned the Minister of Public Works to widen and deepen the canal at the beach there, to allow of larger vessels passing through, thus cheapening rates and benefitting the city generally.

N. L. Martin & Co., as assignees of the Montreal River Transportation Co., in liquidation, will receive tenders to Jan. 10, for the assets of the company, consisting of five motor boats, one scow, one small boat, a quantity of lumber and supplies.

W. E. Bishop, General Manager, and E. Callaghan, Local Manager, Hamilton, of the Hamilton Steamboat Co., were each presented with a diamond and amethyst tie pin, recently, by the Toronto Police Amateur Athletic Association, in recognition of their support.

Press reports state that on the reopening of navigation, some changes will take place in the control of a number of docks, wharves, etc., whereby these will be transferred from the jurisdiction of the Public Works Department to that of the Marine Department.

The steam tug Despatch was towed into Port Bruce recently by the ferry steamboat Marquette and Bessemer No. 2, with 4 ft. of water in her hold. The tug sprang a leak, and the crew were about to abandon the boat, when the ferry sighted her and took her in tow.

The plans for the construction of a dry dock and shipbuilding plant at Owen Sound will shortly be submitted to the Government for approval, in connection with the application for a subsidy under the act granting aid for the construction of such public works.

Press reports from Port Arthur, state that the Canadian Northern Ry., intends spending about \$300,000 in the extension of the coal handling plant there, next summer. It is said that additional unloading machinery, derricks and yard room will be provided.

Deputations connected with the various shipping interests concerned, waited on the Dominion Premier Dec. 12 and 13, to state their views on the construction of the proposed Georgian Bay canal and the enlarging of the Welland canal.

The steam tug Jean, owned in Amherstburg, was burnt there, Dec. 11. She was built at Buffalo, N.Y., in 1889, and was a screw driven vessel with engine of 4 n.h.p. Her dimensions were, length, 49 ft.; breadth, 12.4 ft.; depth, 4.4 ft.; tonnage, 21 gross, 14 register.

The Kingston Shipping Co., Kingston, has transferred its s.s. Prince upert from

the British to the Canadian register. She was built at Dumbarton, Scotland, in 1908, and is screw driven, with engine of 170 n.h.p. Her dimensions are, length 249 ft., breadth 43 ft., depth 19.5 ft.; tonnage, 1908 gross, 1172 register.

The Great Lakes and St. Lawrence Transportation Co.'s steamboat John Sharples, which ran ashore at Gull Island shoals, near Cape Vincent, Lake Ontario, Dec. 8, was reported to be full of water and in bad condition, Dec. 13, and attempts at salving her were abandoned.

The Inland Lines steamboat Emperor was launched at Collingwood, Dec. 17. Her dimensions are: length 525 ft., beam 56 ft., depth, molded, 31 ft. She has been built of steel, with side ballast tanks and double bottom, and has been designed on the arch and web system of construction, with 30 cargo hatches.

The International Transit Co., Sault Ste. Marie, has recently purchased in the U.S., the steamboat Clansman, which it has registered in Canada, and re-named Bawating. The vessel was built in Detroit, Mich., in 1875, and is screw driven, with engine of 28 n.h.p. Her dimensions are, length, 110 ft., breadth 29 ft., depth 11.4 ft.; tonnage, 246 gross, 167 register.

A deputation from Kingston, headed by Hon. W. Harty, waited on the Minister of Railways and Canals, Dec. 8, to urge the building of dams along the Rideau Lakes to hold back the water for the dry season, for the betterment of navigation, and to ensure its perman-

SAULT STE. MARIE CANALS TRAFFIC.

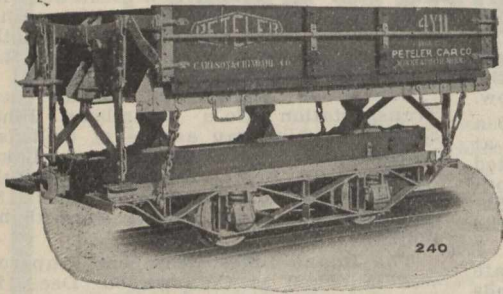
The following commerce passed through the Sault Ste. Marie Canals for the season 1910:

ARTICLES.	CANADIAN CANAL	U. S. CANAL	TOTAL
Copper..... Eastbound..... Net tons	26,632	121,438	148,070
Grain..... "..... Bushels	24,300,195	14,943,137	39,243,332
Building stone..... "..... Net tons	300	9,335	9,635
Flour..... "..... Barrels	2,178,933	4,856,746	7,035,679
Iron ore..... "..... Net tons	28,525,024	13,075,362	41,600,386
Pig iron..... "..... "..... "	8,650	40,340	48,990
Lumber..... "..... M. ft. B.M.	44,494	558,607	603,101
Silver ore..... "..... Net tons	.....	.....	.....
Wheat..... "..... Bushels	68,754,925	17,505,949	86,259,974
General merchandise..... "..... Net tons	76,950	96,337	173,287
Passengers..... "..... Number	13,410	18,857	32,267
Coal, hard..... Westbound..... Net tons	549,311	1,109,533	1,658,844
Coal, soft..... "..... "..... "	3,535,811	8,319,072	11,854,883
Flour..... "..... Barrels	1,100	10	1,110
Grain..... "..... Bushels	.....	2,153	2,153
Manufactured iron..... "..... Net tons	169,068	226,611	395,679
Iron ore..... "..... "..... "	3,248	.....	3,248
Salt..... "..... Barrels	138,419	390,191	528,610
General merchandise..... "..... Net tons	67,053	611,209	1,238,262
Passengers..... "..... Number	19,987	14,679	34,666
Vessel passages..... Number	7,972	12,927	20,899
Registered tonnage..... Net	23,349,137	26,506,986	49,856,123
Freight—Eastbound..... Net tons	31,531,036	15,602,673	47,133,709
—Westbound..... "..... "	4,904,521	10,324,988	15,229,509
Total freight..... "..... "	36,435,557	25,927,661	62,363,218

COMPARATIVE STATEMENT FOR THE SEASONS OF 1909 AND 1910.

ITEMS.	TOTAL TRAFFIC FOR	
	Season 1910.	Season 1909.
Vessels:		
Steamers..... Number	17,674	16,463
Sailing..... "..... "	1,890	1,787
Unregistered..... "..... "	1,335	954
Total..... "..... "	20,899	19,204
Lockages..... "..... "	14,569	13,571
Tonnage, Registered..... Net	49,856,123	46,751,717
Freight..... "..... "	62,363,218	57,895,149
Passengers..... Number	66,933	59,948
Coal, hard..... Net Tons	1,658,844	1,412,387
Coal, soft..... "..... "	11,854,883	8,527,639
Flour..... Barrels	7,676,789	7,004,175
Wheat..... Bushels	86,259,974	113,258,561
Grain..... "..... "	39,243,485	46,519,451
Manufactured and Pig Iron..... Net Tons	444,669	522,281
Salt..... Barrels	528,610	651,091
Copper..... Net Tons	148,070	127,212
Iron Ore..... "..... "	41,600,384	40,014,978
Lumber..... M. ft. B.M.	603,101	552,380
Silver Ore..... Net Tons	.....	.....
Building Stone..... "..... "	9,635	1,784
General Merchandise..... "..... "	1,411,549	1,140,344

The U. S. canal was opened May 5, and closed Dec. 14, 1910; season 224 days.
The Canadian canal was opened Apr. 12, and closed Dec. 15, 1910; season 248 days.



PETELER FOUR YARD.

Most popular car on market to-day for Railroad Contractors. Especially designed for heavy Rock Work. Body bracing and double diamond frame truck admitted superior to all others.

PETELER CAR COMPANY, Minneapolis, Minn., U.S.A.

Peteler Dump Cars

Sizes One to Seven Yards

Our 1910 Cars are further improved and are ideal for handling all kinds of material.

