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Telephone and Contractors' interests

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See page 653.

## The Classification of the Graduation on Railway Construction.

By Professor B. J. Dalton.

At the recent annual meeting of the Kansas Engineering Society, Prof. B. J. Dalton, of Lawrence, Kan., read a paper on this subject, a copy of which he has kindly furnished us, as follows:—

The classification is one of the most difficult problems for the young engineer. It is a subject that cannot be taught in the class room. A young man starting out for himself after graduation may, within the first year, work for two men, both working under the same specifications, yet their classification will be entirely different.

Several years ago, during the construction of a certain line of railway through this and adjoining states, a dispute arose between the contractor and the division engineer over the classification. The difference in their estimates amounted to \$25,000 or \$30,000. The chief engineer appointed a commission of three of the oldest and best engineers on the line to go over this particular piece of work and classify it. They were men of many years experience in railway construction, yet they differed greatly in their estimates, so finally allowed an average of the three classifications. There must be some reason for this difference, and I believe that it is due to the indefinite wording of the specifications, and each man's interpretation of them.

Here is a sample specification for solid rock used by a number of the large railway systems:—  
"Solid rock shall comprise rock in solid beds or masses in its original position, which may be best removed by blasting, and boulders or detached rock measuring one cubic yard or over." Even under these specifications I have seen indurated clay classified as solid rock, and I believe justly so.

The Santa Fe Rd. specifications are more explicit. They read:—  
"Solid rock shall comprise: First, rock in solid beds or masses in its original or stratified position. Second, boulders or detached masses of rock exceeding one cubic yard, and all other material which in the judgment of the chief engineer cannot be removed without continuous drilling and blasting, and which is as difficult and expensive to remove as solid lime or sand stone. The fact that blasting may be resorted to by the contractor, or be the most economical method of working a material, will not of itself entitle such material to be classified as solid rock." This specification leaves out soft sand stone which is too hard to be plowed, but which may be blasted and then taken out with wheelers. This material is classified by some men as solid rock, and by others as part solid rock and part loose rock.

One specification for loose rock reads:—  
"Loose rock shall comprise all rock, which, in the opinion of the engineer, requires for its removal the use of steam shovel or pick and bar, without blasting, although blasting may be resorted to at the option of the contractors, and all detached masses of rock of more than one cubic foot, and less than 18 cubic feet."

Another one reads:—  
"Loose rock shall comprise all boulders or detached masses of rock, measuring more than one-fourth cubic foot and less than 18 cubic feet each; also indurated and cemented material, slate, shale, hardpan, soft and decomposed rock in ledges or

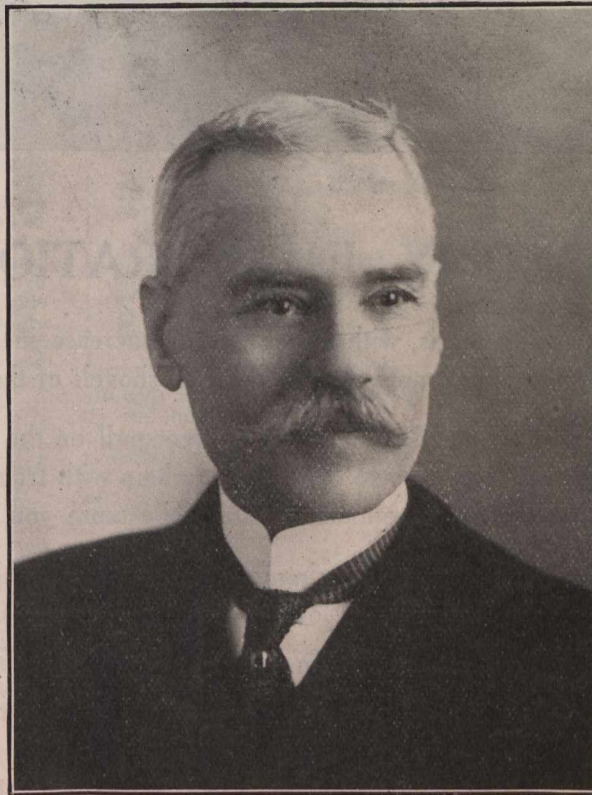
sification entirely to the judgment of the engineer, and the result is that contractors, in bidding on work, bid more upon the reputation of the engineer in charge of the work than upon the specifications.

The material that the contractor actually receives loose rock classification for is any material that requires more than three teams on the plow, but which he does not have to blast. If it is too hard to plow it is blasted and classified as solid rock, or part solid rock and part loose rock.

All material that is not classified as solid rock or loose rock is called common excavation or earth excavation. Several specifications read:—  
"Common excavation shall comprise all other materials of whatever nature that do not come under the classification of solid rock or loose rock, or such other classification as may be established before the award of the contract."

Another one reads:—  
"Earth shall include any and all kinds of material which, in the judgment of the engineer, is not so compactly united or hardened as to prevent plowing or loosening with a 10-inch grading plow drawn by a well handled team of six good, strong, heavy horses or mules, with one strong, capable man at the plow handles and another one on the beam. It is understood and agreed that material shall not be classified other than earth because of its small quantity; or because of its position, or because rocks, stones, logs, roots or the presence of frost render plowing impracticable or inadvisable. Plowing is not intended to mean turning a furrow for any specified length; nor shall material be classified other than earth because plowing is not attempted or performed. Any material not clearly described as loose rock or solid rock shall be classified as earth." This last specification is entirely too rigid for earth. In many places cuts are composed of a mixture of clay and large boulders, so interwoven that the only practical way of removing the material is to blast it and then handle it as a solid rock cut. Although the earth may constitute as much as 25% of the whole mass, it must be handled exactly the same as the rock, and at the same cost, therefore it should be classified as solid rock.

In some places we find the rock in ledges separated by layers of earth. Under these circumstances the earth should be classified as solid rock. The classification should be made in accordance with the intent of the specifications, rather than with the exact wording. For instances, the specifications on a certain 50 miles of line, specified earth as sand, loam, clay, or a mixture of clay and boulders that measured one cubic foot in size, and that could be plowed



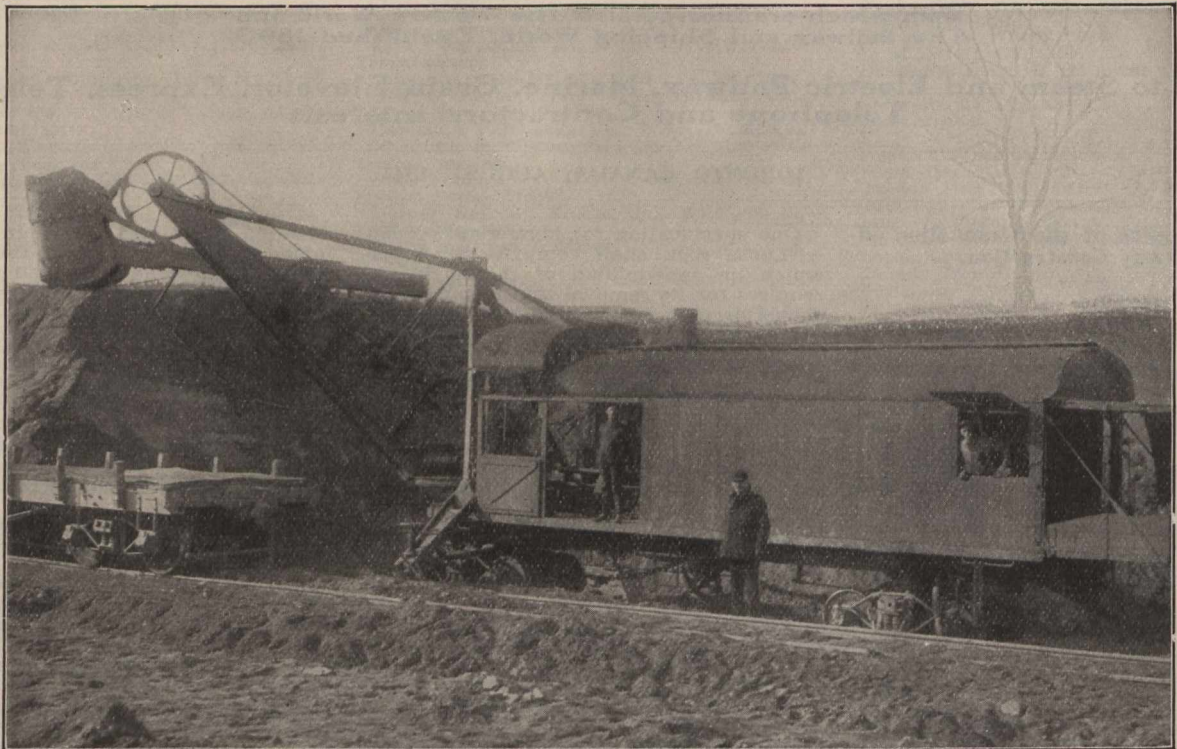
Lacey R. Johnson, M. Can. Soc. C. E.,  
Assistant Superintendent of Motive Power, C.P.R. Eastern Lines.

masses, and boulder or gravel deposits or beds, which are so indurated or compactly united that, in the judgment of the engineer, such material cannot be plowed, as set forth under the specifications for earth, but which can, in the judgment of the engineer, be removed or loosened by a moderate use of explosives; but, if, in the judgment of the engineer, an unnecessary quantity of explosives is used, such fact shall not modify or influence his judgment in making the classification, or entitle the contractor to a higher classification."

All these specifications leave the clas-



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with three teams. The contract was awarded at 14 cents per cubic yard. Fully 60% of the material was a mixture of clay and boulders which ranged from about two to eight inches in diameter. The most of the material was plowed with two teams and none of it required more than three. Although it plowed easily, it could not be moved to advantage with either slips or wheelers. Even after the chief engineer abandoned his specifications and classified it as loose rock, the contractor was dissatisfied, and sued the company for \$50,000. After the suit had run in the courts for a couple of years, the company and the contractor agreed to arbitrate, and let the court render a decision in accordance with the findings of the board of arbitration. In the arbitration agreement was a clause specifying that the classification should be made in strict accordance with the contract and specifications. The arbitrators rode over the line on a flat car, at the rate of 25 miles an hour, only stopping to examine one cut. They then took all the maps, profiles and note books to St. Louis, and after three or four months awarded the contractor one-half the amount he was suing for.

Therefore, I do not think it advisable to try to use specifications that differ very materially from the specifications used by the other roads. Consequently I wish to recommend the following specifications:—"Earth or common excavation shall include any and all kinds of material which can be plowed with a 10-inch grading plow drawn by a well handled team of six heavy horses or mules, with one strong man at the plow handles; and which, after plowing, can be moved with slips or wheelers fully loaded. By plowing it is intended that one plow shall be able to loosen enough material to keep at least twelve scrapers running.

"Loose rock shall include any and all kinds of material which can be plowed with either a 10-inch grading plow or a rooper, drawn by more than six mules or horses, or that cannot be moved with scrapers or wheelers fully loaded; also all detached masses of rock or boulders measuring less than 18 cubic feet each.

"Solid rock shall include all detached masses of rock or boulders measuring 18 or more cubic feet each, as well as all material which must be blasted, and is as expensive to remove as solid lime stone, or solid sand stone, which is hard enough to be used in first class masonry work. Any material that requires blasting, and may then be removed with scrapers or wheelers shall be classified as 50% solid rock and 50% loose rock."

It would be better to let all contracts unclassified. By this method the contractor would be given a profile of the line and would be permitted to make as many borings as he desired to determine the nature of the material. His price per cubic yard would then be based upon his own classification. This method leaves no room for disputes between the contractor and the company. Where this plan has been adopted it has proven very satisfactory to both the company and the contractors. Owing to the sharp competition between contractors the work does not cost any more than by the old method.

[Prof. Dalton's suggestions are of considerable interest and will, we hope, evoke discussion. We will be glad to have any of our engineering, contracting, or other readers write us their opinions on his suggested classifications for earth excavation, loose rock and solid rock, and also as to his recommendation to let contracts unclassified.—Editor.]

Work in connection with the geodetic survey of Canada has been started on the Pacific coast, the headquarters being at Victoria, B.C.

**Canadian Specifications for Classification.**

In connection with the foregoing article by Prof. Dalton, we have obtained the specifications of various Canadian railways from the chief engineers, and give the following extracts—

**ALGOMA CENTRAL & HUDSON BAY RAILWAY.**

Excavations will be classified under the following heads, namely, solid rock, loose rock and common excavation, under the following definitions:—

All stones or boulders found in excavation measuring more than 27 cubic feet, or one cubic yard in volume, and a solid quarry stone requiring drilling and blasting in order to remove it, will be classified as solid rock.

All rock commonly designated stones or boulders individually measuring in volume from one cubic foot to one cubic yard will be classified as loose rock.

All other material not classified as solid rock or loose rock will be classified as common excavation.

The price for said excavation in all the several classes thereof will be understood to cover and pay for the entire expense of removal of material excavated by any method whatever, including loading, unloading, transportation and deposition in the manner prescribed in these specifications, and in the location designated by the engineer, provided the average haul of the material so transported does not exceed 500 ft., and beyond that distance one cent per cubic yard per each additional 100 ft. will be

**A PROMINENT ENGINEER'S OPINION.**

J. G. Sullivan, Assistant Chief Engineer, C.P.R. Western Lines, writes from Winnipeg:—

"I consider the information in connection with orders, etc., of the Board of Railway Commissioners which are published in the Railway and Marine World, are alone worth more than the subscription price."

allowed when such over-haul is ordered by the engineer.

No rock excavation will be allowed for beyond the limits of the base and slopes as specified. All rock loosened by explosives beyond the slope must be removed at the expense of the contractors, but if required to make up the embankment, will be paid for at the price for common excavation.

**CANADIAN PACIFIC RAILWAY.**

Grading will be classified under the following heads: solid rock, loose rock, hard pan and earth.

Solid rock will include rock in solid beds or masses in its original position, which cannot be removed without blasting, and boulders or detached rock measuring one cubic yard or over.

Loose rock will include all detached rock or boulders measuring more than one cubic foot and less than one cubic yard, and all shale, slate, soap stone, disintegrated granite, and other soft rocks, which can be removed without blasting, though blasting may be occasionally resorted to.

Hard pan will include cemented gravel, hard pan, indurated clay or combinations of the same whose hardness is such that if in a suitable location could not be plowed by an average four horse team.

Earth will include all other material such as loam, clay, sand, quick sand, gravel, muskeg, angular rock fragments, and small boulders.

Material borrowed for embankment will not be classified higher than loose

rock, without prior written authority of the engineer.

Material in slips, slides and subsidences extending beyond slope lines will not be paid for, unless such occurrences were beyond the control of the contractor and not preventable by the use of due care and diligence.

The classification of material from slides will be in accordance with its condition at the time of removal regardless of prior condition. Measurements of overbreak in rock cuts will be the space originally occupied by material before the slide occurred, regardless of the classification of same.

Measurements will usually be made in excavation. In prairie or level country, where the embankments largely exceed the excavations, measurements will be made in embankments.

**GRAND TRUNK PACIFIC RAILWAY.**

Grading will commonly be classified under the following heads: solid rock excavation, loose rock, and common excavation.

Solid rock excavation will include all rock found in ledges or masses of more than one cubic yard, which in the judgment of the engineer, may be best removed by blasting.

All large stones and boulders measuring more than one cubic foot and less than one cubic yard, and all loose rock, whether in situ or otherwise, that may be removed by hand, pick or bar; all cemented gravel, indurated clay, and other materials, that cannot, in the judgment of the engineer, be plowed with a 10 in. grading plow, behind a team of six good horses, properly handled, and without the necessity of blasting—although blasting may be occasionally resorted to—shall be classified as loose rock.

Common excavation will include all other material of any character whatever, not classified as solid or loose rock.

Material in slips, slides and subsidences extending beyond slope in cuttings, will not be paid for, unless, in the opinion of the engineer, such occurrences were beyond the control of the contractor and not preventable by use of due care and diligence.

The classification of material from slides shall be made by the engineer, and will be in accordance with its condition at the time the slide is being removed, regardless of prior condition.

**GRAND TRUNK RAILWAY.**

All material excavated will be classified as solid rock, loose rock, common excavation, or such additional classifications of material as may be established before the award of the contract.

Solid rock shall comprise rock in solid beds or masses in its original position which may be best removed by blasting; also all detached masses of rock or boulders, each of which measures one cubic yard or over.

Loose rock shall comprise all detached masses of rock or boulders of more than one cubic foot and less than one cubic yard, and all other rock which can be properly removed by pick and bar without blasting; although steam shovel or blasting may be resorted to in order to facilitate the work.

Common excavation shall comprise all other materials of whatever nature that do not come under the classification of solid rock or loose rock, or such other special classifications as may be established before the award of the contract.

D. C. Macdonald, Division Freight Agent, C.P.R., Regina, Sask., writes:—"I cannot afford to be without the Railway and Marine World."

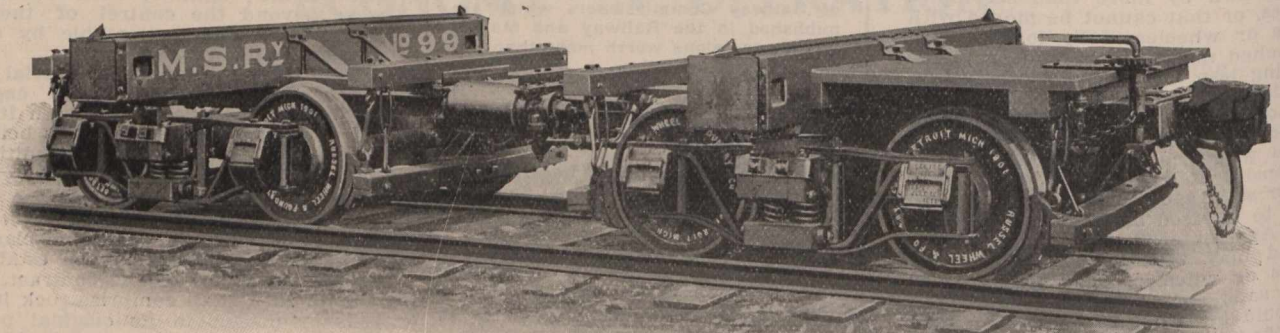
A site has been purchased at Fort Francis, Ont., by Alexander Bruce and Co., upon which it is proposed to establish a plant for preserving railway ties. It is proposed to put up a plant capable of handling 1,000,000 ties a year.



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### Prevention and Cure of Hot Boxes and Economy of Proper and Efficient Oiling of Rolling Stock.

By J. Thos. Warde, Chief Clerk, General Car Foreman, C.P.R., Winnipeg.

The question of hot boxes is a serious one. The trouble is largely caused by the ignorance of the oilers, secondly, by the inferior brass used in the composition of the journal bearings, and, thirdly, by improper seating of journal bearings and wedges.

I will take up the question of the employe's ignorance. We take a laborer, as a general thing a "foreigner," (I do not say this in a discriminating way, as some of this element is among some of our best men), but what I want to point out is, that this man is taken simply because another man will not do the work unless he can possibly help it. The man selected is told to take his dope and as a rule his oil can. His instructions are simply to oil up. Follow the man around the train. What do you find? You find him forcing dope into a box already overcrowded, and you will also find him sloshing oil into a box already leaking on account of too much oil.

You cannot blame the man for this. The question is—Who is to blame? It is no use blaming the foreman. Probably the foreman knows no better than he does. The question arises—Find a remedy. The remedy consists in elevating the position, and in educating the man to fill it. But how? That is the question. My experience is that you cannot do this in a day. You have to get your man interested in his work, in place of the clock, and then you can teach him the why and the wherefore of oil economy and the prevention of hot boxes.

In the first place, teach him how to prepare the dope, and the average quantity of waste and oil required, which is on an average of about one gallon of oil to about 10 lbs. of waste. See that he has the proper receptacles for the making of it and storing it after it is made. My experience is that an average of a barrel of oil to about 100 lbs. of waste is required to soak it successfully, after which all can be drawn off less 10 gallons. My system was to have three tanks, one for steeping the waste in oil and one for draining. This was arrived at by having an engine stack netting drain board raised about one-third way up in the tank, and the next a storage tank which was covered. I steeped the waste in oil 24 hours, then drained it 12 hours, and afterwards removed it to the storage tank for use. I found that I could as a general rule remove more dope than I put in boxes, but at this time there was no economy in saving the old waste, as all that could be done, was to pick out the cleanest and burn at this time. What I found most successful at that time was to work up my der part of the journal well back to the shoulder. This caused the oil to feed to journal, and certainly to a very large extent prevent a hot box. This is one question where the education of your oiler comes in.

The average amount of dope per box is 3½ lbs. Less is not sufficient, and more is too much for 30-ton cars. Now for a system of systematic teaching. Get your tinsmith to make a standard journal box of heavy galvanized iron, having slide sides. Have a journal of hard wood turned and placed in box. Set your box in same position as it would be on the truck of a car, and have your man pack it with the or-

inary dope and tools. Then carefully remove slide sides and replace by glass. You can then see how your box has been packed, carefully remove your wood journal model, and then you have it practically demonstrated how your box is packed.

The next question is—the material your journal bearing is composed of. As I am not a chemist I cannot explain the composition and the virtues of the various metals used in compiling the metals for a journal bearing, but my experience is that inferior metals have been and are used in their manufacture. You cannot blame your man for hot boxes, if at the same time you know you have an inferior brass composition for your journal bearings.

Then there is the question of unequal bearing of journal bearings and wedges. If any of the members will take the trouble and gauge these with the M.C.B. gauge they will readily see what I mean, and will find something perhaps to blame hot boxes for, both on passenger and freight cars, as you will find a large percentage of your bearings and also of your wedges that are unequal. I might say, though perhaps it is not altogether according to the rules, that I have many times fitted to journals old brasses, and have got good results from their use. In fact, when I was in the practical work, I always had on hand a half-round file, ground down for the purpose, and preferred using an old bearing to the placing of a new one. In road work I have many times treated hot boxes in this way, after the train men have set them out on account of running hot. My experience is that a box well packed and with everything favorable will make a trip of from 8,000 to 10,000 miles. As an instance I cite the following:—I cleaned out the boxes on a sleeping car, I think it was about 1895 or 1896, at Winnipeg, put back the old brasses and wedges and fresh cleaned dope (I might say that I was told this car would not go to Rat Portage on account of it not being flooded with oil) prepared as heretofore stated. I wired and sealed boxes, attaching a tag "Unless box is hot do not open." Car came back from Montreal O.K., went west to Vancouver, came back to Winnipeg with one box seal broken and on the tag was written "Hot box at Medicine Hat caused by broken wedge." The date was given, showing that box was opened on its outward trip west and brass changed. Had a new brass applied. Box was hot and caused delay again at Calgary. Brass was again changed. Brass was sent to Winnipeg and heating found to have been caused by unequal bearing. I opened the other boxes, on advice of our General Car Foreman, and they were found to be in a first class condition and could have run the trip over again. Still, what is feasible on passenger cars is not always to be arranged with freight cars. Take our ballast pits, for instance. With our old style of A 3 journal boxes and covers, it was almost an impossibility to keep these covers on. They would open and allow dirt and dust to gather, and cut journals were numerous. The material question of course crops up, even at a ballast pit, and I was sometimes up against it, especially for waste. When this happened I resorted to a trick. I washed pebbles out of the gravel and placed a very generous supply in the box and then put in waste. I found this scheme to work well, and I have no doubt it was o.k. for short trips.

The prevalence of hot boxes is no doubt due to several and various causes, but chiefly among these is the general ignorance of our average oilers. The quality of oil cannot be blamed, as the oil at present used cannot be compared to the old black oil we were using at that time as a lubricant. Neither can

the general construction of the boxes and covers, as but few of the old style S.E. boxes and A 3 boxes are in evidence, but there is the car capacity and weight. It is reasonable to suggest it may be partly blameable, but it is provided for by the increase of the journal bearing to overcome the extra weight due to the demand for cars of larger capacity. Therefore if our bearings are uniform and our bearings of a mixture suitable to resist heat and hard, heavy service and wear, the question is answered by saying that the fault lies either in unequal bearings or in the ignorance of our oilers.

Before I close I want to say something of our system at the C.P.R. Winnipeg shops reclaiming plant, which consists of three tanks for the reclaiming of oil. Two of these are 3 ft. by 4¾ ft. by 9 ft. long, made of ¼ plate with wood covers, having hinged doors, and are placed end for end. No. 1 tank has a 2 inch angle riveted to side, inside, about 6 inches up at end next to no. 2 tank. A strainer made of smoke stack netting is placed on this angle for the distance of 2 ft., forming a clear chamber. This chamber is fitted with pipe ¾ in., having a fine wire mesh over its entrance. This pipe is connected with a man pump having a 2 inch barrel, by which means the oil is transferred to tank no. 2. These two tanks are raised about 6 ins. off the ground or floor. Beneath tank no. 1 are about 150 ft. of 1½ in. steam pipe supplied with live steam. No. 2 tank is of the same capacity as no. 1, the difference being that the entire length is covered by smoke stack netting placed upon the angle iron. This tank is also fitted with piping beneath, but in addition, is also equipped with 50 ft. of 1½ in. piping at the upper part of back. This is also fitted with a hand pump to remove the reclaimed oil from the waste. Also have a tank 2 ft. by 1½ ft. by 6 ft. for sorting dope. The old dope is placed in tank 1 and steam turned on to raise the temperature to about 100 degrees. This loosens up the dope. After a few hours it is forked over, and is then placed in the sorting tank and sorted over. The waste is then placed in tank no. 2, and subjected to a temperature of 90 to 120 degrees of heat. After being in this tank for a few hours it is forked over again and is then ready for use.

The oil drained from no. 1 tank is pumped over the dope in no. 2 tank, and the oil that gathers beneath the wire screen in no. 2 tank is pumped out of tank into barrels for use.

The waste that is of no value is placed in an air pressure cylinder subject to 80 lbs. pressure. The reclaimed oil ran into tank 2 and then it is ready for use. At stated intervals the tanks are cleaned out and all dirt removed out of the tanks and burned.

The average amount of oil reclaimed runs from 3,500 to 4,000 gallons a month. The average amount of waste reclaimed is from 450 lbs. to 500 lbs. a month, this being all prepared dope and ready for use.

It shows a net saving in oil of \$95 to \$100, and for dope about \$50 to \$60, or a saving of \$150 per month.

This has been more than doubled during the past year, and the general saving at Winnipeg shops now is from \$150 to \$300 a month, according to the season, but \$150 is the minimum.

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

R. I. Bodkin, General Claims Agents Department, C.P.R., Winnipeg, in remitting a renewal subscription, writes:—"The Railway and Marine World is of much value and of great interest to me. Kindly keep sending it to the same address as above."



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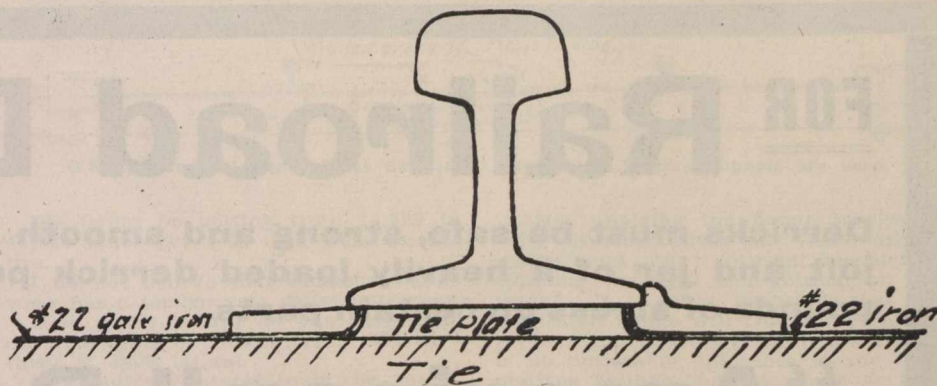


**Fireproof Deck for Timber Trestles.**

The Board of Railway Commissioners some time since exempted the Great Northern Ry. lines in Canada from having to comply with the order respecting the protection of timber trestles, etc., from danger of catching fire from sparks and cinders falling from locomotives. The reason for this exemption lies in the fact that the G. N. R. has, since 1908, been using a standard fire-proof deck for timber bridges on all its lines, both in the U.S. and in Canada; galvanized iron being the protective material employed. It is claimed that this plan eliminates the objectionable features of a gravel deck protection formerly in use, while retaining all its advantages. The gravel deck protection was found to be unsuitable on account of the rotting of the ties and stringers, and because of the continual shaking out of the gravel, thus exposing the ties. It was also found, where bridges are on a curve, that the gravel worked down towards the lowest side. This condition was partially overcome by placing longitudinal strips at close enough intervals, so that the gravel could be levelled up without exposing ties. The gravel deck bridge was finally abandoned and the present galvanized iron protection adopted, with very satisfactory results.

The standard plan for fixing this fire-proof deck shows that 22 gauge galvanized iron is used, the sheets being 6 ft. long by 28 in. wide for the space between the rails, and 30 in. wide on the outside of the rails. The sheets between the rails overlap at the centre, and those outside are bent up against the guard rail, the lap and bent-up edge being made to suit. The sheets are matched to fit closely around tie plates and nailed to ties with 8-penny barbed car nails, 9 gauge, each nail being provided with an 18 gauge washer, 1/4 in. hole, under head. Lining spikes are driven through the galvanized iron. On lines where electric signals are used, and have to be carried across timber bridges, the galvanized sheets, instead of being overlapped in the centre of the track, are bent up, onto a triangular strip of wood, which serves as insulation between the two rails. Eight sheets of each width cover 23 lineal feet of bridge, and 14 nails and washers are required for each lineal foot of bridge.

For the foregoing information and the accompanying plans on this page and pg. 713, we are indebted to A. H. Hogeland, Chief Engineer, G.N.R.



Great Northern Ry. Fireproof Deck for Timber Trestles. Sketch.

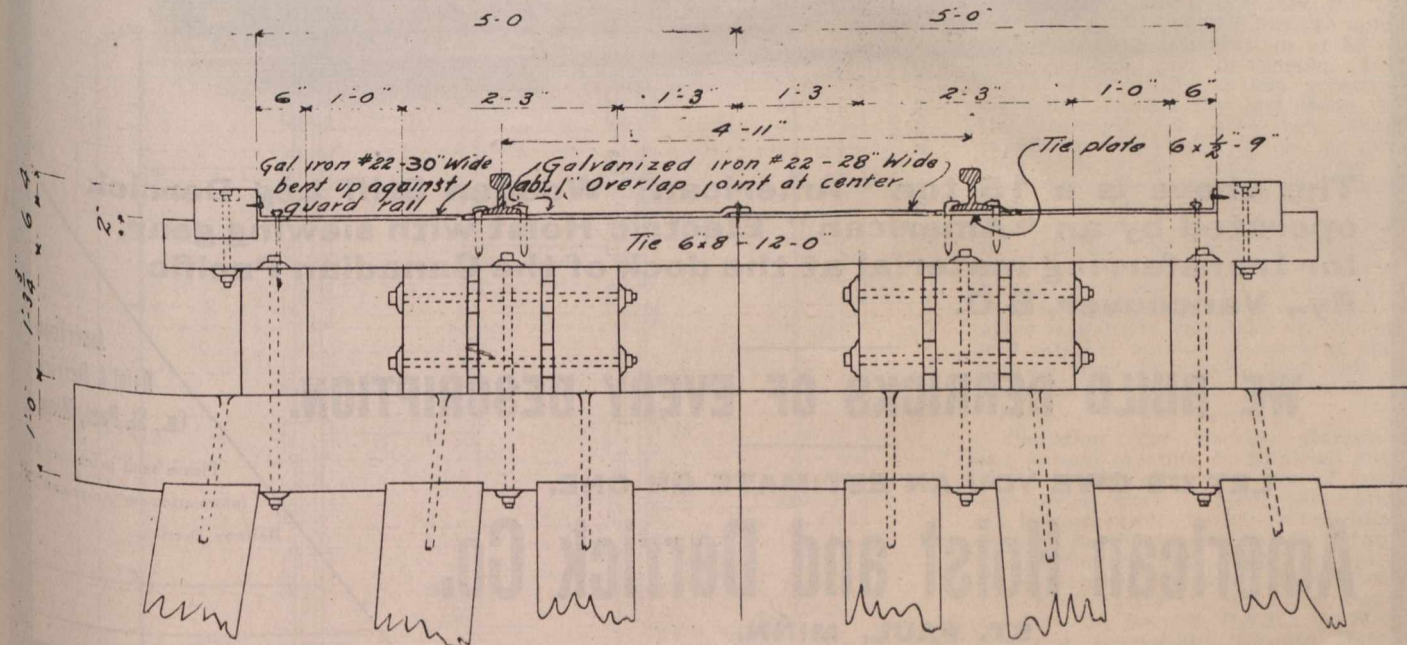
**Transition Curves.**

In the very interesting communication on this subject from J. Leslie, Roadmaster, National Transcontinental Ry., in our last issue, a line of type was misplaced in the lower portion of the second column, making it read incorrectly. We repeat the portion of the letter correctly as follows:—

I once knew an experienced foreman who had charge of a big yard, together with two miles of section, and on the section was a 3° curve. He surfaced and lined his curve as well as he knew how, and when it was completed he felt much elated, thinking it was the best piece of track on the system. To make sure that it was all it appeared to be, he went down the line to the first station and boarded a passenger train for the purpose of satisfying himself that the curve in question was all right. The train when reaching this curve had attained a high rate of speed, the descending grade being in its favor. He discovered, to his great surprise, that the curve in a couple of spots was not anything like the track he thought it was. Judging from the way it rode he thought the defective spots must be very conspicuous or easily detected, but when making an effort at improvement he could not detect the spots which were so very pronounced when riding on the train at a high speed. Now, in this case the defect was certainly in the alignment, and yet his experienced eye could not detect the slight variation. If

he had tried the 62 ft. cord it would have pointed out the invisible spots, but this was in the days long before lining with a cord was thought of. Section foremen as a rule take great pains with their surfacing and lining, and what appears to them to be good track may be full of little imperfections. Their knowledge in general of how a train rides over their newly surfaced and lined track is very limited. Even a roadmaster might be deceived in this way, but his position gives him the advantage in knowing where the defective spot is located, and just what is wrong with it.

The American Association of Demurrage Officers spent two days at Niagara Falls recently, in consideration of changes necessary in the Uniform Code of Demurrage Rules. The changes recommended are all in the direction of making the meaning of the present code clearer. A committee has been appointed to present the suggested changes to the American Railway Association, in time to be acted upon at the fall meeting of the latter organization, which is to be held in November. The changes affect principally the free time to be allowed on cars held for re-shipment and on cars held under bond, subject to Customs regulations. The Association will also ask for some modifications of the claim rule, under which allowances are made for weather interference and for the bunching of cars in transit resulting in their delivery at destination in accumulated numbers.



Great Northern Ry. Fireproof Deck for Timber Trestles. Cross Section.

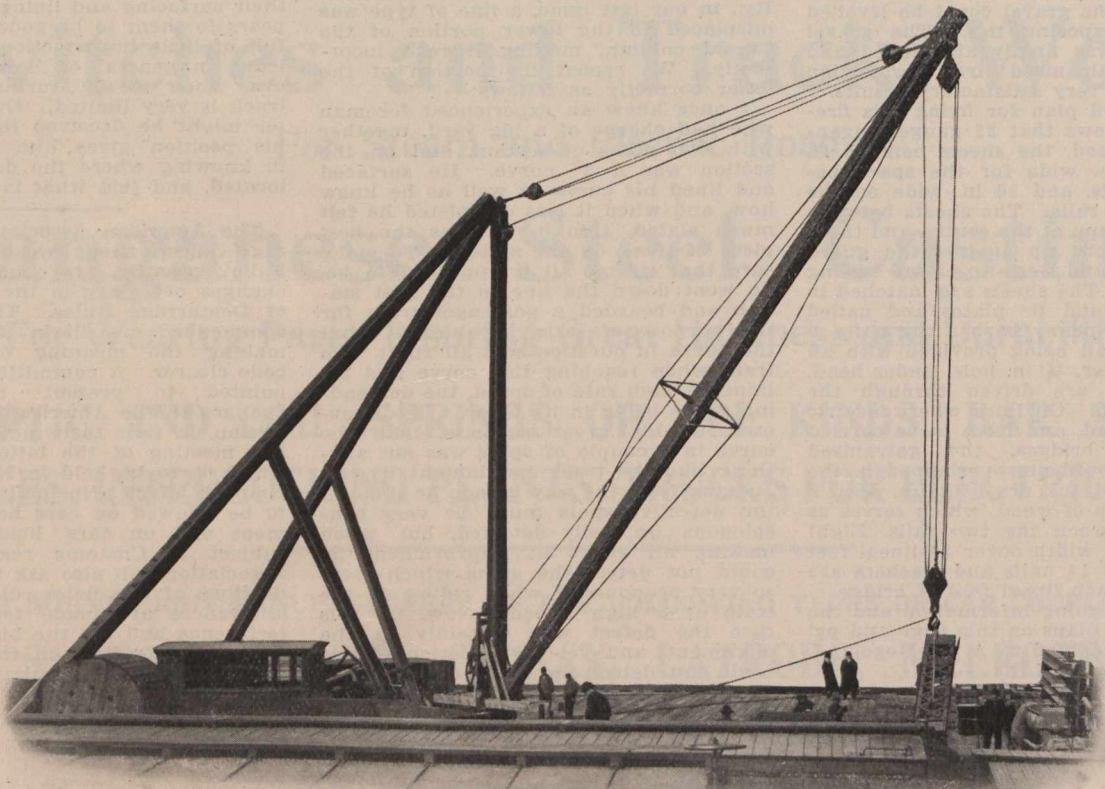


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**Flange Lubrication on C. P. R. Western Lines.**

The American Railway Master Mechanics' Association committee's report on flange lubrication published in our last issue, contained several references to the practice on the C.P.R. Western Lines. In response to our request, Grant Hall, Superintendent of Motive Power & Car Department, Winnipeg, has favored us with a copy of his replies to the circular sent out by the committee, which are summarized as follows, in some instances the question being given as well as the answer:—

We have flange wear on locomotive driver and truck wheels, tender truck wheels and steel passenger car and freight car wheels.

We have in service standard, Pacific, consolidated, and ten-wheel locomotives. The consolidated show the greatest wear.

The number of miles our locomotives give between driving wheel turnings for flange wear depends upon the nature of the district upon which they are operated. This is taken care of by shifting the tires around on wheel centre, which prolongs their life and usually wears them down on tread, so that grooving is necessary before turning for sharp flange.

When a locomotive is stopped on account of sharp flanges, how long is it out of service? We avoid shopping for sharp flanges as above.

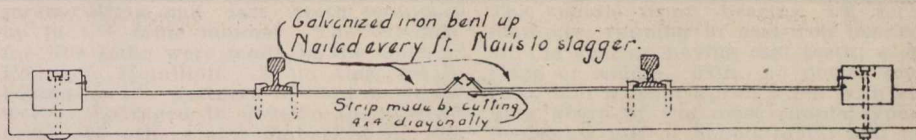
The loss per day on a locomotive shopped on account of sharp flanges depends upon the cost of the locomotive and its earning power.

The labor charge for changing tires on different types of locomotives is \$2 per tire, which shifts them from one wheel centre to another.

The labor charge for turning tires for different types of locomotives, that is the simple operation of turning off a pair of tires in the machine, is 75c.

The metal loss due to turning for flange depends upon the wear of the flange. To build up some of the worn flanges would take half an inch.

If this metal did not have to be removed to form new flanges how many more miles would you get in actual service from the different type of locomotives?



G.N.R. Fireproof Deck. Cross Section of Ties when Electric Signals are used.

We figure on getting from 12,000 to 15,000 miles per 1-32 inch wear on the tire.

I do not believe that excessive flange wear has a tendency to cause hub wear.

How much lateral do you give your different types of locomotives? We give them 3/8 inch lateral.

If a uniform lateral could be maintained, due to the prevention of flange wear, it would be a saving to our locomotive machinery.

We have ten degree curves on our lines. The grades run up to 5%; a considerable portion of the mileage is 2.2%.

We have applied a number of flange lubricating devices to prevent flange wear but up to date (Feb. 16, 1911) have found nothing of material benefit. We have tried hard grease lubricators, also syphoning ordinary engine oil from a receptacle on the flange, but these have proved ineffective.

The flange lubricators are located on bracket on frame adjacent to wheel. They are blind feed depending upon the external flow for judging the feed.

The flange lubricators deliver the oil to the flanges by gravity, flow feeding on shoe, which engages with flange. They do not deliver the oil to the flanges by means of a steam jet or air pipe feed from pipe or nozzle located near the flange.

We use no other method for delivering lubricant to flanges.

None of the flange lubricators we have in service are arranged so that the feed will be uniform in cold or freezing weather. In cold weather the oil becomes thick and will not feed, on account of the temperature.

We have applied flange lubricators to Pacific, consolidated and ten-wheel locomotives. They are as yet in the experimental stage. They are applied to the leading wheels.

Grease and engine oil have been tried without success. The lubricator we are going to try will feed fuel oil.

After applying the flange lubricators did your locomotives ride easier around curves, and did it prevent locomotives climbing the rails and getting off the track? It is to be expected that the lubricated flange will ride curves easier.

Since applying flange lubrication there is no noticeable difference in the locomotives hauling more tonnage or handling regular trains easier on curves.

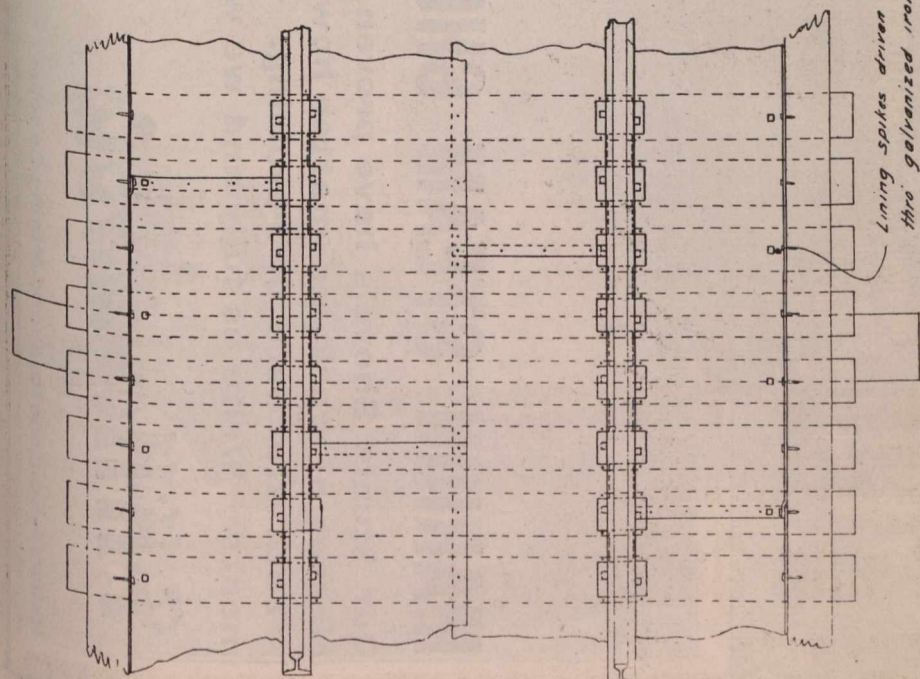
I think a benefit would be derived in many ways from the use of flange lubricators.

We have not applied flange lubricators to new tires, removing the lubricator after tread has become worn, so as to depend upon shoulder worn on tread to protect flange.

What depth of tread wear is necessary to prevent flanges from being cut by rail? I consider that if you are going to get flange wear in a certain district you will get it from the start, and do not think there would be much advantage in having an engine track and wear evenly on the tread on a tangent and then expect that this would keep it away from the flanges if transferred on to a curvy section.

**Poles used in Canada in 1910.**

The Forestry Branch of the Department of the Interior has compiled statistics dealing with the poles purchased in Canada during 1910. The total number purchased was 782,841, an increase of 118% over 1909. The total value of these poles at point of purchase was \$1,043,874, and the average price was \$1.33, or less by 6 cents than the price per pole in 1909. Steam railways, telephone and telegraph companies used 95% of these poles, the remaining 5% being used by electric railways, power and light companies; 97% of the total consumption were cedar poles, which for their cost give better service than any other wood. At present none of these poles are treated or preserved by any method, in which respect Canada is far behind the United States, the latter country using in 1909, 3,738,740 poles at an average cost of \$1.89, or at 50 cents more per pole than in Canada. It was found that it paid to use preservative methods. During the last three years the treatment of poles has advanced rapidly in the United States, so that in 1909 15% of the total number were treated by creosote or other methods. This is an increase of 67% over the number treated in 1908. At present the U.S. has 87 pole treating plants, while Canada has none. It is to be hoped that this great inequality will soon be done away with, and that pole users in Canada may take up this cheap and rational method of securing greater service from the poles used and thus lessening the drain on the forest.



G.N.R. Fireproof Deck for Timber Trestles. Plan.

**Canadian Car Service Bureau.**—At the annual meeting in Montreal July 13 the following representatives of member companies were elected representatives on the executive board:—Chairman, M. Magiff, Superintendent of Telegraph & Car Accountant, Central Vermont Ry.; G. S. Cantile, General Superintendent Car Service, C.P.R.; F. Price, Superintendent Car Service, G.T.R.; G. W. Wilson, Car Accountant, Toronto, Hamilton & Buffalo Ry.; W. S. Moy, Car Accountant, Quebec Central Ry. J. E. Duval is Manager of the Bureau.



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**Recent Advances in Machine Tool Construction.**

*By Colonel Alexander Bertram.*

In this paper it is the author's intention to speak more particularly of the early history of machine tool building as it has come under his personal observation, from his schooldays until the present time.

In 1861 there was in operation in the town of Dundas, Ont., a small jobbing shop conducted by Robert McKechnie, a young patternmaker, who graduated from the Dundas foundry of John Gartshore, and who had struck out for himself in a small way, to carve out an existence in the then growing Province of Ontario. In 1862 he was joined by a young Scotchman in the person of John Bertram, who had received a thorough training as a machinist, and these two founded the Canada Tool Works, or what is now known as The John Bertram & Sons Co., and started as builders of wood machinery, at the same time doing a jobbing trade with the local mills and factories. During 1863 the late John Bertram designed and built in that small shop what was perhaps the first engine lathe ever made in Canada, and from that date the designing and building of machine tools has been continuously carried on at the same place, but, of course, in much better fitted shops than the first small wooden building of those days. This first and somewhat primitive lathe had a swing of 12 in. over the shears, and with a 6 ft. bed, weighed about 600 lbs. The difficulties under which the lathe was built were greater because of the fact that the small shops had nothing in the way of means of planing the bed. This difficulty, however, was overcome at the Gartshore Foundry, where, also, the leadscrew was cut. The planer in use in that shop was a Scotch-built machine, and, of course, had a table of sufficient length to plane this bed without a shift. This lathe was finished in about six months, and a large portion of the small turning was finished by hand tool turning, as at that time there were few self-acting lathes, and certainly none in this shop. All the gears had cast teeth made from wood pat-

terns, and even the change gears for screw-cutting had cast teeth moulded up in the same manner. The castings for this lathe were made in the Gurney Foundry, Hamilton. From this small beginning the partners of that business were encouraged to develop their business, and others also embarked in the same line, with more or less success. John Bertram was a mechanic of advanced ideas, and was never satisfied unless the development of his designs and the organization of his shop were ever on the advance. He at once adopted standards for shop use, in the way of Whitworth standard threads for taps and dies, and also inaugurated male and female, or what are now known as plug and ring gauges, for sizing the bore of wheels and pulleys, and for the turning of shafts. He also saw the necessity of cutting gears, and finally designed and built a gear-cutter. This machine was of the most simple form, consisting of a bracket bolted to the shop wall, carrying a mandril and a dividing plate. A man was trained to feed the cutter slide up and down. During the operation he very often made a slip and spoiled the gear. In those early days Brown & Sharpe cutters were developed, and from that time until the present day B. & S. cutters have been in constant use there for gear-cutting. All key-ways at that time were cut by hand, and it was remarkable how well this was done, and the time taken for small keys was not as far away from the present-day methods, when setting up and preparing a machine to do the work is considered. To duplicate the key-ways in change gears for screw-cutting, a broaching tool was used. After the keyway was roughed by hand, the broach was driven through, thus producing a standard finish, which served the purpose.

His next step was to design a milling machine (fig. 1) for cutting keyseats in shafts. All the movements were by hand, and the machine and its cutters are herewith shown. Since this date, in the early sixties, many changes have taken place toward improving the turning lathe. Then it was considered satisfactory to furnish a 24 in. lathe with a flat shear bed, having single ribs connecting the ways together, a headstock having a four-step cone, with a 2 1/2 in.

belt and a gear ratio of about 5 to 1. The spindle front bearing, 1 1/4 inches diameter, running in cast-iron bearings, all the gearing having cast teeth; a carriage or saddle with no power cross-feed, and a front apron fitted with running gears of the most simple type; a leadscrew nut of babbit metal and tailstock fitted between the flat ways. Yet this was the condition under which the present high-speed machine was developed, and probably I am safe in stating that a greater improvement has been made in iron turning lathes than in any other machine tools in the large group of iron-working machinery. In order to fully illustrate the changes, we shall show three designs of standard iron-turning lathes.

Fig. 2 shows the type of lathe built by this firm until 1885. This lathe is better known to the trade as the flat shear-engine lathe—that is to say, the top of the ways of the bed are a flat surface. The carriage or saddle carrying the tool block is gibbed at both front and rear to the ways of the bed, on which it has its bearing. These ways were planed to an angle of 55 degrees. This lathe swings 24 ins. in diameter, and it will be clearly seen how limited the cone and gear power was as compared with the powerful high-speed machine of the present day. Mr. Bertram having had his early training among Scotch and English machine tools, the designs followed were naturally more of that type.

In the early seventies two types of lathe head construction were freely discussed among mechanics in Canada. The one favored largely by English practice, and termed the conical or solid bearings, appealed to many by reason of its easy adjustment for wear. One element, however, seemed to have been overlooked, and that was the expansion and contraction of the spindle with varying temperatures. This difficulty soon decided the fate of the conical bearings as at that time constructed, for although some English makers hardened and ground both the spindle and bearing, this could not remedy its seizing qualities, and, therefore, the present parallel front and back bearing in lathe head construction has been adopted by nearly all builders.

Fig. 3 illustrates a standard engine

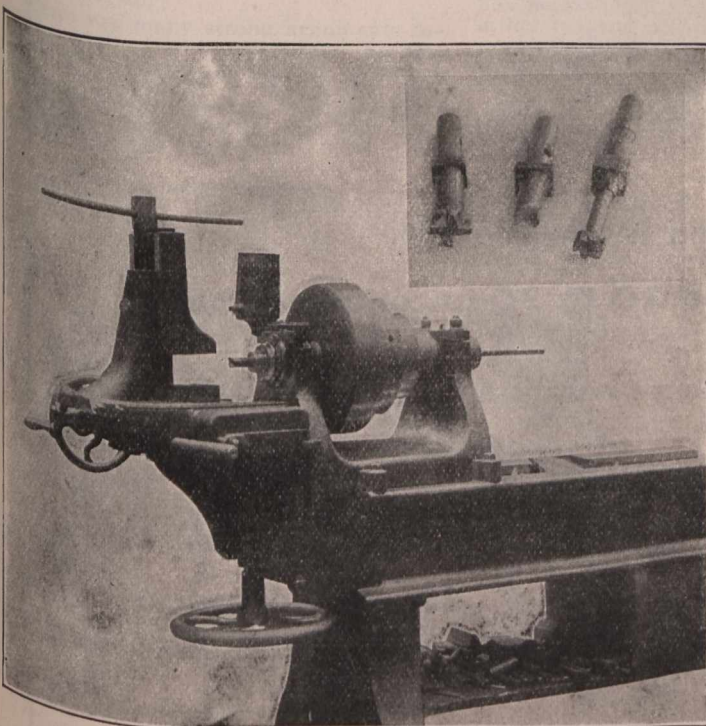


Fig. 1. Milling Machine.

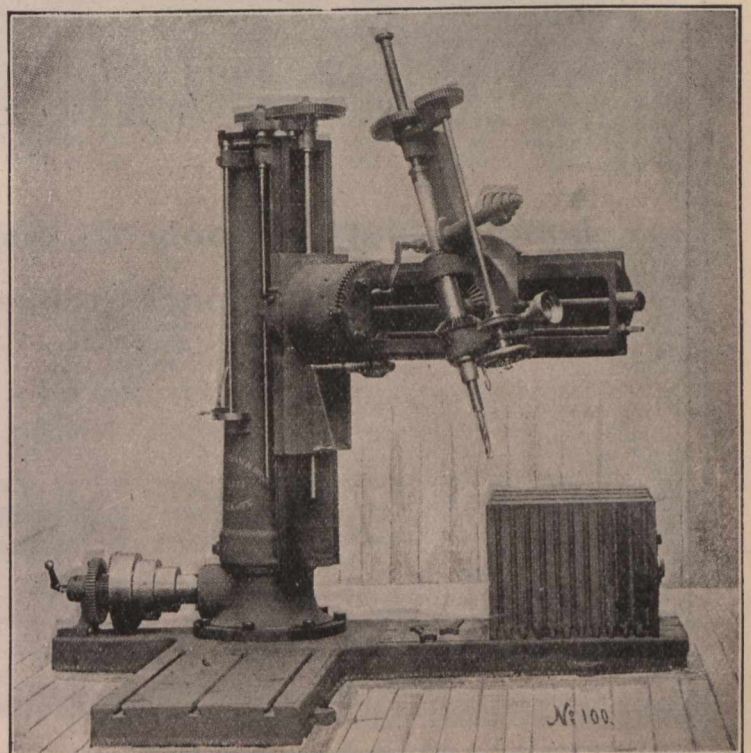
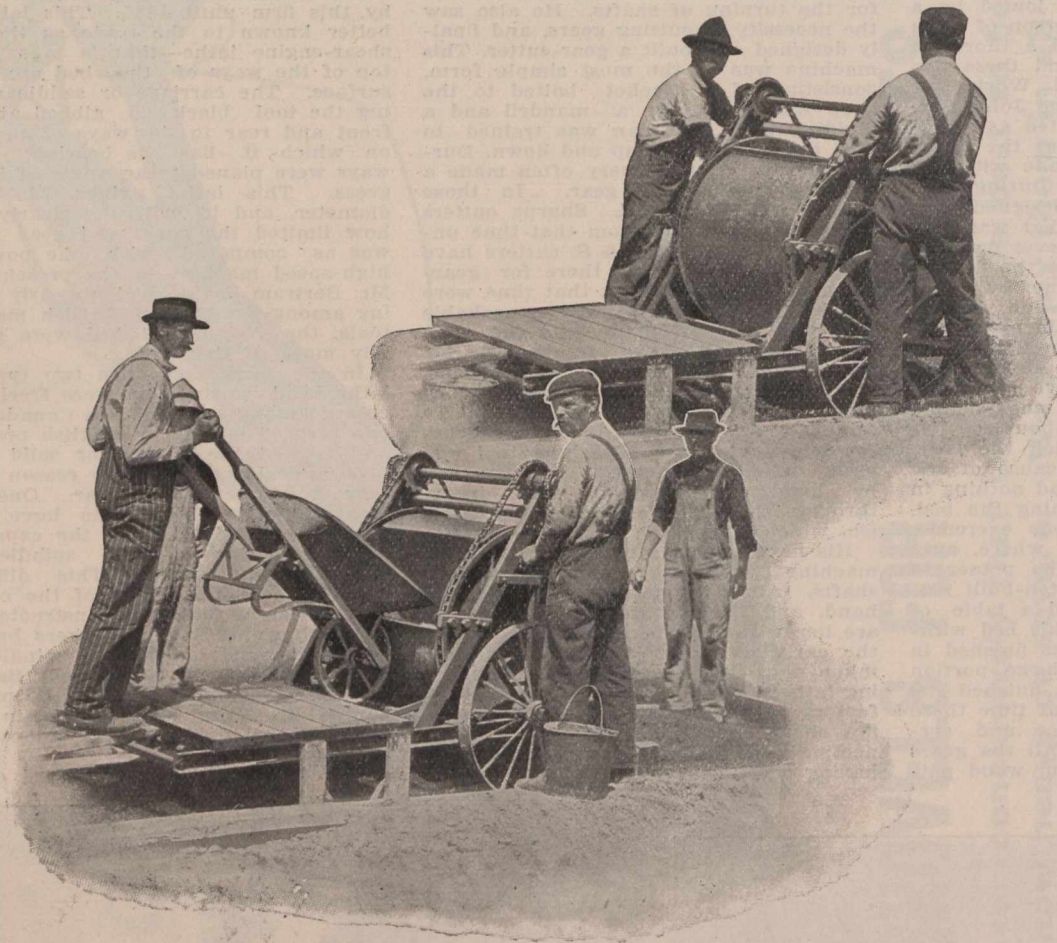


Fig. 24. Old Full Universal Radial Drill.



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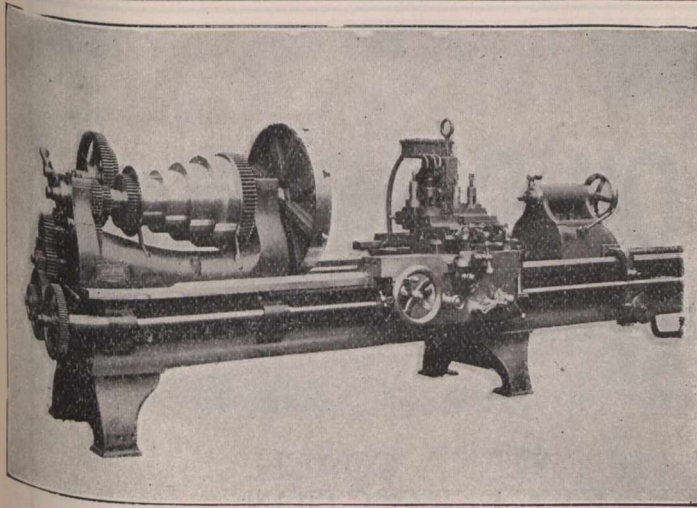


Fig. 3. Standard Engine Lathe.

