

Canadian Railway and Marine World.

November, 1912.

Safety Organization on the Michigan Central Railroad.

From carefully compiled records on all the units of the New York Central Lines, of which the Michigan Central Rd., with its Canada Southern division, is a part, it has been observed that of all the preventable accidents, the majority have not been due to defective conditions, defective equipment or improper methods of operation, but to that hard to control factor, the "human element." These records are kept every month, with the cause and nature of each accident, serving as complete data from which to make the deductions. With these rather alarming conditions before the management, a campaign of education was planned among the employes, to force home their responsibility in the matter, and the degree to which they can assist in the matter of reducing the preventable accidents by a proper co-operation on the part of all concerned.

With this in view, an organization was formed under the charge of Geo. Bradshaw, who was given the title of General Safety Agent, with offices in both New York and Chicago. Prior to this appointment, he had been engaged for about 10 years in the investigation and settlement of claims for personal injuries and death resulting from railway accidents. This placed him closely in touch with conditions as they existed, with a good working basis on which to evolve the safety organizations which are at present in successful operation. Covering this long term of experience, in touch with all sorts of conditions where accidents—preventable and otherwise—were observed, Mr. Bradshaw wrote a book called, "Prevention of Railroad Accidents," in which the more important of his observations are outlined. This book, as a basis for the employes to ground their plans for careful actions in future, has been distributed over all the New York Central Lines, to the number of 60,000. In addition to this, the subject is being kept alive by the periodical distribution of safety literature. This has resulted in the employes taking a personal interest in the subject, with an increased desire on their part to further the cause of safety.

In this book which has been so freely distributed over the lines, there are some very forceful arguments supporting the contentions that a large portion of the preventable accidents are due to carelessness on the part of the human element involved. Stress is laid on the use of an ounce of prevention, instead of a pound of cure in the form of monetary compensation for damages received. This sort of compensation can never make amends to widows and orphans, for example, for the loss of husband or father. The book, being addressed to employes, is confined exclusively to those phases of the subject on which they are able to direct their energies in support of the movement.

On one of the initial fly leaves of the book, there is a very trite remark, an abstract from a paragraph contained in the book, which ought to carry great weight with those for whom the work is intended. It is as follows:—"Injure an experienced man, a new man must take his place. A

new man is always an experiment. The new man to whom you extend the hand of fellowship today, may run a car over you tomorrow." This emphasizes to the employe the fact that even if he be not the victim, his chances of safety are decreased by the presence of indifferent employes about him. For this reason it should be the constant aim of every one to be ever on the alert to point out practices that are dangerous, and suggest alternative ones that eliminate the trouble.

Tables in the book, from statistics compiled by the U.S. Interstate Commerce Commission, show that injuries to employes are constantly on the increase. Whereas

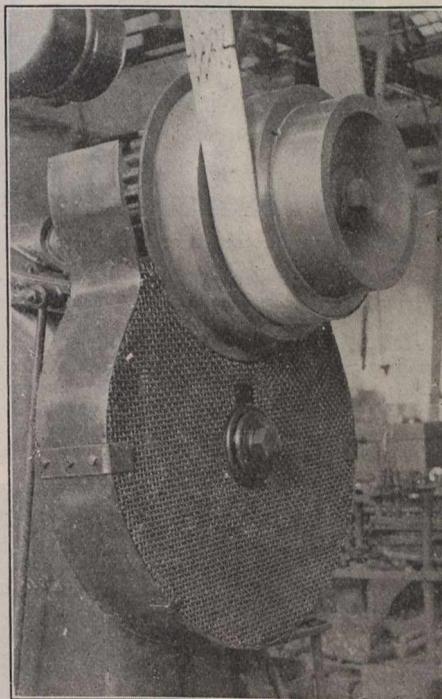


Fig. 1.—Gear Protection on a Slotter.

in 1890, only one out of every 33 employes was in any way injured, in 1911 the ratio had increased to one in every 13. Truly a remarkable subject for thought. The number of accidents resulting in death has not increased to the same degree, but there is still a marked increase. All this has occurred despite the volumes of legislation passed by nearly every Parliament and Legislature in both Canada and the United States. Numerous means of making the lot of the railway employe safer in every way have been introduced as a result of this legislation, so that a great many systems have most of the approved safety devices and other kindred appliances. Over 99% of all trains are equipped with air brakes, reducing the necessity of trainmen traversing the top of the train, and about the same proportion have automatic couplers, making going between the cars unnecessary. Yet with these two greatest death traps removed, the accident record has been growing at an alarming rate.

The only conclusion that can possibly be derived from these records, is that the human element must be at fault. Nobody can say that the present day employe is less intelligent than his predecessor, for such is decidedly not the case with modern high specialization in the particular branch in which the employe is engaged, and the increased opportunities for attaining a higher degree of knowledge concerning the work in hand. This leaves the deduction that the workmen are becoming more careless with their work, and that it is in this direction that those concerned in the reduction of the accident record must look if conditions are not to continue becoming worse and worse as time goes on. Conservation is the present day motto, and the conservation of human life the highest attainment in that programme.

In Mr. Bradshaw's book, instances of everyday carelessness without number are cited from his own observation, the disastrous results occurring being in each case added. Among the incidents cited, a few will be here mentioned: The passing of a danger signal by a fast train because the signal was almost invariably with the engineer and not against; carelessness and a feeling of security prevented the engineer observing the signal. The neglect of car repairers to place warning signs at the ends of cars under which they were working; result, car bumped by yard engine, and workmen injured. Watchmen on car ferry failed to examine ports from a feeling similar to that of the engineer above; sea on the open port window side caused the boat to fill to the extent that saving was impossible, the boat sinking and crew perishing.

A long series of illustrations are given in the book to illustrate the commoner causes of accidents, and the reasons why they occur. These include the careless loading of baggage on trucks, placing baggage in car aisles, unblocked frogs, switches and guard rails; jacking up a track with the jack on the inside; using a hammer on the end of a tempered chisel; not paying attention to work around wood machinery; kicking drawbar jaw as cars are about to couple; opening elevator doors before elevator stops; standing on top of tender between coal chute and cab where the fireman would be caught if the locomotive backed up; hitting a tempered tool in a lathe with a hammer; standing between tracks to jump on the front footboard of a locomotive instead of to one side of track; leaving loose material lying around a freight yard where trainmen might trip and fall under the wheels; defective electrical insulation; sitting on brake wheel, loose baggage and trucks on station platform; where there are two trainmen one should observe each end in switching around; neglecting to flag back when train is stopped. These are but a few of the more common of the many instances cited and illustrated in this book, giving the employes for whom it is primarily intended an idea of the grossness of the careless methods of which they are guilty. In the majority of cases, it is more from lack of perception of the dangers in-

volves that the trouble occurs, and if this condition can be altered, good results will undoubtedly follow. It is a remarkable fact, too, that the majority of the injuries occur to the parties responsible for the carelessness, so that a change in the viewpoint will show that this safety campaign affects each man directly.

Another very prolific cause of accident is the tendency of people to use the railway line as a highway. F. V. Whiting, General Claims Attorney, New York Central Lines, in a recent pamphlet entitled, "Trespassers Killed on Railways—Who are They?" states from observations that cannot be disputed, that contrary to the commonly accepted belief that the majority of people killed or injured while trespassing on railway property are tramps or hoboes, the greater number are of a class of citizen of value to the community. They are largely artisans and business men, using the right of way for a short cut. For this, legislation would remove a great deal of the trouble, but in view of the laxity and impossibility of enforcing such legislation effectively, it has been suggested that all railway employes co-operate to the fullest extent in not only not walking on the right of way themselves, but in influencing others not to do so.

Complete organizations have been introduced on all lines of the systems. For each of the systems, lines east and lines west of Buffalo, the latter including the Michigan Central Rd., there is what is called a general safety committee, comprising on the lines east, the following permanent members:—(1) general manager (chairman), (2) assistant general managers, (3) general superintendents, (4) chief engineer, (5) engineer maintenance of way, (6) superintendent of motive power, (7) superintendent of rolling stock, (8) general claims attorney, (9) signal engineer, (10) chief mechanical engineer, (11) general safety agent, secretary. The General Safety Agent, with offices in both New York and Chicago, is secretary of both general committees.

On the lines west, the organization is

and the general safety agent.

On each division, there are two other committees—maybe more, depending on the extent, but always two—called the division safety committee and the shop safety committee. If more than one important shop exists, there is a committee for each. On

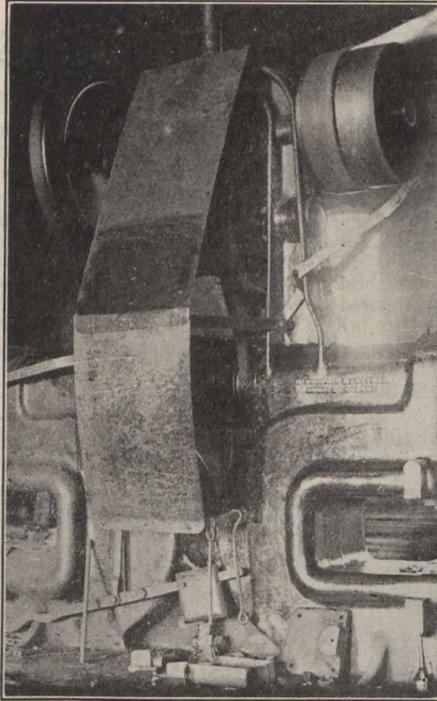


Fig. 2.—Gear Protection on Punch Press.

the Canada Southern division, there is a division safety committee for the whole division, and a shop safety committee located in the shops at St. Thomas. The organization of the division safety committee is as follows:—(1) division superintendent, chairman; (2) master mechanic, (3) division claim agent, (4) division engineer, (5) a road fire-

the chairman.

The organization of the shop committee is as follows:—(1) master mechanic, chairman; (2) foreman, motive power shops; (3) foreman, car shops; (4) superintendent of tools and machinery, (5) a machinist, (6) a boilermaker, (7) a blacksmith, (8) a car repairman, (9) a painter, (10) such other employes or sub-committees as the local conditions may indicate, to be appointed direct by the master mechanic. The first four of these are permanent, with the balance appointed every six months by the master mechanic, the chief clerk of the latter being the secretary of the committee, which is called at the discretion of the master mechanic.

In the different committees, each member is supplied with a small note book marked, "Member of Safety Committee, for Safety Notes Only," in which it is his duty to jot down from time to time as it comes under his observation, any practices or conditions that can be improved. The instructions on the first two pages of the book explain their purport thoroughly. They are as follows:—

"This book is entrusted to you as a member of the local safety committee to be used as a memorandum book for matters pertaining to safety according to the following instructions:—

"1. Carry this book with you at all times while on duty, and when your term expires deliver it to your successor.

"2. Be on the alert to discover unsafe conditions or practices. When you observe, or anyone reports to you, any condition of way, track, structures, equipment, tools or appliances, or any method of practice, which in your opinion, or the opinion of the one making the report to you, is unsafe and which can reasonably be made safe, make at once accurate and complete memoranda of the particular condition or method observed or reported and also of what you, or the one making the report, may think should be done. Report such conditions or practices as soon as discovered to the proper person for correction, and make full report to the committee.

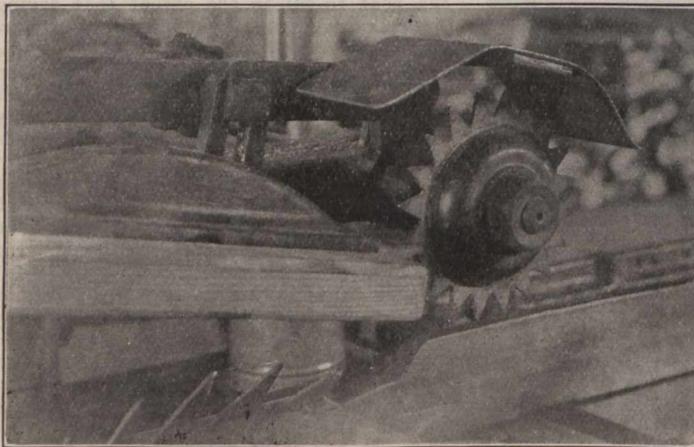


Fig. 3.—Protection to Star Feeder on Rip Saw.

slightly different from that on the lines east. On each line or group of lines under one management, there is a central safety committee, inferior to the above general committee. This central committee is composed of the general officers of the lines under the one management, as for example, the Michigan Central Rd. has a central safety committee at Detroit as well as the general safety committee at Chicago, to which it reports. On the lines west, the general safety committee consists of the assistant vice president, the general managers or other operating officials of the various roads, the general claims attorney

man, (7) a trainman, (8) a conductor, (9) a station agent, or station employe; (10) a supervisor of bridges or buildings, (11) a signal supervisor, or signal man; (12) a track supervisor, (13) a yardmaster, (14) such other employes or sub-committees as the local conditions may indicate, to be appointed directly by the Division Superintendent. The first four of these members are permanent, and the remainder are appointed for six months, the chairman having the appointment of new members at the expiration of that period. The chairman's chief clerk is secretary of the committee, which is called at the discretion of

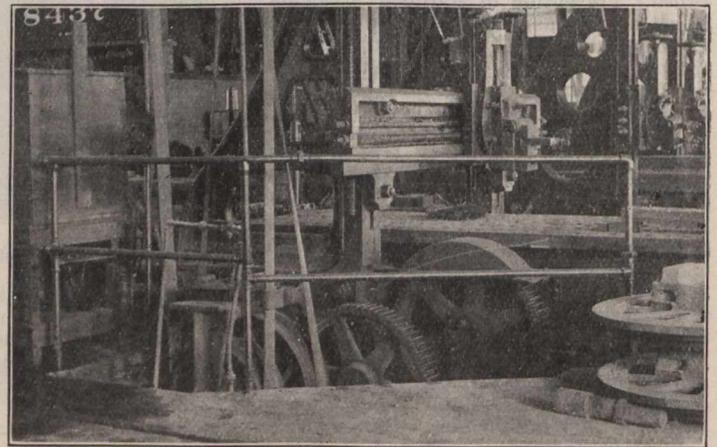


Fig. 4.—Protection to Planer Gearing.

"3. Give proper attention to every matter called to your attention. When practicable, always make a careful investigation yourself of all matters reported to you. However honest may be the man who makes a report to you, there is always the possibility he may be mistaken or he may be reporting to you as facts matters which are 'hearsay' with him. Better see and investigate for yourself. Remember the local committee, when it meets, wants indisputable facts as to what exists, and sound, practicable opinions as to what should be done concerning any given statement of facts. As a member of the com-

mittee, your statements will be given extra weight and credit. So it is a duty you owe to the committee, to yourself, to other members of the committee, to procure and report accurately and completely the facts.

"4. So far as consistent with other duties, investigate cases of injury and damage to property to determine what may be done to avoid a recurrence from similar causes.

"5. Before making any recommendation which has originated with you or been suggested to you, think the matter over carefully. Determine first, whether your recommendation, if adopted, will make conditions safer, and secondly, whether its adoption is reasonable and practicable.

"6. If you see employes violating rules or instructions or taking unnecessary chances in their work, it is your right and

Each of these committees meets at the discretion of the chairman, and on these occasions the note books are called into service, the observations of the different members being discussed thoroughly on all sides, and definite action taken thereon. The smaller and purely local matters are acted upon at these meetings, but the larger questions that would concern other divisions of the system are referred by either of the local committees making the observation, to the central committee, which in turn, if the matter is of sufficient importance to warrant it, refers it to the general safety committee for final action. Thus the smaller things are settled locally, and the more important questions passed along for the benefit of others. These reports from the local committees are made not later than the tenth of the month following that in which the meeting was held.

Throughout this article, there are illustrations of the manner in which the shop committee at St. Thomas, Ont., has improved its opportunities by the protection of machinery. All these improvements have been made within the last few months, as it was only in June that the safety organization movement took definite form, the first meetings of the local committees at St. Thomas being held in July. The locomotive and car departments have set up a healthy rivalry in the matter of protecting machinery, resulting in a very good showing in the short time it has been used.

Fig. 1 shows a simple gear guard on the rear of a slotter in the locomotive department, made of sheet metal and smoke-box netting. In the same department is a typical gear protection on a punch press as in fig. 2. Fig. 3 is a sheet metal rip saw feeder star protection in the car department. Fig. 4 is a planer gear protecting railing around the pit containing the operating gearing; it is made completely from piping. Figs 5 and 6 are of wood machinery in the car department. The band saw is completely enclosed with swing doors. The construction prevents all possibility of the saw flying out and injuring the operator or bystander, and has that added advantage that the chilling breeze set up around the operator's feet by the rapidly moving saw is removed, a comfort in winter. The wood drill case is also simply made of sheet metal, with a hinged front door for oiling and examination of the

person every unsafe condition." The other cards are as follows:—"The more you insist upon carefulness on the part of others as well as exercising it yourself, the safer it will be for all." "The practice of getting on and off moving cars and engines results in injury and death to many employes. Those whose duties require such practice should exercise all possible care. Other employes must not jump on or off moving cars or engines." "Safety should be the first consideration of all employes. In all cases of doubt take the safe course." "Let every employe of the New York Central begin the new year with a firm resolution to do everything in his power to avoid injury to himself or others. This resolution, made and kept, will mean greater safety to employes for 1912." This latter

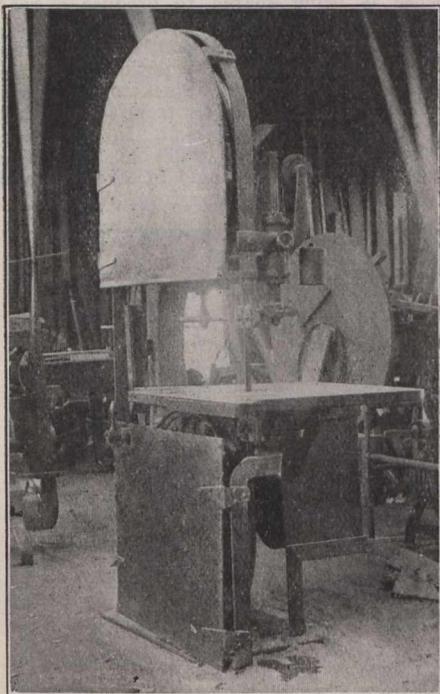


Fig. 5.—Band Saw Protection.

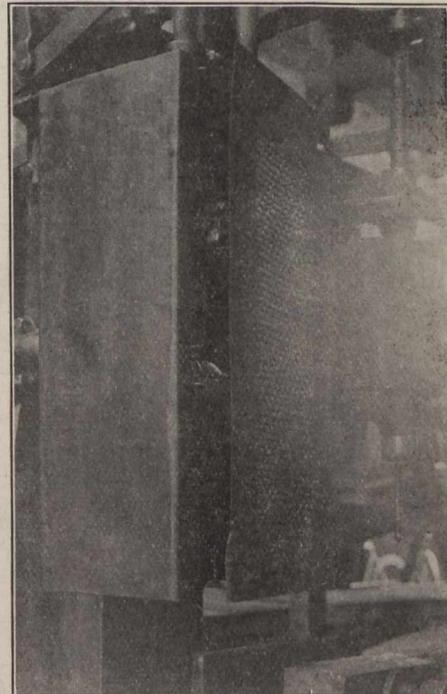


Fig. 6.—Wood Drill Protection.

duty to warn them of the serious consequences which may follow such practices, to explain to them, if necessary, the proper and safe way, and to urge them to comply with rules and instructions and do their work in the safest way. To discharge this duty effectively requires tact and diplomacy, which, if you do not already possess, you can and should acquire by cultivation for your own personal benefit as well as for the advancement of the cause of safety.

"If you, in fact, feel a real unselfish interest in the safety of your fellow employes, you can, by the exercise of patience and good judgment, call attention to their shortcomings and secure their correction, and at the same time make friends for yourself and the cause of safety. You can do a great deal of good by a conscientious and proper performance of your duty in this respect."

The above clearly outlines the duties of the members comprising the committees. Each one, in his particular occupation, is to be ever on the alert for improved conditions of safety. To make the reports more thorough, the mechanics from the major portion of the local committees, for the reason that they are, in the course of their regular work, more in touch with the details of the conditions as they exist, whereas the higher men, at the best, can do no more than know the bigger problems, the smaller things being left to these juniors.

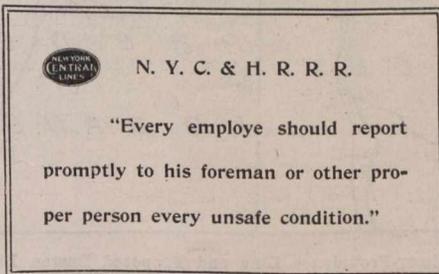


Fig. 7.—Typical Warning Placard.

working parts. The drill spindle to the left is also protected by having a collar shrunk on over the setscrew, making the head of the latter flush with the surface, and not dangerous to the loose ends of the operator's clothes.

In conjunction with this campaign for safety, the shops and other public places are having small placards posted at convenient points, printed with appropriate and trite remarks. These cards are of different colors, the one shown in fig. 7 being typical of the others. They are 6 x 9 ins., and there are five in the set. The one illustrated contains the following remark:—"Every employe should report promptly to his foreman or other proper

card was posted in some shops of the New York Central Lines where the "safety first" movement was introduced earlier.

Other typewritten notices are posted on the shop notice board for that end of the safety propaganda. The first one is the following, and is taken from Mr. Bradshaw's book:—

"MEMORY GEMS FOR SHOP MEN.

"Don't wear loose, baggy, clothing where it is liable to be caught in machinery.

"Avoid walking on railroad tracks, and before crossing any track, 'Stop, look, and listen.'

"Be sure you replace all guards when through repairing machinery. Think about the other fellow.

"It is your duty, as well as your protection, to report unsafe condition to your foreman or superintendent.

"Stop machine before oiling, wiping or repairing it, and don't try to operate a machine you do not understand.

"Don't swing sledge or hammer that you know is working loose on handle, thinking it won't come off till 'next time.' You may not be hurt, but what about the 'other fellow.'

"Don't expect your helper to be as good a mechanic as you are. He isn't or he wouldn't be a helper. A little explanation as to the way the work is to be done may save injury to one or both of you.

"If you know of some machine not properly guarded, don't wait till some one gets hurt and say, 'I told you so.' Tell the

man in charge of the shop, before an accident happens, and ask him to supply proper guard.

"Avoid jumping upon moving cars or engines. Your work does not require it and you cannot afford to take the risk.

"Never strike tempered steel with hammer or other metal object. Many eyes are injured and destroyed from this cause every year."

In addition to the above which are posted in the shops, there are corresponding "memory gems" for the other branches of

railroading, each emphasizing the special risks which that class is liable to, with cautionary remarks thereon.

"The "safety first" movement has been in use such a short time on the Michigan Central Rd. that no definite conclusion as to the efficacy of the scheme can as yet have been deduced, but indications point to its success if carefully followed out. It will be interesting to observe the extent to which the accidents will be reduced, as reflected in the accident reports compiled by the company in future.

Negotiations are under way to obtain the necessary authority for construction in New Hampshire.

As indicated by the foregoing, when all the projected construction is completed the G.T.R. will have a direct line from Montreal to Boston, a short line from Boston to Providence which will form part of a through rail and water route between Boston and New York, and a direct route from Montreal and northern New England to tidewater at Providence through the most prosperous sections of Massachusetts and Rhode Island. The branch between Douglass and Worcester, Mass., will also tap a rich manufacturing region.

The line between Palmer and Providence, which is now under construction, will be a single track for the present, but no expense is being spared to produce a road that can be operated at maximum economy. It extends in a general southeastern direction, passing through the cities of Southbridge, Webster and Blackstone, Mass., thence proceeding directly from Woonsocket to Providence, Rhode Island. In Massachusetts there are 57.69 miles of main line and 7.45 miles of siding. In Rhode Island there is a passenger line from Woonsocket

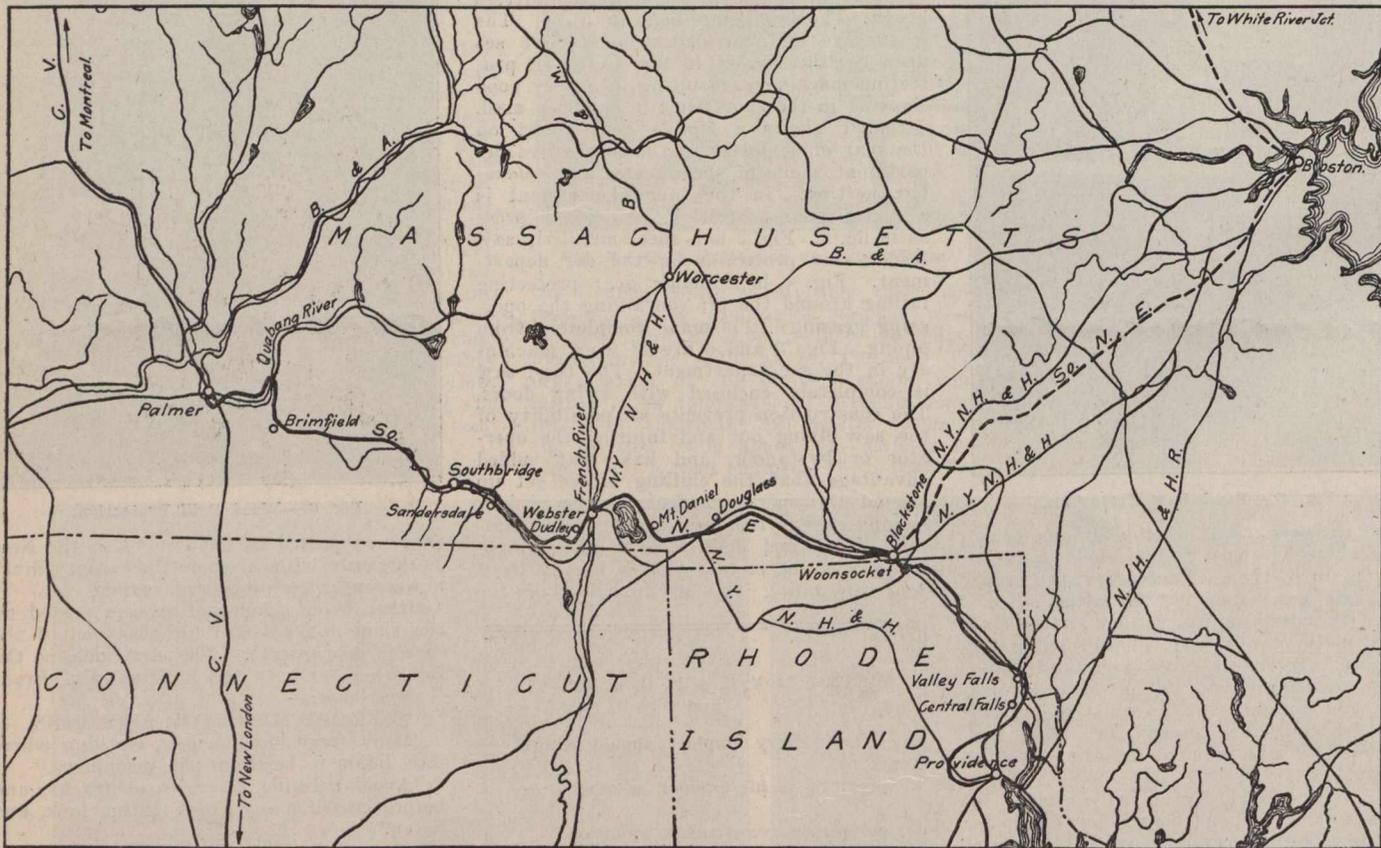
The Grand Trunk Railway Palmer-Providence Line in New England.

By H. Cole Estep, Engineer of Construction.

Contracts have recently been signed and construction begun on the new line of the Southern New England Ry., a subsidiary of the Grand Trunk Ry. Co., which is to extend from a junction with the Central Vermont Ry. in Palmer, Mass., to tidewater terminals at Providence, R.I. The new road, although important in itself, is

through Nashua, N.H., to Boston, 133 3/4 miles. In all, these projects will require approximately 275 miles of main line, together with the numerous sidings and industrial spurs and extensive terminals in Providence and Boston.

The Palmer-Providence line in Massachusetts is being constructed under permission



The G.T.R.'s Palmer-Providence Line and Proposed Boston Line.

only a part of a general scheme which has been developed by E. H. Fitzhugh, President of the G.T.R. properties in New England, for the extension of this system into the rich commercial territory in Rhode Island, New Hampshire and Massachusetts, including the city of Boston, hitherto occupied almost exclusively by the New York, New Haven & Hartford Rd. and its affiliated interests. The G.T.R. plans, in addition to the Palmer-Providence line, include a line of 35.9 miles from Blackstone, Mass., a station on the new road 17 miles north of Providence, to Boston; also another branch from Douglass on the Palmer-Providence line to Worcester, Mass., 21 miles; and finally a road extending south-eastward from a junction with the Central Vermont Ry. at White River Junction, Vt.,

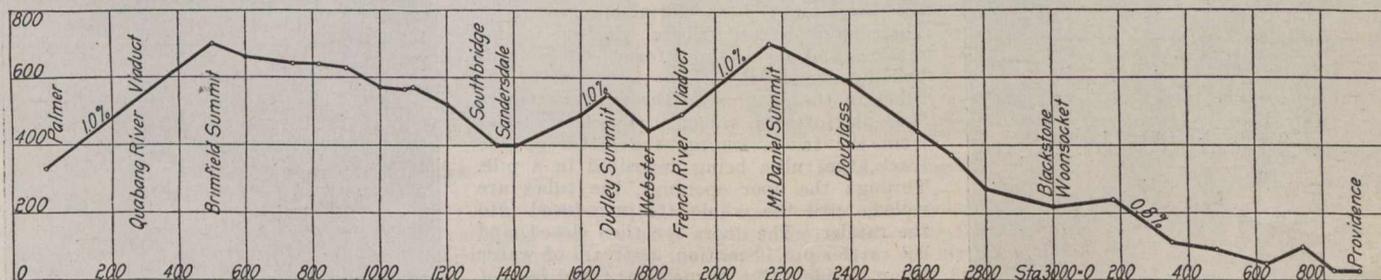
of the state railway commission; the construction of the other lines in Massachusetts, including the Boston terminals, has been authorized by a special act of the legislature; and similar legislative authority has been obtained for the work in Rhode Island. The Massachusetts law provides that the various lines authorized must be located within one year, relocations being permitted; construction must begin within a year from the time of filing the location, and be completed in three years. Under certain conditions the state railway commission is granted the power to extend these periods. Two companies have been organized for construction purposes, one in Massachusetts, the Southern New England Railroad Corporation, and the one in Rhode Island, the Southern New England Ry. Co.

to the Union station at Providence, 17.13 miles, and a freight line from a junction with the passenger line in North Providence to docks at Fielas Point, 9.89 miles, together with 37.76 miles of sidings and a special spur of 0.25 miles on Allen's avenue. The work, therefore, includes 84.71 miles of main line and 45.45 miles of sidings and spurs, or 130.16 miles in all. The most extensive switch yards and terminals will, of course, be situated at Providence.

As soon as authority for construction had been obtained and the line definitely located, the work of obtaining right-of-way began. This was a much more difficult task than it is in less thickly settled portions of the country, and many perplexing obstacles had to be surmounted. The Massachusetts law limits the width of the

right of way to 82.5 feet, which is insufficient in deep cuts or on high fills. Great difficulty was also experienced in defining the various parcels of land purchased for right of way on account of the indefinite wording of most New England deeds. New England was never surveyed into sections, and land is generally described in the deeds by metes and bounds and by reference to old monuments or land marks long since disappeared. For instance, a farm belonging to Wm. Brown is described as consisting of 17½ acres extending from the south boundary of Henry Bowen's land on the north to the north boundary of Alfred Thompson's on the south, etc. It was necessary for the engineers of the railway to accurately determine these boundary lines, and the problems involved may be readily imagined.

The accompanying profile of the line shows the three principal summits which it was necessary to cross, together with the Quabaug, French and Blackstone rivers. These formed the chief controlling points in the location. Starting at elevation 320 at Palmer the line ascends rapidly to the Brimfield summit, 704 ft. above sea level,



Condensed Profile, Grand Trunk Railway Palmer-Providence Line.

nine miles from Palmer. Between these points the Quabaug river is crossed twice. From Brimfield there is a gradual descent for 15 miles to elevation 400 at Sandersdale. Leaving this point the ascent is rapid for the next five miles to the Dudley summit, elevation 545. Next comes a descent into the French river valley and a long climb out on the eastern side to elevation 717 at Mt. Daniel, 41 miles from Palmer. From this point the line drops by easy stages to sea level at Providence.

The location of the line, however, involved much more than simply finding the most advantageous route across the various summits and rivers between the terminals, for the problems encountered in numerous grade separations also had to be met. In the entire length of the line there are no grade crossings, even the country highways being elevated over or depressed under the railway in every instance. In fact, the location resolved itself into a task of suitably treating the various crossings with as little disturbance to existing grades as possible. In many instances it was, of course, necessary to change the grades of streets and highways, but no attempt was made to alter those of the steam railways crossed. In Rhode Island alone there are approximately 69 highway crossings carried either over or under the track, semi-tunnels being generally employed where the highway goes over the railway. As a result of the necessity of avoiding grade crossings, coupled with the desire to leave existing street grades in the towns unchanged wherever possible, a detailed profile of the line in Rhode Island through comparatively level country somewhat resembles the layout of a roller coaster.

In spite of these difficulties the line has been located with a maximum grade of 1% and 6% maximum curves. The grades are equated 0.04% for each degree of curve, and the curves are spiraled on the Searles

system. The spirals, however, are much longer than customary. For example, eleven 33 ft. chords are used in laying out the spiral on a 6° curve, the length of the spiral being 363 ft. On the new line of the Chicago, Milwaukee & Puget Sound Ry. in the west, the spirals on similar curves are only 180 ft. in length. In fact the 6° curves with long spirals on the Southern New England Ry. are about equivalent to straight 4° curves, assuming ordinary angles of intersection. With a 44° angle, the length of a straight 4° curve is 1,100 ft., while a 6° curve with long spirals on the Southern New England is 1,092 ft. in length for the same angle of intersection. The curves will be elevated according to A. R. E. A. standards for 40 miles per hour.

The line includes a great deal of bridge work. Two miles from Palmer occurs the first crossing of the Quabaug river on a steel viaduct 585 ft. long; the same bridge also crosses the state highway and the Central Massachusetts Electric Ry., the maximum height of the viaduct above the valley being 63 ft. Separated from this viaduct by a fill of 80 ft. long is a through plate girder bridge crossing the Boston &

The preliminary layout provides two sets of team tracks with a capacity of 136 and 117 cars, respectively, together with inbound and outbound freight sheds. The former is to be 50 x 670 ft., provided with yard and service tracks having a total capacity of 100 cars. A coach yard will also be located in the immediate vicinity.

The freight line to Field's Point leaves the main or passenger line at the northern limits of the city of Providence, and with a wide sweep first to the south and then to the east reaches its destination on Narragansett bay. This line is 9.89 miles long. At the Field's Point terminus docks are being constructed by the city of Providence.

The general contract for the construction of the Massachusetts portion of the road has been awarded to J. Marsch, Chicago, and the contract for the Rhode Island portion to the O'Brien Construction Co., New York. The general contract in Rhode Island does not include the tunnel under the city of Providence. This will be covered by a separate contract to be let later. The steel bridges will be fabricated by the American Bridge Company of New York,

Albany Rd.

Four and a half miles east of Palmer is situated the largest steel bridge on the line. It carries the track of the Southern New England Ry. over the Quabaug river, and also over the state highway, a wagon road and the Boston & Albany Rd. The bridge is 1,252 ft. long and 115 ft. above the river, being constructed on a 6° curve and 0.76% grade. It is a viaduct consisting of 11 steel towers connected by 70 ft. girder spans; the towers are about 40 ft. long on top, and of sufficient width to carry the single track.

Another important bridge is situated at North Webster, 36 miles from Palmer. At this point the French river, together with the Boston & Albany Rd. and Norwich & Worcester Rd., are crossed. A timber trestle 1,052 ft. long has been planned. It has a maximum height of 55 ft. and is considered to be more economical than a steel bridge would be in the same place. It is estimated on a 5% basis that where the cost of a steel bridge exceeds that of a wooden one by more than 90%, the latter is the more economical.

Near Millville, 55½ miles from Palmer, will be situated a steel and masonry bridge, approximately 500 ft. long, crossing the Blackstone river and the Worcester-Providence and Boston-Willimantic lines of the New York, New Haven & Hartford Rd. The Boston-Willimantic line crosses over the Worcester-Providence line and the Southern New England Ry. over both.

In the city of Providence, the passenger line enters from the north via Randall's and Leonard's ponds, and passing through a 2,400 ft. tunnel under northwest Providence, between Douglas avenue and Jewett street, emerges at the union passenger station in the centre of the city. A terminal for handling miscellaneous freight shipments will be built adjacent to this line between Valley street and the Woonquatucket river,

and erected by the Strobel-Steel Construction Co. of Chicago.

The line is being constructed under the supervision of E. H. Fitzhugh, President of the Southern New England and the Central Vermont railways, assisted by G. C. Jones, Vice President. The engineering officers include H. C. Estep, Engineer of Construction, and J. P. Snow, of Boston, Consulting Bridge Engineer.—Railway Age Gazette.

Improved Baggage Checks.—A baggage check, which is expected to lessen the number of errors and complaints, has just been placed in service by the Pennsylvania Rd. The duplicate portion of the new check is provided with spaces in which are printed a number of the principal "bad order" conditions in which baggage is frequently received for checking. A check, on being delivered to a passenger, will be punched to show whether the piece of baggage is a trunk, suit case or valise, fibre case, or tool chest. Other punches will show the condition in which it is received, whether the bottom, side, top or end is broken, lock or handle broken, hinges loose, old or worn, or whether the piece of baggage is open. In this way the duplicate check will contain a full description of the condition of the baggage when received for shipment. The number on the tag portion of the check is placed at the bottom, while on the duplicate portion it is printed at the top, so that the two can be readily matched when making delivery of baggage. It is expected that with the use of this new form of check the liability of mismatching numbers will be minimized, the delivery of baggage expedited, and the number of claims greatly reduced.

The Quebec Public Utilities Commission has issued general orders re rules for pipes crossing railways and re protection of forests from fires by railways.

Practice of Safe-ending Tubes at the Grand Trunk Railway Stratford Shops.

In shops such as those of the G.T.R. at Stratford, Ont., more attention to the proper planning of the work through the shops is required than in a small shop where the number of locomotives to be handled is small. In the Stratford shops, practically



Fig. 1.—Lifting Tubes to Rattler.

all the locomotives on the Middle and Southern divisions and a large percentage of the Northern division, are handled for repairs, and when the repairs are classed as heavy, calling for the total dismantling of the locomotive, the tubes at the same time require safe-ending. Considering the

the process.

The first step in the process is the removal of the tubes from the boiler in the usual manner. The tubes as removed are placed in trucks of the form shown in fig. 1, these trucks being mounted on a platform in front of the locomotive smokebox, where the tubes can be easily handled without the operator who is removing them, moving from the one position. The truck, loaded with the complete set of tubes from one boiler, is picked up by the travelling crane and carried down the shop to the safe-ending department, and deposited on the plated floor.

Down the centre of the shop, on one side of the safe-ending department there is the built up structure to the right in fig. 1, which houses the tube cleaning apparatus. The tube truck on the plated floor is run along on to the track in fig. 1, a jib crane operating over its whole length.

There are two tube cleaners, of the box rattler type, with supporting trunnions at the level of the platform on the right. There is a box structure closing in the rattler, and on the platform side of this housing are doors for the insertion of the tubes in the opening in the rattler. On to this platform is raised the set of tubes from the truck, leaving the latter on the track, the tubes being deposited in a pile. Through the door openings, the tubes are rolled, until the whole are introduced into the rattler. The doors are then closed, and the rattler put in motion, a stream of water being incidentally turned in from one of the end trunnions. This continues until the tubes are thoroughly free from scale.

After the proper period of cleaning, the rattler is stopped, with its door downwards, the latter on opening dropping the tubes into a truck placed in the box enclosure directly beneath the rattler. The door from which the tubes are removed is in the background in fig. 2, the tubes as removed being in front, to the right, in the same illustration.

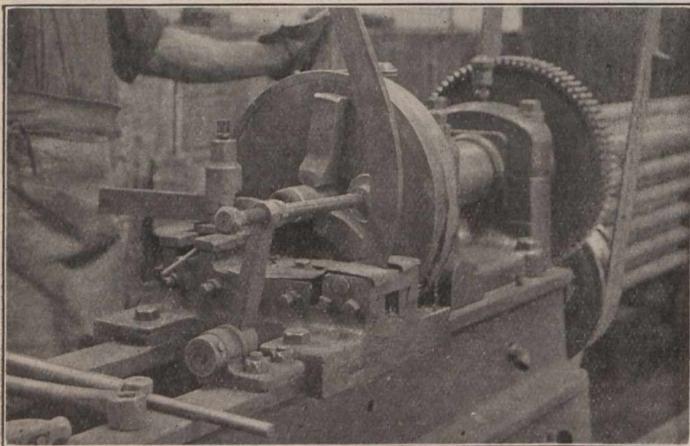


Fig. 2.—Cutting off First Bad End.

extensive mileage, and the nature of the country through which most of the company's lines operate, developing heavy traffic, the number of locomotives at all times undergoing repairs calling for the safe-ending of the tubes is large.

The safe-ending department is located in one end of the locomotive shop, adjacent to the erecting floor, from which the tubes are received. The whole floor of the machine part of this department is covered with boiler plate, for the easy movement of the tube-carrying trucks in the course of transition through the several stages of

The next operation is that of removing one of the damaged ends in the manner shown in fig. 2. This machine is located right at the outlet from the rattler, so that a minimum of handling by the operator is required. The machine employed is of the hollow spindle type, built primarily for this purpose. The tool carriage is secured in a stationary position on the lathe bed, and to the front of the tool carriage there is a swing stop, which can be swung out in line with the tube, so that the operator has a stop against which to push the tube when entering it from the other end, where

the chuck face is invisible to him. The firebox, or lightly damaged end, is the one operated on, a very short piece being removed with a cutting off tool. The cutting off tool is so ground on the end as to give a scarfed edge to the tube end. The tool is operated across the carriage by the vertical lever in the hands of the operator. The scarfed tubes are piled in another truck on the near side of the machine on leaving

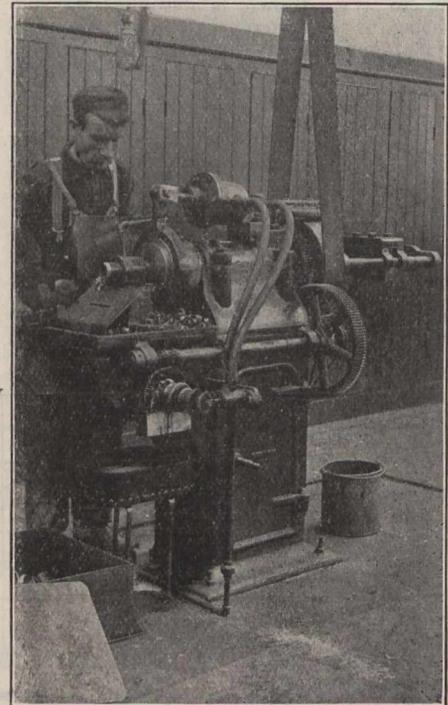


Fig. 4.—Automatic Safe-end Machine.

it. All this part of the shop is floored with plate. This machine is midway between the two rattlers, and so can handle either equally well.

In line with this last machine, and in the rear of the position in fig. 2, are located the machines for the next operation of applying

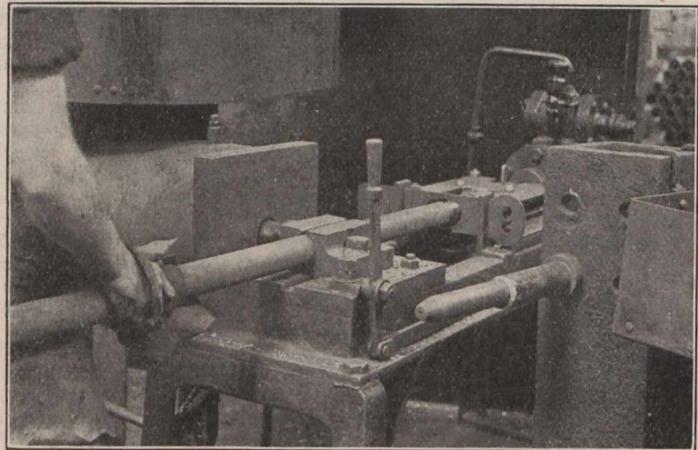


Fig. 3.—Flaring the Cut-off End.

the safe-end. This is shown in fig. 3. The truck from the last position is pushed along only a few feet into position on the left of the operator in this illustration. From this truck, they are taken one at a time and placed in the oil furnace in the left background for heating to a working heat on the scarfed end. The machine in the centre of the view is for expanding the ends to fit over the safe-end. The heated tube is placed in the vise jaws of the machine up to the cross plate, used for locating the tubes. The vise jaw to the left is operated by the cylinder, to the

plunger of which it is connected, the cylinder operating from a valve operated by the operator's foot. At the other end of the machine there is another air cylinder, connected to a crosshead in the centre. On the front face of this crosshead there is a taper pin, which is forced into the tube end by operating the lever on the front corner of the machine. This flares the end sufficiently to slip on to the scarfed end of the safe-end piece. This safe-end piece for the tube is mounted on a mandrel on the face of the stand in the right foreground, with the scarfed end out. Immediately

the rear, shown in more detail in fig 5. On the front face of the machine, attached to the other end of the worm gear shaft across the machine, before referred to, there is a slotted crank, to which is attached in any position along this slot by a clamp nut, the forward end of a connecting rod. The other end of the connecting rod is attached to a horizontal bar, guided in bearings on the front of the machine, all as shown in the foreground in fig. 5. At the rear end of this guided bar, there is an upward arm, attached at the upper end to a block through the centre of which the tube

along the back face of the machine, driven in turn from the large gear which engages the pinion on the spindle of the machine.

The operation of the machine is as follows: With the tube in position for cutting off, the cutter rises from below, severing the tube, the tool at the same time scarfing the end. The piece as cut off drops down the inclined plate in front of the steadyrest, the cutting liquid running back into the machine through the slit in the plate. At that point, the setting of the cams on the worm gear shaft causes the release of the chuck, and simultaneously the feeding

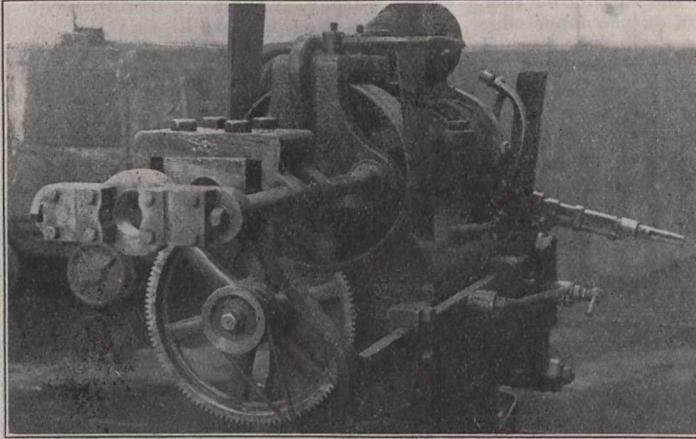


Fig. 5.—Automatic Feeding Mechanism.

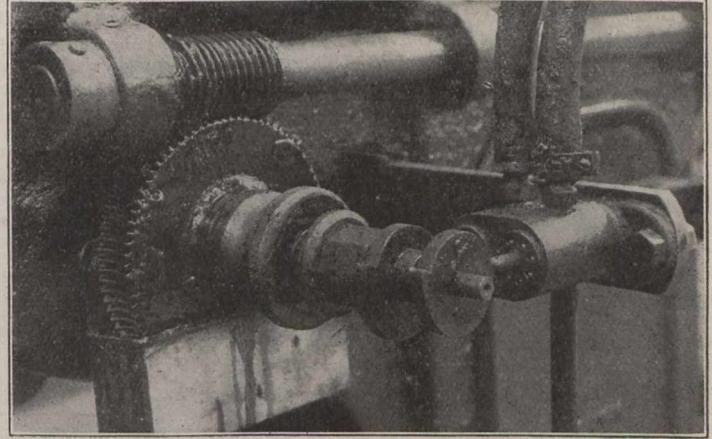


Fig. 6.—Automatic Chucking Mechanism.

on removal from the flaring operation, the still hot end is rammed on the guiding mandrel carrying the safe-end, the impact of the operator driving it on being sufficient to hold the two parts together, although the safe-end is cold. The united pieces are placed on another truck on the right, and moved on for the next operation.

The operation of safe-ending will be interrupted for a moment at this stage to observe the manner of making the safe-end pieces. A machine for automatically producing these pieces is shown in fig. 4. In construction it closely resembles an

in the machine passes. This arm operates a clamping dog on each side of the tube, which clamps the tube in this block as the tube moves forward, but slips on the return. This is the tube feed.

The chucking of the tube is also automatic, the mechanism for the operation of the chuck being located on the rear side of the machine in fig. 4. On the top of the machine an air cylinder is pin connected at the rear to the frame. The plunger rod is attached to an arm which encircles the chuck, and by which the chuck is opened and closed. The valves

mechanism grips the rear end of the tube and feeds it through the chuck the length of stroke to which the adjustable crank on the front of the machine is set. When fed forward that amount the other cam on the worm gear shaft causes the chuck to close, the operation from that point being repeated.

Returning to the operation of safe-ending, the truck of tubes on the ends of which the safe-end pieces have been forced is moved along a little further to the position shown in fig. 7, the ends of the tubes mounted on the truck being visible to the left in the

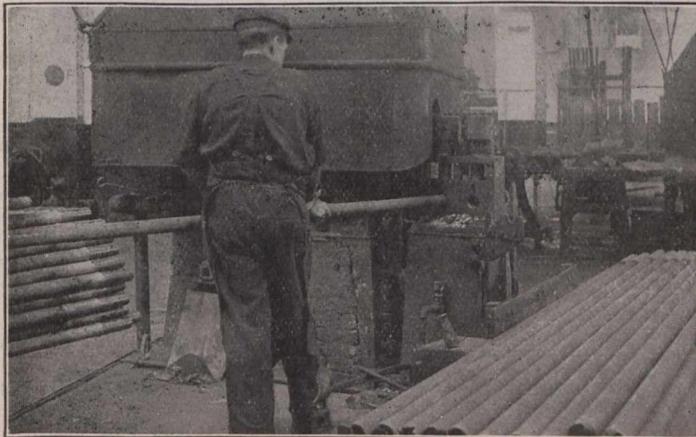


Fig. 7.—Swedging First Tube Ends.

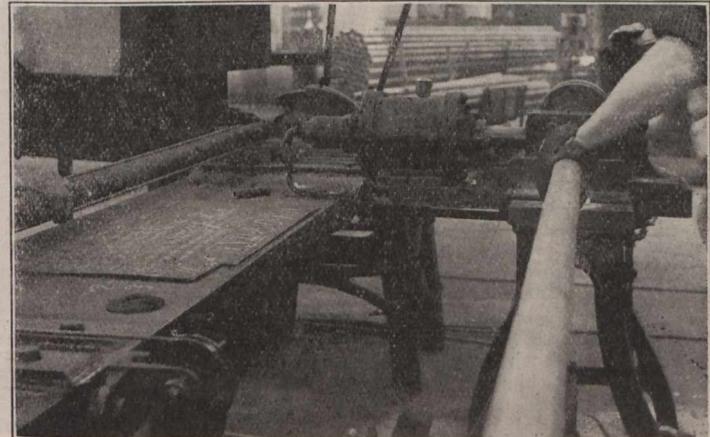


Fig. 8.—Cutting-off and Swedging Second End.

automatic screw machine, the motions on it being very similar. It is, however, a much simpler machine than an automatic screw machine, from the fact that cutting off and feeding forward are the only operations required. The stock tube is held in a hollow spindle, the front end being guided in a solid steadyrest on the front end of the machine. The tool rises from below, being forced upward into the tube at the rear face of the steadyrest by a cam on the worm gear shaft across the machine. The tube is fed forward after each cut, by the attachment guided on the bars to

for operating this chuck are shown in detail in fig. 6. To the right, an air pipe from below connects with twin valves attached to a projecting arm from the side of the machine. From each of these valves a flexible air connection leads, one to each end of the chuck actuating cylinder. On the end of the worm gear shaft are two small cams, in the plane of the valve plungers which they operate. One cam lets air into the cylinder for the closing, and on the release of that end of the cylinder, the air is let into the opposite end. The worm gear is operated by a worm from a shaft

view. Here, the end carrying the safe-end is placed in the furnace, and heated to a welding heat, when the part to be welded together is placed in position under the vibratory air hammer, the operation the operator is performing in the illustration. The hammer dies to the right of those in use for this last operation are used for swedging down the tube end for the copper ferrule used between it and the tube plate. Between these two operations, the loose scale on the outside of the tube is scraped off by rubbing the tube back and forth a few times in the cut outs in the plate

projecting from the right side of the hammer frame. This operation completes the operations on one end of the tube.