Simplicity, Strength and Staying Qualities have kept our cars in the front rank for over thirty years.

PETELER CHILLED WHEELS for all purposes are noted for their deep and uniform chill and will reduce your wheel troubles to a minimum.

We also build Logging Cars, Frogs, Switches, and Turntables; Cars for Mines, Stone Quarries, Brick Yards, and Industrial Cars. Carry stock of Light Rails and Fastenings.

Send for Catalogues and descriptive matter.

Peteler Customers Repeat

Electric Heaters

- Switches
- Relays
- Buzzers
- Door Operators
- Door Signals
- Stateroom Heaters
- Steam Couplers
- Steam Traps
- Valves
- Pipe Fittings

CONSOLIDATED CAR-HEATING CO.

Albany
Chicago

New York
Coaticooke, P.Q.

THE CANADIAN RAILWAY ACCIDENT INSURANCE COMPANY OTTAWA, CANADA

JOHN EMO, General Manager

A PURELY CANADIAN COMPANY

H. W. PEARSON, Secretary-Treasurer

D. MURPHY, President

AUTHORIZED CAPITAL - \$500,000.

SUBSCRIBED CAPITAL - \$200,000.

Issues all classes of Accident and Sickness Insurance at lowest rates as is consistent with safety.

Railroad Employees and Collective Insurance a speciality.

Agents wanted in unrepresented districts.

LEGG BROS. ENGRAVING CO.

MAKERS OF FINE 1/2 TONES LINE ENGRAVINGS WOOD CUTS, ELECTROS

DESIGNERS, ILLUSTRATORS FINE CATALOGUE MAKERS

PRICE LOW

QUALITY HIGH

PHONE MAIN 5003. No. 5 JORDAN ST. TORONTO

Dividend Notice

Niagara Navigation Co., Ltd.

Notice is hereby given that a dividend of four per cent. (being at the rate of eight per cent. for the year) has been declared upon the Capital Stock of this Company, and the same will be payable on the 3rd of January, 1911. The transfer books will be closed from the 17th December to 31st December, 1910, both days inclusive. The annual meeting of the shareholders will be held on Tuesday, the 10th of January, 1911, at 12 noon, in the Board Room, Traders Bank Building, Toronto.

By order of the Board.

B. W. FOLGER,

General Manager.

Toronto, Nov. 28th, 1910.



Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. HANDBOOK on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive special notice, without charge, in the

Scientific American.

A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms for Canada, \$3.75 a year, postage prepaid. Sold by all newsdealers.

MUNN & Co. 361 Broadway, New York
Branch Office, 625 F St., Washington, D. C.

Railway Construction.

Tenders will be received up to noon, January 2nd, 1911, for the construction of the road-bed and structures of the following sections of the Manitoulin and North Shore Railway:—

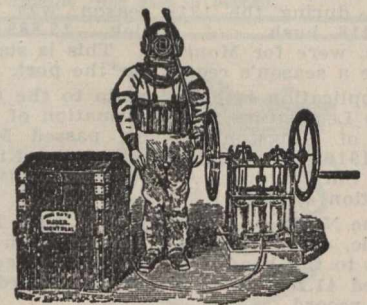
Crean Hill, mile 22.7, West of Sudbury, to connection with present line at Espanola.

Espanola South to a point at or near Mile 61.

Plans, Profiles and Specifications may be seen at the Office of the Chief Engineer, Sault Ste. Marie, Ontario, at the office of the Railway and Marine World, Toronto, or at the Offices of the "Canadian Engineer," at Montreal, Toronto or Winnipeg.

All tenders to be addressed to R. S. McCormick, Chief Engineer, Manitoulin and North Shore Railway, Sault Ste. Marie, Ontario.

The lowest or any tender not necessarily accepted.



JOHN DATE MANUFACTURER OF DIVING APPARATUS

FOR SALE OR HIRE

Brass Founder & Coppersmith
152 Craig St. West, Montreal

Patent Rights for Sale.

PATENT ACT.—Take notice, that the undersigned are prepared to supply, at a reasonable price, sheet metal dumping cars for railroad contractors' use, described in Canadian Patent No. 116,297, or to grant anyone desiring to use the same a license to have the same manufactured for him at a manufacturing establishment in the Dominion of Canada. They are also prepared to receive offers for licenses to manufacture and sell under the same. Ridout and Maybee, Manning Chambers, Queen St. West, Toronto, attorneys for the Goodwin Car Company.

CRESOL CALCIUM.—Patent no. 115,933 for the preservation of Railroad Ties, Telephone and Telegraph Poles, Wood Paving Blocks, etc. For terms of royalty, etc., apply to Blagden, Waugh & Co., 4 Lloyds Avenue, London, E.C., England.

ence from the beginning to the end of the season.

The steam tug Saucy Jim, owned in Collingwood, was burned to the water's edge, about the end of Nov., 1910, at Christian Islands. She was built at Meaford in 1887, and was screw driven with engine of 16 n.h.p. Her dimensions were: length, 84 ft.; breadth, 16.6 ft.; depth 8 ft.; tonnage, 93 gross, 63 register. She was valued at \$10,000.

The steamboat Alaska, owned by W. J. Pulling & Co., of Windsor, Ont., was destroyed by fire at Tobermory, at the end of Nov., where she was sheltering during a storm. She was built at Detroit, Mich., in 1878, and was screw driven with engine of 8 n.h.p. Her dimensions were: length, 165.2 ft.; breadth, 29 ft.; depth, 10.6 ft.; tonnage, 348 gross, 173 register.

The steamboat Winnanna, which was burned to the water's edge at Tobermory, Oct. 19, 1909, and subsequently raised and repaired, has been re-registered at Owen Sound, and her name changed, by order-in-council to Keenan. She was built at Midland, in 1907, and is screw driven, with engine of 75 n.h.p. Her dimensions are: length, 91.5; breadth 20.2; depth, 10.3; tonnage, 199 gross, 125 register.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tide-water, for Nov., 1910, as follows: Superior, 601.69; Michigan and Huron, 579.83; Erie, 571.40; Ontario, 245.15. As compared with the average Nov. levels for the past 10 years, Superior was 1.19 ft. below; Michigan and Huron, 0.70 ft. below; Erie, 0.44 ft. below, and Ontario 0.34 ft. below. An average fall of 0.2 ft. was anticipated during Dec.

The cribs for the extension of the dock at Sault Ste. Marie, for which \$10,000 has been included in the estimates for the current year have been laid, and the work will be completed in the spring. The Government is being asked to undertake further extensions there, local shippers being of the opinion that the new western extension should be the head of a new western wing 250 ft. long, running parallel with the present dock, and that the basin which would be then enclosed, should be filled in.

The Wolfe Island township council decided, Dec. 9, to enlarge the carrying capacity of its steamboat Wolfe Islander, by lengthening her by 15 ft., and adding false sides. Electric lighting equipment, with search light, will also be added, the estimated expenditure being \$7,000. The vessel, which was formerly known as Tom Fawcett, was built at Toronto in 1904, and is a paddle wheel steamer, with engine of 28 n.h.p. Her dimensions now are: length 118.6 ft., breadth 17.7 ft., depth, 6.8 ft.; tonnage, 224 gross, 98 register. The receipts of the ferry service for the season from Mar to Nov. 1910, were \$9,377.35.

A deputation representing various municipal and marine interests, between Ottawa and Kingston, waited on the Minister of Railways and Canals, Dec. 8, to protest against the C.P.R. proposal to close a part of the Rideau canal in order to effect a new entrance to Ottawa. The deputation also asked that the canal be made with an 8 ft. draught. The Minister in reply, pointed out that the C.P.R. had not asked the Government to close the canal outlet, and without committing the Government, he said he would hesitate before giving his consent to such a proposal. He promised that the Government engineers would report as to the desirability of deepening the canal as suggested.