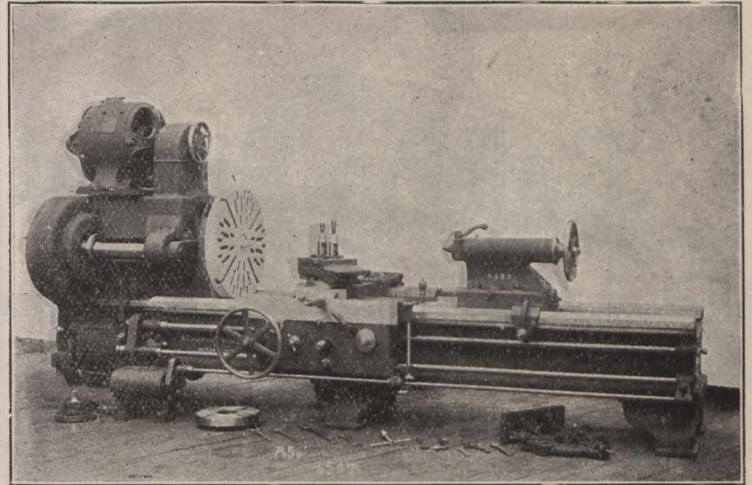


Fig. 4. Motor Driven Lathe.

lathe as manufactured by one of the United States builders. In this design it will be noted that the saddle and tailstock have separate bearings on inverted V's. This construction is favored for lathes of small size, but many leading United States builders favor a flat bearing for the tailstock, which, when provided with proper adjustment for maintaining its alignment, is much more easily kept clear of cuttings.

Fig. 4 illustrates one size of motor-driven lathe as built by the Bertram Co. today. In order to economize in the manufacture of this machine, the construction is such that any stock machines may be converted from belt to motor, or vice versa, as required, and for that reason it is termed the convertible type. The gear and cone ratio is such as to permit of the use of standard motors of variable speed, as made by all the electric companies, and when so arranged with motor drive attached to the running gear, the lathe head loses all semblance to that of the original cone-driven lathe in many of the leading machine shops. This is particularly so in the sizes running from a 30 in. swing and up.

There are many strong arguments favoring the motor-driven lathe. Several of the minor advantages may be noticed. First, the use of the motor does away with the overhead line-shaft and its maintenance. From the fact that belting and the line-shaft have been

done away with, the machine may be placed to greater advantage in a shop, and in this way space may be economized. The range of speeds which are obtained by the variable speed motor through the drum type controllers enables the operator to arrange the cutting speeds to suit the material being machined. This arrangement of speeds is made possible by the fact that the operator, by moving the handle shown at the right-hand of the carriage, instantly controls the spindle speeds. This, of course, is a decided advantage over changing the belt on the steps of the cone-driven lathe. Again, in this, as in all motor-driven machines, the cutting speeds and feeds are very much increased, as the power delivered at the cut by the motor is from 50 to 100% greater than the power obtainable in a belt-driven machine, and the absence of belt pull on the cone gives a greater degree of accuracy to the work produced from the same lathe. In consequence, with the use of high-speed cutting steel, the output of the motor-driven lathe has been increased from 30 to 50%. It may be remarked that the tremendous increase in power in the running head has necessitated the re-designing of the lathe, making all the parts throughout proportionately heavier than the same sized lathe of ten years ago.

Fig. 5 shows another form of motor-driven lathe known as the "all-g geared" type, driven by constant-speed motor or single pulley drive by countershaft. In

this machine all changes of speed are effected by clutches, and no changes of belt, as on a cone, are necessary. For lathes of very large size this construction will commend itself to the user, although there are arguments against the number of gears made necessary to give the desired changes. On all large lathes of this type, separate motor for quick traverse of the saddle along the bed is provided. Movement of the tailstock by the same means gives greater efficiency or quicker adjustment of the tools to the cut.

The foregoing covers in a general way the advance in construction of the engine lathe. Another type of lathe which in recent years has received considerable attention, namely, those for locomotive and coach wheel turning, will now be considered. Fig. 6 shows this machine as originally designed by the Pond Tool Company, of Plainfield, N.J. As first built it was belt driven, having about 9 horse power, and a capacity of from 4 to 6 pairs of wheels per day of 10 hours. The special features of this machine are:

1. The central drive. It is known as the worm drive. The power is transmitted direct from the cone shaft, or as the machine is built today, from the motor, to a worm and a worm wheel, which is mounted on the end of the driving shaft. The end of this main driving shaft is a worm which in turn engages a large worm wheel in the centre of the machine. Both worms

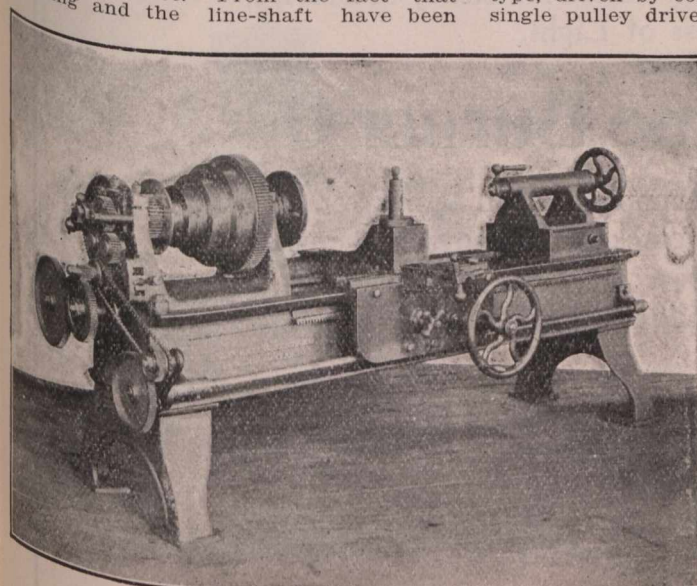


Fig. 2. Flat Shear Engine Lathe.

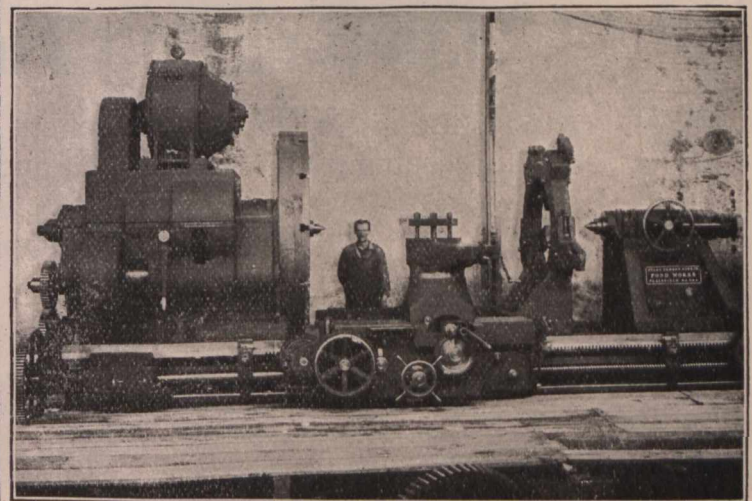


Fig. 5. All Geared Motor Driven Lathe.



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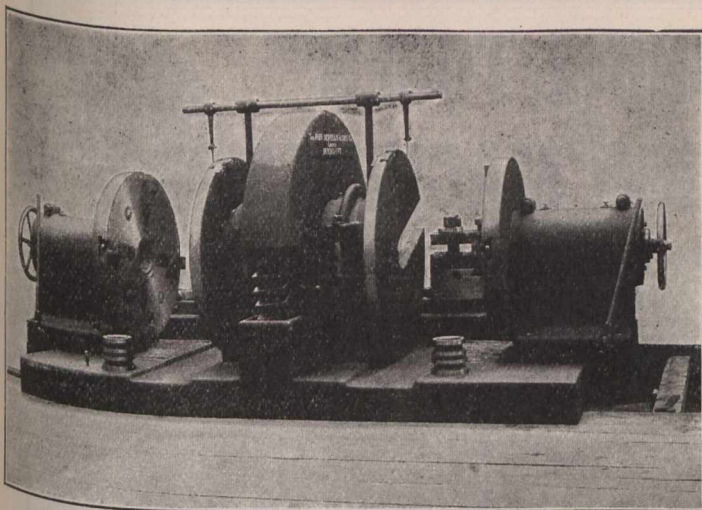


Fig. 6. Locomotive and Coach Wheel Turning Lathe.

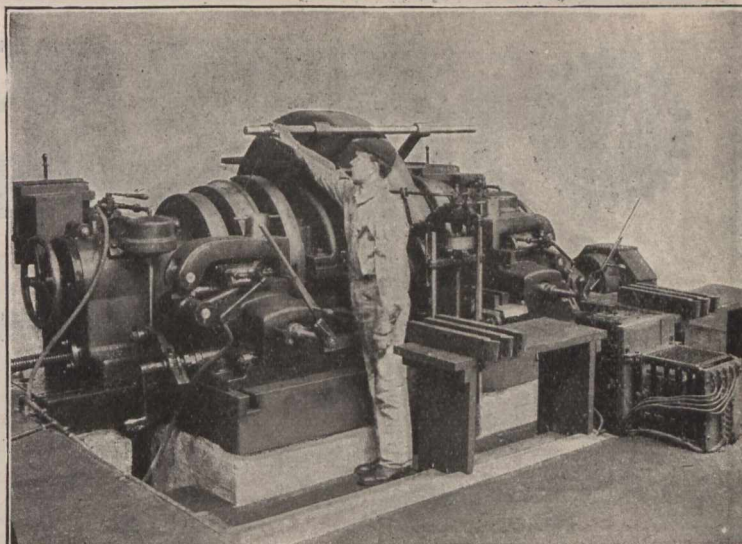


Fig. 7. Locomotive and Coach Wheel Turning Lathe.

and wheels run in oil tight cases, which ensures perfect lubrication. In this way the power reaches the machine midway between the wheels, and, in addition to securing uniform power, the central drive makes it possible to support the wheels on both sides. This is accomplished by means of self-centring chucks, which grasp, or grip the axle journals, and chuck jaws engage the tires.

2. The compound rests, which carry the cutting tools, are mounted on the bed, and are held by four bolts in T-slots—in this way any springing tendency is prevented, and in consequence the heaviest cuts can be carried.

Fig. 7 shows the machine as built today by the John Bertram Co. The machine has undergone radical changes, these having been brought about by the introduction of high speed steel and the use, for driving power, of an electric motor directly attached. As already stated, the original machine was capable of turning from four to six pairs of tires per day, but upon the introduction of the motor, the power was and the output increased from six to eight pairs of wheels per day, with one

man as operator, and one man as helper to roll the wheels in and out of the machine. For a number of years this was considered a standard day's work, but soon the energetic shop managers of the leading railway companies increased the horse power to 30, with the result that the output was increased to from 10 to 12 pairs of wheels per day, this necessitating an additional helper to roll the wheels in and out of the machine. Not content with this, however, the power was further increased to from 35 to 40 horse power, the output thereupon averaging 14 pairs of wheels per day, with two operators and two helpers. This undoubtedly demonstrated the possibilities of the machine, but it also demonstrated to the manufacturers the fact that labor-saving devices must be added, since the output had reached the limit of human endurance.

The latest achievement is clearly illustrated by fig. 8. It consists of a new design of tool block clamping device for holding the tool, and being operated by compressed air, facilitates the work of the operator. Power is also applied for both moving and clamping the heads on the bed.

In fig. 9 there is illustrated the segment in the central driving gear, which opens, closes, and locks automatically as the wheels are rolled in and out, this requiring no attention whatever from the operator. These labour-saving devices have so perfected this machine that the output has steadily increased, until, under a recent test, 33 pairs of wheels were turned in nine hours and thirty-three minutes.

The wheel lathe specially designed for turning the tires of locomotive driving wheels as used up to a few years ago, is illustrated in fig. 10. Those familiar with the modern machine will readily see that the construction is light in all its parts, particularly in the head and face plates. The power is limited, owing to the narrow belt by which the machine was driven, and the output was consequently limited to 1½ to 2 pairs of wheels per day. The top of the bed was a flat surface, and in consequence the pedestal carrying the tool blocks had to be of sufficient height to carry the tools to the centre. Owing to their length in a lathe of 80 ins., this was an extremely weak feature, as it was scarcely practicable to make them of sufficient size and strength to pre-



Fig. 8. Tool Block Clamping Device.

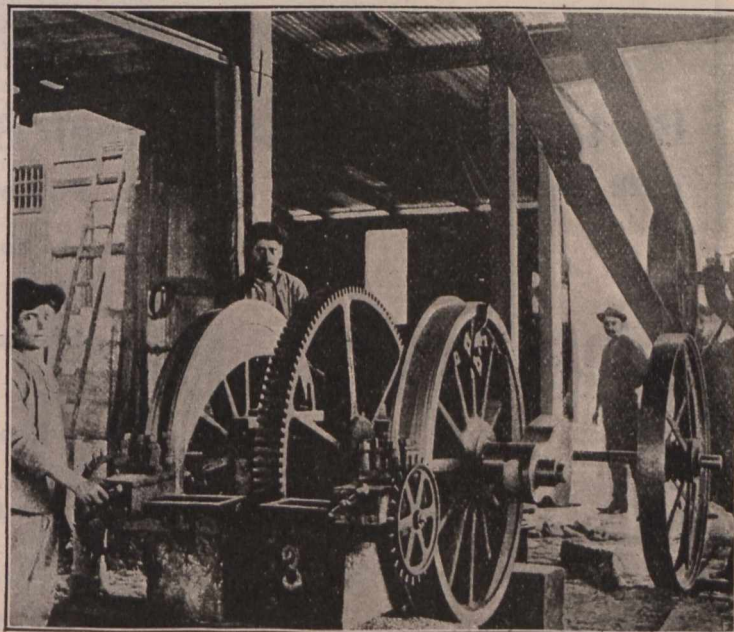
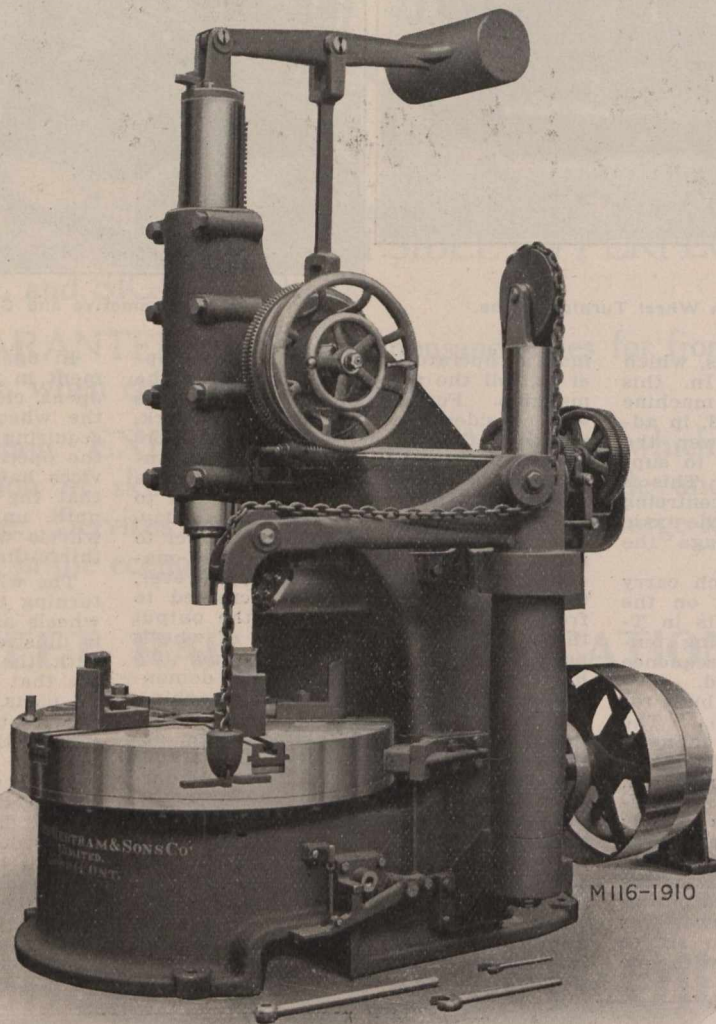


Fig. 14. Wheel Lathe on Mexican Railway.





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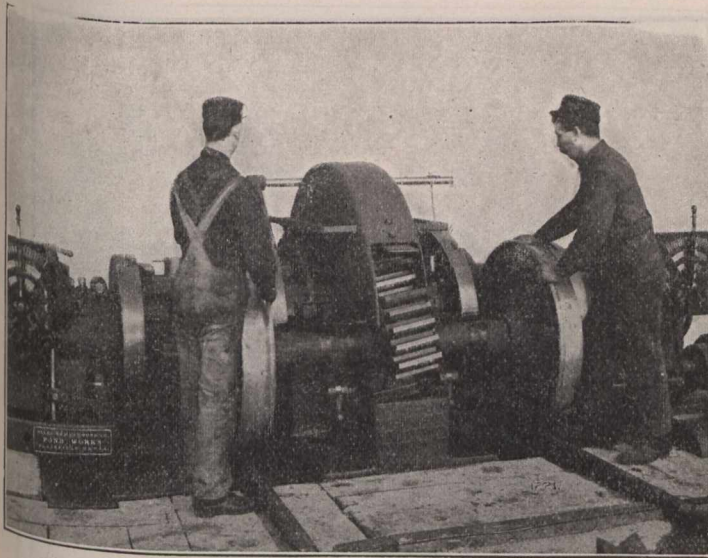


Fig. 9. Showing Segment in Central Driving Gear.

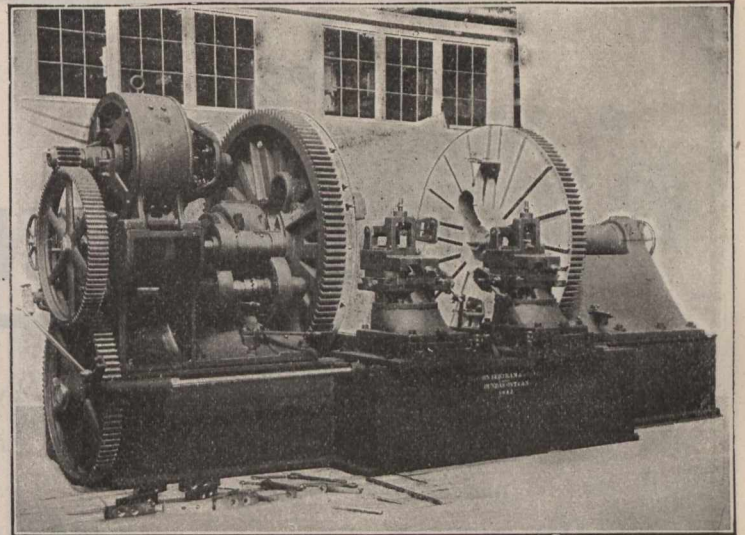


Fig. 11. Modern Driving Wheel Lathe.

vent springing. This, together with the weakness of the driving plates and the primitive method of holding and driving the wheels, accounts very largely for the small output obtained.

The modern 90 in. driving wheel lathe is illustrated in fig. 11. The machine has been designed throughout with a view to obtaining the greatest rigidity at the point where the greatest strain is imposed; this elevation also permits of the use of very short and stiff tool posts. The back web of the bed, not being subject to so great strain, is low; this facilitates the handling of wheels in and out. The tool blocks are equipped with a tool-holder, which renders easier the setting of the cutting tools. The operator is thus relieved of opening and closing four nuts each time the tools are set. The feeds are positive, being operated by connecting rods attached directly to the tool block feed shaft. The head is equipped with a 50 h.p. motor; the power is transmitted through a train of gears and a 7 in. shaft to the internal gears on the face plates. As the internal gears form wide flanges on the face plates, the plates are given great rigidity, and by the use of improved drivers, fig. 12, which hold the wheels perfectly rigid, the heaviest cuts can be carried with little or no vibration. In order to fully realize the improvement in the machine, it need only be stated that while the output of the old machine was from 1½ to 2 pairs of wheels per day, the average output is now 6 pairs of wheels per day, while, under special test, 10 pairs of driving wheels were turned in 9 hours 6 minutes. Fig. 13 shows a cut taken in the above test.

Fig. 14 illustrates a curiosity in wheel lathes from a photograph taken from a lathe in use on a branch railway in Mexico. The bed consists of square timbers, a main gear in halves, which is clamped to the axle at its centre, while the wheels and axle run in their own journal. Claim is made that a pair of wheels were turned in one week, which would scarcely fill the requirements of our large Canadian roads.

The subject of lathes should not be dismissed without a word on the boring and turning mill, another form of lathe construction, so arranged as to permit of the easy chucking of articles to the face-plate. This machine has also been brought to the stage of quick adjustment of rail heads and bars, all the surplus power and energy of the man being developed to increase the number of hours actually at the cutting point of the tool. Fig. 15 shows a standard boring mill, as built by the Bertram Co. for the Canadian market.

Fig. 16 shows a Bertram tire boring mill for coach wheel tires up to 42 in. diameter. The construction is especially for heavy duty.

Few machines which have to do with the production of the modern locomotive have undergone such changes in size, weight, and power as the frame slotting machine. This is due to the increased size and weight of the locomotive of today, as compared with that of a few years ago. This, of course, causes a corresponding increase in the size of the frame to be slotted. Fig. 17 shows the slotting machine, as built by the Bertram Co. until about 1898. The opening in the yoke was 34 in. wide and 12 in. high, and the bed had a length

of 36 ft. The machine was capable of slotting one pair of forged frames in 60 hours.

Fig. 18 illustrates the standard three-headed slotting machine, as in use in the Canadian Pacific and other railway shops. The opening in the yoke is 48 ins. wide and 26 ins. high, and the length of the bed is 40 ft., giving the machine sufficient capacity to slot four of the largest sizes locomotive frames in from 32 to 34 hours.

In Fig. 19 is illustrated the largest type of triple head frame slotting machine which is known. It was installed in the Montreal Locomotive Works about three years ago, the dimensions of the machine being—opening in the yoke 61 by 34 ins., and the bed is 50 ft. long, maximum stroke of cutter bars 32 ins. The machine is capable of slotting six locomotive frames simultaneously, and has the power and rigidity necessary to do the work at the minimum cost under modern manufacturing conditions.

In common with most of the other large machine tools, the method of drive in the slotter has been changed and improved by the introduction of the motor. As will be seen in this plate, each head is driven by a 20 h.p. motor, from which the cutting bars are driven through powerful friction clutches, which permits the operators to have convenient control of the bars at all times. This improved method of drive has superseded the long shaft, which ran the entire length of the bed in the older machines, communicating the power to the cutting bars through a system of clutches. These facts will show that the slotting machine of today has three times the

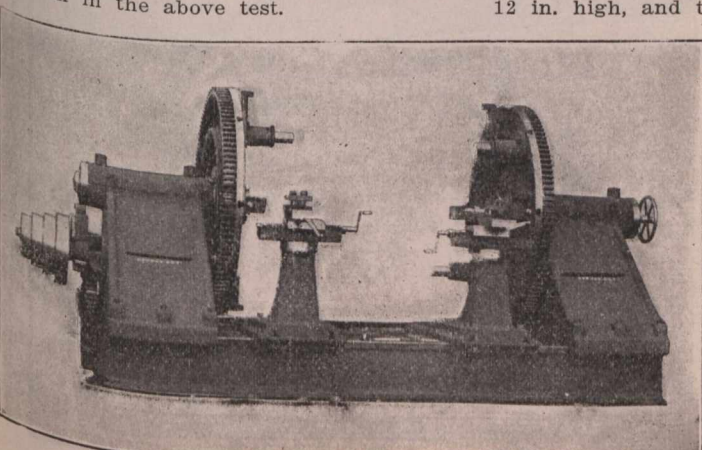


Fig. 10. Old Wheel Lathe.

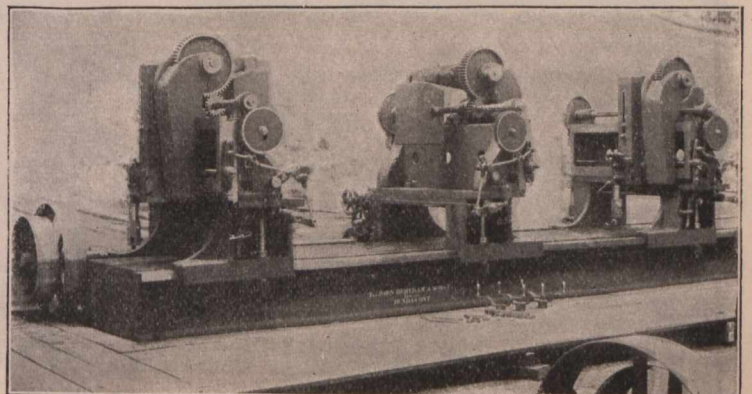


Fig. 17. Old Slotting Machine.



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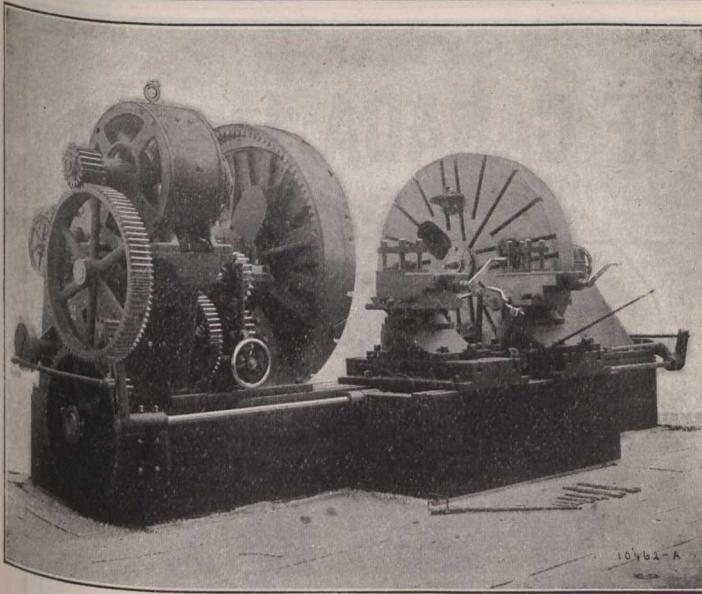


Fig. 12. Modern Driving Wheel Lathe.

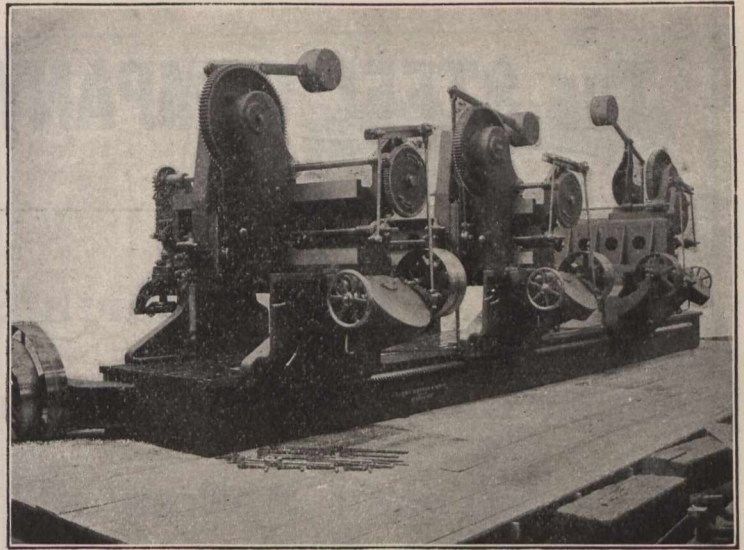


Fig. 18. Three headed Slotting Machine.

capacity of the machine manufactured a few years ago. In consequence a very great saving has been effected in the cost of slotting frames, for, as has been shown, in the earliest machine it required 60 hours to slot one pair of frames, the machine as next improved slotted four frames in 32 hours, while the latest improved machine averages six frames in 40 hours.

In passing rather hurriedly through an outline of machine tool improvements, a few words should be said on the subject of the drilling machine. In common with nearly all classes of machinery the drilling machine has of late years received its share of attention. The following plates will serve to illustrate the development of this type of machine tool, and render unnecessary an explanation of the improvements in detail.

Fig. 20 shows the first ratchet and drill brace used in the shops some 40 years ago. Fig. 21 is a very old illustration of a drill built in the United States. Fig. 22 illustrates a vertical drill, built in the Bertram Works about 1869. Fig. 23 illustrates the latest Bertram vertical drill. Fig. 24 shows a full universal radial drill. The first machine built from this pattern was exhibited at the Centennial Exposition at Philadelphia in 1876. Fig. 25 represents the latest production in full universal radial drills.

Time will not permit the discussion of the present-day drilling records, or to compare them with those of early days. Many articles on high speed

drilling have appeared from time to time in engineering publications, and the wide variations in results obtained might be an interesting point for discussion at a subsequent meeting. Some of those present might then be able to give valuable information regarding personal experiences.

This paper should not be concluded without giving some attention to one of the most important machines, namely, the iron planer, and in doing so it should not be necessary to go into its past history further than to state that since 1694 little was accomplished in its development until early in 1800. As stated in the introductory remarks, there was a machine of this type in the Gartshore Foundry in 1863. This machine had a cutting speed of about 10 ft. per minute. The gearing was made with cast teeth, and the rack had a double section having the teeth staggered to give a smooth and uniform motion to the table.

Fig. 26 illustrates one of the first machines built in the Bertram Works in 1867. The power is delivered to the table by a single 3 in. belt running at a velocity of 512 ft. per minute, with a gear ratio of 6.25, giving an effective pull on the table of 3750 lbs. and a cutting speed of table 20 ft. per minute.

Fig. 27 represents a 36 in. planer, driven by two 3 in. belts, one of them being used as a forward or cutting belt, and the other for the reverse motion. A belt velocity of 1,000 ft. per minute and a gear ratio of 13.4 to 1 de-

livers an effective pull on the table of 8180 lbs., at a cutting speed of 20 ft. per minute.

From the above some idea is given of the gradual development of iron planers. In recent years modern shop construction demanded economy in space and a more convenient shop layout. This led to the adoption of an individual drive made possible by the improvements in electrical machinery, and for the past eight or ten years the usual plan of mounting the motor on top of the planer housing has been followed. This plan is more or less faulty, due to a liability of the machine producing defective work by reason of the natural vibration caused by the motor being placed in that position. To obviate this danger the use of pneumatic clutches was introduced, and a motor drive placed at the base of the housings.

Fig. 28 represents a motor drive mounted upon the housings of the machine, power being transmitted by four belts, two for cutting and two for reverse. This drive was developed to give increased belt pull without excessive belt shifting velocity. The increased pull wide single belt for both forward and reverse motions would demand double the shifting speed to obtain as prompt and uniform a return of table as the original narrow belt required. This increase of shifting speed was practically impossible, hence the introduction of the four-belt drive. With two narrow belts for each motion the required increased pull is obtained, and

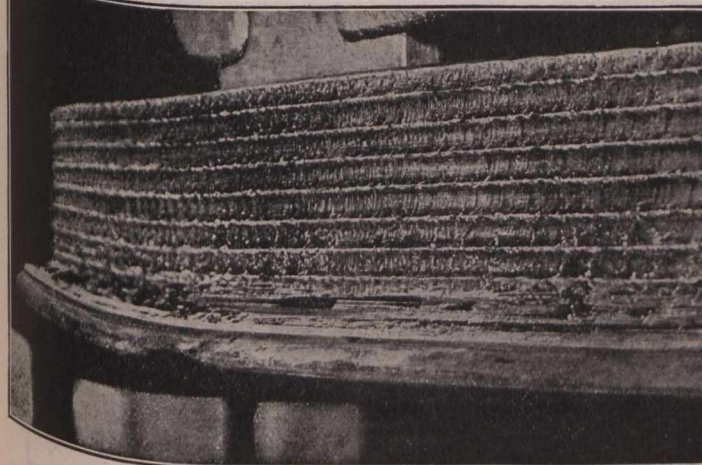


Fig. 13. Taken during test of turning driving wheels.

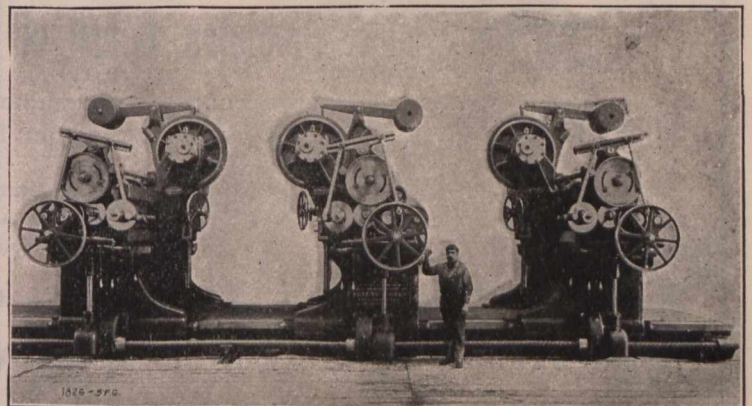


Fig. 19. Triple Head Frame Slotting Machine.



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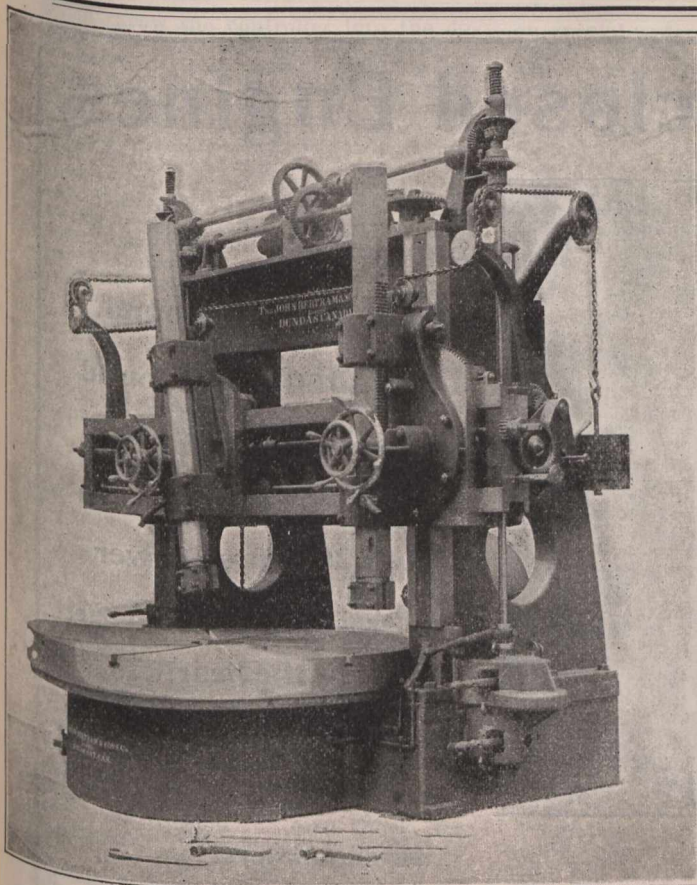


Fig. 15. Standard Boring Mill.

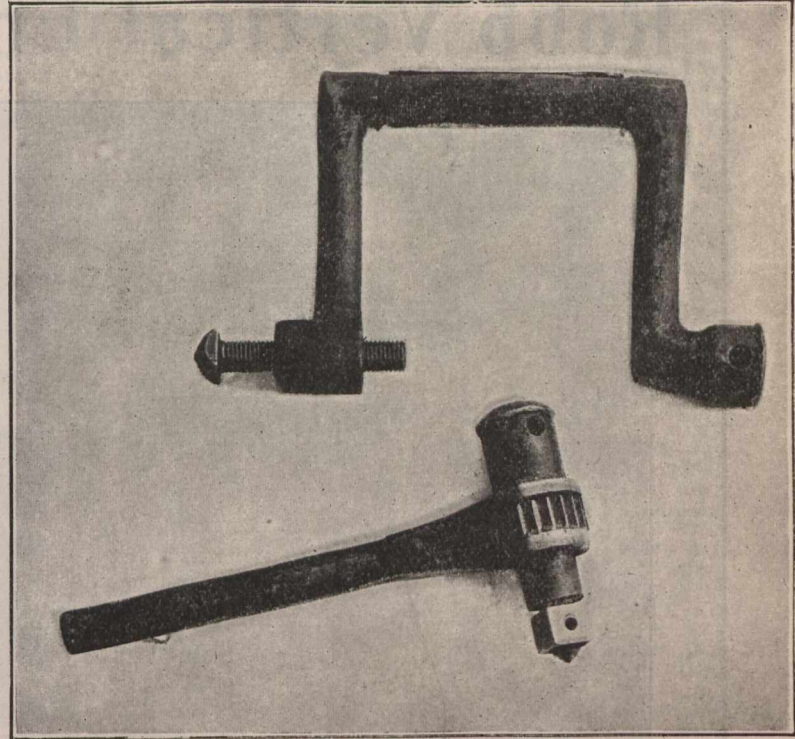


Fig. 20. Old Ratchet and Drill Brace.

the same facility of shifting remains as in the old two-belt drive without any increase in shifting velocity. In this construction by a gear ratio of 8.8 to 1, a belt velocity of 1,330 ft. per minute, an effective pull on the table of 10,000 lbs. is obtained at a cutting speed of 36 ft. per minute, at the same time maintaining a comparatively low belt speed and the use of a 5 in. belt for the cut and return.

We now reach the most modern drive applied to iron planers, and the following is quoted from a circular issued by the Niles-Bement-Pond Co., of Plainfield, N.J., where the improvements were designed and carried out. Fig. 29 represents the machine in question.

"In the Pond reversing motor planer is offered an entirely new method of driving and reversing at variable speeds. This system is the result of years of experimenting in this line, and has proven itself absolutely reliable under the most severe and adverse working conditions. It overcomes all the undesirable features of belt and gear-box drives, and does away with clutches, either pneumatic or magnetic, and all shifting belts. The reversing drive essentially consists of one motor, which acts as a generator at the instant of reversal. This result is accomplished automatically by a patent controller. On the controller are mounted two index scales or dials—one controls the range of cutting speeds and

the other the return speeds. Each scale is provided with 13 graduations or divisions, by means of which an equivalent number of different motor speeds are obtainable by simply sliding the thumb piece on the scale. There are no dashpots in the system.

"The cutting speeds obtainable on the standard type of planers vary from 25 to 40 ft. per minute, and the return speeds from 60 to 100 ft. However, these speeds can be changed to suit individual requirements. The cutting and return speeds are entirely independent of each other, so that it is possible to use the slowest cutting speed and the highest return speed, or vice versa. The table is reversed by adjustable dogs,

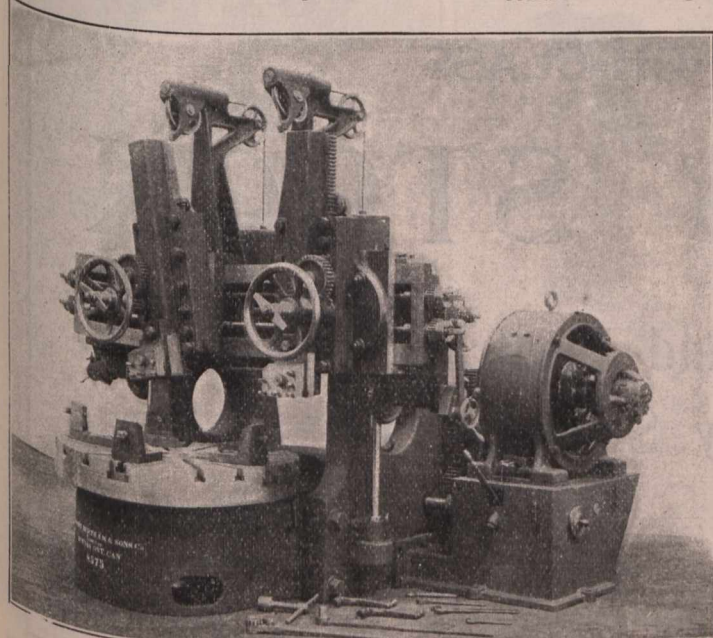


Fig. 16. Boring Mill for Coach Wheel Tires.

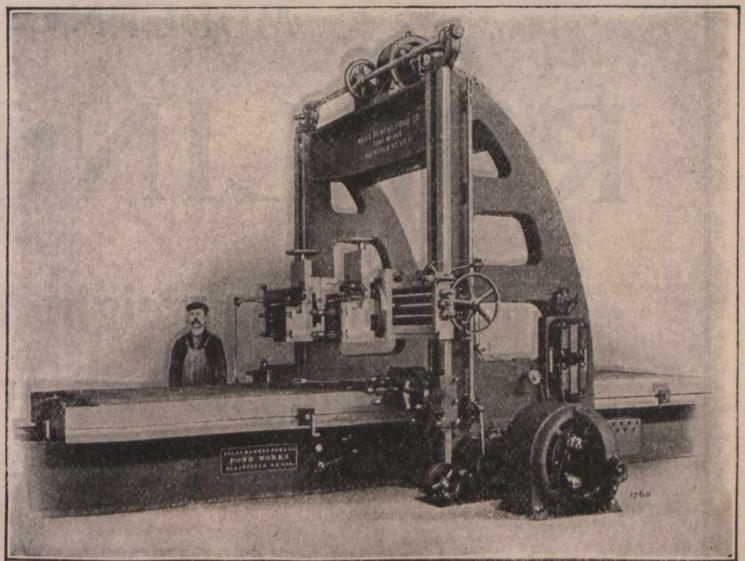
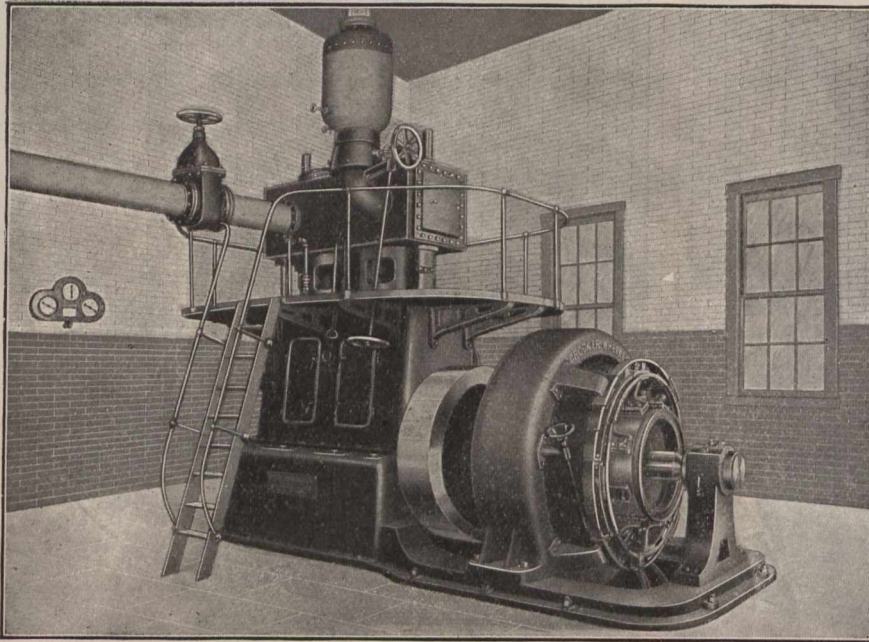


Fig. 29. Modern Drive applied to Iron Planer.



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which throw the controller into the dynamic position, the current which is generated at this instant bringing the motor to a stop. The motor, being directly across the main circuit, has at all times full field strength to brake on, regardless of the speed at which it is running. These conditions account for the quick action of the planer at the instant of reversal, as well as for the perfect electrical action of the motor, there being absolutely no sparking or other electrical strain.

"At the instant of reversal, in which the motor is being brought to a stop, the controller automatically reverses the main circuit to motor, which gives the reverse direction of rotation. The dynamic feature of the controller is absolutely dependent upon speed of the motor, and automatically takes care of the various speeds of rotation. At the end of the stroke a table dog throws over the pilot switch. This is the only mechanical motion in the entire drive. The pilot switch is entirely enclosed, and is placed in the same position on the bed as the mechanical lever of an ordinary belt-driven machine. The pilot switch operates with such ease that it is not necessary to use a wrench to secure the reversing dogs, the latter being quickly adjusted to any desired stroke by means of hand clamps.

"The kinetic energy stored in the work, planer table, armature, and other moving parts of the machine is absorbed by the braking action of the operating torque of the fields on the rotation of the armature, which is accomplished without the least shock, jar, or hesitation. The current generated by this action passes into the starting resistance, and then off as heat, the result accomplished being exactly the same as if some form of mechanical brake had been applied to motor to bring planer to a stop, with the difference, however, that the action is perfectly smooth, has no wearing or frictional surface to contend with, and needs no adjustment. The over-load on the motor at the instant of reversal is never over 50%. The entire drive of the planer is on the floor, or near the floor, where it is accessible. Owing to the absence of the usual belts, clutches, etc., the variable speed planer occupies a minimum floor space.

"The larger machines can be equipped

on special order with a pendant switch, usually suspended from the arch, but which can be placed and operated from any point on the planer. With this feature the table can be advanced, reversed, or stopped from a position convenient to the cutting tool with the same ease and assurance as with the pilot switch. The pendant switch may be used regardless of position of the reversing dogs.

"Speed changes are made so easily, positively, and instantaneously that the operator can, if desired, slow down at any part of the stroke, returning at once to normal or increased speed. If a hard spot is encountered at one portion of the stroke, or if there is an extra depth of cut at any point, the operator can slow down to meet conditions. The most economical speed for different metals, such as steel, iron, bronze, or brass, is instantly available.

"The reversing is accomplished so positively that a stroke of 4 1/2 ins. can be taken on a 96 in. machine."

The foregoing paper was read before the Canadian Society of Civil Engineers Mechanical Section recently.

**Section Work on Railways.**

When the Board of Railway Commissioners had under consideration recently the question of the length of sections to be worked by section gangs on railways and the number of men to compose the gangs, a very important announcement was made as to a change of practice on the C.P.R. eastern lines.

Complaint had been made to the Board that 22 C.P.R. section foremen had been laid off between Chalk River and Port Arthur, Ont., thus lengthening the sections about nine miles, and giving only two men to the increased length. There was also a complaint about the C.P.R. Owen Sound branch, where, it was claimed, a section gang had to look after eight miles or more of track.

E. W. Beatty, Chief Solicitor, C.P.R., contended that the Board had no power to say what number of men a railway company should employ per mile. The Board agreed with this contention and decided to rescind its order of Sept. 15, 1909, ordering the Brandon, Saskatchewan and Hudson Bay Ry. to employ a foreman and two men on each of its

Boissevain and Minto sections.

J. W. Leonard, Assistant to the Vice President, C.P.R., in the course of the argument, in speaking of lines east of Fort William, said:—"I have no hesitation in saying that the system we have of section gangs has not been satisfactory, and I hope to get rid of it, and instead of section gangs there will be simply supervisors and inspectors. I am working with the object of doing a lot of our work by contract and the balance by extra gangs, outside of section labor as we know it. There are more men on the C.P.R. Pacific track today under maintenance than there have ever been at this season of the year before. As an example, over 80% of our tie renewals were in position on June 1. Last year by June 1st 62% were in position, and this is the big work of the spring. We are going to maintain our track, but we want the right to maintain it either by extra gangs or by contract, or whichever way we think we can get the best results. The section forces we hope to get down to simply inspectors or track walkers. We will get them down lower than what we have today and have what we call a section staff. We have put no restrictions of any kind on our superintendents as to the number of men they will employ, but we have said to them, 'For all the year round you must not employ less.' We put a minimum on them. They have the privilege of employing as many more as they think the conditions warrant. Prior to our last reorganization of our track force the minimum force that superintendents were authorized to use on eastern lines was at the rate of 2.19 miles per man; under the new organization it is 2.14. That is, they are told they must not employ less than that."

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

	Acres.
Calgary and Edmonton Ry. ....	16,273.00
Canadian Northern Ry. ....	530.14
Canadian Pacific Ry. ....	12.53
Manitoba Southwestern Colonization Ry. ....	42.33
<b>Total .....</b>	<b>16,858.00</b>

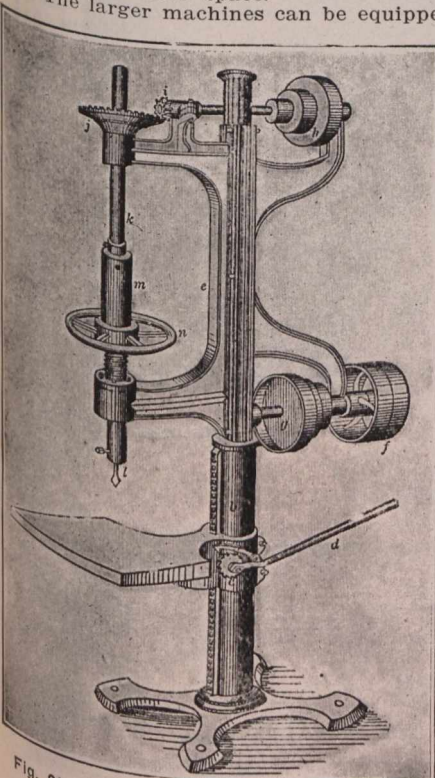


Fig. 21. Old Drill built in United States.

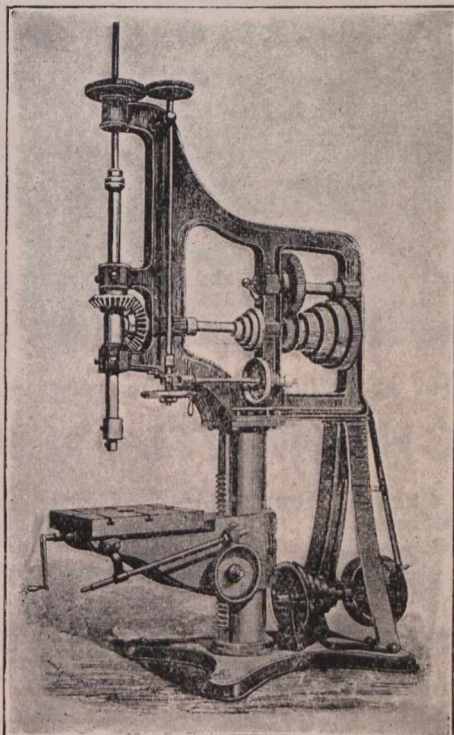


Fig. 22. Vertical Drill built in 1869.

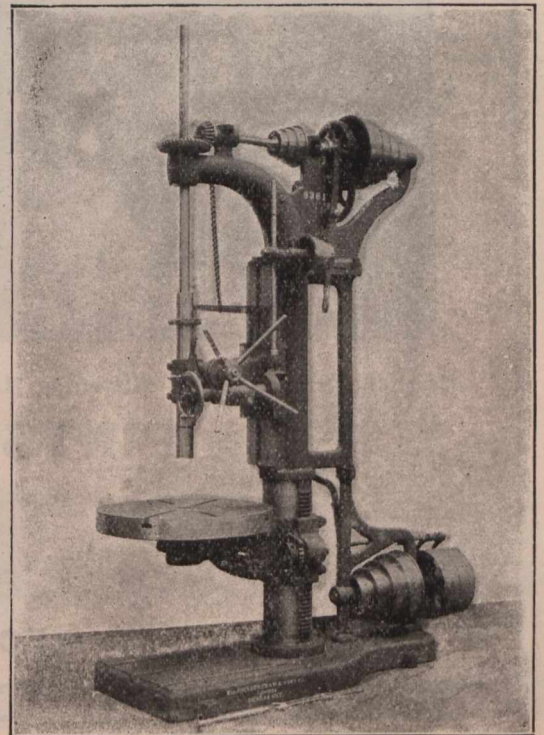


Fig. 23. Modern Vertical Drill.



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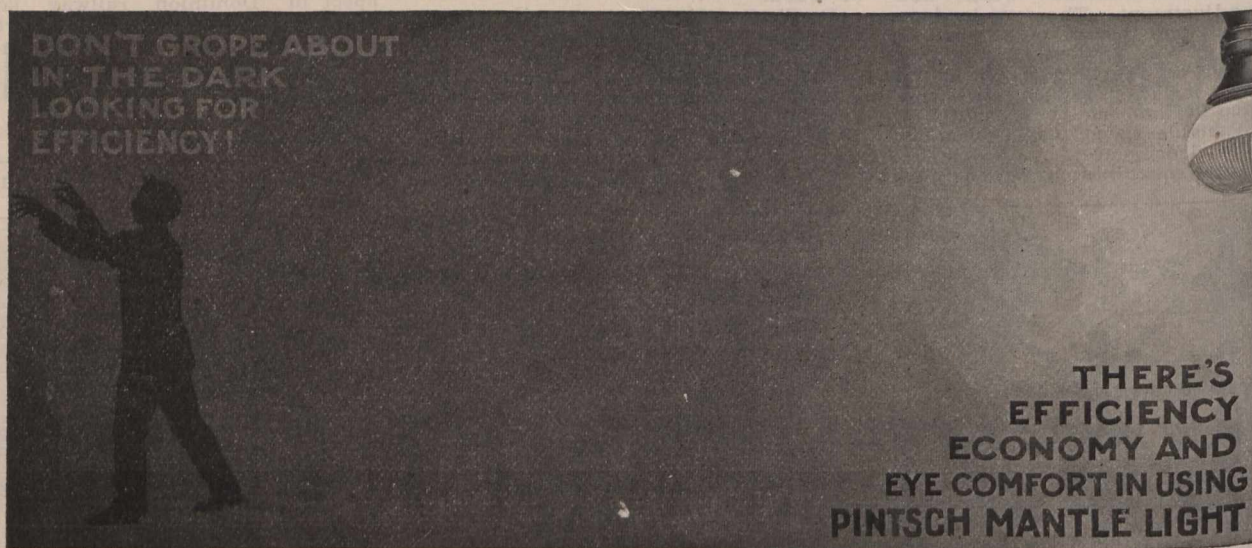
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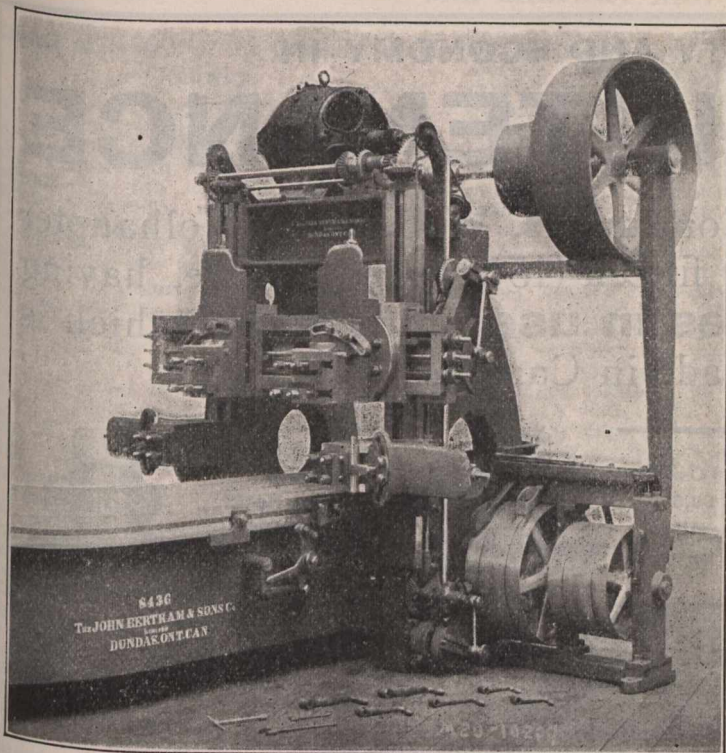
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Machine Tool Construction. Fig. 28. Motor Drive mounted on Housings of Machine.

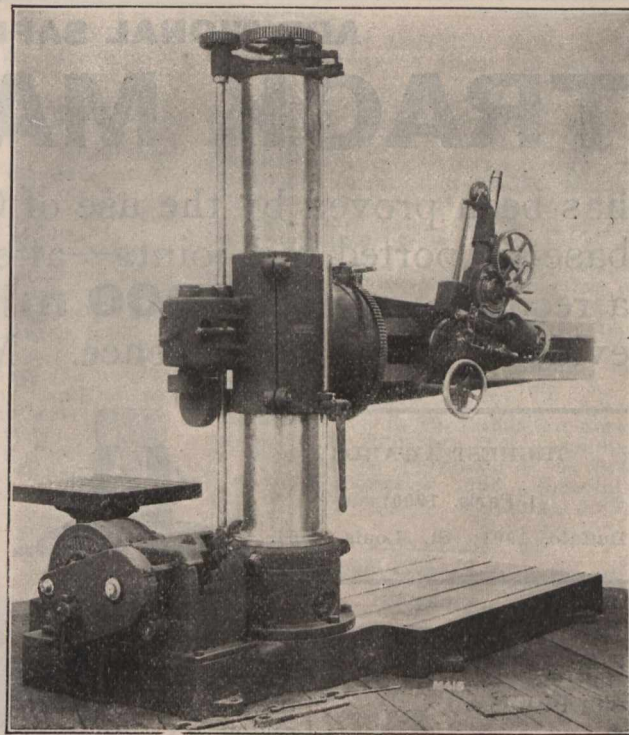


Fig. 25. Modern Full Universal Radial Drill.

**Great Northern Ry. Lines in Canada.**

**Midland Ry. Co. of Manitoba.**—Notice is given in the name of the M.R. Co. of M., which is another name for the Midland Great Northern Ry., that application will be made to the Dominion Government, under the provisions of the Navigable Waters Protection Act, for approval of plans for a bridge across the Assiniboine River in Winnipeg.

**Midland Great Northern Ry.**—Sub-contracts have been let to B. J. Egan for grading, and to Farrelly Bros. for excavation on the line to connect with the terminals between Ross and Pacific Avenues, Winnipeg. The site for the terminals has been cleared, and the work of grading, etc., is being proceeded with.