From this point the tube truck is moved some little distance further down the shop on the plated floor to a position to the left of the point in fig. 8. Here, the tubes have the other bad end heated to a working heat in the furnace on the extreme left, from which they are carried over to the saw, the table of which is in the left foreground. The tube is here placed in a cross carriage on the table, this cross carriage being counter-balanced by weights over pulleys on the front edge of the table as in the lower left hand corner of the illustration. The hot saw, revolving at a high velocity, rapidly cuts off the bad end, cutting the tube to length, the tube carriage having a gauging stop.

The tube thus cut off is passed across the machine to the machine to the right in

other end being supported in wooden blocks on a post on the rear of the carriage of the lathe, to the left of the tool post. These wooden blocks, which clamp together, act as a steadyrest. The tool post carries a cutting off tool and a marking tool, the latter to the left of the cutting off tool at a distance equal to the length of the finished ferrule. The marking tool is set back just far enough to mark the surface of the tube as the cutting off tool is through the tube. This leaves a mark for the next cut, which the operator can quickly follow, with a marked saving in time. On each ferrule being cut off, the operator supports a scraper on the end of the cutting off tool, and scrapes off the burr on the inner edge of the tube end. By this method the ferrules are quickly cut off, and the removal of the burr makes them at once usable in the firebox end of the boiler, fitting over the swedged ends of the tubes.

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

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

John L. Hodgson, Master Car Builder, Western Division, G.T.R., Port Huron, Mich., born at Simcoe, Ont., Nov. 15, 1858.

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

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

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

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

H. P. Sharpe, General Agent, Dominion

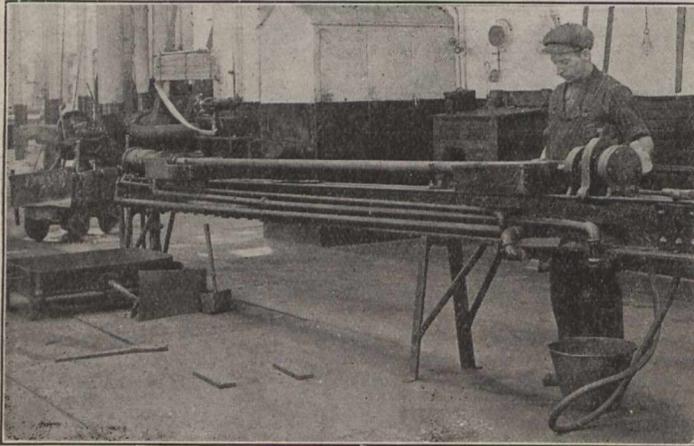


Fig. 9.—Testing Safe-ended Tube.

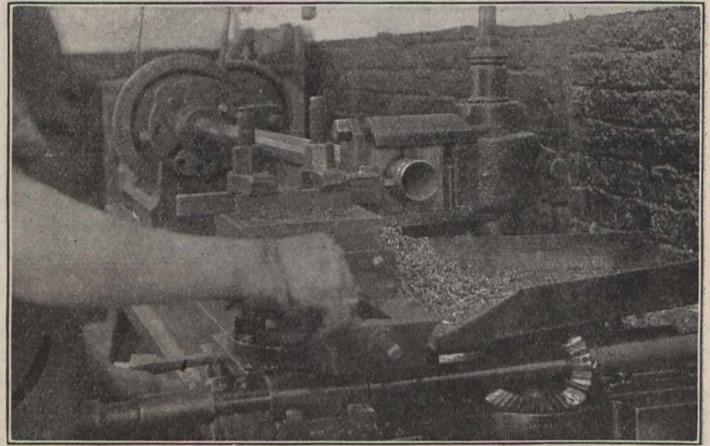


Fig. 10.—Cutting off Copper Ferrules.

the illustration, a machine similar in construction to that in fig. 3, the end of the tube being here flared. The cross cylinder clamps the tube, and the end cylinder flares the end. The balance of the tube department is in the background in this illustration, fig. 8.

The tubes, with both ends thus finished out, are ready for testing in the machine in fig. 9, located a little further along the shop. The head at the far end of the machine is stationary, but that on the near end is movable, like the tailstock of a lathe, to accommodate varying lengths of tubes. The tube is placed up against a washer on the far head, and a plunger on the near end, carrying a washer face, is forced out against that end. Water is introduced under pressure through an opening in the centre of each end washer plate. It is customary first to introduce the water from the far end before closing up the near end, as this forces all air out of the tube, the bed of the machine being on an upward incline toward this end. On the filling of the tube with water, this end, which forms a differential cylinder, is closed, and air pressure introduced behind the large end of the differential piston, producing a water pressure of about 300 lbs. in the tube, the gauge on the wall to the rear indicating that pressure. Both valves are on the front of the machine bed in the position assumed by the operator. To save time in draining out the tube after testing, the large box built up of boiler plate is placed at the far end of the machine, the tubes being drained therein before placing on the truck for removal to the erecting shop, where they are again placed in the boiler.

The copper ferrules used in the firebox end of the tubes are cut off in the manner indicated in fig. 10. A long copper tube is chucked in the lathe head to the rear, the

Birthdays of Transportation Men in November.

Many happy returns of the day to—

J. O. Apps, General Baggage Agent, C.P.R., Montreal, born at Tara, Ont., Nov. 9, 1877.

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

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

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

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

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

F. Conway, acting General Superintendent, Kingston and Pembroke Ry., Kingston, Ont., born at Ernestown, Ont., Nov. 19, 1850.

A. S. Cook, Inspecting Engineer, National Transcontinental Ry., Ottawa, born at Penobscus, N.B., Nov. 20, 1873.

W. L. Crighton, Advertising Agent, Intercolonial Ry., Moncton, N.B., born at Derby, Eng., Nov. 9, 1871.

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

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

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

Express Co., Toronto, born at Brockville, Ont., Nov. 24, 1864.

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

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

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

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

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

C. G. Washbon, Resident Engineer, C.P.R., Winnipeg, born at Morris, N.Y., Nov. 27, 1887.

Proposed Electrification in Chicago.—A conference of operating officials representing 30 railways and engineering staff of the Chicago Association of Commerce committee on smoke abatement and electrification was held recently to consider the mechanical difficulties presented in substituting electrical for steam operation. Each representative was requested to present his own views on the subject, based upon the operating conditions on his lines. In discussing the question of using a third rail in yards some of those present said that the network of track is already so complicated that the addition of an extra rail would increase materially the danger to yard employes and at the same time decrease the efficiency of the service. The use of the overhead trolley instead of third rail was thought also to be unsatisfactory as it would endanger the life of men on the roofs of cars.

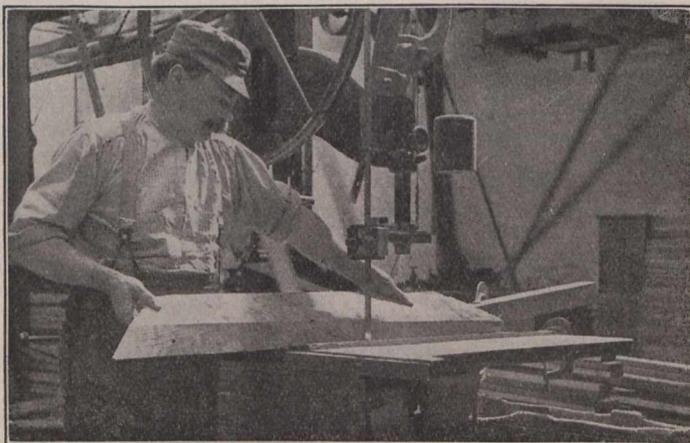
Railway Mechanical Methods and Devices.

Sawing Pilot Slats at Grand Trunk Railway London Shops.

A very simple method of forming the horizontal slats that compose the body of the standard G.T.R. pilot is in use at the company's shops at London, Ont., in the woodworking department. The slats of wood are finished first on all sides, and the ends trimmed off at an angle to fit the backing and the central ridge of the pilot. The difficult part of machining the slats lies in the forming of the front bevel edges.

In these shops, this part of the work is performed on the band saw in the manner illustrated. Across the table to the right of and parallel to the saw, there is clamped a guiding strip of wood. A few inches to the left of the saw, there is clamped another piece, this latter being tapered from the front to the rear. The point of this wedge piece is in a line across the table at right angles to the saw, so that when the end of the slat is laid on the table the end will be level, and just ready to ascend the slope of the wedge. The cut of the saw thus enters at right angles to the face of the slat.

As the cut is pushed forward, the front end of the slat, which continues to rest on the wedge piece, is gradually raised, tipping the slat up on edge against the guiding strip. This tipping effect increases to the end. Experiment determines how far off to the left the outer end of the wedge should be located to give the right amount of tipping effect. Each one of the slats in the height of the pilot has a different amount of edge cut off to give the smooth sloping surface to the face of the pilot, each of the slopes being a matter of experiment. The slats for one side of the pilot are made this way, and the corresponding slats for the other side are made by reversing the



Sawing Pilot Slats to Shape on the Band Saw.

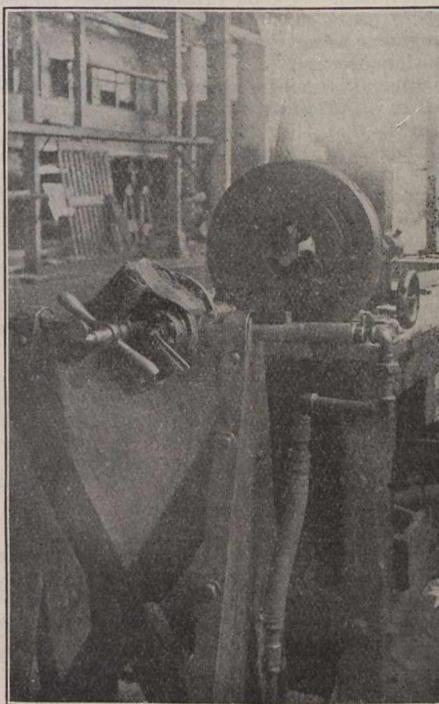
positions of the guiding strip and wedge.

It is customary to make up several pilots at a time, so that the operator can make up that number of slats of each size at a setting, the location of the wedge for each size being known.

The British Columbia Government has resumed possession of some 4,000,000 acres of land, which had been granted in aid of the British Columbia Southern Ry. and the Columbia and Western Ry. The lands have been acquired from the C.P.R., which took over the rights and properties of the two companies named at 40 cents an acre.

Motor Driven Pipe Threader at Grand Trunk Railway Port Huron Shops.

A new use for the air motor is shown in the accompanying illustration of an air-operated pipe threading machine at the G.T.R. shops at Port Huron, Mich. The pipe threading machine is of a standard make, of the small kind designed for hand



Motor Operated Pipe Threading Machine.

operation on a supporting bench, conveniently located to the job. In this case the motor is mounted on a bench in the pipe fitting department.

The air motor, connected to the driving pinion of the pipe cutter, is mounted on a supporting carriage in front of the table end, in a permanent location. This supporting frame is built up of wooden scantling, meeting at the top, in which there is a recess on both sides for the reception of the handles. There is a permanent air connection to the end of the handle, the intake of the motor, controlled in the usual manner with the handle valve. This has been

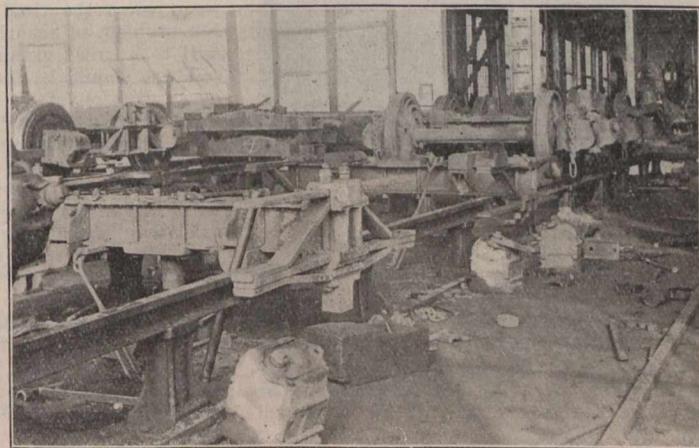
found to be a most useful appliance around the shop for cutting the threads on pipe, and is naturally much more rapid than operation by hand.

Tender Truck Repairs at the Grand Trunk Railway Stratford Shops.

In the G.T.R.'s locomotive repair shops at Stratford, Ont., R. Patterson, Master Mechanic, the tender department is in a wing of the large locomotive shop. The various repair tracks in the tender department are entered from a travelling table down one side of the shop. The tracks at the end from the locomotive shop are for the tender tanks while under repair, the tracks at the other end being set aside for the truck repairs incidental thereto. The two tracks set aside for this purpose are shown in the accompanying illustration, where it will be noted that instead of having the tracks on the level of the floor, as in the usual repair shop, they are raised about a foot or so above the ground in order to make the tracks easier of access for the mechanics, requiring no bending over.

The trucks, as they come from under the tenders at the end of the shop to the left in the illustration, are carried along to the two tracks shown, which are located in the end of the locomotive shop, being handled by a 25 ton electric travelling crane, which picks them up and places them on the elevated tracks, where they are easy of access by the workman.

The tracks are raised on short cast iron standards, ribbed at the four corners for rigidity. The rail base fits in the recessed top, into which it is secured. The truck can be dismembered on these elevated tracks, and the bolster is even then, resting as it will be on the elevated tracks, in a convenient working position.



Elevated Tracks for the Repair of Tender Trucks.

The Canadian Northern Prairie Lands Co. sold 320 acres during August, realizing \$4,960, or \$15.50 an acre. There remain 68,600 acres unsold.

During August, 25 employes were killed, and 53 were injured, in the course of their work in connection with the operation of steam railways in Canada. Of the fatalities, 10 were due to collisions, six to being run over, two each to being crushed by cars and to being struck by trains, and one each, to jumping from a locomotive, to a fall, to falling material, to being buried under coal in the tender presumably while same was being filled, and to electrocution.

Grinding in Throttle Valves at the Grand Trunk Railway Stratford Shops.

In the steam pipe department of the G.T.R. shops at Stratford, Ont., there is in use a rig for grinding in throttle valves, which is both effective and simple in construction, but withal a very cheap rigging to make up.

The throttle valve is held on two projecting strips of bar iron from a bench, by the two supporting lugs, bolting the valve securely into place. The valve is revolved on its double seat by an air motor attached to the upper spindle, emery and oil being introduced between the rubbing surfaces in the usual manner.

The principal feature of the device is an attachment for raising and lowering the valve, with regard to the seat, in the approved manner, in order to gain a smoothly ground in valve. On a plate, shown in the accompanying illustration on the ground below the valve, there is attached a vertical supporting bracket for the guidance of a vertical rod. The lower



Device for Grinding in Throttle Valves.

end of this rod rests on the shorter end of a fulcrumed lever, on the longer end of which the operator presses his foot as shown. The vertical rod is in two sections, telescoping each other. The upper section is a length of pipe fitting loosely over a rod, the pipe having diametral holes at frequent intervals along its length, for the adjustment of the length of the combined rod.

The rod is so adjusted for length that when the foot lever is in a horizontal position, the upper end of the rod, passing through the valve spindle hole in the lower end of the casting, touches the lower surface of the double valve. The operation then is that the operator, as the valve is revolved by the air motor, presses on the foot lever, raising the valve off its seats. This permits a flow of the oil and emery, when the valve is again lowered and the grinding is continued. This operation is repeated as long as necessary.

The lifting attachment is movable into any required position, and is not secured to the floor in position under the valve. This makes the attachment of use in similar positions elsewhere.

The Handling of Sections and Section Foremen.

Following is the report of a committee of the Roadmasters and Maintenance of Way Association of America, presented at the annual meeting at Buffalo, N.Y., recently:—

HOW TO SECURE FOREMEN.—It is agreed that, to secure competent foremen, good wages must be paid and to secure student foremen wages should be paid sufficiently in excess of section laborers to make it attractive to young men with fair education, ambition and ability, to induce them to stay in the track department, rather than work on farms or other places where wages may be higher but steady employment uncertain and the chance for promotion obscure.

Student foremen should be placed with the most progressive section or yard foremen so that they may learn all the latest methods and be taught in the most up to date manner how to acquit themselves when promotion comes to them and they are thrown on their own resources. It goes without saying that section or yard foremen, so designated as teachers of prospective foremen, will endeavor, out of personal pride and with characteristic loyalty to their company, to turn out men who will be a credit to their instructors. These men should be paid 25 cents or more a day, in addition to the pay of a regular track laborer, for a day of 10 hours and they, as well as all foremen, should be paid for overtime over the specified working hours, the same as other employes.

If after working one or two years on a straight section, student foremen are moved into a terminal or yard, they will get experience in switch work, heavy track repairs, and work of this character, and an insight into many phases of track work not encountered on sections, thus making them much more resourceful when the time comes for them to assume control of their own sections. With proper training, as outlined, and with the prospect of inviting wages as a section, yard or extra gang foreman, when the time for promotion comes, the problem of securing competent foremen will to a great extent be solved.

There should be four student foremen on every division of 25 sections and additional ones where the number of sections exceeds this. A yard foreman should receive more wages than a section foreman and it should be considered a promotion for the latter to be placed in charge of a yard. The pay of an extra gang foreman should be larger than that of a yard foreman and men selected to handle extra gangs should be next in line for the position of assistant roadmaster. It should be the settled policy of every railway. All promotions from that of student foremen and extra gang foremen to roadmaster should be held before the wide awake, ambitious man as an inducement for him to work in the maintenance of way department.

A merit system is also recommended, whereby due credit can be given to foremen in every capacity for alacrity, resourcefulness and initiative in cases of emergency, together with a full appreciation of their duties and responsibilities both night and day. The position of foreman in the track department would then be desirable.

LENGTH OF SECTIONS.—Where the equivalent mileage basis of designating length of sections is not used, a section of 4 tracks should be 2 miles long; 3 tracks, 2½ miles; 2 tracks, 3 miles; and 1 track, 5 miles. Equivalent mileage is usually figured on the principal railways at the rate of 1 mile of main track to a mile; 2 miles of main passing siding to a mile; 3 miles of

spur, or commercial track, to a mile; and 15 switches to a mile. In yards, equivalent mileage will regulate the territory which a foreman with a given number of men should have under his jurisdiction.

ORGANIZATION OF SECTION.—Each section should consist of a foreman and one man to each mile of track in summer and one man to two miles of track in winter, when conditions are normal. In severe weather, however, when ice forms and snow storms prevail, a foreman should be allowed to use his judgment in having extra men to keep switches clean and tracks open and to assist wherever necessary in order to keep traffic moving from the physical standpoint of operation in such cases. Each section foreman should have an assistant for every 10 men, the assistant to work the men and prevent them from getting in the way of trains.

The word "section" embraces all main line tracks and main line switches, sidings, freight house tracks, etc., at all way stations and through large yards; yard sections to include all tracks of every description outside of main line switches.

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 (Eastern Lines), G. C. Ransom, Canadian Express Bldg., Montreal.

CANADIAN FREIGHT ASSOCIATION (Western Lines), W. E. Campbell, 502 Canada Building, Winnipeg.

CANADIAN RAILWAY CLUB, J. Powell, St. Lambert, Que. Meetings at Montreal 2nd 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, R. W. H. Smith, 9 Beaver Hall Square, Montreal.

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

NOVA SCOTIA SOCIETY OF ENGINEERS, A. R. McCleave, Halifax, N.S.

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

WESTERN CANADA RAILWAY CLUB, W. H. Rosevear, 25½ Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.

Proposed Changes in M.C.B. Rules of Interchange.—The Master Car Builders' Association has recently taken a special letter ballot of members on proposals to abrogate the rules which penalize the delivering line for owners' defects, and to add a direct 10% to the total labor and material charges as shown on the monthly bills. Both of these proposals are recommendations of the arbitration committee, and have been approved by the executive committee.

Design, Construction and Inspection of Locomotive Boilers.

Following is the conclusion of the American Master Mechanics Association Committee's report on this subject, the first portions of which were published in Canadian Railway and Marine World for September and October:

KELLEY METHOD OF STAYING FLUE SHEETS.—Twelve members advise that they have had no experience with this method. Two members that have used this method advise that no advantage was found and have removed the same. Another member reports that he used five stays in small

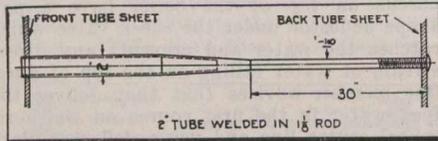


Fig. 27.—Method of Staying Flue Sheets.

boilers containing about 200 flues, and three stays in larger boilers, and believes that it is good practice and tends to prevent flues leaking. Another member is experimenting, as shown in fig. 27, but cannot give any information as regards the performance.

TUBE.—It is the consensus of opinion of those reporting that 2 in. tubes are preferred, until the length of tube exceeds 16 ft., when 2 1/4 in. tubes are preferred.

Taking into consideration that a 2 in. tube will give a greater amount of tube heating surface, and the cost of maintenance is less, and less damage is done to the tube sheets in working over flues, your committee suggests that further consideration be given to the use of 2 in. tubes in lengths greater than 16 ft.

THICKNESS OF FRONT TUBE SHEET.—Half inch and 5/8 in. being used by the majority of the members who replied to the circular. One member uses 9-16 in. and another uses 3/4 in.

THICKNESS OF BACK TUBE SHEET.—One half in. tube sheets are being used by 16 of the members. Two members use 9-16 in. and one uses 5/8 in. All but three report having more or less trouble with flue sheets working up on account of frequently working on the flues, causing the flue sheets to crack across the top of the flange of the sheet.

WIDTH OF BRIDGE in the front tube sheet varies from 1/2 to 15-16 in.; 3/4 in. is used by the majority of members. Width of bridge in the back tube sheet varies from 11-16 to 15-16 in.; 3/4 in. is used by the majority of the members.

FLUE SETTING.—Two members advise that they had tried soft iron ferrules with very little success. One member advises that they had a limited experience trying to set flues in the back flue sheet without any coppers, but found that it did not work satisfactorily, and that they are now experimenting with a combined copper and iron ferrule, but have not had these under test long enough to make any report. One member advises that they use soft iron shims on the front flues to avoid excessive expanding.

SETTING OF FLUES IN THE FRONT Tube Sheet.—The consensus of opinion of the roads reporting is that tubes should be rolled in the front tube sheet without any ferrules, and 10% of the flues, equally distributed, should be beaded with a beading tool.

TUBE SETTING IN BACK SHEET.—Figs. 28, 29 and 30 show the practice followed out by some of the members in setting the tubes, which are giving good results. Fig. 31 shows application, maintenance and removal of flues in locomotive boil-

ers as used by three members. Tube setting of this kind gives a large bridge, good circulation of water at the back tube sheet and at the same time the inside of the flue is reduced at the end so that any cinders which will pass through the swaged end will not clog the flues. The instructions in connection with this plate are as follows:

PREPARING FLUE SHEETS.—Holes in new firebox flue sheet shall be 1 7/8 in. diameter. Holes in new smokebox flue sheet shall be 2 1-32 in. diameter. Holes in old flue sheet more than 1-32 in. out of round must be reamed, reamer A, fig. 31. Inside and outside edges of flue holes in both sheets must be slightly rounded to remove sharp edges.

TABULAR STATEMENT OF FLUE Setting Method.—

Back End.	Front End.
Operation.	Shim.
Expand copper ferrules.	Roll.
Drive in flues.	Dudgeon roller by air.
Roll.	
Bead and caulk.	
Expand.	

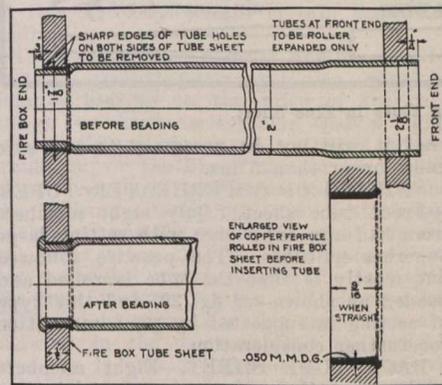


Fig. 28.—Method of Setting Flues in Flue Sheet.

Tool Used.
 Prosser expander.
 Sledge and pin with collar.
 Dudgeon roller by small air motor.
 Beading tool in air hammer.
 Prosser expander.

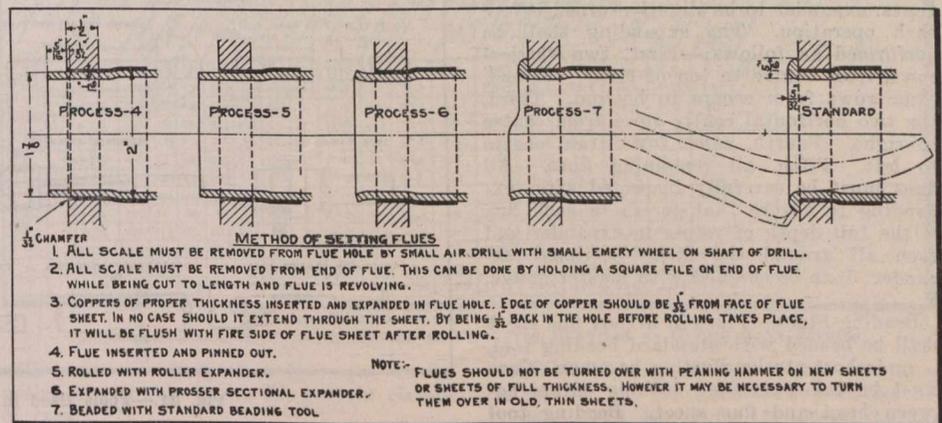


Fig. 29.—Method of Setting Flues in Flue Sheet.

Flue sheet holes (A, fig. 30).—Care should be taken that holes in flue sheet are true, smooth and free from burrs and sharp edges. It is desirable that the flue hole have a fillet especially on the water side, of about 1-32 in. radius. A sharp edge around the hole often cuts the ferrule in two, even cutting into the flue. The diameter of the flue hole should be the same as outside diameter of flue plus 1-32 in.

Copper ferrule (B).—For New York this should not be far different from no. 16 b.w.g. In old flue sheets when the flue

holes are large it is desirable to use enough heavier ferrules to bring the internal diameter of ferrule when expanded into flue sheet to 1/8 in. less than flue diameter. The ferrule should be set into flue hole flush with fireside and expanded into place with Prosser expander (C).

Swaging Flue (D).—Great care should be taken to give the swage the right length and to have it terminate in as abrupt a shoulder as possible. The flue, after it is swaged, should be annealed and the scale removed from the portion entering the sheet. Grinding this scale off by machine is desirable, but in the absence of a grinder the removal of the scale with a file will answer. The flue when driven into the sheet (E) should extend 3-16 in. through the sheet on the fire side.

Rollings (F).—The front end of the flues having been shimmed, when necessary, both the back and front ends are rolled with the dudgeon or other suitable roller, with proper appliances they may be safely and economically rolled by air; the rolling of the back ends must be done by an experienced boilermaker, and the motor must not be larger than a Thor no. 22 or its equivalent.

Beading (G).—This may now be done with a beading tool in an air hammer. Do as little hammering with the beading tool as possible, and do not work bead to a feather edge, but leave as much metal as possible for future caulking.

Expanding (H).—Particular stress should be placed upon this, the most important step in the flue-setting process. Care should be taken that the flue shoulder when heavily expanded bears snugly and firmly against the flue sheet. Hammer not to exceed 4 lbs. after prossering the front ends then bead a sufficient number for safety which finishes the flue setting.

Back ends of flues or safe ends when used in back flue sheet must be cut off square in pipe machine and burr removed by reamer.

Wheel-flue cutters must not be used on account of leaving a heavy burr which splits when beading over.

Air motor and roller are only to be used on initial setting. In reworking flues, the Prosser expander only is to be used, and rollers must not be used, as they force the

bead away from the sheet.

Applying Copper Ferrules.—Copper ferrules 1 3/4 in. inside diameter, 1/2 in. long, .095 in. in thickness shall be used in firebox flue sheet only. Ferrules shall be secured in place with straight expander, B, fig. 31, taking care that shoulder of expander is tight against flue sheet, which shall bring edge of ferrule 1-32 in. from fire side of sheet.

Preparing Flues.—Flue safe ends should be 5 ins. long, except that new iron flues shall have safe ends 4 ins. long, and when

shall be placed in back flue sheet with a these flues are first removed the 4 in. ends will be cut off completely and 6 in. ends applied, after which 5 in. ends should be used. Flues shall be swaged as at D, to 1 11-16 ins. outside diameter by 3 ins. long, including taper at firebox end, for new work; for old work, just enough to enter the copper ferrule. All scale must be removed from swaged ends of flues before application. Smokebox end of flues shall not be more than 1-32 in. less in diameter than holes in the smokebox flue sheet. If necessary, liners may be used.

Fastening of Flue in Flue Sheet.—Flues

beading tool shall be used to bring beads tight to sheet.

Sectional expanders and beading tools must be kept standard by frequently comparing with standard gauges. Any beading tool not conforming to gauge must be sent to principal shop for repairs; these tools must not be repaired at any other shop.

All shops and engine houses must be equipped with standard gauges. All gauges will be made where master gauges are kept.

To remove flues, use flue cutter, P, for the front end, cutting off flues as close to the front flue sheet as possible. Back ends should be split as little as possible, so

surging when making quick stops.

Your committee has no recommendation to make in regard to the use of baffle plates.

Seventeen members deliver feed water to boiler in the first course on the horizontal centre line. The distance from the front flue sheet varies; the minimum distance is 22 ins. and the maximum 6 ft. Five members advise that they deliver feed water to the boiler through the top as well as from the side. One of these members advises that they have never been able to find any particular improvement which the top check has over the side check. Two of these members prefer the water to be fed into the boiler from the top. Boilers having the checks on top of the boiler have a pan shape deflector under the check valve which catches the water and prevents any direct stream of water falling on the top of flues. One member advises that they deliver the feed water in the first course on the horizontal centre line and use a deflector plate placed a short distance away from the boiler course. This is to direct the water to the bottom without striking the tubes. Four members have an attachment on the inside of the injector check to deliver water upward away from the tubes. One member advises that in addition to circulating water from the horizontal line of the boiler they have some locomotives with the delivery pipe passing through the back head, extending from 3 to 6 ft. from the front tube sheet, and the end of the pipe set to deliver water towards the side of the shell; the end of the pipe is submerged. Your committee has no recommendation to make in regard to any particular location where the water is to be delivered to the boiler, as any of the above arrangements seem to give entire satisfaction.

AUXILIARY DOME OR MANHOLE Cover to Facilitate Interior Inspection of Boiler.—One member advises that they provide an auxiliary dome, or manhole, for interior inspection of boiler. The size of manhole is 15 ins. in diameter, located a short distance ahead of the back flue sheet.

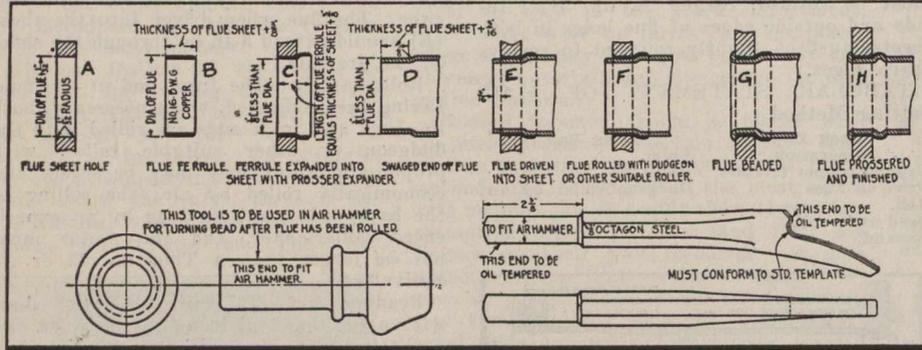


Fig. 30.—Method of Setting Flues in Flue Sheet.

bar, E, and project 1/4 in. through the sheet. Gauge, F, shall be used in checking location of flues. Flues shall then be fastened at firebox end with straight sectional expander, G. While flue is being fastened it may be held in place at front end, using bar, E. Straight sectional expander shall be checked with master gauge, H, fig. 8. Before using sectional expander, and in order to obtain exactly the proper length of flue for beading, flues may be rolled lightly to fasten them in sheet with roller expander, O. After all flues are fastened they shall be flared at firebox end, using flaring tool, N, and long stroke riveting hammer.

Expanding Flues.—Flues at firebox end shall be expanded with sectional expander, J, and long stroke riveting hammer. Roller expander must not be used. Pin shall be driven into expander until flue is solid against flue sheet. This must be done three times, expander to be slightly turned before each operation. The expanding shall be performed as follows:—First, two vertical rows, from centre to top of sheet. Second, same rows from centre to bottom. Third, the two horizontal centre rows from centre to right. Fourth, same rows from centre to left. Fifth, all remaining flues. All flues must be carefully inspected after expanding to assure that recess in each flue is the full depth of recess in expander and even all around the flue. Sectional expander, J, to be checked with master gauge, K.

Beading Flues.—Flues in firebox flue sheet shall be beaded with standard beading tool, L, and short stroke riveting hammer. Care must be taken so that nothing enters between head and flue sheet. Beading tool must conform accurately to master gauge, M, at all times. Smokebox end of flues shall be tightened with flaring tool, N, before rolling takes place. All flues in smokebox end shall be rolled with roller expander, O.

Flue Maintenance.—The firebox end of flues in service must be expanded at regular intervals with sectional expander, J. This work shall be done when boiler is empty and all flues thoroughly cleaned out. Flue leaks in the firebox must be stopped with the sectional expander and not with roller expander nor beading tool. If beads are slightly away from flue sheet, standard

that it will not be necessary to use safe ends longer than 5 ins.

SETTING OF SUPERHEATER TUBES.—Front tube sheet. Only eight members have had any experience with setting large superheater tubes. The practice followed out mostly is that the tube is rolled and beaded as shown on fig. 32, and this type of setting is suggested by your committee for further consideration.

BACK TUBE SHEET.—Eight members advise that they use copper ferrules; one member who omitted copper ferrules is having good success with this method.

The consensus of opinion of the roads

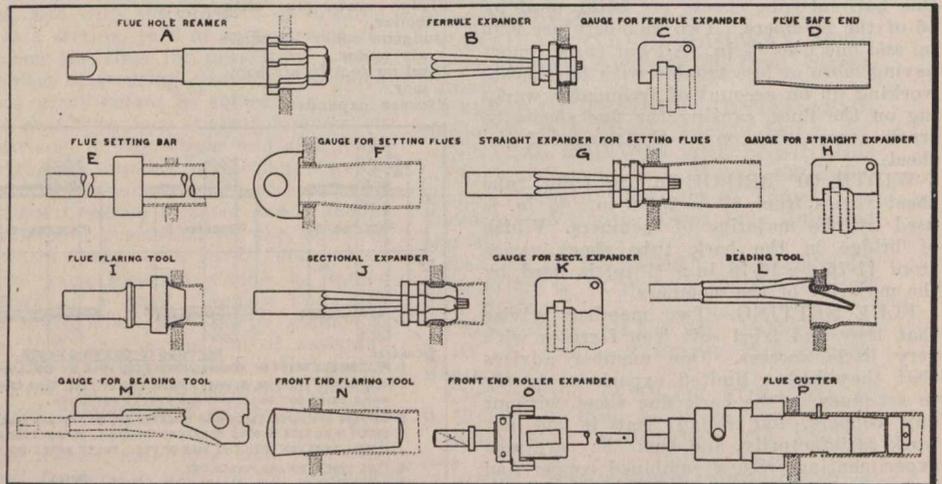


Fig. 31.—Tools Used in Preparation of Flue Sheet.

reporting is that the type of setting shown on fig. 32 is preferred, and your committee suggests this setting, except that the copper ferrules should be no. 13, .095 in. thick, instead of no. 16, .065 in. thick.

CIRCULATION OF WATER.—Your committee took up the question with the members whether any of them employed any special feature of design to facilitate circulation of water. We find that no member has any special design for this purpose. Four members advise that they use baffle plates in the boiler shells, located ahead and rear of the dome. This is to prevent, as much as possible, the water from

This is submitted for your consideration, as it makes inspection of the interior of the boiler possible without removing the throttle standpipe and dry pipe. One member is using larger dome in new construction to accomplish the same result.

SURFACE BLOW OFF COCKS.—Three members use surface blow off cocks. One of these members has discontinued the use of same, the other two members using surface blow off cocks have located them on a line with the second gauge cock, and advise that they get good results from the use of both the blow off cock and surface blow off cocks by getting rid of the mud

and scale by blowing the boilers regularly.

LOCATION OF BLOW OFF COCKS.—We find there is no uniform practice in regard to the location of blow off cocks. Two members advise that they use four or more, which are located one in the throat sheet, one or more in the side water legs, depending upon the size of the boiler, one in the belly of the boiler near the throat sheet, and in some cases additional blow off cocks in the belly of the boiler at the centre. One of these members advises it has been found by using a sufficient number of blow off cocks and insisting upon their use at regular intervals the amount of boiler washing has been cut down considerably, as well as giving greater life to the flues. Another member advises that they have been ex-

For the consideration of the members of the Association in this report you will find a tabulated statement showing the different sizes of fireboxes, as well as a number of tubes and size of cylinders that the differ-

ent members reported as giving good service for passenger, freight and switching service.

Additional illustrations are given on pages 548 and 549.

Suggestions and Deductions From Steel Passenger Cars.

By A. Copony, Chief Draughtsman, Car Department, G. T. R., Montreal.

The first portion of this article was given in the Canadian Railway and Marine World for October.

COST AND WEIGHT.

The cost of any type of steel car will depend on the type of car, the seating capacity, the inside finish, the equipment, insulation, etc., but we must not forget that the cost of a car built of a certain material, in this case steel, will be in a sense direct proportionate to the weight of the car, and for this reason the selection of the type of the car will be of utmost importance. The selection of an economical type of section which combines the greatest strength, not forgetting shear, with the least area, will naturally keep the weight of the car body within certain desirable limits.

The avoidance of a great number of differently pressed parts will also have a definite bearing on the price of the car, and if we have to consider that a light car (avoiding, of course, extremes which would impair the life of the car for length of service), is in two ways desirable from the railway standpoint, the first being initial cost and the second and most important point being that the hauling expenses per car will diminish, despite the fact that the traction force per ton will increase for light weight cars. For this reason we are showing in the diagram that the weight of a car is also of interest to the motive power department. In the tables giving the details of steel passenger cars a column shows the dead weight of car per passenger, and although this value is fluctuating we

railway car amounts to from 1,200 to 1,700 lbs., and admitting the points of superior comfort and safety to be balanced by the poor roadbed and the weight of the power plant of automobiles we must ask the question: "Is there no possibility of getting below the automobile limits of dead weight per passenger, and is this reduction possible without sacrificing safety and comfort?" The possibility to obtain better results is certainly within our grasp and it is a matter of application to attain better results with the superior material we employ in the construction of the car today compared to the inferior bulky material of the wooden cars of yesterday.

DRAFT RESISTANCE.

Until quite recently it has always been our aim to meet the natural demand for faster and larger trains, with an increase in power and speed developed by our locomotives, until we have pretty nearly reached the limit by the natural limitations of the grate surface. The next step to take to prepare for further demands for further increase of speed or length of train, would naturally be the reduction of draft resistance per ton of dead weight.

Draft resistances are made up in the main of air or skin resistance, friction resistance in the bearings, flange friction resistances, rolling friction resistances between wheels and rails, power losses caused by unbalanced wheels, and last, but decidedly not least, slip.

Flange friction resistances are to a certain extent avoidable, rolling friction resistances between wheels and rails are un-

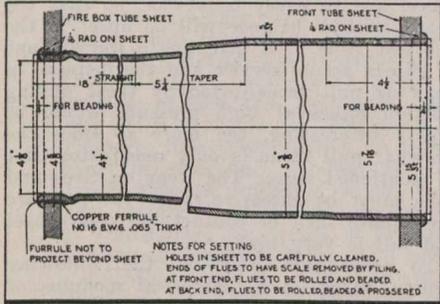


Fig. 32.—Method of Setting Superheater Tubes.

perimenting with the blow off system, by which one blow off cock in the throat sheet draws mud from along the mud ring and the barrel of the boiler by means of slotted pipes, and this has worked out satisfactorily in service. Some of the members favor locating the blow off cock right above the mud ring and another locates them about one foot up from the mud ring.

Your committee has no recommendation to make in regard to the number or where the blow off cocks should be located. The number and location of blow off cocks depends on the quality of water used.

FILLING OF BOILERS.—One member advises that they have had a number of side sheets cracked by filling through blow off cocks located in the water legs. They did not state whether they used cold or warm water. They are now filling through the blow off cocks located in the barrel of the boiler. Another member advises that they have had considerable experience with sheets cracking from the filling through blow off cocks with cold water. They now fill boilers through injectors when using cold water.

It seems to be the consensus of opinion of the members that it is most advisable to fill the boilers from the blow off cocks in the water leg, providing warm water is used. If cold water is used it should be filled through the valve on top of the boiler or through the injectors, and your committee recommends that this practice be followed out.

WASHING OUT AND FILLING UP OF Locomotive Boilers.—The reports regarding washing out and filling up of locomotive boilers and the use of blow off cocks were so at variance with what is generally considered good practice, your committee would strongly recommend the appointment of a special committee to report thereon.

LOCATION OF FITTINGS.—Gauge cocks and lower column cock should be located so that they will not come directly back of gusset plate or stay angles, and not to be located directly over arch tubes.

Figs. 3 and 4 show the type of boiler used by one of the members from an anthracite road, which is submitted for your consideration.

RAILROAD	SIZE OF CYLINDER INCHES	BOILER POLY-PHOSPHATE	LENGTH OF FIRE BOX IN FEET	WIDTH OF FIRE BOX IN FEET	DEPTH OF FIRE BOX IN FEET	NO. OF FLUES IN FIRE BOX	SIZE OF FLUES INCHES	LENGTH OF FLUES IN FEET	SWITCH ENGINES										FUEL
									DIAM. OF BOILER AT FIRST COLUMN INCHES	GRATE AREA SQ. FT.	HEATING SURFACE OF FIRE BOX - 50 FT. INCHES	HEATING SURFACE OF TUBES - 50 FT. INCHES	FLUE HEATING SURFACE	TOTAL HEATING SURFACE	FLUE HEATING SURFACE	GRATE SURFACE	GRATE SURFACE	GRATE SURFACE		30 FT. OF 14 PER EACH CU FT. OF DIAL. CH. VOL
S	18 x 24	180	71	34	7 1/2	21	14-0	50	17	117	1552	13.3	95.1	91.4	6.8	212	ESTIMATED		
M	18 x 26	180	100	42	6 1/2	61	14-6	65	31.5	152.1	2343	15.4	79.2	74.5	4.83	292			
G	18 x 26	175	108	40 1/2	6 1/2	60 1/2	11-6	65	30 1/2	140	1417	10.1	51.6	46.9	4.6	182			
E	18 x 26	175	108	40 1/2	6 1/2	60 1/2	15-0	63 1/2	30.2	158.4	1860	14.3	66.0	61.7	4.3	253			
P	20 x 26	180	105 1/2	39 1/2	47	34	11-7 1/2	67 1/2	67.7	150.6	1572	10.4	25.4	23.2	2.2	187.3			
O	20 x 26	190	98	40 1/2	6 1/2	67	12-9 1/2	66	17.4	148	1772	11.95	70.1	64.7	3.4	203			
C	20 x 26	180	100 1/2	42	6 1/2	63 1/2	11-0	66 1/2	31.5	152	1600	10.3	55.6	50.8	4.82	205			
B	20 x 26	180	110	41	7 1/2	64 1/2	11-0	68 1/2	34.1	194	1798	9.27	58.4	52.7	5.7	201.5			
Q	20 x 26	200	84	66	7 1/2	74	11-0	80	38.5	169	2286	13.5	63.8	59.4	4.58	240			
F&N	21 x 28	180	78 1/2	65 1/2	6 1/2	67 1/2	16-0	68 1/2	32.6	136.9	2703	19.78	87.2	83	4.13	252.9			
M	22 x 24	205	90	66	6 1/2	53 1/2	11-0	67 1/2	41.25	155	1600 1/2	10.3	42.6	38.5	3.76	166			
A	20 x 26	180	78	78	57	57	13-4	63	39	143	2112	14.8	57.8	54.2	3.67	258			
T	18 x 24	180	82	40 1/2	70	67	11-10	60 1/2	22.99	172.9	1274	9.96	58.6	53.3	5.34	183			

Passenger Locomotives.—Dimensions of Fireboxes Reported as Giving Good Service.

will have to admit that it ought to be within reasonable limits for certain classes of cars.

In looking back upon the history of transportation we find that a horse drawn carriage will weigh about 1,500 to 2,500 lbs., seating at an average four passengers and a driver, which brings the dead weight per passenger from 300 to 500 lbs. This vehicle will move at a speed of 6 to 8 miles an hour over a roadbed not comparable to the worst kind of railway track. An automobile, weighing 5 tons, seating 7 passengers, and containing its own power plant, moving with almost the same average speed as a passenger train over a far inferior roadbed compared to a track, will bring the dead weight per passenger to 1,428 lbs. The dead weight per passenger of a steel

avoidable and a reduction of this resistance cannot as yet be considered possible, although there are some products on the market that claim to overcome this trouble of flange friction resistances to a certain extent. The power losses by unbalanced wheels, although small, could be avoided and the effect of unbalanced wheels on tires shall be here entirely neglected.

Next in importance is the question of skin friction or air resistance. Leaving all theories of wave lines for passenger trains unconsidered, the following theory is advanced by scientists: A smooth surface offers more resistance, in form of skin friction, to an air current than a comparatively rough surface, because air is held in the cavities of the rough surface for a certain length of time, thus only permitting

the high spots of the surface to hit the passing air, and as the friction between air and air is less than between air and a smooth solid body the resistance of rough surfaces is smaller. It would be worth while to put this theory to a practical test on railways, but it is a question if it could be used to advantage, since a rough surface offers better opportunities for dust and soot to settle and cling to the car, and is harder to dislodge in the cleaning yards, than from smooth surfaces, some advantages could be derived in the general appearance of the car, since it is impossible to prevent slight buckles with even the very best of care and the use of so-called "patent level" material, which are shown up by a glossy coat of varnish, which defect could be effectively covered by the use of a dull finished surface.

Bearing friction, one of the main factors of train resistance, is one of the points that was apparently neglected until quite recently. We must concede, of course, that a lot of improvements have been made in the use of antifriction metals, but the main issue, the conversion of gliding friction into rolling friction, which would signify a con-

ceded that the results derived from roller bearings were favorable when the cars were run at low speed, the draft resistance at higher speeds was increasing rapidly and exceeded in some cases that of gliding friction bearings. As to these objections much can be said that will put the roller bearing in a more favorable light for consideration.

Heat treatment of special high grades of steel, and the use of vanadium in the manufacture of steel, has made the rollers tougher and harder, so that they can be subjected to higher pressures with impunity.

End thrust bearings were designed to take care of the end thrust of axles, and it can be only a question of time and experiments until a roller bearing for cars will be evolved that will meet all requirements, so that the saving in drawbar pull will more than counterbalance the extra expense of roller bearings.

Experiments were made by Prof. W. P. Graham, of Syracuse university, in 1905, in which the merits of roller bearings were clearly demonstrated by the power consumption of electric street cars equipped with roller bearings and without roller

in all those places where the power is limited has been proven by the use of these roller bearings in harvesting machinery, and this is still more surprising since we know that the working conditions of agricultural machinery are worse than those of a truck in motion.

One other factor in making up our drawbar resistance is slip. The percentage of slip is varying and increases with the difference in diameters of mated wheels on one axle. Although all our railway shops pay special attention to this fact, when they are turning new or repaired passenger equipment out of their shops, it is impossible to maintain equal diameters for any reasonable length of time, since the difference in finish of cut, material, carbon percentage, hardness, etc., are different in every wheel and in every brakeshoe, so that the best diameter balance will be upset in the shortest time. To investigate the amount of slip in actual service and the increase in drawbar pull necessitated by these gliding friction losses at high pressure would be highly interesting, the more so since the drawbar pull alone is only one factor that is mentioned here. The wear on tires and rails must be excessive, since the pressure per square inch of contact between wheel and rail is very high.

To prove this assertion the following figures, based on a theoretical modulus of gliding friction of 0.75 between steel and steel for exceptionally high pressures per square inch and without lubrication, are set down.

The assumption is a train, consisting of 6 cars of 60 tons weight each, the diameter of wheels differing 1/4 in., and the train being carried a distance of one mile. The foot pounds of drawbar pull to move a train at a speed of 45 miles an hour, with a pull of 17 lbs. per ton, is equal to:

$$17 \times 6 \times 60 \times 5280 = 32,313,600 \text{ ft. lbs.}$$

Revolutions of axle with a standard 36 in. wheel per mile =

$$\frac{3.1415 \times 3}{0.785 \text{ inches.}} = 559 \text{ revolutions per mile.}$$

$$\frac{32,313,600}{559} = 57,627 \text{ ft. lbs. per revolution}$$

$$\frac{57,627 \times 0.785 \times 559}{12} = 36.56 \text{ ft.}$$

$$36.56 \times 6 \times 120000 \times 0.75 = 9,875,000 \text{ with load of train.}$$

The friction loss in ft. lbs. with load of train is, therefore, equal to 30.5% of the total drawbar pull.

These figures are, of course, only based on theoretical assumptions, and are used to point a way to investigate one of our heaviest power losses. There is no doubt that the percentage of this resistance will change materially with the speed of trains and weight of cars, and further we maintain that the bulk of flange wear is caused by this difference in diameter of tires, since there is always a lot of play between journal box and journal brass, which permits a constant twisting of the axle, caused by the afore-mentioned forces, which results in the tendency to climbing of flange on rail.

The trouble of slip could be overcome by the application of individual wheels to the truck, or simpler still by the use of sleeve shafts. It would be going too far to advocate the application of this principle, for which a practical solution will have to be found to our present day trucks, but the time will come some day, when the reduction of draft resistance will become imperative, and if we could find means of reducing our draft resistance some 50 to 75% it would mean that we could haul

RAILROAD		SIZE OF CYLINDER INCHES		BOILER PRESSURE		LENGTH OF FIRE BOX		HEATING SURFACE OF BOILER		HEATING SURFACE OF FIRE BOX		HEATING SURFACE OF COMBUSTION CHAMBER		HEATING SURFACE OF WATER HEATER		HEATING SURFACE OF DRAWBAR	
A	G	D	K	P	B	E	F	L	M	Q	R	S	N	O	T	U	V
20 x 28	20 x 28	20 x 28	20 x 28	20 x 32	22 x 30	22 x 30	22 x 30	22 x 30	22 x 30	22 x 30	22 x 30	22 x 30	22 x 30	22 x 30	22 x 30	22 x 30	22 x 30

Freight Locomotives.—Dimensions of Fireboxes Reported as Giving Good Service.

siderable reduction in draft resistance, has been woefully neglected. I am sure that this neglect, or rather the lack of interest shown in taking this matter up for high class passenger rolling stock has had many reasons that could serve as an excuse. Excluding ball bearings entirely, the reasons held against the application of roller bearings were the high pressures to which rollers were subjected to, the complication of design and the high initial cost of the bearings, the possibility of an absolute locking of axle, if one of the rollers should break, and the danger resulting therefrom to the passengers, the difficulty of repairs, the end thrust that has to be taken care of, and a lot of other objections of lesser importance.