The bill to amend the Canada Shipping Act, which was dropped after being read a second time in the House of Commons, last session, was re-introduced by

Mr. Edwards and given its first reading Dec. 1. The bill provides for the insertion of the word "Ontario" after the word "Quebec" in line two, par. 2 of par. c., subsec. one, sec. 477, chap. 113, of the Revised Statutes of Canada, 1906. The change proposed is in accordance with the wishes of the Dominion Marine Association, which represents practically all the vessels on the Great Lakes, and is intended to place the province of Ontario on a parity with the other provinces in respect of pilotage dues.

The Toronto city council special committee on water front improvements, received representations from the Board of Trade, Canadian Manufacturers' Association and Guild of Civic Art, early in Dec., relating to the proposed alteration in the control of the Toronto water front. It had previously been proposed to apply to Parliament to recognize the present commission, to enlarge its powers, and to place the whole of the water front under its control. After discussing the matter, the committee agreed to report to the council, that the proposed commission should consist of three members, appointed by the city council, and that the taxpayers be asked to vote, Jan. 1, whether they approved the scheme, or not.

The Inland Lines steamboat Dunelm, with a cargo of grain consigned to J. Richardson and Son, Kingston, went ashore at Isle Royale, Dec. 7, and, on account of the exposed position, and the state of the weather, all attempts to save either the cargo or the vessel have been given up, and she was abandoned to the underwriters, Dec. 14. She was built in Sunderland, Eng., in 1907, and was a screw driven vessel, with engine of 230 n.h.p. Her dimensions were: length 250 ft., breadth 43.2 ft., depth 23.5 ft.; tonnage, 2,319 gross, 1,481 register. She was one of the vessels formerly owned by R. O. and A. B. Mackay, Hamilton, who formed the Inland Navigation Co., which was absorbed last year by the Inland Lines, Ltd., controlled by Jas. Playfair, Midland. She was later in the month floated and taken to Port Arthur, for examination.

The new U.S. Lock at Sault Ste. Marie is progressing, and it is expected that the excavation for the lock pit will be completed early this year. The contract for the concrete will be let during the winter and work on this will be commenced in the spring. The MacArthur Bros. Co. has the contract for the western section of the approach canal and John Marsch is the contractor for the lock excavation. The work is under the direction of Col. C. McD. Townsend, U.S. Engineers, and L. C. Sabin is Assistant Engineer. This new lock (known as the Davis lock) will be 1,350 ft. long between the gates, 80 ft. wide and 24½ ft. deep below the level of extreme low water. It will be parallel with and adjacent to the two existing locks: the Weltzel lock (1881), 515 by 80 ft., with a depth of 16 ft., and the Poe lock, (1895), 800 by 100 ft., with a depth of 21 ft.

At a recent meeting of the Dominion Marine Association, a protest was made against the closing of the Ottawa end of the Rideau Canal, and a deputation was appointed to interview the Government on the matter. Aids to navigation were recommended, as follows: a light at the end of Indian Island; lighting and improvement of the Murray canal, improvement of the channel at Saltpoint, and it was decided to protest against the removal of the light from the False Ducks. Opposition will also be made to the application of the Canadian Light & Power Co., to take water from Coteau and Cedar Rapids. The Association also decided to ask the Department of Railways and Canals to provide special men

to take lines from vessels entering the St. Lawrence canals, in order to prevent accidents to vessels and crews, and the Department of Marine will be asked to erect range lights near Baker's Point to improve the channel to Kingston Harbor. Consideration was also given to the question of improvements required at the entrance to the Soulanges canal at Coteau.

The contract for the construction of a steamboat for the Richelieu and Ontario Navigation Co.'s Saguenay line, has been placed in Glasgow, Scotland, by C. J. Smith, General Manager, who has recently returned from Great Britain. She will be a twin screw vessel with four cylinder triple expansion engines, supplied with steam by Scotch boilers, equipped with forced draught, and capable of steaming at 15¾ knots an hour. Her dimensions will be as follows: length over all from forward side of stem to after side of wale at main deck, 282½ ft.; length over stem and stern posts at main deck, 275 ft.; beam molded on frame, subject to change, 40 ft.; breadth of beam extreme over wales, 57ft. 10 ins.; breadth of beam at 10 ft. waterline, 39 ft.; depth of hull molded, at main deck, 15 ft. 10 ins. The dining room will be situated on the main deck, aft, with seating capacity for 100. The staterooms will all be arranged as outside rooms, with running water in each, as in the Company's steamboats Rochester and Rapids Prince. There will be 12 parlor rooms with baths attached. The interior finish of the entrance hall will be panelled mahogany, the dining room, panelled in mahogany, oak or white enamel, cabins on promenade and gallery decks, in white pine or cypress and decoratively painted, cabins on hurricane deck, panelled in quartered oak, toilet rooms and bar room in hardwood, and the pilot house in quartered oak, while the floors will be laid with interlocking rubber tiling. The contract calls for the vessel to be delivered in Quebec by June.

Manitoba, Saskatchewan and Alberta.

The Prince Albert, Sask., city council is arranging for the construction of a dam and power canal, on the Saskatchewan River, near La Colle Falls, and is discussing a proposition to submit the matter to the Dominion Government, with a view to the joint carrying out of the work in connection with the proposed undertaking of the Government to establish a navigable waterway between Winnipeg and Edmonton. It is stated that the Government may be asked to pay half the cost of the dam and two-thirds of the cost of the canal.

B.C. and Pacific Coast Marine.

The C.P.R. is making arrangements to convert most of its Pacific coast fleet, during the winter months, into oil burners.

The C.P.R. s.s. Charmer is being thoroughly overhauled and will be partially re-built, during the winter, and new boilers, which have been ordered, will be installed in the spring.

D. E. Brown and Macaulay, Ltd., is suing the Canadian Klondyke Mining Co. of Windsor, Ont., for \$4,376.17, for marine insurance, scow hire, fees as forwarding agents, etc.

The C.P.R. s.s. Princess May is the first of the company's vessels to be converted into an oil burner. The other vessels of the fleet will be similarly altered as opportunity occurs.

The deal, whereby the Pacific Whaling Co.'s property has been transferred to the Canadian North Pacific Fisheries, Ltd., is said to have been consummated

J. S. COFFIN, President

SAMUEL G. ALLEN, Vice-President

C. L. WINEY, Sec. & Treas.

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Specialists in Devices that Make for Economy

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HOMESEEKERS' EXCURSIONS
Every first and third Tuesday in every month.

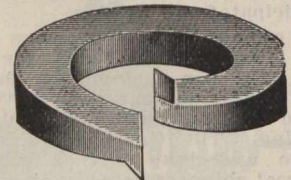
Look the Illinois Central map over and consult

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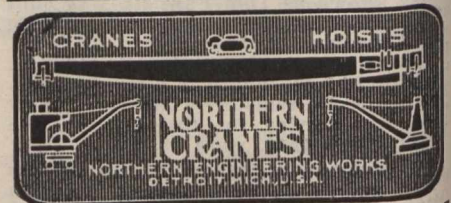
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recently by the paying over by the latter of a cheque for \$1,000,000.

The Grand Trunk Pacific Dock Co.'s dock and buildings at Seattle, Wash., recently completed, were officially opened for business, Dec. 3. An illustration and description of the property were published in our June, 1910 issue.

The North Vancouver city council decided Dec. 6, to submit a bylaw to the ratepayers, providing for the purchase of \$80,000 stock in the North Vancouver Ferry Co., at par, the proceeds to be used in the completion of betterment works, now under way.

The report, recently current in Vancouver, that the G.T.P. Steamship Co.'s steamships Prince Rupert and Prince George will be converted into oil burners has been denied by local officials of the company who stated that the present system is quite satisfactory.