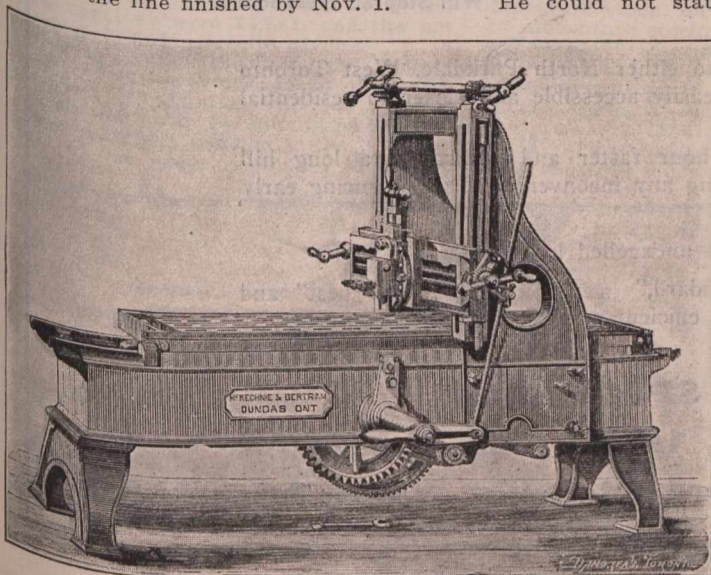
A subcontract was reported let to Powell and Webster for the subways between Tecumseh and Brant Streets, Winnipeg. R. M. Knox, Superintendent of Construction for A. Guthrie & Co., the general contractors, stated June 12 that satisfactory progress was being made with the work, and it was hoped to get the line finished by Nov. 1.

**Regina, Sask.**—Press reports state that an arrangement has been made with the G.T. Pacific Ry., under which the G.N.R. branch now terminating south of the International boundary at either Antler or Sherwood, N.D., will be connected with the G.T.P.R. branch now under construction from Regina, Sask., to the International boundary, and traffic interchanged. One report states that the G.N.R. will run its trains into Regina, and will build a line easterly to Winnipeg, connecting up on its way with the Brandon, Saskatchewan and Hudson Bay Ry.; and westerly to connect up with the Crow's Nest Southern Ry., and the Vancouver, Victoria and Eastern Ry.

**Vancouver, Victoria and Eastern Ry. and Navigation Co.**—J. H. Kennedy, Chief Engineer, was in Vancouver July 3, after making a trip of inspection over the line. He stated that during 1910 there had been 15 miles of grading done from Princeton to Coalmount, on the Tulameen, and it was expected to have the steel laid on this early in Sept. He could not state when work would

be started on the 41 miles from near Coalmount to the summit of Hope Mountain. The surveys were all completed from the east to the summit, which was 3,800 ft. above the sea level, but the surveys from the west had not been fully completed. A. H. Hogeland, Chief Engineer, Great Northern Ry., inspected the work to the Tulameen July 7, and it is said that track laying will be gone on with at once.

Near Hope connection will be made with the Canadian Northern Pacific Ry., and that company's track used for some miles. The Board of Railway Commissioners has approved of the revised location plans for the section from east line of sec. 15, tp. 16, to the west line of tp. 26, from mileage six to a junction with the Canadian Northern Pacific Ry. at mileage 13.3. The construction of the section of the line connecting the already existing lines at the coast with the C.N.P.R. is being gone on with, and is expected to be completed this fall. The principal piece of work on this section of the line is a trestle two miles in length at Abbotsford. (July, pg. 655.)



Machine Tool Construction. Fig. 26. Iron Planer built in 1867.

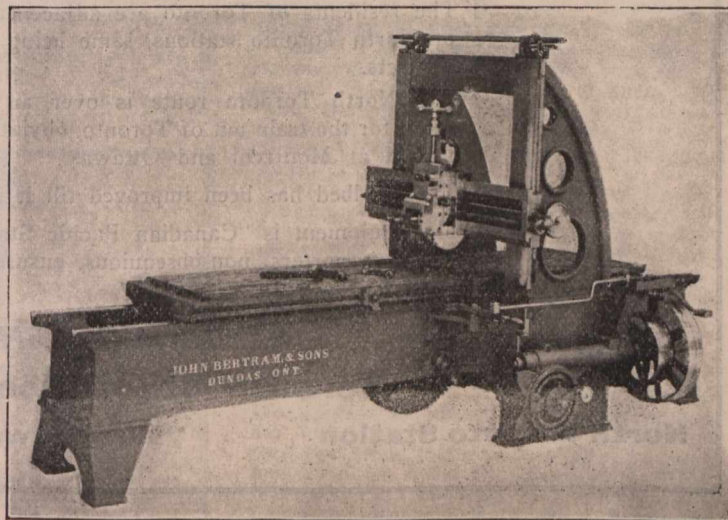


Fig. 27. Thirty-six inch Iron Planer.

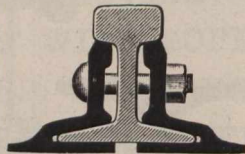


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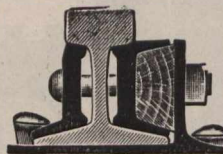
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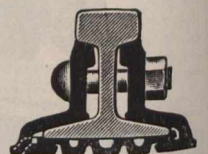
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# Why the G. P. R. North Toronto Route to Ottawa and Montreal is the Logical One

### The train leaves as follows:

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

- ¶ The residents of Toronto are adjacent to either North Parkdale, West Toronto or North Toronto stations, same being easily accessible and closer to residential districts.
- ¶ The North Toronto route is over an hour faster and overcomes a long hill climb for the train out of Toronto, obviating any inconvenience and ensuring early arrival at Montreal and Ottawa.
- ¶ The roadbed has been improved till it is unexcelled in Canada.
- ¶ The equipment is "Canadian Pacific Standard," a synonym for the "best" and attentive porters, non-obsequious, ensure efficient service.

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**North Toronto Station**

**King Edward Hotel**

**West Toronto Station**



Change of Control of the Quebec Central Railway.

Press reports stated recently that the C.P.R. and the New York, New Haven and Hartford Rd. were about to assume control of the Quebec Central Ry. While no official announcements have been made with respect to the changed conditions under which the Q.C.R. will be operated, we have reason to believe that an arrangement has been made for the leasing of the railway for 22 years to the C.P.R., which is acting for itself and for the New York, New Haven and Hartford Rd. The rental to be paid under the lease will, we understand, be sufficient to provide for the payment of full interest on all the different classes of the company's securities, and the line will continue to be operated independently.

The Q.C.R. Co. was incorporated by the provincial Legislature in 1878, and the following lines built:—Sherbrooke to Harlaka Jct. on the Intercolonial Ry., five miles from Levis, 137.50 miles; Chaudiere branch—Beauce Jct. to St. Sabine, 58 miles; Angus branch—East Angus to Angus Mills, one mile; Tring Jct. to Megantic, 60 miles; a total of 256.50 miles. This brings the mileage of lines owned to 244.80 miles, or to 287.43 miles if the 42.63 miles of yard tracks, sidings and spur tracks are included. In addition the company operates over five miles of the Intercolonial Ry. from Harlaka Jct. to Levis.

For some years the company had a rather chequered career, and in 1886 the Quebec Legislature rearranged the company's finances, and named members of the bondholder's committee in London, Eng., together with three Quebec representatives as provisional directors of the reorganized company. At a later date the number of directors was fixed at six, of whom five represented the British interests, and one was appointed by the Quebec Government. Of the original British directors named in the act of 1886, three are still on the board, viz.:—E. Dent, President; A. Bremner, Vice President, and F. H. Norman. In 1889 the directors appointed F. Grundy, an old Manchester, Sheffield and Lincolnshire Ry. man, who had done good work in building up some small railway lines in South Wales, as General Manager. After some years of hard work the line was got into good shape, with the result that when trade conditions began to revive the company was enabled to meet its obligations. In 1900 its gross earnings had reached \$2,526 per mile of road, the net earnings from operation being \$796 a mile. For the financial year ended June, 1910, the gross earnings were \$4,981, and the net earnings \$1,560 per mile of line.

The line runs through the central section of the province, south of the St. Lawrence River, giving all the railway accommodation in the county of Beauce. It has materially assisted in the development of the asbestos mining industries

in Megantic county; in fact 85% of the world's asbestos supply is carried over the Q.C.R. Valuable copper mines, lime quarries, brick works, pulp and paper mills are located along the line. The company's charter powers provide for the extension of the St. Chaudiere branch from its present terminus at St. Sabine to a junction with the Temiscouata Ry., and a line from Scotts to the south end of the Quebec Bridge.

The rolling stock at June 30, 1910, the latest figures available, consisted of:—Ten passenger and 13 freight locomotives, 13 first class, six second class, seven combination, two dining, and 10 baggage, express and postal cars for passenger service; 308 box, 325 flat, 74 stock, 25 coal, two tank and six refrigerator cars for freight service; with 46 cars in company's service.

The total receipts for the year ended June 30, 1910, were \$1,105,866.77, and the total working expenses \$759,555.75, leaving a net revenue of \$346,311.02, which, with interest and amount brought forward, gave the directors

over those for the last financial year, with an increase of about \$40,000 in the net revenue.

The present General Manager, J. H. Walsh, has been connected with the line since 1881, in various positions, including Auditor, General Freight and Passenger Agent, and Traffic Manager. Since his appointment as General Manager, six years ago, the gross earnings have increased from \$700,000 to over \$1,200,000 a year, with a proportionate increase in net revenue. The other officials are:—Superintendent, J. Fortin; General Freight and Passenger Agent, E. O. Grundy; Engineer, J. T. Mockill; Treasurer, W. S. Fry; Accountant, T. J. Maguire; Chief Despatcher, J. T. Reid; Master Mechanic, G. M. Robins; Storekeeper, M. A. Hawkins; Car Service Agent, A. S. Hobson; Car Accountant, W. S. Moy; Car Foreman, N. G. Price; General Roadmaster and Superintendent of Bridges and Buildings, J. Farquhar.

Railways Crossing International Boundary.

Replying to a question in the House of Commons recently, the Minister of Railways said east of Port Arthur Canadian railways cross the International boundary at 23 points, and United States railways cross at one point; while west of Port Arthur Canadian railways cross at eight points, and U.S. railways at 15 points. These points are as follows:—

CANADIAN RAILWAYS.

C.P.R.—Vanceboro, Me.; Debec Jct., N.B.; Aroostook, Me.; Lowelltown, Me.; Massonville, Que.; Abercorn, Que.; Emerson, Man.; North Portal, Sask.; Kingsgate, B.C.; Huntingdon, B.C.

G.T.R.—Stanhope, Que.; Rouse's Point, N.Y.; Moores, N.Y.; Dundee, N.Y.; Niagara Falls, Ont.; Fort Erie, Ont.; Windsor, Ont.; Sarnia, Ont.

CANADIAN NORTHERN RY.—Lake of the Woods, Rainy River, Fort Frances, Ont. ALBERTA RY. AND IRRIGATION CO.—Coutts, Alta.

CANADA SOUTHERN RY.—Niagara Falls, Fort Erie and Amherstburg, Ont.

HEREFORD RY.—Conans Mills, Que.

MASSAWIPPI VALLEY RY.—Stanstead Jct, Que.

RUTLAND AND NOYAN RY.—Noyan Jct., Que.

ST. LAWRENCE AND ADIRONDACK RY.—Near Kelso, Que.

QUEBEC, MONTREAL AND SOUTHERN RY.—Noyan, Que.

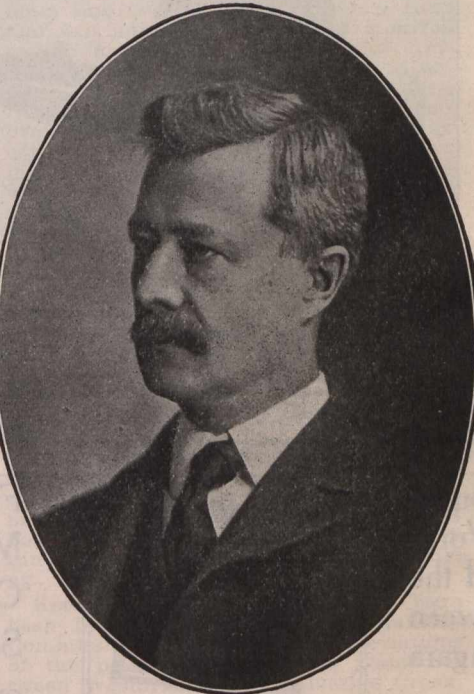
OTTAWA AND NEW YORK RY.—Cornwall, Ont.

UNITED STATES RAILWAYS.

WASHINGTON COUNTY RY.—Near Princeton, N. B., and passes over Canadian boundary for five miles.

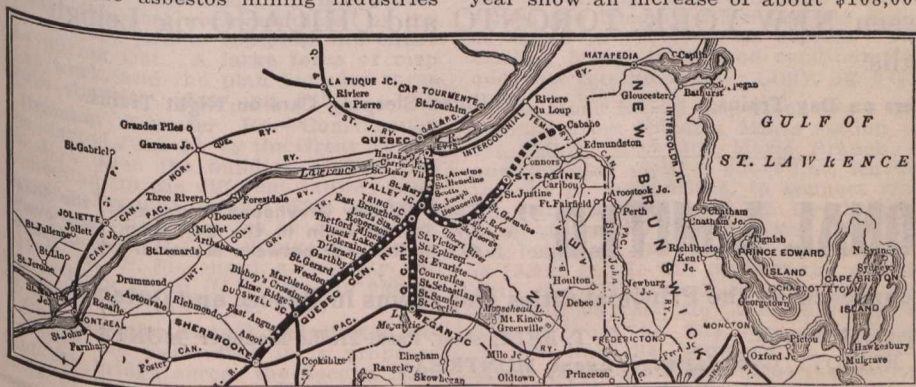
GREAT NORTHERN RY.—Pembina, Man., Gretna, Man.; Wakeham, Man.; Bannerman, Man.; Gateway, Mont.; Beddington, B.C.; Waneta, B.C.; Laurier, B.C.; Carson, Wash.; Ferry, Wash.; Molson, B.C.; Chopeka, Wash.; Huntingdon, Wash.; Blaine, Wash.

The last seven lines mentioned under Canadian Railways are the names of the companies organized in Canada under which U.S. railways enter Canada. The New York Central and Hudson River Ry. owns the Ottawa and New York Ry.; and the St. Lawrence and Adirondack Ry.; controls the Rutland and Noyan Ry., and through the Michigan Central Ry. controls the Canada Southern Ry. The Maine Central Ry., which owns the Washington County Ry., referred to under U.S. Railways, also owns the Hereford Ry. The Boston and Maine Rd. operates under lease the Massawippi Valley Ry. The Delaware and Hudson Co. owns the Quebec, Montreal and Southern Ry.



J. H. Walsh, General Manager, Quebec Central Railway.

\$398,218 for distribution. After meeting interest on the \$2,943,540.07 of 4% debenture stock, on the \$1,644,933.33 of 3% debenture stock, and on the \$1,644,933.34 of 7% income bonds, a dividend of 2% on the \$3,381,603.33 of common stock was declared, and \$46,593 was carried forward. The company holds in the treasury \$601,277 of its capital stock. The earnings for the current year show an increase of about \$108,000



The Quebec Central Railway.

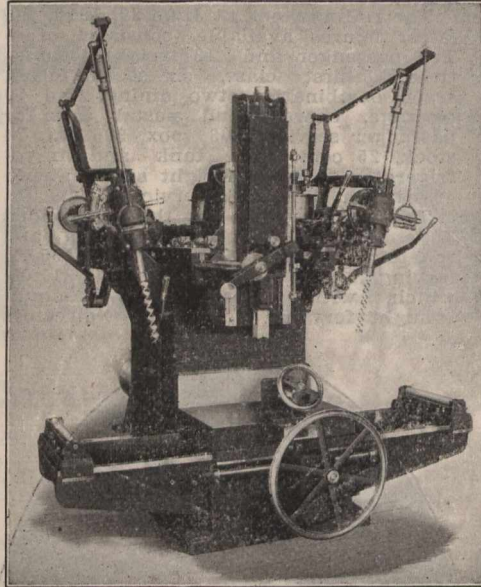


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G. T. BELL, Asst. Pass. Traffic Manager, MONTREAL.

H. G. ELLIOTT, Gen. Passenger Agent, MONTREAL



## RAILWAY DEVELOPMENT.

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

**Alaska Central Ry.**—The Sovereign Bank shareholders decided, July 11, to accept the offer of International Assets, Ltd., to purchase the assets of the bank from the banks assisting in the winding up proceedings. The new company, which is composed entirely of shareholders of the Sovereign Bank, becomes the sole creditor. The assets include the Alaska Central Ry. and an interest in another U.S. railway, from which it is hoped in time to realize considerable profit. (Nov., 1909, pg. 835.)

**Algoma Central and Hudson Bay Ry.**—Tenders were received up to July 15 for the extension of the line from the C.P.R. transcontinental line at Hobon, Ont., northerly to a junction with the National Transcontinental Ry., 142 miles west of Cochrane, a distance of about 101 miles. Location surveys have been made, and a very feasible route has been secured. A gradient of 0.6% compensated for curvature, with maximum curvature of six degrees, has been secured. The height of land is crossed between Wabatoougashene and Oba Lake at an elevation 89 ft. lower than the C.P.R. grade at Hobon. Towards the north end of Oba Lake the country is rough, and there will be considerable rock work, but northerly of the lake and on to the National Transcontinental Ry. there is very little rock excavation, the country in general being flat and interspersed with rolling clay ridges. There will not be any large bridges necessary on the extension as the line parallels the large waterways and crosses only small tributaries of the same. (July, pg. 645.)

**Algoma Eastern Ry.**—The Superior Construction Co. has sublet to Jackson and Goldie, Winnipeg, a portion of work on the section of the line it is building from Crean Hill to Whitefish Bay. Location plans from mileage 21 to 46.75 have been approved by the Board of Railway Commissioners. (July, pg. 645.)

**All Red Line Ry.**—Application is being made to the Dominion Parliament for the incorporation of a company with this title, to build a railway from Montreal northeasterly to the Atlantic ocean, the Gulf of St. Lawrence or the Straits of Belle Isle. Davidson and Wainwright, Montreal, are solicitors for applicants.

**Atlantic, Quebec and Western Ry.**—We are advised that a lot of work is being done towards the completion of the line from Paspebiac to Gaspé, Que. Track has been laid upon 23 miles; the steel trestle at Anse a Beau Fils and the three span bridge over Barachois River have been completed. A steel trestle is being completed at Bois Brule, 15 miles from Gaspé. This leaves to be erected a large trestle at L'Anse a Brilliant, and the large bridge at Douglastown to complete the line into Gaspé. It is expected to have the steel work completed by the end of Aug., and to complete the entire line during Oct. A large force of men is at work, and the plan includes three steam shovels. (July, pg. 645.)

**Brandon Transfer Ry.**—Construction was started June 30, by the Great Northern Ry., upon the building of this line connecting up the different railway lines entering Brandon, Man. The contract for the grading was let to J. Bradley, Brandon, the G.N.R. doing the track-laying. W. P. Stevenson, a G.N. Ry. engineer from Minot, N.D., was in charge of the work. (July, pg. 645.)

**Burrard Inlet Tunnel and Bridge Co.**—Under the agreement it is proposed that the bridge across the Second Narrows of Burrard Inlet, B.C., shall be

built by this company, and that the approaches, which are estimated to cost \$200,000, shall be built by the Vancouver, Westminster and Yukon Ry. (July, pg. 645, and June, pg. 505.)

**Caribou, Barkerville and Willow River Ry.**—Press reports from Vancouver, B.C., state that the company has made all necessary financial arrangements for immediate construction. It is proposed also to build at once a branch line to Bear River, in order to serve some coal properties being developed by J. Hepburn and associates. (July, pg. 645.)

**Hudson Bay, Peace River and Pacific Ry.**—A meeting of shareholders to erect directors and transact other business was called to be held at the company's offices, 408 McArthur Building, Winnipeg, July 24. The notice was signed by H. W. Adcock, Secretary-Treasurer. (July, pg. 645.)

**Intercolonial Ry.**—Tenders are under consideration for the erection of pier and sheds at the Deep Water terminus in Halifax, described in our last issue.

The cut-off line which it is proposed to build at Moncton, N.B., will leave the main line from Halifax at Sunny Brae, and will join the main line to Montreal at the new shops, a distance of 7,600 ft. This will save about 4,000 ft. in distance, but the main object is to prevent freight coming from the north, either over the I.C.R. or the National Transcontinental Ry., when in operation, having to pass through the city of Moncton. It is contemplated that large yards will be built near the new shops, north of Moncton, where freight will be assorted and shipped to Halifax over this cut-off line to prevent its having to pass through the city. It will also cut off some of the grade out of Moncton station; but that is not the main object of this line.

The second track work between St. John and Coldbrook, N.B., was expected to be completed July 29. (July, pg. 645.)

**Kaslo and Slocan Ry.**—A bylaw is being prepared for submission to the Kaslo taxpayers, exempting the company's property from taxation, and granting a bonus of \$5,000 towards the \$25,000 fund for the operation of the line. (July, pg. 647.)

**Kettle Valley Lines.**—Orders have been issued by the Board of Railway Commissioners approving of deviations of the previously authorized plans between Westbridge and Wolverine Creek, B.C., and of the location plans for the line from mileage 35.3 to 45.6 north of Midway, B.C.

In a recent interview at Merritt, B.C., J. J. Warren, President, is reported to have said he was entirely satisfied with the general progress made with construction, and with the outlook for the future. The contract for an additional 30 miles to the summit was expected to be let early in August. (July, pg. 647.)

**Michigan Central Rd.**—We are advised that the company is not contemplating rebuilding the cantilever bridge across the Niagara River, at the Falls, as stated in recent press reports. The existing bridge is in good condition and adequate for the traffic. (July, pg. 649.)

**The Mond Nickel Co.**, which has a line running from Victoria Mines station on the C.P.R. Sault Ste. Marie Branch, is now building another short line, leaving the C.P.R. at Coniston, to connect with the Canadian Northern Ry. for the purpose of serving the smelters. The exact length of this line, we are advised, is 13,500 ft. It will connect the smelter with the C.P.R. and the C.N.R. The line will be used for the shunting of cars of ore, coke, flux, etc. In addition to this line the company is building about 38,000 ft. of sidings at the smelter and roast yard.

**New Brunswick and Prince Edward Island Ry.**—The extension of the spur line to the freestone quarries has been completed, and freight is being shipped over it. Two sidings, each about 500 ft. in length, are being built at the quarry to facilitate traffic. (July, pg. 647.)

**New Brunswick Coal and Ry. Co.**—Traffic has been resumed on this line, the bridge destroyed by the fire at Washademoak, N.B., having been temporarily repaired. A permanent concrete substructure for the bridge is being built. (May, pg. 411.)

**Pacific, Trans-Canada and Hudson Bay Ry.**—The Dominion Parliament is being asked to incorporate a company with this title to build a railway from Edmonton to Athabasca Landing, Alta., on to Wabiska or Loon River, northeast of Lesser Slave Lake, thence northerly to the junction of Loon and Peace rivers, or toward Fort Vermillion, on Peace River, and on to Fort Smith on Slave River, a line from the junction of the Wabiska and Loon rivers easterly to Fort McMurray, thence easterly along the Clearwater and Churchill rivers through Saskatchewan to Fort Churchill or Port Nelson on Hudson Bay; a line from the junction of the Wabiska and Loon rivers, westerly to Peace River crossing, and thence westerly on the north side of the Peace River to Laurier Pass, and on to Prince Rupert or Portland Canal, on the Pacific coast. Smith and Johnston, Ottawa, are solicitors for applicants.

**Port Hood-Richmond Ry. and Coal Co.**—The colliery owned by the company at Port Hood, N.S., which is situated under the sea, has been flooded by the water breaking in at the bottom of the mine, 1,030 ft. below the tide level. H. Donkin, Deputy Commissioner of Mines, states that there is absolutely no hope of the mine. The company has power to build a railway from Port Hood to Port Malcolm, N.S., but has not done any construction. The directors, on the reorganization in 1910, were: S. Dymont, A. H. Dymont, H. Waddington, Toronto; Hon. R. Mackay, Montreal; G. D. Forbes, Hespeler, Ont. There is some litigation pending between the Royal Trust Co. and the Eastern Trust Co. respecting the company's bond issues. (Oct., 1910, pg. 829.)

**Quebec and Saguenay Ry.**—The contractors have over 1,500 men at work, and additional gangs are being added. (July, pg. 647.)

**Queen Charlotte City to Masset Inlet.**—In connection with mining development on Graham Island, one of the Queen Charlotte group off the British Columbia coast, it is reported that active preparations are being made for the building of a railway from Queen Charlotte City to Masset Inlet. Two companies have been incorporated by the British Columbia Legislature to build railways on Graham Island. (See Graham Island, Oct., 1910, pg. 825.)

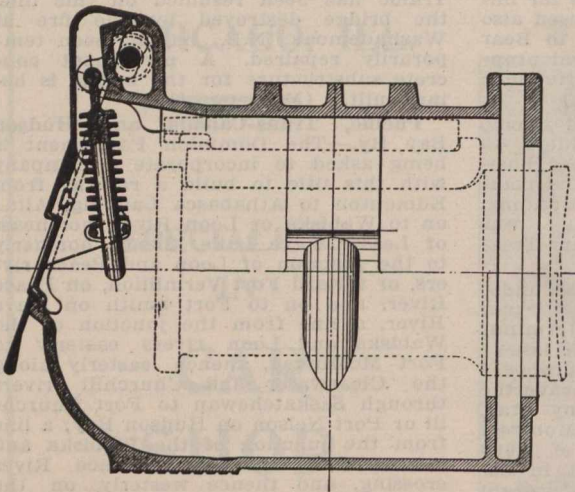
**Reid Newfoundland Ry.**—The first of the branch lines to be built under the act of 1910, viz., that from Shoal Harbor to Bonavista, is nearly completed, and it is expected to have it opened for traffic in about a month. The second branch to be put under construction is that from the present West End branch by way of the South Shore to Trepassey. On this line a considerable amount of grading has been done and several miles of track are reported to have been laid. Surveys have been begun for a third line, starting from Carbonear, near Broad Cove, and extending to Heart's Content and Grate's Cove. (July, pg. 649.)

**Sydney and Louisburg Ry.**—Work was started June 29 on the new line from Momen Jct. to Birch Cove, N.S., about four miles. The work is being done by the company's own men. Feb., pg. 113.)

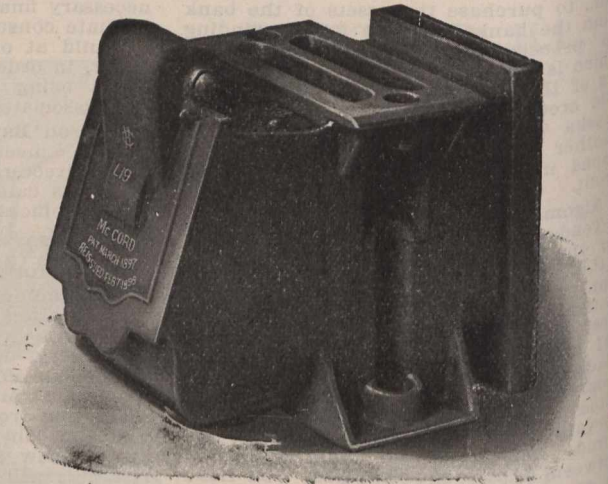


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Sales Representative.



**Temiskaming and Northern Ontario Ry.**—The branch line from Iroquois Falls to Porcupine, Ont., about 30 miles, was opened for traffic July 1, and considerable work has been done on the extension to Hollinger. (July, pg. 649.)

Detailed reports as to the fire in the Porcupine district show that very little damage has been done to the newly-laid track from Iroquois Falls to Porcupine Lake, and that traffic has been resumed. Considerable ballasting will have to be done to bring the branch up to standard. The construction camp on the extension from Porcupine to the Hollinger mine was burned out and J. L. Englehart, Chairman of the Commission, stated July 17 that the Chief Engineer had informed him that construction would be held up for two weeks in consequence.

**Vancouver to Peace River.**—A resolution passed at a recent meeting of the business men of Vancouver, B.C., sets out that it is a matter of paramount importance to the lower mainland and the coast cities, and in the best interests of the development of the province that a line of railway should be built from the coast northward to the Peace River district. A committee was appointed to bring the matter before other public bodies in the province and before the Government.

In an interview Hon. W. Templeman, Minister of Inland Revenue, stated that it was his intention to support the construction of such a line under Government guarantees.

Press reports state that an application for a Dominion charter is being made, and that the financial interests behind the proposition are represented by Lord Brassey and Norton Griffiths, M.P. of London, Eng. (July, pg. 649.)

**Vancouver, Westminster and Yukon Ry.**—W. McNeil, representing the V.W. and Y.R., informed the representatives of the municipalities interested in the building of a bridge across the Second Narrows of Burrard Inlet, Vancouver, July 10, that the company was then in a position to finance the construction of several miles of railway as approaches to the bridge. The rails would be laid from the company's property in the Hastings townsite to the south approach of the bridge, and from North Vancouver to the north approach by the time the bridge was built. The bridge is to be built by the Burrard Inlet Tunnel and Bridge Co., which is being largely bonused by the municipalities, aided by a Dominion subsidy which had been granted the V.W. and G. Ry. The agreement as to the bridge and approaches has been finally approved by all parties interested, and is ready for signature. (June, pg. 509, see also Burrard Inlet Tunnel and Bridge Co.)

**Victoria, B.C.**—The plans for the proposed harbor railway have been submitted to the city council. R. T. Elliott, K.C., informed the council that the provisional company was composed of property owners along the proposed route, and that there were no outside interests. Application had been made to the Provincial Government for approval of the plans. A bylaw granting a franchise for the railway is under consideration by the council.

The route of the proposed railway, as set out in the suggested agreement, is from the outer wharves, near Ontario St., to Menzies St., along the shore line, following the Esquimalt and Nanaimo Ry., to Bridge St., and terminating at Selkirk water. Authority to build certain branch lines is also asked. (July, pg. 649.)

An increase of 2½ cents an hour from July 1 has been granted to machinists on the Canadian Northern Ry. west of Port Arthur, Ont.

### August Birthdays.

Many happy returns of the day to—  
H. H. Adams, General Manager, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., born at Detroit, Mich., Aug. 13, 1876.

W. E. Bishop, Manager, Hamilton Steamboat Co., Hamilton, Ont., born at Brantford, Ont., Aug. 10, 1868.

J. F. Chapman, General Freight and Passenger Agent, Bay of Quinte Ry., Thousand Islands Ry., and Oshawa Ry., Deseronto, Ont., born at Frankford, Hastings Co., Ont., Aug. 25, 1863.

C. H. N. Connell, Engineer of Maintenance of Way, Canadian Northern Quebec, and Quebec and Lake St. John Rys., Quebec, born at Woodstock, N.B., Aug. 26, 1876.

F. Barlow Cumberland, Vice President, Niagara Navigation Co., Port Hope, Ont., born at Portsmouth, Eng., Aug. 5, 1846.

C. D. Fisher, Superintendent District 5, Canadian Northern Ry., Saskatoon, Sask., born at Athens, Ont., Aug. 24, 1867.

G. H. Ham, head office staff, C.P.R., Montreal, born at Trenton, Ont., Aug. 23, 1847.

W. P. Hinton, General Passenger Agent, G.T.P.R., Winnipeg, born at Hintonburg, Ont., Aug. 30, 1871.

R. Kerr, ex-Passenger Traffic Manager, C.P.R., Montreal, born at Toronto, Aug., 1845.

J. D. McDonald, Assistant Passenger Agent, G.T.R., Chicago, Ill., born at Toronto Aug. 27, 1855.

T. McHattie, Superintendent of Motive-Power and Car Department, Central Vermont Ry., St. Albans, Vt., born at Dufftown, Banffshire, Scotland, Aug. 8, 1854.

M. K. McQuarrie, Resident Engineer, District 1, British Columbia Division, C.P.R., Revelstoke, born at Sault Ste. Marie, Ont., Aug. 17, 1884.

C. Montgomery, Assistant Master Mechanic, Pere Marquette Rd., St. Thomas, Ont., born near London, Ont., Aug. 29, 1860.

W. E. Mullins, General Manager, Costa Rica Rd., and Northern Rd., of Costa Rica, San Jose, born at Stratford, Ont., Aug. 13, 1870.

F. H. Phippen, K.C., General Counsel, C.N.R., Toronto, born at Belleville, Ont., Aug. 26, 1862.

W. M. Porteous, Freight Agent, C.P.R., St. Louis, Mo., born at Edinburgh, Scotland, Aug. 3, 1857.

J. F. Richardson, Superintendent Telegraph, Eastern Division C.P.R., Montreal, born at Granby, Que., Aug. 23, 1861.

W. G. Ross, ex-Managing Director, Montreal St. Ry., Montreal, born there, Aug. 6, 1873.

W. Le B. Ross, Local Treasurer, G.T. Pacific Ry., Winnipeg, born at Ottawa, Ont., Aug. 9, 1868.

F. C. Salter, European Traffic Manager, G.T.R., and Canadian Ex. Co., London, Eng., born at Sarnia, Ont., Aug. 31, 1863.

C. R. Scoles, General Manager, Quebec Oriental Ry., New Carlisle, Que., born at Grantham, Lincoln, Eng., Aug. 27, 1856.

S. A. Simpson, Superintendent, Sleeping, Dining and Parlor Cars and News Service, Saskatchewan Division, C.P.R., Moose Jaw, born at Toronto, Aug. 22, 1880.

W. Stitt, General Passenger Agent, C.P.R. Eastern Lines, Montreal, born in Kirkcudbrightshire, Scotland, Aug. 3, 1855.

J. F. Sweeting, Industrial Agent, C.P.R. Western Lines, Winnipeg, born at Worthing, Eng., Aug. 20, 1872.

W. F. Taylor, General Storekeeper, I.C.R., Moncton, N.B., born at Hillsboro, N.B., Aug. 20, 1855.

F. J. Thomson, Marine Superinten-

dent, Canadian Northern Steamships, Ltd., Montreal, born in Cheshire, Eng., Aug. 20, 1876.

W. B. Way, Assistant Superintendent District 3, Eastern Division, C.P.R., Montreal, born at Bowmanville, Ont., Aug. 22, 1867.

E. H. Williams, Locomotive Foreman, Canadian Northern Ry., Brandon, Man., born at West Toronto, Ont., Aug. 26, 1884.

### I. C. R. Work at Campbellton, N. B.

The reconstruction of the buildings and the rearrangement of the Intercolonial Ry. yards at Campbellton, N.B., rendered necessary after the destructive fire which practically burned out the whole town over a year ago, is being rapidly pushed forward. The work is being done under the supervision of the Construction Department. Following is a description of the work at present under way, and proposed:—

**STATION BUILDING.**—This structure is under contract and will be completed and ready for occupation before the cold weather sets in. It will be of brick faced with pressed brick, with sills, lintels, base, copings, etc., of cut free stone of a brown tint. The foundation and basement walls are to be of concrete. The main building will be 112 by 32 ft., one and a half stories high, with pitch roof covered with slates. A one story, flat roofed extension 44½ by 30 ft. will be built at each end of the main building, making the total length 201 ft. over all. The whole building will be surrounded by a 10 ft. verandah, the roof of which is to be covered with asbestos cement shingles. The basement, which will be the full size of the main building, will have a clear head room of about 10 ft. Part of this will be taken up by the heating apparatus, which is to consist of two 35 h.p. return tubular boilers, operating under 60 lbs. pressure. It is intended to heat the passenger cars at rest in the yard by this equipment, as well as the building, pressure reducing valves being used for the building. The ticket and telegraph offices will be located in the central part of the building, with men's waiting room, smoking room and lavatory at one end, and the women's waiting room, parlor and lavatory at the other end. The eastern one story extension will contain the baggage and express rooms, the western extension will be used for the trainmen, car checkers and mail. The second floor of the main building will be used as offices for the Superintendent and staff. The walls of the waiting room, parlor, smoking room and lavatories, to a height of 7 ft. above floor, will be tiled, the floors of the lavatories will also be tiled. The upper part of the walls and ceilings will be finished in wood paneling. The offices on second floor will also be finished in wood. All floors, except these tiled, will be of hard wood. The sanitary arrangements for the convenience of the public will be of the very best. The building is to be surrounded by a concrete walk, extending along the track front about 800 ft. The contractors are Woods and Co., St. John, N.B.

**FREIGHT SHED.**—After the fire last year a freight shed was constructed, at the then most convenient place; this building is 160 by 35 ft., and will now be moved to a new location to suit the rearrangement of the yard, and a new addition of 140 ft. built, making the total length of the finished shed 300 ft. Offices for the freight handling staff will be located in the eastern end.

**REST ROOM.**—A large and well equipped building will be erected for the accommodation of the engine men, near the new engine house erected last fall; the building will be divided into living, sleeping and cook rooms, and bath room fitted with lavatory basins and shower bath; the sleeping rooms are to be made



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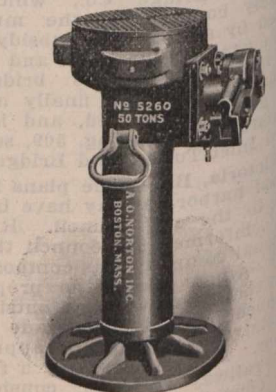


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large enough so that each will accommodate four persons. The heating will be by steam from the power house nearby.

**UNDER CROSSING.**—As the new station is being erected on the opposite side of the yard from that destroyed last summer, all traffic to and from the station to the business part of the town would be across the main line of railway. To obviate this, the main street is to be divided and a wide masonry subway built and the roadway carried under the tracks. This will be about 340 ft. east of the existing grade crossing, and will also be put under way this summer.

The new round house was fully described and illustrated in our last issue.

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

**New England Lines Proposals.**—Location plans have been filed at Providence, R.I., on behalf of the Southern New England Rd., for its branch line to tide-water in Rhode Island. The plans show terminal facilities near Kinsey Ave., and a tunnel under Capitol Hill, Providence. The line enters the State on the Massachusetts boundary in Woonsocket, and passes through Lincoln, Cumberland, North Providence, Pawtucket, Central Falls, Providence, and Cranston.

E. H. Fitzhugh, President of the S.N.E.R., and First Vice President G.T.R., was recently in Providence, discussing with the city authorities the question of wharfage facilities. New docks are under construction, both by the State and by the municipality, and the mayor stated that accommodation would be provided for the company at both of them.

An appeal is being made to the courts to declare that certain property in Woonsocket, R.I., on which the New York, New Haven and Hartford Rd. is building a freight shed, is necessary for the Southern New England Rd. It is alleged that as soon as the proposed route of the S.N.E.R. became known the N.Y., N.H. and H.R. Rd., expropriated the land in question and started building the freight shed.

The plans for the S.N.E.R. from Palmer, Mass., to the Rhode Island boundary, were approved by the Massachusetts Railroad Commissioners, July 12.

The courts issued an order July 17 directing the N.Y., N.H. and H.R. to suspend work on the freight shed at Woonsocket, which was being built on the right-of-way on which it was planned to build the S.N.E. Rd.

**Lachine, Jacques Cartier and Maisonneuve Ry.**—The Montreal board of control informed the company's representatives, June 29, that it would not agree to any more level crossings within the city. As a result of this the question of the approval of the route of the L., J.C. and M.R., which was adjourned to see if an arrangement could be made with the city, came again before the Board of Railway Commissioners, July 11. It was decided that the Board's engineer should confer with the City Engineer and the Chief Engineer of the railway, and bring about an understanding. The company states that it does not desire to cross any existing street on the level, but does not desire to have to build an elevated line in districts where there are no streets.

**Ottawa Improvements.**—The new coal chutes east of the Rideau car shops, Ottawa, are nearing completion. It is stated that owing to the delay in setting the railway entrance plans that work will not be started this year upon the erection of the additions to the shops.

**Ottawa, Rideau Valley and Brockville Ry.**—In an interview at Brockville re-

cently G. E. Kidd, Ottawa, solicitor for the company, is reported to have stated that work would be started laying out the line as soon as engineers could be secured, and that applications were being made for municipal aid and for a Dominion subsidy.

**Toronto.**—While no official announcement had then been made it was stated on the authority of Sir Lyman Jones, President of the Massey-Harris Co., that the company's tender for the purchase of the Asylum and Central Prison grounds would probably be accepted by the Ontario Government. The company's tender was for 10 acres. The G.T.R. sent in a tender in conjunction with the Massey-Harris Co., and he believed the balance of the land would be sold to the G.T.R. If this statement is correct the G.T.R. will acquire 25 acres of the Asylum site, and the whole of the 23 acres forming the prison site.

**Brantford, Ont.**—Application is being made to the Board of Railway Commissioners for authority to build a line from the main line, westerly and southwesterly through the Holmedale district, to a connection with the Brantford and Tillsonburg branch on block 4, Kerr trail. (July, pg. 655.)

### Trade and Supply Notes.

The matter which appears under this heading is compiled, in most cases, from information supplied by the manufacturers of, or dealers in, the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers to distinctly understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

The Canadian Car and Foundry Co. paid its regular quarterly dividend of 1 3/4%, July 25, for the quarter ended June 30.

The Baldwin Locomotive Works, Philadelphia, Pa., has issued its Record no. 70, very fully describing and illustrating Walschaert's valve gear.

The Goldschmidt Thermit Co.'s quarterly publication, Reactions, just issued, contains a number of interesting illustrated articles descriptive of the Thermit welding process as applied to locomotive and marine repairs.

The Standard Steel Works Co., Philadelphia, Pa., has issued a catalogue devoted to steel tires, giving in detail the specifications adopted by the American Society for Testing Materials. Illustrations, diagrams, and a facsimile for dimension blank orders are included.

Following the absorption of the Montreal Steel Works and the Ontario Iron and Steel Co. by the Canadian Steel Foundries, Limited, E. G. Jackson, heretofore Local Manager, Montreal Steel Works, at Toronto, has been appointed Sales Manager, Canadian Steel Foundries, Limited, with headquarters in Montreal.

The Baldwin Locomotive Works, Philadelphia, Pa., has issued its Record no. 69, devoted to Mallet articulated locomotives built for the Atchison, Topeka and Santa Fe Ry., the last order filled being for 40. They are in freight service on the Belen cut-off, where the maximum gradient is six-tenths of 1%. They are rated at 2,200 tons of cars and lading, but have actually handled 2,700 tons, maintaining a speed of 15 miles an hour on the grade mentioned.

The Flannery Bolt Co., Pittsburgh, Pa., has issued a well illustrated booklet on the breakage of staybolts, recommending the practice of flexible staybolt adjustment to the mechanical depart-

ments of railways. It also contains a paper on the inequality of expansion in locomotive boilers, and the possibility of eliminating the bad effects therefrom, by D. R. McBain, Superintendent of Motive Power, Lake Shore and Michigan Southern Ry.

Consequent on the reorganization of the Canadian Locomotive Company, Kingston, Ont., the following directors have been elected:—Hon. W. Harty, Kingston, President; J. L. Whiting, K.C., Kingston; Aemilius Jarvis, Toronto; Robert Hobson, Hamilton; F. G. Wallace, Pittsburgh, Pa.; W. Y. Soper, Ottawa, and J. Redmond, Montreal. C. Birmingham, who has been Managing Director for many years, has retired on account of ill health. The appointment of a manager has not yet been made.

The Rudel-Belnap Machinery Co., Ltd., has been incorporated, with office in Montreal, to deal in electrical, mill, mine, machine shop, railway and contractors machinery and supplies, the principal shareholders being C. M. Rudel, who was sole proprietor of the Rudel-Yeates Machinery Co., and L. J. Belnap, who recently resigned from the service of Allis-Chalmers-Bullock, Ltd., after having been Manager of the Winnipeg office for four years, and subsequently Manager of the Montreal district office for a similar period. The new company will also have charge of the Canadian Crocker-Wheeler Co.'s eastern business.

Carr Lane Glasgow, who has been appointed Montreal district sales manager of Allis-Chalmers-Bullock, Limited, has had extensive experience in the construction of electric railways and the design of electric power plants. After leaving college he was in the employ of Westinghouse, Church, Kerr and Co. for five years, and was one of the engineers in connection with the construction of the Lackawanna and Wyoming Valley Electric Ry. and the Grand Rapids, Grand Haven and Muskegon Electric Ry., and the electrification of the Long Island Ry. Later he was engaged in the electrification of the West Jersey and Sea Shore Ry., and also with the Northern Colorado Power Co. He is a graduate of Cornell University in mechanical engineering.

### A Railway to Hudson Bay.

The Dominion Government steamer Minto sailed from Halifax, N.S., July 8, on a surveying expedition to Hudson Bay. Her special business will be to determine the approaches to Fort Churchill and Port Nelson, as well as other possible harbors on the Bay. The selection of the terminus for the projected railway from Pas Mission, Sask., to the Bay, will be finally determined, it is said, upon the report presented to the Government by the officers of the Minto.

Captain Smith, of the Hudson Bay Co.'s steamer Pelican, stated in Montreal, July 11, as a result of his experience as a navigator in the Bay, that the conditions are far too uncertain to allow a profitable exploitation of the Bay route for ocean travel, but added that Port Nelson, and not Fort Churchill, would provide the best natural port in the Bay. (July, pg. 655.)

A short time ago a press report stated that the C.P.R. was considering the installation of soda fountains on its transcontinental trains. In pursuance of our usual practice to verify matter of this sort before publication, we made enquiry, and were advised that it was only a rumor and not official, although it was not improbable that the innovation might be tried. We have since been officially advised that there was no foundation whatever for the report.



# 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

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

**Windsor Street Station, Montreal.**—The steel work on the extension of this building was reported completed July 8. The concrete and stone work is now going ahead rapidly. Work has been started on the excavation for the boiler house, on Mountain St., from which the new portions of the station will be heated.

**Longue Pointe Branches.**—The Board of Railway Commissioners is being asked for authority to build two additional branch lines in Longue Pointe Ward, Montreal.

**Quebec Jct. to Ste. Agathe Second Track.**—Unconfirmed press reports state that plans are being made for building a second track from Quebec Jct. to St. Agathe, Que., about 50 miles, and that work will probably be started on it next year.

In a recent interview D. McNicoll, Vice President, said there had been a considerable increase of traffic since there had been a double track line to Quebec Jct., and it was the company's intention to double track every portion of the Eastern Division wherever the traffic warranted.

**Lachine Bridge.**—Two abutments on the north side of the river, together with two land piers and ten river piers for the new bridge across the St. Lawrence at Lachine, have been completed. There are still seven river piers to be erected.

**Guelph and Goderich Ry.**—Application is being made to the Stratford, Ont., City Council for right-of-way through the city for the projected line to extend from Linwood, on the G. and G.R., to Embro, on the Tillsonburg, Lake Erie and Pacific Ry. The plan shows a route along the south of Victoria Lake, and through considerable valuable property.

**Sudbury-Romford Jct. Second Track.**—A second track is being built from Romford, mileage 72, to 76, Cartier subdivision. This has become necessary owing to the increased traffic since the opening of the Toronto-Romford line. A station and telephone office will be built at mileage 76, for the convenience of passengers and to facilitate the operation of trains. The two tracks from there east to Romford Jct. will be operated as independent main lines of the Cartier and Sudbury subdivisions, and the trains from mileage 76 to Sudbury will be handled by the staff system. The grading necessary involves several fairly heavy cuttings. The contract for the excavation has been let to M. McCormick, Sudbury, Ont., and the train filling is being done by the company's own forces.

**Fort William Yards.**—Engineers have been engaged in marking out the proposed new yard on No. 1 Island, Fort William, and it is expected that work on the grading for the six miles of track to be laid there will be started at once. Connection will be made with the new yard by way of the McKellar River bridge, and by the new Kaministikwia River bridge.

The general plans for the projected improvements at Fort William, Ont., we are advised, are not yet completed, and it will be some time yet before any decision will be reached as to what will be done.

**Winnipeg Beach Branch.**—The Board of Railway Commissioners has approved of plans for the diversion of the line in Winnipeg Beach, Man.

**Royal Alexandra Hotel, Winnipeg.**—The site upon which the addition to the Royal Alexandra Hotel, Winnipeg, will be built is immediately east of the existing building, on a portion of the present court. Press reports state that the addition will be built immediately.

**Hamiota to Birtle.**—The location plans for this branch line from sec. 7, tp. 14, range 23, west of the principal meridian, to sec. 12, tp. 17, range 12, west of the principal meridian, 32.67 miles, have been approved by the Board of Railway Commissioners.

**Brandon Station.**—A contract was reported let, July 12, to the Brandon Construction Co., for the erection of the new station at Brandon, Man. The contract calls for the completion of the building in Feb., 1912.

**Western Lines Construction.**—A branch is to be built from Boissevain, Man., to Lauder.

Engineers are laying out the route for the extension of the branch from Virden, from the present track end to McAuley, Man. Press reports state that construction is to be gone on with at once, and the line completed this fall.

Track laying was started July 10 from Imperial, Sask., southerly, and it is expected to have steel laid to Craven early in Sept. The ballasting of the line from Colonsay to Imperial has been practically completed.

The contractors have started grading on the new branch from Bassano, Alta., into the company's irrigation lands.

Construction on the branch from Irricana to Standard, 37 miles, is reported to have been completed, and it is expected to have it open for traffic shortly.

**Saskatoon Industrial Spurs.**—Application is being made to the Board of Railway Commissioners for authority to

**FROM THE PASSENGER TRAFFIC  
MANAGER OF THE C.P.R.**

C. E. E. Ussher, Passenger Traffic  
Manager, C.P.R., writes:—

"I look upon the Railway and Marine World as the paper which anyone interested in Canadian railway or marine matters has to take in order to keep posted.

"I would not be without it for considerably more than 'the price of admission.'"

build three industrial spurs, 3,120 ft., 2,640 ft., and 2,736 ft. long, respectively.

**Moose Jaw Yards and Shops.**—A large addition is being made to the stockyards at Moose Jaw, Sask., and a new spur line is being built along the front of the entire yard. The concrete foundations are about completed for a new car repair shop.

**Swift Current to Brooks Branch.**—The location plans of the line from Swift Current to Brooks Branch, Sask., for 78 miles have been approved by the Board of Railway Commissioners.

**Western Shops.**—It is said that the question of the location of the new shops in Alberta or Saskatchewan was under consideration when Sir Wm. Whyte was in Montreal recently, and it is stated that a decision as to where they will be located will be reached shortly. Calgary, Medicine Hat, Lethbridge and Bassano have each pushed their claims to be favorably considered. These shops will be nearly, if not quite, as large as the Winnipeg ones.

**Hotel and Station at Calgary.**—Tenders for excavation on the site of the hotel at Calgary, Alta., are under consideration. The remaining portions of the old stone station building are being removed, and tenders are under consideration for the erection of the new station.

**Lacombe Branch Easterly.**—Revised location plans have been approved by the Board of Railway Commissioners for the extension of the branch from Lacombe, now terminating at Castor, Alta., easterly to a junction with the

line now building from Moose Jaw. The revision is near mileage 147, and covers from sec. 26, tp. 37, range 14, to sec. 2, tp. 35, west of the fourth meridian.

**Calgary and Edmonton Ry.**—The Dominion Parliament is being asked to authorize the company to build a branch from near Sidgewick, southerly to the extension of the Lacombe branch in tp. 36, range 11, west of the 4th meridian, Alta.; and a branch from the above line north of the Battle River, north westerly to a junction with the Wetaskiwin branch in range 17, 18 or 19, west of the 4th meridian, Alta.

**Wardner to Fort Steele, B.C.**—Revised location plans have been approved by the Board of Railway Commissioners for the main line from mileage 0, on the British Columbia Southern Ry., south of Wardner to north of Fort Steele, B.C., and northerly from mileage 35.7, Kootenay district.

**Kootenay Central Ry.**—It is expected that track will be laid on this line to Fort Steele this season, and, if conditions permit, to complete the grading on 25 miles northerly from that point. The Board of Railway Commissioners has approved of the location of the line to Shuswap Indian reserve, north of Atherlinar tp., at mileage 62.54.

**Kaslo to Three Forks, B.C.**—At a public meeting held at Sandon, B.C., July 3, a resolution was passed asking the Provincial Government to approve of the building of this branch of the C.P.R., and not to aid the reconstruction of the Kaslo and Slocan Ry.

**Wharf at Victoria.**—Work was started July 10 on the 240 ft. addition to the wharf at Victoria.

**Esquimalt and Nanaimo Ry.**—We are advised that a contract has been let to Palmer Bros. and Hemming, Vancouver, B.C., to build 22 miles of branch lines in the Cowichan district. The longest branch will start from near Duncan and will run to Cowichan Lake, 18.5 miles, and the other branch will leave the main line near Westholme, and will run to tidewater at Osborne Bay, 3.5 miles. Construction will be started at once, and it is expected to have both branches opened for traffic in the spring.

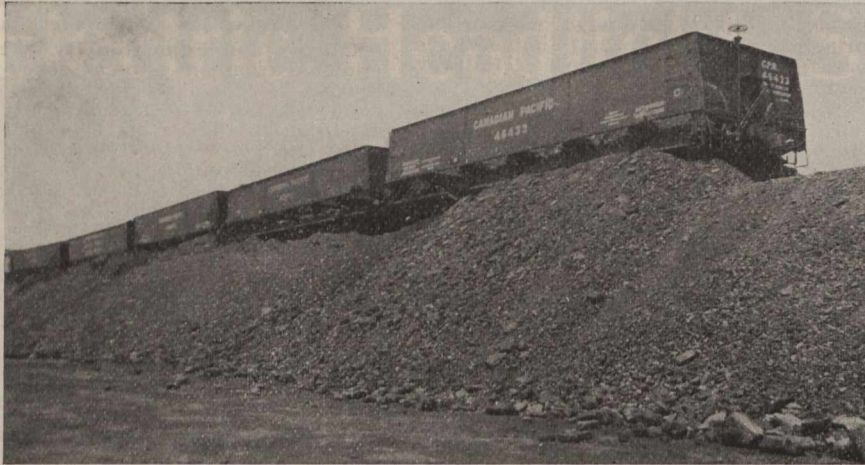
Track laying on the extension to Port Alberni has been completed to the summit beyond Cameron Lake, and it is expected that steel will be laid into Port Alberni by Aug. 15. The wharf at the terminus is completed.

Reports from Victoria state that extensive deposits of iron have been discovered in the vicinity of the upper Quinsam Lake, on property held by United States interests. A deputation representing the mineowners waited on R. Marpole, Vice President, in Vancouver, July 10, with a view of having a branch built to serve the mines. It is said that an engineering party will be put in the field to locate a line from a point on the main line survey north of Comox, to Upper Quinsam Lake, about 15 miles. (July, pg. 657.)

**Telephone Dispatching on the G. T. R.**

The G.T.R. has been using the telephone for dispatching trains upon two sections for the past eighteen months, viz., from North Parkdale, via Allandale, to Burlington Jct, 140 miles, and from Allandale to North Bay, 185 miles, with satisfactory results. An unconfirmed report states that a decision has been reached to abandon the system of dispatching trains by telegraph on all lines and to use telephones instead, over the whole of the company's system. This, it is said, will require the installation of over 30 circuits at a cost of something like \$500,000. The cost of installation is said to be about 75% greater than the telegraph, but a saving of about 50% in operation is effected.

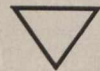




Otis Cars on C.P.R. Coal Pile at Montreal.

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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:

Table with 4 columns: Earnings, Expenses, Net Earnings, Net Increase. Rows for months July to May and Inc. totals.

Approximate gross earnings for June \$1,465,300, and for two weeks ended July 14, \$711,250, against \$1,223,600, and \$586,700, for same periods 1910.

The average mileage operated for the period ended May 31, was 3,354, against 3,168 for the same period 1909-10.

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

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

Table with 4 columns: Earnings, Expenses, Net Profits, Net Increase. Rows for months July to May and Inc. totals.

Approximate gross earnings for June \$9,040,000, and for two weeks ended July 14, \$4,266,000 against \$8,404,000 and \$3,950,000 for same periods 1910.

Commencing July 1, the mileage operated was increased to 10,462.

DULUTH, SOUTH SHORE AND ATLANTIC RY.—Operating revenue for May, \$262,615.28; expenses, \$202,624.81; net revenue, \$59,990.47, against \$298,112.11 operating revenue; \$223,999.76 expenses; \$74,112.35 net revenue for May 1910. Aggregate operating revenue for 11 months ended May 31, \$2,853,120.07; expenses \$2,033,330.86; net revenue \$799,789.21, against \$2,999,166.48 aggregate operating revenue; \$2,065,618.67 expenses; \$933,547.81 net revenue for same period 1909-10. Approximate earnings for June, \$291,206, and for week ended July 7, \$67,856, against \$301,887 and \$63,162 for same periods 1910.

MINERAL RANGE ROAD.—Operating revenue for May, \$63,132.18; expenses \$57,837.84; net revenue \$4,394.34, against \$63,899.54 operating revenue; \$66,424.64 expenses; \$2,525.10 net expense for May, 1910. Aggregate operating revenue for 11 months ended May 31, \$686,617.20; expenses \$655,943.35; net revenue \$30,673.85, against \$763,762.09 aggregate operating revenue; \$82,788.41 net revenue for same period 1909-10. Approximate earnings for June, \$60,287, and for week ended July 7, \$12,901, against \$65,278 and \$11,116 for same periods 1910.

MINNEAPOLIS, ST. PAUL & SAULT STE MARIE RY.—Operating revenue for May, \$1,075,621.59; expenses and taxes, \$807,997.26; operating income, \$267,624.33, against \$1,196,049.50 operating revenue; \$794,406.03 expenses and taxes; \$401,643.47 operating income for May, 1910. Aggregate operating revenue for 11 months ended May 31, \$12,034,211.11; expenses and taxes, \$8,414,760.62; operating income, \$3,619,450.49, against \$14,068,812.18 aggregate operating revenue; \$8,175,472.02 expenses and taxes; \$5,893,340.16 operating income for same period 1909-10. Approximate earnings for June, \$1,813,010, and for week ended July 7, \$458,851, against \$1,926,866 and \$458,172 for same periods 1910.