Several leading railways of the country carried on experiments in years gone by, but the result was in many instances not encouraging. The pressures on the rollers, made of impure and not properly hardened steel, were excessive, the rollers broke, the wear was excessive where pressures had exceeded a certain limit, so that the application of roller bearings was confined to light rolling stock only, and although it

bearings. These experiments showed a saving of power of about 50% by the use of roller bearings, compared to gliding friction bearings of the old type. As the testing facilities must have been of a crude kind, no definite information was given regarding the power consumption per ton mile at varying speeds, the speeds being in every case below 25 miles an hour, so that not many deductions can be drawn from this test. No special test was made to show why the resistance of roller bearings should increase more rapidly after attaining a certain speed limit than gliding friction bearings, and although we can surmise that this is caused by the crowding of rollers, which thus set up a gliding friction among themselves, taking place at double the circumferential speed of one roller, we have no confirmation by test. The use of, and experiments with, roller cages would be advisable, because they are designed to prevent such a state of affairs. Further provisions will have to be made to prevent accidents in case of breakage of rollers, and special care will have to be taken to make the journal as dust tight as possible. That the roller bearing has been a success

just twice as many cars at the same speed we are using today without any increase in power.

INSULATION.

The insulation of steel cars is, in the general opinion of most car builders, one of the few points that have been seriously neglected in the past, and of which it cannot be said that an effective solution has been applied as yet to suit our Canadian climatic conditions, but there is no cause that could prevent the solution in an effective way. As has been pointed out previously the method of insulation depends primarily on the extreme weather conditions of those parts of the country in which a certain car will be used. Heat will be transmitted by one or more or all of the three phenomena, conduction, convection, and radiation. The conduction of heat in all steel passenger cars will be naturally far higher than in wooden cars, but the losses through radiation would be naturally greater in steel cars, since more heat is transmitted by means of conduction to the outside surface of the steel car.

Luckily, however, we have means of checking the losses by radiation and conduction to a marked degree in a lot of the composite materials put on the market for this purpose. The selection of a proper insulation material is made hard by the fact that no scientific investigations into the conductivity of these composite materials are available which would aid the car builder in his task. In order to cut the loss of heat by conduction the employment of entirely closed air cells of small dimensions is suggested, the latter being built up of poor conductors of either organic or inorganic origin on basis of the principle of hollow tiles.

The process of applying insulating material to the inside and outside shell of steel cars gives poor results, since it is practically impossible to prevent the leakage of air into the large air cells between the insulations, and between the insulation and the outside or inside finish. In those cases where the application of the inside finish has to be done direct to the steel structure of the car, like carlins and posts, the use of an intermediate porous material like corkstone, asbestos, or magnesia, is recommended to reduce losses through conduction, the method of fastening the latter being a matter of design and experiments only. Even the application of light wooden strips, although better conductors than corkstone, would be recommended for the ease of applying by means of bolts inserted in keyhole slots of the posts and carlins.

INSIDE FINISH.

The question of inside finish is considered in most cases as a matter of appearance only, but, nevertheless, the proper selection of inside finish material should be based on results of experimental investigation.

The objections to wooden inside finish for steel passenger cars are weight, combustibility, splintering in case of wreckage, and warping, and there is the possibility of trouble caused by the different expansion of the outside and inside shell of cars. The use of steel for inside finish of steel passenger cars has also its disadvantages, foremost of which is high conductivity, poor resistance to denting by baggage, on account of thinness of material, the possibility of condensation, and rusting of finish from the inside out, and some minor disadvantages like buckles and dents which

show up after finish has been varnished and painted. The combination of wood and steel has been attempted by several railways for inside finish, consisting in the application of veneer to steel by means of a binder direct, or by means of an intermediate material to receive a binder, but to my knowledge these experiments have been more or less of a failure on account of the different expansion of materials like wood and steel. I do not see why wood should be combined with steel, if not for the only reason of reducing weight and the prevention of splintering in case of wreckage, for the reduction of conductivity by the application of veneers is small and does not count from the standpoint of insulation. The best material for inside finish would be sheets that combine poor conductivity with small weight, fireproof properties and a certain amount of resistance to destruction, and I think that several or all of these properties can be found in many

so that there is no particular necessity to treat the subject at all, these points being only inserted for the sake of completing the diagram at the beginning of this paper.

The latest orders of different state laws in the U. S., issued outside of the Interstate Commerce Commission rulings, bearing on sanitation, disinfection, common drinking cups, drinking water tanks, etc., are affecting all types of passenger cars and are therefore omitted.

In summing up the foregoing, railways or contractors taking the purchase or sale of steel passenger cars under advisement should investigate the merits of the turtle-back type of car over the monitor type and look into means and ways of reducing the weight and drawbar pull of this equipment, thus bringing cars to a higher economic efficiency than in the past.

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

RAILROAD	INCHES OF CYLINDER	PASSENGER ENGINES										ESTIMATED.							
		BOILER PRESSURE	LENGTH OF FIRE BOX	WIDTH OF FIRE BOX	DEPTH OF FIRE BOX	AREA OF FIRE BOX	NO. OF FLUES	LENGTH OF FLUES	DIA. OF FLUES	DIAG. BRACKET AREA	HEATING SURFACE OF FIRE BOX								
K	18 x 28	200	108	32	66	65	297	2	11'-0"	64	23.5	157	1722	10.9	80	73.3	6.68	227.5	BIT COAL
P	19 x 26	210	108	30	48	38	280	2	15'-10"	67 1/2	67.76	150.6	2044.5	13.6	32.4	30.2	2.3	254	BIT COAL
K	19 x 28	200	120	96	54	47	333	2	11'-4"	69 1/2	80	180	1887	10.5	25.8	23.6	2.25	214	BIT COAL
E	20 x 28	200	108	66	68	64	297	2	16'-0"	68 1/2	49.5	201	2490	12.4	54.4	50.3	4.07	264	OIL
E	20 x 28	200	108	66	68	64	297	2	16'-0"	70	49.5	201	2490	12.4	54.4	50.3	4.07	264	BIT COAL
P	20 x 26	210	108	96	48	40	310	2	16'-4"	68	81.63	174	2664	15.3	34.8	32.6	2.78	286	BIT COAL
M	20 x 26	200	114	66	74	62	315	2	15'-0"	65	53.5	165	2474	14.9	47.6	44.5	2.99	256	BIT COAL
B	22 x 26	200	114	66	74	62	315	2	19'-6"	74	52.2	195	3658	18.6	73.4	69.6	3.7	354	"
L	22 x 26	205	111	72	68	65	315	2	15'-0"	65 1/2	55	166	2474	14.9	48	45	3.02	230	"
Q	22 x 26	205	111	72	74	64	247	2	15'-0"	69	55.5	173	2180	12.6	42.4	39.3	3.12	235	"
T	22 x 26	180	102	64	74	60	302	2	20'-0"	64	46.5	175.4	3164.9	17.9	71.5	67.8	3.77	290	"
N	22 x 28	200	108	75	82	65	382	2	20'-0"	70	56.4	231.3	3982	17.2	74.5	70.7	4.1	340	"
N	22 x 28	200	108	75	82	65	382	2	20'-0"	70	56.4	231.3	3982	17.2	74.5	70.7	4.1	340	"
G	22 x 28	200	108	66	68	64	245	2	20'-0"	70	49.5	180	2475	13.7	53.6	50	3.64	215	"
O	22 x 28	200	97 1/2	76	63	50	305	2	20'-7"	70 1/2	50	169	3340	19.7	70.1	66.8	3.38	284	"
S	22 x 28	185	106	72 1/2	77 1/2	69	302	2	20'-6"	66	54.2	190	3303	17.4	64.5	61	3.5	283	"
T	23 x 28	200	108	70 1/2	81 1/2	68	388	2	20'-0"	70 1/2	53	209	4045.7	19.3	80.3	76.3	3.94	315	"
T	23 x 28	200	108	70 1/2	81 1/2	68	388	2	20'-0"	70 1/2	53	209	4045.7	19.3	80.3	76.3	3.94	315	"
A	25 x 28	180	88	58	84	65 1/2	335	2	18'-0"	70	51.2	163	2588	15.9	53.8	50.5	3.2	204	BIT COAL
J	23 x 30	190	108	71 1/2	77	62	317	2	21'-0"	74	54	192	3903	20.8	75.8	72.3	3.55	284	"
N	23 x 26	200	108	75 1/2	82	65	375	2	21'-0"	70 1/2	56.4	231.3	3960	18.4	67.2	63.2	4.1	290	"
F	23 x 26	200	108	75 1/2	82	65	375	2	21'-0"	70 1/2	56.4	231.3	3960	18.4	67.2	63.2	4.1	290	"
M	24 x 26	205	111	72	79	66	359	2	21'-0"	78	55	199.3	4440	23.3	84.3	80.8	3.62	341	"
L	24 x 26	205	110	72	77 1/2	67 1/2	350	2	21'-0"	76	55	199.32	4420.4	23.2	83.9	80.3	3.62	339	"
Q	24 x 32	205	120	64	81	71 1/2	218	2	21'-0"	78	70	228	3702	16.2	56.2	53	3.26	235	"
C	25 x 28	165	108	72 1/2	74	61	315	2	21'-0"	70	54.2	200	2829	14.3	55.8	52.6	3.69	190.5	"
G	26 x 28	200	120	84	92 1/2	73 1/2	495	2	20'-6"	82	70	235	5324	22.6	79.5	76	3.56	323	"
E	27 x 28	200	124	37 1/2	79	75	355	2	15'-0"	63	32.1	193	2790	14.4	93	87	6.02	161	OIL

Switching Locomotives.—Dimensions of Fireboxes, Reported as Giving Good Service.

of the composite materials made by different concerns for ceiling finish, of material like asbestos, wood pulp, or other vegetable or mineral bases made fireproof or semi-fireproof and homogenous by different patent processes. Before using any of the composite materials exclusively it will be necessary to carefully ascertain the properties of conduction, fire resistance and resistance against rotting, the latter only where the basis of the sheets is of vegetable or animal matter.

The manner of applying inside finish is also of great importance. Inside finish for steel passenger cars should be easily removable, and easily applicable to cars after they have once been fitted, so that it will be possible to inspect the insulation and the condition of the framing at least once a year for the first two or three years after the car is put in service.

HEATING AND LIGHTING.

The construction of the steel passenger car has only very little bearing on the lighting system, be this either gas or electric, and the heating system has also been solved, or nearly solved, for the wooden car, and is, therefore, directly applicable to the steel car, with the possible exception of a necessarily increasing heating capacity to take care of the bad insulation losses of some of the present day steel passenger cars.

VENTILATION AND SANITATION.

These are matters bearing in the same measure on wooden cars as on steel cars,

The Transit as an Improved Tunnel Instrument.

By G. W. McDougal, Kansas City, Kan.

There is a special instrument already on the market for measuring the cross section of tunnels. However, for short tunnels few railways are accustomed to furnish it, leaving the engineer in charge to measure his tunnels as best he can. On tunnel 3, of the Idaho Northern Ry., the regular transit with a vertical arc was converted into what answered for a tunnel instrument, by simply attaching a narrow piece of a wooden straight edge 3 ft. long, to the lower part of the barrel of the telescope and making it parallel with the line of sight of the transit.

When the vertical angle becomes too great to permit looking through the transit itself, the tape is stretched tight from the point in the tunnel roof to the axis of the transit. The three feet straight edge brought parallel to the tape will, to all practical purposes, set the transit on the line of sight for the point in the roof, enabling the correct vertical angle to be read. The vertical angle and distance for each consecutive point enables the area of the resulting triangles (and consequently the entire cross section of the tunnel) to be calculated direct.

It is announced that the Grand Trunk Pacific Ry. hotel in Edmonton, Alta., is to be named the Macdonald, after the late Sir John A. Macdonald.

Canadian Pacific Railway Co.'s Annual Report and Meeting.

Following is the 31st annual report, addressed to shareholders over the signature of the President, Sir Thos. G. Shaughnessy:—

The accounts for the year ended June 30 show the following results:—

Gross earnings	\$123,319,541.23
Working expenses	80,021,298.40
Net earnings	\$ 43,298,242.83
Net earnings of steamships in excess of amount included in monthly reports	1,104,448.79

	\$ 44,402,691.62
Deduct fixed charges	10,524,937.49

Surplus	\$ 33,877,754.13
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Deduct amount transferred to steamship replacement account	\$1,000,000.00
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Contribution to Pension Fund	125,000.00
	1,125,000.00

	\$ 32,752,754.13
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From this there has been charged a half-yearly dividend on preference stock of 2%, paid April 1	\$1,258,333.32
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And three quarterly dividends on ordinary stock of 1% each, paid Jan 2, April 1 and June 29	\$9,450,000.00
	\$ 10,708,333.32

	\$22,044,420.81
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From this there has been declared a second half-yearly dividend on preference stock, payable Oct. 1	\$1,333,901.94
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And a fourth quarterly dividend on ordinary stock of 1% payable Oct. 1	\$3,150,000.00
	\$ 4,483,901.94

Leaving a net surplus for the year	\$17,560,518.87
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In addition to the above dividends on ordinary stock 3% was paid from special income.

DETAILS OF SPECIAL INCOME FOR YEAR.

Balance at June 30, 1911	\$2,702,205.20
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Interest on cash proceeds and deferred payments for land sold	1,817,774.37
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Interest on deposits and loans ..	605,140.21
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Interest on C.P.R. 1st mortgage bonds acquired	61,612.00
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Interest from Minneapolis, St. Paul & Sault Ste. Marie Ry. bonds ..	159,720.00
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Interest from Duluth, South Shore & Atlantic Ry. bonds	100,000.00
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Interest from Mineral Range Ry. bonds	50,160.00
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Interest from Toronto, Hamilton & Buffalo Ry. bonds	10,840.00
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Interest from Kingston & Pembroke Ry. bonds	13,320.00
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Interest from Dominion Government bonds	182,500.00
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Interest from Ontario Government bonds	48,000.00
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Interest from British consols	114,569.44
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Interest from Montreal & Atlantic Ry. bonds, and on other securities	174,311.88
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Dividends on St. John Bridge & Ry. Extension Co. stock	50,000.00
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Dividends on Dominion Express stock	160,000.00
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Dividends on M. St. P. & S.S.M. Ry. common stock	890,645.00
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Dividends on M. St. P. & S.S.M. Ry. preferred stock	445,326.00
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Dividends on Alberta Ry. & Irrigation Co. stock	245,241.50
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Dividend on West Kootenay Power & Light Co. common stock	27,500.00
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Dividends on W. K. P. & L. Co. preferred stock	1,925.00
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	\$7,860,790.60
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Less—Payments to shareholders in dividends: Sept. 30, 1911; Jan. 2, Apr. 1 and June 29, 1912	5,400,000.00
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	\$2,460,790.60
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From this a dividend has been declared, payable Oct. 1	1,350,000.00
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Leaving net surplus carried forward	\$1,110,790.60
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The working expenses were 64.89% of the gross earnings, and the net earnings 35.11%, compared with 64.77 and 35.23% respectively in 1911.

Four per cent. consolidated debenture stock for £2,252,516 was created and sold, and of the proceeds £1,481,592 was applied

to the construction of branch lines; £300,000 for acquisition of steamships for Pacific coast service; £5,000 to acquire a like amount of your company's first mortgage 5% bonds; and the balance £465,924 was devoted to the acquisition of the bonds of other railway companies whose lines constitute a portion of your system, the interest of which had been guaranteed by your company. Four per cent. preference stock for £1,976,390 was created and sold, the proceeds being used to meet capital expenditures.

Your guarantee of interest was endorsed on 4% consolidated bonds of the M. St. P. & S.S.M.R. Co. for \$1,520,000, issued and sold to cover the cost of 76 miles of railway added to that company's system.

During the year 669,639 acres of agricultural land were sold for \$10,710,143, an average of \$15.99 an acre. Included in this area were 3,270 acres of irrigated land, which brought \$44.25 an acre, so that the average price of the balance was \$15.85 an acre.

Your directors consider it desirable to extend the following branch lines of railway in Manitoba, Saskatchewan and Alberta, and will ask you to sanction the issue of the requisite amount of 4% consolidated debenture stock to meet the expenditures, viz.:—Boissevain to Lauder, 37 miles; Weyburn-Lethbridge branch, 125 miles; Kerrobert northeasterly branch, 11 miles; Wilkie-Anglia branch, 4 miles; Swift Current northwesterly branch, 80 miles; Suffield southwesterly branch, 55 miles.

There will be submitted for your consideration a lease of the Kingston and Pembroke Ry., extending from Renfrew, on the company's main line west of Ottawa, to Kingston, and from Godfrey to Zanesville mine, Ont., 107.5 miles; a lease of the Alberta Central Ry., extending from Red Deer to Rocky Mountain House, Alta., 65 miles; an agreement with the St. Marys and Western Ontario Ry. Co. cancelling existing arrangements and substituting a lease of its property for 999 years at a rental equivalent to 4% per annum on bonds issued or to be issued by that company with your consent to an amount not exceeding \$25,000 a mile of its railway; and a deed of conveyance of the Cap de la Madeleine Ry., about 4 miles, connecting your railway near Three Rivers, Que., with Cap de la Madeleine, on the St. Lawrence river, and with the Wayagamack Pulp and Paper Co.'s works.

A lease from the New Brunswick government of the New Brunswick Coal and Ry. Co. for 999 years at a rental of 50% of the net earnings, as defined in the proposed lease, will be submitted for your sanction. This railway extends from the vicinity of Minto to a junction with the Intercolonial Ry., near Norton, N.B., approximately 58 miles, and will form a portion of a connection between your railway and a coal mine in New Brunswick, now in process of development.

For the purpose of securing a shorter and more expeditious route between Quebec and points in New England, served by your friendly connection the Boston and Maine Rd., your directors thought it advisable to lease the Quebec Central Ry., forming the connection between Sherbrooke and Levis, together with branch lines from Beauce Jct. to St. Sabine, and from Tring to Megantic, Que., a total of about 253.5 miles, at a rental based upon the interest on the outstanding 1st, 2nd and 3rd mortgage bonds of the Q.C.R. Co., and a dividend on the outstanding capital stock of that company at 4% per annum for four years

from July 1, 1912, and thereafter at 5% per annum, and you will be asked to confirm and sanction the lease.

The Shuswap and Okanagan Ry., from Sicamous Jct., on your main line in British Columbia, to the head of Okanagan lake, 51 miles, was leased to your company on its completion in 1892 for 25 years, and it was a condition that the company should pay by way of rental 40% of the gross earnings of the line in quarterly amounts. The interest on the bonds issued by the S. & O. Ry. Co. for construction, amounting to £10,000 per annum, was unconditionally guaranteed by the province of British Columbia. Until within the last two years the rental was insufficient to meet the annual interest charge, with the result that the province had a deferred claim against the S. & O. R. Co. for the deficiency in interest amounting to about £80,000 at the end of last fiscal year. As the principal of the bonds will mature July 1, 1915, and it is manifestly desirable that your company should retain possession of the line, a lease of the property for 999 years has been arranged and will be submitted for your approval. The rental to be paid by your company is an amount equivalent to 4% per annum on the outstanding bonds of the company and on any that may hereafter be issued with your consent. Upon being subrogated in the rights of the province your company has undertaken to make good to the province the deficiency in interest, to which reference has been made.

Your land in British Columbia secured by the construction of the Columbia and Western and British Columbia Southern Rvs., had, by lapse of time and judgment of the court, become subject to taxation. Of the lands in these grants 434,696 acres were sold during the past 12 years at an average price of \$1.77 an acre. As these constituted the most accessible of the lands, and the remainder were so situated that they would necessarily be very slow of sale, your directors decided after negotiations covering a considerable period to reconvey to the province the unsold portion of these two land grants, excepting an area of 543,496 acres, reserved by the company to meet its timber and tie requirements, at the price of 40c an acre. This will enable the provincial authorities to encourage settlers to take up on very easy terms such of the lands as may be of use, and the company will be relieved from the cost of administration and from the payment of rather heavy annual taxes. Your directors are of opinion that the transaction, which was not completed until after the close of the fiscal year, will prove advantageous to both the province and your company, and they hope that their action will meet with your approval.

The Georgian Bay and Seaboard Ry., recently built under the auspices of your company between Victoria Harbor, on Georgian Bay, and Bethany, Ont., to provide a shorter and more economical lake and rail route between western Canada and the Atlantic seaboard, has proved more expensive than was anticipated, due to the character of the line that it was finally determined to construct and to other conditions. The power conferred by Parliament on the G.B. & S. Ry. Co. to issue bonds for the purpose of its undertaking was originally limited to \$30,000 a mile, but at the last session this was increased to \$55,000 a mile, and your directors will ask your authority to enter into a supplementary agreement with the G.B. & S. Ry. Co. to increase the limit of that company's bond issue, upon which this company has, by virtue of the lease approved Oct. 3, 1906, agreed to pay interest by way of

rental, from \$30,000 to an amount not exceeding \$55,000 a mile of railway.

Instead of continuing the double track from Glen Tay to Agincourt, on the Ontario and Quebec Ry. between Montreal and Toronto, your directors have decided, if you approve, to secure a line between these two points that will serve the territory further south, and will reach several important towns on the north shore of Lake Ontario. An agreement has, therefore, been made with the Campbellford, Lake Ontario and Western Ry. Co. for the construction, under your company's supervision and control, of that company's railway, 184 miles, between Glen Tay and Agincourt, and for the lease of the railway when completed to your company for 999 years, at a rental equivalent to 4% per annum on the bonds of the C.L.O. & W. Ry. Co., issued with your consent.

Your present route between points in the Kootenay and Boundary Creek districts, B.C., and the Pacific coast is long and expensive, and the best means of securing a more direct route has engaged the attention of your directors for some time past. The Kettle Valley Ry. Co., having a Dominion charter, covering the territory between Midway, the terminus of your Boundary Creek line, and Merritt, on your Nicola line, undertook to build the railway between these points, under the advice and to the satisfaction of your directors, upon condition that your company would lease the line, approximately 270 miles, and the branch line along the north fork of the Kettle river, 24 miles, as soon as the K.V. Ry. Co. is competent to make a lease, paying by way of rental the interest at 4% per annum on the bonds of the K.V. Ry. Co., issued with your consent, any subsidy received from the Dominion or Provincial Government, or from any other source, to be applied on an agreed basis towards the cost of the construction of the railway and a corresponding reduction in the amount of bonds to be issued. This line will give you access to a large and important section of the province in which development should quickly follow railway facilities. Your directors will suggest that they be clothed with power to make an agreement of lease when the requisite legal formalities have been complied with.

The amounts appropriated for new works, exclusive of railway construction, were abnormally large, in the year under review. For the enlargement of terminals, additional buildings, shops, second tracks, sidings and improvements of every variety calculated to improve the efficiency of your railway system, and to facilitate the movement of your large and increasing traffic. \$30,000,000 was authorized to be expended and orders for locomotives and cars, representing an expenditure of \$25,750,000, were placed. Many of these works cannot be completed within the season with the limited amount of labor available, but your directors are sparing no effort to meet the convenience of the public and to strengthen your own position. Canadian manufacturers of freight cars are very much behind in their deliveries, but they promise to do better, and there is little doubt that all of the equipment ordered abroad will be forwarded according to contract.

In 1905, when your company acquired the Esquimalt and Nanaimo Ry., you also purchased the unsold lands on Vancouver Island belonging to that company, about 1,400,000 acres, for \$1,330,000. Thus far 250,000 acres have been sold, yielding \$3,364,000, and the remaining area is of great value, although some portions of it are so situated that they cannot well be utilized. There was the possibility that

these lands might be subject to taxation if segregated from the Esquimalt and Nanaimo Ry., and, therefore, they have never been taken into your accounts, but an agreement about taxes has been made with the province, and hereafter the figures relating to them will appear in your annual statements.

At a special general meeting of shareholders, May 11, 1892, a resolution was adopted authorizing the company to create and issue from time to time consolidated debenture stock payable in sterling money of Great Britain and bearing interest not exceeding 4% per annum for the purpose of satisfying or acquiring mortgage bonds of any other railway company, the principal or interest of which the company shall have already guaranteed. The Dominion Atlantic Ry. Co., whose railway you have leased, provided its money requirements by an issue of three classes of debenture stock, upon which your company has guaranteed the payment of the annual interest as a consideration for the lease of the property. It is quite likely that in the future it will be found desirable to acquire a portion, or all, of this debenture stock by an issue of your own 4% consolidated debenture stock, and, in order to comply strictly with the provisions of the act of 1892, it will be necessary to have an issue of consolidated debenture stock for that purpose approved by the shareholders at the special general meeting duly called for the purpose immediately after the annual general meeting.

CONDENSED BALANCE SHEET.

Assets.	
Railway and equipment.....	\$382,879,051.33
Ocean, lake and river steamships.....	21,338,974.12
Acquired securities (cost).....	80,525,353.32
Properties held in trust for the company.....	6,378,358.03
Deferred payments on land and town site sales.....	41,468,821.88
Advances to lines under construction.....	16,654,401.70
Advances and investments.....	12,360,997.99
Material and supplies on hand.....	13,017,431.90
Current Assets:	
Agents and conductors balances.....	\$4,805,132.07
Miscellaneous accounts receivable.....	5,023,469.41
Temporarily invested in government securities.....	10,088,734.86
Cash in hand.....	33,628,819.03
	\$628,119,545.64
Liabilities.	
Capital stock.....	\$180,000,000.00
Payment on subscription to new issue capital stock (\$18,000,000).....	16,806,621.00
4% preference stock.....	66,695,097.03
4% consolidated debenture stock.....	153,823,706.86
Mortgage bonds:	
First mortgage, 5%.....	\$34,998,633.33
Algoma branch, 1st mortgage.....	3,650,000.00
	38,648,633.33
Current liabilities:	
Audited vouchers.....	\$11,361,277.06
Pay rolls.....	5,621,929.55
Net traffic balances.....	290,366.38
Miscellaneous accts. payable.....	6,271,762.30
	23,545,335.29
Interest on funded debt and rental of leased lines:	
Coupons due July 1, 1912, and including coupons overdue not presented.....	\$1,207,274.00
Accrued fixed charges.....	184,428.35
	1,391,702.35
Equipment obligations.....	1,040,000.00
Equipment replacement fund.....	2,103,993.54
Steamship replacement fund.....	5,721,852.37
Appropriation for additions and improvements.....	3,535,712.14
Reserve fund for contingencies.....	4,382,617.80
Lands and town sites: sales.....	57,538,307.59
Surplus.....	72,885,966.34
	\$628,119,545.64

Note.—In addition to above assets, the company owns 6,660,581 acres of land in Manitoba, Saskatchewan and Alberta (average sales past year \$15.99 an acre), and 4,395,948 acres in British Columbia.

FIXED CHARGES FOR YEAR

1st mortgage bonds 5% due July 1, 1915.....	\$1,749,931.66
St. Lawrence & Ottawa Ry. 4% 1st mortgage bonds.....	38,933.34
Man. S. West. Colzn. Ry. 1st mortgage 5% bonds due June 1, 1934.....	127,200.00
Toronto, Grey & Bruce Ry. rental Ontario & Quebec Ry. debenture stock 5%.....	140,000.00
Ontario & Quebec Ry. ordinary stock 6%.....	975,129.56
Atlantic & North West. Ry. 1st mortgage bonds due Jan. 1, 1937.....	120,000.00
Algoma branch 5% 1st mortgage bonds, due July 1, 1937.....	323,633.34
New Brunswick Southern Ry. 1st mortgage bonds, 3%.....	182,500.00
Lindsay, Bobcaygeon & Pontypool Ry. 1st mortgage bonds, 4%.....	15,000.00
Rental, Calgary & Edmonton Ry. Farnham to Brigham Jct. Mattawamkeag to Vanceboro.....	20,000.00
..	218,357.60
..	1,400.00
..	23,800.00
..	372,829.74
..	25,353.15
..	35,297.73
..	42,191.12
..	2,050.00
..	2,442.05
..	5,000.00
..	939.96
Interest on Montreal & Western Ry.	15,403.37
Interest on equipment obligations 4% Consolidated Debenture Stock.....	63,066.67
Interest from July 1, 1911.....	\$5,935,482.62
Interest from Jan. 1, 1912.....	96,995.58
	\$6,032,478.20
Less received from subsidy Northern Colonization Ry.	8,000.00
	6,024,478.20
	\$10,524,937.49

EXPENDITURES ON CONSTRUCTION ACQUIRED AND BRANCH LINES.

Moose Jaw branch.....	\$1,136,877.08
Craven-Bulyea branch.....	116,685.17
Virden-McAuley branch.....	94,375.77
Stonewall branch extension.....	2,876.53
Lauder branch.....	3,280.69
Weyburn-Lethbridge branch.....	787,295.34
Langdon branch.....	1,418.54
Kipp-Aldersyde branch.....	631,965.44
Bassano-Irricana branch.....	472,059.78
Regina-Colonsay branch.....	653,224.94
Estevan-Forward branch.....	284,577.39
Waldo-Galloway branch.....	141,606.89
Moose Jaw s.w. branch.....	581,539.79
Wilkie n.w. branch.....	474,079.73
Kerrobert n.e. branch.....	140,448.03
Wilkie-Anglia branch.....	262,597.68
Swift Current s.e. branch.....	727,670.68
Swift Current n.w. branch.....	645,679.44
Boissevain-Lauder branch.....	54,873.27
Suffield s.w. branch.....	49,550.64
Three Forks-Bear Lake branch.....	249,182.06
Surveys of projected lines.....	174,844.57
	\$7,686,609.45

EXPENDITURE ON ADDITIONS AND IMPROVEMENTS. MAIN LINE.

Quebec to Bonfield—Additional sidings, buildings, stations and yards.....	\$233,450.00
Permanent bridges and improvements of line.....	392,720.88
Right of way.....	5,175.00
	631,354.88
Montreal terminals.....	16,25,820.23
Windsor St. station extension.....	839,331.42
Double track bridge over St. Lawrence river.....	816,749.29
Bonfield to Port Arthur—Additional sidings, buildings, stations and yards.....	189,957.02
Permanent bridges and improvements of line.....	335,719.08
Wharves, docks and warehouses.....	2,506.58
Telephone dispatching equipment.....	232.89
	528,415.57
Port Arthur to Field—Additional sidings, buildings, stations and yards.....	1,546,845.91
Permanent bridges and improvements of line.....	519,322.14
Winnipeg station and hotel.....	73.35
Winnipeg terminals.....	877,045.20
East Winnipeg yard.....	478,550.22
Wharves, docks and warehouses.....	195.34
Double tracking.....	1,507,953.97
Right of way.....	7,424.13
Calgary hotel.....	238,256.81
	5,175,607.07

STATEMENT OF PENSION DEPARTMENT TO

JUNE 30.	
Balance at June 30, 1911	\$670,487.46
Amount contributed by company for year	125,000.00
Amount received as interest	39,582.24
	\$835,069.70

Payment of pension allowances for year	149,655.38
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Balance in cash and investments	\$685,404.32
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NUMBER ON PENSION ROLL AT JUNE 30.	
Under 60 years of age	64
Between 60 and 70 years of age	269
Over 70 years of age	204

Total	537
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Sir Thos. Shaughnessy, in submitting the report for approval, said:—

The report covers the most prosperous year in the company's history, the gross operating income having exceeded \$123,000,000, and the net balance, after providing for fixed charges and making the usual deductions, being \$33,752,000.

Regarding the crops in Western Canada, there is the prospect that they will be larger than estimated and of particularly good quality. The weather conditions and shortage of farm help interfered with threshing, and the movement of grain to the markets will crowd transportation facilities towards the close of lake navigation. We hope to escape anything in the nature of serious congestion, and have reason to expect that the grain traffic and the general business of the company during next year will be at least as large as it was last.

A second main line is being laid between Regina and Chaplin, Sask., and by the end of 1914 the double track should be completed and in use between Fort William and Calgary, 1,256 miles. The extension of the second track from Calgary to Revelstoke, where the line crosses the mountain ranges, will require careful investigation and study before a plan of operation can be determined, but a double track through this territory is urgently required to meet the demands of traffic, and no time will be lost in the commencement and prosecution of the work. Among other important works in hand are a second main line between Farnham and Montreal junction, including the replacement of the bridge across the St. Lawrence river at Lachine, by a double track structure designed for the heaviest train loads; a large sorting yard for freight trains at Montreal junction; the Windsor street passenger terminal at Montreal, that will be finished about the end of the year and will provide more than twice the present station and yard accommodation; the warehouses and yards for local traffic that are being constructed on the government house and adjoining properties acquired in Toronto; the additional freight yards at Transcona, five miles east of Winnipeg, where about 400 acres are being covered with tracks and buildings to supplement the existing Winnipeg yards, among the largest in the world, but insufficient to accommodate the traffic at that point; the large locomotive and car shops at Ogden, near Calgary, which will be ready for use in the course of the next three or four months; and the new station, overhead bridges and wharf facilities at Vancouver that it will take some time to complete. Innumerable other works of lesser importance, but involving a large expenditure, all designed to facilitate traffic and to accommodate the public, have been executed or are in process of execution, and there would appear to be no limit to the demands of this kind that it will be necessary to meet if our business continues to expand as it has in the past.

The most prudent and effective method of providing money for all these purposes has the close and constant attention of your directors and they believe that in the future, as in the past, the best interests of the

company and of Canada will be served by giving an opportunity to the shareholders to furnish the additional capital on a basis that makes the investment reasonably attractive. With the 4% consolidated debenture stock that your Directors are now authorized to issue and sell, the proceeds to be used in retiring outstanding bonds carrying a higher rate of interest, and in meeting expenditures for additional railway mileage heretofore constructed or acquired, and the consolidated debenture stock that may be issued in respect of the proposed construction or acquisition of the several railway lines described in the report, there will be approximately \$90,000,000 4% consolidated debenture stock, in excess of all heretofore disposed of, that the company will be authorized to issue and sell. Instead of going to the market with any considerable portion of this amount, your directors recommend that you make use of the authority conferred upon you by Parliament to issue ordinary shares of capital stock in lieu of consolidated debenture stock, and that you increase your ordinary share capital from \$200,000,000 to \$260,000,000 to be offered to shareholders at \$175 for each \$100 share, at a time and on terms of payment to be fixed by your directors. The proceeds to the amount of \$60,000,000 will be used to meet expenditures for which proceeds of consolidated debenture stock would otherwise have been utilized, including the satisfaction and cancellation of all the company's outstanding 5% first mortgage bonds, amounting to \$33,766,000, on or before their maturity, July 1, 1915, and the balance will be devoted to such additions and improvements to the property, properly chargeable to capital account, as are in the opinion of your directors necessary from time to time. By this means the company will be getting money on its ordinary share capital at a low rate of interest, taking the present dividend rate as a basis, its bond and debenture debt will be \$60,000,000 less, its fixed charges will be \$2,400,000 per annum less than they otherwise would have been, and its available funds for the purposes of the undertaking will be increased by \$45,000,000. Your directors will recommend that this amount be supplemented by an appropriation of \$15,000,000 from your accumulated surplus, that might properly be distributed to the shareholders but that will instead be expended on capital account in additions and improvements to your property.

The report was unanimously adopted.

It was resolved, that the construction and equipment of the following branch lines and extensions which have been authorized, be approved:—

An extension northeasterly of the Kerrobert northeasterly branch, 11 miles;

An extension westerly of the Weyburn-Lethbridge branch, 100 miles, and easterly from near Stirling on the A.R. & I. Co.'s line, 25 miles;

An extension southeasterly of the Wilkie-Anglia branch, 4 miles;

An extension northwesterly of the Swift Current northwesterly branch, 80 miles;

A branch from Boissevain westerly to near Lauder and known as the Boissevain-Lauder branch, 37 miles;

A branch southwesterly from Suffield, on the main line and known as the Suffield southwesterly branch, 55 miles.

And for such purpose to issue consolidated debenture stock not exceeding £6,000 a mile for the Kerrobert northeasterly branch extension, Wilkie-Anglia branch extension, Swift Current northwesterly branch extension, Boissevain-Lauder branch and Suffield southwesterly branch, and £5,000 a mile for the Weyburn-Lethbridge branch extensions.

Resolutions were also adopted, approving

the lease of the Kingston and Pembroke Ry., for 999 years, at an annual rental equal to the interest payable on the outstanding mortgage debentures, until they have been redeemed, and interest at 4%, payable half yearly upon other securities which the K. & P. Ry. Co. may issue at the request of the lessees, the aggregate securities not to exceed \$10,000 a mile of railway;

Approving the lease of the Alberta Central Ry., for 999 years, at an annual rental equal to the interest payable on all bonds carrying interest not exceeding 4% per annum, payable half yearly, which the lessors may issue at the request of the lessees;

Cancelling the existing lease of the St. Marys and Western Ontario Ry., and approving a new lease for 999 years, at an annual rental equal to the interest payable on all bonds carrying interest not exceeding 4% per annum, which the lessors may issue at the request of the lessees, the aggregate of such bonds outstanding not to exceed \$25,000 a mile of line built or under contract;

Approving the purchase of the Cap de la Madeleine Ry.;

Approving the lease of the New Brunswick Coal and Ry. Co.'s railway, for 999 years, at an annual rental of 50% of the net earnings of the line;

Approving the lease of the Quebec Central Ry. for 999 years, at an annual rental equal to 4% per annum on the outstanding first mortgage debenture stock; interest at 3½% on the second mortgage debenture stock; interest at 5% per annum on the third mortgage bonds; a dividend of 4% per annum on the outstanding capital stock for four years, from July 1, 1912, and thereafter at 5% per annum, and interest on any bonds or debenture stock which the lessors may issue at the request of the lessees;

Authorizing the lease of the Shuswap and Okanagan Ry. for 999 years, at an annual rental equal to the interest payable on the present outstanding bond issue, \$1,250,000, at 4% per annum, and on all bonds carrying interest at 4% per annum which the lessors may issue at the request of the lessees, the aggregate of all such bonds not to exceed \$35,000 a mile of railway built or under contract;

Approving the sale to the British Columbia government of lands of the British Columbia Southern Ry.'s land grant, and the Columbia and Western Ry.'s land grant, at 40c. an acre, reserving 543,496 acres of the B.C. Southern Ry. land grant and all timber on lands covered by timber permits in force at the date of the agreement; releasing the provincial claim for taxes on the B.C. Southern Ry. land grant, and approving payment to the province of amounts advanced for payment of interest on Shuswap and Okanagan Ry. bonds, after crediting amounts received by the province from the company's earnings, the province releasing both companies from all liability to pay any portion of the company's earnings, or interest on the company's bonds; the province also to sell to the company, the Kaslo and Slocan Ry., in consideration of \$25,000, the company to rebuild, maintain and continuously operate same and the province to pay the company a cash subsidy of \$100,000;

Approving a supplementary agreement increasing the bond issue of the Georgian Bay and Seaboard Ry from \$30,000 to \$55,000 a mile;

Approving the lease of the Campbellford, Lake Ontario and Western Ry. for 999 years, at an annual rental equal to the interest payable on all bonds carrying interest not exceeding 4% per annum, which the lessors may issue at the request of the

lessees, the aggregate of such bonds not to exceed \$65,000 a mile of line built or under contract;

Authorizing lease of the Kettle Valley Ry. at an annual rental equal to the interest payable on all bonds bearing interest not exceeding 4% per annum, which the lessors may issue at the request of the lessees, the aggregate of such bonds not to exceed \$50,000 a mile for the Coquihalla branch, and \$40,000 a mile for other lines;

Authorizing the issue of consolidated debenture stock, not exceeding £1,232,500, for the acquirement of the first, second and extension debenture stock of the Dominion Atlantic Ry., which has been leased for 999 years, and

Authorizing the increase of the C.P.R. Co.'s capital stock from \$200,000,000 to \$260,000,000.

The retiring directors, W. D. Matthews, Sir Sandford Fleming, A. R. Creelman and Sir William Whyte, were re-elected.

At a subsequent meeting of the board, Sir Thos. G. Shaughnessy was re-elected President; D. McNicoll, Vice President, and the following were appointed the executive committee:—R. B. Angus, D. McNicoll, Sir Edmund Osler, Sir Thos. Shaughnessy, Lord Strathcona and Sir William Van Horne.

Canadian Ticket Agents' Association's Annual Meeting.

The 26th annual meeting of this association was held at the Chateau Laurier, Ottawa, Ont., Oct. 9.

The Right Honorable R. L. Borden delivered an address of welcome. F. W. Churchill, C.P.R., Collingwood, Ont., replied on behalf of the association.

The President, S. B. Morris, C.P.R., Rodney, Ont., occupied the chair and in his opening address referred among other things to the loss the association had sustained in the death of M. McNarama, G.T.R. agent at Walkerton, Ont., and a past President of the association.

E. de la Hooke, Secretary-Treasurer, read his annual report, the best in the association's history, showing a membership of 218 and there being a balance of \$386.76 on hand.

C. E. Benjamin, General Tourist Agent, C.P.R., Montreal, representing the American Association of Passenger Agents, addressed the meeting and referred to the warm welcome and attention given by the Canadian government to immigrants.

J. A. McKenzie, G.T.R., Woodstock, Ont., reported his attendance as representative of the association at the American Association of General Passenger and Ticket Agents' convention at Seattle, where he was successful in obtaining the appointment of a committee to take up with the Interstate Commercial Commission the question of the granting of free transportation once a year on railways in the United States to members of the association.

A Hilton, General Passenger Agent, St. Louis and San Francisco Rd., was unable to come to Ottawa as representative of the American Association of General Passenger and Ticket Agents, owing to illness.

A letter was read from Barlow Cumberland, a past President, expressing his regret at his inability to be present.

A. E. Duff, District Passenger Agent, G.T.R., Toronto, read a very practical paper in which he dealt with filing tariffs and circulars, displaying advertising matter, public time tables, etc.; newspaper advertising; through ticketing and exchange orders; ticketing children, and soliciting travel.

An amendment to the constitution was

introduced by the President, S. B. Morris, to admit as associate members district travelling or general agents of the passenger departments of Canadian railways and steamship lines and similar officials resident in Canada of any foreign lines. The amendment was defeated.

The following officers were elected for 1913:—President, G. J. Alexander, G.T.R., Richmond, Que.; First Vice President, J. Kidd, C.P.R., Goderich, Ont.; Second Vice President, C. B. James, C.P.R., Orillia, Ont.; Third Vice President, J. A. McKenzie, G.T.R., Woodstock, Ont.; Secretary-Treasurer, E. de la Hooke, London, Ont.; Auditors, A. M. Hare, Wabash Ry., Tilsonburg, Ont. Executive Committee:—W. Jackson, C.P.R., Clinton, Ont.; F. W. Churchill, C.P.R., Collingwood, Ont.; W. McLroy, C.P.R., Peterboro, Ont.; C. E. Horning, G.T.R., Toronto, Ont.; J. F. Dolan, R. & O. Navigation Co., Montreal, Que. There were 119 members and 97 ladies in attendance.

H. W. Baker, Publicity Commissioner, Ottawa, and S. J. Montgomery, City Freight and Passenger Agent, Canadian Northern Ry., Ottawa, were presented with coffee



G. J. Alexander,
President Elect, Canadian Ticket Agents' Association.

percolators as tokens of the association's appreciation for looking after the members' comforts during the meeting.

While the business meeting was going on the ladies were taken by members of the local committee to the Parliament buildings, mint, etc., and in the afternoon were given a ride around the city, visiting Rockcliffe park and Britannia on the Bay. In the evening there was an at home at the Chateau Laurier.

On the morning of Oct. 10, the members were entertained to a trip on the steamboat Victoria by Capt. F. Elliott, and in the afternoon the Experimental Farm and Dominion Observatory were visited. In the evening the party were entertained at the theatre.

T. Thaburn, C.P.R. ticket agent, Brampton, Ont., as in previous years, sent a large box of roses and carnations to Ottawa, to be distributed to the ladies of the party.

On October 11, the party left by G.T.R. special train for Montreal and were guests for tea on the Donaldson liner Saturnia. In the evening they boarded the White Star

Dominion Line s.s. Laurentic and left early next morning for Quebec as guests of the line.

During the trip to Quebec, a presentation was made to Capt. Mathias of the Laurentic, and P. W. G. Mitchell, Passenger Manager, first cabin department, White Star-Dominion Line was given a coffee percolator.

The multiplicity of details in connection with the arrangements for the meeting, transportation of members, etc., were most admirably carried out by Secretary de la Hooke.

Railway Finance, Meetings, Etc.

Boston and Maine Rd.—The shareholders have authorized the issue of 106,637 shares of common stock, and a bond issue of \$7,500,000. The new issue will be used to pay off money borrowed for buying certain railways in Massachusetts; and to improve the line, provide additional equipment, etc.

Cap de La Madeleine Ry.—See Canadian Pacific Ry.

Canada Atlantic Ry.—Following are the officers and directors elected for the current year:—President, E. J. Chamberlin; Vice President, H. G. Kelley; Secretary-Treasurer, F. Scott; other directors, W. Wainwright, J. E. Dalrymple, R. S. Logan and W. H. Biggar.

Canada and Gulf Terminal Ry.—The annual meeting was held at Montreal, Oct. 4. Following are the officers and directors for the current year:—President, M. J. O'Brien; Vice President, H. J. Lyons; Secretary-Treasurer, F. W. Rous; Traffic Manager, Rene Dupont; other directors, G. A. Cote, J. A. Ross, D. Caron, C. A. Gauvreau and J. A. O'Brien.

Canadian Northern Ry.—A prospectus of £2,057,612 (\$10,000,000) 5% income charge convertible debenture stock was issued in London, Eng., Sept. 25, the issue price being 106. Between Jan. 1, 1916, and Jan. 1, 1919, this stock may be converted at the holder's option into common stock. A London cablegram says that the underwriters had to take 77% of the issue, owing to the unfavorable market conditions.

Cape Breton Coal, Iron and Ry. Co.—A meeting of the holders of the 5% gold bonds is to be held in London, Eng., Nov. 6, to consider a resolution approving an extraordinary resolution as defined in article 8 of the mortgage deed.

Canadian Northern Western Ry.—There has been filed with the Provincial Secretary at Edmonton, Alta., a trust deed and mortgage made by the C.N.W. Ry. to the British Empire Trust Co. and National Trust Co., as trustees, and the Province of Alberta securing 30-year 4% guaranteed debenture stock or bonds on certain lines in Alberta. The C.N.W. Ry. Co. is a subsidiary of the Canadian Northern Ry. Co., which is building branch lines under provincial guarantee of bonds in Alberta.

Canadian Pacific Ry.—The Board of Railway Commissioners is being asked for a recommendation to the Governor-in-Council for the sanction of leases to the C.P.R. of the following lines:—Alberta Central Ry. (under construction); Campbellford, Lake Ontario and Western Ry. (under construction); Cap de La Madeleine Ry.; Kingston and Pembroke Ry.; St. Marys and Western Ontario Ry.

Central Ry. of Canada.—Application has been made to list £222,500 fives on the London, Eng., stock exchange.

Central Vermont Ry.—The report for the year ended June 30 shows:—gross receipts, \$4,435,832.21; operating expenses, \$3,419,

312.40; net operating revenue, \$1,016,519.81; less taxes, \$150,000, net debit from rentals, \$16,887.63; hire of equipment debit, \$177,495.23; fixed charges, \$718,276.90; total deductions, \$1,062,659.76; credit parlor cafe car service, \$5,372.92; and interest on securities held by company, \$53,720; net result, \$12,952.97. The property was well maintained during the year and \$1,136,465.70 was spent on improvements, of which \$22,569.40 was paid out of operating expenses. Of the balance, which was charged to capital account, \$1,090,839.72 was for new equipment, and on this account \$980,000 of 5% equipment trust notes were issued, which will be retired at the rate of \$98,000 each year. Special reference was made to the death of C. M. Hays, Chairman of the company, the board's resolution expressing appreciation of his services to the company having been sent to Mrs. Hays. The officers and directors for the current year are:—Chairman, E. J. Chamberlin; President, E. H. Fitzhugh; Vice President and Attorney, C. W. Witters; General Manager, G. C. Jones; other directors, E. C. Smith, W. S. Webb, J. W. Stewart, J. G. McCullough, E. H. Baker, S. E. Kilner, A. Tuttle, C. P. Smith and E. L. Marston.

Dominion Atlantic Ry.—Approximate passenger earnings for Sept., \$63,405.36; freight earnings, \$56,067.94; total earnings, \$119,473.30, against \$165,200 total earnings for Sept., 1911.

Esquimalt and Nanaimo Ry.—There has been deposited with the Secretary of State at Ottawa, copy of a lease, dated July 1, of the line to the C.P.R.; and also copy of a mortgage made between the E. & N. Ry., the Royal Trust Co. and the C.P.R.

Great North West Central Ry.—An action has been started by J. B. Delap, on behalf of himself and shareholders of this company against the company, the C.P.R., Sir Thos. G. Shaughnessy and R. B. Angus, to recover \$300,000 in lieu of 300 shares of stock alleged to be controlled by him, and for an indemnity for allowing the lapsing of the company's charter for building a line to Battleford, Sask.

Kingston and Pembroke Ry.—See Canadian Pacific Ry.

Klondike Mines Ry.—Following are the officers and directors elected for the current year:—President, H. B. McGiverin; Vice President, J. P. Ebbs; Secretary, A. Haydon; other directors, J. Latta and C. G. Kekewich.

Lake Superior Corporation.—The annual meeting was held Oct. 2. Following are the officers and directors for the current year:—President, T. J. Drummond; Vice Presidents, J. T. Lea, W. K. Wigham and J. F. Taylor; other directors, W. E. Stavert, D. C. Newton, J. T. Terry, jr., F. McOwen, H. M. Price, H. Coppel, J. S. Dale; Secretary, T. Gibson.

Minneapolis, St. Paul and Sault Ste. Marie Ry.—During September press reports stated that the company was about to acquire the Wisconsin and Michigan Ry., and to this report we gave an official denial in our last issue. An officer of the company wrote us: "We have not, and do not intend to purchase this railway." Daily papers during October again stated that the M. St. P. & S.S.M.R. had purchased and was about to take over the Wisconsin and Michigan Ry., including the company's docks at Chicago.

Ottawa Terminals Co.—Following are the officers and directors elected for the current year:—President, E. J. Chamberlin; Vice President, H. G. Kelley; Secretary-Treasurer, F. Scott; other directors, W. Wainwright, M. M. Reynolds, R. S. Logan and W. H. Biggar.

Pacific Great Eastern Ry.—The adjourned annual meeting was held at Victoria, B.C., Oct. 15. Following are officers and directors for the current year:—President, J. W. Stewart; Vice President and General Counsel, D'Arcy Tate; Vice President, T. Foley; other directors, D. MacLeod and V. W. Smith.

Quebec Central Ry.—The annual meeting of shareholders was held in London, Eng., Oct. 16. The report showed that the development of traffic from the recent extension had been satisfactory. There had been a slight decrease in foreign traffic, and it was stated that an increase of about \$35,000 a year in wages was anticipated. Increased expenditure would also have to be undertaken for additional siding accommodation, and when the Quebec bridge was completed a large capital expenditure would be necessary for branch lines in order to meet competition in fast train service. The resolution confirming the lease of the company's property to the C.P.R., was passed unanimously. J. H. Walsh, General Manager, Sherbrooke, Que., was present at the meeting.

Suswap and Okanagan Ry.—In connection with the taking over of the land grants to the B.C. Southern Ry., and the Columbia and Western Ry. by the British Columbia Government, the C.P.R. agreed to repay to the province \$401,000 which had been paid by the latter, under its guarantee, as interest on the S. and O. Ry. bonds. The transaction was completed recently.

St. Marys and Western Ontario Ry.—See Canadian Pacific Ry.

Temiscouata Ry.—Gross earnings for Aug., \$23,320; expenses, \$16,234; net earn-

ings, \$7,086. Aggregate net earnings for two months ended Aug. 31, \$16,027.