Press reports from Vancouver, state that it is probable that the G.T.P.R., will dismantle a number of old stern wheel steamboats on the Skeena River and transfer the machinery, boilers, etc., to Soda Creek or Quesnel, for use in the rebuilding of steamboats for use on the Fraser and Nechaco Rivers.

The Gilford Fish Co., Ltd., has been incorporated under the B.C. Companies Act, with a capital of \$150,000, to take over the Viner Fish Curing Co., Ltd.; to carry on a general fishing, curing and dealing business, and in connection therewith to own and operate steam and other vessels.

The Vancouver Springs and Indian River Park Co. is reported to have placed orders for the building of two passenger steamboats, one costing about \$50,000 and the other about \$12,000. The larger vessel will be arranged as an

oil burner, and will be 123 ft. long, with a speed of 17 knots an hour, and the other, will be 80 ft. long.

The Queen Charlotte Islands Collieries Ltd., has been incorporated under the B.C. Companies Act, with a capital of \$1,000,000, to carry on a general coal mining and dealing business, and in connection therewith to build, own and operate tramways, wharves, piers, steam and other vessels, and to act as carriers by land and water.

R. Curnew, New Westminster, owner of the steam tug Sendai, has sold his vessel to Alberni parties, for towing purposes on the coast. The Sendai was built at Vancouver in 1903, and is a screw driven vessel, with engine of 5 n.h.p. Her dimensions are length 37 ft.; breadth 9.8 ft.; depth 4.3; tonnage, 14 gross, 10 register.

The British survey ship Egeria, hav-

The Purchasing Agents' Guide

To the Manufacturers of and Dealers in Steam and Electric Railway, Marine, Grain Elevator, Express, Telegraph, Telephone and Contractors' Supplies, &c.

- Accumulators, Electric
 - Tate Accumulator Co. of Canada, Toronto
- Aerated Waters
 - E. L. DrewryWinnipeg.
- Air Brakes and Fittings
 - Allis-Chalmers-Bullock Ltd.Montreal.
 - Canadian Westinghouse Co. Hamilton, Ont.
- Ales
 - E. L. DrewryWinnipeg.
- Alloys
 - American Vanadium Co....Pittsburg, Pa.
- Angle Bars
 - Hamilton Steel & Iron Co. Hamilton, Ont.
 - Montreal Rolling Mills Co.....Montreal.
 - Nova Scotia S. & C. Co., New Glasgow, N.S.
- Anti Rail Creepers
 - The Holden Co., Ltd.....Montreal.
- Automobiles
 - Preston Car & Coach Co...Preston, Ont.
- Axes
 - James Smart Mfg. Co....Brockville, Ont.
- Axles
 - Canadian Car & Foundry Co...Montreal.
 - Hamilton S. & I. Co., Ltd., Hamilton, Ont.
 - James Hutton & Co.Montreal.
 - Nova Scotia S. & C. Co., New Glasgow, N.S.
 - Jas. W. Pyke & Co.....Montreal.
- Babbit Metal
 - Tallman Brass & Metal Co., Hamilton, Ont.
- Beacons
 - International Marine Signal Co....Ottawa.
- Bearings, Side
 - Canadian Car & Foundry Co...Montreal.
 - Chicago Railway Equipment Co..Chicago.
- Blankets and Bedding
 - The Hudson's Bay Co.
- Boilers
 - Babcock & Wilcox, Ltd.....Montreal.
 - Polson Iron Works, Ltd.....Toronto.
 - Robb Engineering Co., Ltd..Amherst, N.S.
- Boilers, Portable
 - Babcock & Wilcox, Ltd.....Montreal.
 - Polson Iron Works, Ltd.....Toronto.
 - Robb Engineering Co., Ltd..Amherst, N.S.
- Boilers, Stationary and Marine
 - Babcock & Wilcox, Ltd.....Montreal.
 - John Inglis Co., Ltd.Toronto.
 - I. Matheson & Co....New Glasgow, N.S.
 - Polson Iron Works, Ltd.....Toronto.
 - Robb Engineering Co., Ltd..Amherst, N.S.
- Boiler Staybolt Iron or Steel Bars
 - Falls Hollow Staybolt Co..Cuyahoga Falls.
- Boilers, Steam
 - Babcock & Wilcox, Ltd.....Montreal.
 - John Inglis Co., Ltd.Toronto.
 - Polson Iron Works, Ltd.....Toronto.
 - Robb Engineering Co., Ltd..Amherst, N.S.
- Boilers, Water Tube
 - Babcock & Wilcox, Ltd.....Montreal.
 - John Inglis Co., Ltd.Toronto.
 - Polson Iron Works, Ltd.....Toronto.
 - Robb Engineering Co., Ltd..Amherst, N.S.
- Boilers
 - Canadian Car & Foundry Co...Montreal.
 - Canadian Ry. Equipment Co., Welland, Ont.
- Boles, Bridge
 - Montreal Rolling Mills Co.....Montreal.

- Bolts, Track
 - Montreal Rolling Mills Co.....Montreal.
 - Nova Scotia S. & C. Co., New Glasgow, N.S.
- Borers, Car Wheel
 - John Bertram & Sons Co....Dundas, Ont.
- Braces, Cross Arm
 - Montreal Rolling Mills Co.....Montreal.
- Brake Beams
 - Canadian Car & Foundry Co...Montreal.
 - Chicago Railway Equipment Co..Chicago.
- Brake Shoes
 - Am. Brake Shoe & F'dry Co., Mahwah, N.J.
 - Canada Iron Corporation, Ltd..Montreal.
 - The Holden Co., Ltd.....Montreal.
- Brake Shoes, Locomotive Driver
 - Am. Brake Shoe & F'dry Co., Mahwah, N.J.
 - Canada Iron Corporation, Ltd..Montreal.
 - Railway Materials Co.New York.
- Brass and Copper Cloth
 - The B. Greening Wire Co..Hamilton, Ont.
- Brasses, Car
 - T. McAvity & SonsSt. John, N.B.
- Bridge Numbers
 - Acton Burrows, LimitedToronto.
- Bridges
 - Canadian Bridge Co....Walkerville, Ont.
 - Dominion Bridge Co.....Montreal.
- Bronze
 - American Vanadium Co....Pittsburg, Pa.
- Buckets, Coal, Ore and Concrete
 - M. Beatty & Sons, Ltd....Welland, Ont.
 - Brown Hoisting Machinery Co., Cleveland.
 - Williams & Wilson, LtdMontreal.
- Buildings, Steel
 - Canadian Bridge Co....Walkerville, Ont.
 - Dominion Bridge Co.....Montreal.
- Bumping Posts
 - The Holden Co., Ltd.....Montreal.
 - McCord & Co.Chicago, Ill.
- Buoy Lighting
 - Safety Car Heat. & Light. Co..New York.
- Buoys
 - International Marine Signal Co....Ottawa.
- Cables, Electric and Feeder
 - Chapman & Walker, Ltd.....Toronto.
 - E. F. Phillips Electrical Works.Montreal.
 - The Wire and Cable Co.....Montreal.
- Car Furnishings
 - Gulford S. Wood.....Chicago, Ill.
- Car Loaders, Box
 - Mussens, Ltd.Montreal.
- Car Movers
 - F. H. Hopkins & Co.....Montreal.
 - Mussens, Ltd.Montreal.
- Cars
 - Crossen Car Mfg. Co.....Cobourg, Ont.
 - Canadian Car & Foundry Co...Montreal.
 - J. T. GardnerChicago, Ill.
 - Hart-Otis Car Co., Ltd.....Montreal.
 - The Males Co.,Cincinnati, O.
 - Ottawa Car Co., Ltd.....Ottawa.
 - Pay-As-You-Enter Car Co....New York.
 - Preston Car and Coach Co., Ltd..Preston.
 - Russel Wheel & Fdry Co..Detroit, Mich.
 - Silliker Car Co., Ltd.....Halifax, N.S.
- Cars, Logging
 - Peteler Car Co.Minneapolis, Minn.
 - Russel Wheel & Fdry Co..Detroit, Mich.