CHICAGO DIVISION.—Operating revenue for May, \$700,057.92; expenses and taxes, \$575,228.96; operating income, \$124,828.96, against \$798,060.82 operating revenue; \$566,774.84 expenses and taxes; \$231,285.98 operating income for May, 1910. Aggregate operating revenue for 11 months ended May 31, \$8,142,306.16; expenses and taxes, \$6,441,740.97; operating income, \$1,701,165.19, against \$8,132,662.84 aggregate operating revenue; \$5,680,835.93 expenses and taxes; \$2,451,826.91 operating income for same period 1909-10.

Grand Trunk Ry. Earnings, Expenses, Etc.

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

Table for GRAND TRUNK RAILWAY comparing 1911 and 1910 for Earnings and Expenses.

Table for CANADA ATLANTIC RAILWAY comparing 1911 and 1910 for Earnings and Expenses.

Table for GRAND TRUNK WESTERN RY. comparing 1911 and 1910 for Earnings and Expenses.

Table for DETROIT, GRAND HAVEN & MILWAUKEE RY. comparing 1911 and 1910 for Earnings and Expenses.

TRAFFIC RECEIPTS OF THE SYSTEM.

Table showing aggregate receipts from Jan. 1 to June 30 for 1911 and 1910 for Grand Trunk Ry., Canada Atlantic Ry., G.T. Western Ry., and D.G.H. & M. Ry.

National Transcontinental Railway Shops at Transcona.

In our last issue general particulars were given of the shops, etc., to be erected at Transcona, near Winnipeg, for which the N.T.R. Commissioners invited tenders up to July 11. The following additional particulars are now available. The plans call for lumber sheds, scrap platform and storage bins, scrap-platform and machine shop, freight-car shop, planing mills, paint storehouse, coach paintshop, coach shops east and west, car-department office, and motive-power office, in addition to the indirect heating plant, the yard-crane runway, and sewer system. Contractors are asked to tender on the additions in bulk.

The freight-car shop will be 600 by 200 ft., with nine through tracks, having a capacity for 108 standard freight cars. In this building will be established a 20-ton electric traveling crane with a 5-ton auxiliary. The coach shop will be 115 by 260 ft. Along each side will be a balcony 16 ft. wide, with a light wall inclosing it from the floor of the balcony to the roof of the building. Material will be handled up to these balconies by large hoists, one at each corner of the building. The coach paint shop will be 87 by 340 ft., with a standing capacity for 16 standard coaches. The planing mill will be 100 by 300 ft., arranged so that standard cars of material can be run in at the east end and the material unloaded right at the machines.

The plans for the lumber shed call for a building 60 by 165 ft., and those for the wheel foundry show a building 70 by 150 ft., laid out on the straight-floor principle, with four floors for 25 wheels each, giving a capacity of 100 wheels a day. This building, like all others, can be extended when desired. There will be 32 annealing pits and 2 pitting cranes. The cupola room, core room, and charging floor will be at the north end of the building and equipped with pneumatic elevator scalamer, pneumatic charging machine, blower, storage tracks, and all necessary details for operation. When the wheels leave the wheel foundry they will be taken to the wheel and machine shop, a building 70 by 160 ft. spanned by a 10-ton electric traveling crane.

The paint stores will be 30 by 40 ft., the scrap platform, constructed of wood, 30 by 300 ft., and the dry kiln 40 by 50 ft., divided lengthwise into two kilns. The coils for heating the kiln will be distributed on the concrete floor, which drains to a gutter. After the doors are shut the kilns will be controlled from a small cabinet at the west end, in which will be the steam and return control valves, lighting switches, and recording thermometers, the sensitive bulbs of which will be placed several feet along the wall inside the kilns. In this way after the kiln is closed a complete record of the process will be obtained in the control cabinet.

The motive power office building will be brick with a steel interior frame, 60 by 68 ft., with two stories and a basement for a large testing laboratory, lavatories, and storage. The ground floor will be for officials and clerks, with the drafting room, file room, and blue-printing room on the next floor. A vault will be carried up from basement to roof with vaults on each floor. The car-department office building will be similar to the motive power office building.

As there is no municipal sewer for drainage from the shops, a separate sewer system will be installed, and, as there is not sufficient fall from the shops to the Red River for a gravity flow sewer, a pumping station will be installed to force the sewage to the river. A gravity system of tile collecting pipes will run through the shops connecting with roof down spouts, sanitary sewers, and all drains. This sewer line will be arranged with manholes, surface drains, vents, etc., and discharge into a concrete sump, and will form the basement of the pumphouse. The next floor will carry the volute centrifugal pumps, of 15,000 gallons per minute capacity, with suction pipes running down into sump and shafts running up to the floor above, where the vertical shaft motors for driving the pumps will be located.

The details of the shop plant were developed, and the actual construction is to be carried out under the supervision of F. W. Walker, M.E., Superintendent of Terminal Shops for the N.T.R.

The Quebec Bridge.

Work in connection with the rebuilding of the bridge across the St. Lawrence River at Quebec is being progressed with on both sides of the river. The work in progress is the demolition of the portion of the old substructure which is to be replaced. The caisson which was damaged last year, having been repaired, was recently put in position on the south shore and is being sunk into place, and it is expected to have it out of danger from ice during the winter. Caisson number two is being sunk at the site of the north main pier. Caisson number three was launched June 26, and is being sunk into position. Caisson number one is 180 ft. long by 55 1/2 wide, 44 ft. high, and weighs with boilers and pumps 2,600 tons. The other two caissons are each 85 ft. long by 60 ft. wide and 55 ft. high. These are placed end to end and 10 ft. apart. The contractors expect to have the work well forward by the winter, and to have the substructure completed by the end of 1912.

The C.P.R. has just completed the installation of a telephone train despatching system on its lines in New Brunswick.

The British Privy Council, London, Eng., gave judgment July 12 dismissing the appeal of E. A. Wallberg against the decision of the Supreme Court of Canada, in which \$57,000 was awarded him for work done at the Intercolonial Ry. shops at Moncton, N.B., for which action was originally entered for \$90,000.



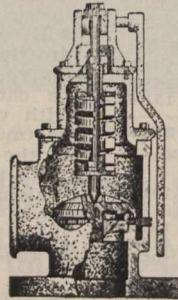
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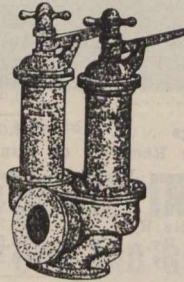
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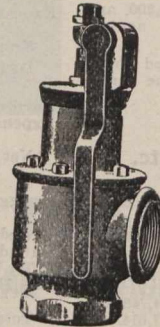
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**Canadian Northern Ry. Construction, Etc**

**Canadian Northern Quebec Ry.**—We are advised that while the matter of the erection of shops at Limoilou, Que., has been under consideration for some time, no definite decision has been reached as to what will be done.

The matter of the company's terminals in Montreal is being widely talked of at present, owing to extensive purchases of land which have been made in the city, and between Montreal and the Back River by what is known as the Deayton-Shaw Syndicate. It is stated that these latter proposals will be developed for industrial plants along the route of the direct line of the C.N.Q.R. from Ottawa, and as sites for suburban residences. We are advised that it is proposed to obtain an entrance into the centre of the city by means of a tunnel under Mount Royal. The feasibility of this proposal is being investigated and plans are being prepared. So far as the laying out of terminals is concerned nothing has been decided, either as to whether the company will lay out terminals for itself or join with some other company, presumably the G.T.R.

**Canadian Northern Ontario Ry.**—The first section of the line from Toronto to Ottawa, viz., from Toronto to Trenton, 100 miles, has been completed with the exception of a few crossings of other lines, and it is expected to start a regular train service over it in August.

The Board of Railway Commissioners has approved the revised location of the line and station grounds in Belleville; of location of line through Camden tp., mileage 145.8 to 149 from Toronto, and near Yarker village, mileage 152.13 to 152.72 from Toronto, as well as for revised location between mileage 11.37 and 14 from Ottawa, and through two lots at mileage 50 from Ottawa.

Subcontracts are reported to have been let for grading between mileage 180 and mileage 200 from Toronto, by Ewen Mackenzie as follows:—P. W. MacLean, Brechin, 2.75 miles; P. Allan, Chaffee's Loch, half a mile; L. MacLean and R. MacIsaac, Brechin, 1.25 miles; D. J. O'Donnell, Toronto, A. O'Donnell, Beaverton, and S. Mackenzie, Toronto, four miles; Stewart and Hart, Portland, four miles; C. A. Cook, Brechin, four miles.

Subcontracts are also reported let on other parts of the line:—McDonald and Chisholm, Hardman's Bridge to Rideau River; H. Christian, Rideau River at Hog's Back to Richmond; P. J. Brennan, from Richmond west to Smith's Falls.

The question of the location of the terminals in Ottawa is still unsettled, and it is said that nothing definite will be done in regard to them until some questions in connection with the route of the proposed Georgian Bay canal have been settled.

A contract has been let to the Northern Construction Co., and Foley Bros. for the construction of the line from Sellwood Jct. to Port Arthur, Ont., about 550 miles. This is the first section to be placed under contract of the line from Ottawa to Port Arthur, for the building of which the Dominion Parliament recently passed an act guaranteeing the company's bonds. The act also covers the building of a direct line from Ottawa to Montreal, which is already under construction by the Canadian Northern Quebec Ry., and a portion of the Canadian Northern Ontario Ry., already in operation in the vicinity of Sudbury. Work on the Sellwood Jct. and Port Arthur line is to be started at once, and the whole line is to be completed by the end of 1913.

After leaving the existing line at Sellwood Jct., the route follows the Vermilion River through a productive timber and mining district to its source, and

then proceeds through a maze of lakes and rivers to the Hudson's Bay Co.'s Flying Post factory, and then enters what is known as the great clay belt of New Ontario. The route for about 250 miles is along the southern portion of this clay belt through a comparatively easy country for construction, and then works on to the southern shore of Lake Nipigon, reaching navigable water at Orient Bay. An abandoned outlet of the lake is followed to the present outlet at Cameron Falls, and then the route is laid out to the C.P.R., which is crossed near Nipigon station. The C.P.R. is paralleled into Port Arthur, and according to Port Arthur press reports the mileage between Nipigon and Port Arthur will be operated as a double track line jointly by the C.P.R. and the C.N.O.R. The route is laid out in the form of a wide curve crossing the height of land about 100 miles north of Lake Superior. The mileage through the territory north of the height of land is through well timbered country, from which considerable traffic will come, and as the land is cleared it will be open for settlement for agricultural purposes. The maximum gradient will be 6 ft. in the thousand against westbound traffic, and 5 ft. in the thousand against eastbound traffic. There will be a number of large viaducts and bridges along the line, with a good deal of rock work at the Nipigon, and a tunnel of 1,100 ft. at Lake Nipigon. The route followed will convey the line to the southeast of the Timagami forest reserve, and will be considerably to the south of the National Transcontinental Ry., gradually approaching it to the north of Long Lake, where the two lines will be about 20 miles apart. From this point the new line will run south to the south of Lake Nipigon, the N.T.R. going round the north end.

Plans and profiles of the route from mileage 280 to mileage 300 from Sudbury, in unsurveyed territory, have been deposited with the Registrar of Algoma at Sault Ste. Marie, Ont., and the Board of Railway Commissioners has approved location plans of the line in Nipigon, Lyon and Dorion tps., and through unsurveyed territory in Thunder Bay District, subject to certain conditions in connection with C.P.R. property.

**Duluth, Winnipeg and Pacific Ry.**—Contracts are reported to have been let to Bailey and Marsh, Minneapolis, Minn., for the erection of a 10-stall roundhouse, with machine shop, storehouse and office building at Duluth, Minn. (July, pg. 661.)

**Canadian Northern Ry.**—An extension of the Birds Hill branch to the beaches on the east side of Lake Winnipeg is under construction, grading work having been started July 4. General Manager McLeod stated that it had not been determined where the line would terminate, but it was not intended to carry it to Fort Alexander at present time.

Work has been started with a view of getting the Thunder Hill branch ready for traffic as far as sec. 36-34-6 this season, and it was stated by General Manager McLeod, July 11, that it was expected to have both the Thunder Hill line and the Rossburn extension ready for traffic as far as the main line this season.

The Hallboro branch, from Hallboro westerly to Beulah, Man., 75 miles, has been opened for traffic, and on the same day a train service was placed in operation on the Maryfield branch from Maryfield to Luxton, Sask., 68 miles.

A 10-stall roundhouse, with a machine shop and turntable, are under construction at Regina, Sask.

The company is laying heavier steel from Regina to Warman, Sask., on the old Qu'Appelle, Long Lake and Saskatchewan Ry.

Track is reported to have been laid

on about 40 miles of the branch out of Delisle, Sask., and the remaining 10 miles was expected to be laid by the end of July.

The branch line from Vegerville, southerly in the direction of Calgary, has been opened for traffic to Munson, Alta. The Board of Railway Commissioners has directed the company to fence the right-of-way and provide farm gates along this line as far as track has been laid at once.

Plans for the entry of a branch line into MacLeod, Alta., came before the city council, June 30, and a preliminary agreement has been reached, under which the company will build its principal shops and headquarters for Southern Alberta there.

Revised location plans have been approved by the Board of Railway Commissioners through tps. 14-16, ranges 25-26, west of the 2nd meridian, Alta., mileage 70.81 to 84.25, and orders have also been issued authorizing the C.N. Alberta Ry. to join its tracks with those of the C.N. Western Ry. in sec. 33, tp. 54, range 2, west of the 5th meridian, Alta., approving of location plans from tp. 53, range 10.13, to tps. 53-52, ranges 18-23, both west of the 5th meridian, mileage 82.03 to 166.01, and approving revised location plans for the line through tp. 24, ranges 27-28, west of the 4th meridian, Alta., mileage 243.77 to 250.27.

General Manager McLeod, on his recent visit of inspection to the line being built to Athabasca Landing, Alta., stated that it was expected to have it completed this season.

Final location is reported to have been completed for the line to the boundary of British Columbia, which is reported to be under contract as far as Brule Lake, 74 miles west of Wolfe Creek, and it is said the grading gangs are working as far as 46 miles west of Wolfe Creek.

Surveys are reported to be in progress for a branch line from a point west of Edmonton into the Peace River country, E. M. Hill and J. P. McKenzie being in charge.

**Canadian Northern Pacific Ry.**—The 1,000 ft. wharf which is being built at Port Mann, B.C., is rapidly approaching completion. The low lying land along the river bank is being filled in, and a large area of land has been cleared. Track has been laid from the wharf to a junction with the Great Northern Ry. to facilitate the moving of construction material. This track will form a part of the yard tracks, for which the clearing is being done.

A considerable mileage of the grading for the line along the Fraser Valley has been completed and A. R. Mann, President, Northern Construction Co., the general contractors, made a trip of inspection over the route from Port Mann to Hope Summit, July 10. It is expected that track laying will be started at an early date.

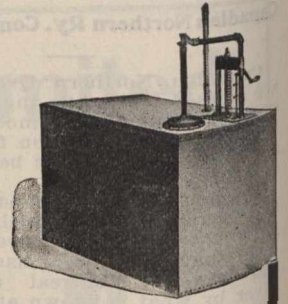
Plans have been deposited with the Department of Public Works, Ottawa, showing location of proposed bridges over the Salmon and Sumas rivers in New Westminster district.

The 163 mile section of the line from Hope to Kamloops, B.C., for which a contract has been let to the Northern Construction Co., and Foley, Welch and Stewart, is about the heaviest piece of railway construction put under contract since the C.P.R. was built. This section of the line starts at Hope Summit, near mileage 70 from Port Mann, and keeps on the south bank of the Fraser River, the C.P.R. being on the north bank. The river and the C.P.R. are both crossed between Cisco and Lytton and the line continues to Kamloops north of the C.P.R., round Kamloops Lake, to the South Thompson River. This mileage covers the construction along the Fraser and Thompson River canyons, and in-



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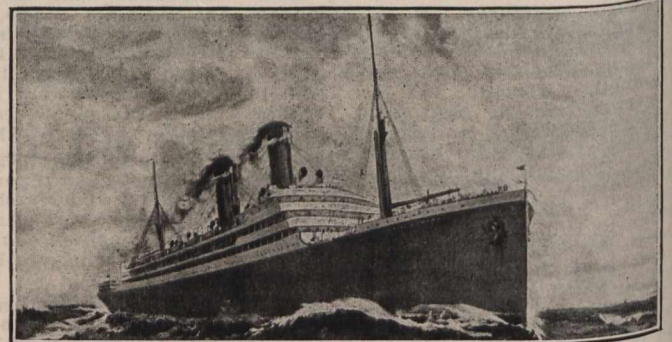
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cludes considerable bridge work and heavy rock work, there being two tunnels, one at Yale, 2,000 ft. long, and one at Battle Bluff on Kamloops, 2,740 ft. long. The line is located on a 0.4% gradient, compensated for curvature, and the sharpest curve is one of eight degrees.

The headquarters for the construction is at Vancouver, and A. R. Mann, President of the Northern Construction Co., is in charge. Subcontracts have been let as follows:—

Palmer Bros. and Hemming, Vancouver, Hope to Yale, 14 miles;

Burns and Jordan, Spokane, Wash., Yale east, 14 miles;

G. Chew, Spokane, 5 1/2 miles;

Geo. Cunningham and Co., Greenwood, B.C., 5 1/2 miles to Boston, Bar;

W. P. Tierney and Co., Vancouver, 11 miles;

A. E. Griffin and James Welch, 19 miles to Lytton;

Grant Smith and Co., Seattle, Lytton to Spences Bridge, 23 miles;

Twohy Bros., Portland, Ore., Spences Bridge east, 41 miles;

Grant Smith and Co., 30 miles to Kamloops.

The contractors are getting in their supplies and establishing camps, and it is expected that active operations will be started on construction early in Aug.

Owing to the topography of the country some difficulty will be experienced in securing camp sites. A majority of these camps will be located on the C.P.R.

or on the opposite side of the river, which will be spanned at frequent intervals by wire suspension bridges to facilitate the delivery of equipment and supplies.

Two years is the period assigned for the completion of this big undertaking. The contractors state that they expect to have 7,000 men along the grade before Oct.

A party in charge of W. I. Bassett is revising the location between the headquarters of the North Thompson River and the Yellowhead Pass.

**Canadian Northern Eastern Ry.**—The line constructed as the Portland Canal Short Line Ry., and extending from Stewart to Ward's Pass, B.C., was opened for traffic, June 24. The name of the company was changed to the C.N.E. Ry. Co. last session of the British Columbia Legislature, Hon. W. Templeman, a member of the Dominion Government, in a speech after the opening of the line, said: "If they come to me for a guarantee of their bonds for the railway from Stewart to Edmonton I would have no hesitation whatever in supporting it. I am speaking for myself and not for the Dominion Government. I think the Dominion is more able to do this than the provincial. The Dominion Government has very little to do with the public directly. All we can do is to aid railway construction, build public wharves and give you telegraphic communications."

**Vancouver Island.**—T. G. Holt, Executive Agent, C.N.P.R., visited Victoria, B.C., July 2, and in an interview said it was almost certain that the balance of the main line mileage on Vancouver Island would be put under contract by the end of the year. Engineers were engaged in checking and finally laying the location line from Cowichan Lake west and northerly to the towns and canal at Alberni. As soon as this work was completed the engineers would start on the surveys northerly from Alberni to the ultimate terminal of the line at the north end of the island. As regards the terminals in Victoria, if satisfactory arrangements could be made as to the late Songhees Indian reserve, the company would prefer to have them located there. The line would certainly be taken into the city.

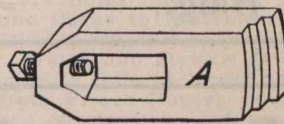
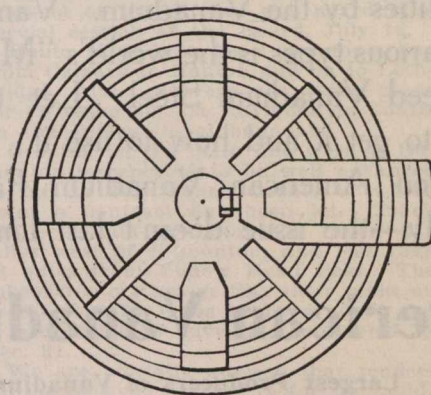
Satisfactory progress is being made on the first section out of Victoria, now under contract, and grading gangs are

working as far out as Sarke Lake. F. G. Holt completed a trip of inspection as far as Sarke Harbor, July 10.

**Wellington Colliery Co.**—The approval of the British Columbia Government has been asked by the Canadian Collieries (Dunsmuir), Limited, for the carrying out of certain works on Puntledge River, by the Wellington Colliery Co. The company's works include a line of railway from near Fiddicks Jct. to Wellington, on Vancouver Island.

#### Lathe Chuck Attachment.

The attachment shown in the accompanying illustration is in use at the C.P.R. Angus Shops, Montreal, and serves to increase the radius of usefulness of an ordinary lathe chuck of small dimensions. It consists of auxiliary jaws A that slip over the regular jaws and are held in place by set screws. The one



shown is intended for holding piston rings or other hollow work that may be caught on the inside. It is evident, however, that a modification of the same arrangement having an overhang, may be applied, by which larger diameters may be chucked than would be possible with the regular chuck.—Railway Age Gazette.

#### Canada's Great Expansion in Railway Construction.

The seventy-fifth anniversary of the completion of the first railway in Canada, viz., the Champlain and St. Lawrence Ry., extending from La Prairie, on the St. Lawrence River, to the Richelieu River, 16 miles, occurred on July 23 on this line the cars were drawn by horses during the first year of its operations. For eleven years this was the only railway in Canada, for it was not until 1847 that there was any increase. In that year 38 miles of line were added, and in 1850 an additional 12 miles were added, bringing the mileage up to 66 miles. From that date onward there was an annual increase, the mileage in 1855 having reached 1,414 miles, while in 1861 it had increased to 2,146. Since that year the new mileage brought into operation has gone on increasing, the figures for mileage in operation at the ten year periods following:—1871, 2,695 miles; 1881, 7,331 miles; 1891, 13,838 miles; 1901, 18,104 miles; 1911, 26,000 miles (estimated). The actual mileage in operation at June 30, 1910, the last date for which official figures are available, was 24,731 miles, and taking into consideration the rate of increase in mileage of recent years, when the figures for

the year ended June 30 are made up, it will be found that the estimated mileage in operation of 26,000 is not very far out. These figures, however, do not include a considerable mileage of lines owned by collieries, logging companies, and other industrial concerns which are operated only for the company's own purposes. The present rate of increase in mileage, as it has been for some years past, has been proportionately greater in Canada than it has in any other country in the world, and from the contracts entered into, and the lines projected, it is likely that this state of affairs will be continued for some years to come.

There are over 2,000 miles of line in process of construction, and already this year contracts have been let for the building of over 2,000 miles additional, and contracts will shortly be let for the last 410 miles of the Grand Trunk Pacific Ry. The building of these lines means a vast capital expenditure spread over the next three years, and makes the Canadian railway construction field the most valuable market in the world for firms catering for that class of trade.

The total capital invested at June 30, 1910, was \$1,410,297,687, of which \$101,816,271 was invested during the financial year. The capital invested for the current year can hardly have been less than \$125,000,000, and considering the amount of construction in progress and what is projected, it would appear that for some years to come Canada can look forward to the expenditure of about the same amount of money annually upon new construction. What this means to the country can scarcely be estimated. Within the last decade there have been developed in Canada the great steel rail making plants at Sydney, N.S., and Sault Ste. Marie, Ont.; a great locomotive building plant at Montreal, and the enlargement of the one at Kingston, Ont., and the car building plants in Montreal, to say nothing of the extensions of previously existing plants, and the erection of works for the manufacture of other supplies necessary for the building, equipment and operations of the lines.

The individual expansion of Canada is as yet in an early stage, and it is practically impossible to form any adequate idea to what extent it may have developed within the next half century. In 1861 there were 2,146 miles of railway in operation; in the half century that has since elapsed the mileage has increased twelvefold, while the industrial expansion of the country has been in proportion. Standing therefore at the beginning of the fourth period of 25 years, we find that Canada is in the forefront of the countries of the world in the matter of railway construction, and that with her increasing development, there is not likely to be any diminution in the rate of railway building for some years to come.

**Montreal-St. Lambert Tunnel.**—Interest was revived in the proposals for the building of a tunnel under the St. Lawrence River at Montreal, by reports from that city, July 16, that considerable areas of land have been secured on the south shore and that a meeting of persons interested in the project was to be held in Montreal, July 26, for the purpose of discussing the project. It is said that D. McDonald and P. Dube, of the Montreal St. Ry., and H. A. Dorsey, President, Dominion Park Co., and others have recently acquired considerable areas of land on the south shore of the St. Lawrence River, in St. Lambert, Victor and Longueuil, and that the project of connecting Montreal with the south shore is under consideration. It is said that in addition to the Montreal St. Ry., the Delaware and Hudson Ry. might also use the tunnel.





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### National Transcontinental Railway.

The plans prepared under the direction of the Commissioners for the N.T.R. for the station building in Quebec have been approved by C. M. Hays, President, on behalf of the Grand Trunk Pacific Ry., and it is said that tenders will be asked for its construction at an early date. The building will be erected on the site of the old Champlain Market. The plans provide for a building 257 by 124 ft. It will be three stories high, surmounted by a cupola. The basement will be of concrete, and the upper part chiselled Deschambault granite. The ground floor will have a 17 ft. ceiling, and the other two stories will be 12 ft., while the rotunda under the cupola will be 63 ft. The layout of the train shed provide for the laying of six tracks at once, with the ultimate intention of laying five additional tracks. The building is expected to be completed by the end of 1912.

The Commissioners are receiving tenders to Aug. 3, for the erection of station and other buildings on the line as follows:—Section 10, from Cochrane to Currie, Ont.; section 11, from Fraser to Grant, Ont.; section 12, from Superior to Dugald, Ont.

Tenders are also being received for the erection of a coaling station having a capacity of 1,000 tons, at Grant, Ont., mileage 232.7, District D.

### GRAND TRUNK PACIFIC RAILWAY.

The Winnipeg City Council has refused to approve of a proposal of the G.T.P.R. to close 36 streets and lanes in Fort Rouge, along the right-of-way from Pembina Road to Oak Point Jet.

In connection with the proposed G.T.P. branch line into Brandon, Man., a plan has been submitted to the City Council showing an entry at the south east corner of the city boundary, passing north of the exhibition ground, and paralleling the Canadian Northern Ry. to a junction with the Brandon, Saskatchewan and Hudson Bay Ry., a Great Northern Ry. line.

The Board of Railway Commissioners has authorized the opening for traffic of the branch from Melville northerly to Canora, Sask., and of the Melville-Regina branch from Melville to Balcarres, Sask. The grading on this latter branch has been completed into Regina, and track laying is in progress. A bridge is under construction across Berry Creek, and this is expected to be completed in the fall. Work is to be started at once on the line from Regina to the International boundary, for which line the whole of the plans have been approved by the Board of Railway Commissioners. The line will terminate on the boundary in sec. 6, tp. 1, range 2, west of the second meridian. It is said that one of the Great Northern Ry. branch lines will be connected with this branch, and that G.N.R. trains will be operated over it into Regina. Grading is reported to be completed westerly from Regina, as far as Pasqua, in the direction of Moose Jaw.

The Board of Railway Commissioners has approved of location plans from mileage 20.3, at the east line of sec. 28, to mileage 40.01, at the west line of sec. 3, tp. 17, range 26, west of the second meridian, and also for a branch line from Moose Jaw, north westerly from the east line of sec. 36, tp. 16, range 27, to the west line of sec. 11, tp. 21, range 4, west of the third meridian, Sask., mileage 0 to 48.55.

The extension of the branch line from Young to Prince Albert, Sask., is expected to be completed this year. It will be 100 miles long, and 60 miles of track have been laid. Track laying is in progress on the remaining 40 miles.

From Biggar, Sask., a branch line is under construction to Battleford. Grading is reported to be practically com-

pleted and it is expected to have the track laid by Dec. 31.

The Board of Railway Commissioners has authorized the opening for traffic of the line from Biggar towards Calgary, mileage 0, to 19.97. A considerable mileage has been graded beyond this point, and tracklaying will be gone on with at an early date. It is intended that this line will effect a junction with the Toftield-Calgary branch, a few miles north of Calgary. Authority has been given by the Board of Railway Commissioners to run freight trains over this latter branch from Toftield to the crossing of the Red Deer River. This line is under construction to Calgary, but considerable difficulty is being experienced in obtaining a route, owing to the objections raised by the C.P.R. to the crossing of the irrigation ditches on its lands. The general route plan has been approved by the Board of Railway Commissioners, and the question of the crossing of the ditches was heard at a special session of the Board, July 18.

Route plans have been filed for a line from Calgary to Nanton and on to Lethbridge, Alta. Surveys are being made for an extension via Raymond to Coutts on the International boundary.

Grading on the main line west of Edmonton is reported to be well advanced as far as Tete Jaune Cache, to which point a contract has been let. Track has been laid to Athabasca River, 210 miles west of Edmonton, and less than 30 miles from Yellow Head Pass. The subcontractors are getting their plant on to the last 20 miles to be graded, and it is expected to have this completed by Dec. 31.

We are officially advised that tenders will be received to Aug. 15 for the building of the last portion of the main line, viz., the 410 miles intervening between Tete Jaune Cache to Aldermere, B.C.

A contract is reported to have been let to Foley, Welch and Stewart for a tunnel, about 0.25 mile in length, at mileage 44 from Prince Rupert, in order to avoid the construction of snowslides. The work is expected to be completed by Jan. 1, 1913.

We are advised that it is not proposed to do anything in the way of preparing plant, etc., on the company's projected dry-dock, shops and roundhouses at Prince Rupert until the agreement covering the tax assessment has been approved by the electors.

Collingwood Schreiber, Consulting Engineer to the Dominion Government, arrived in Vancouver, July 10, from Prince Rupert, B.C., having completed a trip of inspection over the coast section of the G.T.P.R. In an interview he is reported to have stated that owing to the decreasing mileage of railways under construction in the United States the contractors on the line had been enabled to secure practically all the men needed. The line was in operation for nearly 100 miles from Prince Rupert, and over 75% of the grading had been completed between Copper River and Hazelton. There had been some delay in the bridge work owing to high water in the river at Hazelton. It was expected that track would be laid to Hazelton by Dec. 31. From Hazelton to Aldermere the grading was well forward. (July, pg. 623.)

**The British Collieries (Brazeau), Ltd.**, has been incorporated under the Dominion Companies Act, with a capital of \$5,000,000, and offices at Winnipeg, for the purpose of developing coal fields in the Brazeau River district of Alberta. The powers given include authority to build railways in connection with the collieries. The provisional directors are:—E. Brown, H. W. Hutchinson, D. C. Cameron, J. S. Hough, D. R. Dingwall, F. S. Harstone, Winnipeg; J. W. Hayward, M. J. Tobin, Vinton, Iowa.

### Canadian Specifications for Classification.

Since the matter under this heading on pg. 707 went to press we have been furnished with the following additional information:—

**CANADIAN NORTHERN RAILWAY.**  
43.—Excavation shall be classed under four heads, viz.:—Solid rock, loose rock, hard pan and earth; and shall be paid for according to the following definitions.

44.—All stones or boulders found in excavation measuring more than 27 cubic feet, and all solid quarry stone requiring blastings in order to remove it shall be termed solid rock.

45.—Loose rock shall include all kinds of shale rock, soap stone, and other rock which can be removed with pick and bar without blasting, also detached stones of less than one cubic yard and more than two cubic feet.

46.—Hard pan shall consist of all kinds of earth that are so hard that four horses on a plough cannot provide free shovelling or scraping material, or where powder has to be used to loosen.

47.—All other excavation of whatever kind shall be termed earth excavation.

The following alternative specifications are used by the C.N.R. for some contracts:—

43.—Excavations shall be classed under two heads, viz.:—Solid rock, and "all other materials"; and shall be paid for according to the following definitions.

44.—All stones or boulders found in excavation measuring more than 27 cubic feet, and all solid quarry stone requiring blastings in order to remove it shall be termed solid rock.

45, 46 and 47.—All other materials found in excavations other than solid rock as described in section 44 above, shall be termed "all other materials," and paid for at the schedule rate for "all other materials."

### NATIONAL TRANSCONTINENTAL RAILWAY.

Grading will be commonly classified under the following heads: solid rock excavation, loose rock, and common excavation.

Solid rock excavation will include all rock found in ledges or masses of more than one cubic yard, which, in the judgment of the engineer, may be best removed by blasting.

All large stones and boulders measuring more than one cubic foot and less than one cubic yard, and all loose rock, whether in situ or otherwise, that may be removed by hand, pick or bar, all cemented gravel, indurated clay and other materials, that cannot, in the judgment of the engineer, be ploughed with a 10-in. grading plough, behind a team of six good horses, properly handled; and without the necessity of blasting, although blasting may be occasionally resorted to, shall be classified as loose rock.

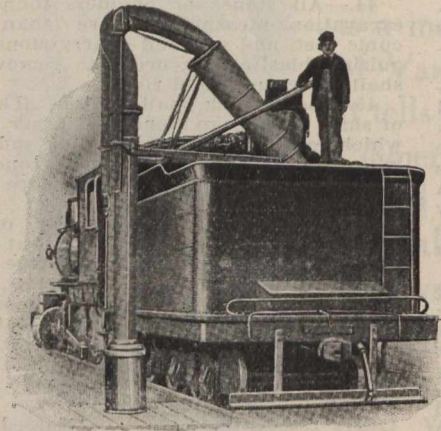
Common excavation will include all earth, free gravel or other material of any character whatever not classified as solid or loose rock.

**Scots in Canada.**—J. Murray Gibbon, Advertising Agent in the C.P.R. European office, London, Eng., has written an interesting book, "Scots in Canada," in which he shows how large a place the sons of Scotland have had in the exploration and development of Canada. The book gives a lot of facts, historical incidents, and names, which are scarcely likely to be found in the more strictly historical books about Canada. One of the points emphasized in the book is the historic character of the C.P.R., showing how it has grown along the old trade route of the North West Company, and, most important of all, how five of the seven of the men who composed the original syndicate for building the line were Scotsmen.



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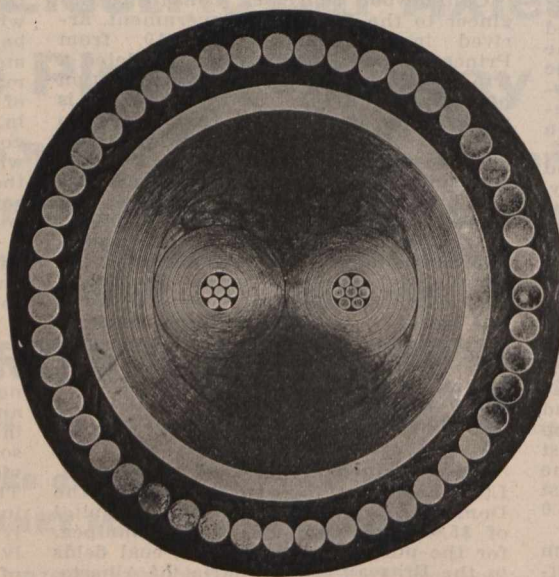
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### Mechanical Stokers.

The American Railway Master Mechanics' committee on this subject presented the following report at the Atlantic City Convention recently:—

Your committee feels fully justified in expressing the opinion that such progress has been made in the development of mechanical stokers to warrant railways installing a limited number upon large locomotives at least, and thus lend their aid in the perfection of a device which your committee has concluded is a necessary appliance to heavy tractive-power locomotives, when such locomotives are called upon to exert their full capacity for a prolonged period.

The large locomotives at present being constructed would unquestionably render service nearer their maximum capacity if the firing were mechanical, and your committee is of the opinion that it behooves the members of this Association to participate actively by utilizing such stokers as have been developed, and, by actual application, assist in the solving of the many problems which must naturally present themselves during practical operation.

The benefits to be derived might properly be again referred to, viz.: Utilization of the maximum boiler capacity of locomotives; reduction of black smoke, because of the possibility of maintaining a thin, level fire; application of coal in more minute quantities; improved life of flues and fire boxes; the reduced labor required should make the positions of firemen more attractive, which will carry therewith obvious benefits to the railways.

The requirements for mechanical stokers, as recommended by your committee, in brief, are:—That they should be capable of firing coal in excess of the maximum requirements of the locomotive; that the fire-box door be free of any attachment which would prevent the fireman from giving such attention as fires may require; be entirely mechanical from tender to grate; be capable of handling bituminous run-of-mine coal, which will include a coal crusher, mechanically operated, on the tender; distribute the coal in the fire box in such a manner as to call for no assistance from the fireman other than regulation of supply and possibly the adjustment of the mechanical appliances for economic coal consumption without emission of black smoke in objectionable quantities; reliability of service.

The committee then briefly described the various mechanical stokers and concluded as follows:

This report does not include any tests comparing efficiency of mechanical stokers to hand firing, as your committee believes that mechanical stokers must be made flexible and reliable mechanics before any prospects of improved economy in fuel consumption may be expected.

Tests comparing inferior fuel used with mechanical stokers to regular supstage of difference in present fuel values, should not be accepted as proof of economy, as such relations would not maintain with the extension to any appreciable number of mechanical stokers.

The progress during the past year has been sufficiently marked to lead your committee to believe that it can present a final report at the next convention upon at least several of the stokers which have already been developed sufficiently to perform actual continuous service.

The Salisbury and Albert Ry. has been closed down between Hillsboro and Albert, N.B., since May 1, and it is reported that it is likely to be closed down between Hillsboro and Salisbury as well.

### Railway and Allied Associations, Clubs, Etc.

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

CANADIAN CAR SERVICE BUREAU, J. E. Duval, 401 St. Nicholas Building, Montreal.

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

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

CANADIAN RAILWAY CLUB, J. Powell, St. Lambert, Que. Meetings at Montreal 1st Tuesday each month, 8.30 p.m., except June, July and August.

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

CANADIAN STREET RAILWAY ASSOCIATION, Acton Burrows, 70 Bond Street, Toronto.

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

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

EASTERN CANADIAN PASSENGER ASSOCIATION, G. H. Webster, 54 Beaver Hall Hill, Montreal.

ENGINEERS CLUB OF MONTREAL, C. M. Strange, 9 Beaver Hall Square, Montreal.

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

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

WESTERN CANADA RAILWAY CLUB, W. H. Rosevear, 52½ Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.

### Railway Finance, Meetings, Etc.

**Algoma Eastern Ry.**—An issue of \$2,500,000 first mortgage 5% bonds, redeemable in 50 years, is being made on the London, Eng., market. The principal and interest is guaranteed by the Lake Superior Corporation. The issue price was 93%.

**Brockville, Westport and Northeastern Ry.**—A receiver was appointed for the company's affairs July 13, on the application of the trustee for the bondholders. A majority of the bonds is said to be held by Mackenzie, Mann & Co. interests, which also hold the majority of the common stock. It was ordered that no sale of the property be made before Sept.

**Dominion Atlantic Ry.**—A special general meeting of shareholders was held in London, Eng., July 12, to increase the number of directors from three to five.

**Dominion Atlantic Ry.**—Gross earnings for May, \$97,100, against \$87,143 for May, 1910. Gross earnings for June, \$112,700, against \$108,412 for June, 1910. Aggregate gross earnings for 12 months ended June 30, \$1,250,400, against \$1,325,726 for same period 1909-10.

**Imperial Coal Co.**—An order has been made for the sale of the mining property of the Imperial Coal Co. at Beersville, N.B., in connection with the winding up of the company in liquidation. The property will be sold at Moncton, N.B., Aug. 30.

The railway now known as the North Shore Ry., was originally chartered as the Imperial Coal Co.'s Ry.; its name being subsequently changed to the Beersville Coal and Ry. Co., and later on to the North Shore Ry.

**London and South Eastern Ry.**—The annual meeting was held at London, Ont., July 4. Following are the officers and directors for the current year:—

President, W. J. Reid; Vice-President, T. H. Smallman; Secretary and Treasurer, J. W. Little; other directors, J. Labatt, J. A. Campbell, M. Masuret, and the mayor of London, ex-officio.

**Maritime Coal, Ry. and Power Co.**—The National Trust Co., Montreal, received to July 17 offers of bondholders to sell the company's first mortgage bonds in accordance with the terms of the trust deed as to the investment of the sinking fund.

**Quebec and Lake St. John Ry.**—The bondholders' protection committee has announced that in anticipation of legislative sanction of the agreement of Feb. 16 between the Q. & L. St. J.R., the Railway Share & Trust Agency Co., and the Canadian Northern Ry., the Q. & L. St. J.R. has undertaken to pay to the bondholders' committee, interest to July 1 on the new 4% debenture stock, to which the committee, as holders of deposited bonds, will be entitled in accordance with the agreement on exchange of securities, the payment to be deemed to have been made on account of arrears of interest due on the deposited bonds should the agreement not be sanctioned.

Total earnings for June, \$60,979.03, against \$54,295.83 for June, 1910. Aggregate total earnings for six months ended June 30, \$271,516.32, against \$267,370.67 for same period 1910. The average earnings per mile for June was \$213.66, and for the six months period, \$951.11, against \$190.25 and \$948.31 for the respective period in 1910.

**Quebec Central Ry.**—Gross earnings for May, \$115,346.87; expenses, \$74,557.51; net earnings, \$40,789.36, against \$99,393.54 gross earnings; \$64,055.88 expenses; \$34,837.66 net earnings for May, 1910. Aggregate gross earnings for 11 months ended May 31, \$1,078,232.44; expenses, \$734,913.14; net earnings, \$343,319.30, against \$984,834.34 aggregate gross earnings; \$677,437.90 expenses; \$307,396.44 net earnings for same period 1909-10.

**Quebec Oriental Ry.**—Notice is given that a call of \$10 a share, payable Aug. 14, has been made upon the holders of 1,250 shares. E. S. Elvey, 194 Temple Chambers, Temple Ave., London, Eng., is Secretary of the company.

**Temiscouata Ry.**—Profit on operation for May, \$6,618, against \$5,732 for May, 1910. Aggregate profit for five months ended May 31, \$13,582, against \$15,378 for same period 1910.

### Control of Pere Marquette Railroad.

The fact that D. B. Hanna, Third Vice President of the Canadian Northern Railway, went over the Pere Marquette lines, both in Canada and the United States, recently, with W. Cotter, President and General Manager of the latter company, gave rise to a report that the Mackenzie Mann interests were about to acquire the P.M.R.

We do not think that any such deal is likely to be made, at all events not in the near future.

### Railway Route Maps Approved.

The Minister of Railways has approved of the following route maps:—

GRAND TRUNK PACIFIC BRANCH LINES Co. July 7. First 14 miles of Cutknife branch. 7th July, 1911.

MONTREAL AND SOUTHERN COUNTIES Ry. July 7. From Victoria Bridge, southerly and westerly, to the Country Club, 1¼ miles.

The C.P.R. has offered prizes amounting to \$750 for the best ten acres of alfalfa grown in 1912, open to all farmers in its irrigation block.



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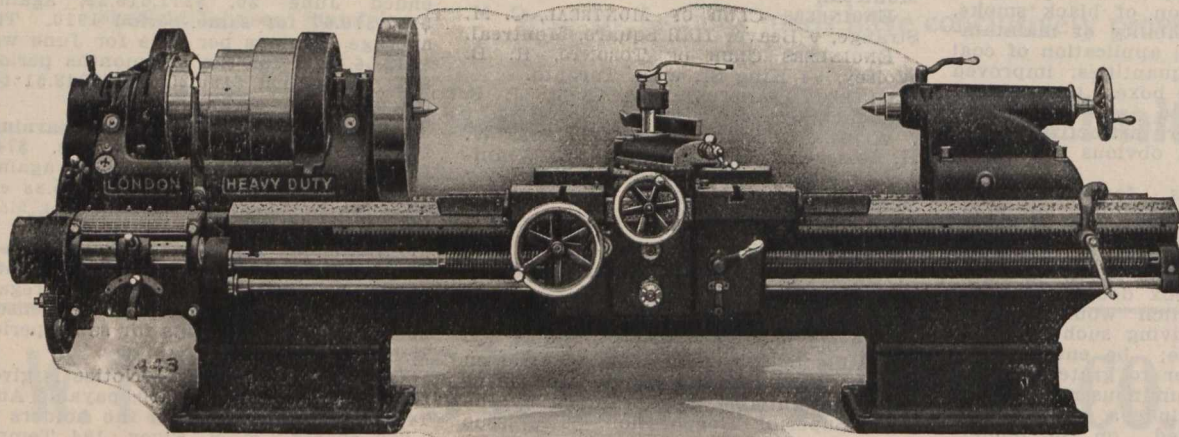
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## Orders by the Railway Commissioners.

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

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

13949. June 14.—Approving Central Vermont Ry. bylaw appointing D. T. Lawrence, G.P.A., to issue tariffs of tolls.

13949. June 14.—Approving bylaw of Hamilton Radial Electric Ry. authorizing G. E. Waller, G.F. and P.A., to issue tariffs.

13950. June 14.—Authorizing C.N.O.R. to cross public road in Loughborough tp.

13951. June 13.—Authorizing C.P.R. to build spur from its 8th Ave. spur in Regina, Sask.

13952, 13953. June 14.—Authorizing C.N.O.R. to cross three highways and to cross and divert highway in South Crosby and South Elmsley tps.

13954. June 12.—Approving Kettle Valley Ry. location from mileage 35.3 to 45.6 north of Midway B.C.

13955. June 12.—Approving deviation of Kettle Valley Ry. location between West-bridge and Wolverine Creek, B.C.

13956. May 22.—Authorizing G.T.P. Branch Lines Co. to cross highway on its Prince Albert Branch in n.w. ¼ sec. 4, tp. 43, r. 26, w. 2 m., Sask.

13957. June 12.—Authorizing C.P.R. to divert main line and cross four highways at Winnipeg Beach, Man.

13958. June 14.—Authorizing C.P.R. to build bridge 18.7 on its St. Gabriel subdivision, District 3, Eastern Division.

13959. June 15.—Authorizing C.N.R. to cross William St., Smiths Falls, Ont.

13960. June 14.—Approving drainage work to be built under G.T.R. in Woolwich tp., Ont.

13961. June 15.—Authorizing C.P.R. to build its Kipp to Aldersyde branch across two highways and divert same.

13962. June 15.—Authorizing C.P.R. to cross with its Weyburn-Lethbridge branch 22 highways in Saskatchewan and Alberta.

13963. June 15.—Authorizing C.P.R. to build its Kipp to Aldersyde branch across 47 highways in Alberta.

13964. June 15.—Approving Wells Fargo and Co. bylaw authorizing J. D. Ludlow and G. S. Lee to issue tariffs of tolls.

13965, 13966. June 15.—Authorizing G.T.R. to use eight bridges on its Ottawa Division.

13967. May 9.—Authorizing C.N.R. to cross with its Hallboro branch 11 highways in Manitoba.

13968. Mar. 28.—Approving location of C.P.R. Hamiota to Birtle branch from sec. 7, tp. 14, r. 23, northwesterly for 32.67 miles, to sec. 12, tp. 17, r. 12, w. p.m., Man.

13969. June 19.—Approving revised location of C.N.R. through tps. 14-16, rs. 25-26, w. 2 m., Sask., mileage 70.81 to 84.25.

13970. June 19.—Approving C.P.R. bylaw authorizing G. M. Bosworth, V.P., W. R. MacInnes, F.T.M., W. B. Bulling, A.F.T.M., Eastern Lines; W. B. Lanigan, A.F.T.M., Western Lines, and C. E. E. Ussher, P.T.M., to prepare and issue tariffs of tolls.

13971. June 19.—Authorizing C.P.R. to build under highway in cons. 4 and 5, Ops tp., Ont.

13972. June 19.—Authorizing C.N.O.R. to cross public road in lot 10, con. 5, and lot 10, con. 6, Nepean tp.

13973, 13974. June 19.—Authorizing G.T.P. Branch Lines Co. to cross with its Regina-Boundary branch, 27 highways between mileage 59 and 90, and five highways on its Prince Albert branch.

13975. June 19.—Authorizing city of Revelstoke, B.C., to erect wires across C.P.R. at Wales St.

13976. June 19.—Authorizing Seymour Power and Electric Co. to erect wires across C.P.R. wires in Hamilton tp., Ont.

13977. June 6.—Rescinding order 8111, re length of section on Boisssvain and Minto sections of Brandon, Saskatchewan and Hudson Bay Ry., and re increasing staff of sectionmen.

13978. June 19.—Approving revised location of C.N.O.R. at Fallowfield, Nepean tp., mileage 11.37 to 14 from Ottawa.

13979. June 19.—Authorizing Georgian Bay and Seaboard Ry. (C.P.R.) to build bridge 42.6 on south half of lot 8, con. 1, Mara tp., Ont.

13980. June 19.—Ordering G.T.R. within 90 days to install improved type of electric bell at Diltz Rd. crossing, Halton tp., Ont.

13981. June 19.—Approving location of G.T.R. station at Ash, Trafalgar tp., Ont.

13982. June 19.—Authorizing C.P.R. to cross with its Weyburn-Lethbridge branch four highways in Alberta.

13983. June 19.—Approving location of C.P.R. station at Colonsay Sask.

13984. June 12.—Approving revised location of C.N.O.R. through tp. 24, rs. 27-28, w. 4 m., Alta., mileage 243.77 to 246.26, and 246.57 to 250.27.

13985. June 14.—Dismissing application of residents of St. Stanislas, St. Prosper, and St. Severin de Proulxville parishes, Que., re alleged inadequate train service of C.N.Q.R.

13986. June 13.—Authorizing G.T.P. Branch Lines Co. to build spur to Dobell Coal Co.'s premises in sec. 35, tp. 50, r. 19, w. 4 m., Alta.

13987. June 12.—Authorizing G.T.P. Branch Lines Co. to divert roads in secs. 1, 2, 9 and 10, tp. 21, r. 13 w. 2 m., Sask.

13988. June 6.—Ordering V.V. and E. Ry. within 30 days, to build suitable culvert, sewer and drain under its line from Front St. to False Creek, Vancouver, B.C.

13989. June 12.—Authorizing C.P.R. to build spur to Moose Nose ballast pit across road allowance, in Springfield municipality, Man.

13990. June 12.—Authorizing G.T.P. Branch Line Co. to cross highway on its Prince Albert Branch, mileage 105, Hudson's Bay Co.'s Reserve, Sask.

13991. June 6.—Approving location of part of C.N.O.R. Sudbury-Port Arthur line through Nipigon, Lyon and Dorion tps. and unsurveyed territory Thunder Bay District, subject to certain conditions in connection with C.P.R. property.

13992. June 12.—Authorizing G.T.P. Branch Line Co. to close and divert road on its Yorkton branch, mileage 16.9, Sask.

13993. June 12.—Approving part of location of Lachine, Jacques Cartier and Maison-neuve Ry., subject to certain conditions with regard to streets, etc., in Montreal.

13994. June 12.—Authorizing Toronto and Eastern Ry. to cross public road at mileage 15.3, Oshawa, Ont.

13995. June 19.—Authorizing C.P.R. to build spur into Cranbrook Jobbers' premises, Cranbrook, B.C.

13996. June 19.—Authorizing C.P.R. to build spur to Maple Creek Light, Power and Molding Co.'s premises, Sask.

13997. June 19.—Authorizing C.N.R. to divert road on its Moose Jaw southeasterly line.

13998 to 14001. June 19-21.—Authorizing G.T.P. Branch Lines Co. to cross with its Regina-Moose Jaw branch seven highways; with its Prince Albert branch highways between secs. 20 and 29, and with its Battleford branch, 17 highways, in Saskatchewan, and with its Biggar-Calgary branch, 12 highways, in Alberta.

14002. June 20.—Approving G.T.P. Branch Lines Co. location of Moose Jaw northwest branch from east line of sec. 36, tp. 16, r. 27, to west line of sec. 16, tp. 19, r. 29, w. 2 m., mileage 0 to 24.43, Sask.

14003, 14004. June 20.—Authorizing G.T.P. Branch Lines Co. to cross with its Regina-Moose Jaw branch seven highways, and with its Moose Jaw northwest branch 19 highways in Saskatchewan.

14005. June 20.—Approving location of G.T.P. Branch Lines Co. Moose Jaw northwest branch from east line of sec. 17, tp. 19, r. 29, w. 2 m., to west line of sec. 11, tp. 21, r. 4, w. 3 m., mileage 24.43-48.55, Sask.

14006 to 14011. June 20.—Authorizing Georgian Bay and Seaboard Ry. (C.P.R.) to cross and close certain streets in Lindsay, and to cross road allowance in Manvers, Ops and Cavan tps., and King St., Bethany, Ont.

14012 to 14015. June 20.—Approving location of C.P.R. stations at Duval, Boharm, Pilot Butte, and Leslie, Sask.

14016. June 20.—Approving location of C.P.R. Swift Current to Brooks branch from sec. 3, tp. 20, r. 19, w. 3 m., at mileage 40 to sec. 7, tp. 22, r. 24, w. 3 m., at mileage 78, Sask.

14017. June 20.—Approving revised location of C.P.R. Lacombe easterly branch in sec. 26, tp. 37, r. 14, at mileage 85.77, to sec. 2 tp. 35, r. 5, w. 4 m., at mileage 147, Alta.

14018. June 20.—Approving C.N.O.R. location through Camden tp., mileage 145.82 to 149, from Toronto.

14019. June 20.—Authorizing Kettle River Valley Ry. to divert road northwest of Midway, B.C.

14020. June 21.—Ordering C.N.R. to build bridge over Serviceberry Creek, Alta., before July 8, under penalty of \$25 a day.

14021. June 21.—Authorizing G.T.R. and Hamilton St. Ry. to operate over interlocking plant at crossing of King St. on G.T.R. Port Dover branch, Hamilton, Ont., speed not to exceed 10 miles an hour.

14022. June 21.—Approving revised location of V.V. and E. Ry., being part of sec-

tion from east line of sec. 15, tp. 16, to west line of tp. 26, from mileage 6 to a connection with C.N. Pacific Ry. at mileage 13.3, New Westminster Dist. at B.C.

14023 to 14026. June 21.—Authorizing Kettle Valley Ry. to cross four highways and divert one northwest of Midway, B.C.

14027. May 30.—Approving plan of C.N.R. and C.P.R. joint station at Regina, Sask.

14028. June 21.—Authorizing C.P.R. to build spur to ballast pit across Government St., Dryden, Ont.

14029. June 21.—Approving revised location of C.P.R. main line from mileage 0, on B.C. Southern Ry. south of Wardner, to north of Fort Steele and northerly at mileage 35.7, Kootenay District, B.C.

14030. Apr. 1.—Authorizing C.P.R. to cross C.N.R. Beulah to Rapid City branch at mileage 9.3 from Hamiota, interlocker to be installed.

14031. June 21.—Authorizing C.P.R. to use bridges 33.3 and 34.4 on Schreiber Subdivision, Lake Superior Division.

14032. June 29.—Authorizing Georgian Bay and Seaboard Ry. (C.P.R.) to cross six highways in Manvers tp., Ont.

14033. June 21.—Approving location of portion of C.P.R. branch from Swift Current to Brooks, Sask., for 40 miles from main line.

14034. June 21.—Authorizing C.P.R. to build spur into premises of Cameron and Heaps and Peart Bros., Regina, Sask.

14035. June 20.—Authorizing C.P.R. to cross with its Kipp to Aldersyde branch, highway crossing at mileage 59.41, Alta.

14036. June 19.—Authorizing Kootenay Central Ry. (C.P.R.) to cross and divert highways and crossing of B.C. Southern Ry.

14037. June 12.—Authorizing C.N. Alberta Ry. to join C.N. Western Ry. in sec. 33, tp. 54, r. 2, w. 5 m., Alta.

14038, 14039. June 16.—Authorizing C.N.R. to cross with its Moose Jaw southeasterly line 26 highways in Saskatchewan.

14040, 14041. June 21, 19.—Authorizing G.T.R. to use bridges 50 and 1, at Holland Ave. and Preston St., Ottawa, Ont.

14042. June 21.—Authorizing G.T.P. Branch Lines Co. to cross with its Moose Jaw northwest branch, highway at mileage 25.9 Sask.

14043. June 21.—Authorizing G.T.P.R. to cross highway and divert same in s.w. ¼ sec. 27, tp. 22, r. 6, w. 2 m., Sask.

14044. June 21.—Approving location of G.T.P. Branch Lines Co. Regina-Moose Jaw branch from east line of sec. 28 to west line of sec. 30, tp. 17, r. 23, w. 2 m., mileage 20.3 to 23.32, Sask.

14045. June 21.—Authorizing G.T.P. Branch Lines Co. to cross with its Calgary Branch eight highways in Alberta.

14046. June 12.—Approving location of G.T.P. Branch Lines Co.'s Regina-Boundary branch from east line of sec. 32, tp. 3, r. 4, to International boundary, sec. 6, tp. 1, r. 2, w. 2 m. Sask.

14047. June 23.—Authorizing C.N.R. to open for traffic its line from Maryfield to Luxton, 68 miles.

14048. May 23.—Dismissing application of city of Toronto for order varying order 10169, Dec. 8, 1909, re Sunnyside and Keele St.

14049. June 21.—Approving C.N.O.R. location near Yarker, Camden tp., mileage 152.13 to 152.72, from Toronto.

14050, 14051. June 21.—Approving agreements between Bell Telephone Co. and La Compagnie de Telephone de St. Ours, and Howica Telephone Co. for interchange of business.