Thousand Islands Ry.—The annual meeting was held at Deseronto, Ont., Sept. 30. Following are the officers and directors for the current year:—President, E. W. Rathbun, Deseronto, Ont.; Manager, J. F. Chapman, Gananoque, Ont.; Secretary and Treasurer, H. W. Cooper, Gananoque; other directors, B. R. Hepburn, M.P., and S. C. Lee.

Victoria and Sidney Ry.—The annual meeting was held at Victoria, B.C., Oct. 9. Following are the officers for the current year:—President, A. H. McNeill, Vancouver; Vice President, F. Brown, Seattle, Wash.; Secretary-Treasurer, A. M. Thomas.

The Victoria and Sidney Ry. Co. has offered to pay to the city of Victoria, B.C., \$36,000, in respect of the amounts the city has been called upon to pay on account of its guarantee of interest of the company's bonds, and to indemnify the city against any future liability on account of the guarantee of the bonds. The city and the province guaranteed \$300,000 of the company's bonds, the city guarantee being to an amount of \$9,000 a year and the provincial guarantee being \$6,000 a year. The city has been called to provide this \$9,000 since the guarantee was given in 1893. The bonds mature in 1917. The company also offers to pay the province \$20,000 and to indemnify it against any further claims under the guarantee. After discussing the matter on Oct. 1 the city council declined to accept the offer.

White Pass and Yukon Route.—Gross earnings for eight months ended Aug. 31, \$738,739, against \$691,760 for same period 1911.

Railway Rolling Stock Notes.

The Hart-Otis Car Co. has ordered from the Canadian Car and Foundry Co. three Rodger distributing ploughs.

The Algoma Central and Hudson Bay Ry. has ordered one all steel snow plough from the Canadian Car and Foundry Co.

The recent press report that the Canadian Northern Ry. had ordered 2,000 box cars, in Hamilton, Ont., is, we are officially advised, erroneous.

The Grand Trunk Pacific Ry. has recently received from the Montreal Locomotive Works, six switching locomotives, nos. 400, 401, and 406 to 409; seven Pacific type locomotives, nos. 1100, and 1109 to 1114; and 25 consolidated locomotives nos. 845 to 869.

The combination second class and baggage cars, 11 of which have been ordered by the Canadian Northern Ry. from the Preston Car and Coach Co., will have 72 ft. bodies, wheel with crucible steel centres and tires, McCord journal boxes, Gold car heating equipment, oil lamps, Susemihl side bearings, P.C. & C. Co.'s standard seats, birch finish and cast steel bolsters.

The Canadian Northern Ry. between Sept. 15 and Oct. 15, ordered the following rolling stock,—30 ten wheel locomotives (light) and 30 ten wheel locomotives (heavy), from the Montreal Locomotive Works; 25 first class cars, and 10 baggage cars, from the Canadian Car and Foundry Co.; 25 second class cars from the Crossen Car Co.; and 11 combination cars, from the Preston Car and Coach Co.

The Intercolonial Ry. has ordered 100 Hart Convertible ballast and construction cars, and 50 all steel Otis type, bottom drop door, coal cars, from the Hart-Otis Car Co. The ballast cars will be of the 1912 design, 40 tons capacity, 36 ft. 8 ins. long by 8 ft. 8 ins. wide inside, and will be built with

special removable tops for coal service when not required for ballasting. They will be built by the Canadian Car and Foundry Co.

The Canadian Northern Ry., between Sept. 15 and Oct. 15, received the following rolling stock,—9 locomotives from the Canadian Locomotive Co.; 1 locomotive from the Canada Foundry Co.; 1 first class car, 1 baggage car, 223 box cars and 1 dining car, from the Canadian Car and Foundry Co.; 2 combination cars from the Preston Car and Coach Co.; 5 baggage and mail cars from the Crossen Car Co.; 3 box cars from the Nova Scotia Car Works.

The G. T. R. has recently ordered the following rolling stock,—25 mikado locomotives, from the American Locomotive Co., Schenectady, N.Y.; one locomotive crane and one wrecking crane, in the U. S.; and has received the following additions to rolling stock,—2 baggage cars, from its Montreal shops; 43 refrigerator cars, 324 box cars, from the Canadian Car and Foundry Co.; 99 box cars, 31 steel coal cars, 81 automobile cars, 1 locomotive crane and 1 wrecking crane, from the U. S.

The Intercolonial Ry., between Sept. 11 and Oct. 15, ordered the following rolling stock,—750 thirty ton steel underframe box cars, 100 forty ton steel underframe platform cars, 20 thirty ton refrigerator cars, and one 8,000 gallon steel underframe tank car, from the Canadian Car and Foundry Co.; 100 forty ton Hart convertible ballast cars and 50 fifty ton Otis type all steel dump cars, from the Hart-Otis Car Co., to be built by the Canadian Car and Foundry Co.; 250 thirty ton steel underframe box cars and 50 thirty ton wooden box cars, from the Nova Scotia Car Works; 3 baggage cars, from the Preston Car and Coach Co.; 5 consolidation freight locomotives, from the Canada Foundry Co., and 120 thirty ton

wooden box cars, to be built at the I. R. C. shops at Moncton, N.B.

The C. P. R., between Sept. 14 and Oct. 14, ordered the following rolling stock,—6 freight refrigerator cars, 23 stock cars, 1 first class car, 23 flat cars, 83 vans, 8 baggage and express cars, 2 superintendents' business cars, 1 fruit express car, 5 locomotives, class U3, 10 locomotives, class G2, 1 flanger, 2 double track snow ploughs, 1 double track flanger, 524 wooden box cars, 8 locomotives, class P1, 2 horse express cars, 1 compartment sleeping car, 1 baggage and express car, and 2 mail and express cars, to be built at its Angus shops; 1124 steel frame box cars, 15 tourist cars, 10 first class cars, 20 baggage and express cars, 263 ballast cars, from the Canadian Car and Foundry Co.; 15 locomotives, class N3, 30 locomotives, class G2, 75 locomotives, class P1, and 10 locomotives, class D10, from the Montreal Locomotive Works; 10 locomotives, class N3, from the Canada Foundry Co.; 1 Jordan ballast spreader, from F. H. Hopkins and Co.; 30 sleeping cars, from the Pullman Co.; 30 sleeping cars, from Barney and Smith Co.; 247 steel frame box cars, from the Standard Car Co.; 85 5 steel frame box cars, from the Western Car and Foundry Co.

Following are chief dimensions, etc., of the class U3 locomotives, which the C.P.R. is building at its Angus shops, as mentioned in our last issue:—

Weight on drivers	137,000 lbs.
Driving wheels, diar.	52 ins.
Wheel base	11 ft. 6 ins.
Wheel base, engine and tender	41 ft. 3 1/2 ins.
Cylinders, diar. and stroke	18 by 26 ins.
Valves, type and diar.	Piston, 11 ins.
Valve gear	Walschaert
Axles, main and others	8 1/2 by 10 ins.
Axles, tender	5 by 9 ins.
Boiler, type	Straight top
Boiler pressure	200 lbs.
Heating surface, firebox	138 sq. ft.
Heating surface, tubes	1406 sq. ft.
Heating surface, total	1544 sq. ft.
Tubes, no. and diar.	234—2 ins.
Tubes, length	11 ft. 5 1/2 ins.
Firebox, length and width	.96% by 41 3/4 ins.
Grate area	28 sq. ft.
Staying	Radial and cross
Tender capacity, water	3,500 imp. gals.
Tender capacity, coal	4 tons

Following are chief details of the 30 Pacific type locomotives, class G2, which the C.P.R. is having built by the Montreal Locomotive Works:—

Weight on drivers	142,000 lbs.
Weight of engine, total	220,000 lbs.
Weight of tender	139,000 lbs.
Heating surface, firebox	183 sq. ft.
Heating surface, tubes	2777 sq. ft.
Heating surface, total	2960 sq. ft.
Heating surface, superheater	539 sq. ft.
Grate area	45.6 sq. ft.
Tubes, no. and diar.	175—2 1/4 ins. and 18—2 ins.
Flues, no. and diar.	22—5 1/2 ins.
Driving wheel base	13 ft.
Wheel base of engine, total	33 ft. 7 ins.
Wheel base of engine and tender	59 ft. 6 3/4 ins.
Boiler, type	Extended wagon top
Boiler, pressure	200 lbs.
Cylinders, diar. and stroke	22 1/2 by 28 ins.
Driving wheels, diar. outside	70 ins.
Valve gear	Walschaert
Superheater	Vaughan and Horsey
Capacity of tender, water	5,000 imp. gals.
Capacity of tender, coal	10 tons

Following are chief details of the 75 Mikado freight locomotives, class P1, which the C.P.R. is having built by the Montreal Locomotive Works:—

Weight on drivers	198,000 lbs.
Weight of engine, total	258,000 lbs.
Weight of tender	170,000 lbs.
Heating surface, firebox	191 sq. ft.
Heating surface, tubes	3788 sq. ft.
Heating surface, total	3979 sq. ft.
Heating surface, superheater	612 sq. ft.
Grate area	49 sq. ft.
Tubes, no. and diar.	210—2 1/4 ins.
Flues, no. and diar.	30—5 1/2 ins.
Wheel base, driving	16 ft. 6 ins.
Wheel base, total engine	35 ft. 5 ins.
Wheel base, engine and tender	66 ft. 5 ins.
Boiler, type	Extended wagon type
Boiler, pressure	180 lbs.
Cylinders, diar. and stroke	23 1/2 by 28 ins.
Driving wheels, outside diar.	63 ins.
Valve gear	Walschaert
Superheater	Vaughan and Horsey

Tender capacity, water	7,000 imp. gals.
Tender capacity, coal	16 tons

The Quebec Central Ry. has ordered four 10 wheel locomotives from the Canadian Locomotive Co. Following are the chief details:—

Weight on drivers	127,500 lbs.
Weight, total	158,500 lbs.
Wheel base, rigid	14 ft. 1 in.
Wheel base, engine, total	24 ft. 4 ins.
Wheel base, engine and tender	52 ft. 1 in.
Heating surface, firebox	165 sq. ft.
Driving wheels, diar.	63 ins.
Driving wheel centres	Cast steel
Driving journals, diar. and length	.9 by 12 ins.
Cylinders, diar. and stroke	.21 by 26 ins.
Boiler, type	Extended wagon top, radial stay
Boiler pressure	190 lbs.
Tubes, diar.	2 and 5 1/2 ins.
Tubes, length	13 ft.
Brakes	Westinghouse E.T. 6
Weight of tender, loaded	124,000 lbs.
Tank capacity, water	5,000 imp. gals.
Tank capacity, coal	10 tons
Tank, type	V shape
Truck, type	Four wheel
Wheels, diar.	36 ins.
Wheels, type	Solid steel
Journals, diar. and length	5 1/2 by 10 ins.
Brake beam	Simplex

Following are chief details of the class D4g locomotives, which are being built at the C.P.R. Angus shops, as mentioned in our last issue:—

Weight on drivers	114,000 lbs.
Weight, total	138,700 lbs.
Driving wheels, diar.	62 ins.
Wheel base, rigid	11 ft. 10 ins.
Wheel base, engine, total	22 ft. 1 in.
Wheel base, engine and tender	50 ft. 2 ins.
Cylinders, diar. and stroke	19 by 24 ins.
Valve, type and gear	Piston, 11 ins.
Valve gear	Walschaert
Axles, driving, main	8 1/2 by 8 1/2 ins.
Axles, leading and trailing	8 by 8 1/2 ins.
Axles, engine truck	5 by 8 ins.
Axles, tender	5 by 9 ins.
Boiler, type	Wagon top
Boiler pressure	180 lbs.
Heating surface, firebox	152 sq. ft.
Heating surface, tubes	911 sq. ft.
Heating surface, total	1062 sq. ft.
Heating surface, superheater	235 sq. ft.
Tubes, no. and diar.	117—2 ins.; 18—5 ins.
Tubes, length	10 ft. 11 1-16 ins.
Firebox, length and width	.96% by 41 3/4 ins.
Grate area	28 sq. ft.
Superheater	Vaughan and Horsey
Staying	Radial and cross
Tender capacity, water	4,000 imp. gals.
Tender capacity, coal	10 tons

Following are chief dimensions of the class E3 locomotives, which the C.P.R. is building at its Angus shops, as mentioned in our last issue:—

Weight on drivers	107,324 lbs.
Weight, total	145,757 lbs.
Driving wheels, diar.	70 ins.
Wheel base, rigid	13 ft. 3 ins.
Wheel base, total engine	23 ft. 11 ins.
Wheel base, engine and tender	51 ft. 1 1/4 ins.
Cylinders, diar. and stroke	19 by 24 ins.
Valve, type and diar.	Piston, 11 ins.
Valve gear	Walschaert
Axles, driving, main	8 1/2 by 8 1/2 ins.
Axles, leading and trailing	8 by 8 1/2 ins.
Axles, engine truck	5 by 9 ins.
Axles, tender	5 by 8 ins.
Boiler, type	Wagon top
Boiler pressure	180 lbs.
Heating surface, firebox	152 sq. ft.
Heating surface, tubes	1045 sq. ft.
Heating surface, total	1197 sq. ft.
Heating surface, superheater	265 sq. ft.
Tubes, no. and diar.	117—2 ins.; 18—5 ins.
Tubes, length	12 ft. 5 1-16 ins.
Firebox, length and width	.96% by 41 3/4 ins.
Grate area	28 sq. ft.
Superheater	Vaughan and Horsey
Staying	Radial and cross
Tender capacity, water	4,000 imp. gals.
Tender capacity, coal	10 tons

The 10 ten wheel locomotives which the C.P.R. is having built by the Canada Foundry Co., Toronto, will have the cabs fitted with side doors, and the front tank arranged to come up to the back of the cab, and make a covered gangway for the fireman. The tank will be fitted with a coal pusher on top of tank body, to be operated by two air cylinders, which, when lifted, will feed coal to front of tank. The cab will be equipped with electric light. Following are chief dimensions, etc.:—

Weight on drivers	198,000 lbs.
Weight on leading truck	25,000 lbs.
Total weight	223,000 lbs.
Weight of tender, loaded	134,000 lbs.

Wheel base, driving	16 ft. 6 ins.
Wheel base, total engine	25 ft. 5 ins.
Wheel base, engine and tender	55 ft. 11 1/2 ins.
Cylinders, diar. and stroke	23 1/2 by 32 ins.
Valves, type and diar.	Piston, 12 ins.
Driving wheels, diar.	63 ins.
Truck wheels, engine, diar.	31 ins.
Truck wheels, tender, diar.	36 1/4 ins.
Journals	
Main, 10 by 14 ins.; others, 9 1/2 by 14 ins.	
Journals, engine truck	6 by 11 ins.
Journals, tender truck	5 1/2 by 10 ins.
Boiler, type	Extended wagon top
Boiler, pressure	180 lbs.
Boiler, outside diar., front end	6 ft.
Firebox, length and width	1.04% by 70 1/2 ins.
Tubes, no. and diar.	210—2 1/4 ins.; 30—5 1/2 ins.
Tubes, length	15 ft. 2 1/2 ins.
Heating surface, tubes	2616 sq. ft.
Heating surface, firebox	165 sq. ft.
Heating surface, total	2781 sq. ft.
Heating surface, superheater	437 sq. ft.
Grate area	49 sq. ft.
Capacity, water	5,000 imp. gals.
Capacity, coal	12 tons
Stack height above rail	15 ft. 3 9-16 ins.
Width outside overall	10 ft. 6 ins.
Superheater	Vaughan and Horsey
Valve motion	Walschaert
Headlights	Electric
Steam heating	Canadian Gold system
Air brakes	Westinghouse, 11 ins. pump
Wheels	Steel tired with retaining rings

Telephone Train Dispatching on the Grand Trunk Railway.

The G.T.R. has had such success with the two telephoning dispatching circuits installed on its Northern division that it has decided to equip the whole line between Montreal and Chicago, which will be divided into five circuits as follows:—

1. Montreal to Brockville, Ont., 125 miles and 26 way stations. Dispatcher located at Montreal.
2. Brockville to Toronto, 210 miles, 30 way stations. Dispatcher located at Belleville, Ont.
3. Toronto to Sarnia, Ont., 169 miles, 30 way stations. Dispatcher located at Stratford, Ont.
4. Extends Port Huron to Battle Creek, Mich., 160 miles, 30 way stations. Dispatcher located at Battle Creek.
5. Battle Creek, Mich., to Chicago, Ill., 172 miles, 39 way stations. Dispatcher located at Battle Creek.

There will be approximately 155 way stations equipped in all, and it has been decided to use the standard 102C plector sets and the swinging type telephone transmitter arm, an order for the whole apparatus having been given the Northern Electric & Manufacturing Co., Montreal.

The Pere Marquette Rd. summer hotel, The Bungalow, at Erieau, Ont., was destroyed by fire, Oct. 12.

The Grand Trunk Pacific Ry. has, according to a Winnipeg press dispatch, decided to install telephone train dispatching over all its lines. The section between Fort William and Superior jct., Ont., will be equipped first.



SEALED TENDERS addressed to the Postmaster General, will be received at Ottawa until Noon, on

Friday, the 6th December, 1912.

for the conveyance of His Majesty's Mails on a proposed Contract for four years, six times per week, over Rural Mail Route from KING, ONTARIO, to commence at the pleasure of the Postmaster General.

Printed notices, containing further information as to conditions of proposed Contract, may be seen and blank forms of Tender may be obtained at the Post Office of King and at the office of the Post Office Inspector at Toronto.

G. C. ANDERSON,
Superintendent.

Post Office Department,
Mail Service Branch,
Ottawa, 21st October, 1912.

Railway Development.

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta Interurban Ry.—The Board of Railway Commissioners has approved of location plans for the company's line near Calgary, Alta., from mileage 2.28 to 9.93, and of another line from mileage 0 to 5.49. (Oct., pg. 501.)

Alberta, Peace River and Eastern Ry.—Application was made recently to the Minister of Railways for approval of the route map of a line from the International boundary to Calgary, thence to Edmonton and on to the Peace river and Fort Churchill, on Hudson bay, a total distance of 1,535 miles. The Minister refused sanction, and stated that approval would only be given for such portion of the line as could be built in two years, and further applications would have to be made for the approval of route maps for additional mileage. Further consideration was postponed, and the Minister directed that the company and the Western Dominion Ry. should get together and come to an understanding as to their separate interests. See Western Dominion Ry. (Aug., pg. 411.)

Algoma Central and Hudson Bay Ry.—The annual report of the Lake Superior Corporation, owning the A.C. and H.B. Ry., stated that the railway had been completed to the C.P.R., and would shortly be open for traffic. The extension to the Canadian Northern Ry. is expected to be completed within a few months, and the further extension to the G.T. Pacific Ry. is expected to be completed by the time of holding the next annual meeting. The building of the new terminal station at Sault Ste. Marie and the improvement of the terminal facilities there and at the port of Michipicoten are progressing satisfactorily. (Oct., pg. 501.)

Algoma Eastern Ry.—Press reports state that the line will be completed through to Little Current, Manitoulin Island, Ont., this year, except for the swing bridge over the channel at Little Current. (Aug., pg. 411.)

The British Pacific Coal Co. has been carrying out an extensive development programme on Graham island, the chief island of the Queen Charlotte group off the coast of British Columbia, in the vicinity of Prince Rupert. The company has built a line of 1.25 miles from the pit mouth to a 600 ft. shipping wharf at Queen Charlotte city. An adjoining property is being developed by the Standard Coal Mining Co., which proposes to build a line from its mines to the same wharf. T. R. Morrow, Vancouver, B.C., is president of the B.P.C. Co.

Burrard Inlet Tunnel and Bridge Co.—The Board of Railway Commissioners has approved of revised location plan for the line in the vicinity of the second narrows of Burrard Inlet, near Vancouver, B.C., station O L 174 and 88.7.

There is considerable local opposition to the 200 ft. central swing span in the proposed bridge, and the Department of Public Works is being appealed to for the purpose of having further consideration given to the plans. (Oct., pg. 501.)

Canadian Car and Foundry Co.—Application is being made to the Dominion Parliament for an act confirming the company's letters patent and authorizing it to build a line connecting its Dominion plant in St. Pierre, Que., with its Turcot plant in Montreal, and also with other plants as may from time to time be found convenient; and also to confirm agreements made between the company and the Government and the G.T.R.

Calumet and Northern Ry.—Application is being made to the Quebec Legislature to incorporate a company with this title to build a railway from Calumet to St. Jovite. The provisional directors named are:—J. R. Colby, Montreal West; E. W. Whiting, A. T. Stewart, A. Cushing, T. M. Papineau, Montreal.

Canada and Gulf Terminal Ry.—At the annual meeting in Montreal, Oct. 4, it was decided to leave the question of the extension of the line in abeyance until it has been definitely decided which form the aid to be granted by the province will take. In the meantime the final surveys for the location of the line through the centre of the Gaspé peninsula are being made. (Sept., pg. 450.)

Central Ry. of Canada.—A resolution was passed at a public meeting in Midland, Ont., Oct. 10, endorsing the company's project to build a direct line from Montreal via Ottawa to Midland. C. N. Armstrong, Vice President, said the distance between the two points is 335 miles, and the contract calls for the building of a line with a 0.4 gradient. The company has offered to grant the Dominion Government running powers over the line on an equitable basis. He also said that it is expected to start work upon the western half of the line in the spring. (Oct., pg. 501.)

Dominion Atlantic Ry.—We are officially advised that a contract has been let to Kirk and Cooke, North Sydney, N.S., for building a line from Centreville, on the Cornwallis branch, to Weston, N.S., 15 miles. A start was made with construction early in October.

We are further officially advised that the trestle bridge at Smiths Cove, N.S., which is 375 ft long, about 50 ft. deep, with 15 ft. openings, is to be replaced by a 10 ft. C.P.R. standard concrete arch and filled. There will be about 40,000 cubic yards of filling, with an arch 155 ft. long. (Oct., pg. 501.)

Active construction on the line has been started by the contractors. The line is 15 miles long, with about two miles of sidings. There will be five stations, Lakeville, Belltown, Grafton, Somerset and Weston. The contract calls for the completion of the line by Aug., 1913, and it is expected to have track laid to Lakeville by the end of the year.

Edmonton, Dunvegan and British Columbia Ry.—The Board of Railway Commissioners has authorized the company to connect its line with the G.T. Pacific in sec. 24, tp. 53, range 25 west 5th meridian, near Edmonton, Alta.

Tracklaying is reported to have been started near Edmonton, and it is expected to have about 120 miles laid this season. The grading is reported completed to Athabasca Landing.

The company will use the union station to be erected by the G.T. Pacific Ry. for passenger traffic in Edmonton, but is laying out its own freight terminals on a site of 142 acres adjoining those of the G.T. Pacific Ry. (Oct., pg. 501.)

Erie, London and Tillsonburg Ry.—We are officially advised that the route map for this line has been approved for the section from Port Burwell to Aylmer, Ont., and that the route map for the balance of the line from Aylmer to London, is before the Minister of Railways for approval. Nothing further has been definitely settled. Only sufficient work is being done in the vicinity of Port Burwell, at present, to retain the

charter rights which have been secured by the G. T. R. (Oct., pg. 501.)

Esquimalt and Nanaimo Ry.—The extension from McBride Jet. to Courtenay, in the Comox Valley, Vancouver Island, B.C., will be about 45 miles long. About 15 miles is reported graded from McBride Jet., and about 10 miles of grading from Courtenay southerly. Tenders are under consideration for the supply of 50,000 ties for the section of the line from McBride Jet. to Big Qualicum river; and for the grading and bridging from Big Qualicum river to Union bay, 19.29 miles. There will be seven steel bridges from 60 to 80 ft. long, and 10 large trestles on the entire extension. The trestles will subsequently be filled. (Oct., pg. 501.)

Fort George to Barkerville, B.C.—Application is being made to the British Columbia Legislature to incorporate a company to build a railway to be operated by steam, electricity or other power from Fort George southeasterly to the Fraser river, at Six Mile creek, and on to the Willow river, thence northeasterly to the Bear river, and thence southeasterly to Barkerville, or between the same points by any other feasible route. Burns and Walkem, Vancouver, B.C., are solicitors for applicants.

Grand Lake and Bell River Ry.—We are officially advised that the charter for the building of this railway was granted to owners of timber limits in the Grand lake district of Quebec. Since the charter was obtained, and subsidies voted by the Dominion Parliament and the Quebec Legislature, the North Ry. has been organized to build a line from Montreal to connect with the National Transcontinental Ry. at Bell river crossing. As this line is likely to pass through the district which the G.L. and B.R. Ry. was projected to serve, it is quite probable that the latter company will not proceed to organization. (July, pg. 339. See North Ry.)

Fredericton and Grand Lake Coal and Ry. Co.—We are officially advised that construction on this railway has been much impeded by the general bad weather, but, nevertheless, a good portion of the grading has been completed. The work on the bridge foundations, particularly, has been retarded by the frequent recurrence of high water, but at Little river and at the Nashwaak river a considerable portion of the concrete for the abutments and piers has been placed. Track has been laid for nine miles eastward from Gibson, and for six miles westward from the end of the New Brunswick Ry. and Coal Co.'s line near Minto. There are three steam shovels and the necessary train service employed, one of the shovels being devoted to ballasting, which has been completed for about seven miles. It is expected to have steel laid through, and most of the work completed by the end of the year. The branch line from Gibson to Marysville, about three miles, was put under construction at the beginning of October. H. W. D. Armstrong, Fredericton, N.B., is Chief Engineer. (Sept., pg. 450.)

Halifax and South Western Ry.—In a recent interview, the Deputy Commissioner of Mines for Nova Scotia is reported as saying, after having made an inspection of the line, that there was no dangerous condition of the roadbed as had been alleged. There were a considerable number of worn-out ties on the first two sections, but these were being replaced. There were also places on the line where more ballast would improve the appearance, and perhaps the smoothness of running. "It is not clear to me," he added, "that there have been casualties exceeding those on any other road for the same train mileage." (May, 1911, pg. 409.)

Huntingdon and Hemmingford Ry. Co.—Application is being made to the Quebec Legislature to incorporate a company with this title to build a railway from Huntingdon to Hemmingford, Que. The provisional directors named are:—H. Timmis, R. H. McMaster, R. H. Barron, Montreal; C. W. Taylor, A. R. McMaster, K.C., Westmount, Que.

Interprovincial and James Bay Ry.—We have been officially advised that this railway company is a subsidiary of the C.P.R.

The Board of Railway Commissioners has approved location through the parishes of Gendreau and Mercier, Que., mileage 0 to 10.11. The line is planned to start from the C.P.R. Kipawa branch, near Kipawa, and the route has been approved by the Minister of Railways as far as Ville Marie, 54 miles.

Kettle Valley Lines.—Steel is reported to have been laid to Carmi, B.C., and grading from that point to the Hope summit is progressing favorably. The work in the vicinity of Penticton is also reported to be progressing at a satisfactory rate. It is expected that the line will be completed through to the Fraser river by Feb., 1914. The line will include the Hope mountain section, which is being built as a joint section under an agreement by the Vancouver, Victoria and Eastern Ry. As will be seen by reference to the C.P.R. Co.'s annual report on another page of this issue the K.V.L. is to be leased to that company on completion. (Oct., pg. 501.)

C. J. Seymour, engineer on construction, is quoted as having stated in Vancouver, Oct. 11, that it was expected to let the last of the contracts shortly. A location party was engaged in the work between Coquihalla summit and Hope, on the Fraser river, the distance down the valley of the Coquihalla river being nearly 40 miles. As now laid out it will entail the construction of 17 tunnels of different lengths, and the grade up this valley will be 2.2%, compensated on curves. At Hope the Fraser river will be bridged to connect with the C.P.R. tracks, the structure at present contemplated being estimated to cost \$750,000. The average cost of construction up the Coquihalla valley is estimated at something over \$100,000 a mile, and under the arrangements arrived at through the Board of Railway Commissioners some time ago, it will be used jointly by the K.V. Ry. and the Vancouver, Victoria and Eastern Ry., the lines connecting at Coldwater on the summit. The V.V. & E. has already let a contract for construction from Coalmont to Coldwater, 46 miles, and Twohy Brothers are building 13 miles from the Kettle valley loop.

Mexican Gulf and Manitoba Ry.—Press reports state that surveys have been completed by J. M. Wiley, Chief Engineer of a railway with this title, for the building of a line from Baton Rouge, on the Mississippi river, Louisiana, U.S., through Leroy, Minneapolis, Princeton, Brainerd, Park Rapids, Mallard, Abda, Bagley and Chourbrook, to the International boundary, and thence to Winnipeg, Man.

A Minneapolis, Minn., despatch, Oct. 7, says J. M. Wiley, F. Beckley and A. J. Beall were arrested and arraigned before the grand jury there on a charge of using the U.S. mails to defraud in connection with the promotion of a company to build a railway from Winnipeg to the Gulf of Mexico. The accused entered pleas of not guilty, and the case was set down for hearing at the U.S. District Court in April, 1913. Beckley and Beall submitted that they were only employes of Wiley, but the U.S. counsel argued that they were represented as officers of the company. Pending the pro-

vision of bail the accused men were taken to jail.

Minneapolis, St. Paul and Sault Ste. Marie Ry.—Press reports state that an extensive property has been acquired in Milwaukee, Wis., for a terminal site for a branch line of the M., St.P. and S.S.M. Ry., or its leased line, the Wisconsin Central Ry.

Another report states that the financial end of the project for the laying out of a large union freight yards terminals and freight and passenger stations, has been arranged, and that the M., St.P. and S.S.M. Ry. is one of the companies guaranteeing the bond issue.

A third report states that a project is under consideration for the extension of one of the company's lines to Great Falls, Mont., and connecting up at Coutts, Alta., with the Alberta Ry. and Irrigation Co.'s line. (Oct., pg. 502.)

North Ry.—F. H. Clergue is reported as stating that surveys would be sufficiently advanced by the beginning of 1913 to give out at least part of the contracts. Construction can be carried on north and south from the National Transcontinental Ry. at the crossing of the Bell river; from Montreal, and from the shore of Nottawa bay. (Sept., pg. 491.)

Ontario-Michigan Ry.—Application is being made to the Dominion parliament to extend the time for the construction of the lines authorized to be built by chap. 122 of the statutes of 1910-11. (July, 1911, pg. 647.)

Pacific Great Eastern Ry.—A contract for the building of this line from Vancouver to Fort George, B.C., has been let to P. Welch, who has resigned his position as Vice President to accept it. Construction headquarters are being established at Lillooet, and work will be pushed forward in the direction of Fort George. The location surveys for this section of the line are completed.

After considerable negotiations the company has acquired the railway and all other property of the Howe Sound and Northern Ry. for \$1,000,000, payable in cash in three annual instalments. The agreement of sale, it is said, was signed in Victoria, Oct. 10. The H.S. and N. Ry. has about 10 miles of line in operation running from Newport at the head of Howe sound inward, with power to build into Vancouver on the one side, and via Lillooet to Fort George on the other. It has valuable water frontage rights on Howe sound and a considerable land property in Newport. J. C. Keith, A. McEvoy, formerly of Toronto, and J. C. Gill, Vancouver, were the principal owners of stock in the company. The purchase of this property settles the difficulties of the route as between Vancouver and Lillooet, and will enable construction to be proceeded with more speedily. (Oct., pg. 502.)

Quebec and Saguenay Ry.—We are advised that construction work on this line was closed down at the end of Aug., by the subcontractors, on instructions received from O'Brien and Doheny, the general contractors. The cause assigned is that the cost of construction was far exceeding the original estimate, and the capital raised was not much in excess of these estimates. The estimates of quantities and of cost were made by the engineers in charge, before the appointment of A. H. U. Bruce, the present Chief Engineer. The directors hope to be in a position to reopen the work at an early date and to complete the line. The section under construction extends from near St. Joachim to Murray Bay, Que., 56 miles. The work to Subgaach is about 95% completed, and most of the concrete work of the piers and abutments of the bridges has been completed. Ten miles of rails are on the ground, and the ties and all other track

material for the 56 miles has been delivered. The main work still to be done to complete the contract is a small amount of grading, the tracklaying, ballasting, and the putting in place of the steel bridges. It is not intended to erect any station buildings, tanks, etc., until the steel is laid. The company has completed a line from Murray Bay to the pulp works near Nairns Falls.

A Quebec press despatch, Oct. 9, states that the general contractors, O'Brien and Doheny, are petitioning for the liquidation of the company in order to secure the payment of \$850,000 stated to be due on construction account. The petition will be considered by the Exchequer Court at an early date.

Quebec and North Eastern Ry.—The Quebec Legislature is being asked to incorporate a company with this title to build a railway from the western boundary of the province near Oposatica lake, Pontiac county, northeasterly through the clay belt to the National Transcontinental Ry., near Lake Kapitachuan, about 160 miles, with branch lines, one from the crossing of the Belle river by the N.T. Ry., southeasterly to Mount Laurier, and on to Three Rivers, on to Grand Piles and on to Quebec; and a second from Lake Timiskaming southerly via Ville Marie, thence northeasterly to Lac des Quinze or Lake Expanse. G. Parent, Quebec, is solicitor for applicants.

Reid Newfoundland Co.—Grading is reported to be completed on 80 miles of the branch from near St. Johns to Trepassey Bay, Nfld., and track laid on 70 miles. On the 35 mile branch from Broad Cove to Hearts Content, 12 miles of grading is reported completed and 10 miles of track laid. (Aug., pg. 412.)

St. John and Quebec Ry.—The New Brunswick Government has authorized the issue of \$160,000 of the guaranteed bonds of the St. J. and Q. Ry. Co. on account of the building of the line along the St. John River valley between St. John and Grand Falls. The guaranteed bonds are issued from time to time as required on the progress estimates approved by the Provincial Engineer. (Oct., pg. 502.)

Saskatoon Transfer Ry.—Tenders are reported to be under consideration for the building of a transfer railway through the industrial section of Saskatoon, Sask. The railway is to be built by the Saskatoon Industrial Development and Power Co. It is hoped to have the grading completed this year and to lay the steel next spring.

We are officially advised that the following are the present directors and officers:—Vice President, J. W. White; Treasurer, C. I. Alexander; Chief Engineer, T. W. Brown; directors, A. Flether, A. Dick, — Anthes. The President had not been elected.

The Sydney and Louisburg Ry. proposes to build a new bridge in Dominion, N.S., in place of the one known as the Red bridge, and to reduce the height over the rails to not less than 15½ ft. (June, pg. 302.)

Timiskaming and Northern Ontario Ry.—In connection with the proposal to electrify one track of the double track between North Cobalt and Cobalt see item Nipissing Central Ry., under Electric Railway Projects, Etc. (Oct., pg. 502.)

The bridge on the Charlton to Elk Lake branch, across Jean Baptiste creek, was reported to have been completed Oct. 12. Track laying is being delayed on account of the scarcity of steel, but the Chairman of the Commission is reported to have stated that he expected steel will be laid into Elk Lake early in December.

Surveys are reported to have been started for a spur line from Iroquois Falls Jct. to the river, where a large pulp mill is being built.

Toronto, Hamilton and Buffalo Ry.—At a conference with the Hamilton board of control, Oct. 2, the General Superintendent stated that the company preferred to raise rather than depress its tracks. The company's engineers are working on plans with that object in view, and will submit them at an early date. (Oct., pg. 502.)

Western Dominion Ry.—A general meeting of shareholders has been called to be held at Carleton Chambers, Ottawa, Nov. 7, to consider an agreement for the purchase by the W.D. Ry. of the Alberta Pacific Ry.'s rights and property. O. E. Culbert is Secretary.

A route map of a section of this projected railway, which has been filed with the city clerk of Calgary, Alta., shows the line running from tp. 22, range 3, west of 5th meridian, and to the south of the Sarcee Indian reservation. From this point it runs into Calgary, and following a course a considerable distance west of, but parallel to the C.P.R. Calgary-Edmonton line, turns into Edmonton. The city council has declined to express any approval of the route until a map is submitted showing in detail the proposed route within the city boundary.

Application will be made to the Board of Railway Commissioners, Nov. 16, for a recommendation to the Governor-in-Council for the sanction of an agreement for the purchasing by the W.D. Ry. Co. of all the charter rights, etc., of the Alberta Pacific Ry. Co., and for the amalgamation of the two companies.

In the course of an application of the Atlantic, Peace River and Eastern Ry. to the Minister of Railways for approval of a route map, representatives of the W.D. Ry. entered opposition on the ground that the route granted to them under a provincial charter would be interfered with. The Minister intimated that before the matter came before him again the two companies should reach an agreement as to the location of their respective lines.

White Pass and Yukon Route.—We are officially advised that the directors are not yet in a position to say definitely whether or not the line will be extended as reported. The matter has been under consideration for some time. (Sept., pg. 451.)

Grand Trunk Railway, Betterments, Construction, Etc.

Portland, Me.—As the result of a recent inspection by Montreal officials, press reports state, it has been decided to demolish the present wharf and immigration buildings at Portland next year, and to replace them by larger structures.

Central Vermont Ry. Improvements.—The Board of Railway Commissioners has granted an extension of time within which the company shall ballast its line between St. Lambert and Waterloo; Marneville and St. Cesaire; Farnham and Freligsburg; Iberville and Farnham, Que.

Quebec Freight Sheds.—A conference has been held between representatives of the Quebec harbor and Vice President Kelley, G.T.R., with a view to the demolishing of the present freight sheds at Point Levis, and the building of a structure there sufficiently large to accommodate the traffic of the G.T.R., the Intercolonial Ry. and the Quebec Central Ry.

Montreal.—An arrangement has been completed between the company and the Montreal city council to divert the line of St. Etienne street so as to improve the approaches to the Victoria Jubilee bridge, and to extend the freight yard there.

The council has granted a permit for

the erection of a six-story solid brick building for freight offices, on the corner of Wellington and St. Etienne streets, at an estimated cost of \$90,000. As announced in our last issue the contract for the building has been let to the John S. Metcalf Co., Montreal.

Prescott, Ont.—R. S. Logan, Vice President, informed the Prescott, Ont., town council at a recent meeting, that owing to the lateness of the season it would not be possible to do very much with the laying out of the proposed terminals there this year, but that a start would be made early next spring.

Orillia to Midland, Ont.—The track between Orillia and Midland, Ont., 33½ miles, is being relaid with 90 lbs. steel, replacing the old 60 lbs.

Canada Atlantic Ry.—Superintendent Coleman is quoted as stating, Oct. 14, that the company had under consideration plans for the extension of its harbor facilities at Depot Harbor, Ont. The grain carrying trade at the port has doubled during the year.

Ottawa Terminals Ry.—Application is being made to the Dominion Parliament to authorize the company to increase its bond issue from \$3,000,000 to \$6,000,000.

Hamilton Freight Yards.—The Board of Railway Commissioners has authorized the company to lay six tracks across Robert street to connect with its new freight yard at the corner of Elgin and Barton streets, Hamilton, Ont.

Grand River Bridge, Brantford.—The Board of Railway Commissioners has authorized the rebuilding of bridge 75, mileage 8.21, over the Grand river at Brantford, Ont. Work was reported to have been started Oct. 14, and it is expected that the bridge will be completed by the spring. The plans provide for erection of an additional span of 76½ ft. at the western end, and the lengthening of the eastern span by 15 ft. The new piers and abutments will be of concrete. The cost is estimated at \$40,000.

Electrification of Branch Lines.—A petition asking for the electrification of the Galt and Elmira branch lines was presented to U. E. Gillen, Superintendent Middle division, at Waterloo, Ont., Sept. 25. He is reported to have expressed his general approval of the project, and to have stated that it would be given every consideration by the management at an early date. (Oct., pg. 503.)

Great Northern Railway Lines in Canada

Vancouver, Victoria and Eastern Ry. and Navigation Co.—A. H. Hogeland, Chief Engineer, G.N. Ry., returned to Vancouver, B.C., Oct. 10, after an inspection of construction work on the line. He is reported as stating in an interview that the quantity of work done since his last visit had exceeded his expectations. There was considerable scarcity of labor, and the work was consequently held back. The line is now completed between Penticton and Coalmount in the Coquihalla valley. A contract has been let to Guthrie, McDougal and Co. for the grading of 42 miles from Coalmount to Coquihalla summit. This firm has sublet 26 miles of the contract, and has a large gang at work on the other 16 miles. The only section of the line not under construction is the 38 mile stretch between Coquihalla and Hope, which is the roughest portion on the whole line. It is to be built for joint operation by the V. V. and E. Ry. and the Kettle Valley Lines. It is expected to have the line from the present terminus at Abbotsford in

operation to Hope by the end of the year. This mileage includes a section of the Canadian Northern Pacific Ry., for the use of which an agreement has been approved. The western section of the line comprises the old New Westminster Southern Ry., the constructed section of the Vancouver, Westminster and Yukon Ry., and some other pieces of line, which connect up with New Westminster, Vancouver, and the ferries plying from Port Guichon to connect with the Victoria and Sidney Ry. on Vancouver Island.

Vancouver Terminals.—A. H. Hogeland, Chief Engineer, G.N.R., is reported as having stated in Vancouver, Oct. 10, that he expected the company would start active work on the construction of the new station within the next six months, and that it would be completed about the same time as the grading and filling work now under way on False creek. (Oct., pg. 507.)

Maintenance of Way by Contract.

In reference to the article on this subject which appeared in Canadian Railway and Marine World for October, one of the most prominent and practical railway officials in the Dominion has written us as follows:—

"I favor doing all work possible by contract, but I do not think it would ever be advisable to let the maintenance of way and bridges by contract, for the reason that it would be difficult to supervise contractors, and I do not see how they could perform this work at any less cost than a railway company, and in my opinion they certainly would not do it as well.

"Of course, grading, track laying and ballasting on new lines are let by contract, and we also contract for crushed rock, etc., but I would never favor letting ordinary maintenance by contract. The experience of railways which let repairs to their freight cars and locomotives by contract does not appear to have been very satisfactory."

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	\$1,829,700	\$1,335,100	\$494,600	\$133,000
Aug.	1,745,800	1,375,000	370,800	56,100
	\$3,575,500	\$2,710,100	\$865,400	\$189,100
Incr.	\$ 679,900	\$ 489,900	\$189,100	.....

Approximate earnings for Sept., \$1,671,500, against \$1,576,400 for Sept., 1911.

The mileage in operation during Aug. was 4,297, against 3,711 in Aug., 1911.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	\$12,052,398.58	\$7,604,221.68	\$4,448,176.90	\$745,148.57
Aug.	12,251,715.87	7,533,790.21	4,717,925.66	642,354.65
	\$24,304,114.45	15,138,011.89	\$9,166,102.56	\$1,387,503.22
Inc.	4,220,391.89	2,832,888.67	1,387,503.22	.....

Approximate earnings for Sept., \$11,322,000, against \$9,834,000 for Sept., 1911.

Grand Trunk Railway Earnings, Etc.

Aggregate from July 1 to Sept. 30:—

	1912.	1911.	Increase.
G.T.R.	\$11,359,577	\$10,351,200	\$1,008,577
C.A.R.	620,311	551,464	68,847
G.T.W.R. ..	1,681,962	1,685,190	96,772
D.G.H.&M.R.	615,359	570,764	44,595

Totals ..\$14,277,209 \$13,158,618 \$1,218,791

W. HARTY, Kingston, Ont., formerly President, Canadian Locomotive Co., has given \$1,000 to the Kingston general hospital.

Mainly About Transportation People.

W. H. ARDLEY, General Auditor, G.T.R., Montreal, has been appointed a justice of the peace.

WALTER LINDLEY, at one time Secretary, Grand Trunk Ry. Co., died suddenly in England, Oct. 22, aged 80.

SIR WM. MACKENZIE, President, Canadian Northern Ry., has subscribed \$2,000 to the Vancouver high school cadet fund.

G. L. BROWN, of the Pullman Co.'s staff, who died at St. Paul, Minn., Sept. 26, was well known in railway circles in Winnipeg.

S. S. FULLER, who died at Stratford, Ont., Oct. 1, was Vice President of the old Stratford and Port Dover Ry., now merged in the G.T.R.

W. SUTHERLAND TAYLOR, ex-Treasurer C.P.R., and Mrs. Taylor, who have been spending the summer in Great Britain, have returned to Montreal.

Mrs. G. M. Bosworth, wife of G. M. BOSWORTH, Vice President, C.P.R., was one of the recent arrivals in England, by the s.s. Empress of Britain.

S. R. NORCROSS, who died at Port Colborne, Ont., Oct. 1, was father of J. W. NORCROSS, Toronto, Manager Merchants' Montreal and Interlake Lines.

M. WHITTY, for many years G.T.R. roadmaster at Stratford, Ont., died at Mitchell, Ont., Oct. 9, aged 77. He had been living retired for some years.

J. G. SULLIVAN, Chief Engineer, Western Lines, C.P.R., Winnipeg, has been elected Honorary President of the Engineering Society of Regina, Sask.

BARLOW CUMBERLAND, ex-Vice President, Niagara Navigation Co., who has been living in Port Hope, Ont., for several years, has removed to Toronto for the winter.

HON. J. S. HENDRIE, M.P.P. for Hamilton, Ont., who has special charge of railway legislation, etc., in the Ontario Legislature, is visiting Scotland with his wife.

HON. F. COCHRANE, Minister of Railways and Canals, has sold his house in Toronto, which he occupied before becoming a member of the Dominion Cabinet.

A. TRITES, charge hand at the Intercolonial Ry. roundhouse, Moncton, N.B., fell into a firebox during the course of his work, Oct. 10, and had three of his ribs broken.

W. A. JEWETT, Nelson, B.C., has been appointed stipendiary magistrate for the territory west of the Rocky Mountains, with headquarters at Tete Jaune Cache, B.C.

REX CROASDELL, Publicity Agent, Canadian Northern Ry., who was operated on in Toronto, recently, for internal trouble, was reported, Oct. 24, to be progressing favorably.

JAS. NORTON was presented with a silver tea service by the staff of the Intercolonial Ry. general freight office, Moncton, N.B., on the occasion of his marriage recently.

R. W. BURNETT, General Master Car Builder, C.P.R., Montreal, has been elected a member of the M.C.B. special committees on car wheels and car trucks, for the 1913 convention.

E. J. CHAMBERLIN, President G.T.R. and G.T. Pacific Ry., has been elected President, G.T. Western Ry. and other G.T.R. subsidiary companies in Michigan, in succession to the late C. M. Hays.

R. CUMMINGS, for the past 14 years station agent at Truro, N.S., has retired after 41 years' service with the Intercolonial

Ry. He and Mrs. Cummings left Truro, recently, for San Francisco, Cal.

S. McELMOYLE, Freight Claims Agent Canadian Northern Ry., Winnipeg, was presented with a cabinet of silverware by the staff of the General Freight Agent's office, Oct. 11, on the occasion of his marriage.

W. P. HINTON, General Passenger Agent, G.T. Pacific Ry., was the principal guest at a civic dinner at Watrous, Sask., Oct. 7, on the occasion of the opening of the sanatorium and summer hotel at Lake Manitou.

The Winnipeg Free Press of Oct. 5 recalls the fact that it was on that day in 1892 that D. B. HANNA removed from Portage la Prairie to Winnipeg to become Treasurer of the old Manitoba and Northwestern Ry.

WM. HARDER, who was one of the first C.P.R. officials who arrived in Winnipeg in Mar., 1881, as Traffic Manager of the western lines, paid a short visit to the city, Sept. 23, after an absence of nearly 30 years.



W. H. Winterrowd,
Mechanical Engineer, C.P.R. Angus Shops,
Montreal.

G. O. SOMERS, who resigned his position as General Freight Agent, Chicago Great Western Ry., a short time ago, has been appointed Manager of the Canada Bond Co., Ltd., which has been organized in Toronto.

A. E. KILLAM, Inspector of Bridges and Buildings, Intercolonial Ry., Moncton, N.B., has been elected President, American Railway Bridge and Building Association, for the current year. He was a Vice President during the year 1911-12.

A. B. CAREY, Resident Engineer, Vancouver Island Power Co., Victoria, B.C., was presented with a silver tea set, by the members of the staff engaged on the Jordan river power plant construction, on leaving the service, Sept. 23.

SCOTT GRIFFIN, European Manager, Canadian Northern Ry., and Canadian Northern Steamships, Ltd., and Mrs. Griffin, who is a daughter of Sir Wm. Mackenzie, will occupy the latter's house, 37 Curzon street, Mayfair, London, Eng., for the winter.

Miss D. A. Musgrove, only daughter

of T. A. MUSGROVE, Repair Track Foreman, Canadian Northern Ry., Winnipeg, was married in Winnipeg, recently, to A. Tamm, of Davis and Tamm, civil and contracting engineers, Brownsville, Texas.

W. C. C. MEHAN, General Superintendent, and G. A. McNICHOLL, Superintendent G.T. Pacific Ry., Prince Rupert, B.C., were presented with gold pins, by the Governor General, recently, in connection with his trip over that part of the system.

A. LICHTENHEIN, of New Rochelle, N. Y., representative of the Galena-Signal Oil Co., who spends a considerable portion of his time in Montreal, was operated on, Oct. 14, for appendicitis. On Oct. 19 we were advised that he was recovering satisfactorily.

E. J. CHAMBERLIN, President, G.T.R. and G.T.P.R.; M. Donaldson, Vice President G.T. Pacific Ry., and G. E. Fauquier, railway contractor, Ottawa, were members of a shooting party which returned to Winnipeg, Oct. 12, over the G.T. Pacific Ry. from the Rocky Mountains.

M. J. POWER'S appointment as General Storekeeper, Canadian Pacific Ry., was correctly announced in Canadian Railway and Marine World for September, but in the October issue he was erroneously referred to as the General Purchasing Agent, which position is held by E. N. Bender.

J. W. LEONARD, Assistant to the Vice President, C.P.R., Montreal; M. N. Todd, President, Galt, Preston and Hespeler St. Ry., and J. Irving, General Sales Agent, Nova Scotia Steel and Coal Co., arrived in Quebec by the s.s. Empress of Britain, Oct. 11, after a two months' trip to Europe.

ARTHUR LE COUR, of Montreal, who was engaged as chief clerk on the G.T.R. grade separation work in the west end of Toronto, died suddenly, Oct. 19, from hemorrhage of the stomach, in Montreal, where he had gone to check all accounts between the city and the railway in connection with the work.

HON. M. E. BERNIER and JAMES MILLS, members of the Board of Railway Commissioners, will at the end of 1913 have served for 10 years, and it is reported that they will then be superannuated, and with that end in view the necessary legislation will be introduced at the Dominion parliament's ensuing session.

R. DOLLAR, principal owner and manager of the Dollar line of steamships, trading between San Francisco, Cal., and the Orient, but registered at Victoria, B.C., according to the London Times, is a native of Scotland, and started life as a shanty chore boy at \$10 a month with the Edwards Lumber Co., Ottawa, when 13 years old.

J. T. McGRATH, who recently resigned as Superintendent of Rolling Stock, Chicago and Alton Rd., Bloomington, Ill., following the resignation of F. W. Morse as Vice President and General Manager, was, at one time, Master Mechanic, G.T.R., Battle Creek, Mich., which position he resigned on Mr. Morse entering the Chicago and Alton Rd.'s service.

J. E. WALSH, Manager of the Canadian Manufacturers Association traffic department, was reported recently to have been appointed as an additional traffic expert to the Board of Railway Commissioners. We have been officially advised that such an appointment has not been made, and Mr. Walsh has also made a statement to the same effect.

SIR WILLIAM WHYTE, of Winnipeg, who is a director of the C.P.R., must have been amused when he saw his portrait in Toronto Saturday Night recently and under it the caption, "Sir William Whyte, K.C.B., elected a director of the Grand

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TORONTO, CANADA, NOVEMBER, 1912.

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Trunk Pacific Ry. Co." The G.T.P.R. direc-
tor is Sir Wm. Henry White, K.C.B., who
lives in England.

W. A. GARRETT, recently chairman of
the General Managers' Association of Chi-
cago, has been elected Vice President in
charge of operation of the Chicago Great
Western Rd., at Chicago, Ill.

C. S. MELLEN, President of the New
York, New Haven and Hartford Rd., has
also been elected President of the New
York, Ontario and Western Ry., succeed-
ing T. P. Fowler, resigned.