- Castings
 - Edgar Allen & Co., Ltd.Montreal.
 - American Vanadium Co....Pittsburg, Pa.
 - Canadian Car & Foundry Co...Montreal.
 - Crossen Car Mfg. Co.....Cobourg, Ont.
 - John Inglis Co., Ltd.Toronto.
 - Lumen Bearing Co....West Toronto, Ont.
 - I. Matheson & Co.....New Glasgow, N.S.
 - Russel Wheel & Fdry Co..Detroit, Mich.
 - Standard Steel Works Co..Philadelphia, Pa.
- Castings, Brass
 - Canadian Bronze Co.Montreal.
 - Canada Iron Corporation, Ltd..Montreal.
 - Kerr Engine Co.Walkerville, Ont.
 - Lumen Bearing Co....West Toronto, Ont.
 - I. Matheson & Co.....New Glasgow, N.S.
 - Tallman Brass & Metal Co., Ltd.Hamilton.
- Castings, Car
 - Edgar Allen & Co., Ltd.Montreal.
 - Am. Brake Shoe & F'dry Co., Mahwah, N.J.
 - Canada Iron Corporation, Ltd..Montreal.
 - Russel Wheel & Fdry. Co..Detroit, Mich.
- Castings, Iron
 - Allis-Chalmers-Bullock Ltd.Montreal.
 - Canada Iron Corporation, Ltd..Montreal.
 - Kerr Engine Co.....Walkerville, Ont.
 - Russel Wheel & Fdry. Co..Detroit, Mich.
- Castings, Iron and Steel
 - Edgar Allen & Co., Ltd.Montreal.
 - Am. Brake Shoe & F'dry Co., Mahwah, N.J.
- Castings, Malleable
 - Galt Malleable Iron Co.....Galt, Ont.
 - Taylor & ArnoldMontreal.
- Castings, Manganese Steel
 - Edgar Allen & Co., Ltd.Montreal.
 - Lumen Bearing Co....West Toronto, Ont.
 - Montreal Steel Works, Ltd.....Montreal.
- Castings, Steel
 - Edgar Allen & Co., Ltd.Montreal.
 - American Vanadium Co....Pittsburg, Pa.
 - Canada Iron Corporation, Ltd..Montreal.
 - W. Kennedy & Sons, Ltd., Owen So'd, Ont.
 - Montreal Steel WorksMontreal.
- Chains
 - B. J. Coghlin & Co.....Montreal.
- Chisels for Pneumatic Chipping Hammers
 - Edgar Allen & Co., Ltd.Montreal.
 - Cleveland Punch & Shear Wks., Cleveland.
- Closets, Car
 - Duner Co.Chicago, Ill.
- Coal
 - Nova Scotia S. & C. Co., New Glasgow, N.S.
- Compressors, Air
 - Allis-Chalmers-Bullock Ltd.Montreal.
 - The American Well Works...Aurora, Ill.
 - Canadian Rand Co.Montreal.
 - The Holden Co., Ltd.....Montreal.
 - John Inglis Co., Ltd.Toronto.
 - Vandeleur & NicholsToronto.
- Concrete Mixers and Rock Crushers
 - Edgar Allen & Co., Ltd.Montreal.
 - F. H. Hopkins & Co.....Montreal.
 - Mussens, LimitedMontreal.
- Contractors' Supplies
 - F. H. Hopkins & Co.....Montreal.
 - Rice Lewis & Son.....Toronto.
 - Peteler Car Co.Minneapolis, Minn.
 - Russel Wheel & Fdry. Co..Detroit, Mich.
 - Williams & Wilson, LtdMontreal.
- Conveyors, Coal and Ash
 - Babcock & Wilcox, Ltd.....Montreal.
 - Williams & Wilson, LtdMontreal.
- Copying Presses
 - James Smart Mfg. Co....Brockville, Ont.

ing completed her work of surveying B.C. waters, all of which will now be undertaken by the Dominion Government's survey steamship Lillooet, has paid off her crew, and has been berthed for the winter. It is stated that she will probably be offered for sale, and that she may be purchased by the Government for use as a training ship.

Preparations have been commenced near Vancouver, for the dredging, next summer, of the First Narrows. The Marine Department's steam tug Newington, recently removed the beacon and installed a mechanical fog bell.

The Canadian North Pacific Fisheries, Ltd., registered under the Dominion Companies Act, with a capital of \$2,500,000, and office at Toronto has been licensed to carry on its business in British Columbia, with Dr. L. Rissmuller, Vancouver, as its attorney.

The s.s. Henriette, formerly owned by Mackenzie Bros., and during the past season, operated under charter by the G.T.P. Steamship Co., has been chartered by the Canadian Pacific Whaling Co., to make trips to Naden harbor, Virago Sound, at the north of Queen Charlotte Islands, conveying men and material for the construction of a new whaling station.

The Vancouver city council received tenders, Dec. 30, for a launch to be used to convey patients to and from the Isolation Hospital, opposite Barnet. The launch must be complete, and equipped with engine of not less than 40 n.h.p., which may be driven by either steam or gasolene. The approximate dimensions quoted are: length 50 ft., beam 12 ft., draught 3½ ft.

The Standard Fish and Fertilizer Co., Ltd., has been incorporated under the B.C. Companies Act, with a capital of \$1,000,000, to take over the assets and business of the Pacific Coast Fisheries,

Ltd.; to conduct a general fisheries business, and in connection therewith to own and operate steam and other vessels of all descriptions, wharves, docks, warehouses and fishing stations.

The Fort George Timber and Transportation Co., Ltd., has been incorporated under the B. C. Companies Act, with a capital of \$200,000, to take over as a going concern the business of the Fort George Lumber and Navigation Co., Ltd., with its assets and liabilities, and in connection therewith to own and operate steam and other vessels, wharves, docks, piers, etc., and to carry on a general shipowning, navigation, stevedoring and carrying business.

The British Columbia Shipping Co., Ltd., has been incorporated under the B.C. Companies Act, with a capital of \$35,000, and office at Victoria, to build own and operate steam and other vessels, and to carry on a general shipping and navigation business. Press reports state that a vessel will shortly be ordered, 120 ft. long, with beam of 24 ft. and draught of 9 ft., on 340 tons displacement. The engines are to have about 240 n.h.p. to develop 10 knots an hour.

The vessel which the C.P.R. has ordered for its Pacific coast service, which was mentioned in our Dec., 1910, issue will be practically a duplicate of the recently arrived s.s. Princess Adelaide. Her dimensions will be:—Length between perpendiculars, 290 ft.; beam, 46 ft.; depth of hold, 17 ft., and she will have a speed of 16 knots an hour. On her arrival on the coast it is proposed to establish a service between Vancouver and Victoria three times a day, leaving each city about 10 a.m., 3 p.m., and 11.30 p.m.

The specifications for the building and laying out of the Department of Marine's lighthouse and buoy depot at Prince Rupert, tenders for which will be received to Jan. 3, include the erection of

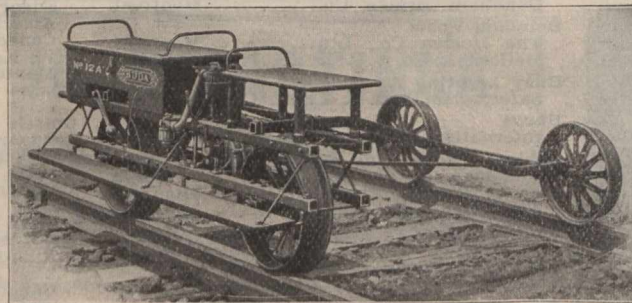
a buoy shed and machine shop, powerhouse and reinforced concrete chimney, carbide store, storehouse, offices, dwellings, etc.; the installation of water and drainage systems, the storage of machinery delivered by the Department, and the erection of a travelling crane of 20 tons capacity. The depot will be located on the south shore of Casey Cove, on the west side of Prince Rupert harbor, and 2½ miles south of the wharf. The wharf, which it is proposed to build, will be 405 ft. long by 40 ft. wide, and 56 ft. wide for about 105 ft. of the length. It will consist of concrete piles, which will be carried up as columns, braced with horizontal and diagonal members, the tops of the columns being finished off at 126.93 ft. The contractor will be called upon to commence work within 30 days after the signing of the agreement, and the work must be completed and ready for occupation on or before Dec. 1.