14052. June 23.—Authorizing South Ontario Pacific Ry. to take G.T.R. lands in Flam- boro tp., Ont.

14053. June 21.—Authorizing G.T.P. Branch Lines Co. to open for freight traffic its Yorkton branch from Melville to Canora, Sask.

14054. June 21.—Approving G.T.P. Branch Lines Co. Biggar-Calgary branch from s.e. ¼ sec. 1, tp. 36, r. 15, to south line of sec. 31, tp. 34, r. 17 w. 3 m., mileage 0 to 19.97, Saskatchewan District, Sask.

14055, 14056. June 26.—Approving Kootenay and Alberta Ry. standard plan of overhead bridges and bridges over Mill Creek and Lang's Coulee, Alta.

14057. June 23.—Approving C.N. Alberta Ry. location through tps. 53, r. 10-13, w. 5 m., mileage 82.03 to 101.79.

14058. June 24.—Authorizing C.N.R. to cross seven highways in Antler municipality, Sask.

14059. June 23.—Approving C.N. Alberta Ry. location through tps. 53 and 52, rs. 14-18, w. 5 m., mileage 101.79 to 133.23.

14060. June 23.—Authorizing C.N. Alberta Ry. to cross public road with its St. Albert westerly line.

14061. June 23.—Approving location of C.N. Alberta Ry. through tps. 53-52, rs. (Continued on pg. 755.)



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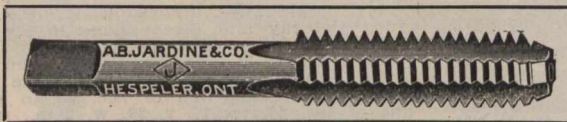
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TORONTO, CANADA, AUGUST, 1911.

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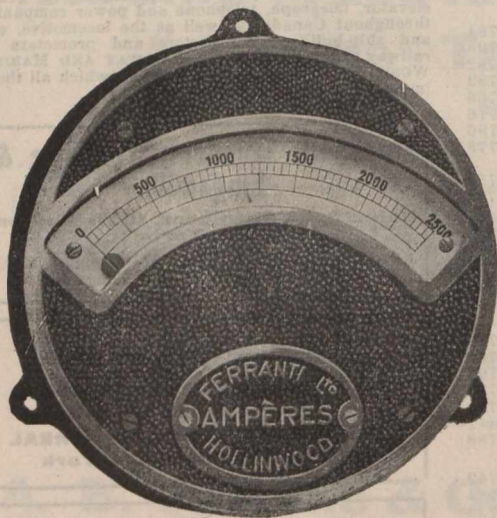
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- 14062, 14063. June 24, 21.—Authorizing C.N.R. to cross 29 highways in Saskatchewan.
14064. June 21.—Authorizing Toronto Eastern Ry. to cross three highways in Whitby tp., Ont.
14065. June 23.—Approving Eastern British Columbia Ry. local freight and passenger tariffs C.R.C. 16 and 3, pending enquiry into B.C. rates generally.
14066. June 24.—Authorizing T.H. and B. Ry. to install block signals between Hamilton and Vinemount, Ont.
14067. June 19.—Authorizing Algoma Eastern Ry. to build spur to Spanish River Pulp and Paper Co.'s mills, Espanola, Ont.
14068. June 23.—Authorizing G.T.P. Branch Lines Co. to open for freight traffic portion of its Tofield-Calgary branch from Tofield to Red Deer River crossing, Alta.
- 14069 to 14071. June 23, 24.—Authorizing G.T.P. Branch Lines Co. to cross certain highways in Saskatchewan and cross and divert eight highways on its Regina Boundary branch, and three highways on its Calgary branch.
14072. June 23.—Authorizing C.P.R. to build spur for Canadian Gate Co., Guelph, Ont.
- 14073 to 14075. June 23.—Authorizing C.P.R. to use bridges 0.3, 34.0, 37.9, 3.4, 66.6 and 68.0 on its St. Guillaume, Drummondville and Megantic subdivisions.
- 14076 to 14077. June 23.—Authorizing Kootenay Central Ry. (C.P.R.) to cross with its Steele, and approving portion of location of main line from lot 46, at mileage 62.54 north-erly to Shuswap Indian Reserve, north of Atalmar townsite, B.C.
14078. June 7.—Rescinding order 13813, June 1, re tunnel under C.P.R. at St. Lawrence Boulevard, Montreal, and extending time for completion to Sept. 15.
14079. June 7.—Approving plan B for sub-section at Brock Ave., Toronto, cost to be assessed as follows: \$5,000 from grade crossing fund, 20% of remainder to be paid by Toronto, 32% by C.P.R. and 48% by G.T.R.
14080. June 23.—Approving New Westminster Southern Ry. Standard Freight Tariff C.R.C. 796, pending inquiry into B.C. rates generally.
14081. May 30.—Authorizing C.P.R. to build subway at Jane St. York tp., according to amended plan, and rescinding order 12622, Dec. 12, 1910, \$5,000 to be paid from grade crossing fund.
14082. June 27.—Authorizing C.P.R. to build spur for Brandon Pressed Brick and Tile Co., Trafalgar tp., Ont.
14083. June 9.—Authorizing town of Shawinigan Falls, Que., to build subway under C.N.R. on Station Ave., \$5,000 to be paid from grade crossing fund.
14084. June 23.—Approving highway diversion of G.T.P.R. between secs. 4 and 5, tp. 25 N., r. 10, w. 2 m., Sask.
14085. June 24.—Authorizing B.C. Southern Ry. (C.P.R.) to build spur for East Kootenay Lumber Co., East Kootenay District, B.C.
14086. June 26.—Authorizing C.P.R. to build spur for Lethbridge-Weyburn Realty Co., Alta.
- 14087, 14088. June 26.—Authorizing C.P.R. to cross with its Regina, Saskatoon and North Saskatchewan branch, 46 highways in Saskatchewan, and with its Kininvie branch, 24 highways in Alberta.
14089. June 24.—Approving location and detail plans of G.T.P.R. station at West Winnipeg, parish lots 17-22, Headingly, Man.
- 14090, 14091. June 24, 26.—Authorizing C.N.R. to open for traffic its line from Hall'sboro to Beulah, 75 miles, and authorizing crossing of 50 highways on same.
14092. June 26.—Authorizing C.N. Alberta Ry. to cross 85 highways.
14093. June 28.—Approving plans for tertiary Ry. covering over C.P.R. and Hull Electric adjacent to Chateau Laurier Hotel, Ottawa.
14094. June 15.—Authorizing C.N.R. to build spur for Arctic Ice Co., St. Vital, Man.
- 14095, 14096. June 27.—Authorizing C.N.R. to cross two public roads on its Rossburn branch, Sask.
14097. June 20.—Authorizing Niagara St. Catharines and Toronto Ry. to build spur for Electric City Athletic Association, Ltd., Niagara Falls, Ont.
14098. June 27.—Authorizing C.P.R. to build spur for St. Lawrence Flour Mills Co., Montreal.
14099. June 15.—Authorizing C.P.R. to build third track across Keewatin St., Winnipeg.
14100. June 21.—Authorizing G.T.P. Branch Lines Co. to build overhead crossing on its Calgary branch.
14101. June 15.—Ordering C.N.R. to provide ballast for raising grade of yard and to build third spur for John Arbuthnot Lumber Co., Winnipeg.
14102. June 27.—Ordering C.P.R. to build subway for J. Hextall, Calgary, Alta., in sec. 34, tp. 24, r. 2, w. 5 m.
14103. June 15.—Authorizing city of St. Boniface, Man., to build Plessis St. across C.P.R. Emerson branch.
14104. June 15.—Ordering C.N.R. to repair diamond and crossing at Tache Ave., St. Boniface, Man., within 30 days, also declaring that ambulance and street cars have right of way over switching movements, under penalty of \$10 for each default.
14105. June 15.—Dismissing complaint of MacPherson Fruit Co., Winnipeg, re alleged overcharge by Dominion Ex. Co. on shipment of strawberries from Burlington, Ont., to Winnipeg and Brandon, Man.
14106. June 14.—Rescinding order 13119, Feb. 24, re C.N.R. spur on blocks 17, 18, 61, 62, 63, 64 from Russell to Fifth St., between Van Horne and College Aves., Brandon, Man.
14107. June 14.—Ordering Brandon, Saskatchewan and Hudson's Bay Ry. (G.N.R.) to build transfer track to connect with C.N.R. and C.P.R., on application of city of Brandon, Man.
14108. June 26.—Approving Quebec Ry., Light, Heat and Power Co.'s bylaw authorizing C. E. A. Carr, General Manager, or J. A. Everell, Superintendent, to prepare and issue tariffs of tolls.
14109. June 27.—Ordering C.N.R. to fence its right of way and erect farm gates on its Calgary-Vegreville branch, upon which rails have been laid, before Aug. 1, under penalty of \$100 a day.
14110. June 28.—Authorizing Quebec Ry., Light and Power Co. to build across Cote de Courville Road, Montmorency, Que.
14111. June 28.—Approving location and plans for G.T.P. passenger station and restaurant at Cobourg, Ont.
14112. June 28.—Approving Vancouver, Fraser Valley and Southern Ry. standard freight tariff C.R.C. 1.
14113. June 29.—Ordering that B.C. Electric Ry. be made party to application re protection by C.P.R. of street crossings in Vancouver.
14114. June 22.—Ordering C.P.R. to furnish certain information to Vancouver Board of Trade within 30 days, in connection with segregating annual return.
14115. June 22.—General order re boiler inspection, testing, etc.
14116. June 30.—Authorizing C.P.R. to cross five streets in Perth, Ont.
14117. June 29.—Authorizing G.T.P. Branch Lines Co. to cross with its Regina-Boundary branch, highway in Enniskillen, Sask.
14118. June 15.—Authorizing G.T.P. Branch Lines Co. to open for freight traffic its Melville-Regina branch from Melville to Balcarres, Sask.
14119. June 30.—Authorizing G.T.P.R. to erect station at Pacific Jct., block 25, s.d. parish lots 32-34, St. Charles, Man.
- 14120 to 14124. June 30.—Authorizing G.T.P. Branch Lines Co. to erect 14 stations, to divert road on its Prince Albert branch, Saskatchewan, to cross and divert 12 highways in Alberta, to divert one in Manitoba, and to build bridge over Elbow River at mileage 200.7.
14125. June 29.—Approving location of G.T.P. Branch Lines Co. Regina-Moose Jaw branch from sec. 25, tp. 17, r. 24, to sec. 3, tp. 17, r. 26, w. 2 m., mileage 23.32 to 40.01, Sask.
- 14126, 14127. June 30, 28.—Authorizing G.T.P. Branch Lines Co. to cross with its Moose Jaw Northwest branch, 23 highways, and cross and divert four highways in Saskatchewan.
14128. June 29.—Authorizing G.T.R. to cross with four additional tracks, McKinstry, Dickson, Hillyard, Niagara and Wentworth Sts., Hamilton, Ont.
14129. June 29.—Authorizing G.T.R. to build spur for Dominion Sewer Pipe Co. at Waterdown Station, Ont.
14130. June 29.—Authorizing G.T.R. to use bridges 155, 157, 158 and 159 on its Eastern Division, and bridge at mileage 289.83.
14131. June 28.—Ordering C.N.R. to do certain cleaning of ditches and yards at Emo, Ont., within 30 days, under penalty of \$25.
- 14132 to 14134. June 29, 30.—Authorizing C.N. Alberta Ry. to build its St. Albert Western line across nine highways in Alberta.
- 14135 to 14140. June 29.—Authorizing C.N.O.R. to cross four highways in Montague tp.; to cross public road in Nepean and Gloucester tps.; approving revised location at Otter Creek, in lots 1 and 2, con. 1, Bastard tp., and lots 26 and 27, con. 1, South Elmsley tp., mileage 50 from Ottawa; authorizing the crossing of public road in Camden tp., and approving revised location of line and station grounds in Belleville.
14141. June 29.—Authorizing C.N.R. to cross with its Crooked Lake branch, six highways in Saskatchewan.
14142. June 28.—Extending to Oct. 31 time for installation of interlocker by C.N.O.R. at G.T.R. crossing, Cobourg.
14143. June 30.—Authorizing C.P.R. to build road diversion in Manvers tp., Ont.
14144. June 29.—Approving detail plans of C.P.R. station at Lacombe, Alta.
14145. June 28.—Authorizing C.P.R. to build additional track across road allowance between secs. 29 and 30, tp. 9, r. 22, w. 4 m.
14146. June 29.—Authorizing C.P.R. to build two Y's across Government road at Yakh station, B.C.
- 14147, 14148. June 29.—Authorizing C.P.R. to build bridge 31.3 on its mountain subdivision and to build bridge over Kaministikura River at Fort William, Ont.
- 14149 to 14151. June 28.—Authorizing Algoma Eastern Ry. to cross under aerial tramway at mileage 24.25, and to cross highway at lot 3, con. 3, Drury tp., mileage 23.45, and approving location from mileage 21 to 46.75, Ont.
14152. June 29.—Approving detail plan of G.N.R. station at Otter, B.C.
14153. June 29.—Authorizing Dominion Atlantic Ry. to build bridge over Moose River, N.S.
14154. June 29.—Authorizing B.C. Government to build level crossing on lot 265, group 1, Similkameen Division, Yale District.
14155. June 29.—Ordering C.P.R. to build highway crossing in Barons, Alta.
14156. June 28.—Authorizing city of Toronto to rebuild bridge over C.P.R. at Weston Road.
- 14157, 14158. June 28, 29.—Authorizing Quebec Ry., Light and Power Co. to open for traffic eastbound track from its junction with main line near Beauport station to Montmorency Falls Park, 3.4 miles, and to build a double-track span over culvert at Beauport.
14159. June 15.—Ordering C.N.R. to raise its track on River Ave., Main St. and Belle Ave., Winnipeg, by Sept., 1912, to be paid from the railway grade crossing fund, 30% of remainder by C.N.R., 30% by city of Winnipeg, 30% by city of St. Boniface, and 10% by Winnipeg Electric Ry.
14160. June 28.—Authorizing C.N.O.R. to build bridge over Napanee River at Yarker, mileage 153.44 from Toronto.
- 14161, 14162. June 30.—Authorizing C.N.R. to build across highways on its Vegreville-Calgary branch, Alta.
14163. June 28.—Approving Brandon, Saskatchewan and Hudson's Bay Ry. bylaw 8, authorizing H. A. Jackson, A.T.M., St. Paul, Minn., to prepare and issue tariffs of tolls.
14164. June 24.—Authorizing G.T.R. to build overhead bridge at Queen St., Palmerston, Ont., in lieu of subway.
14165. June 20.—Approving C.P.R. clearance plan of overhead structure at Weston Road, Toronto.
14166. June 28.—Authorizing G.T.P. Branch Lines Co. to divert road on its Prince Albert branch, Sask.
14167. July 6.—Authorizing C.N.R. to open for traffic its Vegreville extension from mileage 0 to 162.
14168. July 6.—Authorizing G.T.P. Branch Lines Co. and C.P.R. to operate trains over interlocking plant at Camrose, Alta., without stopping.
14169. June 30.—Approving location of C.P.R. Swift Current southeasterly branch from main line in sec. 30, tp. 15, r. 13, near Swift Current, 40 miles, to sec. 19, tp. 11, r. 10, w. 3 m., Sask.
14170. June 12.—Ordering that C.P.R. provide at Montfort Jct. a platform 250 ft. long, commencing at the diamond, work to be completed by Aug. 1, 1911, C.P.R. and C.N.R. to stop trains opposite the platform, and rescinding order 6084, Jan. 14, 1909.
14171. July 10.—Authorizing G.T.R. to build spur for Dominion Flour Mills, Ltd., Montreal.
14172. July 12.—Authorizing C.P.R. to rebuild bridge at mileage 74.6, Eastern Division.
14173. July 11.—Authorizing G.T.R. to build additional track across Walker and Edward Sts., Prescott, Ont.
14174. July 12.—Authorizing C.P.R. to rebuild bridge at mileage 97.2 on its Sherbrooke subdivision, Que.
14175. July 11.—Authorizing G.T.P. Branch Lines Co. to carry traffic over its Melville-Regina branch from Balcarres to Edgeley, Sask.
14176. July 12.—Authorizing C.P.R. to rebuild bridge 69.3 on its Toronto subdivision, Ontario Division.
14177. July 12.—Approving Standard Freight Tariff G.N.C.R.C. 799 of Vancouver, Victoria and Eastern Ry.
14178. July 12.—Authorizing Maine and New Brunswick Electric Power Co. to maintain high tension power line across C.P.R. in Andover parish, N.B.
14179. June 28.—Authorizing N.T.R. Commissioners to take possession of certain lands of the Temiscouata Ry. in Edmunds-



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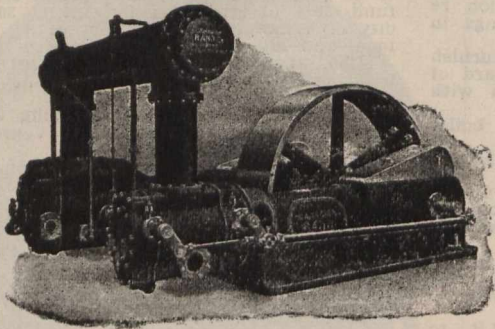
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ton and Madawaska parish, N.B.  
 14180. July 12.—Relieving C.P.R. from further protection of crossing at Dunner St., Norwood, Ont.  
 14181. July 12.—Authorizing C.N.O.R. to divert public road on part lots 33, 34, 35, Tyendinaga tp.  
 14182. July 12.—Ordering Dominion and Canadian Ex. Cos. to perform collection and delivery services for Burrell Rock Drill Co., Belleville, Ont., and that all express companies perform collection and delivery services upon both sides of all streets, fixing municipal boundary lines in which municipal collection and delivery services are established.  
 14183. July 13.—Authorizing C.P.R. to open for traffic its Forward branch from mileage 26 to 52.2, Sask.  
 14184. May 9, 10.—Ordering Bell Telephone Co. by Sept. 15, to make long distance connection with about eight applicant companies for interchange of business, etc.  
 14185, 14186. July 13, 12.—Authorizing C.P.R. to build spurs to Toronto Furniture Co.'s premises across Mowat Ave., Toronto, and in Peel county, one mile south of Cheltenham, Ont.  
 14187. July 12.—Authorizing C.P.R. to build extra track across road diversion in Av. Ont.  
 14188, 14189. July 13, 12.—Approving location of C.P.R. stations at Hosmer, B.C., and Canmore, Alta.  
 14190, 14191. July 13.—Authorizing G.T.R. to use bridges 21, 51 and 64 at mileages 76.02, 125.64 and 154.05, and bridge 122, St. George Viaduct, Middle Division.  
 14192 to 14194. July 14.—Authorizing C.P.R. to use bridges at mileages 75.3, 78.7, 37.4, 70.5, 84.1, 78.5, 40.3, 8.6, 7.4, and 42.1, on Toronto, London and Windsor Subdivisions, Ont.  
 14195, 14196. July 13.—Authorizing G.T.R. to use bridge 45 at mileage 116.19 and 115 at mileage 55.35, Middle Division.  
 14197. July 13.—Authorizing G.T.P. Branch Lines Co. to divert road on its Regina Boundary branch in s.s. ¼ sec. 29, tp. 9, r. 12, w. 2 m., Sask.  
 14198. July 13.—Extending to July 31, time for completion of C.P.R. spur into Horse-shoe Quarry Co.'s premises.  
 14199. July 12.—Approving location of G.T.P.R. station at Druro, Sask.  
 14200. July 12.—Authorizing G.T.R. to change location of its spur to Sylvester Mfg. Co., Lindsay, Ont.  
 14201. July 12.—Authorizing Saskatchewan Government to carry roads C.N.R. in sec. 19, tp. 29, r. 2, w. 3 m.  
 14202. July 12.—Authorizing C.N. Alberta Ry. to cross road allowance between secs. 25 and 26, tp. 53, r. 8, w. 5 m.  
 14203. July 11.—Authorizing C.N.R. to open for freight traffic its line from Luxton to Ceylon, Sask., 89 miles.  
 14204. July 13.—Ordering C.N.O.R. to raise trestle across Lake St. Francois, near New-York station, by Aug. 15, under penalty of \$50 a day.  
 14205. July 14.—Authorizing city of Ottawa to maintain 6 ft. sewer under C.P.R. between Merton and Pinhey Sts.  
 14206. July 14.—Authorizing C.N.O.R. to build bridge over Sucker Creek, Tyendinaga tp.  
 14207. July 14.—Authorizing Georgian Bay and Seaboard Ry. (C.P.R.) to rebuild bridge at mileage 67.9.  
 14208. July 14.—Authorizing Algoma Eastern Ry. to build bridge over West River crossing at mileage 55.96.  
 14209. July 14.—Ordering Napierville Jet. tariffs to be before Sept. 1, joint through freight H. Rd., and authorizing first named company to make refund to Lefebvre and Marchand, Howick, Que., in excess of lawful rate charged on carload of hay from St. Edouard, Que., to Worcester, Mass.  
 14210. July 14.—Extending for three months from July 18, time for completion of spur on Lauriston St., Saskatoon, Sask., without prejudice to complaint of A. Bowman, the whole matter to be reheard at Saskatoon at next meeting of Board.  
 14211. July 14.—Ordering on application of Canmore, Alta., board of trade that plans be submitted for changes to interlocker Sept. 1, and paid equally by the two railways.  
 14212. July 15.—Ordering G.T.R. to re-establish passenger service on trains 7 and 65, and 58 and 6, between Palmerston and Warton, record of passengers to be kept between Aug. 1 and 31, inclusive, and to be filed with Board by Sept. 15.  
 14213. July 18.—Ordering C.P.R. and G.T.P.R. to file joint tariffs of tolls on C.P.R. lines by shortest joint mileages via Canmore, Alta., Saskatoon, Sask., and Portage la Prairie, Man., on lumber, etc., said joint tariffs to apply from all shipping points from which tariffs of lumber, etc., apply to

points east of Rocky Mountains on C.P.R. and C.N.R. Should any disagreement arise between companies full particulars of points in dispute to be reported to Board not later than Sept. 1.

**Too Late for Classification.**

**Alberta Central Ry.**—In an interview in Winnipeg, July 10, J. Carlyle Moore, Vice President, is reported to have stated that good progress had been made with the construction of the line. Up to that time the company had been grading with its own forces, and about 40 miles had been completed from Red Deer, Alta., westerly. A contract had been let to D. F. Macarthur for the grading of between 60 and 70 miles beyond the point to which the work is now in progress, and it was hoped to have steel laid on about 100 miles this fall. This mileage will open up the Brazeau River coalfields, but it is intended sometime in the future to extend the line to the Yellowhead Pass. The company has also power to build a line easterly from Red Deer to Moose Jaw and other points. (July, pg. 645.)

Since the above was put in type, we have been officially advised that a contract for the construction of the line to sub-grade, from Red Deer to Rocky Mountain House, 64 miles, has been let to D. F. Macarthur, of Winnipeg. The work is to be completed to the east end of the North Saskatchewan River at Rocky Mountain House by Nov. 30, the line into the Brazeau coalfields being an extension from Rocky Mountain House westward.

**Kettle Valley Lines.**—R. Smalles, a member of the contracting firm of L. M. Rice & Co., stated in Vancouver, July 12, that his firm had been awarded a contract for building a further section of 40 miles on this line. The first part under contract extends from Bull Creek to the summit near the headquarters of the west fork of the Kettle River. Work is to be started at once and pushed to completion as fast as possible. The contract held by the firm for grading, etc., on the section to Bull Creek has been completed and 20 miles of track has been laid on it. Work was started in Penticton, July 11, on the grading for the line in that town which will connect the wharf, now nearing completion, with the divisional yards which are to be laid out. President J. J. Warren is reported to have stated in a speech at the cutting of the first sod, that about \$4,000,000 would be spent on construction in the town and its vicinity. Work is reported to be progressing rapidly on the section from the C.P.R. at Merritt to the headquarters of the Coldwater River near the Hope Summit. Track has been laid on this section for over 20 miles. (July, pg. 647.)

**St. John Valley Ry.**—Press reports from Fredericton, N.B., July 17, state that while everything is in readiness for the signing of the agreement for the building of the railway along the St. John Valley, as between the Provincial and Dominion Governments, and A. R. Gould, representing the St. John and Quebec Ry., there is some likelihood of a hitch occurring owing to some differences in regard to the specifications. (July, pg. 649.)

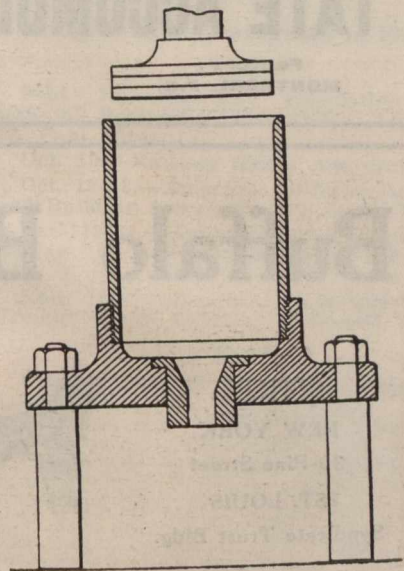
**Great Northern Ry.**—A committee was appointed by the Vancouver City Council July 12 to confer with the company's engineers as to industrial spur lines in the city, with a view of obtaining a consent order from the Board of Railway Commissioners. Tenders were asked, July 12, for the erection of a pier 800 ft. long and 148 ft. wide, on the waterfront between Heatley Ave. and the sugar refinery. A freight shed 100 ft. in width will be built along the whole length of the pier,

having a roadway of 24 ft. wide on each side. A. Stewart, Assistant Chief Engineer, stated that the work would be started within a month and completed as fast as possible. (July, p. 655.)

**White Pass and Yukon Ry.**—In an interview at Vancouver, B.C., July 12, on his return from the north, O. L. Dickenson, Vice President, said in the past month negotiations had been started whereby the copper regions near Whitehorse will be opened up, and that the question of the building of branch lines was under consideration.

**A C.P.R. Grease Press.**

A simple grease press in use in the C.P.R. roundhouse at Glen Yard, Montreal, is shown in the illustration. It consists of a 6-in. pipe that has been bored out and screwed into a cast iron



base. This base receives the grease die which is slipped in from above. After the pipe is filled with the grease to be formed, the piston is forced down by air pressure, driving the grease out through the die in the base.—Railway Age Gazette.

**Grain Elevators in Canada.**

Following is a summary of the number of grain elevators, with capacity, throughout Canada:—

	Number.	Capacity bush.
British Columbia	6	444,000
Alberta	249	8,764,500
Saskatchewan	904	26,465,000
Manitoba	707	21,813,800
Ontario (mills)	4	1,740,000
Ontario (terminals)	15	25,700,400
Eastern transfer	24	20,535,000
Totals	1909	106,462,700

**Creosoting Ties for C.P.R.**—The C.P.R. has made a contract for a term of years with the Dominion Tar and Chemical Co., Ltd., to treat about 1,000,000 ties a year. The plant is located at Transcona, near Winnipeg. The preservative used is creosote, a distillation of coal tar, or the heavy oils of tar. The treatment is to place the ties in cylinders, and, after closing the doors, apply a vacuum, subsequently filling the cylinders with creosote and subjecting the timber to an oil pressure, maintaining the same for as long a time as the class of the timber treated necessitates. The charge is then withdrawn and the operation is complete.



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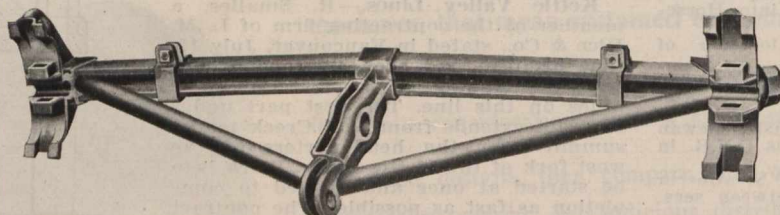
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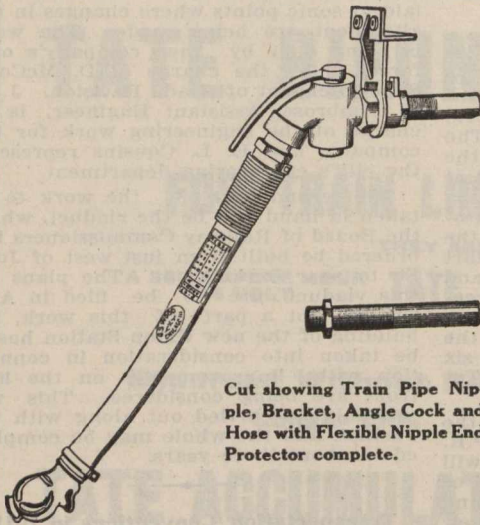
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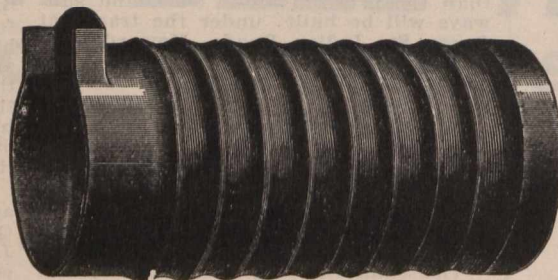
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## MAINLY ABOUT PEOPLE.

Lord Strathcona has been admitted to the freedom of the city of Bath, Eng.

Mrs. John MacTaggart, eldest sister of Sir Wm. Mackenzie, died in Winnipeg July 22, aged 76.

W. H. Biggar, K.C., General Counsel, G.T.R., is in England, accompanied by his eldest son.

A. A. Maver, Master Mechanic, G.T.R., left Montreal, July 19, for a holiday trip to the southern States.

G. H. Shaw, General Traffic Manager, C.N.R., and Mrs. Shaw, returned to Toronto from Great Britain, July 20.

Sir Donald D. Mann, Vice President, C.N.R., returned to Canada, via New York, from England, at the end of June.

C. A. Hanson, of Coates, Son and Co., London, Eng., and Hanson Bros., brokers, Montreal, has been elected sheriff of London.

Sir William Mackenzie, President, Canadian Northern Ry., accompanied by Lady and Miss E. Mackenzie, returned from England, July 5.

G. D. Minty, a Winnipeg barrister, who died there suddenly July 3, was a son-in-law of N. Weatherston, formerly agent Intercolonial Ry. at Toronto.

H. E. Smith, Comptroller, Montreal Street Railway, underwent an operation about the middle of July and is reported to be convalescing satisfactorily.

Major J. F. Smith, who died at Barrie, Ont., July 10, was for 40 years G.T.R. station agent at that place. One son is in the C.P.R. service at Victoria, B.C.

Col. H. H. McLean, K.C., M.P., Vice-President St. John, N.B., Railway, who commanded the Canadian contingent at the coronation, returned to Canada July 9.

O. L. Dickeson, Vice President, White Pass and Yukon Ry., returned to Vancouver, B.C., July 12, from a trip to Alaska, in which he was accompanied by Mrs. Dickson.

W. T. Payne, Manager, C.P.R. Trans-Pacific Steamship service, arrived in Vancouver, July 9, on his way to Yokohama, Japan, after a holiday in Europe and Canada.

Col. Sir Henry and Lady Pellatt entertained the members of the Society of Knights Bachelor at the Cliffords Inn Hall and Garden, in London, Eng., June 28.

Peter Ryan, Registrar, eastern division, Toronto, who is interested in the Caraqueet and Gulf Shore Ry., in New Brunswick, celebrated his golden wedding July 11.

G. Sterret, civil engineer on the G.T. Pacific Ry., construction staff on the Tete Jaune Cache section of the line, was married at Lindsay, Ont., recently to Miss R. McDiarmid.

Mrs. Arthur Sprague, of Toronto and Golden, B.C., was nominated as C.P.R. representative at the sixth annual meeting of the Alpine Club at the Great Divide camp, B.C., July 26.

G. M. Higginson, Trainmaster, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., was presented with a hand bag and pipe, July 19, on starting for a holiday trip to Western Canada.

Sir Wm. Van Horne was awarded the grand championship for the finest boar, and obtained a large number of prizes in the classes for Yorkshire pigs at the Winnipeg exhibition recently.

W. H. Rosevear, of St. Lambert, Que., ex-General Car Accountant, G.T.R., was married at Montreal, July 12, to Miss M. I. Peebles, recently headmistress of the Practice School of Macdonald College.

W. R. McRae, Superintendent Truck and Motor Department, Toronto Ry.,

sailed from Montreal July 12, with his wife and family, on the s.s. Royal Edward, to spend two months in Europe.

Ralph Mojeski, M. Am. Soc. C. E., of Chicago, who is a member of the Quebec Bridge Board of Engineers, has been awarded the honorary degree of Doctor of Engineering by the University of Illinois.

H. R. Charlton, General Advertising Agent, G.T.R., returned to Montreal June 12, from a tour through the Jasper Park district of Alberta, which the G.T. Pacific Ry. proposes to develop as a tourist district.

F. H. McGuigan, formerly Fourth Vice President, G.T.R., is head of the firm of F. H. McGuigan and Co., of Toronto, which has secured the contract for the construction of the filtration plant at Montreal.

P. J. Myler, Vice President, Canadian Westinghouse Co., Hamilton, Ont., and H. H. Gildersleeve, Manager, Northern Navigation Co., Sarnia, Ont., have been elected directors of Travellers Life Assurance Co. of Canada.

A. M. Bennett, for four years chemist at the Montreal Steel Works, was presented with a loving cup, and an emerald and pearl pendant for Mrs. Bennet, July 6, on his leaving Montreal for England, for a similar engagement.

J. D. Altimas, Car Accountant, C.P.R., Montreal, was elected on the committee on office methods and accounting, for three years, at the recent annual meeting of the Association of Transportation and Car Accounting Officers at Cape May, N.J.

Lord Strathcona, who has held the position of High Commissioner for Canada, in London, Eng., for 15 years, has announced that on account of his age, and acting on the advice of his physician, he must relinquish the office at an early date.

Thomas Kinney, Track Superintendent, Sandwich, Windsor and Amherstburg Ry., died suddenly at Windsor, Ont., July 3. He had been in the company's service 16 years, first as trackman and for the past five years as track superintendent.

W. H. Jordan, chief clerk to General Freight and Passenger Agent, C.N.Q.R. and Q. & L.St.J.R., Montreal, was presented with a toilet outfit by the local staff on his leaving Montreal to take up the position of chief clerk to the General Traffic Manager, Canadian Northern Ry. at Toronto.

Col. Henry G. Prout, M. Am. Soc. C. E., First Vice-President and General Manager of the Union Switch & Signal Co., Swissvale, Pa., has been awarded the honorary degree of Doctor of Laws by the University of Michigan. In 1902 he received the honorary degree of Master of Arts from Yale University.

E. J. Brien, whose appointment as Trainmaster, District 2, Lake Superior Division, Schreiber, Ont., was announced in our last issue, was born at Carleton Place, Ont., Sept. 1, 1869, and entered C.P.R. service, Jan. 9, 1891, since when he has been, to June, 1911, switchman, brakeman and conductor, consecutively.

Sir Thomas, Lady and Miss Tait arrived in Montreal July 10, after a residence of eight years in Melbourne, Australia. Since retiring from office as Chairman of the commission managing the Victoria State Railways last autumn, Sir Thomas has been traveling leisurely from Australia, via India and Europe, with his wife and daughter.

R. A. Ross, E.E., and M. Can Soc. C.E., and H. Holgate, M. Can. Soc. C.E., who have been associated for many years as Ross & Holgate, consulting engineers, in Montreal, have dissolved partnership. In future the business will be carried on as R. A. Ross & Co. Mr.

Holgate has been elected President of the Cedar Rapids Power Co.

A. R. Macdonell, railway contractor, formerly of Montreal, died July 15 at Frimley Park, Surrey, where he had lived for the past two years, having gone to England owing to failing health. He carried out a number of large contracts, one of the last being on the National Transcontinental Ry. in Northern Ontario, in partnership with M. J. O'Brien.

Sir Wm. Whyte, replying to a resolution of congratulation from the Victoria, B.C., Board of Trade, July 11, said: "The kind things that have been said to me during the past few days have touched me more than the honor itself, and it is my earnest hope that I may continue to merit the esteem and respect of my friends during the remainder of my life."

T. H. Curtis, who was President of the Master Car Builders Association for 1910-11, and who recently resigned as Superintendent of Motive Power, Louisville and Nashville Rd., has been appointed Mechanical Engineer of the commission to investigate smoke abatement in Chicago, which was appointed by the Chicago Association of Commerce.

Sir Wm. Whyte, Vice President, C.P.R., visited Montreal in the middle of July, to confer with the President on a number of matters relating to the Western Lines, which gave rise to press reports that he was about to retire. Though still an exceedingly vigorous man, Sir William has reached an age when he might, naturally, desire to be relieved of the immense responsibility he has carried for so many years and to enjoy a well-earned rest, but it is not thought that he will retire in the very near future.

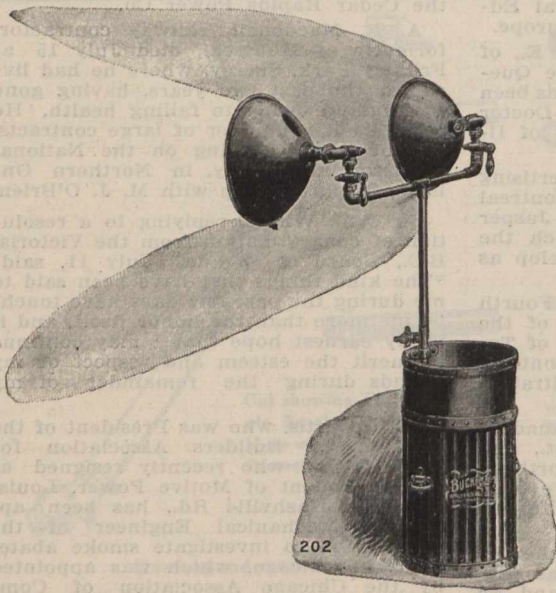
A supplementary list of subscribers to the King Edward Memorial Fund, in Montreal, includes the Canadian Pacific Ry., \$2,500; R. B. Angus, director, C.P.R., \$1,000; Sir H. Montagu Allan, \$1,000; N. Curry, President, Canadian Car and Foundry Co., \$1,000; C. M. Hays, President, G.T.R., \$1,000; C. R. Hosmer, director, C.P.R., \$1,000; R. Meighen, director, C.P.R., \$1,000; Sir Thos. G. Shaughnessy, President, C.P.R., \$1,000; Sir William C. VanHorne, director, C.P.R., \$1,000.

A. T. McKean, whose appointment as City Freight Agent, C.P.R., Winnipeg, was announced in our last issue, was born at St. John, N.B., Dec. 18, 1886, and entered C.P.R. service, June, 1903, since when he has been, to Apr., 1904, clerk in General Freight Department, St. John, N.B.; Apr., 1904, to Mar., 1906, stenographer and statistical clerk, same department; Mar. to Oct., 1906, stenographer to Master Mechanic, Winnipeg; Oct., 1906, to Dec. 31, 1908, stenographer, correspondence clerk, assistant chief clerk, Assistant Freight Traffic Manager's office, Winnipeg; Jan. 1, 1909, to June 15, 1911, Soliciting Freight Agent, Winnipeg.

W. H. Sample, whose appointment as Master Mechanic, Ottawa Division, G.T.R., Ottawa, was announced in our last issue, was born in Altona, N.Y., Aug. 20, 1864, and entered railway service July 20, 1882, since when he has been, to Apr., 1886, fireman, Central Vermont Ry.; Apr., 1886, to July, 1887, engineer, Central Vermont Ry.; July, 1887, to Aug., 1889, engineer, Atcheson, Topeka and Santa Fe Ry.; Aug., 1889, to Feb., 1901, engineer, Central Vermont Ry.; Feb., 1901, to July, 1906, road foreman, Central Vermont Ry.; July, 1906, to Mar. 15, 1911, Superintendent of Motive Power and Car Department, Northern Ry. of Costa Rica.

E. Eley, who has been appointed General Foreman, passenger car repair shops, C.P.R., West Toronto, was born





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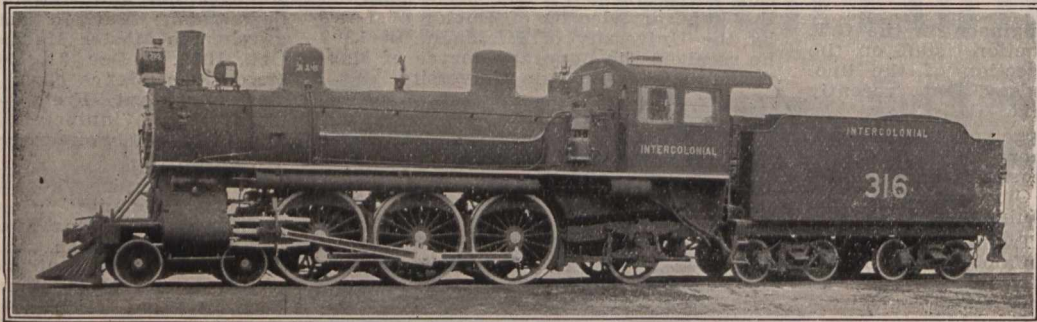
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in London, Eng., in 1867, and commenced railway service with the Great Northern Ry., at King's Cross, London, Eng., June, 1888, and came to Canada in 1889. He entered C.P.R. service in the Bridge and Building Department, Mar., 1894, and was transferred to the Car Department at North Bay, Ont., Aug., 1894, and was, from Mar., 1902, to Jan., 1903, charge hand at Chapleau, Ont.; 1903 to July, 1906, leading hand at North Bay, Ont.; July, 1906, to Feb., 1907, Car Foreman at Quebec; Feb., 1907, to May, 1911, Car Foreman at Glen Yard, Montreal.

S. B. Clement, who has been appointed Chief Engineer and Superintendent of Maintenance, Temiskaming and Northern Ontario Ry., North Bay, Ont., was an honor graduate in civil engineering of McGill University, and has served as an engineer of construction, C.P.R., on survey work, T. and N.O.R.; Assistant Engineer, Ontario Hydro-Electric Power Commission, Assistant Engineer and Chief Engineer, T. and N.O.R.

F. L. Ellingwood, whose appointment as Superintendent of Building Construction, C.P.R., was announced in our last issue, was born at Eastport, Me., Aug. 6, 1863, and commenced engineering work in the early 80's, on construction, and later in the Bridge and Building Department, Burlington, Cedar Rapids and Northern Ry. He afterwards studied architecture in New York, and was in practice as such until 1905, in the latter part of which he was placed in charge of the drawings, etc., for the Pennsylvania Rd. terminal in New York City. On the completion of this work, he returned to private practice, and carried out the designing and construction of a number of large public buildings.

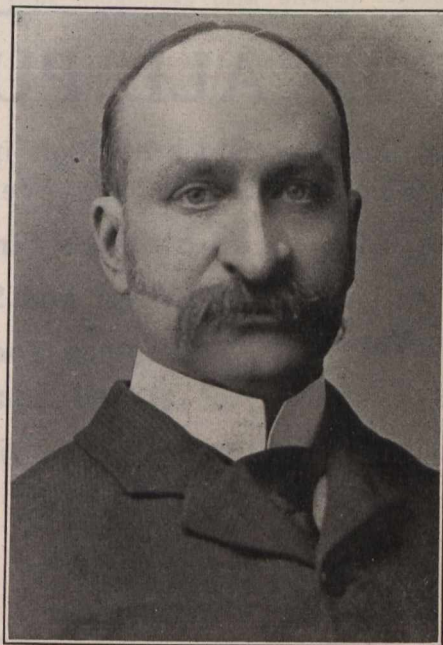
R. Meighen, President, Lake of the Woods Milling Co., which owns an extensive system of grain elevators in the north western provinces, died somewhat suddenly in Montreal, July 12. He was a director of the C.P.R., and of the Dominion Transport Co., and President of the New Brunswick Ry., which has large areas of land in New Brunswick, its railway being leased to the C.P.R. He was a brother-in-law of Lord Mount Stephen, one of the original incorporators of the C.P.R. The value of his estate has been quoted as about \$7,000,000. The funeral held July 15 was largely attended, Sir Thos. G. Shaughnessy, President, and R. B. Angus, director, C.P.R., being among those present.

G. S. Cooke, whose appointment as Superintendent G.T.P.R. lines Winnipeg to Watrous, Sask., was announced in our last issue, was born at Montreal, Oct. 27, 1875, and entered railway service Apr. 1, 1890, since when he has been, to Oct. 1, 1896, clerk in stationery department, G.T.R., Montreal; Oct. 1, 1896, to Feb. 15, 1900, clerk in Superintendent and Trainmaster's office, G.T.R., Montreal; Feb. 15, 1900 to Oct. 16, 1901, chief clerk to Trainmaster, G.T.R., Battle Creek, Mich.; Oct. 20, 1901, to Mar. 1, 1905, chief clerk to Superintendent, St. Louis, Iron Mountain and Southern Ry., Mer Rouge, La.; Van Buren, Ark., and Aurora, Mo.; Mar., 1905, to Jan., 1906, chief clerk to Superintendent, Chicago, Cincinnati and Louisville Rd.; Jan. to Aug., 1906, chief clerk to General Superintendent, same road; Aug., 1906, to Aug., 1907, Trainmaster, same road, Peru, Ind.; Sept. 1, 1907, to Oct. 15, 1908, chief clerk, Engineering Department, Grand Trunk Pacific Ry.; Oct. 15, 1908, to June 1, 1911, Trainmaster, G.T.P.R., Melville, Sask.

Geo. W. Torrance, Freight Agent for Ontario for the White Star-Dominion Line Steamships, with office in Toronto, who died in Montreal July 21, was one of the best known and best liked traffic officials in Canada. He had been ailing since last winter, when he had a severe attack of la grippe. Early in July he

left Toronto for a rest and change of air, going to Montreal, and from there to Metis, Que., with his sister. They then went on to St. Andrews, N.B., but as he grew worse they returned to Montreal, where he went to Victoria Hospital, suffering from a complication of diseases to which he quickly succumbed. He was a son of the late David Torrance, some time President of the Bank of Montreal, and had been in Toronto for some 35 years, first as representative of the Dominion Line Steamships, and latterly of the White Star-Dominion Line. In his young days he was an excellent lacrosse player, and always took great interest in sports. For many years he was a director of the Ontario Jockey Club, and latterly was chairman of its executive committee.

Lacey R. Johnson, Assistant Superintendent of Rolling Stock, C.P.R., Montreal, whose portrait appears on the first page of this issue, was born at Abingdon, Berks, Eng., June 22, 1855, and educated at the Grammar School there. He entered railway service as an apprentice at the Great Western Ry. works, Swindon, June 1, 1870, and was Chief Engineer and Foreman of Mechanics at the Woolwich Arsenal, Jan.



The late George W. Torrance.

1 to Aug., 1876, and fitter and erector, Sept., 1876, to Nov., 1878; Manager, Davis and Sons' engineering works, London and Abingdon, Nov., 1878, to Aug., 1879. In Sept., 1879, he went to India as draughtsman on the Scinde, Punjab and Delhi Ry., and was subsequently foreman of machine and erecting shops there. He left India on account of health, Mar., 1882, and entered G.T.R. service at Montreal as draughtsman June, 1882, and joined the C.P.R., Nov. 2, 1882, since when he has been, to Nov., 1885, General Foreman at Carleton Jct.; Nov., 1885, to May, 1886, Assistant Master Mechanic, Eastern Division, Chapleau, Ont.; May, 1886, to Apr., 1901, Master Mechanic, Pacific Division, Vancouver, B.C., and from the commencement of the trans-Pacific service his jurisdiction extended over the engineering department of the vessels, during which time he spent three different winters in Hong Kong superintending alterations and repairs to the company's vessels; Apr. to Sept., 1901, on the purchase of the Canadian Pacific Navigation Co. by the C.P.R., he was Superintending Engineer of the combined fleets, which position was severed from the locomotive and car department; Sept. 1,

1901, he was appointed Assistant Superintendent of Rolling Stock at Montreal, which position he still holds.

### The Railway and Marine World's Mechanical Editorship.

Frederick H. Moody, B.Sc., has been appointed Mechanical Editor of the Railway and Marine World, and will enter on his duties at once. His career eminently fits him for this work. After passing through Harbord Collegiate Institute, Toronto, he entered the University of Toronto, and graduated, with honors, in mechanical and electrical engineering. He then took the post graduate course in mechanical engineering, receiving the degree of Bachelor of Applied Science, with honors, and was appointed Demonstrator in Thermo-dynamics at the University, instructing the third and fourth year students. He also had charge of a night class in steam engine design at the Toronto Technical School.

His practical work has been varied and thorough. He served the major portion of his time as machinist apprentice with the John Inglis Co., Ltd., engine builders, machinists, etc., Toronto, and his other practical work includes shop work on high tension transmission apparatus with the General Electric Co. at Schenectady, N.Y., designer of locomotive details with the American Locomotive Co. at Schenectady, N.Y., and designer of vacuum and marine pumps, largely for vessels for the United States Navy, with the Blake and Knowles Pump Co., East Cambridge, Mass.

Then he took up mechanical editorial work, and was for some time associate editor of the Maclean Publishing Co.'s technical papers, Canadian Machinery, The Power House, and the Canadian Foundryman, in Toronto. Latterly he has been one of the associate editors of Machinery, and of Railway Machinery, published in New York, which is said to have the largest circulation of any mechanical paper in the world. He is thus thoroughly equipped for the work he will have to do for the Railway and Marine World, and which will speak for itself. We confidently ask for him the cordial co-operation of railway mechanical officials generally, which, we are sure, he will receive, and in this connection we wish to extend our cordial appreciation for favors and support, for which we are indebted to very many of them, in the way of contributions of matter, information, hints, etc.

In pursuance of the policy announced at its inception, namely, to thoroughly cover every department of railway work, the Railway and Marine World has always devoted a considerable amount of space to mechanical matter, and, as a consequence, enjoys a most thorough circulation throughout the Dominion among steam and electric railway officials in the mechanical departments, reaching the superintendents of rolling stock, master car builders, master mechanics, locomotive foremen, road foremen of locomotives, car foremen, shop foremen, etc., as well as all other classes of railway officials.

The rapid increase in railway mileage, and the establishment of new and enlarged shops, which is going on, renders it desirable that still more space should be devoted to mechanical matters in future, and we, therefore, decided to increase our editorial staff, in order that the ground may be even still more effectually covered. We feel confident that our action will be appreciated by our readers.

A. E. Starr has been appointed acting Manager, C.P.R. Telegraphs, Victoria, P.C., during the absence on leave of W. Christie.



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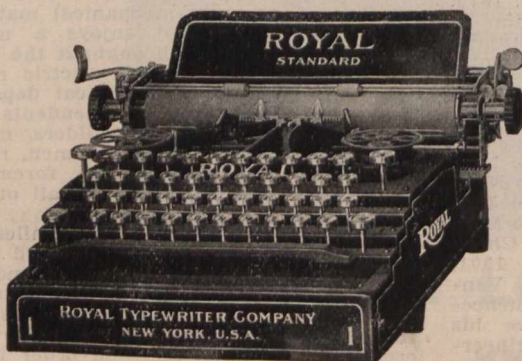
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### Fort Garry Union Station, Winnipeg.

The union station which is being built at Winnipeg by the Canadian Northern Ry. for the joint use of itself and the Grand Trunk Pacific Ry., is rapidly approaching completion. The station and terminal yards occupy about 70 acres of ground, located very close to the centre of the city, and bounded by Water St. on the north, Main St. on the west, the Assiniboine River on the south, and the Red River on the east. On this site was originally located old Fort Garry, built in 1812 to protect the trading post previously established by the Hudson's Bay Company, and which was the original settlement of the city.

THE PASSENGER STATION BUILDING is located on Main St., directly opposite Broadway, and is an imposing structure, built entirely of stone, having a length of 350 ft. along Main St., and a width of 140 ft. The larger portion of the building is four stories and basement, with an elaborate central portion, having great arched windows on all four sides, and surmounted by a massive dome 100 ft. high above street level. The centre of this dome is directly opposite the centre of Broadway. The main entrance is off Main St., at centre of building, beneath a great stone arch, having massive stone columns on either side projecting 10 ft. beyond the building walls. The main floor is at the street level, and will be devoted entirely to station facilities.

The main floor plan, for convenience to passengers, and facility of operation, represents the highest type of modern passenger station design. Passengers going through the main entrance will pass through a vestibule and arrive directly into the ticket lobby, a clear circular space 90 ft. in diameter, entirely unobstructed by columns, seats or booths of any kind. This lobby is directly beneath the great dome and is exceptionally well lighted by the great arched windows, one on each of the four sides. On the east and west sides these windows open through to the front and rear walls of the building, and on the north and south sides open directly out on the large open courts. The lobby is surrounded on the first story by balconies overlooking the main floor. These balconies run between the great arched ribs, which, rising from the main floor, taper away to the summit of the dome. The ticket booths are arranged on south side of lobby, and passengers after purchasing tickets will go directly to baggage checking counter at rear of booths. They may then pass out from lobby through rear vestibule direct to subway under tracks, from which ample stairways lead up to the train shed platforms overhead. On the north side of ticket lobby space is provided in each corner for telephone and telegraph booths and newspaper and book stands. Passengers who must wait for trains may pass through north side of ticket lobby into waiting room, which has an area of 9,000 sq. ft. By this arrangement of having the waiting room adjoining and separate from ticket lobby, a quiet and orderly waiting room



Fort Garry Union Station, Winnipeg.

is assured, as all passengers going to and from trains may pass directly through the unobstructed ticket lobby without entering waiting room. The confusion incident to having both moving and waiting passengers together will be effectually prevented by this arrangement.

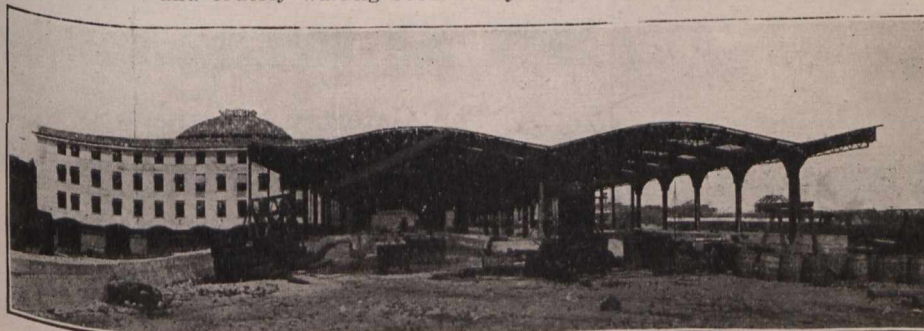
Adjoining the waiting room on the west side and facing on Main St., is the lunch room, area 1,300 sq. ft., also the restaurant, area 2,200 sq. ft. Both of these rooms have a separate entrance off Main St., so that they are capable of handling local business direct. Adjoining the waiting room on the east side is the men's waiting room, area 1,800 sq. ft., and the women's waiting room, area 1,800 sq. ft., each provided with toilets and wash stands. On the north side of waiting room an exit is provided to a 50 ft. street on private property, which may be used exclusively for carriages. The central portion of the waiting room is covered over by an arched skylight 40 ft. wide by 100 ft. long, above which is an open court, thus providing the waiting room with excellent light. A special feature has been made of the construction of these skylights. They are composed of vault light in panels and made absolutely watertight, which, in a region of heavy snowfalls and extremes of temperature will prevent the annoying leaks and draughts incident to large skylights of ordinary construction in this climate.

The walls of waiting room are embellished with the coat of arms of each of the various provinces of the Dominion, executed in gold leaf and colors. The seats in this room are heavy oak benches of the movable type, these being generally considered as the most desirable for station purposes. Arranged around the waiting room are the usual concessionary booths for the sale of cigars, candy,

souvenirs, etc. The interior of waiting room and ticket lobby has the effect of stone construction throughout, the wainscoting being of marble 6 ft. high, and the floors of terrazzo. This construction gives not only a very attractive appearance to the rooms, but has the advantage of being sanitary and readily cleaned. All stairways are of iron with marble treads.

The entire south wing of the main floor is occupied by the baggage room, area 8,000 sq. ft., and the express room, area 8,000 sq. ft. In the future, when more space is required, both the baggage and express will occupy space beneath the tracks and platforms adjoining rear of building, as described further on. The space at first occupied by them in the building may then be used for additional waiting room space, if considered desirable at that time, or for other station purposes. The central portion of this wing is covered by an arched skylight similar to that over the waiting room in the north wing, there being an open court in the interior of this wing also. A driveway for baggage and express waggons is provided at the south end of building. The level of this driveway is 3½ ft. below the level of main floor, and is reached by a short 5% grade down from Main St. The waggons will be loaded and unloaded on an 8 ft. platform outside of building wall, which spans the basement area away below. The baggage and express will be handled by hand trucks between the building and the train platforms, through trucking subways beneath train sheds, and by electric elevators from subways to each platform at either end of train shed.

The basement floor is 15 ft. below the level of Main St. The entire north wing of this floor will be devoted to immigrants. There is a waiting room, area 10,000 sq. ft., having a lunch counter on the north side, and a laundry and separate men's and women's bathrooms on the east side. Adjoining the waiting room on the south side is a separate men's smoking room, with toilets, area 3,000 sq. ft., also a women's waiting room with toilets, area 3,000 sq. ft. The immigrants will be conducted to and from waiting room and trains by means of a stairway at rear of building, leading direct from basement to passenger subway. A separate immigrants' entrance off Main St. is provided leading down from street to basement, partly by a stairway and partly by ramp. It will therefore be seen that immigrants will be well provided for, and will be han-



Fort Garry Union Station, Winnipeg. Train Shed, under construction, from the south.