R. J. LYDIATT, chief clerk to A. Price,
General Superintendent, Alberta division,
C.P.R., Calgary, has resigned, on his ap-
pointment as private secretary to the chair-
man of the governors of Calgary university. He
was chief clerk to Mr. Price, during the
period from 1899, when the latter was
located at Toronto, Fort William, Winni-
peg and later at Calgary.

J. McLELLAN, who died in Winnipeg,
Oct. 8, was identified with the Manitoba
Cartage Co. soon after he went to Winni-
peg in 1878, and later on joined the C.P.R.,
with which company he remained until he
retired from active service about 18 months
ago. He served as roadmaster and train-
master prior to becoming city freight agent,
which position he vacated in 1905, subse-
quently being appointed Superintendent of
Terminals at Winnipeg.

T. HICKEY, Roadmaster, Michigan Cen-
tral Rd., St. Thomas, Ont., sustained a
broken leg and some severe cuts, when his
gasoline car jumped the rails near Muncie,
Oct. 8. He was accompanied by W. O.
Houston, Division Engineer, and Assistant
Roadmaster Kinney, who both escaped
with slight bruises. It was later discov-
ered by the confession of a number of small
boys, that the placing of a spike in a
switch point was the cause of the accident.

R. A. BARRETT, who has been appointed
Superintendent, Toronto, Hamilton and
Buffalo Ry., Hamilton, Ont., commenced
railway service as Yardmaster, Michigan
Central Rd., at Montrose, Ont., and was
subsequently Trainmaster, M.C.R. division
east of St. Thomas, Ont., with headquar-
ters at Niagara Falls, Ont., and in 1911
was appointed Trainmaster, T.H. & B. Ry.,
at Hamilton, Ont., which position he held
to the date of his present appointment.

L. G. COLEMAN, who was recently ap-
pointed Superintendent, Ottawa division,
G.T.R., Ottawa, was born in Macon, Ga.,
Dec. 7, 1877, and entered railway service,
Oct. 1, 1900, since when he has been, to
May 1, 1902, engaged with the G.T.R.,
Delaware, Lackawanna and Western Rd.,
and with the Rogers Locomotive Works,
returning to G.T.R. service, May 1, 1902,
since when he has acted in the capacities
of Trainmaster and Assistant Superinten-
dent at Ottawa.

X. H. CORNELL, who has been appointed
Superintendent of Transportation, Pere Mar-
quette Rd., Detroit, Mich., was, at one time,
Master of Transportation, G.T.R. Western
division, Durand, Mich., resigning that posi-
tion in 1909, on his appointment as Super-
intendent of Transportation, Chicago and
Alton Rd., Chicago, Ill., when F. W. Morse,
formerly Vice President and General Man-
ager, G.T. Pacific Ry., was appointed Vice
President and General Manager, Chicago and
Alton Rd. His resignation from the C. & A.
Rd. followed that of Mr. Morse.

ROBERT TOOMBS, Auditor, Minneapolis,
St. Paul and Sault Ste. Marie Ry., Min-
neapolis, Minn., died suddenly in a street
car there, Oct. 10. He had been troubled
with heart disease for some time. He was
born at Milwaukee, Wis., Apr. 19, 1859,
and entered railway service in 1874. Before

becoming connected with the M. St. P. &
S.S.M.R. he was auditor of the Wisconsin
Central Ry., now the Chicago division of
the M. S. P. & S.S.M.R., and prior to that
he was auditor of the Duluth, South Shore
and Atlantic Ry., all of which are con-
trolled by the C.P.R.

SIR DONALD MANN, who has been
touring the Canadian Northern Ry. to the
Pacific coast, returned to Toronto, Oct. 14.
In connection with the recent report that
his life had been attempted while in Van-
couver, he stated that no such attempt
had been made, but that an insane person,
who had declared his intention of shooting
him, Sir Thos. Shaughnessy and E. H.
Harriman, had been taken care of by the
police. The fact that Mr. Harriman has
been dead for some time, is evidently a
proof that the man is not in his right
mind.

Biographical data respecting W. C. LAN-
CASTER, Electrical and Mechanical En-
gineer, Montreal Tunnel and Terminal Con-
struction, Mackenzie, Mann & Co., was pub-
lished in Canadian Railway and Marine
World for September, pg. 460, and his por-
trait should have been given on the same
page, but by an unfortunate transposition
it appeared in the Electric Railway Depart-
ment on pg. 470, being designated as a
portrait of F. D. Burpee, Superintendent
and Purchasing Agent, Ottawa Electric Ry.
Mr. Lancaster's portrait is therefore re-
printed in this issue, with the correct desig-
nation.

A. J. IRONSIDES, whose appointment as
District Master Mechanic, district 4, Sas-
katchewan division, C.P.R., Saskatoon,
was announced in our last issue, was born
at Orillia, Ont., in 1882, and entered C.P.R.
service in 1901, since when he has been, to
1902, wiper at Windsor street roundhouse,
Montreal; 1902, foreman, same place; 1902
to Aug., 1906, similar position at Brandon,
Man.; Aug., 1906 to June, 1907, locomotive
driver, same place; June to Dec., 1907,
locomotive driver, Kenora, Ont.; Dec., 1907,
to Apr., 1908, locomotive driver, Brandon,
Man.; Apr., 1908, to Aug., 1912, locomotive
driver, Sutherland, Sask.

H. E. WHITTENBERGER, who has been
appointed Superintendent, Middle division,
G.T.R., Toronto, and whose portrait ap-
pears in this issue, was born at Peru, Ind.,
Nov. 9, 1869, and entered transportation
service in 1885, since when he has been,
to Feb., 1897, in various positions, Wabash
Rd.; Feb., 1897, to May, 1902, Trainmaster,
Middle division, G.T.R.; May, 1902, to
Sept., 1904, Superintendent, Denver and
Rio Grande Ry.; Sept., 1904, to Jan., 1906,
Superintendent, Cincinnati, Hamilton and
Dayton Ry., Indianapolis, Ind.; Jan., 1906,
to Sept. 30, 1907, Superintendent, Kansas
City Southern Ry.; Sept. 30, 1907, to
Oct. 17, 1912, Superintendent, Eastern
division, G.T.R., Montreal.

C. T. DELAMERE, whose appointment as
Assistant District Engineer, Canadian
Northern Ontario Ry., Montreal-Port
Arthur lines, Port Arthur district, was an-
nounced in a recent issue, was born at
Brainerd, Minn., Mar. 18, 1881, and gradu-
ated in civil engineering from Minnesota
university, in 1903. He entered railway
service in 1903, since when he has been, to
1904, transitman, Northern Pacific Ry.;
1904 to 1905, Resident Engineer, same road;
1905 to 1908, Division Engineer, same road;
1908 to 1909, Locating Engineer, Western
Dakota Ry.; 1909 to 1911, Division En-
gineer, same road; 1911 to July, 1912, Resi-
dent Engineer and Division Engineer, C. N.
Ontario Ry.

J. D. McDONALD, Assistant General
Passenger Agent, Grand Trunk Ry., Chi-

cago, left there, Sept. 8 with his wife and daughter on the American Association of General Passenger and Ticket Agents' special train for Seattle, Wash., where the Association's annual meeting was held, and the party proceeded to Victoria and Vancouver where they were entertained on behalf of the C.P.R. by H. W. Brodie, Assistant General Passenger Agent. After returning with the Association to Tacoma, Wash., Mr., Mrs. and Miss McDonald went to Prince Rupert, B.C., and to the end of steel on the G.T.P.R. east of that point, and then visited Lower California, returning to Chicago, Oct. 6.

PATRICK DUBEE, Secretary-Treasurer, Montreal Tramways Co., and President Canadian Street Railway Association, while attending the American Electric Railway Association convention in Chicago early in October, was summoned back to Montreal, owing to the death of his father-in-law, Matthew Dineen. Mr. Dineen came from Ireland some 50 years ago, and was one of the pioneer landscape gardeners in Montreal. Some 35 years ago he became a contractor and did a large amount of civic work, especially sewer and conduit construction. He was warden of St. Patrick's church for some 30 years and one of the oldest members of St. Patrick's Society, being also associated with St. Ann's Total Abstinence Society.

J. B. GRAY, whose appointment as Superintendent, Sleeping, Dining and Parlor Cars and News Service, C.P.R., lines east of Toronto and Sudbury, Ont., Montreal, was announced in our last issue, was born in July, 1876, and entered the Pullman Co.'s service in 1893 as junior clerk in the dining car store room, remaining in that department in various capacities in several large U. S. cities, until 1895, when he was appointed Assistant Commissary at Chicago, Ill. He remained there until 1909, when he was appointed Assistant Superintendent, Sleeping Car Department, at Portland, Ore., which position he held up to the time of his appointment as Assistant Superintendent, Sleeping, Dining and Parlor Cars and News Service, C.P.R., Calgary, Alta.

R. A. BARRETT, who has been appointed Superintendent, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., was born at Berlin, Ont., Aug. 26, 1870, and entered railway service, 1884, since when he has been, to 1888, in various positions in the Michigan Central Rd. offices at St. Thomas, Ont.; 1888 to 1891, in various positions in the yards, same road, St. Thomas, Ont.; 1891 to 1897, General Yardmaster, same road, St. Thomas, Ont.; 1897 to 1898, road conductor, same road; 1898 to Feb., 1901, Assistant Trainmaster, same road, Montrose, Ont.; Feb., 1901 to July, 1911, Trainmaster, M.C.R. lines between Suspension bridge, Buffalo and St. Thomas; July, 1911, to Oct. 1, 1912, Trainmaster, T.H. & B.R., Hamilton, Ont.

T. DAVIES, who has been appointed Chief Dispatcher, district 1, Canadian Northern Ry., Port Arthur, Ont., was born at Bangor, Wales, June 17, 1878, and entered railway service, Aug., 1892, since when he has been, to Apr., 1894, call boy, C.P.R., Medicine Hat, Alta.; Apr., 1894, to Apr., 1895, car checker, C.P.R., Medicine Hat, Alta.; May 1, 1895 to Aug., 1899, operator and agent at various points, C.P.R., between Medicine Hat, Alta., and Donald, B.C.; 1899 to 1902, operator and agent, various roads in the U.S.; Oct. 3, 1902, to Sept. 23, 1905, operator, Canadian Northern Ry., Winnipeg; Sept. 24, 1905, to Jan. 30, 1906, dispatcher, same road, Dauphin, Man.; Feb. 3, 1906, to Aug. 2, 1911, dispatcher, same road, North Battleford, Sask.; Aug. 3, 1911, to Sept. 11, 1912, dispatcher, same road, Winnipeg.

W. H. WINTERROWD, whose appointment as Mechanical Engineer, C.P.R., Angus locomotive shops, Montreal, was announced in our last issue, and whose portrait appears in this issue, was born at Hope, Ind., Apr. 2, 1884, and educated at Shelbyville, Ind., and Purdue University, whence he graduated in 1907. He entered railway service in 1905, since when he has been, to 1906, blacksmith helper, Lake Erie and Western Ry., Lima, O., 1906 to 1907, air brake and car repairman, Pennsylvania Rd. western lines, Dennison, O.; 1907 to 1908, special apprentice, Lake Shore and Michigan Southern Ry., Elkhart, Ind.; 1908 to 1909, Roundhouse Foreman, Lake Erie, Alliance and Wheeling Ry., Alliance, O.; 1909 to 1910, Night Roundhouse Foreman, Lake Shore, Michigan and Southern Ry., Youngstown, O.; 1910, Roundhouse Foreman, same road, Cleveland, O.; 1910 to Sept., 1912, Assistant to Mechanical Engineer, same road, Cleveland, O.



W. C. Lancaster,
Electrical and Mechanical Engineer, Montreal
Tunnel and Terminal Construction.

National Transcontinental Railway Construction.

An Ottawa press dispatch of Oct. 17 says that the Dominion Government has made arrangements for the putting in operation of the N.T. Ry. from Moncton, N.B., to Levis, Que., and that Intercolonial Ry. rolling stock will be used. It is expected that the section from Cochrane, Ont., the junction with the Timiskaming and Northern Ontario Ry., to Lake Superior Jet., will be ready for temporary operation early in November. From Lake Superior Jet. to Winnipeg the line is already being operated by the G.T. Pacific Ry. under an agreement. The question of the taking over of that section of the line by the G.T.P. Ry. has not yet been settled. (Oct., pp. 506.)

Grand Trunk Pacific Railway Construction.

According to a report of work done to Sept. 30, 159 stations have been located on the main line between Winnipeg and Fitzhugh, Alta. Of these 69 have been completed, 44 are under construction, and pre-

parations are being made for starting the remaining 46.

The Board of Railway Commissioners has approved of revised location for the line from mileage 347.5 to 372.4 east of Prince Rupert; through the Noon-la Indian reserve, mileage 395 east of Prince Rupert; to the boundaries of the Sa-La-Quo Indian reserve, mileage 449.18 to 452.94 east of Prince Rupert; and mileage 49.26 to 59.17 in the Fort George District.
**GRAND TRUNK PACIFIC RAILWAY
BRANCH LINES.**

Application is being made to the Dominion Parliament for an act extending the time within which to complete the construction of the several lines authorized to be built by the acts of 1906, 1909, 1910 and 1911.

Local press reports state that the company has acquired a considerable area of property on McKellar street, Fort William, Ont., on which it is proposed to lay out freight sheds, etc. The property is said to be two city blocks in extent.

A considerable area of property is reported to have been acquired to the south east of Brandon, Man., on which, it is stated, the company will lay out terminal yards for the use of its Harte-Brandon branch now under construction.

Two station buildings are reported to five others to be under construction. This branch runs northerly from Nielville, Sask. On the branch southwesterly to Regina, four stations are reported to have been completed, and three more to be under construction.

The Board of Railway Commissioners has authorized the opening for traffic of the branch line from Regina to the International boundary, from Regina to Talmage, Sask., mileage, 66.5. The Board has also approved of revised location plans for the line from sec. 11, tp. 7, range 10, to sec. 13, tp. 3, range 4, west second meridian, mileage 91.13 to 135.93.

It was reported that on Sept. 30 there were three station buildings under construction on the branch line from Young to Prince Albert, Sask., and that plans for 16 other standard stations had been prepared.

The Board of Railway Commissioners has authorized the building of a connection between the terminus of the branch line from Oban, in Battleford, Sask., and the starting point of the line from Battleford into the Cutknife district. The Board has authorized the establishment of terminals in Battleford. It has also approved of revised location plans for the Cutknife branch through sec. 36, tp. 43, range 18, west of 3rd meridian.

Construction department reports state that on Sept. 30 four station buildings had been completed on the branch out of To-field to Calgary, Alta., and that three others were under construction. Track is reported to have been laid to Irricana, and the grading to have been completed into Calgary. At the crossing of the Bow river, about four miles out of Calgary, a steel bridge is being erected by the Canadian Bridge Co. It is expected that this will be completed, and steel laid into Calgary early in November. The Board of Railway Commissioners has approved of revised location plans for the line south of Calgary towards the International boundary, from n.e. ¼ sec. 12, tp. 13, r. 24, to n.w. ¼ sec. 34, tp. 11, r. 23, w. 4 m., mileage 81.41 to 90.43, South Alberta district.

The Board of Railway Commissioners has authorized the opening for traffic of the Alberta coal branch from mileage 0 to 36.6. This line starts at Bickerdike, on the main line, and runs southwesterly to the coal fields in the Brazeau river district. (Oct., pg. 507.)

Transportation Appointments Throughout Canada.

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.

Bellingham Bay and British Columbia Rd.—J. S. GOLITHON has been appointed Master Mechanic, vice J. A. Haley, resigned. Office, Bellingham, Wash.

Canada and Gulf Terminal Ry.—J. E. PINAULT has been appointed Superinten-



U. E. Gillen,
Superintendent, Eastern Division, Grand Trunk
Railway.

dent, vice J. R. Cassidy, resigned. All traffic employes report direct to him on all matters pertaining to their duties; agents and conductors continue to report returns, collections, etc., to T. J. Lyons. Office, Matane, Que.

Canadian Northern Ry.—J. C. O'DONNELL, heretofore Trainmaster, district 2, Winnipeg, has been appointed Trainmaster, district 1, Rainy River, Ont., vice G. W. Chapman, assigned to other duties.

I. L. BOOMER, heretofore Chief Dispatcher, district 1, Port Arthur, Ont., has been appointed Trainmaster, Port Arthur subdivision, with jurisdiction over Port Arthur and Atikokan terminals, vice G. Darrah. Office, Port Arthur, Ont.

T. DAVIES has been appointed Chief Dispatcher, district 1, Port Arthur, Ont., vice I. L. Boomer, promoted.

A. E. COX, heretofore Storekeeper, Winnipeg, has been appointed General Storekeeper for all lines west of Port Arthur, Ont. Office, Winnipeg.

G. A. GLAY, heretofore conductor, has been appointed Trainmaster, district 2, Winnipeg, vice G. W. Chapman, who succeeded J. C. O'Donnell, and subsequently resigned.

Canadian Pacific Ry.—D. L. JONES, who has been acting as Master Mechanic, Atlantic division, McAdam jet., N.B., during the absence on sick leave of C. R. Ord, has resumed his duties as District Master Mechanic, districts 1 and 2, Woodstock, N.B., Mr. Ord having returned.

J. F. GILDEA, heretofore Locomotive Foreman, Schreiber, Ont., has been appointed Locomotive Foreman, Hochelaga, Montreal, vice J. Wilkinson.

J. SKINNER, heretofore ticket agent at Owen Sound, Ont., has been appointed city passenger, ticket and telegraph agent, Peterboro, Ont.

E. J. MURPHY, heretofore Locomotive Foreman, John street yards, Toronto, has been appointed Assistant Foreman, West Toronto.

D. L. DERROW has been appointed Locomotive Foreman, John street yards, Toronto, vice E. J. Murphy, transferred.

W. McILROY, heretofore ticket agent at Peterboro, Ont., has been appointed city passenger and ticket agent, Hamilton, Ont.

W. H. WALKER has been appointed night locomotive foreman at Fort William, Ont., vice A. Brown, promoted.

P. S. LINDSAY, heretofore District Master Mechanic, district 3, Manitoba division, Brandon, has been appointed District Master Mechanic, district 2, Manitoba division, vice A. G. Hebb, transferred. Office, Winnipeg.

L. FISHER, heretofore District Master Mechanic, district 4, Manitoba division, Souris, has been appointed District Master Mechanic, district 3, Manitoba division, vice P. S. Lindsay, transferred. Office, Brandon.

A. G. HEBB, heretofore District Master Mechanic, district 2, Manitoba division, Winnipeg, has been appointed District Master Mechanic, district 4, vice L. Fisher, transferred. Office, Souris.

H. J. HUMPHREY has been appointed Car Service and Fuel Agent, Saskatchewan division, vice R. A. Gamble. Office, Moose Jaw.

R. COOPER, heretofore Assistant Car Foreman, has been appointed Car Foreman at Moose Jaw, Sask., vice J. B. Shelton, who has left the service.

A. H. MIDDLETON has been appointed Assistant Car Foreman at Moose Jaw, Sask., vice R. Cooper, promoted.

A. McARTHUR, heretofore Locomotive Foreman, Fort William, Ont., has been appointed Locomotive Foreman, Sutherland, Sask., vice J. Sindall, transferred.

W. THOMAS, heretofore assistant chief clerk, has been appointed chief clerk to General Superintendent, Alberta division, C.P.R., Calgary, vice R. J. Lydiatt.

E. W. DEMER has been appointed Storekeeper at Macleod, Alta. This is a new position.

J. SINDALL, heretofore Locomotive Foreman, Sutherland, Sask., has been appointed Shop Foreman, Cranbrook, B.C.

T. S. BERTRAM has been appointed Roundhouse Foreman, Revelstoke, B.C., vice R. Millar, acting Roundhouse Foreman, assigned to other duties.

C. BROWN, heretofore Roundhouse Foreman, Vancouver, has been appointed Locomotive Foreman, North Bend, B.C., vice W. E. Hayward, appointed Roundhouse Foreman, Vancouver.

W. E. HAYWARD, heretofore Locomotive Foreman, North Bend, B.C., has been appointed Roundhouse Foreman, Vancouver, vice C. Brown, appointed Locomotive Foreman, North Bend.

Dominion Atlantic Ry.—F. VAN BLARCOM has been appointed Locomotive Foreman at Kentville, N.S. The titles of Mechanical Superintendent, formerly held by W. Yould, and Master Mechanic, formerly held by J. H. Yould (now Superintendent of Motive Power) have been abolished.

Grand Trunk Pacific Ry.—A. S. WRIGHT has been appointed Locomotive Foreman at Regina, Sask., vice A. J. Roberts, resigned.

J. NESS has been appointed Car Foreman, Regina, Sask.

C. E. STEWART has been appointed Locomotive Foreman at Biggar, Sask., in charge

of locomotive and car departments, vice G. M. Carruthers, assigned to other duties.

G. M. CARRUTHERS, heretofore Locomotive Foreman, Biggar, Sask., has been appointed night foreman, Melville, Sask.

The following agents have been appointed,—Gerald, Sask., R. W. Gibson; Ituna, Sask., G. C. Smart; Leney, Sask., W. J. Reid; Stony Plain, Alta., R. L. Williams; Bickerdike, Alta., W. A. Bishop; Fitzhugh, Alta., R. C. Harmon; Reford, Sask., T. Hutchings; Dandurand, Sask., A. E. Robin; Lebre, Sask., R. N. McNabb.

Grand Trunk Ry.—U. E. GILLEN, heretofore Superintendent, Middle division, Toronto, has been appointed Superintendent, Eastern division, vice H. E. Whittenberger, transferred to Toronto. Office, Montreal.

G. W. CLARK has been appointed Locomotive Foreman, St. Lambert, Que.

W. H. WALKER, heretofore Locomotive Foreman at Brockville, Ont., has been appointed Locomotive Foreman at Turcot, Que., vice J. D. Scott, resigned.

L. J. McLAUGHLIN has been appointed Locomotive Foreman at Brockville, Ont., vice W. H. Walker, transferred.

H. E. WHITTENBERGER, heretofore Superintendent, Eastern division, Montreal, has been appointed Superintendent, Middle division, vice U. E. Gillen, transferred to Montreal. Office, Toronto.

W. H. FARRELL, Superintendent of Terminals, is in Montreal, apparently temporarily, in connection with terminal work there. A Montreal press dispatch of Oct. 25 states that he has been appointed Superintendent of all G.T.R. terminals, with headquarters at Montreal.



H. E. Whittenberger,
Superintendent, Middle Division, Grand Trunk
Railway.

G. STOKES, heretofore Yardmaster, Don yard, Toronto, who was recently appointed General Yardmaster, Toronto terminals, vice J. McCormick, has since been appointed acting Terminal Superintendent, Toronto, while W. H. Farrell is absent in Montreal.

G. A. METLER has been appointed Yardmaster, Don yard, Toronto, vice G. Stokes, promoted.

L. E. WRIGHT has been appointed town ticket agent at Collingwood, Ont.

J. J. KNIGHT, heretofore agent at Exe-

ter, Ont., has been appointed Local Freight Agent, Guelph, Ont., vice W. F. Briggs, transferred to Brantford, Ont.

W. F. BRIGGS, heretofore Local Freight Agent, Guelph, Ont., has been appointed Freight Agent at Brantford, Ont.

T. J. CASSIDY, heretofore dispatcher, has been appointed Chief Dispatcher, St. Thomas, Ont., vice W. J. Hogan, promoted.

W. J. HOGAN, heretofore Chief Dispatcher, St. Thomas, Ont., has been appointed Master of Transportation, Western division, vice G. W. Gillespie, transferred. Office, Durand, Mich.

J. A. CLANCEY has been appointed Assistant Superintendent of Terminals, Milwaukee jct., Mich.

The following agents have been appointed, —Huntingdon, Que., W. A. Hunter; Whites, Que., E. E. Bourdon; Jacques Cartier jct., Que., L. Rainville; Anson jct., Ont., F. E. Hutchinson; Caledonia, Ont., H. Rose; Jordan, Ont., N. G. Case; Bright, Ont., M. J. Byrne; St. Polycarpe jct., Que., W. Hardy; Rainy Lake, Ont., J. M. Smith.

Great Northern Ry.—J. M. GRUBER, heretofore General Manager, has been appointed Vice President in charge of operation. Office, St. Paul, Minn.

W. P. KENNEY, heretofore General Traffic Manager, has been appointed vice President in charge of traffic. Office, St. Paul, Minn.

G. H. EMERSON, heretofore Assistant General Manager, has been appointed General Manager, vice J. M. Gruber, promoted. Office, St. Paul, Minn.

Intercolonial Ry.—JOHN JOHNSON has been appointed Roundhouse Foreman, Sydney, N.S., vice D. McLennan, assigned to other duties.

Press reports state that the office of Chief Engineer has been abolished and that W. B. MACKENZIE has been appointed Right of Way and Lease Agent.

Michigan Central Rd.—J. F. DEIMLING, heretofore Chief Engineer, Pere Marquette Rd., Detroit, Mich., has been appointed Engineer of Construction, M.C.R. Office, Detroit, Mich.

A. L. SARVEY, heretofore Grade Separation Engineer, has been appointed Assistant Chief Engineer, vice F. B. Marble, resigned. Office, Detroit, Mich.

E. M. WALKER has been appointed Grade Separation Engineer, vice A. L. Sarvey, promoted. Office, Detroit, Mich.

A. K. GALLOWAY, heretofore Roundhouse Foreman, St. Thomas, Ont., has been appointed General Foreman, Detroit locomotive terminals, Detroit, Mich.

G. R. GALLOWAY, heretofore Roundhouse Foreman, Montrose, Ont., has been appointed Roundhouse Foreman, St. Thomas, Ont., vice A. K. Galloway, promoted.

J. R. SANDS, heretofore machinist, has been appointed Roundhouse Foreman, Montrose, Ont., vice G. R. Galloway, transferred.

Minneapolis, St. Paul and Sault Ste. Marie Ry.—H. B. DIKE, General Solicitor, who has been appointed Assistant to the President, as announced in our last issue, will have such special duties as may be assigned to him from time to time. Office, Minneapolis, Minn.

C. N. KALK, heretofore Principal Assistant Engineer and Signal Engineer, has been appointed Chief Engineer, vice T. Greene, deceased. Office, Minneapolis, Minn.

S. B. NOBLE has been appointed Travelling Passenger Agent, with headquarters at 299 Broadway, New York City. This is a new position.

T. A. HAVERSTAD has been appointed Agricultural Commissioner, Minneapolis, Minn. This is a new position.

F. R. SMALLEY has been appointed Travelling Agent, with headquarters at 379 Robert street, St. Paul, Minn., vice H. T. Duffy, promoted.

B. C. HARRISON has been appointed District Passenger Agent, with headquarters at 222 Bannatyne avenue, Winnipeg, Man.

H. T. DUFFY, heretofore Travelling Agent, St. Paul, Minn., has been appointed District Passenger Agent, Portland, Ore., vice G. Taylor, resigned. Office, corner of Third and Pine streets.

New York Central and Hudson River Rd.—S. R. PAYNE, heretofore General Superintendent, Western district, Syracuse, N.Y., has been appointed Assistant to General Manager, performing such duties as may be assigned to him. Office, Rochester, N.Y.

T. W. EVANS, heretofore Superintendent, Buffalo division, Buffalo, N.Y., has been appointed General Superintendent, Western district, vice S. R. Payne, promoted. Office, Syracuse, N.Y.



A. E. Cox,
General Storekeeper, Canadian Northern Railway.

Pere Marquette Rd.—W. L. KELLOGG, Superintendent of Motive Power, has had his office moved from Detroit to Wyoming, and will have direct charge of the shops there, and a general supervision over the motive power and car department.

H. O. HALSTEAD, heretofore Superintendent of Transportation, Detroit, Mich., has been appointed Superintendent, Detroit division, comprising the line from Detroit to Grand Rapids, including Detroit terminals and Detroit-Windsor ferry operation. Office, Detroit.

X. H. CORNELL, heretofore Superintendent of Transportation, Chicago and Alton Rd., Chicago, Ill., has been appointed Superintendent of Transportation, Pere Marquette Rd., vice H. O. Halstead, assigned to other duties. Office, Detroit, Mich.

S. A. CHAMBERLIN, heretofore Master Mechanic, Grand Rapids, Mich., has been appointed Master Mechanic, Saginaw, Mich., vice F. C. Pickard, resigned.

Toronto, Hamilton and Buffalo Ry.—R. A. BARRETT, heretofore Trainmaster, Hamilton, Ont., has been appointed Superintendent. Office, Hamilton.

Canadian Northern Railway Construction, Betterments, Etc.

Canadian Northern Quebec Ry.—It is expected that the new car and machine shops at Limoilou, a suburb of Quebec, will be completed by Nov. 30. Nothing definite has yet been decided as to the company's terminals in Quebec, but negotiations are going on between the city and the company, and how they will turn out depends a good deal upon what will be done by the Dominion Government in connection with the terminals for the National Transcontinental Railway. The C.N.Q. Ry. has a large area of land at Cap Rouge, and it is said that this is to be developed for the company's steamships harbor.

Canadian Northern Montreal Tunnel and Terminal Co.—Supplemental letters patent have been granted under the Dominion Companies Act increasing the capital from \$50,000 to \$5,000,000.

The shaft at Maplewood Ave. is reported completed, and preparations are being made for starting driving the tunnel north and south from it. This will make four headings at work driving.

The Montreal city council is in favor of the Board of Railway Commissioners deciding the question of the overhead line from Lagachetiere street to the water front.

Montreal-Ottawa-Port Colborne Line.—The Board of Railway Commissioners has approved of location plans for the line through Jacques Cartier and Hochelaga counties and part of Montreal, mileage 43.56 to 55.23 from Hawkesbury.

It is expected that the grading on the section of the line out of Ottawa to Fitzroy harbor on the Ottawa river will be completed this fall.

The Board of Railway Commissioners has authorized the C.N.O. Ry. to cross the Algoma Eastern Ry. with its main line extension to the Algoma Eastern Ry. on lot 6, con. 4, McKim tp., Sudbury district.

The Board of Railway Commissioners has approved of revised location plans for the line from mileage 278.11 to 280.11, and from 283.76 to 285.72 from Port Arthur, Ont.

Canadian Northern Ontario Ry.—It is expected that the line from Ottawa to Toronto will be completed this year. With the exception of the bridges over the Rideau and Joch rivers, the section between Ottawa and Smiths Falls is practically ready for track laying. This work is to be started early in November. The section between Harrowsmith, the end of the Bay of Quinte Ry., which is incorporated in the line to Smiths Falls, is well advanced towards completion.

Toronto-Hamilton-Buffalo Line.—The Board of Railway Commissioners has authorized the building of the line across the C.P.R. at Lambton, mileage 6.13 from Yonge street, Toronto; the building of a bridge across the Humber river, mileage 6.32 west of Yonge street, Toronto; and of the location of the line through Saltfleet tp., mileage 45.17 to 54.21.

Canadian Northern Ry.—The Board of Railway Commissioners has approved of revised location of the proposed connection of the International Bridge and Terminal Co.'s line with the C.N.R. at Fort Frances, Ont.

It is reported that work is to be started at once on what is known as the Fort Rouge cut off, south of Winnipeg. A temporary trestle bridge will be erected across the Red river, and the reports state that the cut off will be completed by the end of November.

The Board of Railway Commissioners has approved of location plans for a line

through tps. 4-7, range 1 east of the first meridian to range 2 west of the first meridian, mileage 0 to 18.08.

Tenders are under consideration for the building of a 256 ft. extension to the freight shed at Brandon, Man. R. B. Pratt, Winnipeg is architect.

The Board of Railway Commissioners has approved of location plans for the line through tps. 43 and 44, range 4, west of the 3rd meridian, Sask., mileage 28.18 to 37.96.

The Alberta Government has approved of the route map of a line from Hanna to Medicine Hat, Alta. It is stated that construction will be started at Medicine Hat at an early date. The line, it is stated, will connect with the main line near Bruderheim.

Track is reported to have been laid on the branch line from Edmonton to Camrose, on the Vegreville-Calgary line for 16 miles. It is expected that the line into Calgary will be completed this year. Steel has been laid, it is reported, to within 12 miles of Calgary, and on Oct. 16 it was stated that the city council had agreed to give the company all the facilities necessary. The bridge over the river to carry the line right into the centre of the city is to be completed by Oct., 1913. Grading is reported to have been completed on the line from Saskatoon to Berry creek, 240 miles, and track has been laid for 220 miles. This line is to connect with the Vegreville-Calgary line at Drumheller. It is expected to complete 50 miles of the line south of Calgary this year.

The Board of Railway Commissioners has approved of revised location plan for the line through tp. 46, range 1, west of the 6th meridian, mileage 224.66 to 228.36. This is described as being a line of the C.N. Alberta Ry.

An agreement is reported to have been reached between the city and the company, under which the terminal station, etc., in Edmonton, Alta., is to be erected during 1913.

Canadian Northern Pacific Ry.—We are officially advised that the following sub-contracts have been let by the Northern Construction Co., on the line west of Yellowhead Pass, B.C.:—Mileage 0 to 10, Phelan and Shirley mileage 10 to 18, Sieurs-Carey Co.; mileage 18 to 34, Palmer Bros. and Henning; mileage 34 to 39, S. B. Hogan; mileage 49 to about 160 miles north of Kamloops, Palmers Bros. and Henning. This section of the work is being done under the supervision of the general contractors' Edmonton office, the remaining mileage to Port Mann being handled from Vancouver.

It is said from a letter received Oct. 2, by the mayor of Kamloops, B.C., that a divisional point is to be located there. The description and plan of the proposed bridge across the North Thompson river near Kamloops, already described in our columns, have been filed with the Public Works Department at Ottawa.

Tenders are under consideration for the building of lines to be known as the Okanagan branches. The starting point is at Kamloops, B.C., on the main line, and the first section extends to Vernon, 83 miles, while the second extends from Vernon and Lumley to Kelowna, 48 miles. Contractors were asked to tender separately on each section and to give alternative prices for grading based on the following classifications:—A.—Solid rock; loose rock; hard pan; earth. B.—Solid rock; all other material. The work is to be completed within a year from signing of contract.

The Vancouver city council, Oct. 1, adopted an agreement with the company as to the False creek property to be utilized as terminals, and a bylaw is being pre-

pared for submission to the ratepayers.

Lines on Vancouver Island.—We are officially advised that the 40 mile contract referred to in our last issue as having been let to the Northern Construction Co., has been handed over to Murdoch Co. Work has been started at the Alberni end, and it is expected to have it completed in a year.

Plans have been approved by the British

Columbia Government for a line from mileage 100, near Cowichan lake, to mileage 210 on Quinsam river.

The Premier of British Columbia is reported as stating, Oct. 4, that an agreement had been reached with the company as to terminals in Victoria, and that the details will be laid before the Legislature. (Oct., pg. 510.)

Canadian Pacific Railway Betterments, Construction, Etc.

St. John Terminals.—Press reports state that the company is negotiating with the city council of St. John, N.B., for a strip of land at Fourville station for the erection of additional office buildings.

Place Viger Improvements.—It is reported that a contract has been let to the Canadian Stewart Co., for the erection of an addition to the Place Viger hotel, Montreal to give 140 extra guest rooms.

Ottawa Improvements.—D. McNicoll, Vice President, is reported as stating, Oct. 7, that the project for the building of a tunnel at Ottawa had not been abandoned as had been reported. Negotiations were going on with the Dominion Government, and everything depended upon their outcome. It was possible that there would be some change in the plans, but nothing definite could be said for some time.

Smiths Falls, Ont.—Press reports state that local firms have been asked to tender for the erection of a locomotive house and machine shop at Smiths Falls, Ont.

Campbellford, Lake Ontario and Western Ry.—The Board of Railway Commissioners has authorized a connection to be made with the Kingston and Pembroke Ry. at Parham station, mileage 24.8 from Glen Tay, Ont.; and has approved of revised location plans for the line from mileage 125.5 to 127.32.

North Toronto Grade Revision.—Tenders are under consideration for the construction of the substructure of the Avenue road subway, Toronto, a part of the grade separation work in North Toronto. B. Ripley is engineer in charge.

Sault Ste. Marie Branch Grade Revision.—The Board of Railway Commissioners has approved plans for the revision of the alignments and gradients of the Sudbury-Sault Ste. Marie branch, mileage 7.42 to 8.39 Webbwood section.

Bergen Northeasterly.—The Board of Railway Commissioners has approved of location plans for a line northeasterly from Bergen, Man., to lot 58, Kildonan parish, 9.92 miles.

Swift Current Bassano Cut Off.—We are officially advised that it is not intended to do any construction this year beyond the 80 miles at present under contract.

The Board of Railway Commissioners has approved revised location on this line from sec. 35, tp. 22, range 27, to sec. 17, tp. 23, range 29, mileage 93 to 111.9.

Irricana to Bassano.—Press reports state that the branch line from Irricana to Bassano, Alta., has been completed, and will be handed over to the operating department at an early date.

Lacombe Easterly.—The Board of Railway Commissioners has approved of location plans for the extension of the branch from Lacombe easterly from mileage 100.07 to 146.10. The line at present terminates at Monitor, Alta., and it will effect a junction with the Moose Jaw northwesterly line at Kerrobert.

New Southern Main Line.—In connection with the construction of various lines in Saskatchewan and Alberta, and the building of the Kettle Valley lines, which are

being taken over by the C.P.R., western papers have published a map showing a new main line from Winnipeg to Vancouver. It is stated that this line would be nearly 400 miles shorter than the present line, and that the gradients through the Rocky mountains would be easier than on the line through Kicking Horse pass. The section of the line under construction in Saskatchewan and Alberta is an extension of the line westerly from Weyburn, now terminating at Viceroy, Sask., to Sterling, Alta.

Kaslo and Slocan Ry.—Press reports state that W. P. Tierney, contractor, has received instructions from the C.P.R. to complete the standardization of the K. and S. Ry. between Bear lake and Whitewater mine, and to carry on the work of standardizing the rest of the line during the winter. The work includes, besides the alteration of the dump from narrow to standard gauge, the reduction of gradients, and the straightening out of curves. The recently completed spur line from the C.P.R. at Three Forks connects with the K. and S. Ry. at Bear lake. The Board of Railway Commissioners has authorized the opening for traffic of the line from Three Forks to Bear Lake, 5.2 miles.

Calgary to Vancouver Second Track.—We are officially advised that the contract for grading between Hammond and Ruby creek, B.C., has been let to Grant Smith and Co. and McDonnell, who have already put in their camps and started work. The portion between Hammond and Mission, 20 miles, will be completed by the end of this year. This stretch is light work, located along the Fraser river, with a few shovel cuts, the remainder being hand grading. Between Mission and Ruby creek the work is slightly heavier, with some rock work. There is one tunnel 440 ft. long, which will have to be widened for the second track, and a couple of small grade reductions which will give a ruling gradient of 0.4%. There is no heavy bridge work on this stretch, as all the sub-structures or permanent bridges have already been built to carry a second track, and the temporary bridges are being replaced with permanent structures this year. H. Rindal, Division Engineer, Vancouver, is in charge.

Car Ferry Barge.—A contract is reported to have been let to the British Columbia Marine Ry., Esquimalt, for the construction of a car ferry barge to be named Transfer No. 4. It will be a steel car ferry barge, 260 ft. long, 42 ft. beam, and 12 ft. deep, built to accommodate 15 loaded railroad cars. Unlike the Transfer No. 3, recently constructed at Esquimalt, the new barge will not be provided with holds to carry cargo. She will have three lines of rails, and all her cargo will be in the cars loaded on the deck. She will be amply provided with bulkheads, the plans providing for two longitudinal bulkheads and five transverse bulkheads. Accommodation for the crew will be provided by a house at the fore-castle head, and a small donkey boiler will be provided to furnish steam for the windlass, pumps, etc. The barge will be provided with the requisite pumps and other gear. (Oct., pg. 504.)

Orders by the Board of Railway Commissioners.

Beginning with June, 1904, Canadian Railway and Marine World has 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 orders took place, and not those on which the orders were issued. In many cases orders are not issued for a considerable time after the dates assigned to them.

17553. Sept. 24.—Approving Campbellford, Lake Ontario and Western Ry. (C.P.R.) location from mileage 125.5 from Glen Tay, south-westerly through Hope tp. and Hope, Ont., to mileage 127.3; and rescinding orders 16977, July 6, and 17330, Aug. 2.

17554. Sept. 24.—Authorizing C.P.R. to open for traffic its Nakusp and Slocan branch from Three Forks to Bear Lake, B.C., mileage 0 to 5.2.

17555. Sept. 23.—Authorizing C.P.R. to build spur for Maple Lake Lumber Co., west of Sprague tp., Ont.

17556. Sept. 24.—Authorizing C.P.R. to build spur 436 ft., northwesterly across Outremont yard, and across Montreal Light, Heat and Power Co.'s property, being of St. Laurent parish, Que.

17557. Sept. 23.—Approving location of C.N. Ontario Ry. station grounds at South March.

17558. Sept. 23.—Authorizing C.N. Ontario Ry. to build across public road, lot 9, con. 2, Gibbons tp., mileage 266.5 from Ottawa.

17559. Sept. 23.—Authorizing Canadian Northern Ry. to build between secs. 3 and 4, tp. 29, r. 7, w. 4 m., on its Goose Lake extension.

17560. Sept. 23.—Authorizing C.N. Ontario Ry. to build bridge across Stony Creek, Fitzroy tp., mileage 34.4 from Ottawa, and to divert Jimmys creek.

17561. Sept. 24.—Temporarily approving Western Canada Power Co. standard freight and passenger tariffs, C.R.O., B. 4, and A. 1.

17562. Sept. 25.—Authorizing Toronto, Hamilton and Buffalo Ry. to build spurs for National Steel Car Co., Hamilton, Ont.

17563. Sept. 25.—Authorizing G.T.R. to build siding for the Campbell Flour Mills Co., Toronto.

17564. Sept. 25.—Extending to Nov. 15 time within which Central Vermont Ry. shall ballast line between St. Lambert and Waterloo, Marieville and St. Cesaire, Farnham and Frielsburg, and Iberville and Farnham, Que.

17565, 17566. Sept. 24.—Approving Burrard Inlet Tunnel and Bridge Co.'s revised location from stations 0 to 174-88.7, and 4-56.3 to 324-32, B.C.

17567. Sept. 25.—Approving Esquimalt and Nanaimo Ry. plan of steel trestle across Arbutus canyon at bridge 14.9, B.C.

17568, 17569. Sept. 23.—Authorizing C.P.R. to build spur for Elmore and Snyder, near Laggan, B.C., and additional track across St. Thomas and Deschamps streets, Three Rivers, Que.

17570. Sept. 25.—Approving C.P.R. plan showing replacement of existing trestle at bridge 37.6, Walkerton subdivision, Ont.

17571. Sept. 23.—Authorizing C.P.R. to carry road allowance across its Reston to Wolseley branch at mileage 36.61, Sask.

17572. Sept. 24.—Amending order 16998, July 13, re C.P.R. spur at Longue Pointe, Que.

17573. Sept. 23.—Authorizing C.P.R. to build spur for J. C. Graham Co., St. John, Winnipeg.

17574. Sept. 25.—Authorizing C.P.R. to build spur for Cornellier and Joly, near Angus station, Que.

17575. Sept. 23.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across and divert road allowance between lots 16 and 17, con. 1, Hope tp., mileage 129.68 from Glen Tay, Ont.

17576, 17577. Sept. 21, 25.—Authorizing Canadian Northern Ry. to build its Goose Lake extension between sec. 33, tp. 30, and sec. 3, tp. 31, p. 12, w. 4 m., and to build its Carlton branch across seven highways in Saskatchewan.

17578. Sept. 25.—Authorizing C.N. Quebec Ry. to divert St. Davids street, Hawkesbury, Ont., on s.e. and n.w. sides of its right of way.

17579, 17580. Sept. 23.—Approving C.N. Ontario Ry. revised location through unsurveyed territory, Algoma district, mileage 278.11 to 280.11, and 283.76 to 285.72 from Port Arthur.

17581 to 17583. Sept. 25, 24.—Authorizing C.N. Ontario Ry. to build across Etobicoke creek, mileage 10.98 west from Toronto, across public road on lot 2, con. 4, Crerar tp., and across public road between Field and Springer tps., Nipissing district.

17584. Sept. 23.—Authorizing C.N. Ontario Ry. to build bridge across Ground Hog river, mileage 149.7 from Sudbury, Ont.

17585. Sept. 23.—Amending order 17006 re C.N. Ontario Ry. crossing of public road in Ste. Genevieve parish, Que., by substituting new plan.

17586. Sept. 23.—Authorizing C.N. Ontario Ry. to build across C.P.R. at Lambton, Ont., mileage 6.13 from Yonge street, Toronto, and

rescinding order 16234, March 11, in same connection.

17587. Sept. 23.—Authorizing town of Pointe-aux-Trembles, Que., to extend Frontenac street across Canadian Northern Montreal Tunnel and Terminal Co.'s tracks.

17588. Sept. 23.—Authorizing Niagara, St. Catharines and Toronto Ry. to build spur for Montrose Paper Co., Thorold, Ont.

17589. Sept. 24.—Defining express delivery and collection limits in Maple Creek, Sask.

17590. Sept. 26.—Authorizing C.P.R. to build between Blanshard and East Nissouri tps., station 193.4, Ont.

17591. Sept. 25.—Authorizing C.P.R. to rebuild bridge 81.5 on its Woodstock subdivision, Ont.

17592. Sept. 24.—Approving revised location of C.P.R. Lacombe easterly branch from s.e. ¼ sec. 26, tp. 36, r. 12, mileage 100.07, to s.e. ¼ sec. 3, tp. 35, r. 5, w. 4 m., mileage 146.10, Alta.

17593. Sept. 26.—Approving replacement of C.P.R. span on bridge 18.9, Elora subdivision, Ont.

17594. Sept. 25.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to connect with Kingston and Pembroke Ry. (C.P.R.) at Parham station, mileage 24.8 from Glen Tay, Ont.

17595, 17596. Sept. 25.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge 178.44 over public road, and to build across four highways, mileage 89.15 to 93.04 from Glen Tay, Ont.

17597. Sept. 26.—Approving revised location of G.T. Pacific Branch Lines Co., Calgary-Boundary branch from west line, n.e. ¼ sec. 12, tp. 13, r. 24, to south line n.w. ¼ sec. 34, tp. 11, r. 23, w. 4 m., mileage 81.41 to 90.43, South Alberta district.

17598. Sept. 28.—Authorizing G.T.R. to rebuild bridge 303 over Beaver river, milepost 107.46, district 14, Northern division, Ont.

17599. Sept. 26.—Approving revised location of G.T.R. siding for Western Foundry Co., Wingham, Ont.

17600. Sept. 25.—Authorizing G.T.R. to rebuild three bridges on its Middle division at milepost 44.61, Rockwood; 31.87, at Limehouse, and 122.84, at Sebringville, Ont.

17601. Sept. 26.—Authorizing C.N. Ontario Ry. to build across public road overhead on lot 44, con. 1, Camden tp.

17602, 17603. Sept. 26, 25.—Authorizing Alberta Interurban Ry. to build overhead structures across G.T. Pacific Branch Lines Co.'s Toffield-Calgary branch, and C.P.R. Langdon branch, sec. 2, tp. 28, r. 26, w. 4 m.

17604. Sept. 26.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to connect with G.T. Pacific Ry., sec. 24, tp. 53, r. 25, w. 5 m.

17605. Sept. 24.—Approving C.N. Ontario Ry. location through Jacques Cartier and Hochelega counties and part of Montreal, mileage 43.56 to 55.23 from Hawkesbury.

17606. Sept. 25.—Authorizing C.N. Ontario Ry. to build across Foresters creek, Ross tp., Ont.

17607. Sept. 26.—Authorizing G.T.R. to operate across the Montreal Park and Island Ry. near Turcot, Que.

17608. Oct. 1.—Authorizing Esquimalt and Nanaimo Ry. to build across four highways on its Comox extension, mileage 40.75 to 44.8 from McRide Jet., B.C.

17609. Sept. 26.—Approving revised location of International Bridge and Terminal Co.'s line, and connection with Canadian Northern Ry. in Fort Frances, Ont.

17610. Sept. 30.—Defining express delivery and collection limits in Summerside, P.E.I.

17611. Sept. 28.—Authorizing C.P.R. to build its Swift Current northwesterly branch across 80 highways in Alberta, mileage 0 to 84.98.

17612. Sept. 26.—Authorizing C.P.R. to build extension to spur for R. Laidlaw & Co., Toronto.

17613. Sept. 25.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge 89.1 across public road.

17614. Sept. 28.—Amending order 17392, Aug. 30, re taking of G.T.R. lands by Campbellford, Lake Ontario and Western Ry. (C.P.R.) by changing Darlington tp. to Hope tp., Ont.

17615. Sept. 25.—Extending to Dec. 15 time within which G.T.P. shall complete bridge across Lachine road at Rockfield, Que.

17616. Sept. 26.—Authorizing Canadian Northern Ry. to build its Goose Lake extension between secs. 28 and 27, tp. 28, r. 6, w. 4 m.

17617. Sept. 25.—Approving G.T. Pacific Ry. station site at Miniota, Man.

17618. Sept. 25.—Dismissing G.T. Pacific Ry. application for authority to construct Y at mileage 29 west of Yellowhead pass.

17619. Sept. 25.—Ordering that joint freight rates to be charged by C.P.R., Canadian Northern Ry. and G.T. Pacific Ry. on lumber in carloads between Port Arthur and Fort William, Ont., and points on G.T.P.R. Lake Superior branch of G.T.P.R. be no higher than 1c per 100 lbs. over G.T.P.R. rates between Westfort, Ont., and Lake Superior branch points.

17620. Sept. 26.—Authorizing Central Vermont Ry. to rebuild bridge across Yamaska river near Farnham, Que.

17621. Sept. 30.—Authorizing Bay of Quinte Ry. to revise grade across two highways in Portland tp., Ont.

17622. Sept. 30.—Authorizing Heaps Brick Co. to cross Western Canada Power Co.'s tracks at Ruskin, B.C.

17623, 17624. Oct. 1.—Defining express delivery and collection limits in Fredericton, N.B., and Rouleau, Sask.

17625. Sept. 26.—Authorizing C.N. Ontario Ry. to build across two highways at mileage 221.09 and 224.54, Ferris tp., Nipissing district.

17626. Oct. 2.—Authorizing Esquimalt and Nanaimo Ry. to build spur from near intersection of Telegraph and Store streets, southwesterly across same, and lot 125, Victoria, B.C.

17627. Sept. 23.—Authorizing C.N. Ontario Ry. to build bridge across Humber river, York tp., mileage 6.32 west of Toronto.

17628. Sept. 30.—Authorizing Canadian Northern Montreal Tunnel and Terminal Co. to carry its tracks across Jacques Cartier and Union Ry. near Jacques Cartier Jct., Que.

17629. Sept. 28.—Certifying correction on plan and book of reference of Sept. 12 of revised location of Campbellford, Lake Ontario and Western Ry. (C.P.R.) across mill pond, Bowmanville, Ont.

17630. Oct. 2.—Authorizing C.P.R. to take 1,788 sq. ft. of certain lands for enlargement of its station grounds at St. Pie, Que.

17631. Oct. 2.—Authorizing C.P.R. to build extra track between sec. 3, tp. 15, and sec. 33, tp. 14, r. 15, w.p.m., at Neepawa, mileage 60.8 on M'nedosa subdivision, Man.

17632. Sept. 25.—Authorizing Kingston and Pembroke Ry. to build spur for North American Smelting Co., Kingston, Ont.

17633. Oct. 2.—Authorizing Toronto Suburban Ry. to build under C.P.R. at Mimico river in lot 8, con. B, Etobicoke tp., Ont.

17634. Oct. 4.—Authorizing G.T.R. to rebuild four bridges; over Little Sable river, mileage 121.08; Hamilton creek, mileage 151.18; O'Grady's creek, mileage 153.28, and over stream, mileage 159.52, on Middle division, Ont.

17635. Sept. 27.—Authorizing Ottawa Electric Co. to erect its wires across C.P.R. at Carleton street.

17636. Oct. 1.—Approving location Toronto, Hamilton and Buffalo Ry. passenger station at Silverdale.

17637. Oct. 2.—Authorizing Alberta Interurban Ry. to build across C.P.R. Calgary-Edmonton branch overhead in sec. 13, tp. 24, r. 1, w. 5 m., South Alberta district.