During Sept. and Oct., 1910, 10 employees were killed and 11 injured in the course of their work in connection with the navigation of Canadian waters. Of the fatalities, five were due to drowning, three to falling material and two to falls; while of the other accidents, four were due to machinery, three each to falls and to falling material, and one to being scalded.

The Steamboat Inspection Board reports to the Marine Department, that there were 1,978 steam vessels, of 440,819 tonnage, known to the inspectors, on the Dominion register, and 162 steam vessels of 238,227 tonnage, not on the Dominion register, inspected, during the year ended Mar. 31, 1910. The amount collected in fees from the Dominion registered vessels, was \$6,469.60. Thirty-two casualties were reported during the year, and penalties were enforced in two cases of passenger overcrowding.

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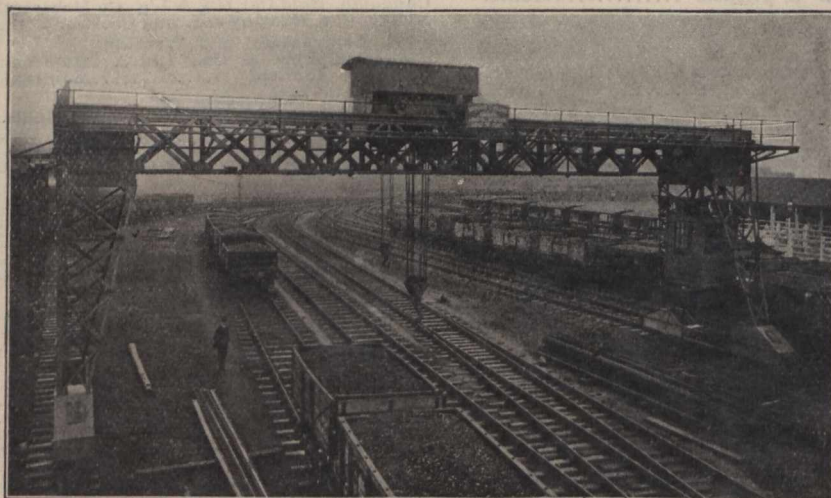
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- Couplers, Car and Locomotive**
- Canadian Car & Foundry Co...Montreal.
- McConway & Torley Co...Pittsburg, Pa.
- Montreal Steel Works, Ltd...Montreal.
- Taylor & ArnoldMontreal.
- Couplers, Steam**
- Consolidated Car Heating Co., Albany, N.Y.
- Cranes**
- Brown Hoisting Machinery Co..Cleveland.
- Northern Engineering Wks..Detroit, Mich.
- Williams & Wilson, LtdMontreal.
- Cranes, Electric**
- Babcock & WilcoxMontreal.
- Dominion Bridge Co.Montreal.
- Mussens, LimitedMontreal.
- Northern Engineering Wks, Detroit, Mich.
- Cranes, Locomotive**
- The Males Co., Cincinnati, O.
- Cranes, Wrecking**
- Mussens, LimitedMontreal.
- Crowbars**
- B. J. Coghlin & Co.....Montreal.
- Curtains and Fixtures, Car**
- The Holden Co., Ltd.....Montreal.
- Preston Car & Coach Co...Preston, Ont.
- Cuts**
- Acton Burrows, LimitedToronto.
- Cylinders**
- American Vanadium Co...Pittsburg, Pa.
- Derricks**
- M. Beatty & SonsWelland, Ont.
- Mussens, LimitedMontreal.
- Diaphragms, Vestibule**
- Gullford S. Wood.....Chicago, Ill.
- Dies**
- Butterfield & Co.Rock Island, Que.
- A. B. Jardine & Co.Hespeler, Ont.
- Ditchers**
- M. Beatty & SonsWelland, Ont.
- Driving Outfits**
- John DateMontreal.
- Mussens, LimitedMontreal.
- Doors, Steel Rolling**
- Mussens, LimitedMontreal.
- Door Signs**
- Acton Burrows, LimitedToronto.
- 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 & CoWinnipeg.
- Dredges**
- M. Beatty & SonsWelland, Ont.
- Polson Iron Works, Ltd.....Toronto.
- Drills, Air**
- Canadian Rand Co.....Montreal.
- Drills, Flat Twisted**
- Cleveland Punch & Shear Wks., Cleveland.
- Dry Goods**
- The Hudson's Bay Co.....
- Dump Cars, Contractors'**
- F. H. Hopkins & Co.....Montreal.
- Peteler Car Co.Minneapolis, Minn.
- Western Wheeled Scraper Co..Aurora, Ill.
- Dump Cars, Hand**
- Meaford Wheelbarrow Co., Ltd., Meaf'd, Ont.
- Dynamos**
- Northern Electric & Mfg. Co...Montreal.
- Vandeleur & NicholsToronto.
- Dynamo and Electric Castings**
- Am. Brake Shoe & F'dry Co., Mahwah, N.J.
- Economizers**
- Babcock & Wilcox, Ltd.....Montreal.
- Electric Apparatus**
- Allis-Chalmers-Bullock Ltd.Montreal.
- Chapman & Walker, Ltd.....Toronto.
- Northern Electric & Mfg. Co...Montreal.
- Vandeleur & NicholsToronto.
- Electric Car Route Signs**
- Acton Burrows, LimitedToronto.
- Preston Car & Coach Co...Preston, Ont.
- Electric Light Plant**
- Allis-Chalmers-Bullock Ltd.Montreal.
- Elevators, Grain**
- John S. Metcalf Co.Chicago, Ill.
- Enameled Iron Signs**
- Acton Burrows, LimitedToronto.
- 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.
- John Inglis Co., Ltd.Toronto.
- Robb Engineering Co., Ltd..Amherst, N.S.
- Engines, Gas**
- Allis-Chalmers-Bullock Ltd.Montreal.
- Vandeleur & NicholsToronto.
- Williams & Wilson, LtdMontreal.
- Engines, Gasoline**
- Canadian Fairbanks Co., Ltd...Montreal.
- Ontario Wind Engine & Pump Co. Toronto.
- Vandeleur & NicholsToronto.
- Engines, Hoisting**
- Allis-Chalmers-Bullock Ltd.Montreal.
- M. Beatty & SonsWelland, Ont.
- John Inglis Co., Ltd.Toronto.
- I. Matheson & Co...New Glasgow, N.S.
- Polson Iron Works, Ltd.....Toronto.
- Russel Wheel & Fdry. Co..Detroit, Mich.
- Williams & Wilson, LtdMontreal.
- Engines, Pumping**
- John Inglis Co., Ltd.Toronto.
- Engines, Stationary and Marine**
- John Inglis Co., Ltd.Toronto.
- I. Matheson & Co...New Glasgow, N.S.
- Polson Iron Works, Ltd.....Toronto.
- Robb Engineering Co., Ltd..Amherst, N.S.
- Engines, Steam**
- Allis-Chalmers-Bullock Ltd.Montreal.
- Vandeleur & NicholsToronto.
- Explosives**
- Standard Explosives, Limited ..Montreal.
- Express Office Signs**
- Acton Burrows, LimitedToronto.
- Fencing**
- Owen Sound Wire Fence Co., Ltd., O'n S'd.
- Fenders for Electric Cars
- J. M. Moorhouse.....Winnipeg.
- Ferro-Vanadium**
- American Vanadium Co. ..Pittsburg, Pa.
- Fire Appliances**
- Missouri Lamp & Mfg. Co., St. Louis, Mo.
- Flags**
- The Hudson's Bay Co.....
- Flour**
- The Hudson's Bay Co.....