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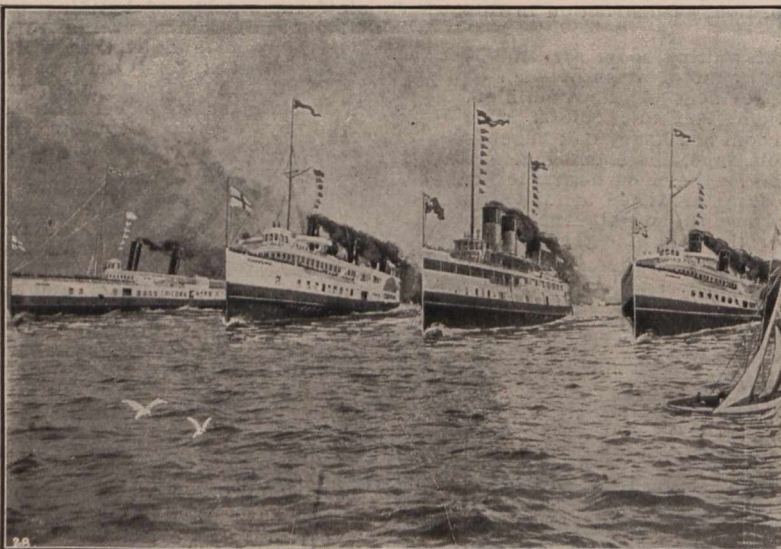
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Levis,	24.10	11.20	22.00	7.35

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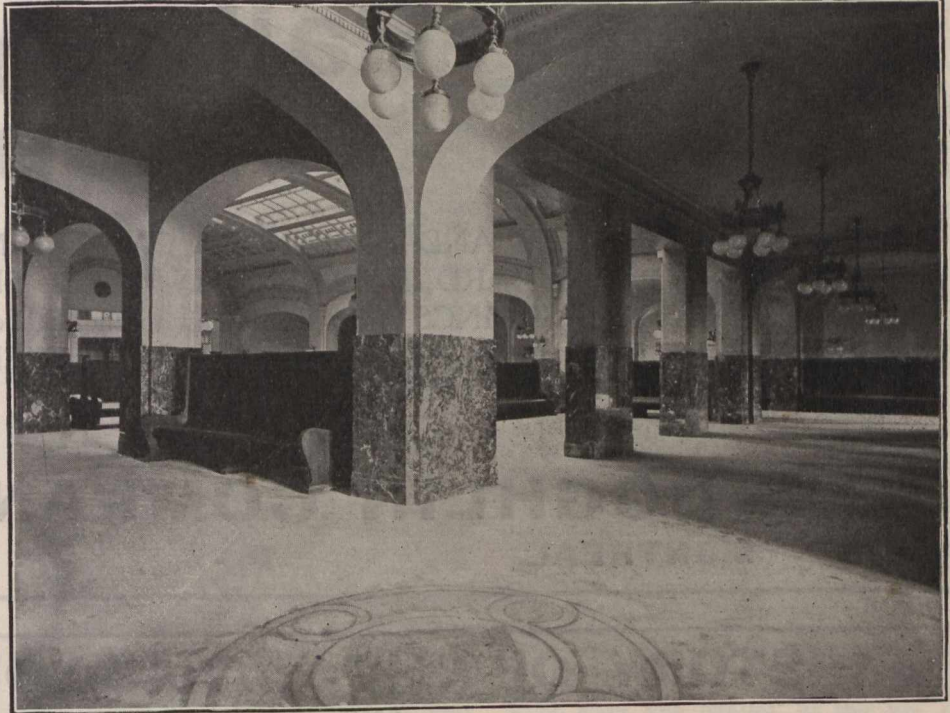
dled to and from both trains and the street without coming into contact with other passengers.

In the north wing of basement floor, at the southwest corner, a barber shop is provided, area 1,300 sq. ft., which can be reached by stairways from both Main St. and the main vestibule of building. The remainder of the west side of wing is occupied by the kitchen, area 6,000 sq. ft., which will supply the restaurant and luncheon rooms directly overhead. The remainder of this wing is occupied by the boiler and engine rooms, also heating and ventilating apparatus. There are four boilers of 130 h.p. each, provided for heating purposes. Under the central portion of building, the basement floor will be used for storage of sleeping and dining car supplies, and miscellaneous storage purposes. The basement is surrounded on all four sides by an open areaway 10 ft. wide, which supplies light and air to the basement rooms.

The second, third and fourth floors will be occupied entirely by the local and general Western Offices of the Canadian Northern and Grand Trunk Rys. These offices are to be on either side of a corridor, the interior row of offices in each wing facing on the open court. Each floor provides an available office space of 25,000 sq. ft., exclusive of corridors, stairway, elevators and toilets. Provision has been made in the design of foundations and steel structure for the future addition of five office floors, so that the building will then be capable of providing 200,000 sq. ft. of available office space.

The building is so designed that there will be no necessity for artificial lighting in any portion during the day. The electric lighting of the main floor has been artistically arranged. In the ticket lobby the lamps for the greater part are concealed, the interior of the vast dome being illuminated by the brilliant reflected light from these invisible lamps. In addition there is a large chandelier containing 150 lights, suspended above the centre of lobby. A special feature has been made of the heating and ventilating layout. The heat will be supplied by hot water system, using the indirect method on the main floor, and the direct method on the office floors.

The structure of the building is of the steel skeleton type. The column



Fort Garry Union Station, Winnipeg. Waiting Room.

loads are supported at the foundations by concrete piles, each pile designed to carry a load of 40 tons. The character of the soil at the site is the blue clay common to Winnipeg, the supporting power of which cannot be relied upon to sustain a greater load than 3,000 lbs. to the square foot. The use of concrete piles was necessary, owing to the fact that they lie between the high and low water lines of the Assiniboine River, which is about 1,000 ft. from the building site.

In the space allowed for the various rooms of the station, and also in the design of passenger track layout, ample provision has been made for the probable rapid growth of Winnipeg, and the consequent increase of requisite station facilities and traffic. The architects be-

lieve that the station as designed will meet all demands that will be made upon it for many years.

PASSENGER YARD AND TRAIN SHED.—The track layout for both the passenger and freight yards was developed after much study by the engineers and other officials of both railway companies in co-operation with the architects. Several preliminary layout plans showing the various types of passenger terminals were made and studied. It was finally decided that a layout of the through station type, with approach tracks elevated over the intersecting streets, and with tracks raised sufficiently above main floor of station to allow a passenger entrance subway beneath, was the most desirable, giving the greatest operating efficiency for the present and prospective traffic to be handled at Winnipeg, as well as providing the greatest convenience to passengers.

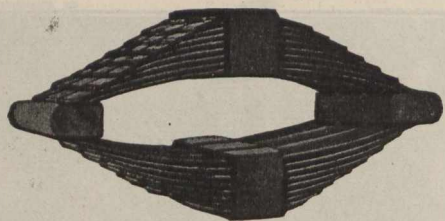
The maximum development of the passenger terminal layout will consist of eight through passenger tracks, with adjacent platforms, and two separate open running tracks at rear for through freight trains. The platforms will be 20 ft. wide, and can be made 1,650 ft. long. By means of this great length, and by the use of the double cross-overs, each track will be capable of handling two trains of 11 cars each during periods of heavy traffic. The total capacity of platforms will be 200 70 ft. cars. The platforms will be of reinforced concrete construction raised 12 ins. above base of rail. Between each pair of tracks there will be three lines of pipe for water, steam and gas. Passengers going to trains will pass from rear of ticket lobby into a 50 ft. wide subway, with head room of 10 ft., having 7 ft. wide stairways on each side, leading up to each platform. This subway will be so arranged by means of railings and gates that there will be no interference between passengers going to trains with those coming from trains. The subway will be heated in winter from the building. The elevation of tracks over the subway will be 10 ft. above level of main floor of station. A slight ramp down from rear of ticket lobby to floor of subway will allow a clear head room of 10 ft.

As already described, the baggage and



Fort Garry Union Station, Winnipeg. Waiting Room.





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The following cities are using Pay-As-You-Enter Cars: Chicago City Railway, 339 cars; Chicago Railways, 1,328; Public Service Corporation of New Jersey, 466; New York City Railway, 555; Third Avenue Railroad, New York, 550; International Railway, Buffalo, 200; Buffalo & Lake Erie Traction Co., 10; Washington Ry. & Elec. Co., Washington, D.C., 100; Capital Traction Co., Washington, D.C., 51; Municipal Traction Co., Cleveland, Ohio, 180; United Rys. Co. of St. Louis, Missouri, 310; Portland Ry., Lt. & Pwr. Co., Portland, Ore., 25; Columbus Ry. & Lt. Co., Columbus, Ohio, 10; Wichita R.R. & Lt. Co., Wichita, Kan., 14; Jacksonville Elec. Co., Jacksonville, Fla., 5; Dallas Elec. Co., Dallas, Texas, 20; Houston Elec. Co., Houston, Tex., 41; Northern Texas Trac. Co., Ft. Worth, Texas, 25; Ithaca Street Ry., Ithaca, N.Y., 2; Peoria Street Ry., Peoria, Ill., 13; Urbana & Champaign Ry., Champaign, Ill., 3; Mutual Lt. & Water Co., Brunswick, Ga., 4; Rochester Ry. Co. Rochester, N.Y., 25; Ft. Dodge, Des Moines & So. R.R. Co., 2; Muskogee Elec. Trac., Muskogee, Okla., 6; Union Traction Co., Dubuque, Ia., 4; Topeka Ry. Co., Topeka, Kas., 12; United Rys. & Elec. Co., Baltimore, Md., 32; Detroit United Ry., Detroit, Mich., 225; Cincinnati Traction Co., Ohio, 50; Montreal Street Railway, 400; British Columbia Elec. Ry., 30; Calgary Street Railway, 18; Metropolitan Street Ry., Kansas City, Mo., 50; Edmonton Radial Ry., 4; San Antonio Traction Co., San Antonio, Tex., 6; Rockford & Int. Ry., Rockford, Ill.; Cairo Street Ry. & Lt. System, 6; Des Moines City Railway, Iowa, 12; Macon Ry. & Lt. Co., Macon, Ga.; Virginia Ry. & Power Co.; Columbia Elec. St. Ry. & Lt. & Power Co., Columbia, S.C.; Aurora, Elgin & Chicago Ry., Chicago, Ill.; Wichita Falls Traction Co., Wichita Falls, Tex.; Ottawa Electric Ry. Co., Ottawa, Bloomington & Normal Ry. & Lt. Co., Bloomington, Ill.; Corsicana Transit Co., Corsicana, Tex.; Compania Electrica y de Ferrocarriles, Mexico; The Milwaukee Elec. Ry. & Lt. Co., Milwaukee, Wis.; Springfield Street Ry. Co., Springfield, Mass.; Lynchburg Traction Co., Lynchburg, Va.; Chicago & Southern Traction Co., Chicago, Ill.; Calumet & South Chicago Ry. Co., Chicago, Ill.

### THE LESSON

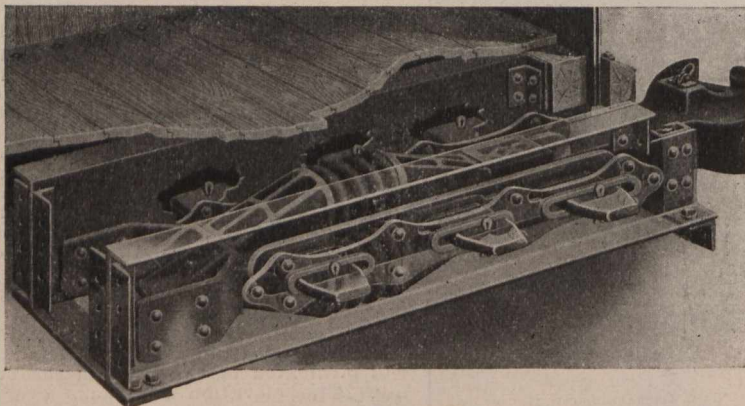
taught by this widespread use of Pay-As-You-Enter Cars is obvious. Increased Revenue, Accident Elimination and Schedule Improvement have been demonstrated in every case. Isn't all this sufficient to show that it always pays to operate the Pay-As-You-Enter Car? Why not remodel some of your present cars?

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express business will be handled for the present in the south wing of station building. In the future, however, these facilities will occupy space beneath the tracks, the tracks being carried overhead by steel viaduct construction. The south wing of station need then contain only a baggage checking counter for the convenience of passengers, with pneumatic tube connection with baggage room. The remainder of this wing will be used for any other station purpose desired. All the sheds beneath tracks will have a clear head room of 10 ft. They will be approached from a 50 ft. driveway, 3 ft. 6 in. below floor of sheds, with a 4% grade down from Main St., south of station building. On the south side of this driveway are the express sheds, one for each road, with an available floor space of 15,000 sq. ft. in each shed. On the north side is the baggage room, with an available floor space of 20,000 sq. ft., also the mail room, with 10,000 sq. ft. On both the express and baggage sides of drive there will be a row of electric elevators, one to each platform. These lifts will supply all trains departing for the west and south, and arriving from the east. The fact that the largest portion of all express business handled at Winnipeg arrives from the east and departs to the west, determined the location of sheds on this side of train shed. To supply the eastbound departing trains and the westbound arriving trains, the baggage and express will be handled through a 15 ft. trucking subway at rear of train shed to a row of elevators on north side of train shed. By these arrangements there will be no necessity for trucking of any kind being done on the train platforms, thereby affording the passengers the unobstructed use of the platforms, and avoiding all interference and confusion. This system of handling baggage, express and mail beneath tracks, with elevators to each platform, is in successful operation at some of the largest and most modern passenger terminals in the U.S., notably the union station at St. Louis, the Rock Island station at Chicago, the union station at Washington, D.C., and the Pennsylvania Rd. station at Pittsburgh. Similar systems of baggage and express handling are also successfully used in many of the large railway terminals in Europe.

**APPROACHES TO PASSENGER TERMINAL.**—The west approach starts from the present main track on the north bank of the Red River, about 2,000 ft. west of Main St., and descending on an earth embankment at a maximum ruling gradient of 0.4%, passes over Main St. on a double track plate girder bridge, allowing an underclearance of 14 ft. for the street roadway. It then crosses the Assiniboine River on a new double track steel truss bridge 400 ft. long, one span of which is a swing bridge, as required by the Dominion Government. The east approach starts from the main line, near St. Boniface station, and rising on an earth embankment, with the ruling 0.4% gradient, crosses the Red River, on a new double track steel truss bridge 900 ft. long, containing one draw span, as required by the Government. It then crosses on steel plate girder bridges, the Winnipeg Transfer Ry., Mill St., Notre Dame Ave. and Water St. Each of the street roadways have at least 14 ft. clear head room. The base of rail is practically level from the Red River bridge to the Assiniboine River bridge at elevation 769.0, which is approximately 10 ft. above the level of Main St. At each end of the passenger layout there will be a signal tower, from which all signals, switches and crossovers will be controlled. The electro-pneumatic system of interlocking will be used. All track work is of first class construction, with 80 lb. rails and gravel ballast. While the Government requires all bridges across either the Red or Assiniboine Rivers to contain draw spans, only the Red

River is navigable for any but small boats.

Due to the inevitable future development of the great fertile northwestern portion of Canada, Winnipeg will undoubtedly in time occupy the same important position as the railway centre of Canada, that Chicago now occupies as the railway centre of the United States. The officials of the joint railways and the architects have made this fact the leading consideration in the layout and design of both passenger and freight terminals. The plans were so drawn that the above described grand scheme of operation may be realized in the ultimate development, but necessitating the initial construction of only that portion necessary to handle the traffic presented by the requirements of the present and immediate future. The railway officials who co-operated for the construction of these joint terminals, and who personally rendered valuable assistance to the architects in their work of designing the terminals, are: Sir Wm. Mackenzie, President; Sir Donald Mann, Vice President; and M. H. McLeod, General Manager of the Canadian Northern Ry.; C. M. Hays, President; E. J. Chamberlin, Vice President and General Manager, and B. B. Kelliher, Chief Engineer, G.T. Pacific Ry. Warren and Wetmore, of New York City, are the architects who have had charge of the design, and who have supervised the construction of both the station building and the track layout of passenger and freight yards. Peter Lyall and Sons are the general contractors for the station building.

**How to Organize a Railway Fuel Department, and its Relation to Other Departments.**

*By T. Duff Smith, Fuel Agent, Grand Trunk Pacific Railway.*

When we consider that at least 8% of the earnings of our railways is spent on fuel, it must be plain to every thinking man that here we have a large item of expenditure which requires expert management and should be under the control of a department which should have its proper recognition in the departments of all railways.

The fuel department should consist of the fuel agent, his clerical staff and fuel inspectors also in cases where the railway company owns and operates its own coal dock, a dock superintendent and his staff. Taking them in the order named, we commence with the fuel agent. I do not believe in keeping the accounting separate from the purchasing and distributing parts of the work, so will state that the fuel agent should be held responsible for all fuel from the time it is purchased until it is finally accounted for to the audit department.

What are the necessary qualifications of a fuel agent and what are his principal duties? Before we can use any fuel it has to be purchased, and on this point there is a great difference of opinion as to who should purchase fuel. My own opinion is that it should be done by the fuel agent, under the direction of the general manager or general purchasing agent. He should have a thorough knowledge of all the different qualities and grades of coal on his own line and adjacent thereto, and should keep in close touch with all movements in the way of development thereon. It would also be proper to study the geological formation of all districts adjoining his line, so that he may know where to look for future supplies. To insure economical working he should be familiar with the capabilities of the different classes of bituminous coal, also hard, slack and lignites, by the use of which he may greatly reduce the cost of heating roundhouses, stations, etc.

The distribution of coal should be closely watched, so as to prevent congestion and avoid extra haulage. The actual office work of issuing orders for distribution and also tracing cars which have not reached destination in reasonable time should be assigned to one of the office staff designated fuel distributor.

The fuel agent should not spend too much time in the office where the routine work can be attended to by the clerical staff, but should be out on the line as much as possible, getting in close touch with the men who have the actual handling, master mechanics, road foremen, agents, etc., and thus gain information which will enable him to make economies, probably only small ones, but which all tell in the year's work.

He should have a knowledge of the



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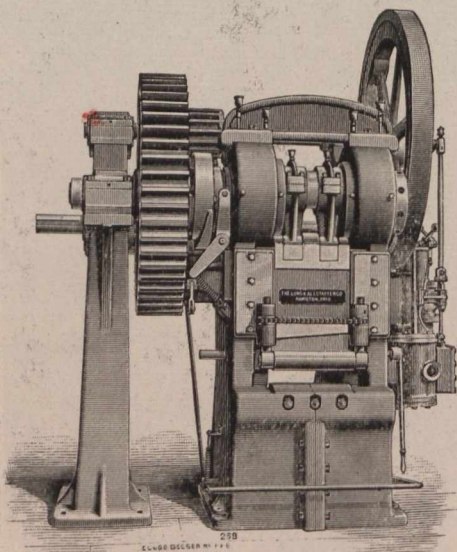
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different systems of handling coal, so as to be able to meet any contingencies and to keep the actual cost of handling at a minimum. He should so arrange his supplies that while amply protecting himself against any possible shortage by reason of unforeseen delays, bad weather, wrecks, wash-outs, etc., he may not have too much stock on dumps, thus causing extra cost by shrinkage, double handling and interest on money lying idle. He should have an all round knowledge of the accounting system, and have such reports sent in as will keep him in close touch with actual stocks and costs. The system of records should be such that it is absolutely impossible for any car, or, in fact, any fuel to remain unaccounted for. The actual charging for the fuel and distribution of charges should be done by the fuel accountant, who is on the fuel agent's staff.

He should keep in close touch with the general manager, purchasing agent or other officer to whom he directly reports, so that he may have immediate advice on questions of policy, etc., with general superintendents, so that they may facilitate movement of cars and also to get advance notice of any extra supplies required by reason of rush of traffic, opening pits or track laying. He should also consult them as to any alterations required to improve coaling tracks or plants, especially at temporary coaling stations. He should also have daily communication with the car service agent, so that a proper supply of equipment may be available at points required. On some lines as on my own, we have a heavy westbound movement during the early part of the navigation season, and a heavy eastbound movement during the fall months. Having to bring in our coal supply over the Great Lakes during navigation, it is most essential to keep well posted as to the car situation, so that we may load all cars west with coal and save light cars (in our case we have to use all box cars), and so make traffic both ways, thus saving equipment and power. This same principle will apply to all local conditions.

But the most important official to the fuel agent is the superintendent of motive power or master mechanic. Fully 90% of our fuel is used by this department, and it is only by the close cooperation of the two departments that the best results may be obtained. On a few roads they have a properly organized testing department, but with the majority all tests have to be made by the mechanical department, so that, to a great extent, the fuel agent has to rely on the result of their labors. Also where a performance sheet is compiled, it will not be possible to get any improvements unless the two departments work closely together. In passing, let me state that I am not in favor of the "pooling" system, as under it you cannot place the blame on the actual man who is wasting or burning too much fuel.

The last man, but far from the least, to mention on the fuel staff is the fuel inspector. To fill this position I prefer a practical miner to any one else. He should, of course, be competent to judge whether the coal is up to the standard required by contract. His duties are, to see that all cars, before loading, are clean and in fit condition to carry coal, so that there will be no loss by leakage. To see that all cars are weighed both empty and loaded, noting any differences between actual and stenciled tare. To inspect all coal loaded, which should be done at the picking table, where he can see all the coal and detect impurities, and that the coal is properly cleaned. To report daily, by mail, if within one day's journey, otherwise by code wire, all cars loaded, giving car num-

bers, weights and destination, also reporting any local conditions at mine, such as variations in quality, opening new seams, car supply and labor conditions, especially when there is any friction between operators and employers, thus giving the fuel agent an opportunity to protect his stocks against any shortage caused by a possible strike or lock-out. As far as consistent, he should confer with operators when they have trouble with bad veins, etc., and try by practical advice to help improve matters. I have been receiving coal from one mine where, by our inspector's practical advice, the quality of the coal has improved fully 20% during the last six months. Operators, instead of objecting to such inspectors, are pleased to have them. Inspectors should have the power to absolutely refuse any coal not up to standard, and having given your inspector this power, trust him, and stand behind him and you will soon



T. Duff Smith,  
Fuel Agent, Grand Trunk Pacific Railway.

find that operators will tender you only the article you have purchased.

In conclusion, the fuel department, although generally looked upon as one of the minor departments of a railway, is really one of the most important, as we all know that, next to labor, fuel is the greatest expense in the railway budget. It is not an earning department like the freight or transportation departments, but in the hands of a competent fuel agent it does earn money, not by bringing it in but by saving, and the best fuel agent is the man who, while giving greatest efficiency in working will keep down the actual cost of his fuel and handling to a minimum, at the same time keeping watch to see that none of the fuel is being wasted by other departments.

The foregoing paper was read at the International Railway Fuel Association's annual meeting recently.

F. R. Glover, Assistant General Manager, British Columbia Electric Ry., returned to Vancouver, July 10, from a lengthened trip to England and Scotland.

## 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.

**Alberta Central Ry.**—M. Neilson, until recently Consulting Engineer, Montreal St. Ry., has been elected Vice President and General Manager, A.C.R.

**Canadian Northern Ry.**—Following are the officials of the recently established District 6, at Brandon, Man.:—Superintendent, W. E. Roberts; Chief Dispatcher, W. I. Munroe; Trainmaster, G. A. Cunliffe; Bridge and Building Supervisor, T. Harris; Locomotive Foreman, H. Williams; Roadmaster, Portage la Prairie to Regina, Maryfield and Wawanesa subdivisions, all with offices at Brandon; Roadmaster, Brandon Jct. to Calder, Hallboro to Beulah, E. Cheetham, with office at Neepawa, Man.

**Canadian Pacific Ry.**—A. Rutledge, heretofore Assistant Superintendent, has been appointed Superintendent, Sleeping, Dining and Parlor Cars, and News Service, District 1, embracing the lines east of Toronto and Sudbury, Ont. Office, Glen Yards, Montreal.

E. Eley has been appointed Foreman Passenger Repair Shops, West Toronto, Ont., vice F. W. Perry, appointed Divisional Car Foreman, Toronto.

J. Sindall has been appointed Locomotive Foreman at Sutherland, Sask., vice J. McQuarrie, transferred.

R. Cooper has been appointed Assistant Car Foreman at Moose Jaw, Sask. This is a new position.

J. D. Muir, heretofore Locomotive Foreman at Red Deer, Alta., has been appointed Locomotive Foreman at Medicine Hat, Alta., vice A. Mallinson, transferred to Revelstoke, B.C.

F. McFarlane, heretofore Locomotive Foreman at Crownsnest, B.C., has been appointed Locomotive Foreman at Red Deer, Alta., vice J. D. Muir, promoted.

M. A. Cardell, heretofore shop foreman at Medicine Hat, Alta., has been appointed Locomotive Foreman at Strathcona, Alta.

H. W. McLeod, heretofore Trainmaster, District 3, British Columbia Division, Grand Forks, has been appointed Trainmaster, District 1, British Columbia Division, vice W. M. Ansley, transferred. Office, Revelstoke, B.C.

L. L. Ashton has been appointed Assistant Roadmaster, District 1, British Columbia Division, Revelstoke, vice J. Todd, resigned.

A. Mallinson, heretofore Locomotive Foreman at Medicine Hat, Alta., has been appointed General Foreman, with supervision over Car Department as well as Locomotive Department, at Revelstoke, B.C., vice W. Kennedy, resigned.

A. W. G. Clark, heretofore General Fuel and Locomotive Inspector, Western Lines, Winnipeg, has been appointed Trainmaster in charge of territory between Laggan and Field, B.C., including Field terminals, vice A. N. McIntyre, transferred. Office, Field.

W. M. Ansley, heretofore Trainmaster, District 1, British Columbia Division, Revelstoke, has been appointed Trainmaster, District 3, British Columbia Division, vice H. W. McLeod, transferred. Office, Grand Forks, B.C.

A. N. McIntyre, heretofore Trainmaster, District 1, British Columbia Division, Field, has been appointed Trainmaster, District 2, Vancouver to and including Kamloops. Office, Vancouver.

T. H. Crump, heretofore Trainmaster, District 2, British Columbia Division, Vancouver, has been appointed Trainmaster in charge of Vancouver terminals, Westminster Jct. and Westminster subdivision. Office, Vancouver.

**Central Vermont Ry.**—At a board meeting, July 27, E. H. Fitzhugh, here-



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before Vice President, was elected President, vice C. M. Hays, resigned.

**Dominion Atlantic Ry.**—At a board meeting in London, Eng., July 12, Sir Thos. G. Shaughnessy and D. McNicoll, President and Vice President, C.P.R., were elected as additional directors of the D.A.R.

**Grand Trunk Pacific Ry.**—R. D. Thomas has been appointed Assistant to General Superintendent, vice N. B. Walton, who was also Trainmaster, District 4, 5 and 6, promoted. Office, Winnipeg. The position of Trainmaster, Districts 4, 5 and 6, has been abolished.

A. MacNamara has been appointed Assistant to Master Mechanic at Rivers, Man.

E. Hacking has been appointed General Car Foreman at Rivers, Man.

N. B. Walton, heretofore Assistant to General Superintendent, and Trainmaster, Districts 4, 5 and 6, Winnipeg, has been appointed Superintendent, lines Watrous to Edmonton, inclusive. Office, Wainwright, Alta.

Dr. Traynor has been appointed District Surgeon at Kitselas, B.C.

Dr. C. A. Eggert has been appointed Division Surgeon. Office, Prince Rupert, B.C.

The following agents have been appointed:—Hinton, Alta., G. Mann; Mirror, Alta., P. L. Harper; outside agencies: Fort William, Ont., R. Street Co.; Red Deer, Alta., G. H. Lindsay; Lacombe, Alta., J. McKinley; Wetaskiwin, Alta., J. P. Johnston; Strathcona, Alta., H. L. Sandeman.

**Grand Trunk Ry.**—J. H. Corcoran, heretofore of the Intercolonial Ry. passenger department at Moncton, is reported to have been appointed Traveling Passenger Agent of the G.T.R. in the Maritime Provinces, with headquarters at Moncton.

W. Walker has been appointed Resident Engineer, Ottawa Division, vice A. Gray, who has been appointed Assistant Engineer, Upper Ottawa River Storage, Public Works Department, Ottawa. Office, Ottawa.

John Walker has been appointed Resident Engineer, Northern Division, Alandale, Ont., vice H. W. McAll, resigned.

E. C. Lee, heretofore yard foreman has been appointed General Yard Foreman at Depot Harbor, Ont.

The following agents have been appointed:—Compton, Que., J. A. Provencher; Bowmanville, Ont., E. H. Brown; Anson Jct., Ont., H. F. Ward; Brampton, Ont., W. E. Holwell; Beachville, Ont., W. A. Abray; Komoka, Ont., N. A. McCallum; Pinkerton, Ont., R. M. Sparing; Paisley, Ont., S. Young; Hariston, Ont., J. H. Fawcett; Ayton, Ont., V. Cavanagh; South Indian, Ont., W. Key; Pembroke, Ont., F. O. Parent; outside agency, Sault Ste. Marie, Ont., W. R. Thom.

**Temiskaming and Northern Ontario Ry.**—J. H. Black, Superintendent, North Bay, Ont., having resigned to become General Manager, Northern Ontario Light and Power Co. at Haileybury, Ont., the position of Superintendent has been abolished.

S. B. Clement, heretofore Chief Engineer, has been appointed Chief Engineer and Superintendent of Maintenance of Way and Motive Power Department. Office, North Bay, Ont.

W. A. Griffin, heretofore Traffic Accountant, has been appointed Superintendent of Traffic, and in addition to his present duties will have jurisdiction over dispatchers, station agents, operators, trainmen, enginemen, and other matters pertaining to transportation. Office, North Bay, Ont.

A. J. Parr, heretofore Freight and Passenger Agent, has been appointed General Freight and Passenger Agent, reporting direct to the Commission. Office, North Bay, Ont.

G. W. Lee, General Agent, North Bay, Ont., heretofore reporting to the Superintendent, will hereafter report direct to the Commission.

H. F. MacDonald, heretofore acting Accountant, has been appointed Accountant, reporting direct to the Commission. Office, Toronto.

### The Railway as a Manufacturer.

By E. J. McVeigh Storekeeper G.T.R.  
Ottawa Ont.

The railway must necessarily be a manufacturer, but the important question is where will it stop. Beyond doubt the place to stop at is the point where manufacturing does not pay. In other words, where the article can be bought cheaper in the trade than it can be manufactured by the railway. This would seem to be a self evident proposition, but to keep right in the matter, as in many others, requires eternal vigilance on the part of some one. Our railways are today manufacturing many articles that could be bought at less than they cost to make in our shops, and they go on doing this until some one happens to notice it, and that item is dropped. But what is every man's business, is no one's business, and what we require is a more systematic supervision of this branch of our work.

The supply department is much to blame in this matter. How often do we place orders on shops for certain items of material without first making sure that such items can be made there better and cheaper than it could be purchased for. Are such orders not often made with the idea of decreasing our bills payable without considering whether we are, or are not, saving money. It is good business to compare our own cost of manufacture with the price at which we may purchase, but it is not good business to manufacture without carefully making that comparison.

The shop people were not the first to sin in this matter. In fact, they have stood out against it in most cases, until forced to give in, and the bad example so set has led to much evil, for it soon became known that while it was difficult to get certain things by purchase, no one seemed to care about the same thing made in the shops, so it was just made and that was all there was to it. Thus the evil grew, until it got away beyond orders placed by the stores department, and when John Smith of the motive power department, had his requisition for a new desk returned cancelled by the head of his department, who considered that the old desk was good enough for a few years yet, John told his troubles to James Jones, of the car department, and Jim, being a good chap, and knowing that he would want something from the machine shop some day, got busy and made the desk for Smith. His men were not cabinet builders, they didn't have the material to hand, but they managed it all right. And what did it cost? Neither Jim Jones nor anyone else knows, but it is a safe bet that it was at least twice what such a desk could be bought for, and the railway paid, while the purchasing agent was pleased to see the item cancelled, and the head of the motive power department congratulated himself that time on having saved a few dollars.

Had we not encouraged this "make it in the shop" business, the evil would never have grown to its present proportions. We are all more or less to blame in the matter, and it is up to each one of us to help to put a stop to it. The violated principle here makes of this a very serious matter indeed, for our heads of departments no longer control expenditure. It is not the one desk that Jones of the car shop made for Smith of the motive power, but we all

soon became Smiths and Joneses. A small leak can let in water enough to sink a ship if left alone, and a leak that grows is naturally much worse.

With our present organization it would be unfair to ask the storekeeper to act as a spy on his friends, Jones and Smith, in their little game of scratch my back and I'll scratch yours, and the fact of the matter is he won't do it. In the first place he won't act the spy because he does not like that kind of thing, and in the second place, he won't be held responsible anyway, and he expects to want his own back scratched a little some day. This is not a simple matter to be disposed of by a general order, and so long as we are human we will never get it just right, just as we never reach perfection in anything. But to hit anywhere near the mark, we must shoot in the direction of it, and to control this business, to any extent, we must have some one on the ground responsible for it. Why is not the storekeeper the man? It is a question of supplies, and he is the supply man, and it comes back to the question of his extended jurisdiction.

The method that suggests itself is that it should be laid down as a first principle that nothing in the nature of supplies be manufactured in shops other than to storekeepers order. Then it is up to him to see that he does not place orders for items that can be purchased for less money than it will cost to make them; he to inform the purchasing agent on this point, and shop people to have the privilege of returning improper orders, when they can show that they are such. An inspector, or other official, going through the shop and noting work other than regular repairs, may call for stores order covering same. If order cannot be produced, he has found something to enquire into. If it can, and he is still not satisfied, the storekeeper must explain. This would have a tendency to make both shop people and storekeeper careful. Then when it is understood that the storekeeper is responsible, and must account for all such work done in shops, and he has a right to demand explanation, the shop people will have him, as well as other officials, to dodge when doing unauthorized work. This will give Jones a good reason for refusing to make that desk for Smith. Quite frequently he only wants a reason for refusing to do it anyway.

This is not offered as a "cure-all," but like the good doctor's prescription, it is intended to "assist nature," human nature in this case. The storekeeper will not act as a spy on his fellow employes, nor will he continue to "butt in" when he has no authority. But make this his business and he will do it to an extent that will greatly improve the present conditions.

It is not necessary to tell railway men that as soon as a railway becomes big enough it should manufacture its own bar iron, brass and grey castings, machine bolts, track bolts and spikes, frogs and switches, build its own cars, etc., etc. These are large matters that have been fully considered and decided on. But even in these matters we must be constantly on the alert to see that our cost does not go up, and our standard of quality go down. Because we beat all creation last year, we must not take it for granted that we are doing the same thing this year. Men outside who make their living by manufacturing some one of these items are constantly straining every nerve to beat us at the game. We must keep ahead, or, in our own interest, quit. Then conditions change, and where we were forced to manufacture a thing a few years ago because no one else manufactured it, we may find today that it is now made both better and cheaper than we can do it. We should not go on mak-



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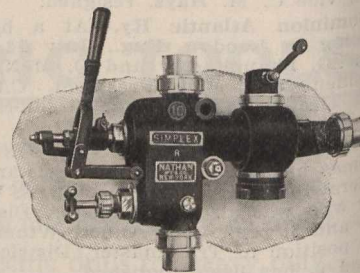
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ing things just because we started to do so some years ago.

Then we must guard against the danger of putting up with an inferior thing because we make it ourselves, in the mistaken idea that we are not losing money by doing so. Take one item that most roads delight to make for their own use, the cold set used by our track men. Now one good cold set will cut 20 rails, and many cut 100. Twenty bad sets will not cut one rail. But it costs us as much to make the bad tool as it does to make a good one, yet we often let the poor article pass because it is made in our own shop, whereas, if we purchased this tool at the same price it costs us to make it we would return them to the seller for replacement, and we would insist, and rightly, that each set be a good one. This applies to many other items, as well as cold sets.

Some years ago one of our railway papers published an article highly commending a shop foreman for a great saving he was making for his company by manufacturing coal hammers out of the 12 in. waste ends of 1 3/4 in. square tool steel. I drew the editor's attention to the fact that a piece of 1 3/4 square tool steel 12 inches long, was not generally considered waste, and I figured out for him what a coal hammer so made would cost. It came to about \$1.40, and I told him that we used a coal hammer that was quite satisfactory, and it cost us 12 cents. The editor asked me to excuse him from publishing my letters and figures, as he did not want to emphasize the fact that he was as big an ass as the foreman who had tried to gain a reputation for economical management on such a poor foundation.

My own experience leads me to believe that a railway shop designed and equipped for repairs to cars or locomotives cannot turn out special articles cheaply, and we will all agree that we should not make an article at a greater cost than it may be bought for. But it is not also true that we should buy rather than manufacture, when we can manufacture at a cost only equal to that at which we can buy? Do not we increase business generally by so doing, which must rebound to the benefit of the railway, but we make friends for the railways, and surely there never was a time in the history of the world, when a friend was a more valuable asset than today.

I would not attempt to lay down rules for all people to work to, but in this matter of manufacturing there are certain general rules that should be followed, these are:

- 1.—The factory should be under the charge of the general storekeeper when situated near his headquarters, or under the divisional storekeeper on the division where the factory may be situated.
- 2.—The factory accounts should be kept separate from store and shop accounts, and a regular monthly balance sheet got out for each factory, their raw material, new tools, and repairs, and their pay roll being their debit, while their credit would be the value of finished article turned out.
- 3.—Accept no man's word as to what it costs to make anything, find out for yourself. Then compare the cost, and the article with the same thing as it can be purchased, when the thing is of such a nature that it can be purchased.
- 4.—Have standards and stick to them.

It may or may not pay a railway company to manufacture. It is highly probable that it may not if the business is not closely looked after, and close attention is the only way to know the truth, and I am of the opinion that there are few roads that would not greatly benefit by a careful enquiry into this matter, and the establishing of

a system whereby it could, and would, be watched carefully.

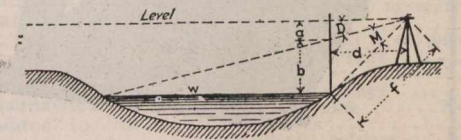
The foregoing paper was read before the Railway Storekeepers' Association recently.

**Some Methods of Finding The Width of a Stream.**

By H. A. Kohnharst, Lexington, Ky.

Where it is desirable in surveying to find the approximate width of a stream of moderate size, without having to cross it, one of the following methods may be found of service. Existing formulas will probably be found more accurate for streams of considerable width, and the use of the proposed ones will be more or less limited, in consequence. The advantages claimed over other ways are, the short time taken, and the fact that only one set-up is required.

The operations are as follows: Set up a transit on the bank, at a convenient distance from the edge of the water. Level the telescope, and have the rodman hold the rod as close as possible at the edge of the water. Take the reading, which is a + b. Then depress the telescope and focus at the opposite edge of the water, and take the reading on the rod. Call this b. If the first formula is used, the horizontal distance from the plumb line of the instrument to the edge of the water must be measured.



Call this d. Let w be the width sought. Then we have two similar right triangles if the rod has been held plumb, which should be done. From the proportion of the sides,

$$w = \frac{bd}{a} \dots\dots\dots(1)$$

This method may be used if only a level is available, although the determination of the horizontal distance d to the edge of the water may be found somewhat awkward.

Where the transit is used, take the angle of depression, D, the reading b as taken in the first formula, and use this formula:

$$w = b \cot D \dots\dots\dots(2)$$

A third method is to obtain the inclined distance f, from the pivotal centre of the telescope to the edge of the water, and then to read the two vertical angles, one, D, from the horizontal to the opposite side; the other, M, from the opposite side to the nearer edge of the water, if the bank does not interfere with the line of sight. This gives three quantities in a scalene triangle, and, by the law of sines,

$$w = \frac{f \sin M}{\sin D} \dots\dots\dots(3)$$

The accuracy of the first formula will be increased if the distance of the set-up from the water is nearly equal to the width of the stream, as then the two triangles approach each other in size. The second formula was found to be more accurate than the first, by actual test, across a 90-ft. stream, though it may not be in all cases. Conditions in a particular case will determine which of the three formulas is to be used.—Engineering News.

The Board of Railway Commissioners, July 18, granted leave to the White Pass and Yukon Ry. to reopen the case relative to its freight rates. The Board made an order for reduction in the operation of which has been suspended pending the rehearing, which has been set down for Oct.

**Among the Express Companies.**

Press reports from Regina, Sask., July 6, state that the Dominion Ex. Co. has abandoned its appeal against the recent judgment, which gave the city the right to tax the company's offices here.

The Board of Railway Commissioners has ordered the Dominion and Canadian Ex. Cos. to perform a specified collection and delivery service in Belleville, Ont., to perform similar services on both sides of all streets there, and to fix municipal boundary lines in which municipal collection and delivery services are established.

The Canadian Northern Ex. Co. has discontinued its service west of Kindersley, Sask., closing offices at the following places: Alsask, Fairmount, Fuller, Harwell, Merid and Pinkham, Sask. The office at Vandura, Sask., has also been closed, and waybill offices have been opened at Rosebank, Man., and Langbank, Sask.

In 1909 and succeeding years the Dominion Parliament voted sums for the purpose of promoting the development of a traffic in fish from the Maritime Provinces to inland points in Canada. The Minister of Marine stated in the House of Commons recently that the total weight of fish transported had been 7,276,847 lbs., of which 59,672 had been transported by freight in the financial year of 1907. The total weight carried in the three succeeding years by express and freight was as follows:—

	Can. Ex.	Dom. Ex.	Freight	Total
1908-09	190,691	178,028	213,723	577,442
1909-10	1,239,443	1,572,570	157,520	2,969,533
1910-11	1,599,958	1,837,932	1,837,932	3,670,200

The figures for 1910-11 are not complete, as the returns are not yet all in.

**Telegraph and Cable Matters.**

W. M. Thompson is reported to have been appointed local manager, C.P.R. Telegraphs at Saskatoon, Sask., vice Skatebol, resigned to enter private business.

Press reports from Regina, Sask., state that the C.P.R. has abandoned its appeal against the judgment which recently gave the city the right to levy taxes on the company's telegraph offices there.

B. S. Jenkins, General Superintendent, C.P.R. Telegraphs, Western Lines, was in Vancouver recently on inspection trip, and is reported to have stated that the rapid development of territory necessitated increased telegraphic facilities, and that two new lines would shortly be added to the system, between Field and Kamloops.

At the recent annual convention of the Association of Railway Telegraph Superintendents at Boston, Mass., F. E. Camp, Inspector of Telegraphs, C.P.R., Revelstoke, B.C.; E. A. Speer, Inspector of Telegraph Construction, C.P.R., Toronto, and E. M. Payne, Inspector of Telegraphs, C.P.R., Winnipeg, were elected as active members. A paper on some hints was read by W. J. Camp, Electrical Engineer, C.P.R. Telegraphs, Montreal.

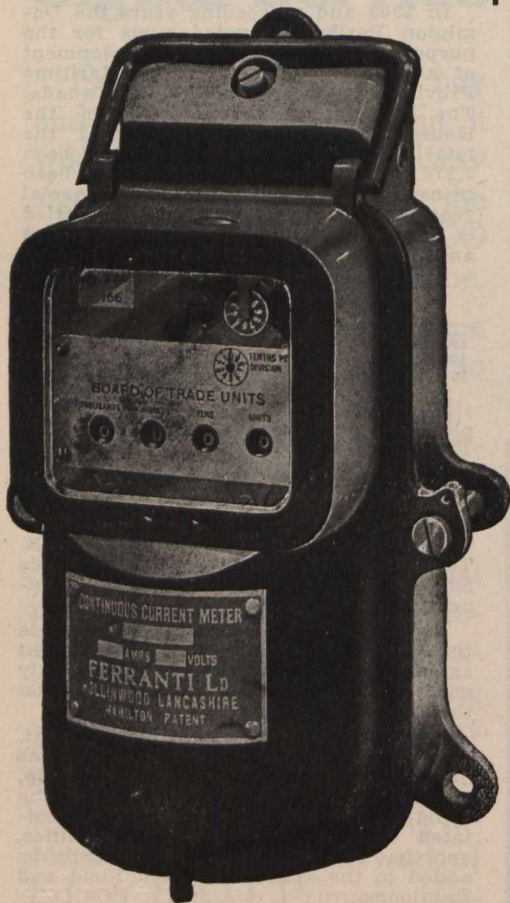
J. T. Phelan, Superintendent of Government Telegraphs, returned to Prince Rupert, B.C., at the end of June, from an inspection trip up the river and into the Naas district. He reported that work was somewhat impeded in the latter district, but that the second gang, stringing wire from Alice Arm is progressing favorably from that point across the Naas River. He stated that the telegraph line to Stewart would be completed before the winter, as also would the line to Goose Bay.



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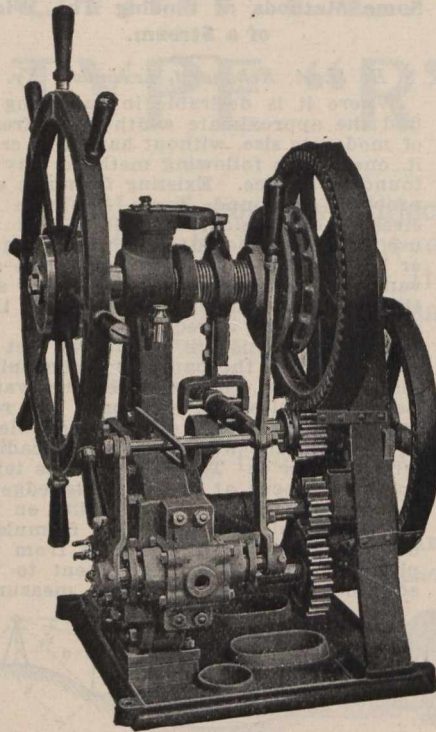
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- Capacity ..... 40 tons
- Length between end sills ..... 36 ft.
- Length over side sills ..... 8 ft. 10 ins.
- Width over side stakes ..... 9 ft. 7 7/8 ins.
- Centre to centre of trucks ..... 26 ft. 1 3/4 ins.
- Air brakes ..... Westinghouse K.C. 812
- Couplers ..... Janney cast steel, 5 by 5 ins. shank, 8 1/2 ins. butt ends
- Draft springs ..... M.C.B. Class G
- Trucks ..... Arch bar type, 80,000 lbs. capacity
- Axles ..... Steel
- Bolsters and brake beams ..... Simplex
- Side bearings ..... Susemihl
- Brake shoes ..... Steel back
- Journal bearings ..... M.C.B.
- Journal boxes ..... McCord
- Journal wedges ..... Drop forged
- Truck wheels ..... M.C.B. 33 ins., cast iron

The C.P.R., between July 13 and 24, placed orders for the following rolling stock, at its Angus shops, Montreal: 102 box cars, one ballast car, two flat cars, six stock cars, three vans and one flat express car.

The C.P.R., between July 13 and 24, received the following additions to rolling stock: 376 box cars, 288 stock cars, 46 refrigerator cars, eight tourist cars, 22 suburban cars, two sleeping cars, 23 vans, one snow plow, one stores supply car, six dining cars, two second class cars, 20 ballast cars, two observation sleeping cars, nine D.10 locomotives, and one Mallet locomotive, from its Angus shops, Montreal; five D.10 locomotives from the Canadian Locomotive Co., Kingston, Ont.; one Lidgerwood unloader from Allis-Chalmers-Bullock, Ltd., and one ballast spreader from the U.S.

Following are the chief details of the two Pacific and three 10-wheel locomotives which the Intercolonial Ry. has ordered from the Canadian Locomotive Co., Kingston, Ont.:

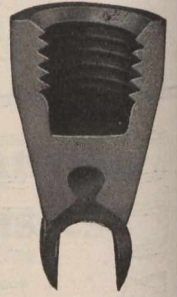
- Weight on drivers ..... Pacific. 10 wheel. 133,550 lbs. 126,000 lbs.
- Weight in working order. 198,550 lbs. 155,000 lbs.
- Wheel base, rigid ..... 12 ft. 7 ins. 14 ft. 1 in.
- Wheel base, total, engine ..... 31 ft. 6 ins. 24 ft. 4 ins.
- Wheel base, engine and tender ..... 57 ft. 10 1/4 ins. 51 ft. 4 1/4 ins.
- Length over all ..... 67 ft. 3 3/4 ins. 60 ft. 8 1/2 ins.
- Heating surface, firebox ..... 162 sq. ft. 165 sq. ft.
- Heating surface, tubes. 2,584 sq. ft. 1,885 sq. ft.
- Heating surface, total. 2,746 sq. ft. 2,050 sq. ft.
- Driving wheels, diar. .... 72 ins. 63 ins.
- Driving wheel centres. .... Caststeel
- Driving journals. .... 9 ins. by 12 ins.
- Cylinders, diar. and stroke ..... 21 by 28 ins. 20 by 26 ins.
- Boiler, type ..... Radial stayed, Radial stayed, wide firebox. ext. wagon top.
- Boiler pressure ..... 200 lbs. 200 lbs.
- Tubes, no. and diar. .... 232 2 1/4 ins. 278 2 ins.
- Tubes, length ..... 19 ft. 13 ft.
- Brakes ..... Westinghouse American E.T.
- Weight of tender, loaded ..... 122,250 lbs. 120,000 lbs.
- Capacity, water ..... 5,000 imp. gals. 5,000 imp. gals.
- Capacity, coal ..... 10 tons 10 tons
- Tank style ..... Water bottom U shape
- Truck, style ..... 4 wheel, simplex 4 wheel bolster
- Wheels, diar. .... 36 ins. 36 ins.
- Wheel, type ..... Wrought iron Steel tires centres.
- Journals ..... 5 1/4 by 10 ins.
- Brake beams ..... Simplex Simplex

**Vessels Removed from the Register.**—

The following vessels were removed from the register during May, for the reasons assigned:—Steam, Cheronea, St. John, N.B., 2,060 tons, sold to foreigners; Harlaw, Windsor, N.S., 267 tons, lost at sea; Salling, Audley R., St. Andrews, N. B., 19 tons, lost at sea; D. Cronan, Quebec, 40 tons, out of existence; Evelyn, Charlottetown, P.E.I., 167 tons, transferred to Barbados; F. W. Pickels, Quebec, 386 tons, lost at sea; G. Walter Scott, St. John, N.B., 75 tons, broken up; Lucina, Quebec, 37 tons, broken up; Sarah Jane, Windsor, N.S., 15 tons, broken up; Transvaal, Lunenburg, N.S., 79 tons, stranded.

J. F. Middlemass has been appointed local manager, Canadian Northern Telegraph Co., Saskatoon, Sask. He has lived in Calgary, Alta., for some time, but was for a number of years in the Great North Western Telegraph Co.'s service in Toronto.

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Sectional View.

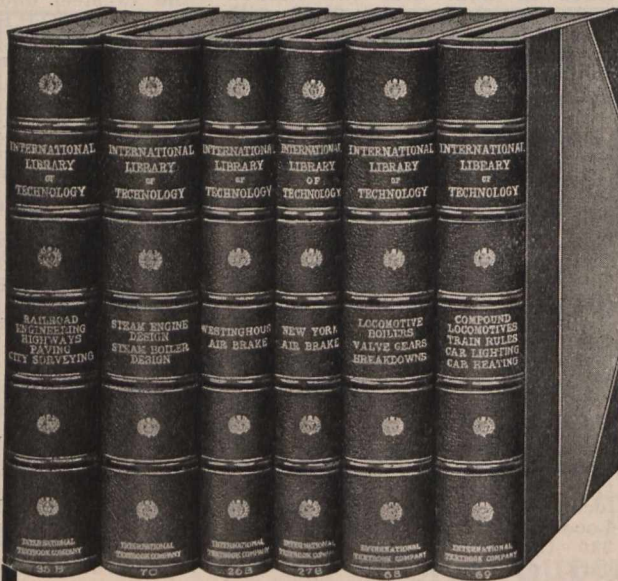
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## The Use of Tee Rails in Street Railway Construction.

By F. G. Simmons.

Mr. Simmons, who is a Canadian by birth, and is Superintendent of Construction and Maintenance of Way of the Milwaukee Electric Ry. and Light Co., read the following paper recently before the Engineering Society of Wisconsin, of which he is President, and we are indebted to him for having furnished us with a copy of it.

The title of this paper refers solely to paved streets, as we think anyone with any knowledge of the subject will admit that where a street railway is built as an exposed track or in unpaved districts, there is no question as to the use of the type of rail commonly known under the designation "tee." The fact that the question is raised where tracks are to be laid in paved streets is, of course, the only reason for the preparation of this paper. Arguments are urged on both sides and it is the purpose of the author to present as many of these arguments both for and against the use of tee rail as he can find and with each argument to present the best counterbalancing argument he can find or devise.

No mechanical method or device is perfect and it is therefore the desire of a conscientious engineer in investigating any given problem, for the purpose of determining a course of procedure, to ascertain as accurately as possible all arguments for and against any particular method or device. That one which investigation shows to be supported by the best and most logical representation and arguments it is fair to assume is the most correct, and therefore the most desirable. In preparing this paper the author believes that in presenting and analyzing all the arguments he has found available he may make it easier for many busy engineers to determine upon which side lies the stronger argument and thus arrive at a decision more in keeping with experience and fact than might otherwise be possible.

Practically all engineers in charge of street railway work are unqualifiedly in favor of the use of tee rail and where an exception occurs it is always in one of the very largest cities of the country, the only cases that have come to the author's knowledge being in New York, Philadelphia and Chicago. In these three cases the engineers all agreed that tee rail was preferable in such places, as the team travel was not too heavy on the track portion of the street, but that when a constant stream of vehicles was encountered on this space, a girder or grooved girder type of rail was preferable. We wish to urge in this connection that where the track portion of the street is so constantly occupied by vehicles as to make this argument

tenable, it has become manifestly inadvisable to continue surface lines and the substitution of either elevated or underground means of transit has become imperative. Where surface congestion has become so great that the surface street cars are limited in their average attainable speed by a constant stream of vehicles, the transit provided is absolutely undesirable and should be replaced by some more efficient method.

One of the arguments most insisted on by those who oppose the use of tee rail is that the paving along the rail is subjected to extreme wear and ruts out with undue rapidity. Now, the undue wear on the street paving along the gauge line of the tee rail is undoubtedly caused, or has been caused in the past, by inadequate methods of laying the paving abutting this point. At no other point on the street can there be any difference in wear whether the rail is tee, girder, grooved girder or any other kind, providing you grant that you are not trying to create a skidway for teams in the constructing of a street railway track. The increasing demand for expeditious transit in our rapidly expanding cities would seem to make the team skidway idea ridiculous.

The paving used in conjunction with all track construction should undoubtedly be of the block or brick variety; the necessity for minor repairs to the track structure making a sheet variety of paving altogether inadvisable. It is the opinion of the author that any engineer urging the use of sheet asphalt paving in connection with street railway tracks is either inadequately educated as to the results to be obtained, wilfully oblivious to the interests of the street railway company or personally interested in the promotion of asphalt paving.

We think it is rapidly becoming apparent to all that asphalt paving in contact with or immediately adjoining the rails is not desirable and one of the great and ruling reasons therefor is this:—The rails being of steel, the vehicular traffic passing back and forth over and along them is bound to wear or scoop out the asphalt immediately adjacent to them. It has been considered advisable in the past to place rows of granite blocks or bricks on each side of the rails, but while this does to a large extent take up the minute vibration which is incident to the somewhat elastic foundation necessary, it only serves to transfer the undue wear to a point further from the rail itself and does not remove this objection. Many cities have and are requiring the use of a grooved girder rail, but the writer submits and maintains that this does not preserve the integrity of the abutting asphalt paving to any greater extent than in the case of the ordinary and more serviceable tee rail. In Minneapolis, where the street railway company maintains only that portion of the paving inside the rails of its tracks and the city maintains all the paving from the rail to the curb, they consider it advisable to pave in the tracks with granite or sandstone blocks, no matter what the character of the paving that is used for the remainder of the street, and when asphalt is used for the city's portion, the city places two rows of granite blocks against the outside rails, but, as argued above, this only serves to transfer the point of wear; it does, of course, not preserve the abutting asphalt from the disintegration set up by the rail vibration.

Other types of paving are numerous and the writer recommends for use on heavily traveled streets where street railway tracks exist, granite in the case of

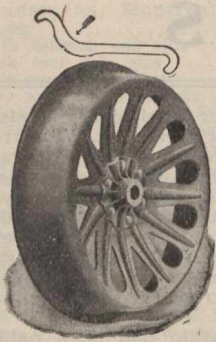
heaviest travel, or brick for business streets not heavily traveled. For residence streets where street railway tracks exist, we believe that with proper methods used, a satisfactory paving may be secured of either brick, creosoted block or some paving of similar characteristics. Asphalt, properly laid, has sufficient field on boulevards and residence streets where no street railway tracks are present.

Too much attention has been paid in the past to the contentions of the various contractors and supply-men, whose interests usually extended only to securing a market for their products. Arguments of this character should be absolutely ignored and a determination made only on the findings as to conditions and physical requirements. Petitions from property-owners should also be ignored except only as they can show a thorough knowledge of the subject. The writer has encountered cases where types of paving have been laid on certain streets at the solicitation of the abutting property owners when every expert and engineer possessing any knowledge of the subject whatever was aware that a mistake was being made, and we recall one case in Milwaukee, when a brick paving was laid in this manner on six blocks of street where the traffic was so heavy that the bricks—which were not first class to commence with—were worn through to the concrete foundation, in places, within six months of their installation.

When the evolution of the horse railway into the mechanically propelled street railway began, the first successful installations were those of the cable railways. In a number of the western cities no departure was made from the use of tee rail, a heavier section only being used. In many of the eastern cities, however, it was thought advisable to develop a tram-girder type of rail which later has been modified into a grooved girder. The original idea obtaining at that time was the accommodation of vehicular traffic. How erroneous this was many of us have since learned, the necessity for rapid transit having become so insistent that nearly everyone understands the importance of keeping the vehicles off the tracks in order that the great street car riding public may come and go at a rate much in excess of the slow moving horse tram-car. Many cities which a few years ago were demanding the installation of a tram or grooved girder rail are now convinced that a much better and more enduring type of construction may be obtained by the use of the so-called Shanghai tee rail, and we believe its use will soon be general.