17638. Oct. 4.—Approving C.N. Quebec Ry. plan of span to replace present timber trestle over Montreal Terminal Ry., Bout de L'Île, mileage 12 from Montreal.

17639. Sept. 26.—Authorizing C.N. Ontario Ry. to cross Algoma Eastern Ry. with its main line extension on lot 6, con. 4, McKim tp., Sudbury district.

17640. Oct. 3.—Extending to Dec. 15 time within which C.P.R. shall complete spur for American Lumber Co. at Sumas Jet., B.C.

17641. Oct. 4.—Approving C.P.R. plan showing replacement of double tracking of bridge 63.3 by 30 ft. deck plate girder span at Lac du Bonnet subdivision.

17642. Oct. 4.—Authorizing C.P.R. to build two spurs in block 1, Calgary, Alta.

17643. Oct. 3.—Approving location and type of G.T.R. station at Gobles, Ont.

17644, 17645. Oct. 4.—Authorizing G.T.R. to build branch for W. Gracey and Sons, and siding for Queen City Oil Co., Barrie, Ont.

17646. Oct. 3.—Authorizing G.T. Pacific Branch Lines Co. to carry traffic over its Regina-Boundary branch between Regina and Colfax, mileage 0 to 47.9, Sask.

17647. Oct. 4.—Authorizing city of St. Catharines, Ont., to build Berryman avenue across G.T.R. and Niagara, St. Catharines and Toronto Ry.

17648. Oct. 4.—Amending order 17405, Sept. 4, which required details to be placed on British Columbia Electric Ry., and interlocked with semaphores on Vancouver, Fraser Valley and Southern Ry. by providing that all interurban cars and cars operating on Nanaimo street be stopped before making the crossing at First avenue, Vancouver.

17649 to 17651. Oct. 3.—Authorizing Esquimalt and Nanaimo Ry. to build spurs for B.C. Pottery Co., Ltd.; J. E. Painter and Sons, and Sweeney Cooperation Co., Victoria, B.C.

17652. Oct. 3.—Authorizing G.T.R. to build siding for the Bechtels Ltd., Waterloo tp., Ont.

17653. Oct. 3.—Authorizing C.P.R. to build spur for Canadian Western Natural Gas, Light, Heat and Power Co., Calgary, Alta.

17654, 17655. Oct. 4.—Ordering C.P.R. to place watchman at Stone road, Galt, Ont., between 7 a.m. and 6 p.m.; and to install automatic electric bell at Peterboro street, Norwood, Ont.

17656. Oct. 3.—Authorizing G.T.R. to rebuild bridge 39 on Middle division, 3.97 miles from Tavistock, Ont.

17657. Sept. 24.—Authorizing G.T. Pacific Ry. to build its Lake Superior branch across Port Arthur and Fort William Electric Ry. at Syndicate avenue, Fort William, Ont.

17658. Oct. 2.—Authorizing G.T. Pacific Branch Lines Co. to build its Brandon branch across six highways, mileage 13.9 to 18.2, Manitoba.
17659. Oct. 3.—Ordering G.T.R. to keep watchman during June, July, Aug. and Sept. at crossing of Georgian Bay and Seaboard Ry. (C.P.R.), at Tecumseh street, Orillia, Ont.
17660. Sept. 25.—Relieving G.T. Pacific Ry. from stopping its trains at King street, Entwistle, Alta., and from handling its freight traffic at sawmill siding.
17661. Oct. 3.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across Scucog street, Bowmanville, Ont., mileage 149.2, crossing to be protected by gates.
17662. Sept. 3.—Authorizing G.T.R. to build spur for Battle Creek Toasted Corn Flake Co., London tp., Ont.
17663. Sept. 7.—Authorizing C.P.R. to build additional track under Clavet and Nelson streets and across Stephen street, Port Arthur, Ont., by extending overhead bridge.
17664. Oct. 7.—Authorizing C.P.R. to build its Bassano to Irricana branch across 15 highways from mileage 36.8, near Standard, to mileage 50.3, near Hussar, Alta.
17665. Oct. 4.—Approving proposed deviation of Nipissing Central Ry. between Cobalt and North Cobalt, Ont.
17666. Oct. 7.—Approving location Interprovincial and James Bay Ry. (C.P.R.) from mileage 0 to 10.11, through Geandreau and Mercier parishes, Que.
17667. Oct. 4.—Relieving Kingston and Pembroke Ry. (C.P.R.) from erecting fences along certain portions of its line.
17668. 17669. Oct. 7.—Authorizing G.T.R. to take certain lands in St. Antoine ward, Montreal; and ordering it to protect all shunting movements by sending a man ahead over switch with Central Ontario Ry. at subway leading from Murray tp. and Frankfort to Trenton, Ont.
17670. Oct. 7.—Authorizing Algoma Eastern Ry. to build spur from mileage 9.08 through lot 9, con. 3, Snider tp., to the North Star mine.
17671. Oct. 7.—Authorizing C.P.R. to build three spurs for Sand and Supplies, Ltd., North Dumfries tp., Ont.
17672. Oct. 8.—Approving C.N. Alberta Ry. revised location through tp. 46, r. 1, w. 6 m., mileage 224.66 to 228.36.
17673. Oct. 8.—Approving Canadian Northern Ry. location through tps. 4-7, r. 1, e.p.m., Manitoba, mileage 0 to 19.08.
- 17674 to 17676. Oct. 7.—Authorizing C.N. Ontario Ry. to build across public road between lots 242 and 245 at station 1622-10, St. Eustache parish, Que.; to build across two highways on its Montreal-Port Arthur line in Ferris tp., Ont., and to build bridge across Ottawa river at Fitzroy harbor, mileage 37.32 west of Ottawa.
17677. 17678. Oct. 7. 9.—Authorizing G.T.R. to build siding for J. K. Kidd, Mount Bridges, Carleton tp., and six additional sidings across Robert street, and public lane from Elgin street to Ferguson avenue, Hamilton, Ont.
17679. Oct. 8.—Approving revised location G.T. Pacific Branch Lines Co.'s Regina-Boundary branch from east line, sec. 11, tp. 7, r. 10, to east line, sec. 13, tp. 3, r. 4, w. 2 m., mileage 91.13 to 125.93, Cunningham district, Sask.
17680. Oct. 7.—Authorizing G.T.R. to build siding for Canada Pine Lumber Co., Bethune tp., Ont.
17681. Oct. 8.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across 20 highways from mileage 167.35 to 177.00.
17682. Oct. 9.—Authorizing G.T. Pacific Branch Lines Co. to build its Regina-Boundary branch across highway in n.e. ¼ sec. 11, tp. 17, r. 20, w. 2 m., at mileage 1.4, Assiniboia district, Sask.
17683. Oct. 7.—Approving location C.N. Ontario Ry. station grounds at mileage 69.83, Forrester Falls, Ross tp.
17684. Oct. 8.—Extending to Nov. 15 time within which G.T. Pacific Branch Lines Co. shall complete spur from Melville-Yorkton branch at Yorkton, Sask.
17685. Oct. 8.—Authorizing G.T. Pacific Branch Lines Co. to build Brandon branch across two highways, mileage 18.48 and 14.2, Brandon district, Man.
17686. Oct. 9.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge 150.37 between lots 16 and 17, con. 1, Darlington tp., Ont.
17687. Oct. 9.—Approving C. N. Ontario Ry. location through Saltfleet tp., mileage 45.17 to 54.21.
17688. Oct. 5.—Ordering G.T.R. to protect West and Front streets, Orillia, Ont., by gates and watchmen.
17689. Oct. 10.—Authorizing C.P.R. to build spur for Consolidated Rubber Co., Winnipeg.
17690. Oct. 10.—Extending to Dec. 31, time within which C.P.R. shall complete branch for British Columbia Brass, Ltd., New Westminster.
17691. Oct. 10.—Extending to June 20, 1913, time within which C.P.R. shall complete spur for Provincial Reformatory, Guelph, Ont., as authorized by order 17075, July 19.
17692. Oct. 10.—Approving C.P.R. location northeasterly from Bergen to lot 58, Kildonan parish, Man., 9.92 miles.
17693. Oct. 10.—Authorizing G.T.R. to build siding for Pratt & Letchworth Co., in Brantford, Ont.
17694. Oct. 10.—Amending order 15654, Dec. 16, 1911, to provide for interchange track, at Petrolea, Ont., between M.C.R. and G.T.R., within 15 days after conveyance of land for the purpose.
17695. Oct. 10.—Authorizing Montreal and Atlantic Ry. (C.P.R.), to build spur across Academy street, Sutton, Que.
17696. Oct. 9.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.), to cross G.T.R. overhead, near Shannonville station, Ont., mileage 69.25 from Glen Tay, without lowering G.T.R. tracks.
17697. Oct. 10.—Ordering G.T.R. to protect Ottawa street, Hamilton, Ont., by watchman, between 7 a.m. and 7 p.m., in addition to bell already installed.
17698. Oct. 10.—Authorizing Canadian Northern Ry. to build spur, from mileage 0 to 0.80, on main line, to connect with transfer yard west of Dawson road, St. Boniface, Man.
17699. Oct. 9.—Ordering C.P.R. to make grade on south side of track at crossing on lot 18, con. 7, Peel tp., mileage 27.07, ¼ mile west of Wallenstein station, 1 in 20; to be completed by Oct. 31.
17700. Oct. 9.—Authorizing G.T.R. to build additional track across Richmond street, Strathroy, Ont.
17701. Oct. 8.—Authorizing G.T.R. to build siding for proposed hospital for insane, at Whitby, Ont.
17702. Sept. 26.—Authorizing C.P.R. to cross highway overhead between cons. 4 and 5, Ops tp., Ont.
17703. Oct. 9.—Authorizing Toronto Suburban Ry. to cross under C.P.R. on lot 12, con. 3, Toronto tp., Ont.
17704. Oct. 9.—Authorizing Louth tp., Ont., to build highway across G.T.R., between lots 22 and 23.
17705. Oct. 9.—Ordering G.T.R., to cut down trees and reduce clay banks obstructing view of highway crossing one mile north of Burba Falls, Ont.
17706. Oct. 12.—Authorizing G.T. Pacific Ry. to carry traffic over its Regina-Boundary branch, between Colfax, mileage 47.9, and Talmage, mileage 66.5, Sask.
17707. Oct. 11.—Authorizing G.T.R. to rebuild bridge carrying Victoria avenue across its tracks, Niagara Falls, Ont.
17708. Oct. 8.—Authorizing diversion of highway immediately west of G.T.R. station at Thornton, Ont.
17709. Oct. 9.—Approving location and detail plans of new G.T.R. station at Sunnyside, Toronto.
17710. Oct. 8.—Ordering G.T.R. to reduce, to 4 ft., height of cedar hedge, and right of way fence, along n.e. side of highway near Thornton station, Ont.
17711. Oct. 11.—Authorizing G.T.R. to rebuild bridge 75, mileage 8.21, over Grand river, Brantford, Ont.
17712. Oct. 4.—Amending order 17230, Aug. 14, re operation of Mount McKay and Kakabeka Falls Ry. over C.P.R., at Neebing avenue, Fort William, Ont., by removing restriction as to using steam as motive power.
17713. Oct. 11.—Authorizing C.P.R. to build spur for Ontario Rock Co., Belmont tp., Ont.
17714. Oct. 11.—Authorizing C.P.R. to build two spurs for Purmal Brick Co., Medicine Hat, Alta.
17715. Oct. 10.—Approving C.P.R. plan, June 21, showing changes to be made in electric bell protection at Main street, Carleton Place, Ont.
17716. Oct. 11.—Authorizing C.P.R. to build spur for Moffat Stove Co., Weston, Ont.
- 17717 to 17720. Oct. 10, 11.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.), to build bridge at mileage 30.9, Hinchinbrooke tp., overhead crossing, at mileage 130.78, Port Hope tp.; bridge 133.90, Hone tp., and bridge at mileage 41.45, Camden tp., Ont.
17721. Oct. 10.—Relieving C.N. Ontario Ry. from providing further protection at highway crossing just south of Brechin.
17722. Oct. 4.—Amending order 17231, Aug. 14, re operation of Mount McKay and Kakabeka Falls Ry. over G.T. Pacific Ry. at Neebing avenue, Fort William, Ont., by removing restriction as to using steam as motive power.
17723. Oct. 8.—Authorizing Toronto Suburban Ry. to cross under G.T.R. on lot 19, con. 8, Esquesing tp., Ont.
17724. Oct. 12.—Approving Toronto Eastern Ry. revised location, on Bond street, Oshawa, Ont.
17725. 17726. Oct. 11.—Authorizing Walkerville Water Co. to lay water pipe under Essex Terminal Ry. at Argyle road, and Lake Erie and Detroit River Ry. (Pere Marquette Rd.), at Edna street, Walkerville, Ont.
17727. Oct. 9.—Approving Niagara, St. Catharines and Toronto Ry. location, through Louth and Clinton tps., Ont., mileage 0 to 10.59.
17728. Oct. 12.—Authorizing G.T. Pacific Ry. to carry traffic over its Alberta coal branch from mileage 0 to 36.6.
17729. Oct. 11.—Authorizing C.P.R. to build spur to Alberta Foundry and Machine Co., Medicine Hat, Alta.
17730. Oct. 12.—Approving revision in line and grade of portion of C.P.R. Sudbury-Sault Ste. Marie branch, from mileage 7.42 to 8.39 (Webbwood section), Waters tp., Ont.
- 17731, 17732. Oct. 9.—Authorizing city of Hamilton, Ont., to extend Birmingham street across Toronto, Hamilton and Buffalo Ry., and G.T.R., in lot 7, con. 1, Barton tp., now portion of the city.
17733. Oct. 12.—Temporarily approving G. T. R. freight mileage tariff, C.R.C. 11, between and including Prince Rupert and South Hazelton, B.C.
17734. Oct. 12.—Authorizing G.T. Pacific Branch Lines Co., to build additional spurs from its Alberta coal branch for Macleod Collieries.
17735. Oct. 11.—Authorizing C.P.R. to build spur for York Shaw, Calgary, Alta.
17736. Oct. 12.—Extending to Nov. 30, time within which C.P.R. shall build spur for M. Rumely Co., Saskatoon, Sask.
17737. Oct. 11.—Approving proposed location of C.P.R. station at Innerkip, Ont.
17738. Oct. 8.—Authorizing C.N. Ontario Ry. to take portion of lot 15, con. 4, Nepean tp., for carrying out diversion, as approved by order 13701.
17739. Oct. 4.—Authorizing C.N. Ontario Ry. to build across Bridge street, Yarker.
17740. Oct. 11.—Amending order 17281, Aug. 13, re C.P.R. spur east of Nesbing avenue, Fort William, Ont.
17741. Oct. 11.—Authorizing C.P.R. to build spur for J. T. Hepburn Co., Toronto.
17742. Oct. 14.—Approving proposed location of C.P.R. station at Hussar, Alta.
- 17743, 17744. Oct. 14.—Authorizing C.P.R. to construct spurs for Tregillus Clay Products Co., Shaganappi, Alta., and Bishopric Wall-board Co., Junction Gore, Ottawa, Ont.
- 17745, 17746. Oct. 14.—Extending, for six months, time within which Esquimalt and Nanaimo Ry. shall file standard tariff of maximum freight tolls for approval, and authorizing it to build spur for Shawinigan Lake Lumber Co., Victoria, B.C.
17747. Oct. 14.—Authorizing C.N. Ontario Ry. to build across and divert public road, lot 4, Bristol tp., Que.
17748. Oct. 14.—Approving Canadian Northern Ry. plans standard no. 6 station, for its eastern lines.
17749. Oct. 15.—Approving location of C. N. Ontario Ry. station grounds at Bristol corners, Que.
17750. Oct. 14.—Approving by-law authorizing W. McNeill to prepare and issue Western Canada Power Co. tariffs of tolls.
- 17751, 17752. Oct. 16.—Authorizing G.T.R. to rebuild bridge 15, to mileage 22.73, across Welland canal, near St. Catharines, and bridge 45, mileage 76.83, over Huron road, between North and South Easthope tps., Ont.
17753. Oct. 11.—Ordering G.T.R. to maintain electric hall at crossing just east of Jordan station, Ont.
17754. Oct. 15.—Extending to June 15, 1913, time within which Dominion Atlantic Ry. should complete bridge across Shubenacadie river at South Maitland, N.S.
17755. Oct. 16.—Authorizing C.P.R. to build branch across road allowance at south end of sec. 30, tp. 16, r. 5, w. 2 m., Sask.
17756. Oct. 16.—Relieving G.T.R. from providing further protection at crossing on Trolley street, Hamilton, Ont.
17757. Oct. 14.—Approving C.N. Quebec Ry. location through Arundel, Ponsomy and Amherst tps., mileage 0 to 12.41.
17758. Oct. 14.—Authorizing G.T. Pacific Branch Lines Co. to build its Brandon branch across highway between secs. 17 and 18, tp. 10, r. 18, w.p.m., Man.
17759. Oct. 14.—Authorizing C.N. Ontario Ry. to build across Laughton avenue overhead, in Toronto.
17760. Oct. 14.—Authorizing Canadian Northern Ry. to build its Morris to Portage branch across 25 highways in Manitoba.
17761. Oct. 17.—Authorizing C.P.R. to build spurs for city of Medicine Hat, Alta., and for Medicine Hat Pottery Co.
17762. Oct. 14.—Ordering Hamilton Radial Ry. to build farm crossings for J. B. Leonard and W. J. Copp, Nelson tp., Ont.
17763. Oct. 16.—Authorizing Lachine, Jacques Cartier and Maisonneuve Ry. (G.T.R.) to build bridges across Ontario, Forsyth, Hochelaga, Sherbrooke, Bercy, Hogan and Masson streets, Cote de la Visitation, Iberville; De Fleuriment street, Cote St. Michel road, Bagg Ave., Sault au Recollet road, St. Denis and St. Lawrence boulevards, Montreal.
17764. Oct. 16.—Authorizing Canadian Northern Ry. to build across 15 highways on its Calgary southerly branch.
17765. Oct. 16.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across forced road overhead, in lot 15, con. 7, Camden tp., mileage 48.7 from Glen Tay, Ont.
- 17766, 17767. Oct. 16.—Authorizing C.P.R.

to build spurs for Great Western Lumber Co., Red Deer, Alta., and Dodge Manufacturing Co., West Toronto, Ont.

17768. Oct. 16.—Authorizing C.P.R. to open for traffic its second main line between Adirondack Jet. and St. Constant, Que., about 4.70 miles.

17769. Oct. 14.—Authorizing G.T. Pacific Ry. to carry traffic over its line in British Columbia, between mileage 164 and 176.8, east of Prince Rupert.

17770. Oct. 16.—Authorizing G.T. Pacific Ry. to build spur for city of Edmonton yards, Alta.

17771. Oct. 16.—Certifying corrections in location plan of G.T. Pacific Branch Lines Co., Tofield-Calgary branch, from sec. 21, tp. 29, r. 24, w. 4 m., to sec. 1, tp. 23, r. 1, w. 5 m., Alta., mileage 150 to 198, as approved by order 10662.

17772. Oct. 16.—Authorizing G.T.R. to build siding for Massey-Harris Co., Toronto.

17773. Oct. 14.—Authorizing Esquimalt and Nanaimo Ry. to build spur for D. McKenzie, Victoria, B.C.

17774. Oct. 15.—Authorizing Barton tp., and Hamilton City and Suburban Homes, Ltd., to build Rosedale avenue, at grade, across T.H. & B. Ry.

17775. Oct. 17.—Authorizing C.P.R. to build bridges 24.2 and 24.1, over Otonabee river, Toronto subdivision.

17776. Oct. 16.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge at mileage 130.21 across road allowance between lots 18 and 19, con. 2, Hope tp., Ont.

17777. Oct. 16.—Authorizing C.N. Alberta Ry. to build under G.T.P.R., in n.e. ¼ sec. 15, tp. 46, r. 1, w. 6 m.

17778. Oct. 17.—Authorizing Canadian Northern Ry. to build its Prince Albert-Battleford line across four highways in Saskatchewan.

17779. Oct. 17.—Authorizing C.N. Quebec Ry. to build across public road in St. Eustache.

17780. Oct. 17.—Authorizing G.T. Pacific Ry. to carry traffic on its Moose Jaw branch between Regina and Moose Jaw, mileage 0 to 34.7.

17781. Oct. 16.—Extending time for G.T.R. to restore proportion, viz., 88c. a ton, of joint rate of \$1.60 a ton, on pressed brick from Bradford, Pa., to Windsor, Ont., as required by order 17552, Sept. 21.

17782, 17783. Oct. 17.—Authorizing C.N. Ontario Ry. to build across public road between cons. 3 and 4, March tp., and overhead across St. Lawrence Boulevard and St. Denis Boulevard, Montreal.

17784. Oct. 17.—Authorizing Nelson and Fort Sheppard Ry. (G.N.R.) to take up spur at Tamarack station, B.C.

17785. Oct. 17.—Extending to July 1, 1913, time within which C.P.R. shall complete branch for Crushed Stone and Gravel, Ltd., authorized by order 16981.

Traffic Orders by the Board of Railway Commissioners.

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

C.P.R. STANDARD FREIGHT MILEAGE TARIFF.

17270. Aug. 23. Re application of C.P.R. Co. for approval of a standard freight mileage tariff to be designated as C.R.C. no. W. 1758 to comply with sec. 327 of the Railway Act. It is ordered that the said tariff between the company's stations in Alberta and British Columbia, between Canmore, Alta., and Vancouver, B.C., including its Arrow Lake, Mission and Westminster branches, be temporarily approved pending judgment in the inquiry by the Board into the rates charged generally in British Columbia; provided that in the meantime no increases shall be made in the rates of any special freight tariff of class rates within the territorial limits of the said standard freight mileage tariff, and that no rates shall be increased because of this order.

BRICK RATES, BRADFORD, PA., TO WINDSOR, ONT.

17552. Sept. 21. Re application of Cadwell Sand and Gravel Co., Ltd., of Windsor, Ont., complaining of increased rate on pressed brick from Bradford, Pennsylvania, to Windsor, Ontario, from \$1.60 to \$2 a ton. Upon hearing the application at Toronto, on April 30, the applicants and the Canadian Freight Association being represented; and upon its appearing that the G.T.R. will re-

ceive an additional 32c. per ton as its proportion of the increased rate to \$2 a ton—it is ordered that the proportion, viz., 88c. per ton, which accrued to the G.T.R. as its percentage division of the joint rate of \$1.60 a ton charged from Bradford, Pa., to Windsor, Ont., prior to April 20, be restored by the G.T.R., within 45 days from the date of this order, as a proportional rate from Buffalo to Windsor, and as the maximum proportional to intermediate G.T.R. points, limited to brick shipped from Bradford and Bradford rate points destined to Windsor and the said intermediate points.

Order 17781. Oct. 16.—Postponed the effective date of the above order 17552.

CRUSHED STONE FREIGHT RATES.

17493. Sept. 16.—Re application of Power City Stone Co., Ltd., of Niagara Falls, Ont., complaining of change proposed by Michigan Central Rd. in rate of crushed stone from the applicants' quarry, Niagara Falls, to Toronto, under supplement 10 to its Joint Commodity Tariff C.R.C. 1743; and applying for an order disallowing or suspending said tariff: It is ordered that the said proposed supplement shall not come into force, pending a hearing and disposition of the application by the Board.

LUMBER RATES FROM PORT ARTHUR, ONT.

17619. Sept. 25.—Re application of Vigers-Sheer Lumber Co., Ltd., of Port Arthur, Ont., complaining that it is unjustly discriminated against in the matter of carload traffic to or from Grand Trunk Pacific Ry. points which is interswitched by the Canadian Pacific and Canadian Northern Railways between Westfort and Port Arthur, Ont.: It is ordered that the joint freight rates to be charged by the C.P.R., the Canadian Northern Ry. and the G.T. Pacific Ry. on lumber, in carloads, between Port Arthur and Fort William and points on the G.T.P.R. Lake Superior branch be not higher than 1 cent per 100 lbs. over and above the G.T.P.R. rates between Westfort and Lake Superior branch points: the tariff, or tariffs, to comply with this order, to become effective not later than 21 days from the date hereof.

Transportation Conventions in 1912.

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

Nov. 15.—American Railway Association, Chicago, Ill.

Nov. 15-16.—American Association of Freight Traffic Officers, Chicago, Ill.

Nov. 19-21.—Maintenance of Way Master Painters' Association, Chicago, Ill.

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

Among the Express Companies.

The Canadian Northern Ex. Co. has opened waybill offices at Ardath and Avonlea, Sask.

The Canadian Northern Ex. Co. has opened offices at Morrin, Alta.; Berton, Man., and Forward, Sask.

L. C. Goodge has been appointed agent, Dominion Ex. Co., Yarmouth, N.S., vice A. Steves, deceased.

C. A. Roach, heretofore stationed at Cornwall, Ont., has been appointed route agent, Canadian Ex. Co., with headquarters at Montreal.

A Steves, agent, Dominion Express Co., Yarmouth, N.S., was killed at Hartford, near Yarmouth, Oct. 16, when his automobile turned over. He was accompanied by

W. F. Branscombe, route agent, Dominion Ex. Co., St. John, N.B., who escaped injury.

N. J. Ross, Superintendent, Canadian Ex. Co., was in Prince Rupert, B.C., during October, for the purpose of looking over the ground with a view to the inauguration of the company's express system from that city to interior points along the G.T. Pacific Ry.

The Board of Railway Commissioners has ordered that the express delivery and collection limits in Summerside, P.E.I., be those enclosed by Water street, from Clarks brook to East street, East, Ottawa, Granville, Green and Centre streets, Hawthorne avenue, Duke, North Market and Northumberland streets, to the water front; of Fredericton, N.B., enclosed by River street, John street, between Lansdowne street and Odell avenue, Waterloo row, from south end of Ketchums bridge, Lansdowne street, University avenue, C.P.R. to station, Victoria street, from Carleton street, Smythe and Saunders streets, and Odell avenue to the river; and of Rouleau, Sask., enclosed by Wetmore street, from Railway avenue, Knox avenue, Brownlee street and Railway avenue to starting point.

The Canadian Ex. Co. has had built five electric trucks for city service in Montreal to take the place of horse drawn wagons. Three of them are of two tons capacity each, the others of one ton each. They have a speed of from 10 to 12 miles an hour, which is more than double the efficiency of the old horse wagon, and will travel for 45 miles on a single charge. The large vehicles are 166 ins. long overall and 76 ins. wide. The others are 149 ins. long and 72 ins. wide. Horses often require the attention of more than one driver. They can only cover a limited amount of ground in a day. Their care and feeding is costly. Large stables must be maintained in convenient proximity to the railway station, where real estate values are often at their highest. In the search for improved methods the Canadian Ex. Co. was led to a choice between gas and electricity as the motive power. Inquiry from similar concerns in the United States, where both had been tried, and careful investigation decided the latter as the better field for experiment on account of its perfect simplicity of mechanical parts, which means fewer repairs and less attention; of its perfect ease of control, which allows any intelligent horse driver to run an electric; of the absence of fire risk; and of economy from the fact that power is not consumed when the vehicle is not in operation. The introduction of these cars is largely in the nature of an experiment, but if the results that are hoped for can be obtained it is probable that the horse will be largely, though gradually, superseded. Climatic conditions are more favorable to the south, but while it is a little doubtful if the electric can be operated in Montreal the year round there is no reason why this should not be done in Toronto. Owing to the batteries, which are suspended from the floor of the trucks, these can only pass over well beaten roads where snow drifts have to be encountered, but even in Montreal it should be possible to use them during more than seven months out of the twelve. Charging the motors is a somewhat lengthy operation, but this can be done at night so that no time is lost. The Canadian Ex. Co. is installing its own charging plant at the stables in Montreal, which must now serve as a garage.

Attention is called, by the Winnipeg Free Press, to the fact that on Oct. 9, 1877, the steamboat Selkirk arrived in Winnipeg with the first locomotive to reach the Canadian prairies.

Electric Railway Department.

Straightening Motor Axles at London Street Railway Shops.

A convenient means of straightening motor axles that have accidentally become bent, without the necessity of removal from the lathe when placed therein for turning, is in use in the London (Ont.) St. Ry. shops, R. H. Welburn, Master Mechanic. It often occurs that the axle may have become slightly bent in service, maybe to a degree that would not be noticed until placed in the lathe. To remove from the lathe and straighten, under any of the usual methods, and then insert in the lathe to determine if sufficient bend has been given to the shaft, is at the best a slow task, and one that is fatiguing to the operator.

In the method used in the London shops, the bending attachment can be applied directly to the axle as mounted between the lathe centres for turning. Two arms,

shaft tested for correctness by loosening up the screw and allowing the attachment to hang down on the side of the lathe while the axle is revolved on the centres, and the eccentricity, if any, determined preparatory to another application of the press.

Disposition of Lost Articles by Toronto Railway Company.

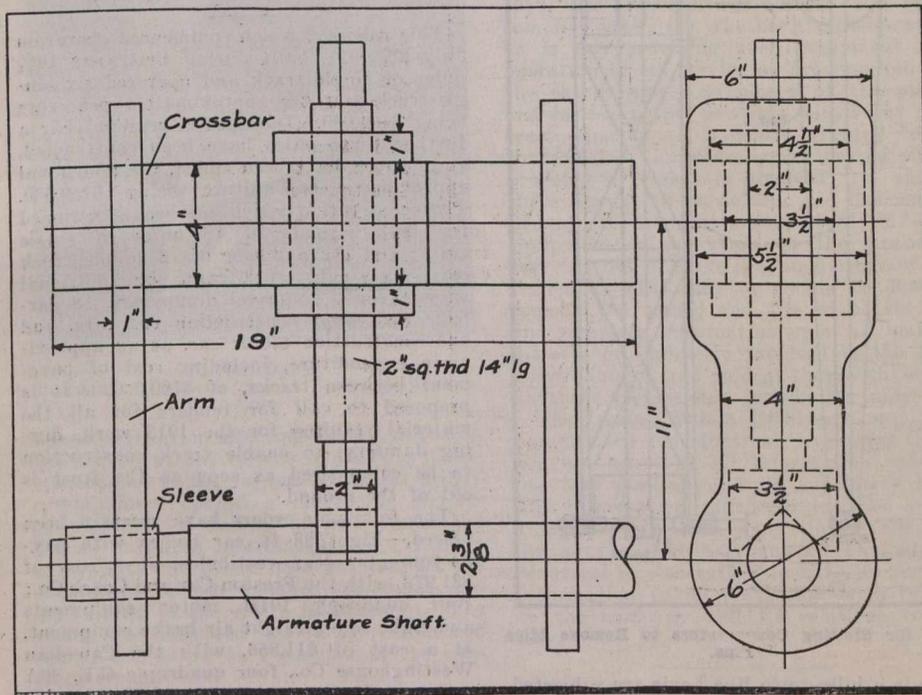
The Ontario Railway and Municipal Board gave the following judgment Sep. 28:—

This is an application made by the city to the Board to prescribe the method of dealing with articles, which may be left upon the company's cars by the travelling public. The company, some years ago, when articles were left on the cars, adopted the practice of sending them to its head office at the corner of King and Church streets. The number of articles which the

reasonable and improper, and without suggesting any other method in their application, ask that this Board should prescribe the way in which these articles should be dealt with by the company. It was suggested at the hearing, by the city, that the company should provide a building in the down town district, in the neighborhood of the loop on Scott street and fit it up for the reception of lost articles and provide the clerical or other assistance necessary to handle them. It appears in the evidence that in the last year over 13,000 lost articles have been taken care of by the company. Of these about 7,000 were claimed and restored to the owners.

The franchise agreement between the city and the company makes no provision for the care and disposal of lost articles. The only provision in reference to property left on the cars, is contained in sec. 215 of the Ontario Railway Act, of 1906. This section provides that "It shall be the duty of every street railway company, which shall have unclaimed property left in its cars, to ascertain, if possible, the owner or owners of such property, and to notify such owner or owners of the fact by mail as soon as possible after such property comes into their possession. Every such company which shall have such property, not perishable, in its possession for a period of three months, may sell the same at public auction, after giving notice to that effect, by one publication, at least 10 days prior to the sale, in a daily newspaper published in the city or town in which such sale is to take place, of the time and place at which such sale will be held, and such sale may be adjourned from time to time until all articles offered for sale are sold. All perishable property so left may be sold by any such street railway company without notice, as soon as it can be, upon the best terms that can be obtained."

It will be observed that the duty of the company under this section, is to ascertain, if possible, the owner or owners and notify them by mail. It would scarcely be possible to notify the owners, unless the lost articles had upon them an address or some means for the identification of the owner. The city relies on the Ontario Railway and Municipal Board Amendment Act, 1910, 10 Edw. VII., cap. 83, sec. 7, which provides that the act shall be read with and as part of the Ontario Railway and Municipal Board Act, 1906, and secs. 2, 3, 5 and 6 of the act shall apply to street railways as well as other railways. It will be observed that the act, 10 Edw. VII., cap. 83, is an amendment to the Ontario Railway and Municipal Board Act of 1906, not to the Ontario Railway Act of 1906. That act, 10 Edw. VII., empowers the Board to determine the just, reasonable, safe, proper and adequate regulations, practices, equipment, appliances or service to be observed and to be used in the transportation of passengers, freight and property. It does not extend to the care of property left on the cars. It only applies to transportation. The Board is of opinion that it has no power or jurisdiction under the Ontario Railway and Municipal Board Amendment Act of 1910 to declare that the practice adopted by the company in the care of articles left on the cars is unjust, unreasonable and improper, and to prescribe some other method of caring for them and restoring them to the owners. The application is dismissed, but without costs, except that the city shall pay \$20 for stamps on the formal order.



Press Attachment for Straightening Motor Axles Directly in the Lathe.

bored $2\frac{3}{8}$ ins. diameter at the lower end, the diameter of the standard axle in use on that system, are slipped on to the axle, the latter passing through these holes. Centering 11 ins. out on these arms, there is a 2 x 4 in. opening for the reception of a crossbar of the same dimensions. This crossbar is built up from two 1 in. slabs, rivetted together. These slab pieces encircle at the centre a square threaded nut, through which passes a square threaded screw, 2 ins. in diameter and 14 ins. long. This bears down at the lower end on a V block resting on the bent part of the shaft.

When the bend occurs at a point where the outer arm must be near the end of the shaft, there is a taper collar of the same outside diameter as that of the shaft, to fit over the taper pinion end. The bending attachment can thus be moved to any position, with the arms close together, or at the maximum distance apart, as the nature of the bend requires.

A set can be given to the shaft, and the

company were called upon to take care of became so large, and so much time was taken up by claimants making enquiries at the office, identifying their property, and resuming possession of it, that the conductors returning their fare boxes were very much inconvenienced and delayed. The service was so affected that the company found it expedient some time ago to direct each conductor to take the articles in the first place to the car barns at the end of his run, where they were left along with a memorandum giving particulars of where they were found. They were then gathered together and sent by car to the barn on Lansdowne avenue. The company there provided a room for storing them and a clerk to examine, label and put them in racks, so that they could be identified and returned to the owners when they applied for them. A telephone is maintained for the convenience of persons making enquiries. The city says that this practice, in dealing with lost articles, is unjust, un-

Halifax Electric Tramway Co.

For some time past it has been reported that a change in the control of the company was impending, and on Oct. 8 it was semi-officially announced in Halifax that the control of the company had passed into the hands of a syndicate of Montreal financiers headed by E. A. Robert, President Montreal Tramways Co. The report further stated that the new interests will develop a water power close to Halifax, and that the H.E.T. Co. will be the principal user of the power generated. It is said that there is no intention to transfer the offices from Halifax to Montreal.

The Nova Scotia Legislature at its last session passed an act respecting the exclusive franchise granted the Halifax Electric Tramway Co. and the city of Halifax. The reasons for passing the act are set out in the preamble from which it appears that the existing franchise will expire in 1916; and that negotiations had taken place between a majority of the directors and the city council as to terms, which negotiations had not been submitted for the shareholders' approval. It was considered desirable to postpone approval of such negotiations to maintain the existing contract or franchise, and to provide that no disposition shall be made of the company's undertakings while the present act is in force.

The act provides that the exclusive franchise granted the company by the statutes of 1895 be extended 21 years on the same terms so far as taxes and contributions to the city are concerned. The charges for fares, electric current and gas are made subject to the Public Utilities Board; and the net profits of the company are to be divided as follows:—A dividend to stockholders not to exceed 8%; a fund for the extension and improvement of the property to be created by the setting aside of an amount up to a 4% dividend on the common stock, and any balance to be equally divided between the company and the city. These sections of the act are to become operative on a date to be fixed by proclamation. The act also provides that the directors are to report at the next annual meeting of shareholders the progress of negotiations with the city council for the purpose of securing an expression of their views upon the same.

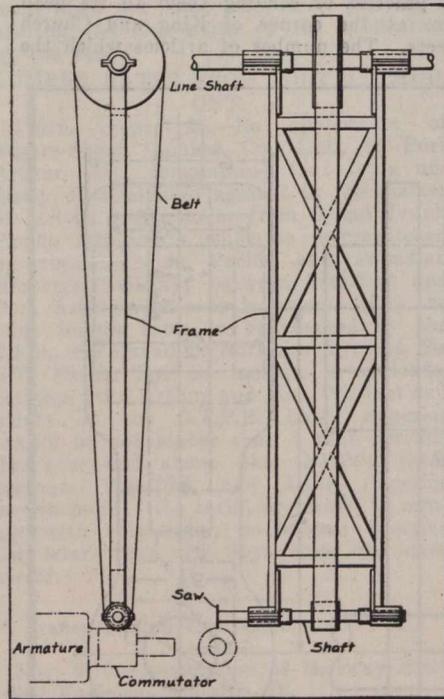
There is to be no increase in the amount of bonds or debentures issued beyond the present amount of \$600,000 of 5% first mortgage bonds, and no second mortgage or other charge is to be placed upon the property, except such as may be given to secure the existing bond issue or any renewal of the same. The capital stock is not to be increased beyond the present amount of \$1,500,000, and no stock is to be granted preferential rights. The company is not to dispose of its property in whole or in part, and it is not to enter into agreements or contracts with other companies for the purchase of hydro-electric power, or any water power, for the purposes of the company. The company's power to pay dividends is limited to 8%; all outstanding proxies are declared to be void, and any company having similar objects to the H.E.T. Co., holding any of its shares is declared to be incapable of voting either in person or by proxy, at any of the company's meetings. This part came into force May 3, the date of the passing of the act, and is to remain in force until May 3, 1913, unless sooner repealed.

At a meeting of the laws and privileges committee of the Halifax, N.S., city council, Oct. 7, a resolution was adopted that the city solicitor be instructed to propose legislation which would serve to prevent a

possible removal of the Halifax Electric Tramway Co.'s head office to Montreal. It was stated that it had been ascertained that the control of the company had shifted from Halifax to Montreal, and it was feared that the head office would follow, which would make it inconvenient for the inspection of the books by the authorities. The city receives 4% of the gross receipts of the street railway, and 2% of the gross receipts of the power plant.

Commutator Slotting Rig at Levis County Railway Shops.

The Levis County Ry. shops at Levis, Que., are small, as the number of cars operated is so few that the capacity for repair need not be very large. In common with other small shops similarly situated, the equipment is not very large, calling for the exercise of a good deal of native ingenuity in the repair of the rolling stock, and the maintaining of it in good condition under the heavy conditions of operation to which



Rig for Slotting Commutators to Remove Mica Fins.

cars in a hilly town like Levis are subjected.

From this latter cause, burnt out motors are of more or less frequent occurrence, although this difficulty has of late been materially minimized by the use on all cars of a regulator to prevent an overcharge of current to the motor when starting under heavy load as on a hill. The method of putting such motors again in condition by rewinding was described in a previous issue.

The wearing down of the commutator on a motor is a condition with which all roads have to contend. Not only is the wear uneven at different points on the circumference, but the greatest trouble arises from the fact that the copper segments wear down more rapidly than the separating layers of mica, leaving the outer edges of the latter projecting out beyond the metal. A simple rig, which is shown in the accompanying illustration, has been built up in these shops to remove these projecting fins.

A wooden framework is supported from bearings on the shop line shaft, the bearings allowing the frame to hang freely on the revolving shaft, and also permit of swing of the lower end. On this lower end there is a small shaft, carrying at one end

a thin saw cutter. A large pulley on the line shaft drives the small shaft at a high speed through a belt on the frame passing over a small pulley of the small shaft.

The armature, with the commutator ring to be slotted, is mounted horizontally in V grooves between two horses, directly under the path of the saw, and at the requisite height to cause the cutter to form a shallow slot in the mica insulation between the commutator segments. The operator holds the commutator in position on the horses with one hand, and with the other swings the cutter frame along the length of the slot, repeating this operation for all the slots. The arc through which the frame swings is so small that the resulting groove is to all purposes level, and for the purpose required is amply accurate.

The whole time required to mount and slot a complete commutator is only about 10 minutes. This is accomplished on a machine that complete only cost in the neighborhood of \$12 to build. There are other uses to which the machine is put to advantage, principal among them being that of sawing up wood and similar operations.

Regina Municipal Railway Construction, Equipment, Operation, Etc.

This railway, which commenced operation July 29, 1911, built during that year 10½ miles of single track and operated six single truck cars, the approximate expenditure being \$500,000. During the present year a further three miles have been constructed, and 14 cars have been added, the additional approximate expenditure being \$250,000. The construction which has been sanctioned for 1913 consists of 18 miles of single track, and the purchase of 12 double truck cars, six single truck cars, one additional snow plough, 12 gravel dump cars, 18 garbage cars, four construction flat cars, and one construction motor car, at an approximate expenditure, including cost of pavement between tracks, of \$700,000. It is proposed to call for tenders for all the material required for the 1913 work, during January, to enable track construction to be commenced as soon as the frost is out of the ground.

The following orders have recently been placed.—Eight 28 ft. car bodies with pay-as-you-enter rear vestibules, at a cost of \$31,272, with the Preston Car and Coach Co.; four quadruple 101B motor equipments and eight sets straight air brake equipment, at a cost of \$11,856, with the Canadian Westinghouse Co.; four quadruple G.E. 80A motor equipments, at a cost of \$9,400, with the Canadian General Electric Co.; and eight sets 27G1 trucks, all steel rolled wheels, at a cost of \$7,360. Each car delivered f.o.b. Regina, will cost \$7,481.

Following is the general specification of the cars:—

Length of car body	28 ft.
Length of front vestibule	5 ft.
Length of rear vestibule	7 ft.
Length of car over buffers	41 ft.
Width of car	8½ ft.
Truck wheels, diam.	33 ins.
Width of tread	2½ ins.
Width of flange	¾ in.
Depth of flange	¾ in.
Axles, diam.	4½ ins.
Gauge	4 ft. 8½ ins.

The passenger returns to Aug. 31, show number of passengers carried, 1,760,969; revenue received, \$81,955.45. The average weekly operation shows, 53,000 passengers carried, and a revenue of \$2,300. There is an average of 12 cars now in operation, and by the end of the year it is anticipated that 20 cars will be running. The railway is showing a satisfactory net profit above operation charges, and all fixed charges against capital expenditure. H. Doughty is Superintendent.

Canadian Street Railway Association's Annual Meeting.

The annual meeting of this Association was held at London, Ont., Oct. 4 and 5, there being a good attendance of representatives of member companies from the various provinces. The President, James Anderson, General Manager Sandwich, Windsor & Amherstburg Ry. occupied the chair.

The Secretary-Treasurer, Acton Burrows, presented a very complete report dealing in detail with the Association's work during the year, referring to Dominion and Pro-



Patrick Dubee,
President, Canadian Street Railway Association.

vincial legislation affecting electric railways, the actions of the Boards of Railway Commissioners and the various provincial utility commissions, operating rules for electric railways, and a number of other important topics, including information on a variety of subjects which had been gathered at the request of certain member companies and distributed to the entire membership. The report was discussed section by section and action was taken on a number of the subjects brought up.

Papers were read on several subjects, including telephone train dispatching, automatic railway dispatching and signalling, the evolution of the electric railway car, track construction, the use of T rails, etc., etc. There were also a number of topical discussions on other subjects of vital interest to electric railway interests and which had been suggested by officials of member companies.

The election of officers resulted unanimously as follows:—President, Patrick Dubee, Secretary-Treasurer, Montreal Tramways Co.; Vice President, C. B. King, Manager London St. Ry.; Secretary-Treasurer, Acton Burrows, Managing Director, Canadian Railway and Marine World.

Executive Committee:—Jas. Anderson, General Manager, Sandwich, Windsor & Amherstburg Ry.; E. P. Coleman, General Manager, Dominion Power and Transmission Co.; J. D. Fraser, Secretary-Treasurer, Ottawa Electric Ry.; H. M. Hopper, General Manager and Purchasing Agent, St. John Ry.; J. E. Hutcheson, General Manager Montreal Tramway Co.; Wilson

Phillips, Superintendent Winnipeg Electric Ry.

Assistant Secretary, Aubrey Acton Burrows, Secretary and Business Manager, Canadian Railway and Marine World.

The officers attending the meeting were most hospitably entertained by C. B. King, Manager London St. Ry., who gave a dinner and also a theatre party for them. After the conclusion of the business on Oct. 5, the party were taken by special car over the London & Lake Erie Ry. and Transportation Co.'s line from London to Port Stanley, on the invitation of the General Manager, S. W. Mower, and were given every opportunity of thoroughly inspecting that up to date interurban line, one of the most interesting features of which is the operation of four car trains during the busy summer.

Inquiry Into Montreal Tramway Company's Service.

The Quebec Public Utilities Commission has decided to make an enquiry into the Montreal Tramway Co.'s service in Montreal and contiguous municipalities, to determine (a) whether the Commission's directions respecting the prevention of accidents and the lessening of danger from the operation of cars, as issued on Nov. 18, 1910, and amendments thereto are being complied with; (b) whether the Company is or is not providing such equipment and operation of its service as are required for the safety and convenience of the public and for the proper carrying out of any contract, charter or franchise granted to or controlled by it, whereby the use of public property or rights is involved; (c) should there appear to be defects and deficiencies in any of the matters involved in such equipment or operation, or the means of carrying out or exercising such contract and franchise, what may or should be done to remedy the same; and (d) to obtain full and complete information upon all matters directly or indirectly involved in the foregoing inquiry, and to deal therewith, so far as the Commission's jurisdiction may lie.

The Quebec Public Utilities Commission has directed the Montreal Tramways Co. to produce before it all information concerning the company and its subsidiary lines. The information called for includes everything relating to the operation of the lines during the past two years. The city of Montreal is also called upon to produce all information in its possession with respect to the company and its relations to the city.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for Aug., \$553,148; operating expenses, \$343,979; net operating earnings, \$209,169; renewal funds, \$51,620; net earnings, \$157,549; approximate income from investments, \$35,000; net income, \$192,549, against \$436,520 gross earnings; \$278,513 operating expenses; \$158,007 net operating earnings; \$37,935 renewal funds; \$120,072 net earnings; \$25,000 approximate income from investments; \$145,072 net income for August, 1911. Aggregate gross earnings for two months ended Aug. 31, \$1,091,988; net earnings, \$381,842, against \$845,850 aggregate gross earnings; \$283,125 net earnings, for same period 1911.

Cape Breton Electric Co.—Gross earnings for Aug., \$31,598.38; operating expenses and taxes, \$16,100.77; net earnings, \$15,497.61; interest charges, \$4,495.83; balance, \$11,001.78; sinking and improvement funds, \$1,206.67; balance for reserves, etc., \$9,795.11, against \$28,933.97 gross earnings; \$15,556.89 operating expenses and taxes; \$14,

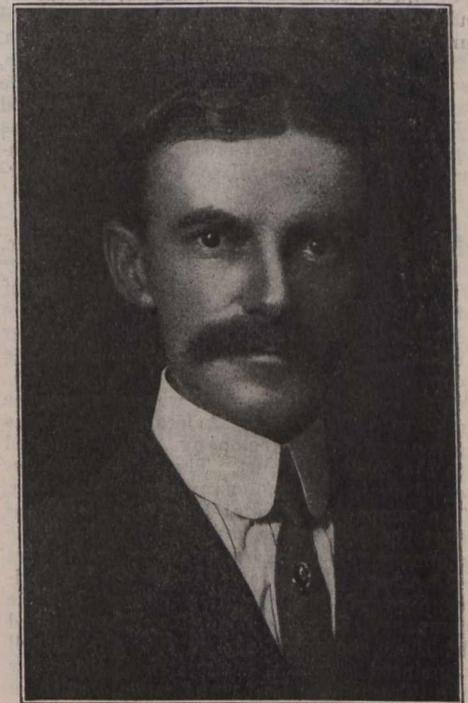
277.08 net earnings; \$4,512.50 interest charges; \$9,764.58 balance; \$1,140 sinking and improvement funds; \$8,624.58 balance for reserves, etc., for Aug., 1911. Construction charges for Aug., \$770.57.

Oshawa Ry.—The annual meeting was held at Deseronto, Ont., Sept. 30. Following are the officers and directors for the current year:—President, E. W. Rathbun, Deseronto; Manager, J. F. Chapman, Gananoque, Ont.; Secretary and Treasurer, H. W. Cooper, Gananoque; other directors, B. R. Hepburn, M.P., and D. A. Valteau.

Quebec Ry., Light and Power Co.—Gross earnings for August, \$163,882; operating expenses, \$79,479; net earnings, \$84,402, against \$150,652 gross earnings; \$66,196 operating expenses; \$84,455 net earnings for Aug., 1911.

Regina Municipal Ry.—Passenger earnings for Aug., \$10,135.50; miscellaneous earnings, \$472.50; total earnings, \$10,608; operating expenses, \$7,100.33; net operating earnings, \$3,507.67; interest charges, etc., \$2,544.87; net profit, \$962.80. Passengers carried during month, 251,246. Car mileage, 38,565.

Toronto Ry., Toronto and York Radial Ry., Etc.—Gross earnings for Aug., \$727,925; operating expenses, maintenance, etc., \$325,519; net earnings, \$402,406, against \$654,730 gross earnings; \$303,725 operating expenses, maintenance, etc.; \$351,005 net earnings, for August, 1911. Aggregate gross earnings for eight months ended Aug. 31, \$5,453,099; net earnings, \$2,821,327, against \$4,853,686 aggregate gross earn-



C. B. King,
Vice President, Canadian Street Railway Association.

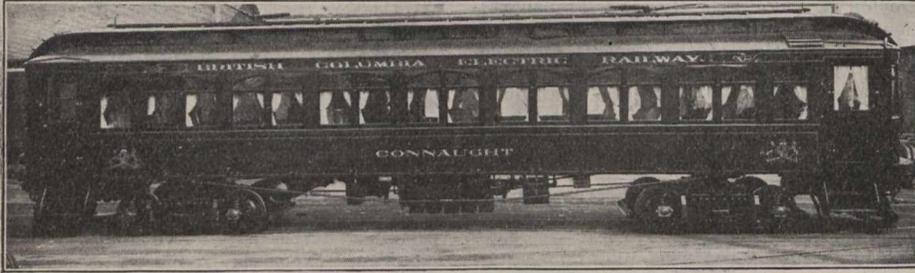
ings; \$2,490,150 net earnings, for same period 1911.

Winnipeg Electric Ry.—Gross earnings for Aug., \$303,764; operating expenses, \$162,431; net earnings, \$141,333, against \$299,615 gross earnings; \$137,825 operating expenses; \$161,790 net earnings, for Aug., 1911. Aggregate gross earnings for eight months ended Aug. 31, \$2,427,830; net earnings, \$1,133,895, against \$2,503,972 aggregate gross earnings; \$1,257,983 net earnings, for same period 1911.

A quarterly dividend at the rate of 12% per annum was paid Oct. 1 to shareholders of record at Sept. 20.

Royal Car on the British Columbia Electric Railway.