- Forgings**
- Edgar Allen & Co., Ltd.Montreal.
- American Vanadium Co. ..Pittsburg, Pa.
- Canadian Car & Foundry Co...Montreal.
- Cleveland City Forge & Iron Co., Cleveland.
- Crossen Car Mfg. Co.....Cobourg, Ont.
- Hamilton Steel & Iron Co., Ltd., Hamilton.
- Nova Scotia S. & C. Co., New Glasgow, N.S.
- Standard Steel Works Co., Philadelphia, Pa.
- Foundry Appliances**
- Goldschmidt Thermit Co.Toronto.
- Ont. Wind Eng. & Pump Co., Ltd., Toronto.
- Frames, Steel for Cars**
- Canadian Ry. Equip't Co., Welland, Ont.
- Frogs**
- Canadian Ramapo Iron Wks.Niagara Falls.
- Peteler Car Co.Minneapolis, Minn.
- Furnaces, Corrugated**
- Continental Iron Works...Brooklyn, N.Y.
- Furnaces, Oil**
- Railway Materials Co.New York.
- Furnaces, Shop**
- Railway Materials Co.New York.
- Fuse Batteries**
- Standard Explosives Limited...Montreal.
- Fuse Detonators**
- Standard Explosives Limited...Montreal.
- Fuses, Electric**
- Standard Explosives Limited...Montreal.
- Gaskets**
- Franklin Mfg. Co.....Franklin, Pa.
- The Holden Co., Ltd.....Montreal.
- McCord & Co.Chicago, Ill.
- Gates**
- Owen Sound Wire Fence Co., Ltd., O'n S'd.
- Gates, Crossing**
- The N. L. Piper Ry. Supply Co...Toronto.
- Gauges, Locomotive**
- Taylor & ArnoldMontreal.
- Utica Steam Gauge Co.....New York.
- Gears**
- American Vanadium Co. ..Pittsburg, Pa.
- Generators, Electric**
- Northern Electric & Mfg. Co...Montreal.
- Grates, Shaking**
- Babcock & Wilcox, Ltd.....Montreal.
- Polson Iron Works, Ltd.....Toronto.
- Vandeleur & NicholsToronto.
- Groceries**
- The Hudson's Bay Co.....
- Hammers, Cast Steel**
- American Brake Shoe & Fdry Co.Mahwah.
- James Smart Mfg. Co...Brockville, Ont.
- Handcars**
- Canadian Fairbanks Co., Ltd...Montreal.
- Crossen Car Mfg. Co.....Cobourg, Ont.
- F. H. Hopkins & Co.....Montreal.
- Mussens, LimitedMontreal.
- Rice Lewis & Son.....Toronto.
- Hardware**
- The Hudson's Bay Co.....
- 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.
- Heaters, Oil-burning**
- Tate, Jones & Co. Inc. Pittsburg, Pa.
- Heating, Car**
- Canadian Gold Car H'g & L'g Co..Montreal.
- Consolidated Car Heating Co., Albany, N.Y.
- Safety Car Heating & L'ting Co.New York.
- Hoists, Pneumatic**
- Taylor & ArnoldMontreal.
- Hollow Staybolt Iron and Steel Bars**
- Edgar Allen & Co., Ltd.Montreal.
- Hoppers, Car, Wet or Dry**
- Duner Co.Chicago, Ill.
- Hose, Air Brake and Steam**
- Gullford S. Wood.....Chicago, Ill.
- Hydrants**
- Canadian Fairbanks Co., Ltd...Montreal.
- Kerr Engine Co.....Walkerville, Ont.
- Illustrations**
- Acton Burrows, Limited.....Toronto.
- Injectors**
- T. McAvity & SonsSt. John, N.B.
- Inspections**
- R. W. Hunt & Co.....Montreal.
- 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**
- Montreal Steel Works, Ltd.....Montreal.
- Railway Signal Co. of Canada...Montreal.
- Saxby & Farmer, Ltd.....Montreal.
- Iron, Pig**
- Nova Scotia S. & C. Co., New Glasgow, N.S.
- Iron Signs**
- Acton Burrows, Limited.....Toronto.
- Iron Staybolt Bars**
- Falls Hollow Staybolt Co..Cuyahoga Falls.
- Jacks**
- Canadian Fairbanks Co., Ltd...Montreal.
- H. & E. Lifting Jack Co..Waterville, Que.
- F. H. Hopkins & Co., Ltd.....Montreal.
- Montreal Steel Works, Ltd.....Montreal.
- Mussens, LimitedMontreal.
- A. O. NortonCoaticook, Que.
- James Smart Mfg. Co...Brockville, Ont.
- Williams & Wilson, LtdMontreal.
- Japans**
- The Dougal 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, &c.**
- E. L. DrewryWinnipeg.
- Lagging and Covering, Locomotive**
- Franklin Mfg. Co.Franklin, Pa.
- Taylor & ArnoldMontreal.
- Lamps, Arc**
- Northern Electric & Mfg. Co...Montreal.
- 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.
- Williams & Wilson, LtdMontreal.
- Lighting, Car**
- Canadian Gold Car H'g & L'g Co.Montreal.
- Safety Car Heating & L'ting Co.New York.
- Lights, Contractors' and Wrecking**
- F. H. Hopkins & Co., Ltd.....Montreal.
- Mussens, LimitedMontreal.
- Locomotives, Compressed Air**
- Baldwin Locomotive Works.Philadelphia.
- Canadian Locomotive Co..Kingston, Ont.
- International Marine Signal Co..Ottawa.
- Montreal Locomotive W'ks (Ltd.)Montreal.
- Locomotives, Electric**
- Baldwin Locomotive Works.Philadelphia.
- Montreal Locomotive W'ks (Ltd.)Montreal.
- Locomotives, Logging**
- Baldwin Locomotive Works.Philadelphia.
- Canadian Locomotive Co..Kingston, Ont.
- Locomotives, Rack**
- Baldwin Locomotive Works...Philadelphia.
- Canadian Locomotive Co..Kingston, Ont.
- Montreal Locomotive Works.....Montreal.
- Locomotives, Steam**
- Baldwin Locomotive Works...Philadelphia.
- Canadian Fairbanks Co., Ltd...Montreal.
- Canadian Locomotive Co. ..Kingston, Ont.
- J. T. GardnerChicago, Ill.
- The Males Co., Cincinnati, O.
- Montreal Locomotive Works...Montreal.
- Vulcan Iron WorksWilkesbarre, Pa.
- Lorries, Tracklaying**
- Crossen Car Mfg. Co.....Cobourg, Ont.
- F. H. Hopkins & Co.....Montreal.
- Lubricators**
- McCord & Co.Chicago, Ill.
- Taylor & ArnoldMontreal.