The method of applying the paving adjacent to the gauge line of the rail has been, through the development of the various types of permanent paving, the most difficult one. A prejudice has existed, and in some quarters still exists, in favor of a groove, either moulded or cut in the blocks or bricks, and many arguments are urged in support of this method. We wish, however, to submit the fact that up to the present it has proven anything but satisfactory. In granite the best results are probably evident, but even here the difficulty of obtaining a smooth and even cutting of the hard material is a serious objection and there is no doubt but that in vitrified brick the result is absolutely disastrous, the sharp edge of the groove wearing away at once and the life of the material at this point is subjected to undue wear from the beginning. A new method of treating this gauge line proposition is coming to the fore and





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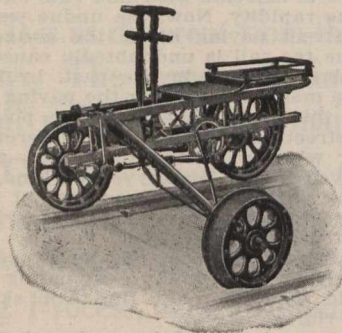
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rapidly gaining favor all over the West and Middle West. This consists simply in depressing the regular block or brick and extending it under the head of the rail at the gauge line, giving the paving a flat crown between the rails of the tracks. We have adopted this method in Milwaukee and find that it works very well indeed, after about four years of actual experience. It has been adopted in a number of other places with uniformly good results. Many people have objected to this type of construction on the ground that it offered too much obstruction to the team travel passing on the streets, but actual tests show that on the average the resistant forces are less for vehicles passing in all directions than when two grooves are to be overcome; and we wish to say again that the miles of this type now in place in Milwaukee are giving very satisfactory results.

It might be well to say at this time that the use of a 7 inch Shanghai tee rail for city track construction has been adopted and is recommended as best practice by the American Electric Railway Engineering Association, and this action has been concurred in by the Central Electric Association, and will undoubtedly secure the approval of all the local electric railway associations of the country, and I wish also to say to the large number of municipal officers present that any street railway corporation of any acumen whatever is just as desirous as you can possibly be to obtain the best results which can be achieved, both as to durability of paving and minimum resistance to vehicular traffic on account of the presence of the rails.

In discussing the gauge line question with a prominent municipal officer recently he urged that a narrow groove was permissible, because the era of the narrow tired vehicle was rapidly coming to a close and auto tires and auto truck tires would soon supersede all the old flat and narrow metal tires. The author believes this is so, but this would entirely do away with the arguments against the method of laying the paving under the head of the rail, as the skidding of vehicles is practically the only bad effect to be feared and this cannot occur in the case of auto and auto truck tires.

George Weston, of the Board of Engineers in control of the entire street railway situation in Chicago, speaking before the American Electric Railway Engineering Association at its session at Denver on Oct. 5, 1909, and discussing the recommendation of the committee on way matters said in part: "I believe every engineer who has studied track construction and has anything to do with its maintenance and its care would prefer a tee rail track, provided the pavement can be laid in a permanent manner that will withstand wagon traffic, abrasion, etc. We have laid very little of the tee rail track construction in Chicago up to this time, and where we have undertaken to install it we have met with serious objections from aldermen and other city officials, teamsters and citizens of tee rail on account of the pavement. The street railway people believe the objection is due principally to prejudice based upon misinformation. The paving done in the tee rail track construction was brick, with a special nose brick to form a groove for a flangeway next to the rail. A great amount of heavy teaming exists on some portions of the streets on which this track was laid, resulting in the abrasion or breaking down of this groove or nose brick, and we have recently adopted a method of laying the track which is illustrated in the paper under discussion to-day, the ordinary paving brick being laid against the web of the rail and crowned in the centre. We believe from the experience we have had with the nose brick that this method of paving will be more satisfactory. We have not tried as yet the use

of granite block, along the side of the rail, but I am favorably impressed with the advantage to be derived from the use of this superior wearing material."

Speaking in the same discussion at Denver, Mr. Cran, one of the prominent engineers connected with the electric railways of Connecticut, said in part: "We are thoroughly in favor of the tee rail, and while we have never made what might be called official standards, and promulgated them generally, we have adopted three types of tee rail. One is the 5-in. 80-lb. A.S.C.E. section, which we use for trunk line interurban work, and even for work in small towns we find that we can construct a 5-in. or even a 6-in. macadam roadway with that rail and have very good success with it. Then we use the 7-in. 95-lb. tee rail, Milwaukee section, such as Mr. Simmons provides, or section 273. The matter of a groove brick at the rail is a delusion, as far as my experience is concerned, and I do not believe in it. The groove wears out under team traffic and produces a rut there into which narrow tread wheels get."

Walter H. Evans, of the Indiana Union Traction Co., speaking at the same time, said: "In connection with the tee rail section, which is recommended by the committee, I have been connected with cities where there was absolutely nothing but tee rail, with the exception of what old rail it had not been found necessary to replace, and in connection with what Mr. Winsor has said complimentary to the city of Denver, I might just say that Denver was probably the first city in the country to adopt tee rails and they have used nothing else since. In my opinion the tee rail is largely responsible for the excellent track condition which you see here to-day."

Mr. Bong, of the Salt Lake City St. Ry. Co., discussing the same matter, said: "In regard to the remarks on tee rail construction, I agree with the ideas of the gentlemen who have spoken on that subject. I believe the engineers should stand solidly for the tee rail, and I believe that finally by fighting for it the municipal authorities will come to time, for as a matter of fact the best tracks maintained and operated are of tee rail construction. In Salt Lake City we use nothing but tee rail, and I believe to-day we have a very good construction. We know that Denver has used the tee rail for years, and it has proved a success. In Salt Lake City we have some girder rail construction which has not proved a success, but a failure. The ball wears and the wheels cut down to the flanges, which causes more friction and requires more power to pull the cars. It is claimed that the girder rail helps the teamsters, but I think that is a mistake, as they get into the ruts and cannot get out without breaking a wheel. That has been the experience in most cities."

G. G. Young, consulting engineer, of New York City, in a written discussion of the subject read before the Association at this same time also said in part: "Your committee on way matters has presented an interesting and valued report, and it is hoped that the discussion will result in some action in recognition of the advantages and adaptability of the use of tee rails in paved streets, and for all classes of traffic conditions. The companies and cities that have had the greatest experience with the use of tee rails in paved streets are its strongest advocates, and therefore their opinions must have the most weight. The question of the proper dimensions and type of rail has been heretofore so dependent on the types and kinds of paving that the two questions should be considered together, and as the question of economical maintenance is acknowledged by the committee to be of such serious importance it would seem most proper to consider the mat-

ter of economical maintenance concurrently with the question of the selection of the proper rail and paving. Where a suitable concrete base is used for both track and paving foundations there is no difficulty in laying a smooth top paving of a type suited for any vehicular traffic in connection with the use of a standard section of tee rail, and, if properly designed and constructed the pavement should not wear in ruts. Tee rails present much less metal on the street surface and therefore are better for street traffic, and can be made satisfactory for all classes of street traffic by adoption of the proper type of paving. Companies now using the flange tread type of girder rail would find that tee rail would be cheaper and more satisfactory, and the street traffic would not produce ruts along the rails if modern smooth paving on concrete base was used.

"In every case that has come under my observation and experience tee rail has been locally acknowledged as very much quieter, and its only objection is an assumed one of difficulty in paving, which does not exist, in fact, where pavements are properly laid on a suitable concrete base."

(To be continued in Sept. issue.)

#### Electric Railway Notes.

The British Columbia Electric Ry. has received two electric locomotives.

Four single truck cars for the Regina, Sask., Municipal Ry. have been received from England.

The Pay-As-You-Enter Car Corporation has declared a quarterly dividend of 1 3/4% on the preferred stock.

Charles Hugill has been appointed Track Superintendent, Sandwich, Windsor & Amherstburg Ry., vice T. Kinney, deceased.

The Moose Jaw Electric Ry. has received two 21 ft. electric cars, 31 1/2 ft. over all, mounted on 21-E trucks, from the Ottawa Car Co., Ottawa, Ont.

The Port Arthur and Fort William Electric Ry. has received two 33 1/2 ft. pay-as-you-enter cars, 46 1/2 ft. over all, mounted on 27-G-1 trucks, from the Ottawa Car Co., Ottawa, Ont.

The Sherbrooke St. Ry. has ordered two 18 1/2 ft. single truck pay-as-you-enter cars, 29 ft. over all, complete, mounted on 21-E trucks, from the Ottawa Car Co., Ottawa, Ont.

The Temiskaming & Northern Ontario Railway Commission is said to have under consideration the purchase of some 30-ton interurban cars for the Nipissing Central Electric Ry., which it now controls.

The standard tariff of maximum freight rates between stations on the Vancouver, Fraser Valley and Southern Ry., a line owned by the British Columbia Electric Ry., connecting Vancouver and New Westminster, through Hastings township, has been approved by the Board of Railway Commissioners.

Under the municipal by-law governing the operation of the Hamilton, Grimsby and Beamsville Ry., the company's cars may be stopped anywhere to take up a passenger. As a result of a conference, 90 stopping places between Hamilton and Beamsville have been selected, and the Ontario Railway and Municipal Board is being asked to confirm the agreement.

The Kingston, Portsmouth and Catarqui Electric Ry., which recently commenced operating a Sunday service, has declined to accede to the request of the Lord's Day Alliance to discontinue the service. The company's franchise allows the operation of cars on Sundays, and the management states that so long as the majority of the citizens desire it, the cars will be run.



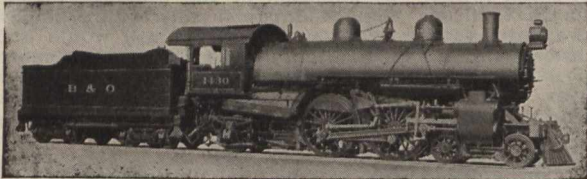
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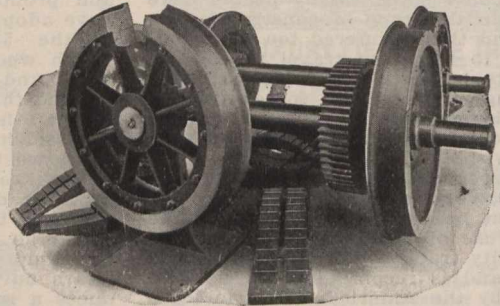
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Guelph, Ont., press reports state that Hilliard Foster, of Toronto, and formerly of Guelph, has been appointed Manager of the Guelph Radial Ry. and the Guelph waterworks, both of which are owned by the city, at a yearly salary of \$1,300, to succeed J. J. Hackney, who has been appointed Manager of the Public Utilities at Port Arthur, Ont. Mr. Foster has recently been engaged on trunk sewer construction in Toronto.

The Montreal St. Ry. has ordered 10 steel street car bodies of the pay-as-you-enter type, of which the following are the chief details, from the Canadian Car and Foundry Co., Montreal:—

Length over end sills	32 ft. 3 ins.
Length over platform	45 ft. 8½ ins.
Width over side sills	8 ft. 3 ins.
Wheel base of car	20 ft. 8 ins.
Interior finish	Cherry
Head lining	Composite board
Ventilators	Garland, 8 per car
Seats	Rattan

J. J. Hackney, heretofore Manager of the Guelph Radial Ry. and of the water works at Guelph, Ont., has been appointed Manager of Public Utilities at Port Arthur, Ont. The statement that he will have full charge of all public utilities, which in a year's time will include the electric railway, is incorrect, as the award of the Ontario Railway and Municipal Board, placing the management of the Port Arthur and Fort William Electric Ry. under a joint commission of the two cities, does not expire until Dec. 1, 1913.

### Projects, Construction, Betterments, Etc.

**Birds Hill and Springfield Ry.**—Application was made, July 14, to the municipal council of St. Paul, Man., for a franchise for the supply of electricity for power, light and heat purposes, to a syndicate which controls the B.H. and S. Ry. charter. The agreement includes a franchise for the operation of an electric railway. The provisional directors are:—N. McGregor, J. W. McKinley, S. R. Henderson, T. E. Meredith and A. E. Hosken. A similar application is being made to the municipality of Springfield. The St. Paul's municipal council, July 15, declined to approve of the company's application for a franchise; but promised to consider a new proposition at the August meeting.

**Brandon, Man.**—The city council has under consideration a bylaw granting a franchise for the building of an electric railway in the city to J. D. McGregor, as representative of a syndicate. Mr. McGregor and the syndicate's engineer, H. E. Mole, discussed the matter with the council, June 30, and the matter is still under consideration. (July, pg. 683.)

**British Columbia Electric Ry.**—G. P. Norton, H. G. Brown and E. M. Harvey, directors of the company residing in England, completed an inspection of its various plants and interests, July 12, the trip ending at Victoria. The local managers of the company at Vancouver, New Westminster and Victoria, had charge of the party in their own districts. In an interview H. G. Brown said within the last year or so the company had expended over \$1,000,000 on the Jordan River power development, and it was expected to have the plant in operation in Sept. The company was face to face with the necessity for the expenditure of \$500,000 on relaying tracks in Victoria, and had undertaken the building of a line in the Saanich peninsula at a cost of about \$600,000.

The plans for the Saanich extension show a line from the Victoria city boundary, along a private right-of-way to a point on Saanich Inlet beyond Union Bay. It was reported, July 5, that the purchase of the right-of-way had been completed and that a considerable amount of clearing had been done. Some grading has been done by the company's

own men, and the rails have been ordered. It is expected that the city terminus of the line will be in the new yards on Douglas St.

Good progress is reported to have been made with the laying of a second track on the original interurban line from Vancouver to New Westminster, and it is expected that it will be completed in the fall.

Work has been started building a machine and car shop at Chilliwack for taking care of the cars on the Fraser Valley line.

Extensions of several lines in North Vancouver are being made.

The railway committee of the Vancouver city council had a conference with the visiting directors of the company upon the franchise question, and it is said that the negotiations which were broken off some months will be resumed. (July, pg. 683.)

**Calgary Municipal St. Ry.**—Track has been laid on the extension to Crescent Heights, and the line will be in operation early in Aug. Applications are being made for the extension of other lines, one of the proposals coming from a syndicate which purposes to build 11 miles of tracks to open up its property, and hand the line over to the city for operation. This latter proposition was referred to the commissioners for consideration July 4. (July, pg. 683.)

**Dunnville, Wellandport and Beamsville Electric Ry.**—Grading is reported to be completed between Dunnville and St. Anns, Ont. Ties have been laid and rails are being delivered. It is expected to have this portion of the line completed early in the fall. Surveys are being made for the line from Dunnville to Port Dover, and tenders are being asked for the grading on the first part of this section. A right-of-way has been granted through Walpole tp. for this line. R. T. Gough is Chief Engineer in charge of surveys and construction. (May, pg. 453.)

**Halifax Electric Tramway Co.**—The Dominion Government has agreed to allow an entrance into the park grounds at Halifax, N.S., at a rental of \$5 a year. All that is now required in order to allow construction to proceed is the signing of the necessary agreement with the city council. (July, pg. 683.)

**Hamilton, Ont.**—The Colonial Engineering Co., of Montreal, has under consideration plans for the building of an electric railway from Hamilton to Galt, Guelph, Berlin and Waterloo, and another from Hamilton to Caledonia, Cayuga and Hagersville, Ont. F. L. Somerville, Toronto, has made some surveys for these lines, and it is said that proposals will be submitted to the Hamilton city council at an early date on behalf of the company. (See Hamilton to Galt, July, pg. 683, and Hamilton, Caledonia and Port Dover Ry., Feb, pg. 167.)

**Montreal Street Ry.**—Work was started, July 17, on the construction of a new line from St. James St. to Plateau Ave.

Application is being made to the courts by the city council to compel the company to extend certain of its lines under the agreement of 1892. (July, pg. 683.)

**Moose Jaw Electric Ry.**—A discussion took place at the meeting of the Moose Jaw city council, July 10, with regard to the slowness of construction of the electric railway. It was stated that the line was to have been completed Dec. 1, 1910; that the company had promised from time to time since then that the work would be completed in thirty days' time; and that on a visit to the plant a few days previously Alderman Small had been told that the engines would not be installed for five or six weeks. The city has offered to supply power for the operation of the line if the company

would get the track in condition.

Meetings of shareholders was called to be held in Moose Jaw, July 31, for the purpose of organizing the company, and for the purpose of creating a bond issue of \$250,000 to be secured by a mortgage of the company's undertaking. (May, pg. 455.)

**Morrisburg and Ottawa Electric Ry.**—A meeting of shareholders was held at Morewood, Ont., July 28, for the purpose of completing the organization of the company and electing a permanent board of directors. The notice calling the meeting was signed by W. H. Fetterley, President, and R. A. Bishop, Secretary of the provisional directors.

An Ottawa press dispatch, Jan. 19, states that it has been arranged to transfer the head office from Morewood to Ottawa, after the organization of the company, and that it is expected construction work will be started in the fall. (Mar., pg. 259.)

**Nelson Street Ry.**—A complete car service has been put in operation on the recently reconstructed and extended electric railway in Nelson, B.C. The system at present has a length of 5.5 miles, but it is contemplated to extend it along the valley. (May, pg. 455.)

**Nipissing Central Ry.**—The undertaking of the N.C. Ry. was taken over by the Commissioners of the Temiskaming and Northern Ontario Ry., June 21, and is vested in a company comprising the members and principal officers of the Commission. This is necessary owing to the fact that the N.C. R. is operated under a Dominion Act of Parliament, and has power to build lines in Quebec. It is proposed to extend the line to the waterfront at Haileybury, and to the T. and N.O. Ry. station at Cobalt, as well as to improve the existing line. (June, pg. 557.)

**Ottawa, Smith's Falls and Kingston Ry.**—An effort is being made to raise \$100,000 to complete the surveys and to lay out this projected line, and meetings are being held at different places along the route to obtain local support. The route projected is along the west bank of the Rideau River from Ottawa to Smiths Falls, and then by the most convenient route to Kingston. At present, however, the provisional directors are only considering the building of the line from Ottawa to Smiths Falls. (May, pg. 455.)

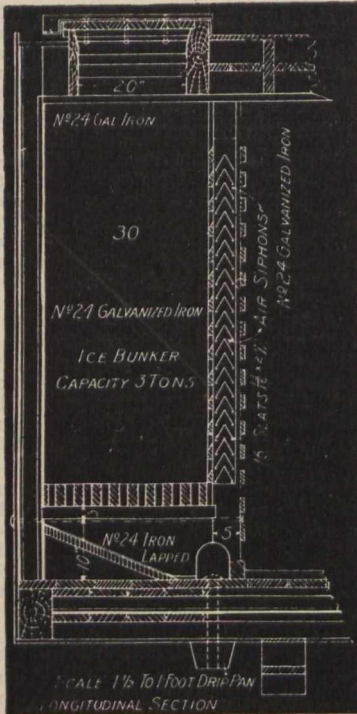
**Peoples Ry.**—It is said that at the meeting of shareholders held in Berlin, Ont., July 17, a new board of directors was elected, and that resolutions were passed authorizing the prosecution of negotiations for the taking over of the company's property and franchises by the Mackenzie, Mann & Co. interests. (July, pg. 683.)

**Port Arthur and Fort William Electric Ry.**—Tenders are under consideration for the delivery of material along the track between McIntyre and Neebing rivers as follows:—900 cubic yards of fill material, 1,234 cubic yards crushed rock, and 450 ties. The extension of the line to Mariday Park was opened for traffic July 9. (July, pg. 683.)

**Quebec Ry., Light and Power Co.**—The Board of Railway Commissioners has authorized the company to open for traffic its eastbound track, from its junction with the main line near Beauport station to Montmorency Falls Park, 3.4 miles; and to build a double track span over the culvert at Beauport, Que. Negotiations are in progress with the Limoulin council with regard to the route of the proposed line through that town. (July, pg. 683.)

**Regina Electric Ry.**—The first section of the electric railway in Regina, Sask., has been opened for traffic, and work is being pushed forward on the other sections as fast as possible. The city coun-





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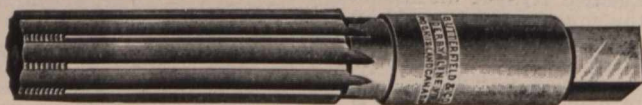
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ill has under consideration proposals for the building of additional lines, and has decided to extend the Albert and Broad Street line to Sixteenth Ave., and the Scarth St. line south to Sixteenth Ave. and east to Broad St., and will give further consideration to a proposal to extend the Albert St. line northerly to the city limits. (July, pg. 685.)

**Saskatoon, Sask.**—The bylaw granting a franchise for the building of an electric railway to the Evans syndicate was passed by the electors of Saskatoon, Sask., July 6, by 472 votes to four. It is said that the company intends to start construction at once. (July, pg. 685.)

**Sherbrooke Railway and Power Co.**—It was reported at a special meeting of shareholders, July 13, that the old street railway system had been reconstructed, and that the greater part of the extensions in the city had been almost completed. Operations had not been started on the extensions owing to the city's delay in paving Wellington St. This has now been arranged for and the double track on that street laid. (July, pg. 685.)

**Toronto Suburban Ry.**—Plans were filed, July 7, showing an extension of the present line from Lambton along a private right-of-way, south of Dundas St., as far as the Etobicoke River, on the boundary line between York and Peel townships. The question of the approval of the plans came before the Ontario Railway and Municipal Board July 21. Notwithstanding the filing of these plans the company's engineers were engaged July 17 in securing options on lands within the same area north of Dundas St.

The company proposes to build a line from Lambton Mills, the terminus of the present line on Dundas St., to Guelph, passing through or near Islington, Summerville, Dixie, Cooksville, Erindale, Streetsville, Meadowville, Churchville, Huttonville, Norval, Georgetown, Glenwilliams, Acton, Milton, and Brampton. It has power to build an extension of its Weston line to Woodbridge and to extend its Davenport Road line to St. George St. in Toronto. It is proposed to build a terminal adjoining the North Toronto Station of the C.P.R., and of the Metropolitan Division of the Toronto and York Radial Ry.

The officers and directors of the reorganized company are:—President, Sir Wm. Mackenzie; other directors:—R. M. Horne-Payne, London, Eng.; A. H. Royce, Major G. C. Royce, F. H. Phippen, K.C., and L. W. Mitchell, Toronto. (July, pg. 677.)

### Operating Rules for Electric Railways

The committee appointed at the Canadian Street Railway Association's annual meeting recently, to compile a code of operating rules for electric railways, met in Toronto July 6, those present being the President, J. Anderson, General Manager, Sandwich, Windsor and Amherstburg Ry., in the chair; E. P. Coleman, Manager of Railways, Dominion Power & Transmission Co.; P. Dubee, Secretary, Montreal St. Ry.; A. Eastman, General Manager, Windsor, Essex & Lake Shore Rapid Ry.; J. E. Hutcheson, Superintendent, Ottawa Electric Ry.; W. R. Robertson, Superintendent, Niagara, St. Catharines & Toronto Ry., and the Secretary-Treasurer, Acton Burrows.

In consequence of the oppressive heat in the city the meeting was held on one of the verandahs on Toronto Island, where the committee worked in comfort. The draft of a very complete code of rules was prepared, and the Secretary was authorized to submit the same to the Board of Railway Commissioners for approval.

### Electric Railway Legislation in Nova Scotia.

Three acts were passed at the last session of the Nova Scotia Legislature affecting street railways and other public utilities within the province. Two affect existing companies, and the third provides for the granting of provincial aid towards the building of electric railways in parts of the province remote from steam railways, or where the traffic to be developed does not warrant the building of steam railways.

By an act amending the statute law, sec. 11, chap. 1, of the acts of 1909, is amended by adding "and make such extensions as may be required" after the word "facilities" in line 22, and by the addition of a new clause providing that the consent of the Public Utilities Commission is necessary before any public utility shall carry on business within the province.

Another act consolidates the acts affecting street railways, and provides for its application to all street railway or tramway companies. The Public Utilities Commission may make orders for extensions of lines, approve of regulations made by the companies, and make orders as to various matters in connection with the operation of cars. The companies may appeal to the Governor-in-Council from any orders made; the Attorney General is to be notified of any violation of the orders made, and the Supreme Court of the province is given jurisdiction in suits arising in consequence of any order made, and penalties are to be recoverable by civil action. Section 16 provides that "any provisions contained in the act of incorporation of any street railway, and the rules thereunder conferring upon any city, town or municipality powers which are by this act conferred upon the Commission, are hereby repealed"; and section 17 says: "This act shall apply to the Halifax Electric Tramway Co., Limited, only."

Under the provisions of the act granting aid to electric railways, the Government is authorized to grant a cash subsidy not exceeding \$2,000 a mile; to loan to a company up to \$8,000 a mile, or to guarantee the principal and interest of bonds on lines to be built in such districts as are approved. The lines to which aid is granted are to be built according to approved plans and specifications.

### Electric Ry., Finance, Meetings, Etc.

**British Columbia Electric Ry.**—Gross earnings for May, \$398,437; working expenses, \$260,437; net operating earnings, \$138,000; renewal funds, \$29,770; net earnings, \$108,230; approximate income from investments, \$20,000; net income, \$128,230, against \$256,806 gross earnings \$156,065 working expenses; \$100,741 net operating earnings; \$17,852 renewal funds; \$82,889 net earnings; \$16,500 approximate income from investments; \$99,389 net income for May, 1910. Aggregate gross earnings for 11 months ended May 31, \$3,839,170; net earnings, \$1,464,709, against \$2,728,437 aggregate gross earnings, and \$1,147,106 net earnings for same period 1909-10.

The company, July 15, offered to shareholders £600,000 of new stock, including £200,000 of 5% cumulative preference stock, £200,000 of preferred ordinary stock, and £200,000 of deferred ordinary stock at a premium of one, two and four shillings a share respectively.

**Calgary Municipal St. Ry.**—A Calgary press report states that the street railway revenue for the first six months of this year was \$149,437, and net earnings \$49,705.

**Halifax Electric Tramway.**—Receipts for May, \$17,198.82; for June, \$23,702;

for two weeks ended July 14, \$10,966.89, against \$15,673.97; \$22,421.06, and \$9,975.77 for same periods, respectively, 1910.

**London St. Ry.**—Gross earnings for June, \$24,051.91; expenses, \$16,841.63; net earnings, \$7,210.28; deductions, \$2,375.49; net income, \$4,834.79. Aggregate gross earnings for six months ended June 30, \$127,801.83; expenses, \$94,193.01; net earnings, \$33,608.82; deductions, \$14,269.34; net income, \$19,339.48.

**Montreal and Southern Counties Ry.**—A writ of mandamus has been issued by the courts directing the company to enter in its transfer books 800 shares now held by the Bank of Quebec.

**Montreal St. Ry.**—Passenger earnings for June, \$419,347.46; miscellaneous earnings, \$12,679.15; total earnings, \$432,026.61; operating expenses, \$227,217.47; net earnings, \$204,809.14; city percentage on earnings, \$43,836.06; interest on bonds and loans, \$15,552.79; rent leased lines, \$607.10; taxes, \$5,000; total charges, \$63,995.95; surplus, \$140,813.19; expenses per cent. of earnings, 52.59, against \$373,258.80 passenger earnings; \$11,305.31 miscellaneous earnings; \$384,564.11 total earnings; \$198,848.62 operating expenses; \$185,715.49 net earnings; \$35,350.24 city percentage on earnings; \$15,036.62 interest on bonds and loans; \$552.90 rent leased lines; \$4,000 taxes; \$54,939.76 total charges; \$130,775.73 surplus; 51.71 expenses per cent. of earnings for June, 1910. Aggregate total earnings for nine months ended June 30, \$3,438,940.08; operating expenses, \$2,015,139.33 net earnings; \$1,423,800.75; total charges, \$403,885.42; surplus, \$1,019,915.33; expenses per cent. of earnings, 58.60, against \$3,091,799.56 aggregate total earnings; \$1,806,291.83 operating expenses; \$1,285,507.73 net earnings; \$361,087.27 total charges; \$924,420.46 surplus; 58.42 expenses per cent. of earnings for same period 1909-10.

A Montreal dispatch, July 18, says arrangements have been completed for the financing of the Montreal Tramways Co., and that a meeting of shareholders of the M.S.R. will shortly be held to arrange for the transfer of the company's property and franchises. It is stated that an issue of \$9,000,000 of M.T.R. Co.'s 5% bonds will be sold to provide the cash to pay for the M.S.R. stock, and that there will also be issued additional bonds and about \$20,000,000 of common stock.

**Toronto Ry.**—A special general meeting of the shareholders is called for Aug. 14 to sanction an increase of the capital stock by \$4,000,000, making the aggregate capital stock \$12,000,000.

**Toronto Ry.**—Gross earnings for May, \$400,897; working expenses, maintenance, etc., \$193,006; net earnings, \$207,891, against \$353,792 gross earnings; \$172,433 working expenses, maintenance, etc.; \$181,359 net earnings for May, 1910. Aggregate gross earnings for five months ended May 31, \$1,833,391; net earnings, \$879,029, against \$1,656,842 gross and \$786,460 net for same period 1910.

**Winnipeg Electric Ry.**—Sir Wm. Mackenzie is quoted as having said, July 13, that the company's offer to the city for the sale of the lines and franchises on the basis of \$250 per share would not remain open very much longer. The matter was before the city council at a private meeting on July 13.

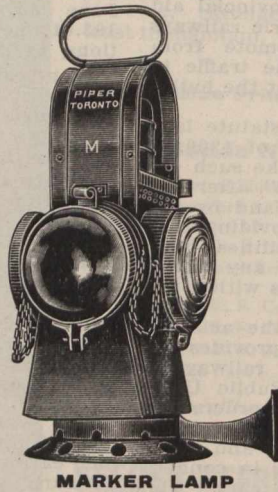
**Winnipeg Electric Ry.**—Gross earnings for May, \$295,779; working expenses, \$149,699; net earnings, \$146,080, against \$238,240 gross earnings; \$117,812 working expenses; \$120,428 net earnings for May, 1910. Aggregate gross earnings for five months ended May 31, \$1,576,252; net earnings, \$761,448, against \$1,289,774 gross and \$629,537 net for same period 1910.



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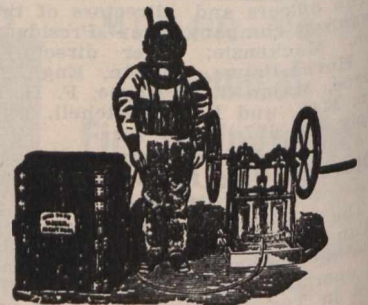
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## The Ocamo-Yarmouth Collision.

Capt. L. A. Demers, Dominion Wreck Commissioner, gave the following judgment at St. John, N.B., recently, which was concurred in by E. C. Elkins and Capt. J. Hayes, assessors:—The court having carefully reviewed the evidence adduced, finds that had the captain of the Yarmouth exercised more discretion upon first entering the wheelhouse and observing the vessel at anchor, he would have noticed a volume of smoke escaping from her funnel—the unmistakable sign of a vessel getting under way—and would consequently have been more vigilant in his lookout. The pilot of the Ocamo, knowing as he did, the significance of the three blasts sounded by the Yarmouth, displayed reluctance to alter the course of his ship, through fear of experiencing difficulty in making his wharf as intended, which reluctance on his part the court interprets as carelessness in the navigation of the vessel he was piloting, for it is the court's opinion that the accident would have been avoided had the Ocamo been steered in midchannel, and not allowed to proceed on her port helm without taking into consideration the influence of the tide on her starboard bow, which naturally had the effect of drawing her closer to the Yarmouth and the wharf than intended. The master of the Ocamo, by his testimony, labored under the erroneous impression that the presence of a pilot on his vessel relieved him of responsibility as to the safe navigation of his ship, and the court holds that upon perceiving the injudicious course pursued by the pilot the captain should have remonstrated with the pilot and insisted upon an alteration in the course, thus affording a wider berth to the Yarmouth, and the captain of the Ocamo is consequently warned to be more assertive of his authority in the future, remembering always that he is master of his ship and therefore solely responsible.

The master of the Yarmouth is reprimanded for his failure in making sure that the harbor was clear within a safe navigable distance before casting off his lines, while the pilot of the Ocamo is severely censured for his action, and the court suggests that the matter be dealt with by the Commissioners as they deem fit.

It is the opinion of this court that the Yarmouth, by casting off her lines

upon the approach of a vessel, and the Ocamo, by steering an injudicious course, contributed each to the collision, and both ships are therefore held to be responsible.

## Notices to Mariners.

The Department of Marine has issued the following:—

61. June 19.—152. General Canadian list of lights and fog signals, new edition. 153. Quebec, Gulf of St. Lawrence, Gaspé bay, Gaspé basin, O'Hara point, lights on wharf to be discontinued.

62. June 23.—154. Ontario, Canadian list of lights and fog signals, new edition. 155. Ontario, Lake Huron, westward of Cove island, whistling buoy replaced by gas and whistling buoy.

63. June 23.—156. British Columbia, Canadian list of lights and fog signals, new edition. 157. British Columbia, Charham sound, chart, Tree bluff to Kinahan islands, issued. 158. British Columbia, Queen Charlotte sound, Bremner island, rock reported northward of.

64. June 23.—159. Nova Scotia, Cape Breton island, Cape North lightstation, intended change in characteristic of fog alarm. 160. Quebec, Gulf of St. Lawrence, Magdalen islands, Bird rocks, intended change in characteristic of fog alarm. 161. Newfoundland, west coast, Cape Anguille, intended change in characteristic of fog alarm. 162. Newfoundland, southwest coast, Cape Ray, intended change in characteristic of fog alarm.

65. June 24.—163. Quebec, River St. Lawrence, Mille Vaches river, Sault au Mouton, hydrographic notes. 164. Quebec, River St. Lawrence, Mille Vaches bay, Mille Vaches, hydrographic notes. 165. Quebec, River St. Lawrence, north shore, Escoumains range, daymarks.

66. June 26.—166. Quebec, Magdalen islands, House harbor entrance, buoyage. 167. Quebec, Magdalen islands, Sandy Hook channel buoyed, buoy off Meule rock.

67. June 27.—168. Quebec, River St. Lawrence below Quebec, Empress shoal, gas buoy established. 169. Quebec, River St. Lawrence below Quebec, off Cape Tourmente, gas buoy placed temporarily for dredging purposes.

68. June 27.—170. Canada, Great Britain and Ireland, North Atlantic lane routes.

69. June 29.—171. Nova Scotia, Cape Breton island, east coast, off Neil harbor, whistling buoy established. 172. Prince Edward Island, east coast, Montague river, off French creek, buoy established. 173. Prince Edward Island, north coast, Cascumpexque harbor, Alberton, change in position of range lights. 174. Prince Edward Island, North point reef, position of whistling buoy.

70. June 29.—175. Ontario, Lake Erie, Rondeau harbor, wreck removed. 176. Ontario, Georgian bay, approach to Midland, Snake island, buoy established. 177. Ontario, Detroit river, ballard reef channel, new channel for light draught vessels.

71. July 3.—178. British Columbia, Vancouver island, southeast coast, Esquimalt harbor, Constance cove, mooring buoy placed. 179. Alaska, Revillagigedo channel, Spire island reef, change in character of light. 180. Alaska, Clarence strait, Stikine strait, south entrance, light established. 181. Alaska, Sumner strait, Beauclerc island, light established.

72. July 4.—182. Nova Scotia, south

coast, Torbay, Charlo harbor, change in color of range lights. 183. Nova Scotia, south coast, Torbay, Cole harbor, change in color of range lights. 184. Quebec, River St. Lawrence below Quebec, north of Patience island, gas buoy placed temporarily for dredging purposes.

73. July 6.—185. Nova Scotia, Bay of Fundy, Minas basin, Cheverie, light established. 186. Nova Scotia, south coast, Eastern Points harbor, light established. 187. New Brunswick, Chaleur bay, Petit Rocher, change in position of lighthouse.

74. July 7.—188. Quebec, Gulf of St. Lawrence, entrance to Little Natashkwan harbor, buoys established. 189. Quebec, Gulf of St. Lawrence, Seven Islands bay, Pointe Noire, light established on Clark City wharf. 190. Quebec, River St. Lawrence, Ile Verte, light established on wharf.

## C.P.R. Trans-Pacific Steamships.

G. M. Bosworth, Vice President, C.P.R., who returned from England, July 21, announced that contracts had been placed for the building of two steamships for the trans-Pacific service between Vancouver and Japanese and Chinese ports. These are to be delivered ready for operation in the spring of 1913, and the estimated cost of each is \$2,500,000. They will be operated on a fortnightly schedule. He is also reported to have stated that one of the vessels now running on that route would be taken off and placed on another Pacific route.

## The Grounding of the s.s. Stormount.

Capt. L. A. Demers, Dominion Wreck Commissioner, gave the following judgment in Montreal July 12, concurred in by A. F. Nash, and A. T. Haworth, master of the s.s. Manchester Importer at Athens, in the case of the grounding of the s.s. Stormount at Longue Pointe on May 6:—

The court having carefully studied and considered the evidence adduced by the various witnesses is of the opinion that the master and officers of the s.s. Stormount are exonerated from all blame for this accident, but wishes to point out that the master has full responsibility of the navigation of the ship; and whenever he perceives that the pilot, who is simply acting as his adviser as to local conditions, is doing wrongly, it is his duty to check or countermand any wrong orders which may have been given by the pilot; and moreover, the court regrets to say that in this case, owing to the peculiar position in which the master was placed, that he was unable to be on deck in the narrow places in the river St. Lawrence and to be on hand in case of eventualities. The fact of the master being obliged to be on deck from Fort William through the canals up to Montreal is to be greatly deplored, yet his absence from the deck in narrow stretches such as in the river St. Lawrence is censured.

The court is also of opinion that the pilot is wholly to blame for the grounding of this vessel, and he showed a certain amount of ignorance and lack of experience in the navigation of his first vessel. Therefore, in view of the foregoing and with the hope that this will be a lesson to him to exercise greater care in future and to make himself



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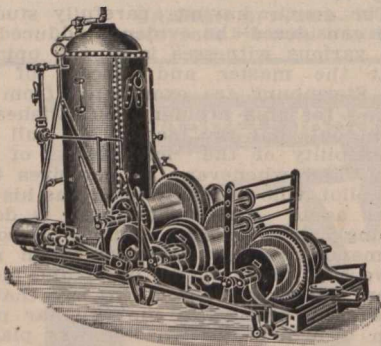
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thoroughly conversant with the conditions of the river, this court will suspend his certificate as pilot for the balance of this year, but will return to him his apprentice pilot's certificate, in order to enable him to acquire the necessary knowledge which all pilots should possess.

**Wreck of the s.s. Ben Earn.**

The following decision was given by Capt. Demers, Dominion Wreck Commissioner, at Yarmouth, N.S., July 6, and concurred in by B. R. Hilton and J. W. Anderson, assessors, in regard to the wreck of the s.s. Ben Earn, on June 16, on the Salvage Ledge, off Point Blanche, somewhere in the vicinity of Braist Rock. The vessel eventually became a total loss:—

The court having carefully weighed the evidence adduced finds that the master placed too much reliance upon the casual soundings taken and that while they seemed to coincide with the courses steered, they were nevertheless insufficiently frequent to establish that the courses he had traced were being properly steered, as the chart shows that the depths actually found when soundings were taken, were obtainable on both sides of the course steered by the Ben Earn, and the court holds that if soundings had been taken every half hour that they would have undoubtedly discovered that the vessel was more inshore than they actually believed her to be. The court further holds that when the surf was sighted, the captain, instead of starboarding should have gone full speed astern, although his

action in this respect would seem justifiable by the fact that the land was on his starboard side, but owing to the slow speed of the ship at the moment, it is held that if the ship had been put full astern when the whistling of the birds was heard, that the accident might have been avoided, although the court is not prepared to assume that it would have been avoided had such action been taken.

In view of the facts above set forth, and taking into consideration the good reputation of the captain, the court will not deal with his certificate, but cannot refrain from censuring him and advising him to exercise more caution, especially when navigating waters whose currents and influences he is unfamiliar with. The officers of the vessel are exonerated.

**Atlantic and Pacific Ocean Marine.**

The Newfoundland Premier, on his return from England, early in July, announced that his Government was prepared to subsidize a direct line of steamships between Newfoundland and Galway, Ireland.

The Harrison Line s.s. Centurion arrived at Vancouver, June 27, on her maiden trip, in the new service which this company has inaugurated with B.C. ports, from Great Britain by way of the Horn.

The British steamships Woolwich and Cromarty have been chartered by Pickford and Black, for the West Indies service, to replace the steamships Sobro and Luristan, the charters of which are about to expire.

The Hudson's Bay Co.'s s.s. Pelican was libelled at Montreal, July 16, on a claim by J. Gagne, diver, for \$100 for his services. Bonds were immediately furnished by the company's agents and the vessel released.

A press report from Liverpool, Eng., states that in order to offset the increase of wages due to the recent strike of seamen, the passenger rates to Canada and the U.S. have been increased by from \$1.25 to \$2.50, and it is possible that an increase in freight rates will also take place.

The North Atlantic Shipping Conference decided, July 13, to continue the present agreement until Oct. 31, when it is anticipated that a new agreement will be signed. A special committee was appointed to consider a number of proposals made and to report to the full conference in October.

A proposal is under discussion in St. John, N.B., to incorporate a company with a capital of \$2,000,000, to operate a steamship service between St. John, Cuba and Jamaica. It is proposed to commence with two vessels, suitable for both a freight and tourist trade. E. S. Kirkpatrick, formerly Canadian Trade Commissioner in Cuba, is chiefly responsible for the movement.

The International Mercantile Marine Co.'s report for 1910 shows gross earnings of \$38,073,596, against \$33,953,208 for the previous year. There was an increase in operating and general expense, and also in the fixed charges. There was a surplus of \$4,849,581, against \$1,182,335 for 1909. The report states that there are 124 vessels in service, to which must be added six, then under construction.

**LIST OF STEAM VESSELS REGISTERED IN CANADA DURING MAY, 1911.**

Name	No.	Where and When Built.	Engines, etc.	Length	Breadth	Depth	Gross Tons	Reg. Tons	Port of Registry	Owners
Alex. Clark...	122,589	Collingwood, Ont., 1911	Screw 29 n. h. p.	91.2	18.3	8.8	99	65	Collingwood, Ont.	A. Montgomery, M.O., Collingwood, Ont.
Alluvia.....	130,483	New Westminster, B.C., 1911	Pa. 9	100.0	23.3	5.0	263	154	New Westminster, B.C.	S. Dawe and N. P. Roman, New Westminster, B.C.
Aloha.....	130,546	Seattle, Wash., 1909	Screw 7	39.7	11.4	4.0	16	11	Vancouver, B.C.	Snowdon-Bidlake Logging Co., Vancouver, B.C.
Davy Jones...	130,541	Everett, Wash., 1907	" 6	73.0	12.3	5.4	34	23	"	E. B. Deane, Vancouver, B.C.
Eleanor Mc...	126,956	Victoria, B.C., 1911	" 2	37.0	10.6	6.6	15	10	Victoria, B.C.	W. L. McLennan, Victoria, B.C.
Erchoy.....	130,481	Harrison River, B.C., 1908	" 1	20.2	5.2	2.3	2	1	New Westminster, B.C.	A. Kilby, Harrison River, B.C.
Flat (1).....	130,542	U. S.	" 7	26.0	9.3	2.2	7	5	Vancouver, B.C.	R. H. Elder, Flat Island, B.C.
Holly Leaf...	130,547	Vancouver, B.C., 1911	" 1	56.6	14.2	5.1	24	17	"	H. Bell-Irving Co., Vancouver, B.C.
Igerude.....	130,544	1911	" 5	44.0	12.8	5.4	18	12	"	Skeena River Commercial Co., Vancouver, B.C.
John Pratt...	130,421	Sorel, Que., 1911	" 54	80.5	22.1	11.4	166	78	Montreal	Sincennes-McNaughton Ltd. Montreal
John Young...	130,522	" 1910	" 48	84.5	22.0	8.1	170	77	"	Harbor Commissioners of Montreal
Kitsap (2)...	126,800	Ballard, Wash., 1895	" 8	47.0	13.0	4.6	828	17	New Westminster, B.C.	R. Douglas, New Westminster, B.C.
Madge A. P...	130,477	Tancook, N.S., 1910	"	44.8	10.2	5.2	11	10	Lunenburg, N.S.	J. E. Publicover, Blandford, N.S.
Nearnskos...	130,374	Peterboro, Ont., 1911	"	60.0	11.3	5.3	21	"	Peterboro, Ont.	Peterboro Canoe Co., Peterboro, Ont.
Nelsara.....	130,643	Vancouver, B.C., 1911	" 1	35.3	7.6	4.0	9	6	Vancouver, B.C.	E. G. W. Wyatt, Vancouver, B.C.
Newmaid...	130,482	Steveston, B.C., 1911	" 1	31.4	8.7	3.9	7	5	New Westminster, B.C.	Butterfield, Mackie & Co., New Westminster,
Nitche.....	130,373	Hastings, Ont., 1911	" 7	39.0	11.0	6.0	19	13	Peterboro, Ont.	Randolph Macdonald Co., Toronto
O. Paul.....	126,851	Sorel, Que., 1911	" 20	61.0	15.4	6.5	57	26	Sorel, Que.	J. Paul, Sorel, Que.
Scena.....	126,450	Strathcona, Alta., 1910	Pa. 4	120.0	22.0	4.0	114	72	Kenora, Ont.	J. Walker, Strathcona, Alta.
Sea Snipe...	130,460	Muskegon, Mich., 1911	Screw 1	35.0	8.6	3.8	9	7	Vancouver, B.C.	A. H. Morton, Vancouver, B.C.
Songee.....	130,548	Vancouver, B.C., 1911	" 3	49.6	14.0	5.0	26	18	"	W. S. Holland, Vancouver, B.C.
Wilful.....	126,954	Victoria, B.C., 1906	" 4	26.0	6.9	2.8	4	2	Victoria, B.C.	J. Harper, Victoria, B.C.

(1) Formerly, Goldenrod. (2) Formerly, Eclipse.

**LIST OF SAILING VESSELS AND BARGES REGISTERED IN CANADA DURING MAY, 1911.**

Name	No.	Where and When Built	Rig	Length	Breadth	Depth	Reg. Tons	Port of Registry	Owners
Cheticamp...	126,575	Cheticamp, N.S., 1911	Schr.	38.5	11.6	6.3	10	Port Hawkesbury, N.S.	P. E. Aucoin, Cheticamp, N.S.
Donald L. Silver...	130,562	Lunenburg, N.S., 1911	"	105.6	25.8	10.5	94	Lunenburg, N.S.	O. P. Silver, et al., Lunenburg, N.S.
Elizabeth D...	126,807	Meteghan, N.S., 1911	"	85.0	22.0	7.8	79	Yarmouth, N.S.	S. D. D'Entremont, M.O., Publico, N.S.
Ethel M. C...	130,565	Tancook, N.S., 1909	"	41.0	10.3	5.3	11	Lunenburg, N.S.	A. Johnson, M.O., Indian Harbour, N.S.
Gros Ours...	126,577	Grand Etang, N.S., 1911	"	48.5	11.9	6.5	14	Port Hawkesbury, N.S.	E. LeBlanc, et al., Grand Etang, N.S.
I No 1.....	130,545	Nanaimo, B.C., 1909	Scow	55.0	24.4	6.0	73	Vancouver, B.C.	Red Fir Lumber Co., Vancouver, B.C.
James L.....	130,564	Tancook, N.S., 1911	Schr.	56.2	14.0	7.6	32	Lunenburg, N.S.	H. Little, Terence Bay, N.S.
Keta.....	126,719	Gagetown, N.B., 1910	Barge	60.0	21.9	4.0	81	St. John, N.B.	J. S. Gregor, St. John, N.B.
Laurin and Leitch No. 4	130,523	Montreal, 1911	Dredge	100.4	31.9	4.1	236	Montreal	T. Bastien, J. Laurin and W. C. Leitch, J. O., Montreal
M. C. G. Boudreau	126,576	Cheticamp, 1911	Schr.	51.9	13.7	7.0	22	Port Hawkesbury, N.S.	C. G. Boudreau, Cheticamp, N.S.
Melanope...	74,550	Liverpool, Eng., 1876	Barge	258.2	40.2	23.8	1561	Vancouver, B.C.	C. P. R. Co., Montreal
Muriel M. Richard	130,479	La Have, N.S., 1911	Schr.	112.8	25.8	10.2	97	Lunenburg, N.S.	W. Richard, M.O., LaHave, N.S.
Nita M. Conrad	130,476	Mahone Bay, N.S., 1911	"	102.4	25.8	10.8	91	"	J. Conrad, M.O., LaHave, N.S.
Phoebe M...	130,563	Tancook, N.S., 1910	"	40.6	10.8	5.6	12	"	D. Morash, West Dover, N.S.
Review.....	130,478	La Have, N.S., 1911	"	72.0	22.8	9.2	74	"	J. R. Rafuse, M.O., Conquerall Bank, N.S.
Right Away...	130,561	Tancook, N.S., 1911	"	45.0	11.3	6.8	121	"	J. Rood, Halifax, N.S.
Roland A. T...	130,480	" 1909	"	41.0	10.3	5.2	11	"	C. Tanner, Black Rocks, N.S.
Satellite...	88,287	Kennebunk, Me., 1860	"	48.8	15.9	5.8	26	St. Andrews, N.B.	R. Brown, Campobello, N.B.
Lantiwana...	126,718	Upper Gagetown, N.B., 1910	Dredge	66.4	25.1	5.1	159	St. John, N.B.	Imperial Dredging & Construction Co., Oromocto, N.B.
Violet F...	130,566	Tancook, N.S., 1909	Schr.	42.2	10.3	5.3	12	Lunenburg, N.S.	W. Frederick, M.O., Indian Harbour, N.S.
Westholme No. 3	126,955	Swanson Bay, B.C., 1910	Barge	100.0	32.0	8.0	211	Victoria, B.C.	Westholme Lumber Co., Victoria, B.C.







The Hudson's Bay Co.'s s.s. Pelican was at Montreal, during July, taking on stores for the company's stations throughout the Bay. This is the usual annual trip made by this vessel from London, Eng. The company has also chartered the s.s. Beothic for a similar purpose. Capt. Smith, who has had considerable experience of the Bay conditions, while in command of the Pelican, in response to questions as to the possibility of maintaining a trans-Atlantic service through the Bay to Fort Churchill, is reported to have said that he did not think that it would be possible for more than three months in the year.

The subsidy contract with the Union Steamship Co. of New Zealand, regarding the mail service between Canada and New Zealand, commencing in August, provides that the contract will be for five years, that the amount to be contributed by New Zealand shall be £20,000 a year, with exemption from harbor and dock dues, that permission be given the contractors to run from Auckland to Sydney, or Melbourne, and to retain any sum contributed by the Australian Government for such service, that the voyage between Vancouver and Auckland be made in 19 days, and that New Zealand shippers shall have the first refusal of all space so long as no subsidy is being paid by Australia.

**Maritime Provinces and Newfoundland.**

The Department of Public Works received tenders, July 26, for the construction of a breakwater at Brooklyn, N.S.

Capt. W. R. Lugar held an enquiry, at Halifax, N.S., recently into the causes of the stranding of the s.s. Morien, near Parrsboro, early in July.

An order in council has been passed changing the name of the ferry steamboat, which the St. John, N.B., city council has purchased in the U.S., from Newport to Governor Carleton.

The Marine Department is reported to be preparing plans for the building of a Customs protective vessel for the Atlantic and St. Lawrence waters. She will be 175 ft. long, and of about 900 tons, and the approximate cost is \$225,000.

The Canada Atlantic and Plant Steamship Co.'s s.s. Halifax grounded on George's Island in Boston harbor, July 17, during a dense fog. She was released at high tide the same day, and on entering the harbor collided with the Dominion Atlantic Ry. s.s. Prince Arthur. The damage in both cases was slight.

Sir Henry M. Pellatt, who is chiefly interested in the project for the construction of a dry dock and shipbuilding plant at Sydney, N.S., by the British Canadian Shipbuilding Co., stated, July 17, that the company would not carry out such work unless it was awarded the contract for the building of vessels for the Canadian navy.

The Navigation Syndicate, Ltd., has been incorporated under the New Brunswick Companies Act, with a capital of \$30,000 and office at Nordin, to build, purchase or otherwise acquire and operate steam and other vessels, and carry on a general navigation business. The incorporators are O. W. Nordin, J. Ander, H. Oquist, H. Tideman, Nordin, N.B., and A. Kulinder, Rexton, N.B.

A preliminary enquiry was held at Halifax, N.S., early in July, into the collision between the s.s. Cape Breton and the schooner Guide, but the evidence was not then completed owing to the non-appearance of the master of the s.s. Cape Breton on account of illness. The Cape Breton has been libelled on behalf

of the schooner Guide, on a claim of \$10,000 for damages caused by the collision on July 7. She was released on bonds.

The St. John River Steamship Co. is suing the Crystal Stream Steamship Co. for damages and loss for exclusion from the Victoria wharf at Indiantown, and for breach of agreement, through the latter company operating a steamboat on the Fredericton route. The amount of the damages claimed is the earnings of the Crystal Stream Steamship Co.'s steamboat Majestic, operated on the Fredericton route, and the company is being asked to produce its books and receipts for the season.

The Marine Court of Enquiry at St. John, Nfld., delivered judgment, July 7, in the matter of the loss of the Reid Newfoundland Co.'s s.s. Bruce on Mar. 24. It found that the vessel was well equipped and the compasses in good order, the errors known and corrections properly applied to the courses steered, and that the loss was caused by the master setting and steering an improper course, due to his failure to verify the vessel's position by taking reliable bearings of Scattarie light. The master, R. Drake, is the holder of a colonial certificate of service but not of a certificate of competency.

An order in council has been passed cancelling a previous order in council, which established the pilotage authorities of Hillsboro and Hopewell District and Moncton District, N.B., and establishing in their places the Shepody Basin District, comprising all the waters of Shepody Bay, Shepody Basin, Petitcodiac River and Memramcooke River north from a line drawn from the westernmost extreme of Cape Maringouin westward through the south point of Mary Island to the mainland of Albert county, south and east of the public bridge connecting Moncton and Coverdale, and south of the Upper Dorchester bridge on the Memramcooke River.

**Province of Quebec Marine.**

The s.s. General Wolfe, which collided with the s.s. Aranmore, near Murray Bay, Que., June 29, and sank, has been abandoned as a total loss. Both vessels are owned by Holliday Bros., Quebec, and are registered in England.

The St. Lawrence Sand Gravel Dredging Co., Ltd., has been incorporated under the Quebec Companies Act, with a capital of \$49,900 and office at Sorel, to dredge for sand, gravel and other material, and in connection therewith to own and operate steam tugboats, dredges, etc.

The Richelieu and Ontario Navigation

Co.'s s.s. Saguenay, which recently arrived at Montreal, from England, was taken for a trial trip, after having been overhauled, July 6. A number of local transportation officials were the guests of the company on a short run to Tetrautville. She was placed on her regular run on the same day.

Capt. Riley, Superintendent of Pilots, conducted a preliminary investigation at Montreal, July 5, into the cause of the collision between the steamships Helvetia and Cascadia about two months ago in the St. Lawrence a little above Quebec. It had not then been decided whether a further enquiry would be held.

The Montreal harbor revenue for June was \$66,058.45, an increase of \$7,277.02 over the revenue for June, 1910. There was a slight decrease in the exports. The number of vessels arriving was 241 of a tonnage of 732,810, being five vessels less and 77,655 tons more than in June, 1910. The total receipts from imports, exports and local traffic since the opening of navigation to June 30 were \$118,999.45.

The Lake Champlain and St. Lawrence Ship Canal Co.'s plans which were recently filed with the Public Works Department at Ottawa, provide for a 12 ft. waterway starting at Fryer's Island, near St. John, tapping the St. Lawrence at Longueuil, 21 miles north. The canal will give Montreal a direct connection with Lake Champlain by way of the Richelieu River. From Lake Champlain to New York, the existing routes will be used. The canal will pass south of Chambly Basin, cross the Little Montreal River at St. Louis de Gonzague and pass across St. Francois de Borgia, Lange Gardien, Cote St. Lambert and Longueuil parishes.

**Ontario and the Great Lakes.**

Press reports state that the Hamilton Steamboat Co. and the Turbine Steamship Co. are contemplating the inauguration of a Sunday service between Toronto and Hamilton.

The Department of Railways and Canals will receive tenders to Aug. 4 for the lock gates and valve gates for the Holland River division of the Trent canal.

The captains of the Niagara Navigation Co.'s steamboats Chippewa and Corona were each fined \$150 and costs, at St. Catharines, July 15, for breaches of the liquor license act.

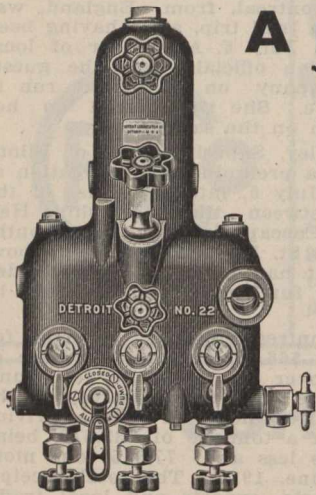
The Rideau Navigation Co.'s steamboat Rideau Queen ran aground in the Rideau River, July 11, sustaining damage to her wheel and rudder. She was

**Lake Grain Shipments**

The following statement, prepared by F. E. Gibbs, Grain Inspector, Fort William, Ont., shows the bushels of grain shipped by vessels from Fort William and Port Arthur, of the 1910 crop, from the close of navigation to June 30. The last two figures in each column represent lbs.