In connection with the recent visit of the Duke of Connaught to the Pacific coast the B.C. Electric Ry. was requested to arrange for the transportation of the royal party from Vancouver to New Westmin-



Royal Car on British Columbia Electric Ry.

ster. In order to meet the demands fittingly, the company decided to specially equip one of its cars, and this work was handsomely done in its shops. The accompanying illustration shows the exterior and interior of the car which was one of the regular cars built for the company's Fraser river division. The interior fittings were entirely taken out and re-arrangement made in parlor car style throughout. The interior trimmings were of rich green and cream, the company's colors, relieved by light silk curtains at the windows, the carpeting being green and the chairs and lounges richly upholstered in green plush. The car was equipped with frosted lights, and as a portion of the run was in the evening, luminous electric radiators provided heating. The exterior of the car was painted in green and cream, the name, Connaught, and the royal coat of arms appearing on either side.

Montreal Tramways Co.'s Freight Traffic.

The situation in regard to the carrying of freight through Montreal streets by the Montreal Tramways Co., has become rather interesting. For a considerable period, the company, then the Montreal St. Ry. Co., carried freight, but action was taken by the city to prevent this. A local decision was given against the company, which appealed to the Supreme Court. The latter body decided against the company early in October. The company immediately gave instructions that the decision be complied with, and the stoppage raised an outcry from contractors and others who have taken considerable advantage of the facilities offered by the company. The city council was approached by those concerned, and in turn the council appointed a special committee to interview the Tramways Co. management, with a view to returning to the former condition of affairs. The company, however, declined to do this unless the city council prepare and pass a bylaw giving the company the necessary permission. A bylaw is in course of preparation and will be dealt with as soon as possible, so that the facilities for the conveyance of contractors' and other materials across the city may be renewed.

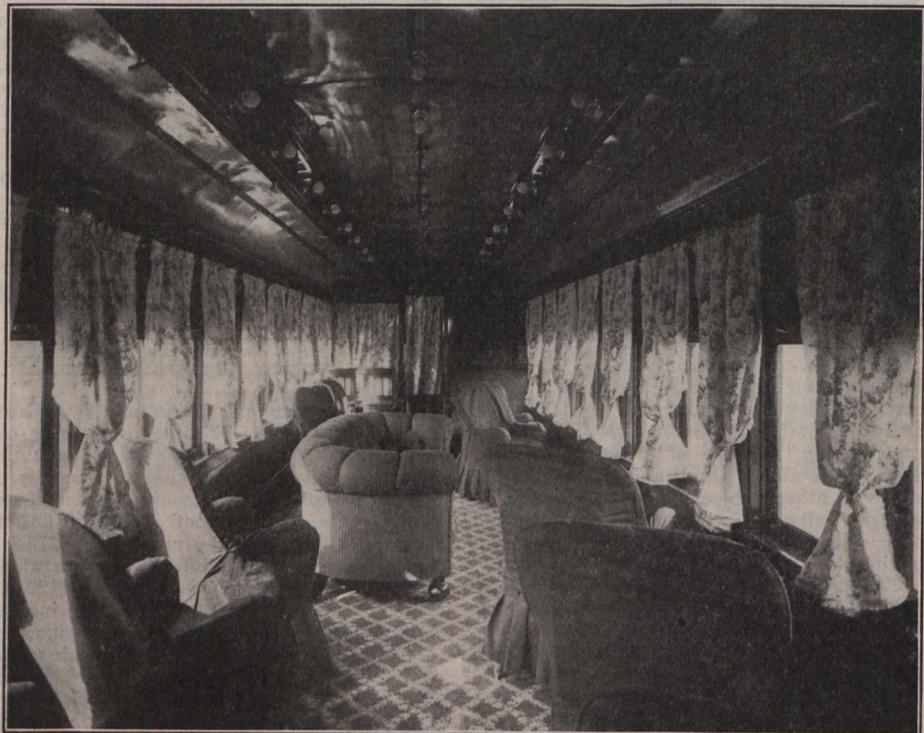
Calgary Municipal Ry.—Passenger earnings for Sept., \$59,136; miscellaneous earnings, \$820.25; total earnings, \$59,956.25; operating expenses, \$36,688.34; net balance, \$23,267.91; contingent account, interest and sinking fund, \$10,211.29; net profit, \$13,456.62. *against* \$33,677.05 passenger earnings; \$527.30 miscellaneous earnings; \$34,204.25 total earnings; \$20,135.55 operating expenses; \$14,068.80 net balance. Sept., 1911.

A point of considerable importance to electric railways was decided on Oct. 4, in a suit brought by S. Brundage against the Windsor, Essex & Lake Shore Rapid Ry. to recover \$5,000 as damages for personal

injuries, loss of two horses killed and damages to wagon and harness, which occurred on June 30, 1911, at a highway crossing on that company's line.

The company produced witnesses who testified that the highway crossing signal whistle had been sounded by the motorman on approaching the crossing, and it was contended that the plaintiff was asleep and in no condition to heed warning signals. The jury of 12 farmers gave a verdict in the company's favor, costs to be paid by plaintiff.

This decision is of great importance to all railway companies, as it apparently establishes the fact that if a car or train is operated in accordance with the regulations enacted by the Board of Railway Commissioners, railway companies are not liable to damages resulting from accidents at highway crossings.



Royal Car, British Columbia Electric Ry., Interior.

The Cape Breton Electric Co., operating the electric railways in Sydney, North Sydney, and to Glace Bay, has voluntarily increased its conductors' and motormen's wages, the new rates being, for the first year, 20c.; second year, 21c.; third year, 22c.; fourth year and up, 24c. an hour.

Electric Railway Notes.

The Edmonton Radial Ry., operated by the city of Edmonton, Alta., has ordered one Simplex, self clearing dump car from the Canadian Car and Foundry Co.

The Brandon, Man., city council has instructed the City Engineer to prepare specifications of single truck cars of the pay-as-you-enter type, with the necessary equipment.

The electric railway under construction in Saskatoon, Sask., is being provided with 12 single truck motor cars, built by the St. Louis Car Co., St. Louis, Mo. Each car will be 34 ft. 4 in. over bumpers, and 21 ft. 4 ins. over corner posts.

The Grand Valley Ry., which is in the hands of a receiver, proposes, press reports state, to put on a regular freight service between Brantford and Galt, Ont., and is having a special type of freight and express car built for the service. E. B. Stockdale, Brantford, Ont., is the receiver.

W. N. Warburton, heretofore in Toronto, Hamilton and Buffalo Ry. service at Hamilton, Ont., has been appointed General Manager, London and Lake Erie Ry. and Transportation Co., London, Ont., vice S. W. Mower, resigned. He was at one time with the Chatham, Wallaceburg and Lake Erie Ry.

The St. John Ry., St. John, N.B., has increased the rate of wages to its conductors and motormen by an advance of 2½c. an hour, the new schedule being, for the first six months, 18½c.; second six months, 20½c.; second year, 21½c.; third year and up, 23½c.; Sunday work, 4c. an hour extra.

The Board of Railway Commissioners has approved of standard passenger tariff at the rate of 4c. a mile; and of standard freight mileage tariff for the Western Can-

ada Power Co.'s line. The tariffs are signed by R. F. Hayward, General Manager; W. McNeill, Assistant General Manager; H. Dalton, Passenger and Freight Agent.

During August, two employees were killed and nine were injured in the course of their work in connection with the operation of

electric railways in the Dominion. One of the fatalities was caused by the man falling from the running board of a car, and the other by being run over. Four of the other accidents were due to collisions, and one each to a fall, a derailment, to machinery and to a runaway.

The Toronto and York Radial Ry. has received two pay-as-you-enter cars, with steel underframes, 33½ ft. long, from the Preston Car and Coach Co.

The Toronto city council recently instructed the Commissioner of Works, to obtain the necessary equipment to enable the civic car line on Gerrard street east to be put into operation by about the end of November, and it has been decided to purchase at once three 45 ft. centre aisle cars, double end control, one work car and one sweeper.

The Regina, Sask., city council has ordered from the Preston Car and Coach Co. eight double truck car bodies, with accessories, delivered at Regina, for \$31,272. The Canadian Westinghouse Co. secured a contract for four sets 101 B motors, at \$2,340 each, f.o.b. Hamilton; eight sets air brake equipment at \$312 each, f.o.b. Hamilton; and the Canadian General Electric Co., Toronto, was given a contract for four sets of 6-80 A motors at \$2,350 each, f.o.b. Peterboro, Ont.

The following changes of officials of the Dominion Power and Transmission Co., Hamilton, Ont., have been made:—W. C. Hawkins, heretofore General Manager, Secretary and Chief Engineer, has been appointed Managing Director; E. P. Coleman, heretofore Manager of Railways, has been appointed General Manager; W. G. Angus, heretofore Electrical Engineer, has been appointed General Superintendent of Light and Power, and G. E. Waller, heretofore General Freight and Passenger Agent, has been appointed General Superintendent of Railways. The position of General Freight and Passenger Agent, has been abolished for the present.

Internal Combustion Manual.—This book of 146 pages, by F. W. Sterling, Lieutenant, U. S. Navy, published by the School of Marine Engineering, U. S. Naval Academy, Annapolis, Md., is intended as a text book for the use of midshipmen, but there is no reason why other students should not profit by the well arranged data here offered. Fuel being the fundamental that controls design and operation, this subject is first presented. After considering fuel, ignition, cooling, and lubrication in their relation to the engine, these four operations are shown combined in some of the latest and most approved types of engine. The producer plant is given a chapter to itself. For so short a course, the subject has been treated in a very sensible and satisfactory manner.

The Lemieux Act.—The labor congress which met at Guelph, Ont., recently, reaffirmed the decision of the meeting at Calgary, Alta., last year, and decided to petition Parliament to repeal the Lemieux Act, under which, boards of conciliation in labor disputes are appointed. Magnus Sinclair, of the electric railways employes union, spoke in opposition to the act, pointing out that the Montreal St. Ry. Co. had obtained an injunction restraining the board which was appointed, from holding an enquiry. President Lowe, of the maintenance of way employes union, supported the act, as also did D. Campbell of the telegraphers union.

The Canadian Northern Quebec Ry. roundhouse at Longue Pointe, Montreal, together with four locomotives, was destroyed by fire, Oct. 11. The damage is estimated at \$125,000.

Electric Railway Projects, Construction, Betterments, Etc.

Berlin and Waterloo St. Ry.—The Berlin, Ont., city council has under consideration plans for increasing the capacity of the car barn at Berlin. (June, pg. 303.)

Brandon, Man.—The city council has under consideration the building of car barns and power plant for the electric railway, on land owned by the city. (Oct., pg. 520.)

British Columbia Electric Ry.—A committee has under consideration proposals for a consolidate franchise for 25 years for South Vancouver, Point Grey, Hastings townsite and D.L. 301. The question of extension of lines in these places has given rise to considerable discussion for some time past, and the present committee is working on a new attempt to have the necessary lines built.

Cars are being operated over the line just completed from Kerrisdale station along Wilson road, to Dunbar st., about a mile. Connection is made at Kerrisdale station with the Vancouver and Lulu Island Ry., which is operated by the company.

A new line from New Westminster to Queensborough has also been put in operation. (Oct., pg. 520.)

Calgary Municipal Ry.—The citizens of Calgary, Alta., have by a very large majority carried the bylaw confirming an agreement with a southeast Calgary company as to the building of an electric railway there. About a mile of line is to be built from the present terminus of the city car line, to the eastern limits of the city, and handed over to the city as a free gift, for operation. (April, pg. 196.)

The Edmonton Interurban Ry. was incorporated by the Alberta Legislature in 1910 to build a number of electric railways radiating from Edmonton. The company is reported to have been reorganized in September, and to have entered into an agreement with the Franco-Canadian Corporation for financing. An office has been opened at 248 Jasper ave., Edmonton, and Mr. Kimpe is reported to be Managing Director in charge, with J. H. Pickard as Vice President. The company was reported, Oct. 11, to have entered into a contract with J. W. McLeod, for the building of a line from Edmonton to St. Albert, of six miles. At this point a power house is to be built and equipment installed sufficient to operate 26 miles of line. Work is reported to have been started, and it is expected to have the line completed by June, 1913. The line starts at Queen Mary park, where a station will be built for the transfer of passengers and freight to the municipal line, if satisfactory arrangements can be made. It is proposed to equip the line with 60 ft. passenger cars having a compartment for express, parcels and baggage; and cars for coal and general freight. The lines projected by the company, M. Kempe is reported as stating, will be as follows:—To Beaver Lake and Tofield, 40 miles; to Vegreville, 60 miles; to Pigeon Lake, 40 miles; to Lac Ste. Anne, 56 miles; to Mowassin, 45 miles; to Namayo, 12 miles; to Morinville by way of St. Albert, 18 miles.

Edmonton Radial Ry.—The Mayor of Edmonton is reported as stating, Sept. 11, that the city council was planning to extend one of its lines to St. Albert, by way of Calden and the terminus of the Edmonton, Dunvegan and British Columbia Ry., next year, and that a right of way had practically been secured without cost. Some grading is reported to have been done. (June, pg. 308.)

Grand Valley Ry.—E. B. Stockdale, receiver of the G.V. Ry., is reported as stating that the company's lines in Brantford, Ont., are to be put in first class condition

before the winter, and that a good deal of work, with this end in view, has already been done. (Mar., pg. 147.)

Guelph, Ont.—Press reports state that U. S. interests are endeavoring to secure franchises for the building of an extensive system of electric railways radiating from Guelph, and serving particularly Puslinch Lake, Hespeler, and Preston to the south, and as far as Arthur northerly. It is stated that those interested are desirous of obtaining the use of the Guelph Radial Ry. tracks and the surrender of that municipally owned railway's charter to Puslinch Lake, etc. (See Guelph Radial Ry., May, pg. 251.)

Kingston, Portsmouth and Catarqui Electric Ry.—The city council of Kingston, Ont., has under consideration the question of repairing certain streets on which the electric railway is being operated, and of having new steel rails laid at the same time. The matter is still being negotiated between the parties. (Aug., 1910, pg. 682.)

Lake Erie and Northern Ry.—The plans for the line from the proposed terminus at the corner of Colborne and Clarence streets, through Brantford, towards Galt, Ont., have been prepared for submission to the city council. This portion of the line includes some rather difficult pieces of engineering. The plans for the entry into Galt were submitted to the city council, Oct. 8. W. P. Kellett, Brantford, is Chief Engineer. (Oct., pg. 520.)

Lethbridge Municipal Ry.—The municipally owned electric railway in Lethbridge, Alta., was reopened for traffic, Sept. 12. The city council's street railway committee has under consideration plans for the extension of the line during 1913. (Oct., pg. 520.)

London Street Ry.—In connection with the proposed north end extension the company has made application to the London, Ont., city council for permission to cross the C.P.R. tracks at Adelaide street. The company desires that the city should join it in making the necessary application to the Board of Railway Commissioners. (Oct., pg. 520.)

Medicine Hat, Alta.—Application has been made by a syndicate, headed by Sir Max Aitken, Montreal, to the Medicine Hat, Alta., city council for a franchise for an electric railway. The council is of opinion that the city could not finance such an undertaking itself, and that if the citizens demand a line at once, the only way to get it is by granting a franchise. No decision has been reached. (May, pg. 252.)

Montreal and Southern Counties Ry.—The Minister of Railways has approved of route map for the proposed line from Ranelagh to Laprairie, Que., four miles.

An agreement was signed Oct. 3, by which the town of Greenfield Park, adjoining St. Lambert, grants the company a 21 year franchise for an electric railway within its limits. The line is expected to be in operation by the end of the year. (Oct., pg. 520.)

Montreal Tramways Co.—An order was issued Oct. 8, by the Quebec Public Utilities Commission directing the company to build certain extensions of lines in order to provide additional routes and so avoid congestion of traffic. (Oct., pg. 520.)

We are officially advised that the only extension ordered by the Public Utilities' Commission was for half a mile of single track on Westminster avenue, Montreal West. This work is already in hand, and was expected to be completed Oct. 30.

The order made by the Quebec Public Utilities Commission directs, among other

things, that the company shall at once start, and complete with due diligence, a line to Montreal West. (Oct., pg. 520.)

Morrisburg and Ottawa Electric Ry.—At the annual meeting in Ottawa, Oct. 8, the directors were authorized to start construction in May next. The question of letting a contract was left in their hands.

Following are the directors and officers for the current year:—President, J. G. Kilt, Morewood, Ont.; Vice President, H. McDonald, Ottawa; other directors, J. Oliver, R. E. Reardon, J. W. Bogert, Morewood, Ont.; W. C. Strader, Williamsburg, Ont.; R. J. Biggar, Ottawa; Secretary-Treasurer, R. A. Bishop; Solicitor, G. D. Kelley; Auditor, G. L. Blatch. (Oct., pg. 520.)

Mount McKay and Kakabeka Falls Ry.—The Board of Railway Commissioners has rescinded the clause of the order of Aug. 14, directing the company to use steam as a motive power for its cars in passing over the C.P.R. at Neebing Ave., between Fort William and Neebing tp., Ont. (June, pg. 309.)

Niagara, Welland and Lake Erie Ry.—The taxpayers of Welland, Ont., have approved a bylaw granting a right to build an electric railway through a section of the industrial district being opened up by the Canadian General Securities Co., Toronto. (Oct., pg. 521.)

Press reports state that the work of extending the line to the suburb of Dane City, and to Rosedale, Welland, Ont., will be completed this fall. (Oct., pg. 530.)

Niagara, St. Catharines and Toronto Ry.—The Board of Railway Commissioners has approved of revised location plans for the extension of the line from St. Catharines to Niagara-on-the-Lake, through Louth and Clinton townships, mileage 0 to 10.59. (Oct., pg. 521.)

Nipissing Central Ry.—We are officially advised that the Timiskaming and Northern Ontario Ry. Commission, which now owns the N.C. Ry., proposes to equip with electricity one track, on the double track line between North Cobalt and Cobalt, Ont., to allow the N.C. Ry. to operate its cars into Cobalt station. The details of the work to be done have not been arranged.

The line from Cobalt enters Haileybury by Georgiana and Ferguson avenues, terminating at Ferguson avenue and Browning street. The plans for the extension of the line show that one section will be built from the present terminus to the terminus of the Haileybury spur line at the lake shore end of Florence street, and another section, to be known as the Foster spur, from the end of the Haileybury spur on Farr street, and the lake shore road to the foot of Elliott street. The principal gradient on the first named section will be 1.7%, and on the second 2%, with a fair amount of curvature in each case. The Haileybury spur will be utilized to the junction with the Timiskaming and Northern Ontario Ry.'s main line, which will be utilized to near the boundary between Bucke and Dymond tps., whence an independent route will be followed into New Liskeard, to the Wabi river bridge, on Armstrong avenue. The principal gradient will be 2.66%, increasing for a short distance to 3.5%. This will be on leaving the T. & N.O. Ry. to get to the level at Lake Shore road. The extensions are under construction, but it has not been decided when they will be opened for traffic. (Oct., pg. 521.)

Ontario, West Shore Ry.—At a recent meeting at Goderich, Ont., between J. W. Moyes, the promoter of the line, and representatives of the municipalities which guaranteed bonds, Mr. Moyes is reported

as having stated the position of affairs as follows: The total expenditure on the road this far had been about \$650,000, which includes the \$400,000 of bonds guaranteed by the municipalities; \$75,000 or \$80,000 of moneys raised on the \$200,000 of unguaranteed bonds which had been hypothecated therefor; and the balance from other sources. He claimed to have put in \$170,000 of his own money. Completion was made impossible by the Hydro-Electric Commission stepping into the territory with its power development scheme, which prevented the sale of the Maitland river Power Co.'s bonds and the further advance of money to complete the road. He had made three offers to the Commission regarding the Maitland river scheme, but could not get an agreement. If the municipalities would in some way that might be agreed upon, either by further guarantee or in some way, assist to release these hypothecated bonds, they could be sold for enough to complete and put in operation the road, and he was willing for the railway company that the municipalities should get in return for this assistance a \$100,000 bond interest in the road and representation on the directorate. If the Hydro-Electric Commission would give a definite assurance of a power supply the completion of the line could be financed.

It was agreed that a deputation from the municipalities should wait on the Commission to see what could be done; and to secure a report on the cost of the work done from an engineer, preferably H. W. Middlemiss, Consulting Engineer of the Ontario Railway and Municipal Board. (Sept., pg. 468.)

Ottawa and St. Lawrence Electric Ry.—**North Lanark Ry.**—The first named railway is projected by a company bearing that title, and incorporated by the Ontario Legislature in 1908. In 1911 it secured an extension of time for construction for five years. Among the powers conferred was the right to require the charter of the North Lanark Ry., which was incorporated by the Ontario Legislature in 1898, and the Cornwall Electric Ry. In 1911 the N.L. Ry. secured an extension of time for construction for five years. Surveys have been made, but nothing has been done in the way of construction. We have been officially advised that the charters of the O. and St. L. E. Ry. and of the N.L. Ry. have been acquired by J. A. Morden and Co., Toronto, and that they have been amalgamated, the prospectus issued stating that the amalgamated company will now be known as the Ottawa and St. Lawrence Electric Ry.

A map, issued with the prospectus, shows a line from Ottawa to Morrisburg, with a branch from Kenmore to Russell; a line from Morrisburg to Cornwall, at which town connection can be made with the Cornwall Electric Ry., and running powers secured over it. From Morrisburg the line is shown along the St. Lawrence river to Brockville, thence northerly through Athens, Perth and Lanark to Brayside, on the Ottawa river, which is followed easterly to Ottawa. A branch is shown from Lanark to High Falls. This covers practically the whole of the mileage authorized to be built by the two companies—204 and 70 miles respectively. There are no engineering difficulties, 75% of the grading being over cultivated land, much of it at a dead level. The surveys were made under the direction of A. H. N. Bruce, M. Can. Soc. C. E., Ottawa, who estimated the cost of construction at \$11,000 a mile for 234 miles and \$13,000 a mile for 40 miles.

The company is being reorganized, and we are advised that it is expedient to put the line from Ottawa to Morrisburg under construction this fall, the Ottawa and St.

Lawrence Construction Co. having been given a contract for the entire line. (Sept., pg. 468.)

Ottawa Electric Ry.—The bylaw to give effect to the agreement as to extension of the lines in the city will be submitted to the taxpayers at the elections, Jan. 1. (Oct., pg. 521.)

Regina Municipal Ry.—The city council of Regina, Sask., has approved of the programme of extensions of the lines for 1913. This provides for the laying of a second track on two existing lines, and the laying of 12 single track and six double track extensions. The estimated total cost of the new construction is nearly \$700,000. The necessary bylaw will be submitted to the electors at an early date. (Aug., pg. 421.)

Saskatoon Municipal Ry.—The electric railway under construction in Saskatoon, Sask., consists of 12 miles of single track, but as there will be 1.5 miles of double track, the total length of track will be 10.5 miles. Four miles will be laid with 80 lb. steel, and the remainder with 60 lb. The rails are to be laid on cedar ties embedded in concrete on paved streets, and on cedar ties with ballast on improved streets. The bridge crossing the Saskatchewan river to the Nutana side has been taken over by the city from the province, and a double track is to be laid over it. The car barn, 90 by 160 ft., is on the west side, over the C.P.R. tracks. It is one storey, containing six tracks, office, quarters for the men, and a repair shop. Power will be obtained from the city power house. It is expected to have the line completed and in operation by the middle of December. (Oct., pg. 521.)

St. John Ry.—Press reports state that in addition to extending its power transmission and electric lighting lines, the company proposes to add considerably to its power house plant. (June, pg. 310.)

St. Laurent, Que.—The Franco-Belgian Investment Co. is making application to the council of St. Laurent parish, Que., for a franchise for an electric railway, as well as for lighting and water supply. The company has power under a general charter granted under the Dominion Companies Act, to acquire gas, electric light, electric railway undertakings, etc., and is reported to have a working understanding with the Montreal Tramways Co. O. L. Robitaille, Montreal, is a provisional director.

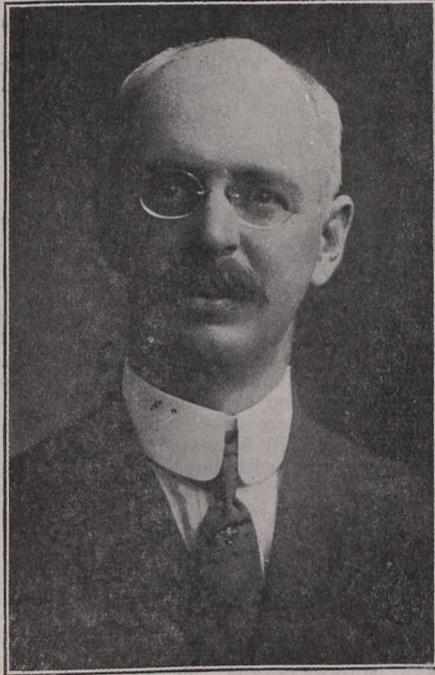
At a meeting of the St. Laurent council Oct. 7, a bylaw granting a 25 years franchise for an electric railway to the Franco-Belgian syndicate was read and considered. The bylaw was opposed on behalf of rate-payers, on the ground that the granting of the franchise would be prejudicial to the town's interests when the question of amalgamation with Montreal came up for consideration, as it would at no distant date. No definite action was taken.

Stratford Ry.—A press report states that plans have been filed for the building of 6.85 miles of electric railway in Stratford, Ont. The local papers make no reference to this, but state that on Oct. 7 Sir Wm. Mackenzie informed representatives of the local company that it was intended to build the line, and that instructions had been given to work out the best possible arrangements and terms. W. H. Moore and J. E. Robbery have been in Stratford frequently before and since that date, and it is said that an agreement for a new franchise is being prepared for submission to the city council. (Oct., pg. 521.)

Toronto and York Radial Ry.—The charter of the section of the Scarborough division within the present city limits of Toronto expires Nov. 16, and the city council has instructed the Works Commissioner to arrange as to the terms upon which it is to

be taken over by the city. It is expected that the city will arrange with the company for the operation of the section of line as at present, until the city has made plans for operating it in connection with other civically owned lines. (Oct., pg. 521.)

Toronto Suburban Ry.—We are officially advised that it is possible that the gauge of this railway, 4 ft. 10½ ins., will be



E. P. Coleman,
General Manager, Dominion Power and Transmission Company.

changed to standard gauge in the near future, but that no definite decision has been reached.

The extension which is being built from near Lambton, through Summerville, and Cooksville, to Georgetown and Guelph, is to be standard gauge. Good progress is being made with the grading on the Maher subcontract, which extends to Cooksville, and it is expected that the steel will be laid by Christmas.

Winnipeg Electric Ry.—We are officially advised that the Winnipeg, Selkirk and Lake Winnipeg Ry., a subsidiary company, has let a contract for the building of a line to Stonewall, Man., and that work will be started at once. The line will start from near Middlechurch, on the company's present line, follow the right of way of the Stoney Mountain spur, which has been acquired from the Winnipeg city council, and then on to Stonewall. (Oct., pg. 520.)

Personal Paragraphs.

Miss L. W. Moyes, second daughter of J. W. MOYES, promoter of the Ontario and West Shore Ry., was married in Toronto recently to J. H. Bickle.

JAS. GRAHAM, heretofore an erecting engineer for the Canadian General Electric Co., chiefly in the maritime provinces, has been appointed General Superintendent, Yarmouth Street Ry., Yarmouth, N.S.

LUDWIG ROTHERY, son of J. E. Rothery, General Manager Toronto & Eastern Ry., has resigned his position as Superintendent of construction in the Tri State Ry. & Electric Co.'s power house at East Liverpool, Ohio, to take a post graduate course at Toronto University, of which he is a graduate.

A portrait published in Canadian Railway and Marine World for September, and which

had under it the caption, "F. D. BURPEE, Superintendent and Purchasing Agent, Ottawa Electric Ry.," was really a portrait of W. C. Lancaster, Electrical and Mechanical Engineer, Montreal Tunnel and Terminal Construction, Mackenzie, Mann & Co., the photographs received from the two persons named having been transposed in the office. Mr. Burpee's portrait is therefore given correctly in this issue. Biographical information respecting him was published in the August issue, pg. 419.

GEO. E. WALLER, who has been appointed General Superintendent of Railways, Dominion Power and Transmission Co., Hamilton, Ont., was born in Barton tp., Ont., Aug. 23, 1871, and entered transportation service in 1896, acting as conductor and motorman, Hamilton, Grimsby and Beamsville Electric Ry., and remained as such until 1897, when he was appointed agent, and in 1899, General Manager and Secretary, same road. He continued in that capacity until 1908, when he was appointed General freight and Passenger Agent, Dominion Power and Transmission Co., which position he held at the time of his present appointment.

C. B. KING, Manager London Street Ry., London, Ont., who has been elected Vice President Canadian Street Railway Association, and whose portrait appears in this issue, was born at Gallena, Southern Indiana, Sept. 12, 1871, and was educated at the public and high schools, New Albany, Ind., graduating in 1891. He entered electric railway service in its early days with the Louisville Ry., and served in its shops, and subsequently to 1895 in the stores department. In 1895 he entered the Detroit Citizens Street Ry. service and occupied various positions to 1905, chiefly as Assistant to the Vice President and General Manager, since when he has been Manager London Street Ry.

S. W. MOWER, for the last six years General Manager, London and Lake Erie Ry. and Transportation Co., and of its predecessor the London and South Western Traction Co., at London, Ont., has been appointed General Manager of the Otsego and Herkimer Rd., at Hartwick, N.Y., to succeed J. K. Choate, resigned. This company operates an electric line of 54.91 miles, connecting Oneonta, Hartwick, Coopers-town, Richfield Springs, Mohawk and Herkimer, N.Y., and reaches Utica by the Utica and Mohawk Valley Ry. It is advertised as "the most beautiful scenic route in central New York." It has 27 motor and 60 other cars, and operates 10 trains each way per day. Mr. Mower was in the Detroit United Ry. service before going to London.

EDWARD P. COLEMAN, who has been appointed General Manager, Dominion Power and Transmission Co., controlling various electric railways in and around Hamilton, Ont., and whose portrait appears in this issue, was born at Taunton, Mass., June 14, 1867, and educated at the public schools there. He was from Feb. 9, 1885, to Feb. 9, 1896, in the Hubec Printing Press draughting office at the Taunton Locomotive Manufacturing Co.'s shops, with which his father and grandfather were associated for many years; Jan. 1, 1896, to Sept. 1, 1900, Treasurer and General Manager, Attleboro Steam and Electric Co., Attleboro, Mass.; May 5, 1898, to Mar. 31, 1899, in United States service during the Spanish war as Second Lieutenant and Battalion Adjutant, 5th Massachusetts Infantry; July 1, 1899, to Sept. 1, 1900, General Manager, Plymouth Electric Light Co., Plymouth, Mass.; Sept. 1, 1900, to June 1, 1905, Vice President and General Manager, Consolidated Lighting Co., Montpelier, Vt.; June 1, 1905, to Mar. 1, 1907, in practice as consulting engineer,

general, electric light, power, railway and quarry work, and Treasurer and Manager, Wetmore and Morse Granite Co., Montpelier, Vt.; Mar. 1, 1907, to Jan. 1, 1909, General Manager, Great Northern Power Co., Duluth, Minn.; and Mar. 1, 1909, to Oct. 10, Manager of Railways, Dominion Power and Transmission Co., Ltd., Hamilton, Ont.

PATRICK DUBEE, who has been elected President, Canadian Street Railway Association, and whose portrait appears in this issue, was born at Montreal, Mar. 4, 1876, and was educated at the Christian Brothers school and at St. Patricks academy, there. He started as office boy with the Montreal St. Ry., July 9, 1890, two years before the electrification of the road, and has remained in its employ ever since, occupying various positions in the offices of the Secretary, Comptroller and Manager, until May, 1901, when he was appointed Assistant Secretary at the time that W. G. Ross was appointed Secretary-Treasurer. In Dec., 1903, Mr. Ross having been elected Managing Director, Mr. Dubee was appointed Secretary. In 1903, when the Montreal St. Ry. Mutual Benefit Association was organized, the details were left in his hands, and he was subsequently elected a director and Secretary-Treasurer of the Association, and has occupied those positions continuously. The association thus organized is recognized as the most successful of its kind on the continent. In 1901, when the Montreal St. Ry. Co. acquired control of the Montreal Park and Island Ry. Co., he was also appointed Secretary of the latter company, and in 1904 on the organization of the Suburban Tramway and Power Co., he was also appointed Secretary-Treasurer, and in 1909, in addition, was appointed Secretary-Treasurer of the Longueuil Tramways Co. On the recent consolidation of the Montreal St. Ry. Co., and its subsidiary companies under the title of Montreal Tramways Co., he was



F. D. Burpee,
Superintendent and Purchasing Agent, Ottawa Electric Railway.

appointed Secretary-Treasurer of the new company, which position he still holds. He has taken a very active part in the Canadian Street Railway Association's proceedings since its inception in 1904, having been a member of the executive committee for several years, and for the year 1911-12 Vice President.

Quebec Railway, Light, Heat, and Power Company's Report.

Following is the report for the year ended June 30, submitted at the recent annual meeting:—

The gross earnings from operation were \$1,415,825.38, as compared with \$1,280,126.76 in 1911, an increase of \$135,698.62; the operating expenses were \$734,925.35, as compared with \$661,907.15, an increase of \$73,018.20; the net earnings were \$680,900.03, an increase of \$62,680.42 over 1911, equal to 10.13%. After adding miscellaneous income, \$194,584.46, and deducting fixed charges of \$660,363.96, two dividends paid Oct. 15, 1911, and Jan. 15, 1912, amounting to \$199,990, and organization expenses of \$3,919.68, there remains a net surplus of \$11,210.85, which added to surplus account leaves a balance of \$73,539.45 to the credit of this account. Reserve accounts have also been created.

Assets.		
Investments—stocks, bonds and interests in other corporations	.....	\$22,819,192 64
Less bonds of subsidiary companies outstanding	.....	3,659,000 00
Treasury bonds	.....	19,160,192 64
Advanced to controlled companies for construction, etc.	.....	1,236,100 00
General construction	.....	371,337 07
Underlying securities redemption fund	.....	389,952 73
Cash on hand and in banks	.....	40,169 75
Accounts and bills receivable	.....	254,513 25
Stores and supplies on hand	.....	235,665 30
		136,739 87
		\$22,374,670 61
Liabilities.		
Capital stock	.....	\$10,000,000 00
Less unissued	.....	500 00
Bonds	.....	\$14,600,000 00
Less in escrow to redeem bonds of subsidiary companies	.....	\$3,659,000 00
Less unissued	.....	220,600 00
Less cancelled	.....	114,000 00
		3,993,600 00
Accounts payable	.....	10,606,400 00
Sundry loans	.....	158,572 62
Accrued interest	.....	1,171,968 01
Unpaid interest and dividends	.....	148,875 12
Accrued charges	.....	189,586 84
Reserves	.....	8,154 10
Surplus	.....	18,074 47
		73,539 45
		\$22,374,670 61

RAILWAY DEPARTMENT.

Quebec Ry., Light and Power Co. City Division.

During the year the company continued its policy of improving its service, and the result shows new record figures, the increase in revenue passengers being 928,315 over 1911. More attention than ever has been devoted to repairs and renewals to the roadway. During July, 1911, another observation car built in the company's shops was added to rolling stock, making two now in use. The rolling stock has not only been maintained in good condition during the year, but considerable sums have been expended upon all departments in line with the policy to maintain the property and rolling stock in first class condition.

Montmorency Division.

This division again shows very appreciable gains, both in its passenger and freight service. About two and a half miles have been relaid with 80 lb. steel, the old rails being used for sidings at various points. Terminal facilities in the city of Quebec have been very considerably improved to cope with the rapidly increasing traffic. All property has been maintained in a proper state of efficiency, and a considerable sum has been spent on the upkeep of the tracks and rolling stock. The Kent house and amusement park are becoming increasingly popular as resorts.

QUEBEC COUNTY RAILWAY.

This railway continues to make satisfactory progress; the number of revenue passengers carried being 137,216 in excess of

last year, an increase of 54%. The road and track have been maintained in good condition.

QUEBEC AND SAGUENAY RY.

(Under Construction.)

This railway extends from mile 30, the termination of the Montmorency division, to mile 85.5, Pointe au Pic. Good progress has been made, approximately 85% of the work being completed. \$104,992 was received on account of Dominion government subsidies, and this was applied to the redemption of bonds according to the trust agreement.

LOTBINIERE AND MEGANTIC RY.

This railway runs between Lyster and St. Jean Deschailons, Que., 30 miles. It was taken over by the company during Feb. The road is of standard gauge, 56 lb. rails, and serves a very good lumber territory. It was acquired in connection with the purchase of the charter of the Quebec Eastern Ry. It was taken over as a going concern and its revenues have been taken into the

The completion of the new office building at the corner of Crown and St. Joseph streets was unfortunately delayed until May. The completion of the building enables the consolidation of the executive offices in the one building and has facilitated the transaction of business. Considerable office space has been rented in the building.

The Vancouver Island Electric Ry. Co. is applying to the British Columbia Government for licenses to store or pen back water on the Sproat and Campbell rivers, and to take and use water from the Campbell and Stamp rivers and Qualicum creek for the development of electric current for railway and power purposes. The company proposes to build a transmission line to Nanaimo, and to build electric railways. The applications are signed by E. Bottomley, agent for the company.

The pay-as-you-leave car, put into operation by the Cleveland (Ohio) Railway, has been withdrawn after a trial of several months. While loading such a car is expeditious, it was found that unloading is very slow and that on the whole the disadvantages more than offset the advantages. The fare box will be placed in the rear of the car, and it will hereafter be operated in the same way as the pay-as-you-enter cars.

The New Orleans and Grand Isle Traction, Light and Power Co., of which C. E. A. Carr, formerly of Quebec, is General Manager, intends to apply to the Dominion parliament next session for an act to authorize the company to acquire and operate railways, tramways and telegraph and telephone lines outside of Canada; to change the name to the New Orleans and Grand Isle Ry., Light and Power Co., Ltd., and to issue to holders of its shares who may desire the same share warrants to bearer in the usual form in lieu of the stock certificates representing such shares.

Railway Ties Bought in 1911.

There were 13,683,770 cross-ties purchased in Canada in 1911, according to statistics compiled by the Department of the Interior's forestry branch. This is an increase of 4,469,808 (48.5%) over the number purchased in 1910. The increase is largely due to railway construction, which was especially noticeable in the western provinces. The replacement of ties on existing lines amounted to about 10,000,000.

Eighteen kinds of wood were used, jack pine standing first in importance, numerically, with about 40% of the total. Tamarack stood second with almost 19%. Douglas fir with 14% and hemlock with 12% occupied third and fourth places, respectively.

The average price of ties in 1911 was 39c., one cent more than in 1910. Southern pine ties at \$1.10, imported from the United States, were the most expensive, and spruce trees at 26c. were the cheapest. The saw tie is increasing in favor, evidently, as 70%, or 3% more than in 1910, were the product of the mill. Sawn ties cost, on the average, 41c. each, or 4c. more than hewn ties, while in 1910 the hewn ties were the more expensive by 3c.

Only 206,209 ties, or 1.5% of the total number purchased, were given preservative treatment. However, this is practically a clear advance over 1910. Two treating establishments are now in operation. On the average, the treatment of ties prolongs their life by 10 years. It is estimated that at least 350,000,000 feet, board measure, could be saved annually through this process.

earnings of this company.

POWER AND LIGHT DIVISION.

The consolidation under the direction of R. S. Kelsch, Consulting Engineer, of the various power supplies at the Queen street sub-station has been completed and is a great advantage both to customers and the company itself, guaranteeing as it does a service free from interruptions or breakdowns, the company being able to utilize power from any one or all of its hydraulic stations and its steam plant for its various lighting or power requirements. Special attention has been paid to the distribution system and a large sum has been expended in repairs and replacements. Several important power contracts are in view for the coming year and the outlook is bright.

2,006 ft. of new gas mains were laid during the past season. The new installations total 564, including stoves, radiators, heaters, etc.; 311 new meters were added. In line with the policy to put all the property in the best possible condition, over 38,000 ft. of the distribution system was gone over, thoroughly examined and repaired.

The increase in gross earnings from operation of \$135,698.62 demonstrates not only the increased growth of business, but also of the city and district served, and it is the opinion of your directors that this increased growth will continue. A feature of the financial report is that while a large sum has been spent on the upkeep and improvement of various plants, the percentage of operating expenses to gross earnings remains at the low figure of 51.91%.

Marine Department.

Dominion Hydrographic Survey Steamship for Atlantic Coast, Hudson Straits and Bay.

A preliminary description of this vessel was given in Canadian Railway and Marine World for July, an illustration of the profile was published in the August issue, and the letting of the contract for construction at Wallsend on Tyne, Eng., was announced in the October issue. Following is a more complete description:—

Owing to the conditions that will be encountered in surveying Hudson bay and straits this vessel has received special attention in design to meet the severe ice conditions under which she is likely to operate, and in determining the type of ship this had also a considerable influence and it was deemed advisable to depart from the two recent vessels designed for the above department, consequently a spar deck type was considered advisable. Also, to meet the severe conditions referred to, it was decided to build her along the lines that practice has determined as being most suitable for the ice boats in operation in Newfoundland. The bow or forefoot will therefore be well cut away and well rounded at the bottom where the plates are moulded into the stem, giving quite a spoon effect to the lower part of the forefoot so that the boat could easily ride over or upon the ice obstructions.

In frame this vessel will be considerably heavier than required for classification in Lloyds 100 A1, and the half length forward will not only be considerably heavier in frame, but the frames will be spaced much closer together. From one third the length abaft the stem the frames will be only 16 ins. apart. From there to one half the length they will be 18 ins. apart, and the balance the usual pitch determined by Lloyds.

It was considered desirable to considerably increase the plating of the forward end of the ship. Consequently all plating for the forward half length will be twice as thick as that called for by Lloyds, and the two strakes at the water line will be twice as heavy as that demanded by Lloyds for the full length, it being assumed that after the bow has broken up the ice, that in its travel aft these two upper strakes should be protected. In fact, the designer, after a visit to St. Johns, Nfld., felt satisfied that she will be in every way suited for the purpose intended.

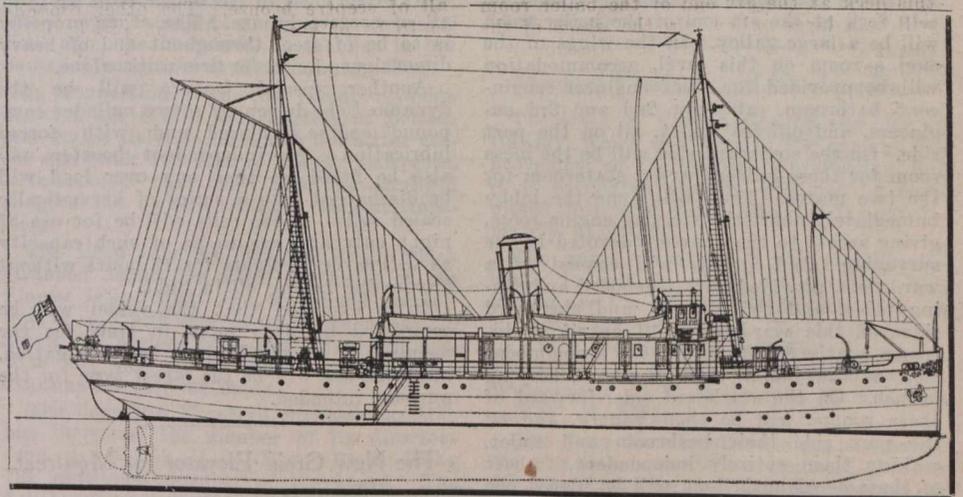
It was decided to maintain a very minute water tight subdivision. Consequently this boat could easily flood two or more of her compartments and still be perfectly seaworthy, a condition, however, that would not very likely occur. Notwithstanding, in as much as she will operate so far from her base it was considered advisable to take no chances. In her ability to meet and pass through large floes of field ice she will have very few equals.

The type of boat adopted, as before stated, is a shelter deck ship built of steel throughout, with scantlings practically twice as heavy as required by Lloyds. She will have a straight stem and elliptical stern, with two pole masts of wood, equipped with a full outfit of sails and all necessary standing and running rigging. The forward end of the spar deck will be specially stiffened from the stem to back of the breakwater, and under the windlass and cables special

teak beds will be provided, and in addition this deck will be specially stiffened by extra pillaring to the main deck. The star deck will be steel plated throughout, and then covered with Oregon pine with teak margins. The main deck will be plated amidships over and around the machinery spaces and then laid with Oregon pine. The orlop decks will be plated and all caulked water tight, so that if these orlop decks are considered as tank tops there will be a double bottom throughout her complete length, although what is usually understood as double bottom will extend only from the aft engine room bulkhead to the forward bunker bulkhead. This space will be divided into three compartments transversely and then subdivided longitudinally by the centre keelson, making practically six separate water tight compartments. To carry the watertight subdivision to a further point the longitudinal bunker bulkheads in both engine and boiler spaces will also be watertight.

On the boat deck will be stowed two 27 ft. gasoline launches of a type that has been demonstrated by the Canadian Hydrographic Survey as most suitable for this work. The engines used in these launches will be the standard of New Jersey. Aft of the launches will be stowed two 27 ft. cutters, also specially equipped for surveying service. These launches and boats will be swung in and out by a complete outfit of Welin davits and chocks.

On the spar deck will be placed the usual steam windlass and abaft this a deep breakwater to throw over any water that she may shed. Then will come a spacious chartroom, the sailing master's bedroom and day cabin, and the coxswain's storerooms, and abaft the engine and boiler casings a wireless office and a stateroom for the wireless operator. On the aft end of this deck will be a complete sounding outfit, including a deep sea sounding donkey, and on the port quarter aft will be a specially designed steam driven sounding machine and on the



Dominion Government's Hydrographic Survey Steamship for Atlantic Coast, etc.

The vessel over all will be 182½ ft. long; length between Lloyds perpendiculars, 170 ft.; beam moulded, 33½ ft.; depth moulded to upper deck, 13½ ft.; displacement on mean draft of 11 ft., 1,050 tons, with 250 tons of coal on board and 60 tons of stores and water; speed on the above displacement 12½ knots for a 10 hours continuous trial.

On the boat deck will be placed the pilot house, to be heavily built of teak and the interior lined in quarter oak and the house then bolted by a series of sceptre bronze bolts to the chart house. On the top of the pilot house will be the standard compass, and owing to the dip of the compass in the northern latitudes in which this vessel will operate it is specified that no iron work shall be nearer this compass than 18 ft., and to fulfil this requirement it was found necessary to make the greater portion of the chartroom of sceptre bronze, which possesses very remarkable qualities as it is found that the galvanic action that usually takes place between bronze and iron in sea water in this case is at a minimum, and is practically a negligible quantity.

starboard quarter a submarine sentry. On this deck also will be placed the small dinghy for ship's use, and on the port quarter aft this dinghy a sounding platform and two additional sounding platforms under the bridge at this level, one port and one starboard.

Immediately abaft the engine hatch will be a powerful steam winch, for warping ship and in addition for handling the falls of the boats and launches.

It is expected that when this vessel proceeds north for her season's work, she will carry quite an extensive outfit, and to handle this outfit there will be three pairs of extra davits on the spar deck and two 3½ ton cargo booms, one to the mainmast, one to the foremast.

Special reference should be made to the chartroom, which will really form the ship's workshop. In it after the several boats have done their day's work, will be plotted the results, on a preliminary chart. Consequently it has received special attention. In the centre of the room will be a large chart table under which will be a lot of drawers for stowing the complete and in-

complete charts. In the corners on the aft side of this room will be cabinets for carrying the scientific instruments and overhead a speaking hood for communication with the pilot house, so that the officer in charge of the survey, when deep sea sounding with the ship proper, can from the chartroom dictate and check her course. The chartroom will be neatly panelled in quarter oak and the floor laid in linoleum, making when complete a remarkably comfortable workshop.

The main deck will be devoted entirely to the accommodation of the crew and surveying staff. In the extreme forward end of the ship will be the general storeroom, in which will be stored gasoline. When carrying gasoline this storeroom will be open thoroughly to observation, being only closed by a collapsible iron fence, so that in case of fire it can be readily seen and completely exposed for treatment. Aft this port and starboard will be the crew's offices, including boatswains' stores, carpenter shop, and in the centre a large room for cold storage, on the forward end of which will be placed a no. 3 refrigerating machine. Aft of this will be a space occupied by ladders giving access to the firemen's and seamen's quarters, and in the wings of this space will be hooks for hanging the seamen's oilskins, and also the fresh water drinking tanks. Then will come the cabins for the accommodation of the petty officers, eight in number, all fitted in pine, with hardwood berths, and neatly painted. The centre of this space will be devoted to their mess. Then will come the machinery space, and above the boilers on this deck at the aft end of the boiler room will be a large galley. In the wings of the engine room on this level, accommodation will be provided for chief engineer, engineers' bathroom, cabin for 2nd and 3rd engineers, and officers' toilet, all on the port side. On the starboard side will be the mess room for these officers, and a stateroom for the two mates. Then will come the lobby immediately aft the steering engine room, giving access to the quarters devoted to the surveying staff. This will consist of a wardroom, provided with sideboard and dining table, and on the port and starboard sides of this wardroom will be six staterooms neatly fitted out for the accommodation of the junior staff of the surveying branch. On the starboard side, forward of these rooms, will be their pantry, and on the port side their bathroom and toilet, making them entirely independent. Aft of these accommodations will be placed the accommodation for the hydrographic officer in charge of the survey. This will consist of a saloon panelled in mahogany, a stateroom and a large bathroom and wardrobe. The fantail aft of this will be devoted to general stores.

The forward orlop deck will be devoted to storeroom, general locker, accommodation for eight firemen on port side and 12 seamen on starboard side, and a room for the accommodation of eight additional seamen that would form special survey parties independent of the crew. Then will come the machinery space, and on the aft orlop deck will be four more staterooms devoted to the surveying staff and extensive storerooms and lockers.

Everything has been done as far as possible to make the ship complete for the purpose intended. The navigating outfit will be as complete as can be made, and the compasses, three of which will be fitted, will be of the Kelvin White type. There will also be located in the saloon of the officer in charge of the survey a chronometer locker containing five chronometers, all of the best manufacture.

The propelling machinery will consist of

a vertical inverted three cylinder triple expansion engine, with cylinders 17½, 27½, 47, and a common stroke of 28 inches. This engine will drive a four bladed sceptre bronze propeller about 10 ft. in diameter and 9 ft. pitch, and revolutions of from 150 to 160, with a steam boiler pressure of 185 lbs. There will be two Scotch boilers, each 11½ ft. long and 11¼ ft. mean diameter, having about 78 sq. ft. of grate surface and a collective h.s. of 2,800 sq. ft., all built to Lloyds highest class and tested for working pressure of 185 lbs. These boilers are to be fitted with the latest type of heated draft, driven by a 54 in. blower. The auxiliary machinery in the engine room will consist of an independent air pump, a steam dynamo, one duplex feed pump, one auxiliary feed pump, one fire and bilge pump, one sanitary pump, one 10 ton evaporator, and a distiller with a capacity of not less than 1,600 gallons of potable water in 24 hours. All the machinery to be of the best make and manufacture.

The main condenser will be built up of wrought steel and fitted complete internally with sceptre bronze tube sheets and tubes for the reasons as before specified. This condenser will be of the uniflow type and is designed to give 27 ins. of vacuum under the most extreme conditions. The stern tube, also a special feature, will be of cast steel, and the shafting throughout is to be not less than ¾ in. diameter larger than the diameters called for by Lloyds.

She will be further equipped with two independent propellers, one for ordinary work when clear of ice, of the built up type, all of sceptre bronze. The other propeller is to be of steel throughout and of heavy dimensions, built for ice work alone.

Another special feature will be the dynamo, to be driven by a two cylinder compound engine enclosed and with forced lubrication. An independent booster will also be fitted, so that any over load will be discharged into a series of hermetically sealed cells. These cells will be for use at night only and are to be of such capacity as will carry 32 lights for 12 hours without any undue falling off in light.

It is expected that the vessel will be completed by July next, in time for the opening up of the Hudson bay navigation, and that she will be the latest type for the purpose intended.

The New Grain Elevator for Montreal.