Lumber
 Imperial Timber & Trading Co., Vancouver.
 Parry Sound Lumber Co.Toronto.
Machines and Plant, Contractors'
 M. Beatty & SonsWelland, Ont.
 Canadian Fairbanks Co., Ltd..Montreal.
 J. T. GardnerChicago, Ill.
 F. H. Hopkins & Co.Montreal.
 Mussels, LimitedMontreal.
Machines and Tools, Prospecting
 The American Well Works...Aurora, Ill.
Machines and Tools, Well Drilling
 The American Well Works...Aurora, Ill.
Machines, Boring and Turning
 John Bertram & Sons Co....Dundas, Ont.
Machines, Car Shop
 John Bertram & Sons Co., Ltd.Dundas, Ont.
 Cincinnati Punch & Shear Co., Cincinnati.
 Greenlee Bros. & Co.Chicago, Ill.
Machines, Cement
 James 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
 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.
 Cleveland Punch & Shear Wks., Cleveland.
Machines, Radial Drilling
 John Bertram & Sons Co. ..Dundas, Ont.
Machines, Rivetting
 Long & Allstatter Co. Hamilton, Ohio.
Machines, Slotting
 John Bertram & Sons Co. ..Dundas, Ont.
Machines, Straightening
 Cleveland Punch & Shear Wks.Cleveland.
Machines, Tire Welding
 Long & Allstatter Co. Hamilton, Ohio.
Machines, Track
 Greenlee Bros. & Co.Chicago, Ill.
Machines, Tracklaying
 F. H. Hopkins & Co.Montreal.
Machines, Wood and Iron Working
 Canadian Fairbanks Co., Ltd..Montreal.
 Williams & Wilson, LtdMontreal.
Machine Tools
 John Bertram & Sons Co. ..Dundas, Ont.
 Pratt & Whitney Co.Dundas, Ont.
Manhole Frames and Covers
 American Brake Shoe & Fdry Co.Mahwah.
 Canada Iron Corporation, Ltd..Montreal.
Marine Repairs
 Goldschmidt Thermit Co.Toronto.
Marine Supplies
 Rice Lewis & Son.....Toronto.
Metal, Babbit
 Tallman Brass & Metal Co., Hamilton. Ont.
Metals
 Goldschmidt Thermit Co.Toronto.
Metal Work, Structural
 Canadian Bridge Co....Walkerville, Ont.
 Dominion Bridge Co.....Montreal.
 Montreal Locomotive Works.....Montreal.
 Jas. W. Pyke & Co.Montreal.

Milepost Numbers
 Acton Burrows, Limited.....Toronto.
Motors
 Canadian Fairbanks Co., Ltd..Montreal.
 McCord & Co.Chicago, Ill.
Motors, Electric
 Allis-Chalmers-Bullock Ltd.Montreal.
 Canadian Crocker-Wheeler Co. ..Montreal.
 Chapman & Walker, Ltd.....Toronto.
 Northern Electric & Mfg. Co....Montreal.
 Vandeleur & NicholsToronto.
Motor Generator Sets
 Allis-Chalmers-Bullock Ltd.Montreal.
 Chapman & Walker, Ltd.....Toronto.
 Vandeleur & NicholsToronto.
Motors, Turntable
 Taylor & ArnoldMontreal.
Nickel
 The Orford Copper Co.New York.
Nickel for Nickel Steel
 The Orford Copper Co.New York.
Numbers
 Acton Burrows, LimitedToronto.
Nut Locks
 Positive Lock Washer Co. ..Newark, N.J.
Nuts, Clevis
 Cleveland City Forge & Iron Co.Cleveland.
Nuts, Square and Hexagon
 Montreal Rolling Mills Co.....Montreal.
Oakum
 The Hudson's Bay Co.....
Office Fittings
 Can. Office & Sch'l Furn. Co...Preston.
Office Signs
 Acton Burrows, LimitedToronto.
Oils
 Galena Signal Oil Co..Franklin & Toronto.
Packing
 Anchor Packing Co. of Can., Ltd.,Montreal.
 Greene, Tweed & Co.New York.
 The N. L. Piper Ry. Supply Co..Toronto.
Paints
 R. F. Johnston Paint Co., Cincinnati, Ohio.
Pile Drivers, Railway
 F. H. Hopkins & Co.Montreal.
 Mussels, LimitedMontreal.
Pinch Bars
 The N. L. Piper Ry. Supply Co..Toronto.
Pipe, Culvert, Cast Iron
 Gartshore-Thompson Pipe Co..Hamilton.
Pipe, Gas, Cast Iron
 Gartshore-Thompson Pipe Co..Hamilton.
Pipe, Sewer, Cast Iron
 Gartshore-Thompson Pipe Co..Hamilton.
Pipe Stocks
 Butterfield & Co.Rock Island, Que.
 A. B. Jardine & Co.....Hespeler, Ont.
Pipe, Water (Cast Iron)
 Gartshore-Thompson Pipe Co..Hamilton.
Planers
 John Bertram & Sons Co. ..Dundas, Ont.
Platforms, Steel
 Standard Coupler Co.New York City.
Ploughs, Contractors'
 Meaford Wheelba'ow Co., Ltd., Meaf'd, Ont.
 Mussels, LimitedMontreal.
Porter
 E. L. DrewryWinnipeg.
Powder, Blasting
 Standard Explosives, Limited ..Montreal.
Preservative for Hose
 Guilford S. Wood.....Chicago, Ill.

Printing
 Southam PressToronto.
Propellor Wheels
 W. Kennedy & Sons, Ltd., Owen So'd, Ont.
Pumps
 Canadian Fairbanks Co., Ltd..Montreal.
 S. F. Bowser & Co., Ltd.....Toronto.
 Ontario Wind Engine & Pump Co..Toronto.
 James Smart Mfg. Co....Brockville, Ont.
 Vandeleur & NicholsToronto.
Pumps, Centrifugal
 The American Well Works...Aurora, Ill.
 M. Beatty & SonsWelland, Ont.
 John Inglis Co., Ltd.Toronto.
Pumps, Deep Well, Steam and Power
 The American Well Works...Aurora, Ill.
Pumps, Fire Pressure
 The American Well Works...Aurora, Ill.
Pumps, Irrigating
 The American Well Works...Aurora, Ill.
Pumps, Reclamation
 The American Well Works...Aurora, Ill.
Pumps, Sprinkler Systems
 The American Well Works...Aurora, Ill.
Pumps, Underwriters' Fire
 The American Well Works...Aurora, Ill.
Punches and Shears
 Cincinnati Punch & Shear Co., Cincinnati.
 Cleveland Punch & Shear Wks., Cleveland.
 Long & Allstatter Co. Hamilton, Ohio.
 Williams & Wilson, LtdMontreal.
Rail Benders, Roller
 F. H. Hopkins & Co.Montreal.
Montreal Steel WorksMontreal.
Rail Drilling Machines
 A. B. Jardine & Co.Hespeler, Ont.
Rails, new
 Dominion Iron & Steel Co....Sydney, N.S.
 Drummond, McCall & Co.....Montreal.
 J. T. GardnerChicago, Ill.
 J. J. GartshoreToronto.
 F. H. Hopkins & Co.Montreal.
 Peteler Car Co.Minneapolis, Minn.
Rails, for relaying
 F. H. Hopkins & Co.Montreal.
 J. J. GartshoreToronto.
 Mussels, LimitedMontreal.
 Provincial Steel Co., Ltd. .. Cobourg, Ont.
 Jas. W. Pyke & Co.Montreal.
Rail Joints
 Goldschmidt Thermit Co.Toronto.
 The Rail Joint Co. of Canada...Montreal.
Rails, Re-rolled
 Provincial Steel Co., Ltd. .. Cobourg, Ont.
Railway Supplies
 Canadian Fairbanks Co., Ltd..Montreal.
 Franklin Mfg. Co.Franklin, Pa.
 T. McAvity & SonsSt. John, N.B.
 The Hiram L. Piper Co.....Montreal.
 The N. L. Piper Ry. Supply Co..Toronto.
 Rice Lewis & Son.....Toronto.
 Russel Wheel & Fdry. Co..Detroit, Mich.
 Williams & Wilson, LtdMontreal.
Reamers
 Butterfield & Co.....Rock Island, Que.
 Cleveland Punch & Shear Wks.Cleveland.
 A. B. Jardine & Co.Hespeler, Ont.
Replacers, Car and Locomotive
 Alexander Car Replacer Mfg. Co.Scranton.
 The Holden Co., Ltd.....Montreal.
 F. H. Hopkins & Co.Montreal.
Rivets, Boiler, Bridge and Structural
 Montreal Rolling Mills Co.....Montreal.



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