Destination	Wheat	Oats	Barley	Flax
<b>Canadian ports:</b>				
Depot Harbor	431,224.30	34,000.00		
Goderich	1,012,522.30	690,280.12	34,901.00	36,248.09
Kingston	2,659,777.30	1,402,820.31	246,032.29	50,627.38
Montreal	1,558,506.40	2,381,246.37	10,417.04	36,476.06
Meaford	105,000.00			
Owen Sound	215,296.10	344,466.31	20,005.30	
Port Colborne	1,334,647.20	186,147.12		
Point Edward	185,630.00	50,000.00	9,727.32	35,128.01
Quebec		198,159.26		
Tiffin	1,685,258.20	365,021.26		
Victoria Harbor	57,370.00			
Walkerville	148,417.40			
	9,393,650.30	6,152,146.05	321,083.47	153,479.54
<b>Foreign ports:</b>				
Buffalo	7,312,431.10	363,785.12	197,623.06	194,414.08
	16,706,081.40	6,515,931.17	518,707.05	352,894.06
Same period 1910	14,556,061.40	7,398,238.28	598,011.19	895,546.1





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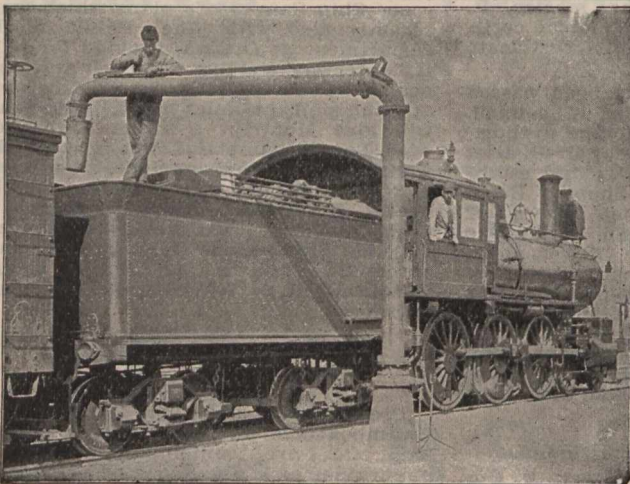
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TEUTONIC	"	26
MEGANTIC	Sept.	2
CANADA	"	9
LAURENTIC	"	16
TEUTONIC	"	23
MEGANTIC	"	30
CANADA	Oct.	7
LAURENTIC	"	14
TEUTONIC	"	21
MEGANTIC	"	28
CANADA	Nov.	4
LAURENTIC	"	11
TEUTONIC	"	18

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released and taken to Kingston for repairs.

The Department of Railways and Canals has awarded the contract for the construction of an extension to the north mooring pier at the upper entrance to the Sault Ste. Marie canal to J. F. Body, Sault Ste. Marie, Ont.

The Lake Ontario and Bay of Quinte Steamboat Co.'s steamboat Caspian, while en route to Rochester, ran aground, July 12, and sustained considerable damage to her wheel and rudder. She was released, July 15, and taken to Kingston for repairs.

Co. Anderson, Chief Engineer, Department of Marine, recently completed a tour of inspection of the Trent canal with a view to reporting on the question of better lighting and the placing of a number of additional buoys.

The Northern Navigation Co. and the Inland Lines, the control of which has been obtained by the Richelieu and Ontario Navigation Co., continue to be operated under their respective names, and with the same officials as heretofore.

The plans for the improvement of the harbor at Port Stanley have been completed and forwarded to Ottawa for approval. The breakwater will be of the most modern construction and it is expected to be completed this summer, after which a new pier for unloading will be built.

The Montreal Star's London, Eng., correspondent stated, July 15, that arrangements had been completed for the Canadian lake merger in connection with Manchester Liners, Ltd., and that the capital involved in the Canadian part of the agreement was \$20,000,000, covering 50 vessels.

The steamboat Norseman, owned in Belleville, and which was recently seized by the sheriff on claims by the crew for wages, was sold to a local syndicate for \$1,000, July 11. She was built at St. Catharines in 1864, and was formerly named Gipsey. Her dimensions are: length 177.2 ft., breadth 28.4 ft., depth 12.2 ft., tonnage 620 gross, 400 register, and she is screw driven by an engine of 200 n.h.p.

The U.S. Lake Survey reports the levels of the Great Lakes, in feet above tidewater, for June, as follows—Superior, 601.34; Michigan and Huron, 579.98; Erie, 571.90; Ontario, 245.66. As compared with the average June levels for the past ten years, Superior was 1.20 ft. below; Michigan and Huron, 1.12 ft. below; Erie, 0.96 ft. below, and Ontario, 1.18 ft. below. It was anticipated that there would be a rise of 0.2 ft. in Lake Superior, and of 0.1 ft. in Michigan and Huron during July.

The Ontario and Quebec Navigation Co.'s steamboat Geronia, which was expected to be completed in readiness for service between Toronto and Quebec, July 20, was not delivered at Collingwood at that date. She left Toronto on her maiden trip in that service, July 27.

The Sault Ste. Marie Dry Dock and Shipbuilding Co. has communicated with the local council to the effect that J. O'Boyle, with whom the council made an agreement relating to the construction of a dry dock and shipbuilding plant at Sault Ste. Marie, has been relieved of any obligations under the agreement, and that all such are now binding upon the company.

The Mathews Steamship Co.'s steamboat Yorkton arrived in Toronto towards the end of July, with a cargo of scoria blocks from Middlesbrough, Eng. She was built at Sunderland, Eng., for the lake bulk and package freight trade, and will be operated by the owning company between Montreal and Fort William. She is of the single deck type, of arch construction, with no upright stan-

chions in the hold, and has three watertight compartments, with steel bulkheads and with double bottom. The captain's, owners', purser's and dining rooms are finished in mahogany, and the remaining quarters in oak. Her engines are triple expansion with cylinders 17, 28 and 46 ins. diam. by 33 ins. stroke, supplied with steam by two boilers, each 12 by 11 ft., under natural draught. There are six hatches, each 12 by 26 ft., and the general equipment includes electric lighting plant, steam heating, steam steering gear, windlass, capstans and winches. She has been built to class 100 A1 at Lloyd's, for a passage through the Welland canal with cargo of 80,000 bush., and of 100,000 bush. on deep draught, with a certificate for carrying freight to any part of the world. Her dimensions are: length, 257 ft.; beam, 42½ ft.; depth, 18½ ft.; tonnage, 1,771 gross, 1,136 register. She is practically a duplicate of the same company's steamboat Mapleton.

**Manitoba, Saskatchewan and Alberta.**

The Pioneer Navigation and Sand Co., Ltd., of Winnipeg, is being voluntarily wound up, and tenders are being received for its land assets up to Aug. 4.

The steamboat Slave Lake, recently built at Athabasca Landing, Alta., and owned by V. Maurice, Grouard, left the Landing, June 29, on her first trip to the Lesser Slave Lake.

**B.C. and Pacific Coast Marine.**

Preliminary work is reported to have commenced for the G.T.P.R. dry dock at Prince Rupert. The dock will consist of three sections, each constructed that it can be used separately.

The sternwheel steamboat George E. Starr, owned in Seattle, Wash., is reported to have been sold to Vancouver parties for operation on the Fraser River.

The G.T.P. Coast Steamship Co.'s s.s. Prince Rupert resumed service, July 3, after having a thorough overhauling and cleaning, and having her boilers equipped with forced draught.

The steamboat Pauline, owned in Dawson, Yukon, while en route to Dawson from the Tanana River, July 1, struck a rock near Eagle and sank. She was built at White Horse in 1907, and was a paddle wheel vessel, with engine

of 2 n.h.p. Her dimensions were: length 85.5 ft., breadth 15.5 ft., depth 3.5 ft., tonnage 145 gross, 91 register.

The Coast Steamship Co., Vancouver, has placed the s.s. Celtic on the route between Vancouver, Seattle and Tacoma, making two sailings each week. The Celtic was built at Vancouver in 1907, and she is screw driven with engine of 16½ n.h.p. Her dimensions are: length, 89.4 ft.; breadth, 24.5 ft.; depth, 8.6 ft.; tonnage, 239 gross, 163 register.

The steamboat Belfast, with a cargo of lime, bound from Texada Island to Seattle, struck on a rock, near Nanaimo, July 9, and catching fire was totally destroyed. She was owned in Vancouver, where she was built in 1904. Her dimensions were: length 91.3 ft., breadth 18 ft., depth 7 ft., tonnage 105 gross, 72 register, and she was screw driven by engine of 15 n.h.p.

The G.T.P. Coast Steamship Co.'s s.s. Prince John, which sailed from Glasgow, Scotland, early in July, is expected to reach Vancouver towards the end of August, when she will be placed on the Prince Rupert and Queen Charlotte Islands route. She was formerly known as Amethyst, and has a cargo capacity of 450 tons in addition to her bunkers. Her dimensions are: length 185 ft., breadth 30 ft., depth 13¼ ft., and she is built of steel and classed 100 A 1 at Lloyd's. There are seven water tight bulkheads with double bottom, affording ample ballast and fresh water storage, large bunkers, triple expansion engines, two multitubular Scotch boilers, suitable for a speed of 12 knots an hour.

The Dominion Government steam tug Point Ellice was launched at North Vancouver, July 11. She is to be used as a tender to the Government dredge Ajax. She is built to class 100 A 1 at Lloyd's, her dimensions being as follows: length over all 91½ ft., between perpendiculars 78½ ft., beam 20 ft., molded depth 12¾ ft. She has five water tight bulkheads extending from the floor plates to the main deck, and is equipped with fore and aft compound surface condensing engine with cylinders 16 and 34 ins. diam., by 24 ins. stroke, of 500 h.p. at 125 revs. per minute, for a speed of 12 knots an hour, supplied with steam by a Scotch marine boiler 12 ft. diam. by 11 ft. long at a working pressure of 150 lbs. to the square inch. The air pump, 12 by 12 ins., is driven from the low pressure cross head; the steering gear is direct acting and automatic, and she was built

**SAULT STE. MARIE CANALS TRAFFIC**

The following commerce passed through the Sault Ste. Marie Canals in June:

ARTICLES	CANADIAN CANAL	U. S. CANAL	TOTAL
Copper ..... Eastbound ..... Short tons	601	16,175	16,776
Grain ..... " ..... Bushels	2,113,954	870,942	2,984,896
Building stone ..... " ..... Short tons	740	740	740
Flour ..... " ..... Barrels	192,330	490,451	682,781
Iron ore ..... " ..... Short tons	3,565,476	1,089,871	4,655,347
Pig iron ..... " ..... " "	2,490	2,490	2,490
Lumber ..... " ..... M. ft. B.M.	3,574	75,316	78,890
Silver ore ..... " ..... Short tons	.....	.....	.....
Wheat ..... " ..... Bushels	2,953,888	2,092,037	5,045,925
General merchandise ..... " ..... Short tons	5,356	10,532	15,888
Passengers ..... " ..... Number	1,662	3,302	4,964
Coal, hard ..... Westbound ..... Short tons	33,060	1,220,118	253,178
Coal, soft ..... " ..... " "	521,795	1,375,163	1,896,958
Flour ..... " ..... Barrels	.....	.....	.....
Grain ..... " ..... Bushels	.....	.....	.....
Manufactured iron ..... " ..... Short tons	25,047	16,006	41,053
Iron ore ..... " ..... " "	8,356	6,356	6,356
Salt ..... " ..... Barrels	8,526	52,136	60,662
General merchandise ..... " ..... Short tons	93,397	83,409	176,806
Passengers ..... " ..... Number	113,192	1,673	5,865
Vessel passages ..... Number	922	631	2,573
Registered tonnage ..... Net	2,658,886	3,201,730	5,860,616
Freight—Eastbound ..... Short tons	3,722,935	1,369,763	5,092,698
"—Westbound ..... " "	680,873	1,702,516	2,383,389
Total freight..... " "	4,403,808	3,072,279	7,476,087

Short tons are tons of 2,000 pounds

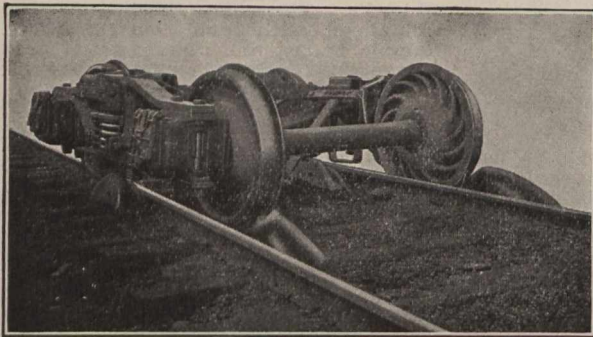


Electric Heaters                      Door Signals  
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 heaviest equipment.

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to the designs of H. A. Bayfield, Government Superintendent of Dredges.

The North Arm Steamship Co. is reported to have made arrangements for the purchase of the steamboat Skeena from Foley, Welch and Stewart, for summer service on the North Arm. She was built at Vancouver in 1908, and is driven by a paddle wheel by an engine of 8 n.h.p. Her dimensions are: length 121.2 ft., breadth 26.8 ft., depth 5.6 ft., tonnage 515 gross, 310 register.

**Beeson's Marine Directory.**—In issuing the 25th annual number of this indispensable directory of the marine interests on the Great Lakes, the publisher refers to the initial issues and the reception accorded them and adds: "Today, with a large Canadian following, in addition to our patronage in the States, it is as widely known and circulated as such a medium can be. . . . And I shall continue this publication and seek to make it of increased value to all concerned." The directory contains all the information about the Great Lakes marine to which owners and managers constantly need to refer, and this is arranged in a most convenient manner for reference. A special article on the Chicago Sanitary District and the proposed harbors is of interest to Canadian marine men, on account of the influence the Chicago Drainage Canal and its pos-

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sible development as a navigation route to the Gulf of Mexico may have on the water level of the Great Lakes. A large number of illustrations are given, in-

cluding the new Canadian bulk freighter Toiler. The directory is published by H. C. Beeson, 1340 Washington Boulevard, Chicago, Ill.

The Department of Marine has issued lists of all lights and fog signals on the inland waters and the Pacific coast of Canada, corrected up to April 1.

# 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.

**Accountants and Auditors**  
W. M. Dunlop and Co. .... Ottawa

**Accumulators**  
Tate Accumulator Co. of Can., Ltd. .... Toronto

**Acetylene**  
Commercial Acetylene Co. .... Toronto

**Aerated Waters**  
E. L. Drewry ..... Winnipeg

**Air Brakes and Fittings**  
Allis-Chalmers-Bullock Ltd. .... Montreal  
Canadian Westinghouse Co. Hamilton, Ont.

**Alex**  
E. L. Drewry ..... Winnipeg

**Alloys**  
American Vanadium Co. .... Pittsburg, Pa.  
Titanium Alloy Mfg. Co. .... Pittsburg, Pa.

**Angle Bars**  
Nova Scotia S. & C. Co., New Glasgow, N.S.  
Steel Co. of Canada, Ltd., Hamilton, Ont.

**Anti Rail Creepers**  
The Holden Co., Ltd. .... Montreal

**Asbestos**  
Canadian H. W. Johns-Manville Co., Ltd. .... Toronto

**Automobiles**  
Preston Car & Coach Co. .... Preston, Ont.

**Axes**  
James Smart Mfg. Co. .... Brockville, Ont.

**Axles**  
Canadian Car & Foundry Co. .... Montreal  
James Hutton & Co. .... Montreal  
Nova Scotia S. & C. Co., New Glasgow, N.S.  
Jas. W. Pyke & Co. .... Montreal  
Steel Co. of Canada, Ltd., Hamilton, Ont.

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C. H. Besly Co. .... Chicago, Ill.

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**Battery Boards**  
Tate Accumulator Co. of Can., Ltd. .... Toronto

**Geo. C. Royce** ..... West Toronto, Ont.

**Beacons**  
International Marine Signal Co. .... Ottawa

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Canadian Car & Foundry Co. .... Montreal

**Chicago Railway Equipment Co.** .... Chicago

**Blankets and Bedding**  
The Hudson's Bay Co. ....

**Blasting Powder**  
Curtis's & Harvey (Canada) Ltd. .... Montreal

**Boiler Checks**  
Nathan Manufacturing Co. .... New York

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Polson Iron Works, Ltd. .... Toronto  
Robb Engineering Co., Ltd. .... Amherst, N.S.

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Polson Iron Works, Ltd. .... Toronto  
Robb Engineering Co., Ltd. .... Amherst, N.S.

**Boilers, Stationary and Marine**  
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Polson Iron Works, Ltd. .... Toronto  
Robb Engineering Co., Ltd. .... Amherst, N.S.

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Polson Iron Works, Ltd. .... Toronto  
Robb Engineering Co., Ltd. .... Amherst, N.S.

**Boilers, Water Tube**  
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Polson Iron Works, Ltd. .... Toronto  
Robb Engineering Co., Ltd. .... Amherst, N.S.

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Canadian Ry. Equipment Co., Welland, Ont.  
Whyte Railway Signal Co. .... Toronto

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Steel Co. of Canada, Ltd. .... Hamilton, Ont.

**Bolts, Track**  
Nova Scotia S. & C. Co., New Glasgow, N.S.

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John Bertram & Sons Co. .... Dundas, Ont.

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London Machine Tool Co., Ltd., Hamilton.

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Canadian Car & Foundry Co. .... Montreal  
Chicago Railway Equipment Co. .... Chicago

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Am. Brake Shoe & F'dry Co., Mahwah, N.J.  
Canada Iron Corporation, Ltd. .... Montreal  
The Holden Co., Ltd. .... Montreal

**Brake Shoes, Locomotive Driver**  
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Canada Iron Corporation, Ltd. .... Montreal  
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Railway Materials Co. .... New York

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C. H. Besly Co. .... Chicago, Ill.

**Brasses, Car**  
T. McAvity & Sons ..... St. John, N.B.

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Cleveland Bridge & E. Co. .... Darlington, Eng.  
Dominion Bridge Co. .... Montreal

**Bronze**  
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Titanium Alloy Mfg. Co. .... Pittsburg, Pa.

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Williams & Wilson, Ltd. .... Montreal

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Cleveland Bridge & E. Co. .... Darlington, Eng.  
Dominion Bridge Co. .... Montreal

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Dominion Equip. & Supply Co., Winnipeg.  
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McCord & Co. .... Chicago, Ill.

**Buoys**  
International Marine Signal Co. .... Ottawa

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Chapman & Walker, Ltd. .... Toronto  
E. F. Phillips Electrical Works, Montreal.  
The Wire and Cable Co. .... Montreal

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Dake Engine Co. .... Grand Haven, Mich.

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**Car Movers**  
F. H. Hopkins & Co. .... Montreal  
Mussens, Ltd. .... Montreal

**Cars**  
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Canadian Car & Foundry Co. .... Montreal  
Dorner Railway Equip. Co. .... Chicago, Ill.  
J. T. Gardner ..... Chicago, Ill.  
Hart-Otis Car Co., Ltd. .... Montreal  
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Pay-As-You-Enter Car Co. .... New York  
Preston Car and Coach Co., Ltd. .... Preston  
Russel Wheel & Fdry Co. .... Detroit, Mich.  
Western Wheeled Scraper Co. .... Aurora, Ill.

**Car Signal Systems**  
Ohio Brass Co. .... Mansfield, Ohio

**Cars, Logging**  
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**Castings**  
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Canadian Car & Foundry Co. .... Montreal  
Crossen Car Mfg Co. .... Cobourg, Ont.  
Lumen Bearing Co. .... West Toronto, Ont.  
Russel Wheel & Fdry Co. .... Detroit, Mich.  
Standard Steel Works Co. .... Philadelphia, Pa.  
Titanium Alloy Mfg Co. .... Pittsburg, Pa.

**Castings, Brass**  
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Canada Iron Corporation, Ltd. .... Montreal  
Kerr Engine Co. .... Walkerville, Ont.  
Lumen Bearing Co. .... West Toronto, Ont.  
Tallman Brass & Metal Co., Ltd. .... Hamilton

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Am. Brake Shoe & F'dry Co., Mahwah, N.J.  
Canada Iron Corporation, Ltd. .... Montreal  
Russel Wheel & Fdry Co. .... Detroit, Mich.

**Castings, Iron**  
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Canada Iron Corporation, Ltd. .... Montreal  
Kerr Engine Co. .... Walkerville, Ont.  
Russel Wheel & Fdry Co. .... Detroit, Mich.

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Taylor & Arnold ..... Montreal

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Lumen Bearing Co. .... West Toronto, Ont.

**Castings, Steel**  
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Canada Iron Corporation, Ltd. .... Montreal  
Canadian Steel Foundries, Ltd., Montreal  
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Pratt & Letchworth Co. .... Brantford, Ont.  
Titanium Alloy Mfg. Co. .... Pittsburg, Pa.

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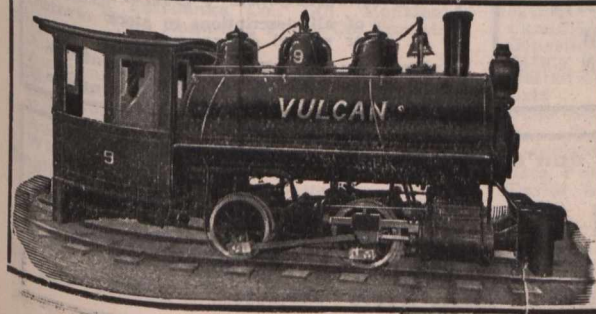
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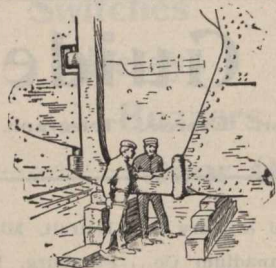
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New York, Plymouth, Cherbourg, Southampton

Oceanic ... Aug. 12 | Majestic ... Aug. 26  
 Olympic ... Aug. 19 | Oceanic ... Sept. 2

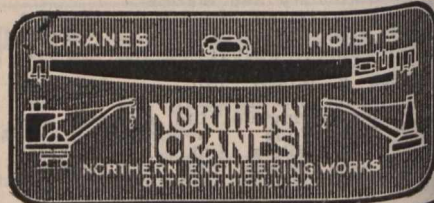
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 Dominion Bridge Co., Montreal.  
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 American Hoist & Derrick Co., St. Paul, M.  
**Cranes, Wrecking**  
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 Titanium Alloy Mfg. Co., Pittsburgh, Pa.  
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**Dump Cars, Hand**  
 Western Wheeled Scraper Co., Aurora, Ill.  
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 Meaford Wheelbarrow Co., Ltd., Meaford, Ont.  
**Dynamos**  
 Northern Electric & Mfg. Co., Montreal.  
**Dynamo and Electric Castings**  
 Am. Brake Shoe & Fdry 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.  
**Electric Car Route Signs**  
 Acton Burrows, Limited, Toronto.  
 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, Limited, Toronto.  
**Engines, Automatic**  
 Polson Iron Works, Ltd., Amherst, N.S.  
 Russel Wheel & Fdry Co., Detroit, Mich.  
**Engines, Corliss**  
 Allis-Chalmers-Bullock Ltd., Montreal.  
 Robb Engineering Co., Ltd., Amherst, N.S.  
**Engines, Gas**  
 Allis-Chalmers-Bullock Ltd., Montreal.  
 Williams & Wilson, Ltd., Montreal.  
**Engines, Gasoline**  
 Canadian Fairbanks Co., Ltd., Montreal.  
 Ontario Wind Engine & Pump Co., Toronto.  
**Engines, Hoisting**  
 Allis-Chalmers-Bullock Ltd., Montreal.  
 American Hoist & Derrick Co., St. Paul, M.  
 M. Beatty & Sons, Welland, Ont.  
 Dominion Equip. & Supply Co., Winnipeg.  
 Polson Iron Works, Ltd., Toronto.  
 Russel Wheel & Fdry Co., Detroit, Mich.  
 Williams & Wilson, Ltd., Montreal.  
**Engines, Stationary and Marine**  
 Polson Iron Works, Ltd., Toronto.  
 Robb Engineering Co., Ltd., Amherst, N.S.  
**Engines, Stationary, Appliances**  
 Nathan Manufacturing Co., New York.  
**Engines, Steam**  
 Allis-Chalmers-Bullock Ltd., Montreal.

**Engineers, Consulting**  
 Alfred Lovell, Philadelphia, Pa.  
**Explosives**  
 Curtis's & Harvey (Canada) Ltd., Montreal.  
**Express Office Signs**  
 Acton Burrows, Limited, Toronto.  
**Fencing**  
 Owen Sound Wire Fence Co., Ltd., O'n S'd.  
**Ferro-Vanadium**  
 American Vanadium Co., Pittsburg, Pa.  
**Fire extinguishers**  
 Miller Chemical Engine Co., Chicago, Ill.  
**Flags**  
 The Hudson's Bay Co., Toronto.  
**Flour**  
 The Hudson's Bay Co., Toronto.  
**Forgings**  
 American Vanadium Co., Pittsburg, Pa.  
 Canadian Car & Foundry Co., Montreal.  
 Cleveland City Forge & Iron Co., Cleveland.  
 Crossen Car Mfg. Co., Cobourg, Ont.  
 Nova Scotia S. & C. Co., New Glasgow, N.S.  
 Standard Steel Works Co., Philadelphia, Pa.  
 Steel Co. of Canada, Ltd., Hamilton, Ont.  
 Titanium Alloy Mfg. Co., Pittsburgh, Pa.  
**Foundry Appliances**  
 C. H. Besly Co., Chicago, Ill.  
 Goldschmidt Thermit Co., Toronto.  
 Ont. Wind Eng. & Pump Co., Ltd., Toronto.  
**Frogs**  
 Canadian Ramapo Iron Wks., Niagara Falls.  
 Johnson Wrecking Frog Co., Cleveland, O.  
**Furnaces, Corrugated**  
 Continental Iron Works, Brooklyn, N.Y.  
**Furnaces, Oil**  
 Railway Materials Co., New York.  
**Furnaces, Shop**  
 Railway Materials Co., New York.  
**Fuse Batteries**  
 Curtis's & Harvey (Canada) Ltd., Montreal.  
**Fuse Detonators**  
 Curtis's & Harvey (Canada) Ltd., Montreal.  
**Fuses, Electric**  
 Curtis's & Harvey (Canada) Ltd., Montreal.  
**Gaskets**  
 The Holden Co., Ltd., Montreal.  
 McCord & Co., Chicago, Ill.  
**Gates**  
 Owen Sound Wire Fence Co., Ltd., O'n S'd.  
**Gates, Crossing**  
 The N. L. Piper Ry. Supply Co., Toronto.  
 Whyte Railway Signal Co., Toronto.  
**Gauge Cocks**  
 Nathan Manufacturing Co., New York.  
 Ohio Brass Co., Mansfield, Ohio.  
**Gauges, Locomotive**  
 Taylor & Arnold, Montreal.  
**Gauges, Water**  
 Detroit Lubricator Co., Detroit, Mich.  
 Nathan Manufacturing Co., New York.  
 Ohio Brass Co., Mansfield, Ohio.  
**Gears**  
 American Vanadium Co., Pittsburg, Pa.  
 Titanium Alloy Mfg. Co., Pittsburgh, Pa.  
**Generators, Electric**  
 Dorner Railway Equip. Co., Chicago, Ill.  
 Northern Electric & Mfg. Co., Montreal.  
**Graders and Ditchers**  
 Western Wheeled Scraper Co., Aurora, Ill.  
**Grates, Shaking**  
 Babcock & Wilcox, Ltd., Montreal.  
 Polson Iron Works, Ltd., Toronto.  
**Grinders, Disc, for Wood and Metal**  
 C. H. Besly Co., Chicago, Ill.  
**Groceries**  
 The Hudson's Bay Co., Toronto.  
**Hammers, Cast Steel**  
 American Brake Shoe & Fdry Co., Mahwah, Ont.  
 James Smart Mfg. Co., Brockville, Ont.  
**Handcars**  
 Canadian Fairbanks Co., Ltd., Montreal.  
 Crossen Car Mfg. Co., Cobourg, Ont.  
 Dominion Equip. & Supply Co., Winnipeg.  
 F. H. Hopkins & Co., Montreal.  
 Mussels, Limited, Montreal.  
 Rice Lewis & Son, Toronto.  
 Whyte Railway Signal Co., Toronto.  
**Hardware**  
 The Hudson's Bay Co., Toronto.  
 Rice Lewis & Son, Toronto.  
**Headlights**  
 Commercial Acetylene Co., Toronto.  
 The N. L. Piper Ry. Supply Co., Toronto.  
 Pyle National Elec. Headlight Co., Chicago.  
**Headlinings**  
 Crossen Car Mfg. Co., Cobourg, Ont.  
**Heaters, Feedwater**  
 Robb Engineering Co., Ltd., Amherst, N.S.  
**Heating, Car**  
 Canadian Gold Car H'g & L'g Co., Montreal.  
 Consolidated Car Heating Co., Albany, N.Y.  
 Safety Car Heating & L'ing Co., New York.  
 United States Light & Heat Co., New York.  
**Hoists**  
 Dake Engine Co., Grand Haven, Mich.  
**Hoists, Electric**  
 American Hoist & Derrick Co., St. Paul, M.  
**Hoists, Pneumatic**  
 Taylor & Arnold, Montreal.  
**Hooks**  
 Steel Co. of Canada, Ltd., Hamilton, Ont.  
**Hoppers, Car, Wet or Dry**  
 Duner Co., Chicago, Ill.  
**Hose, Air Brake and Steam**  
 Guilford S. Wood, Chicago, Ill.

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 Canadian Fairbanks Co., Ltd., Montreal.  
 Kerr Engine Co., Walkerville, Ont.  
**Illustrations**  
 Acton Burrows, Limited, Toronto.  
**Injectors**  
 T. McAvity & Sons, St. John, N.B.  
 Nathan Manufacturing Co., New York.  
**Inspections**  
 R. W. Hunt & Co., Montreal.  
 Alfred Lovell, Philadelphia, Pa.  
**Insulators, Porcelain**  
 Ohio Brass Co., Mansfield, Ohio.  
**Insurance, Accident**  
 Can. Casualty & Boiler Ins. Co., Toronto.  
 Canadian Ry. Accident Ins. Co., Ottawa.  
 Imp. Guarantee & Acc. Ins. Co., Toronto.  
 London Guar. & Accident Co., Ltd., Toronto.  
**Insurance, Boiler**  
 Can. Casualty & Boiler Ins. Co., Toronto.  
**Interlocking Plant and Signals**  
 Canadian Steel Foundries, Ltd., Montreal.  
 Railway Signal Co. of Canada, Montreal.  
 Saxby & Farmer, Ltd., Montreal.  
**Iron and Steel Bars**  
 Steel Co. of Canada, Ltd., Hamilton, Ont.  
**Iron, Pig**  
 Nova Scotia S. & C. Co., New Glasgow, N.S.  
**Iron Signs**  
 Acton Burrows, Limited, Toronto.  
**Jacks**  
 Canadian Fairbanks Co., Ltd., Montreal.  
 Canadian Steel Foundries, Ltd., Montreal.  
 Dominion Equip. & Supply Co., Winnipeg.  
 H. & E. Lifting Jack Co., Waterville, Que.  
 F. H. Hopkins & Co., Ltd., Montreal.  
 Mussels, Limited, Montreal.  
 A. O. Norton, Coaticook, Que.  
 James Smart Mfg. Co., Brockville, Ont.  
 Whyte Railway Signal Co., Toronto.  
 Williams & Wilson, Ltd., Montreal.  
**Japans**  
 The Dougal Varnish Co., Ltd., Montreal.  
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 Canadian Bronze Co., Montreal.  
 Crossen Car Mfg. Co., Cobourg, Ont.  
 Kerr Engine Co., Walkerville, Ont.  
 Jas. W. Pyke & Co., Montreal.  
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 McCord & Co., Chicago, Ill.  
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 E. L. Drewry, Winnipeg.  
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 Canadian H. W. Johns-Manville Co., Toronto.  
 Taylor & Arnold, Montreal.  
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 Northern Electric & Mfg. Co., Montreal.  
**Lamps, Gas**  
 Commercial Acetylene Co., Toronto.  
**Lamps, Incandescent**  
 Canadian Westinghouse Co., Hamilton, Ont.  
**Lamps and Lanterns**  
 The Hudson's Bay Co., Toronto.  
 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, Ltd., Montreal.  
**Lighting, Buoy**  
 Blaugas Co. of Canada, Ltd., Montreal.  
 International Marine Signal Co., Ottawa.  
 Walter MacLeod & Co., Cincinnati, O.  
 Safety Car Htg. & Ltg. Co., New York.  
**Lighting, Car**  
 Blaugas Co. of Canada, Ltd., Montreal.  
 Canadian Gold Car H'g & L'g Co., Montreal.  
 Commercial Acetylene Co., Toronto.  
 Safety Car Heating & L'ing Co., New York.  
 United States Light & Heat Co., New York.  
**Lighting, Signal**  
 Commercial Acetylene Co., Toronto.  
**Lights, Contractors' and Wrecking**  
 F. H. Hopkins & Co., Ltd., Montreal.  
 Walter MacLeod & Co., Cincinnati, O.  
 Mussels, Limited, Montreal.  
**Line Material**  
 Ohio Brass Co., Mansfield, Ohio.  
**Locomotives, Compressed Air**  
 Baldwin Locomotive Works, Philadelphia.  
 Canadian Locomotive Co., Kingston, Ont.  
 International Marine Signal Co., Ottawa.  
 Montreal Locomotive W'ks (Ltd.), Montreal.  
**Locomotives, Contractors'**  
 Dominion Equip. & Supply Co., Winnipeg.  
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 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 W'ks., Montreal.  
**Locomotives, Steam**  
 Baldwin Locomotive Works, Philadelphia.  
 Canadian Fairbanks Co., Ltd., Montreal.  
 Canadian Locomotive Co., Kingston, Ont.  
 J. T. Gardner, Chicago, Ill.  
 Montreal Locomotive Works, Montreal.  
 Vulcan Iron Works, Wilkesbarre, Pa.  
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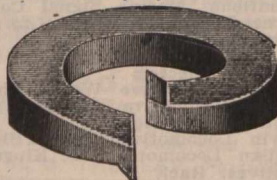
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Notice to Shareholders.

The Annual General Meeting of the Shareholders of this Company will be held on Wednesday, 9th day of August next, at the Head Office of the Company at Kingston, at eleven o'clock a.m., for the purpose of electing Directors and transacting of other business.

The Stock Transfer Books will close in New York on Saturday, 29th day of July, 1911, at 1 p.m. All books will be reopened on Thursday, 10th day of August, 1911.

A. McNAUGHTON, Secretary.

Kingston, Ont., July 5th, 1911.

### NOTICE.

The General Railway Signal Company, the owners of the exclusive rights to Canadian patents No. 92323, No. 93127, No. 96256, and No. 97758, issued to Young and Townsend, and covering methods of signaling electrified railways, wishes to call the attention of all possible users of the devices and systems covered by such patents, to the fact that it is prepared to sell and furnish, at short notice, all such devices, and to install such systems upon any railway in the Dominion of Canada.

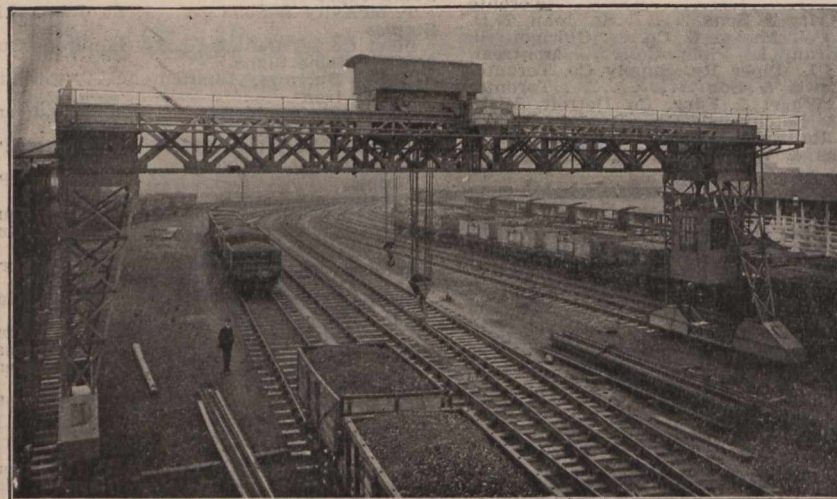
All inquiries regarding the above should be addressed to the office of the company, Room 506, Eastern Townships Bank, 263 St. James St., Montreal, Que.



- Lubricators**  
 Detroit Lubricator Co.....Detroit, Mich.  
 McCord & Co. ....Chicago, Ill.  
 Nathan Manufacturing Co.....New York  
 Taylor & Arnold .....Montreal.
- Lumber**  
 Imperial Timber & Trading Co., Vancouver.  
 Parry Sound Lumber Co. ....Toronto.
- Machines and Plant, Contractors'**  
 American Hoist & Derrick Co., St. Paul, M.  
 M. Beatty & Sons .....Welland, Ont.  
 Canadian Fairbanks Co., Ltd., Montreal.  
 J. T. Gardner .....Chicago, Ill.  
 F. H. Hopkins & Co. ....Montreal.  
 Mussels, Limited .....Montreal.
- Machines, Boring and Turning**  
 John Bertram & Sons Co.....Dundas, Ont.  
**Machines, Car Shop**  
 John Bertram & Sons Co., Ltd.Dundas, Ont.  
 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**  
 American Hoist & Derrick Co. St. Paul, M.  
 Brown Hoisting Machinery Co..Cleveland.
- Machines, Logging**  
 Russel Wheel & Fdry. Co..Detroit, Mich.
- Machines, Milling**  
 John Bertram & Sons Co. ..Dundas, Ont.
- Machines, Planing and Shaping**  
 John Bertram & Sons Co. ..Dundas, Ont.
- Machines, Radial Drilling**  
 John Bertram & Sons Co. ..Dundas, Ont.
- Machines, Rivetting**  
 Long & Allstatter Co. .... Hamilton, Ohio.
- Machines, Slotting**  
 John Bertram & Sons Co. ..Dundas, Ont.
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 Long & Allstatter Co. .... Hamilton, Ohio.
- Machines, Track**  
 Greenlee Bros. & Co. ....Chicago, Ill.
- Machines, Tracklaying**  
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 Canadian Fairbanks Co., Ltd., Montreal.  
 Williams & Wilson, Ltd .....Montreal.
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 Pratt & Whitney Co. ....Dundas, Ont.
- Machinists' supplies**  
 C. H. Besly Co. ....Chicago, Ill.
- Manhole Frames and Covers**  
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- Marine Supplies**  
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 Tallman Brass & Metal Co., Hamilton, Ont.
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 Goldschmidt Thermit Co. ....Toronto.
- Metal Work, Structural**  
 Canadian Bridge Co.....Walkerville, Ont.  
 Cleveland Bridge & E. Co. Darlington, Eng.  
 Dominion Bridge Co.....Montreal.  
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 Geo. C. Royce .....West Toronto, Ont.
- Millstones**  
 Acton Burrows, Limited.....Toronto.
- Mill supplies**  
 C. H. Besly Co. ....Chicago, Ill.
- Motors**  
 Canadian Fairbanks Co., Ltd., Montreal.  
 McCord & Co. ....Chicago, Ill.
- Motors, Electric**  
 Allis-Chalmers-Bullock Ltd. ....Montreal.  
 Chapman & Walker, Ltd.....Toronto.  
 Northern Electric & Mfg. Co.....Montreal.
- Motor Generator Sets**  
 Allis-Chalmers-Bullock Ltd. ....Montreal.  
 Chapman & Walker, Ltd.....Toronto.
- Motors, Turntable**  
 Taylor & Arnold .....Montreal.
- Nails, Cut and Wire**  
 Steel Co. of Canada, Ltd., Hamilton, Ont.
- Nickel**  
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 Nickel for Nickel Steel  
 The Orford Copper Co. ....New York.
- Numbers**  
 Acton Burrows, Limited .....Toronto.
- Nut Locks**  
 Positive Lock Washer Co. ..Newark, N.J.
- Oakum**  
 The Hudson's Bay Co.....
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 Can. Office & Sch'l Furn. Co....Preston.
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 Detroit Lubricator Co. .... Detroit, Mich.  
 Nathan Manufacturing Co.....New York.
- Oils**  
 Galena Signal Oil Co..Franklin & Toronto.
- Packing**  
 Anchor Packing Co. of Can., Ltd., Montreal  
 Greene, Tweed & Co. ....New York.  
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 F. H. Hopkins & Co. ....Montreal.  
 Mussels, Limited .....Montreal.
- Piles**  
 Harris Tie and Timber Co..Ottawa, Ont.
- Pinch Bars**  
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- Pipe, Culvert, Cast Iron**  
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- Pipe, Gas, Cast Iron**  
 Gartshore-Thompson Pipe Co..Hamilton.
- Pipe, Sewer, Cast Iron**  
 Gartshore-Thompson Pipe Co..Hamilton.
- Pipe Stocks**  
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 A. B. Jardine & Co.....Hespeler, Ont.
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 Gartshore-Thompson Pipe Co..Hamilton.
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- Planers**  
 John Bertram & Sons Co. ..Dundas, Ont.
- Platforms, Steel**  
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- Porter**  
 E. L. Drewry .....Winnipeg.
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 Ontario Wind Engine & Pump Co.Toronto.  
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- Punches and Shears**  
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 Williams & Wilson, Ltd .....Montreal.
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 Dominion Equip. & Supply Co., Winnipeg.  
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 Whyte Railway Signal Co. ....Toronto
- Rail bonds**  
 Ohio Brass Co. .... Mansfield, Ohio
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 Whyte Railway Signal Co. ....Toronto
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 Dominion Iron & Steel Co....Sydney, N.S.  
 Drummond, McCall & Co.....Montreal.  
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 J. J. Gartshore .....Toronto.  
 F. H. Hopkins & Co. ....Montreal.
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 J. J. Gartshore .....Toronto.  
 Mussels, Limited .....Montreal.  
 Provincial Steel Co., Ltd. .. Cobourg, Ont.  
 Jas. W. Pyke & Co. ....Montreal.
- Rail Joints**  
 Goldschmidt Thermit Co. ....Toronto.  
 The Rail Joint Co. of Canada.....Montreal.  
 Whyte Railway Signal Co. ....Toronto
- Rails, Re-rolled**  
 Provincial Steel Co., Ltd. .. Cobourg, Ont.
- Railway Supplies**  
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 Canadian H. W. Johns-Manville Co.,  
 Ltd. ....Toronto  
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 Burton W. Mudge & Co.....Chicago, Ill.  
 The Hiram L. Piper Co.....Montreal.  
 The N. L. Piper Ry. Supply Co.Toronto.  
 Rice Lewis & Son.....Toronto.  
 Russel Wheel & Fdry. Co..Detroit, Mich.  
 Pratt & Letchworth Co..Brantford, Ont.  
 Whyte Railway Signal Co. ....Toronto  
 Williams & Wilson, Ltd .....Montreal.
- Reamers**  
 Butterfield & Co.....Rock Island, Que.  
 A. B. Jardine & Co. ....Hespeler, Ont.
- Refrigerators**  
 Seeger Refrigerator Co. ..St. Paul, Minn.
- Replacers, Car and Locomotive**  
 Alexander Car Replacer Mfg. Co.Scranton  
 Dominion Equip. & Supply Co., Winnipeg  
 The Holden Co., Ltd. .... Montreal  
 F. H. Hopkins & Co. .... Montreal  
 Johnson Wrecking Frog Co.Cleveland, O  
 Whyte Railway Signal Co.....Toronto
- Rock Crushers**  
 Allis-Chalmers-Bullock Ltd.....Montreal.  
 Western Wheeled Scraper Co..Aurora, Ill.
- Rope**  
 F. H. Hopkins & Co.....Montreal.  
 The Hudson's Bay Company .....
- Ropes, Derrick**  
 Dominion Wire Rope Co. ....Montreal.
- Ropes, Switch**  
 F. H. Hopkins & Co., Ltd.....Montreal
- Rubber Goods, Mechanical**  
 Guilford S. Wood.....Chicago, Ill.
- Scales**  
 Canadian Fairbanks Co., Ltd., Montreal.
- Safes**  
 J. & J. Taylor.....Toronto.
- Sanders, Pneumatic**  
 Ohio Brass Co. .... Mansfield, Ohio
- Scows, Dump and Deck**  
 M. Beatty & Sons.....Welland, Ont.
- Scrapers, Wheel and Drag**  
 F. H. Hopkins & Co.....Montreal.  
 Meaford Wheelbarrow Co., Ltd., Meaford, Ont.  
 Mussels Limited .....Montreal  
 Western Wheeled Scraper Co..Aurora, Ill.
- Screw Plates**  
 Butterfield & Co.....Rock Island, Que.  
 A. B. Jardine & Co.....Hespeler, Ont.
- Screws, Wood and Machine**  
 Steel Co. of Canada, Ltd., Hamilton, Ont
- Seats, Station**  
 James Smart Mfg. Co. ....Brockville, Ont.
- Semaphore Arms**  
 Acton Burrows, Limited .....Toronto.
- Semaphores**  
 The N. L. Piper Ry. Supply Co., Toronto.  
 Saxby & Farmer, Ltd. ....Montreal
- Shapers**  
 London Machine Tool Co., Ltd., Hamilton.
- Shingles**  
 Imperial Timber & Trading Co. Vancouver.
- Ships**  
 Polson Iron Works, Ltd .....Toronto
- Shop Equipment, Car and Locomotive**  
 London Machine Tool Co., Ltd., Hamilton.
- Shops**  
 The Hudson's Bay Company .....
- Signal House Numbers**  
 Acton Burrows, Limited .....Toronto.
- Signals**  
 Railway Signal Co. of Canada..Montreal.  
 Hall Signal Co. ....Chicago, Ill.  
 The Hiram L. Piper Co., .....Montreal.  
 The N. L. Piper Ry. Supply Co. ....Toronto.  
 Saxby & Farmer, Limited .....Montreal.  
 Union Switch & Signal Co., Swissvale, Pa.  
 Whyte Railway Signal Co. ....Toronto.
- Signals, Fog**  
 International Marine Signal Co...Ottawa.
- Signs**  
 Acton Burrows, Limited .. ....Toronto.
- Sills, Steel for Cars**  
 Canadian Ry. Equip't Co..Welland, Ont.
- Skidders and Loaders**  
 Russel Wheel & Fdry Co..Detroit, Mich.
- Slack Adjusters**  
 Chicago Railway Equipment Co...Chicago
- Sledges**  
 James Smart Mfg. Co....Brockville, Ont.
- Snow Ploughs**  
 Canadian Car & Foundry Co...Montreal.  
 Crossen Car Mfg. Co. ....Jobourg, Ont.
- Solder**  
 Tallman Brass & Metal Co. Hamilton Ont.
- Spikes, Railway, Ship or Press'd**  
 F. H. Hopkins & Co.....Montreal.  
 Nova Scotia S. & C. Co. New Glasgow, N.S.  
 Steel Co. of Canada, Ltd., Hamilton, Ont.
- Spreader Cars**  
 F. H. Hopkins & Co.....Montreal.  
 Western Wheeled Scraper Co.) Aurora, Ill.
- Spring Dampeners**  
 McCord & Co., .....Chicago, Ill.
- Springs**  
 American Vanadium Co. ....Pittsburg, Pa.  
 Canadian Steel Foundries, Ltd., Montreal  
 B. J. Coghlin & Co. ....Montreal.  
 F. H. Hopkins & Co.....Montreal.  
 Standard Steel Wks. Co., Philadelphia, Pa.  
 Titanium Alloy Mfg. Co...Pittsburgh, Pa.
- Sprinklers, Electric**  
 Preston Car & Coach Co..Preston, Ont.
- Stand Pipes**  
 T. McAvity & Sons .....St. John, N.B.
- Staples**  
 Steel Co. of Canada, Ltd., Hamilton, Ont.
- Station Name Signs**  
 Acton Burrows, Limited .....Toronto.
- Staybolt Iron**  
 Taylor & Arnold .....Montreal.
- Staybolts, Flexible**  
 Flannery Bolt Co. ....Pittsburg, Pa.
- Staybolts, Locomotive**  
 Flannery Bolt Co. ....Pittsburg, Pa.
- Staybolt Taps**  
 Butterfield & Co. ....Rock Island, Que.  
 A. B. Jardine & Co., .....Hespeler, Ont.
- Steam Couplers**  
 Safety Car Heating & L'ting Co. New York.
- Steam Hammers**  
 John Bertram & Sons Co. ..Dundas, Ont.
- Steam Shovels**  
 F. M. Beatty & Son .....Welland, Ont.  
 F. H. Hopkins & Co.....Montreal.  
 Mussels, Limited .....Montreal.
- Steamship Signs**  
 Acton Burrows, Limited .....Toronto.
- Steam Traps**  
 Consolidated Car Heating Co., Albany, N.Y.
- Steel**  
 Hermann Boker & Co. ....Montreal.  
 Nova Scotia S & C Co New Glasgow, N.S.
- Steel, Fire Box**  
 Taylor & Arnold .....Montreal.
- Steel for Axes**  
 Canadian Steel Foundries, Ltd., Montreal
- Steel for Saws**  
 Canadian Steel Foundries, Ltd., Montreal



- Steel for Springs  
 Jas. Hutton & Co., .....Montreal.  
 Steel Shafting  
 Nova Scotia S. & C. Co. New Glasgow, N.S.  
 Steel, Nickel for Nickel  
 The Orford Copper Co. ....New York.  
 Steel Plates  
 Jas. W. Pyke & Co., .....Montreal.  
 Steel, Tool  
 Canadian Steel Foundries, Ltd., Montreal  
 Steering Gears  
 Dake Engine Co. ....Grand Haven, Mich.  
 Stokers, Mechanical  
 Babcock & Wilcox, Ltd .....Montreal.  
 Storage Batteries  
 T. A. Edison Co., Inc.....Orange, N.J.  
 Tate Accumulator Co. of Can., Ltd..Toronto  
 Stoves  
 James Smart Mfg. Co....Brockville, Ont.  
 Superheaters  
 Babcock & Wilcox, Ltd .....Montreal.  
 Switchboards  
 Geo. C. Royce .....West Toronto, Ont.  
 Switches  
 Can. Ramapo Iron Wks. Ltd. Niagara Falls  
 Canadian Steel Foundries, Ltd., Montreal  
 Switches, Electric  
 Geo. C. Royce .....West Toronto, Ont.  
 Switch Stands  
 Can. Ramapo Iron Wks. Ltd. Niagara Falls  
 Switch Targets  
 Acton Burrows, Limited .....Toronto.  
 Tacks  
 Steel Co. of Canada, Ltd..Hamilton, Ont.  
 Tanks and Tank Fixtures  
 Ontario Wind Engine & Pump Co.Toronto.  
 Polson Iron Works .....Toronto  
 Tanks, Oil  
 S. F. Bowser & Co., Limited....Toronto.  
 Tanks, Portable Acetylene, for Welding  
 Commercial Acetylene Co. ....Toronto.  
 Taps  
 C. H. Besly & Co. .... Chicago, Ill.  
 Butterfield & Co. ....Rock Island, Que.  
 A. B. Jardine & Co., .....Hespeler, Ont.  
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 Northern Electric & Mfg. Co. ....Montreal.  
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 Acton Burrows, Limited .....Toronto.  
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 Goldschmidt Thermit Co. ....Toronto  
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 Nova Scotia S. & C. Co. New Glasgow, N.S.  
 Pratt & Letchworth Co...Brantford, Ont.  
 Steel Co. of Canada, Ltd..Hamilton, Ont.  
 Guilford S. Wood .....Chicago, Ill.  
 Ties  
 Harris Tie and Timber Co..Ottawa, Ont.  
 Parry Sound Lumber Co. ....Toronto.  
 Timber, Railway and Bridge  
 Harris Tie and Timber Co..Ottawa, Ont.  
 Tires, Steel  
 Jas. Hutton & Co., .....Montreal.  
 Jas. W. Pyke & Co., .....Montreal.  
 Standard Steel Wks. Co.,Philadelphia, Pa.  
 Tools and Supplies  
 Canadian Fairbanks Co., Ltd....Montreal.  
 Jas. Smart Mfg. Co. ....Brockville, Ont.  
 A. B. Jardine & Co., .....Hespeler, Ont.  
 Pratt & Whitney Co. ....Dundas, Ont.  
 Williams & Wilson, Ltd .....Montreal.  
 Tools, Track  
 John Bertram & Sons Co. ..Dundas, Ont.  
 Canadian Steel Foundries, Ltd..Montreal  
 B. J. Coghlin & Co. ....Montreal.  
 F. H. Hopkins & Co., .....Montreal.  
 Mussels, Limited .....Montreal.  
 Tools, Pneumatic  
 The Holden Co., Ltd. ....Montreal.  
 Tools, Cast Steel Track  
 American Brake Shoe & Fdry. Co. Mahwah  
 Track Equipment  
 Can. Ramapo Iron Wks. Ltd. Niagara Falls  
 Tramway Equipment  
 J. J. Gartshore .....Toronto.  
 Transformers  
 Allis-Chalmers-Bullock Ltd .....Montreal.  
 Geo. C. Royce .....West Toronto, Ont.  
 Transmission Appliances  
 Canadian Fairbanks Co., Ltd. ....Montreal.  
 Williams & Wilson, Ltd .....Montreal.  
 Trolley guards  
 Ohio Brass Co. .... Mansfield, Ohio  
 Trolley Poles, Steel  
 Dornier Railway Equip. Co...Chicago, Ill.  
 Trolley Wheels  
 Tallman Brass & Metal Co..Hamilton, Ont.  
 Trucks  
 Jas. Smart Mfg. Co. ....Brockville, Ont.  
 Trucks, Electric Car  
 Baldwin Locomotive Works..Philadelphia.  
 Canadian Steel Foundries, Ltd..Montreal  
 Trusses, Roof  
 Canadian Bridge Co. ....Walkerville, Ont.  
 Cleveland Bridge & Eng. Co., Ltd.,  
 Dominion Bridge Co. ....Montreal.  
 Tubes, Boiler  
 Jas. W. Pyke & Co., .....Montreal.  
 Turbines, Steam  
 Allis-Chalmers-Bullock Ltd .....Montreal.  
 Turnbuckles  
 Canadian Steel Foundries, Ltd..Montreal  
 Turntables  
 Canadian Bridge Co. ....Walkerville, Ont.  
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 Royal Typewriter Co. ....New York  
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 Detroit Lubricator Co. .... Detroit, Mich.  
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 Detroit Lubricator Co. .... Detroit, Mich.  
 Kerr Engine Co. ....Walkerville, Ont.  
 Nathan Manufacturing Co. ....New York.  
 Valves, Brass Gate  
 Detroit Lubricator Co. .... Detroit, Mich.  
 Kerr Engine Co. ....Walkerville, Ont.  
 Valves, Check  
 Nathan Manufacturing Co. ....New York.  
 Valves, Iron and Brass  
 Canadian Fairbanks Co., Ltd....Montreal.  
 Valves, Iron Gate  
 Detroit Lubricator Co. .... Detroit, Mich.  
 Kerr Engine Co. ....Walkerville, Ont.  
 Valves, Locomotive Pop  
 T. McAvity & Sons .....St. John, N.B.  
 Taylor & Arnold .....Montreal.  
 Valves, Steam  
 Detroit Lubricator Co. .... Detroit, Mich.  
 Nathan Manufacturing Co. ....New York.  
 Vanadium Steels  
 American Vanadium Co ....Pittsburg, Pa.  
 Varnishes  
 The Dougal Varnish Co., Ltd....Montreal.  
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 Polson Iron Works, Ltd .....Toronto  
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 Western Wheeled Scraper Co..Aurora, Ill.  
 Washers  
 Steel Co. of Canada, Ltd..Hamilton, Ont.  
 Waste  
 B. J. Coghlin & Co. ....Montreal.  
 N. L. Piper Railway Supply Co...Toronto.  
 Water Softeners  
 Babcock & Wilcox, Ltd .....Montreal.  
 L. M. Booth Co. ....Chicago, Ill.  
 Dearborn Drug & Chemical Co., Chicago.  
 Welding  
 Goldschmidt Thermit Co. ....Toronto.  
 Wheelbarrows  
 F. H. Hopkins & Co., .....Montreal.  
 Meaford Wheelbarrow Co. Ltd. Meaf'd, Ont.  
 Wheels, Car  
 Canada Iron Corporation, Ltd.,...Montreal.  
 Canadian Car & Foundry Co....Montreal.  
 Jas. W. Pyke & Co., .....Montreal.  
 Standard Steel Wks. Co.,Philadelphia, Pa.  
 Wheels, Locomotive  
 Canada Iron Corporation, Ltd.,...Montreal.  
 Wheels, Re-inforced Pressed Steel  
 Kalamazoo Ry. Sup. Co..Kalamazoo, Mich.  
 Wheels, Rolled, solid Forged  
 Standard Steel Wks. Co.,Philadelphia, Pa.  
 Wheels, Steel Tired  
 Standard Steel Wks. Co.,Philadelphia, Pa.  
 White Lead  
 Steel Co. of Canada, Ltd..Hamilton, Ont.  
 Windlasses  
 Dake Engine Co. ....Grand Haven, Mich.  
 Windmills  
 Ontario Wind Engine & Pump Co.Toronto.  
 Wire  
 American Vanadium Co. ....Pittsburg, Pa.  
 Titanium Alloy Mfg. Co...Pittsburgh, Pa.  
 Wire and Wire Rope  
 Canada Wire & Cable Co., Ltd...Toronto  
 Dominion Wire Rope Co. ....Montreal.  
 Mussels, Limited .....Montreal.  
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 American Hoist & Der. Co.St. Paul, Minn.  
 Wire, Telegraph and Telephone  
 Canada Wire & Cable Co., Ltd...Toronto  
 Chapman & Walker, Ltd .....Toronto.  
 E. F. Phillips Elec. Works, Ltd. ....Montreal.  
 The Wire & Cable Co. ....Montreal.  
 Wire, Transmission and Trolley  
 Canada Wire & Cable Co., Ltd...Toronto  
 Chapman & Walker, Ltd .....Toronto.  
 The Wire & Cable Co. ....Montreal.  
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 American Brake Shoe & Fdry. Co. Mahwah  
 Yachts  
 Polson Iron Works, Ltd .....Toronto



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