The new concrete grain elevator, which the Montreal Harbor Commissioners have built to enable them more efficiently to cope with the grain situation in the harbor, was officially opened by the Minister of Marine, Oct. 3. The construction was decided on in 1910, and the specifications provided for a capacity of 1,772,000 bush., but during construction it was discovered that this capacity would be insufficient to meet the needs of the port, and additional storage capacity was ordered for another 850,000 bush., making a total storage capacity of 2,622,000 bush. The elevator, with the storage addition, occupies a space of 456 ft. 8 ins., by 100 ft., and is 220 ft. high. The structure is erected on filled ground along the waterfront, where there is an approximate average level of 25 ft. The rail level is at high water mark, and to provide for the deep receiving pits a large portion of the excavation for the main elevator was carried down about 20 ft., and the whole area of the main building was excavated to low water level and wooden piles driven. On these piles, reinforced concrete 3½ ft. thick was laid, and concrete piers and walls built on this foundation and carried

to track level. The track girders are of reinforced concrete, except over the receiving pits where they are of steel, as are also the boot tanks and track hoppers. The foundation of the additional storage capacity was arranged differently, as, owing to there being no elevator legs, such deep excavation was not necessary. Reinforced concrete piles were driven, with their tops about 4 ft. below the base of rail, and on these the concrete foundation was laid. There are four tracks through the elevator, with bin openings 22½ ft. above. The bin columns are of reinforced concrete spaced 24 ft. centres each way, with heavy reinforced concrete girders supporting the bins. The curtain walls are of concrete and the windows are fireproof. The bins are also of reinforced concrete, 86 ft. deep, with walls 8 ins. thick, and capacities ranging from 6,800 to 14,300 bush. There are 278 bins exclusive of shipping bins. The upper portion of each bin along the waterside is used as a shipping bin, an intermediate concrete bottom being placed about midway. The cupola is built entirely of reinforced concrete, the lower sides of the floor and roof beams being chambered. It is 107 ft. high above the bin walls and 220 ft. above base of rail. The marine tower for unloading vessels is erected on a jetty, and is so placed that two vessels may be dealt with at the same time. It is 340 ft. from the elevator, and is of structural steel, with a steel gallery running from the tower to the elevator, carrying the conveyors which take the grain from vessels to the elevator.

The general equipment includes four receiving tracks, 24 track hoppers and 12 receiving legs, each leg being fed from two hoppers, interlocking valves being used to prevent grain from reaching the leg from more than one hopper at a time. The arrangement of the track hoppers is such that the unloading of a car on one side of the leg is independently carried on and may proceed simultaneously with the unloading of a car on the other side. The elevator will be capable of receiving 240 cars in 10 hours under ordinary conditions, and this can be increased. The marine tower is equipped with two marine legs with an hourly capacity of 20,000 bush. The grain is weighed by Fairbanks continuous automatic weighing machines, and the shovel apparatus is operated by air, while the best equipment for handling the machinery is provided. Cleaning and drying machinery are also included in the equipment, and power is supplied by electric motors of the induction type.

The designers and constructing engineers of the elevator are John S. Metcalf Co., Ltd., Montreal.

Largest Floating Dry Docks in the World.

Following is a list of the largest floating dry docks, by which it will be seen that the one which has been located at Montreal stands fifth as regards lifting capacity and length:—

Dock	Lifting capacity Tons	Length Ft.	Clear width Ft.	Depth over keel		Owners
				Blocks	Ft.	
Kiel.....	40,000	656	154	35½		German Govt.
Hamburg.....	35,000	720	108½	33		Blohm & Voss
Medway.....	32,000	680	113	36		British Govt.
Portsmouth.....	32,000	680	113	36		British Govt.
Montreal.....	25,000	600	100	27½		Canadian-Vickers Co.
Hamburg.....	25,000	525½	108½	33		Vulcan Co.
Pola.....	22,500	584½	111½	37		Austro-Hung. Govt.
Rio de Janeiro.....	22,000	550	100	30		Brazilian Govt.
Hamburg.....	20,000	511½	97	26		Reiherstieg Co.

An order in council has been passed changing the name of the steamboat John B. Trevor, to Atikokan.

Collision Between s.s. A. W. Perry and Schooner Albert J. Luk.

Commander H. St. George Lindsay, R.N.R., Wreck Commissioner, sitting at Halifax, Oct. 3, assisted by Captains Neil Hall and J. W. Harrison, of Halifax, gave the following decision respecting the above mentioned collision which occurred on May 16:—

"Both vessels are to blame for the collision, inasmuch as the speed that each was making prior to and at the time that they came in sight of each other, was excessive, considering the dense fog prevailing at the time, and not in accordance with article 16 of the International Rules of the Road. Therefore the court censures both masters, and also censures the first mate of the A. W. Perry—W. A. Power—for not stopping the engines (vide art. 16) on first hearing the schooner's horn. The court severely criticizes the custom of the watch officer being in a pilot house in thick weather, with both doors closed, and the engine room telegraph situated on the bridge, out of reach of that officer, as not being conducive to safe and proper navigation, and the court also condemns the custom, which is said to be general in fishing schooners, of leaving the decks of these vessels in charge of two deck hands only. Under such weather conditions as prevailed on the night of the accident, the court considers that such a practice is to invite disaster."

Charges for Loading Grain at Port Arthur and Fort William.

A conference was held at Port Arthur, Oct. 8, between Jas. Playfair, President; F. King, Counsel, and F. S. Wiley, representing the Dominion Marine Association, and C. Tilt, President, A. C. Ruttan, Secretary, and others, representing the Lake Shippers' Association, when the following tentative agreement was arrived at:—

"It is agreed to suspend the Lake Shippers' Clearance Association's present tariff so far as it applies to vessels, from Oct. 15 to Nov. 25, 1912, inclusive, and to substitute the following:—

"(a) Vessels up to 125,000 bush. of wheat capacity, 30 cents per thousand bush. for loading within 24 hours of arrival, loading weather.

"(b) Vessels of 125,000 to 200,000 bush. of wheat capacity, 30 cents per thousand bush. for loading within 48 hours of arrival, loading weather.

"(c) Vessels of 200,000 or over bush. of wheat capacity as follows:—40 cents per thousand for loading in 24 hours; 30 cents per thousand for loading in 48 hours; 10 cents per thousand for loading in more than 60 hours; 20 cents per thousand for loading in 60 hours.

"If above time limits are exceeded in classes a and b the charge is to be 10 cents per thousand bushels.

"If delay is caused by non surrender of documents, the shippers are to be penalized by the Lake Shippers' Clearance Association to the extent of the estimated loss of revenue to that Association by reason of such delay.

"Sample cargoes to be loaded at 15 cents per thousand bushels straight.

"After No. 25, 1912, and until the close of navigation, the charge to be 20 cents per thousand bushels flat on all boats loaded.

"Time shall start from time of arrival ready for loading if such time is prior to 4 p.m. on a working day. If after that hour time shall start at 7 a.m. on the fol-

lowing morning if elevators not working during the night."

As above stated, the agreement is merely tentative and for a limited period and it is proposed to settle the whole question at a further conference during the winter. The important points of the present agreement are that it is an acceptance of the Dominion Marine Association's proposal to base the tariff of charges upon actual dispatch, that it is a frank open agreement that the most fruitful source of trouble is the shipper's delay in putting in his surrender, and that it is an agreement by the Lake Shippers' Clearance Association to try to discipline or penalize its members for such delays. The agreement is by no means perfect, but any faults or inconsistencies can be remedied during the winter, and in the meantime both associations are pleased to have found common ground to further negotiations.

Atlantic and Pacific Ocean Marine.

Canadian Northern Steamships, Ltd., has increased the number of its directors from five to six.

The Manchester Liners' s.s. Manchester Civilian, which is under construction in England for the Canadian trade, is expected to be completed shortly, when she will immediately be put into service.

The Elder Dempster Co.'s s.s. Canada Cape, which was at one time in operation between Canada and Cape Colony, and which was damaged at Cape Town some time ago, has been sold as she lies in her damaged condition at Southampton, Eng.

In connection with the recent collision between the C.P.R. s.s. Empress of Britain and the s.s. Helvetia, in which the latter vessel was sunk and lost in the St. Lawrence, it is reported that the C.P.R. has arranged to give the owners £60,000 as compensation.

The Head Line s.s. Bengore Head, which stranded about five miles northeast of the Flower Island light, Oct. 6, floated the following day and put in at Fortune bay to await the arrival of a tug. She left Fortune bay Oct. 10, for Montreal, where an examination will be made.

The Canadian Northern Steamships, Ltd., has increased the number of its directors from five to six, R. M. Horne-Payne being the additional member of the board. The full board now consists of Sir William Mackenzie, Sir Donald Mann, Z. A. Lash, D. B. Hanna, A. D. Davidson and R. M. Horne-Payne.

The number and tonnage of ocean going vessels arriving at Montreal from the opening of navigation to Sept. 30, was 558, with a tonnage of 1,814,086 tons, being a decrease of 28 vessels and an increase of 58,580 tons, as compared with the same period in 1911. During past years there has been a steady increase in the tonnage of vessels using the St. Lawrence route.

The Minister of Marine, accompanied by a number of representatives of the shipping interests, made his annual inspection of the St. Lawrence ship channel early in October. Speaking at a dinner at Sorel, he stated that it was the intention of the government to make the channel the safest in the world. In a few years time there would be a 35 ft. channel, and he predicted great growth in the tonnage using the St. Lawrence route.

The report of Manchester Liners, Ltd., for the year ended June 30, shows profits of £101,946, a little over double those of the previous year. There are arrears of dividend on the 5% preference stock, cover-

ing 3½ years, which are to be paid off, and £45,000 has been written off for depreciation, leaving £10,100 to be carried forward. The company operates entirely between Canada and Manchester, Eng., and is a subsidiary of Furness, Withy and Co., who are largely interested in the Richelieu and Ontario Navigation Co.

On a recent westward trip of the Canadian Northern s.s. Royal Edward, an apparatus for the detection of the presence of icebergs, during fog, etc., was tested. It is described as an electric, automatic, self recording apparatus for taking the salinity of the water, with an automatic ice alarm which is sounded immediately the proximity of ice is discovered. This is achieved, not by the change in temperature of the water, but by the change in salinity, which is greatly reduced by the presence of icebergs. It is stated that the tests were extremely successful.

The s.s. Thyra Menier, which has been chartered by Henri Menier for the Anticosti island trade, is owned by the Donald Steamship Co., of Bristol, Eng., and New York, and was recently built at Newcastle, Eng. She is built on the arch principle, and is of the following dimensions:—length, 240 ft.; breadth, 36 ft.; depth, moulded, 16 ft. 5 ins., with 5 ft. 9 ins. arch. The propelling machinery consists of engines and cylinders 17, 28 and 46 ins. diam., by 33 ins. stroke, supplied with steam by two main boilers, 12 by 10½ ft., at 180 lbs., giving her a speed of about nine knots an hour. She will carry about 2,250 tons dead weight on 16 ft. draught.

Maritime Provinces and Newfoundland.

The work of construction on the pier at Halifax, which is a part of the general improvement of the harbor, is proceeding, but it is estimated that it will not be completed until next year. The cost is approximately \$1,000,000.

The annual meeting of the Canada Atlantic Transit Co., was held recently. Following are the officers and directors for the current year,—President, E. J. Chamberlin; Vice President, H. G. Kelley; Secretary-Treasurer, F. Scott; other directors, W. Wainwright, J. E. Dalrymple, R. S. Logan and W. H. Biggar.

The Reid Newfoundland Co.'s steamship for the Cabot strait service, and the one for the Labrador service, descriptions of which have been given in a previous issue, are well on the way, and it is anticipated that the former will be ready for service about January, and the other in time for the seal fishery season.

The Canada Atlantic and Plant Line Steamship Co.'s s.s. Evangeline, a description of which has been given in a previous issue, is announced to sail for Canada shortly, some delay having occurred on account of extra work to her interior fittings. H. L. Chipman, Manager of the company, superintended her outfitting.

The British government survey ship Ellinor, which has been engaged in survey work round Newfoundland and Labrador for some time, has been removed from that neighborhood, and sent to the West Indies to carry out the survey of a harbor there, after which she has been ordered to return to England, about April, 1913. The Newfoundland government is making representations to the British government, in the hope that the work hitherto done by the Ellinor be continued.

At a recent meeting of the Halifax board of trade, a communication was received from a steel shipbuilding concern in England, making a proposal for the establishment

of a steel shipbuilding plant in Halifax. Although the name of the firm concerned was not mentioned in the reports, it is said that it is Armstrong, Whitworth and Co., of Elswick, and Manchester, with which firm St. Percy Girouard, who has recently been visiting in Canada, in connection with a proposed shipbuilding plant, is connected.

The owners of the s.s. St. Pierre Miquelon, a French vessel, owned in St. Pierre, Miquelon, and formerly engaged in the mail service between the island and Canada, appealed to the Supreme Court, Oct. 16, against the judgment of the Nova Scotia courts, by which they were held responsible for the loss of the s.s. Renwick, which was sunk and lost off Egg island, near Halifax, Dec. 26, 1911. The judgment of the lower courts was upheld, and the St. Pierre Miquelon held solely responsible for the collision and subsequent loss.

The Boston and Yarmouth Steamship Co., which was recently incorporated to take over the Dominion Atlantic Ry. steamships, will enlarge the berthing capacity of the steamships Prince Arthur and Prince George, and will probably put into service next year the steamship Old Colony. A. E. Williams, heretofore agent, Dominion Atlantic Ry., Yarmouth, N.S., will continue to act as agent for the steamship company, and it is reported that J. Bent will be appointed wharfinger there, replacing J. B. Killam. The steamships Prince Arthur and Prince George have been transferred from the British to the Canadian register.

Plans and specifications for the new wharf at Carleton, N.B., for the Marine Department were recently completed, and tenders were to be received Nov. 1 for the carrying out of the work. The harbor face of the wharf is to be 445 ft. from Middle street, and there will be four cribs, one being 199 ft. long, and outside of this there will be an angle crib 74½ ft. on either leg, carrying the wharf to the harbor line and forming a little more than half the face. The other half will be an angle crib, 68 ft. long on either leg, making the wharf face a total length of 143 ft. The fourth crib forming the southern anchorage will be 100 ft. long.

The Dominion Coal Co. is reported to have decided to carry out considerable improvements in connection with its coaling plant at Halifax. The present sheds there are to be cleared away, and the latest appliances for handling coal to and from vessels are to be installed. Three towers are to be erected, of wood and steel, running on rails along the wharf, and each tower will be 90 ft. high and have a 65 ft. boom attached with a clam bucket arrangement with capacity of at least one ton of coal. With these towers working, it is estimated that 200 tons of coal can be taken from a vessel each hour, and 1,500 tons bunkered in 10 hours.

Province of Quebec Marine.

The Department of Naval Service recently received tenders for the erection of a wireless telegraph mast at Father point.

The chief of the Quebec fire brigade has recommended the purchase of a steamboat, equipped with fire fighting appliances, for use in the harbor and along the water front.

The Montreal Transportation Co.'s steamboat Windsor broke one of her wheels, and collided with a stone pier in the Lachine canal, while on the way to Montreal, Oct. 12.

The Montreal Harbor Commissioners recently offered for sale, the wreck of the steamboat Florida, which was burnt to the water's edge at Victoria pier, and abandoned, July 7.

Press reports from Quebec state that W. Price and J. B. E. Letellier of Quebec, and A. Gravel of Levis, have been appointed as the new Harbor Commission for Quebec, with the first named as chairman.

An order in council has been passed granting permission to re-register the s.s. Turret Bell, No. 104263, at the port of Quebec, all requirements having been complied with, and also changing its name to Kwasiind.

The Quebec Harbor Commissioners received tenders, Oct. 21, for the construction of a 1,000,000 bush. capacity grain elevator with marine tower and shipping apparatus, on the Princess Louise embankment.

Traffic on the Lachine canal, which was interrupted, Sept. 24, by the carrying away of the gates of St. Gabriel lock, by the Canadian Lake Line steamboat Nevada, was resumed Sept. 26, on the completion of the work of replacing them.

It is announced that work will shortly be commenced on the enlargement of the G.T.R. elevator at Windmill point, Montreal harbor, by the addition of storage bins for a further 700,000 bush., giving it a total capacity of 1,700,000 bush.

A. Johnston, Deputy Minister of Marine, on his return from an inspection trip around the Magdalen islands, Anticosti, St. Pauls, and the north shore of the St. Lawrence, recently, is stated to have recommended a more modern light than is at present being used for buoys, range lights, etc.

The act creating a new harbor commission for Quebec, to consist of three members, displacing the former board of nine, came into effect, Oct. 13, by proclamation. The new board, according to local press reports, will consist of W. Price, chairman, J. B. E. Letellier and A. Gravel.

The Public Works Department, during November, will receive tenders for the construction of an extension to the wharves at Ste. Anne de la Pocaterie and Cap a l'Aigle; for extension to the pier at Kamouraska; for a wharf at Ste. Victoire, and for wharves and dredging at Rimouski, Que.

An Ottawa report of Oct. 12 states that as a result of the recent visit of cabinet ministers to Quebec the Government will undertake the construction of a dry dock there as an ordinary public work. It is said that if it is so undertaken, arrangements will be made with the shipping interests for its operation.

G. W. Stephens, Chairman, Montreal Harbor Commission, in an interview, is reported to have stated that he had nothing to say for publication on the subject. The resignation of the other two members of the commission, L. E. Geoffrion and C. C. Ballantyne, had previously been announced by the Minister of Marine.

The floating dry dock, Duke of Connaught, for the Canadian Vickers, Ltd., plant at Montreal, which arrived at Sydney, Oct. 22, and which was towed across the Atlantic by the two Dutch tugs Zwartee Zee and Roode Zee, was insured for the passage for £200,000. A complete description of the dry dock was given in Canadian Railway and Marine world for October.

A proposal to build a marine railway at Sorel, has been promised favorable consideration by the Minister of Public Works. In connection with the scheme, Sir Rodolphe Forget, President, Richelieu and Ontario Navigation Co., stated at Sorel, Oct. 2, that if the government would carry out the work, his company would pay the interest on the capital cost.

Canada Cement Transport, Ltd., has been incorporated under the Dominion Companies Act, with \$50,000 capital, and office in Mont-

real, to own and operate vessels, and carry on a general navigation and forwarding business. The incorporators are, W. J. Shaughnessy, C. G. Heward, A. Charters, Montreal; A. E. Woodworth and A. B. Wright, St. Lambert, Que.

The Shipping Federation of Canada, the Montreal board of trade and the chamber of commerce, are considering the question of arranging a meeting of representatives of the three bodies, with a view to making representations to the government, so that they may recommend a practical representative of the marine interests for the Harbor Commission, two members of which are retiring shortly. The two retiring members are L. E. Geoffrion and C. C. Ballantyne.

The number of permits for the passage of vessels through the Lachine canal, from the commencement of navigation this year to the end of September, was 4,665, against 4,319 for the same period 1911. The merchandise passing through, during September, included, wheat, 3,100,158 bush.; oats, 1,380,827 bush.; flour, 125,529 barrels; eggs, 2,066 cases; butter, 827 packages; cheese, 37,758 boxes, apples, 6,734 barrels. Increases over the figures for Sept., 1911, were shown in each case, that for wheat being approximately 50%.

Henri Menier, of Paris, France, who owns Anticosti island, in the Gulf of St. Lawrence, and who is carrying on extensive lumbering and fishing operations, is operating one steamship, Savoy, which he owns, and has three other steamships on time charter, viz.,—Norhilda, Querida and Thyra Menier. Four more steamships are to be chartered for next year. Shipments of pulpwood have also been made on a number of other vessels, including the Saskatoon, Renvoyle and Mapleton, the destinations having been lake ports as for Niagara Falls, N.Y., and on the Atlantic coast to Portland.

Ontario and the Great Lakes.

H. B. Smith, of Owen Sound, Ont., is reported to have been elected a director of the Richelieu & Ontario Navigation Co.

The Peoples Line steamboat Frontier, formerly Argyle, has been attached, at Toronto, for unpaid wages. The crew claim that their wages have been unpaid for two months.

Orders in council have been passed changing the names of the steamboats Active, and Marina, to Charlie Gale, and George A. Graham, respectively. The port of registry of the former is Amherstberg, and of the latter, Port Arthur.

Hon. F. Cochrane, Minister of Railways and Canals, inspected the proposed route of the new Welland canal, early in October, and is reported to have stated that as the plans had been passed, tenders would be called for very shortly.

The Great Lakes Dredging Co. is reported to have placed an order at Port Arthur, for the construction of a large ice breaking steam tug, about 20 ft. longer than the James Whalen, with a cement hull and powerful engines.

The steamboat Britannic, which went ashore at Weavers point, just below Morrisburg, Aug. 24, was released, Oct. 9, and taken to Prescott. She will probably be taken to Kingston later, for repairs. She is owned by H. McMorran, Port Huron, Mich.

The Dominion Public Works Department has awarded the contract for the dredging of about 95,000 cubic yards at Port Arthur and in the vicinity, to the Great Lakes Dredging Co. A considerable portion of the dredging will take place in the neighborhood of the dry dock.

The Ontario and Quebec Navigation Co.'s steamboat Lloyd S. Porter, with a barge in tow, went ashore on Morgans point, about six miles west of Port Colborne, Oct. 13. The steamboat was released without damage, but the barge could not be removed, and she subsequently went to pieces.

The C.P.R. terminal elevator B, at Fort William, has been turned over to the Grain Growers' Association, who are now operating it, with the old staff. The elevator has a capacity of 2,500,000 bush. The Grain Growers' Association is expecting to secure control of other terminal elevators in the near future.

An Ottawa press dispatch of Oct. 14, states that it has been decided to have the steamboat Dollard, which is under construction for the St. Lawrence lighthouse service, at Kingston, Ont., equipped with an oil fuel burning apparatus. This will be the first vessel in the government service to be so equipped.

S. Brisbane, who has been chief engineer on vessels of the Northern Navigation Co., for several years, and since the construction of the Hamonic, in charge as chief engineer on her, has been appointed shore engineer, and will spend most of the winter at Port Arthur overlooking the building of the company's new vessel there.

The U. S. steamboat Wm. C. Moreland, which sank in Lake Erie in 1910, and which was salvaged and taken to Sarnia, was recently towed to Windsor, where, after the stoppage of the pumps, she again sank. It is said that she will be permitted to lie where she is until a purchaser can be found for her engines, which are stated to be in good condition.

The Detroit and Cleveland Navigation Co. has signed a lease of the docks at Port Stanley, for one year, and it is stated that on the reopening of navigation in the spring, a daily steamboat service will be put on from Port Stanley. A clause has been inserted in the lease, providing for the purchase of the docks at the end of the year, under certain conditions.

A Fort William press dispatch states that as a result of a recent visit of Sir Rodolphe, President, and James Playfair, director, Richelieu and Ontario Navigation Co., to Fort William, it is likely that some developments will take place in local marine circles. It is stated that some land has been secured along the Kaministikwia river, which it is thought will be utilized for the company's purposes.

The channel between Wood Island and Wallace island, in the St. Lawrence river, has recently been improved by cutting off the north extreme of the islet and shoal north of Wallace island, and the south extremity of the shoal extending south from Wood island, including the most southerly rock. The channel can safely be used by upbound vessels provided they keep in mid channel, but down bound vessels should use the U.S. channel.

The U. S. Lake Survey reports the levels of the great lakes in feet above tidewater, for September, as follows:—Superior, 602.53; Michigan and Huron, 580.67; Erie, 572.48; Ontario, 246.38. As compared with the average September levels for the past ten years, Superior was 0.27 ft. below; Michigan and Huron, 0.19 ft. below; Erie, 0.70 ft. above, and Ontario, 0.36 ft. above. It was anticipated that during October Superior would remain stationary, while the other levels would fall 0.2 ft.

The Northern Navigation Co. intends making some considerable additions to its facilities at Point Edward, including the erection of a combined storehouse and cold storage plant, built of wood with concrete

foundation. The building will be 90 by 60 ft. A laundry building of reinforced concrete to replace the present building at Sault Ste. Marie will also be erected, and the extension of the westbound dock and warehouse to double its present capacity will also be undertaken. The cost is estimated at \$50,000.

The U. S. War Department received tenders, Oct. 31, for work on the St. Marys Falls canal, comprising the removal of timber work and all soft and broken rock along about 520 ft., on the south side of the canal, from near the east side of Magazine street, westward to the present concrete wall, and the building of a concrete wall on top or the rock. The estimated quantities cover 4,000 cub. yds. of excavation, 3,700 cub. yds. of concrete, exclusive of cement, 2,500 lin. ft. of drilling and grouting, 1,400 cub. yds. of backfilling, and about 4,400 barrels of cement.

The Toronto Ferry Co.'s ferry steamboat Kathleen was practically destroyed by fire, while in dry dock at Toronto, Oct. 12. The damage is estimated at \$7,000, which is covered by insurance. L. Solman, Manager, is reported to have stated that it is highly improbable that she will be rebuilt. She was built at Toronto in 1886, and was the last of the vessels which the Toronto Ferry Co. took over from A. G. Tymon. She was screw driven by engine of 35 n.h.p. Her dimensions were, length 84 ft., breadth 18 ft.; depth 5.5 ft., tonnage 110 gross, 72 register.

The buoys marking the east side of the deeper, or west, channel have been moved to the eastward of the Ballard reef channel in the Detroit river, to give a greater width to the channel. The two northerly gas buoys and the two intermediate spar buoys are moved to mark a line 50 ft. east of the former positions, and the south gas buoy is moved 150 ft. east of its former position. The width of the deep west channel is 350 ft. abreast of the area under improvement at its north end and 450 ft. at the south end abreast of the entrance to the Livingstone channel.

A considerable amount of dredging has been carried out in Fort William harbor during the present year. Since the opening of navigation, seven large dredges and three clam-shells have been working continuously, and it is estimated that between 30,000 and 40,000 cubic yards of solid earth have been dredged each day, in the deepening and widening of the channels. The McKellar river has been dredged its whole length and widened from 95 ft. to about 400 ft., and deepened to 25 ft. The Mission river has been widened from 300 ft. to 500 ft. throughout its length, and deepened to 30 ft. The Kaministikwia river has been widened by 100 ft. from the Mission turning basin to Thunder bay, and is now 500 ft. wide, with an average depth of 30 ft.

Manitoba, Saskatchewan and Alberta.

The steamboat Mount Cashel, owned by E. A. Moore, Winnipeg, was badly damaged by fire on the Red river, near the Main street bridge, Oct. 12. The whole of her upper portion was burned, the damage being estimated at \$20,000, which is covered by insurance. She was built this year for pleasure service on the river and lake and had 78 staterooms. Her cost is said to have been about \$180,000.

The Hyland Navigation and Trading Co.'s steamboat Winnitoba, was destroyed by fire, at Winnipeg, Sept. 29. She was built at St. Boniface in 1909, and was paddle wheel driven with engine of 21 n.h.p. Her dimensions were, length 170 ft., breadth

28.5 ft., depth 7 ft.; tonnage, 883 gross, 556 register. J. L. Hyland, President, is reported to have stated, Oct. 3, that nothing definite had been settled about building another vessel to replace her, but it was probable that one would be built, to be ready for service about next June.

A Winnipeg press report states that a proposition is under consideration to connect Portage la Prairie with Lake Winnipeg, and says that with a comparatively small outlay, the town could be connected by waterways with the North Saskatchewan river. A 2½ mile channel through Meadow portage would connect Lakes Manitoba and Winnipegosis, and the deepening of a similar channel, which has during high water periods been navigated by Hudson's Bay Co.'s vessels, would connect Lake Winnipegosis with Cedar lake, which is an extension of the North Saskatchewan river, above Grand Rapids. A canal from Delta to Portage creek would complete steamboat navigation to Edmonton.

British Columbia and Pacific Coast Marine.

The G.T. Pacific Coast Steamships Co.'s s.s. Prince George will be withdrawn from the service between Victoria, Prince Rupert and Stewart, Nov. 1, and placed in the dry dock at Esquimalt for general overhauling and repairs. On the completion of these, she will take the place of the s.s. Prince Rupert, which will be similarly overhauled.

The city of New Westminster is applying to the Dominion parliament for an act providing for the future management of the port of New Westminster, the tidal waters of the Fraser river, and all the water front property along them and adjacent waters, and to constitute the New Westminster Harbor Commission.

The Coquitlam Shipbuilding and Marine Railway Co., recently incorporated with \$500,000 capital and office at Vancouver, B. C., is reported to have begun the erection of buildings near the junction of the Pitt and Fraser rivers, at Coquitlam, where a general shipbuilding business will be engaged in when the plant is completed. L. D. Shaffner, Bridgeton, N.S., is chiefly interested in the project.

The municipalities of Richmond, South Vancouver, Burnaby and Point Grey are applying to the Dominion parliament for an act constituting the waters of the north arm of the Fraser river, lying west of the westerly limits of New Westminster, together with all the branches and arms, to lines drawn across the points of land forming the mouths of the outlets of the north arm, and branches emptying into the Gulf of Georgia, with the waters of the Gulf of Georgia, adjacent thereto and known as Sturgeon bank, as a harbor under the name of North Fraser harbor, to provide for the management of the harbor, the appointment of the North Fraser Harbor Commission and defining its powers.

Largest Freighters in the World.—The largest vessels in the world designed for carrying freight exclusively are the Col. James M. Schoonmaker and the William T. Snyder, Jr., built for operation on the Great Lakes. They measure over all 617 ft., molded beam 64 ft., molded depth 33 ft., with a deadweight carrying capacity at 20 ft. draught of 13,200 tons. They carry water ballast in side tanks and in a double bottom which is 6 ft. deep. The total water ballast capacity is 9,440 tons. Each vessel is equipped with a quadruple expansion engine of vertical inverted type with an estimated horse power at 90 revolutions per minute of 2,600.

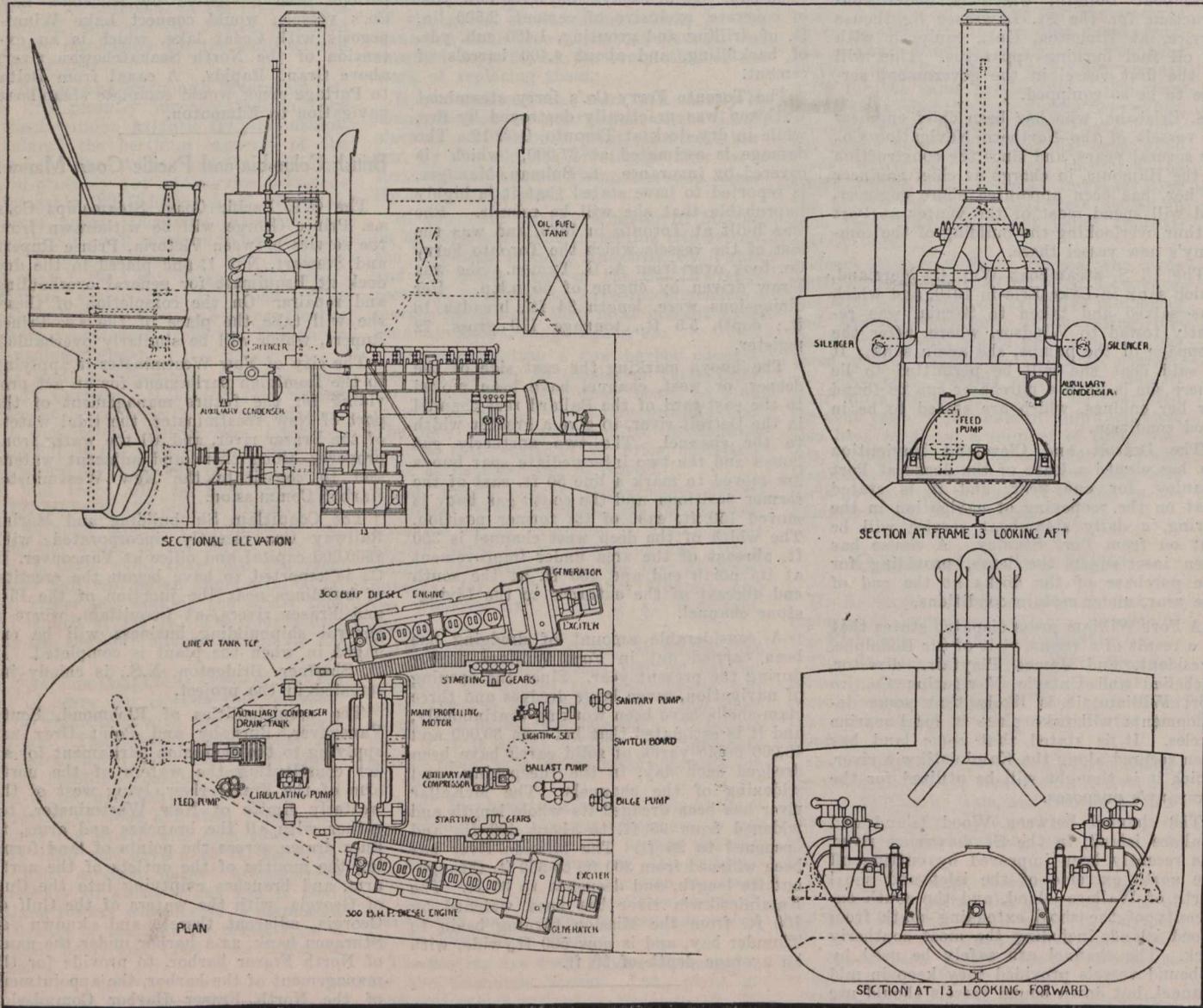
An Electrically Propelled Vessel for the Canadian Lakes Trade.

Canadian Railway and Marine World for September, contained some details of the vessel, which is to be electrically driven, and which is under construction at Newcastle, Eng., for the Montreal Transportation Co. The following additional details will be of interest:—

The engine, which is of the Diesel four cycle principle, has six cylinders 12 in. diam., and a stroke of 13½ ins., giving 400 revolutions a minute. The cylinders cranks are so arranged that the firing occurs at equal intervals. The engine is entirely enclosed, and the forced lubrication is arranged for by a valveless pump driven from an eccen-

compressor on the engine, which also supplies the compressed air for forcing the fuel oil into the cylinders. A patent arrangement for the prevention of the accumulation of fuel oil in the valves is provided. A small fly wheel is used, sufficiently heavy to ensure steady running, etc. Cooling water is circulated through the cylinder and compressor jackets by a rotary pump drawing directly from the sea, and is driven by mitres geared from the compressor end of the crank shaft. The air for the main cylinders is taken through the bed plate. Under normal operation the engines will run under governor control at 400 r.p.m, but

electrical connections, apart from its attachment to the propellor shaft. The stationary part of the motor has two separate windings for 30 and 40 poles respectively, which are mutually non-inductive, thus exercising no influence on one another, and they work independently on the magnetic circuit of the motor. When these windings are connected respectively to the appropriate generator, the synchronous speed due to each is 80 r.p.m. when at full speed. By changing the connections the rotation is reversed, and by connecting the 40 pole winding to the 6 pole generator, the synchronous speed drops to 60 r.p.m., thus giving about three-quarters speed. One generator may be stopped and the other



Arrangement of Machinery in Diesel-Engined Ship with Electric Drive for the Montreal Transportation Co.

tric on the crank shaft at the compressor end. The second motion shaft is driven by a worm wheel on the crank shaft midway between the centre cylinder through a vertical shaft, which carries the governor at the upper end. This second motion shaft, which is at the front of the engine, and carries the cams for working the valves, also carries the eccentrics driving the two fuel pumps. This enables the power to be evenly divided between the cylinders. The compressor is driven from the main crank shaft, and is mounted on the bed plate extended for the purpose. The engine is started by compressed air stored in receivers placed near the engine, supplied by the

the speed can be adjusted by the governor so that it may maintain a rate considerably below this if required.

The electric equipment consists of two three-phase generators giving 235 kilovolt-amperes at 500 volts alternating, each. They have six and eight poles respectively, giving frequencies of 20 and 26.6 per second. An exciter is connected to the shaft of each generator, which when working normally gives about 30 amperes at 100 volts, and is arranged for a considerable overload. Coupled direct to the propellor shaft is a single three phase motor, developing 500 shaft h.p. The motor is of the simple squirrel cage type without any mechanical or

left running at full speed under governor control, giving approximately its full economy, as the power required to drive at three-quarters speed is about half what is required to drive at full speed. If either of the generators be left attached to its own winding, the other being shut down intentionally or by accident, the vessel is propelled by either engine at a little over half speed, the speed of the vessel dropping with the rotation of the engine until an automatic adjustment of power and speed is reached, which occurs at about half speed. The control gear, which will not be operated from the bridge as a regular thing, but which is being so arranged that such opera-

tion can be carried out when desired, has five positions on the switch, similar to those of the ordinary engine room telegraph, each position being definitely fixed by cams and rollers so that a stoppage at an intermediate position is prevented. For half speed, no. 1 generator is coupled up to no. 2 winding of the motor, and no. 2 generator is running light or stopped; for full speed each generator is connected to its own winding in the motor. The controlling gear provides for the interruption of the excitation of the generators while the switch is being moved from one step to another. This method of operation renders the electric circuits dead while the switching over operation is being carried out and injurious sparking is avoided.

Two steam boilers are provided for operating the deck equipment, steering gear, electric lighting and heating. Fuel oil is used for the boilers. It is estimated that the vessel will carry about 250 tons more than a similar vessel equipped with reciprocating engines, and she is designed to carry 2,400 tons deadweight of cargo, fuel, fresh water and stores on a 14 ft. draught.

Her dimensions are, length between perpendiculars 250 ft., length over all 256 ft., breadth extreme 42½ ft., depth moulded 19 ft., forecastle 48 ft., poop deck 42 ft., speed 9 knots an hour.

The foregoing is adapted from the Marine Review.

Navigation Matters on the Yukon River

O. L. Dickeson, President White Pass and Yukon Route, has announced that the company will extend its Yukon river steamboat service next year to Fairbanks, Alaska, about 800 miles northwest of Dawson.

A Pacific Coast correspondent writes us that the additional service may be provided by putting in operation some more boats, which are idle at White Horse, Yukon. This, however, being contingent upon the U.S. Government opening Fairbanks as a subport of entry for these vessels. If this is not conceded, it is expected the company will build two more boats at Seattle, Wash., which will be shipped to White Horse in sections and put together there.

In the early rush to the Klondike, before the White Pass and Yukon route was entirely completed, there were a large number of people rushing into Dawson seeking gold, and it looked as though navigation would be closed, due to weather conditions, before a sufficient amount of supplies could be handled into Dawson to take care of the population. Hence the Canadian Government issued an order permitting United States bottoms to handle goods into Dawson as a free subport of entry. The necessity, however, for issuing this order, as it turned out, never existed, nor does it exist to-day, although no action was taken to have the Government rescind the order to protect British capital against the invasion of U.S. capital in British territory. This has given the U.S. company such a decided advantage over the British company that the British Yukon Navigation Co., Ltd., made application to the U.S. Government to be accorded a similar courtesy in the opening of Fairbanks as a subport of entry and thus enable it to establish a competing service, which is very badly needed all through the lower Yukon river country.

No decision has yet been given at Washington, but it is stated that the Collector of Customs for Alaska has reported adversely on the matter to the Secretary of the Treasury. The Fairbanks Commercial Association has petitioned the President of the U.S. to take favorable action in the matter, owing to the fact, according to peti-

tion, that the people who control the transportation facilities likewise control a large part of the merchandising business, thus making it very important for the protection of independent merchants to have another transportation company. Should the President refuse the request it will be most unjust discrimination, for as above pointed out the U.S. has enjoyed a similar courtesy at the hands of the Canadian Government for a number of years and it will most certainly be the Dominion Government's duty to withdraw the privileges under which United States steamboats can go to Dawson.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

79. Sept. 18. 216. Nova Scotia, Bay of Fundy, Lurcher shoal lightship, intended change in characteristic of fog alarm. 217. New Brunswick, east coast, North Tracadie gully, buoy established. 218. Quebec, Gulf of St. Lawrence, Harrington islands, Harrington harbor, changes in buoyage. 219. Quebec, River St. Lawrence, Saguenay river entrance, Bar reef, bell buoy established.

80. Sept. 19. 220. British Columbia, Burrard inlet, Vancouver harbor, Burnaby shoal, light and fog bell established on a float, caution. 221. British Columbia, Observatory inlet, Granby bay, Graves point, light established.

81. Sept. 23. 222. Ontario, Georgian bay, Victoria harbor, Port McNicoll, buoyage. 223. Ontario, Georgian bay, Byng inlet, buoys established. 224. Ontario, Lake Nipissing, North Bay, light established on wharf.

82. Sept. 26. 225. Nova Scotia, Cape Breton island, east coast, Sydney harbor, south arm, Sydney, Battery point range lights established. 226. Quebec, River St. Lawrence, St. Thomas channel, change in color of starboard gas buoy lights. 227. Newfoundland, east coast, Conception bay, Western bay head, change in character of light.

83. Sept. 27. 228. Ontario, Lake Erie, Port Colborne, light exhibited on eastern breakwater. 229. Ontario, Lake Superior, Thunder cape fog alarm, direction in which horn points. 230. Ontario, Lake Superior, Thunder bay, Fort William, off mouth of Kaministikwia river, gas buoy replaced by gas and bell buoy. 231. Ontario, Lake Superior, Thunder bay, Mutton island, Burke shoal, buoys established.

85. Oct. 1. 234. Ontario, River St. Lawrence, Thousand islands, Fiddlers Elbow, shoal being dredged, gas buoy removed, new channel opened. 235. Ontario, Detroit river, Ballard reef channel, increased width of available deep channel, buoys moved. 236. Ontario, Lake Huron, chart issued, Cove island to Duck islands. 237. Ontario, Lake Huron, chart issued, Duck islands to Detour passage.

86. Oct. 3. 238. Quebec, Gulf of St. Lawrence, Ste. Anne river, Ste. Anne des Monts, light established on pier. 239. Quebec, River St. Lawrence, Orleans island, south shore, St. Francois wharf, light established.

87. Oct. 4. 240. Nova Scotia, Cape Breton island, Cape North light station, fog alarm destroyed by fire.

88. Oct. 7. 241. Quebec, Ottawa river, Ste. Anne de Bellevue, third range light established. 242. Quebec, Ottawa river, Chute a Blondeau, range lights established.

89. Oct. 12. 243. Quebec, Saguenay river, east of river Caribou, Savard range lights discontinued. 244. Quebec, Saguenay river, change in position of river Caribou range lights. 245. Quebec, Saguenay river, Simard range lights established.

90. Oct. 16. 246. Quebec, River St. Lawrence, Ile Verte, range lights established. 247. Newfoundland, south coast, Placentia bay, Tides Cove point, fog signal established. 248. United States of America, Maine, Moose Peak light station, fog signal established. 249. Ireland, east coast, Ross-lare harbor approach, South Long bank buoy, replaced by light and bell buoy.

91. Oct. 18. 250. New Brunswick, south coast, Bay of Fundy, Sisters rock, buoy established. 251. New Brunswick, Chignecto channel, Cumberland basin, eastward of Amherst basin, buoy established. 252. Nova Scotia, Bay of Fundy, Lurcher shoal, lightship replaced on her station. 253. Nova Scotia, south coast, Aspotogan peninsula, shoal off Bayswater, buoy established. 254. Prince Edward Island, east coast, Cardigan bay, Georgetown harbor, daymark on Georgetown back range lighthouse. 255. Prince Edward island, south coast, Hillsborough bay, Haszard point, daymarks on range lighthouses. 256. Prince Edward Island, south coast, Hillsborough bay, Charlottetown harbor, daymarks on Brighton beach range lighthouses.

The Canadian Interlake Line's Vessel Fordonian.

This vessel which has been built at Port Glasgow, Scotland, by the Clyde Shipbuilding and Engineering Co., Ltd., has already been partly described in Canadian Railway and Marine World, and is of special interest as the first of her type to be built in Great Britain. She is 250 ft. long, 42½ ft. beam and 26½ ft. deep to awning deck. The special feature is that she has been fitted with oil motors of the Carels-Diesel type. The engines are of the two cycle type, and have a brake horsepower of 750, which is equal to an indicated horsepower in a steam engine of 875.

The trial trip took place Sep. 21. We are advised that from the time of starting off the engines at 8 a.m. they were never stopped, excepting by the orders from the pilot on the bridge, until 9 p.m. Several runs on the Firth show the vessel to have a speed of 10 knots, although only developing considerably under the maximum power. During the whole of the trials the engines worked very satisfactorily and very smoothly. Vibration in the ship was practically nonexistent. Representatives from the British Admiralty, Imperial Japanese Navy, Australian and Canadian steamship owners, and very many of the principal shipping companies in Great Britain and Ireland were present, and to the majority of them the smooth and satisfactory working of the machinery was a revelation. During the course of the trials, the engines were tested for manœuvring purposes, and were put through a very severe test. During 40 minutes, 61 manœuvres were executed, this being a much more severe test than a steam engine is usually subjected to, but the whole performance was carried out with very commendable dispatch, and with great satisfaction. The time occupied in going from full speed ahead to full speed astern was eight seconds.

After the trial trip the vessel returned to Glasgow to load, and after further runs on the measured mile, which were satisfactory in every way, sailed Sep. 28 for Canada. On Oct. 21 it was reported that the vessel had met with an accident in the Irish channel, and had put back for Glasgow.

V. W. Ferneret, Superintendent Engineer, St. Lawrence ship canal, has been appointed a member of the Lighthouse Board, in place of Capt. L. A. Demers, recently appointed harbor master at Montreal.

Registration of Terminal Elevator Warehouse Receipts.

Under the provisions of the Canada Grain Act, an order in council has been passed approving of the rules and regulations and fees in connection with the registration of terminal elevator warehouse receipts, as adopted by the Board of Grain Commissioners. These provide that as soon as possible after Aug. 31, in each year, statements of all outstanding warehouse receipts, and of car lots and parcels of grain for which no receipts have been issued, shall be sent to the Deputy Registrar. The warehouseman shall issue to the person entitled to receive it, a warehouse storage receipt for each individual car load or parcel of grain, subject to his order, stating the date of receipt of grain in store, quantity and inspected grade, that grain has been received

and stored with grain of the same grade by inspection, that the grade is deliverable on return of receipt properly endorsed by the person to whose order it was issued, and on payment of charges for storage and transportation, if any. Every warehouse receipt, before being delivered to the party entitled to receive it, shall be tendered to the Deputy Registrar by the warehouseman; for registration, and shall be accompanied by a list setting forth the number of each receipt, the date, the ex car number, kind and grade, gross weight, dockage and net weight, and the name of the elevator issuing receipt. No grain shall be shipped from any terminal elevator by the warehouseman, and no grain shall be delivered by the warehouseman unless the covering warehouse storage receipts be surrendered by the shipper to the warehouseman. When any grain is delivered or shipped from a terminal elevator, the operator shall tender to the Deputy Registrar for registra-

tion for cancellation, registered warehouse storage receipts covering the same both as to quantity and grade, and showing number of receipt, date out of store, amount, grade and kind of grain. As soon as possible after shipment, in no case, except through unavoidable delay, exceeding three days, the owner, lessee or manager of every terminal elevator shall furnish the Warehouse Deputy Registrar weekly with a correct statement of the amount of each kind and grade of grain received in store in his elevator during the week, also the amount of each kind and grade of grain delivered or shipped. Each terminal elevator shall pay to the Board of Grain Commissioners 4c. per 1,000 bush. for inward registration, and 4c. per 1,000 bush. for registration for cancellation. At the end of each month the Board shall render each terminal elevator an account of such fees, and such account shall be paid before the 10th of the following month.

List of Steam Vessels Registered in Canada during August, 1912

Name.	No.	Where and When Built.	Engines, etc.	Length	Breadth	Depth	Gross Tons	Reg. Tons	Port of Registry	Owners.
Abegweit.....	131031	Steveston, B.C., 1912	Screw 3 n.h.p.	30.0	9.5	3.1	6	6	Vancouver, B.C.	H. C. Shaw, Vancouver, B.C.
Adine II.....	130933	Stamford, Conn., 1910	" 4 "	55.6	10.9	6.8	21	14	Montreal	J. K. L. Ross, Montreal.
Alouette.....	131104	Brockville, Ont., 1912	" 1 "	30.4	6.1	2.5	3	2	"	A. Decary, Montreal.
Alven S.....	130960	Tancook, N.S., 1912	" 1 "	53.2	14.6	7.6	29	27	Lunenburg, N.S.	Dominion Fisheries Ltd., Halifax, N.S.
B.C.L.....	130773	Michipicoten, Ont., 1911	" 2 "	44.0	12.0	5.2	18	9	Sault Ste. Marie, Ont.	H. F. Huxtable, Michipicoten, Ont.
B. C. Boy.....	131032	Port Guichon, B.C., 1912	" 17 "	62.0	17.5	7.2	61	42	Vancouver, B.C.	V. Martinolich and B. Nicolich, Port Guichon, B.C.
Blanchard C.....	130508	Shelburne, N.S., 1912	" 2 "	41.0	13.0	5.8	11	11	Shelburne, N.S.	A. Swansburg, M.O., Little Harbor, N.S.
Blanche L. G.....	131070	Blandford, N.S., 1912	" 1 "	41.0	10.6	5.8	12	11	Lunenburg, N.S.	H. Gates, Blandford, N.S.
Blanche S.....	131080	Little Tancook, N.S., 1907	" 1 "	40.2	10.3	5.8	11	10	"	R. Schnare, M.O., Blandford, N.S.
Bogan.....	103828	New Richmond, Que., 1909	" 3 "	54.0	13.2	3.2	28	18	Paspebiac, Que.	Montgomery & Sons Co., New Richmond, Que.
C.F.T.....	130498	New Westminster, B.C., 1912	" 6 "	46.0	11.9	5.0	24	15	New Westminster, B.C.	Canadian Fish Products Ltd., London, Eng.
Casarco.....	130430	Shelburne, N.S., 1912	" 3 "	71.0	16.7	6.5	34	24	St. Andrews, N.B.	Canadian Sardine Co., St. Andrews, N.B.
Clan.....	130887	Victoria, B.C., 1909	" 1 "	27.5	6.9	2.6	3	3	Victoria, B.C.	R. Allan, Chemainus, B.C.
Conveyor.....	130885	Tete Jaune Cache, B.C., 1912	" 15 "	141.7	34.8	5.2	725	457	"	J. W. Stewart, Vancouver, B.C.
Deborah.....	130497	Annieville, B.C., 1912	" 1 "	29.5	8.4	3.0	6	4	New Westminster, B.C.	J. Gundersen, Annieville, B.C.
Denise S.....	131107	Sorel, Que., 1912	" 17 "	54.6	14.6	6.4	54	26	Montreal	Sincennes-McNaughton Line, Montreal.
De Witt.....	131069	Lunenburg, N.S., 1908	" 1 "	43.9	11.0	5.5	12	11	Lunenburg, N.S.	F. Mason, Eastern Points, N.S.
Dominion Park No. 1.....	131108	Sorel, Que., 1910	" 1 "	25.5	5.3	2.5	2	2	Montreal	A. A. Cherrier, Montreal.
Doncella.....	131034	Tacoma, Wash., 1908	" 5 "	70.8	12.8	3.1	27	18	Vancouver, B.C.	West Vancouver Ferry Co., Vancouver, B.C.
Donna Isabel.....	131035	Vancouver, B.C., 1912	" 3 "	49.5	11.0	5.0	20	14	"	J. W. Chappell, Vancouver, B.C.
Dowagiac.....	130891	Victoria, B.C., 1912	" 2 "	31.2	8.5	4.5	10	5	Victoria, B.C.	G. Watson, Victoria, B.C.
Dreadful.....	131148	South Shields, Eng., 1912	" 74 "	118.5	25.2	13.8	253	92	Vancouver, B.C.	Canadian Tugboat Co., Vancouver, B.C.
Du Sault.....	131103	Montreal, 1906	" 1 "	34.0	6.5	2.6	3	2	Montreal	A. Dussault, Varennes, Que.
E. E. Lowe.....	130370	Louisburg, N.S., 1912	" 18 "	42.9	10.0	7.2	16	15	Sydney, N.S.	C. A. Lowe, Sydney, N.S.
Elsie S.....	131079	Tancook, N.S., 1912	" 1 "	40.0	10.0	5.2	11	10	Lunenburg, N.S.	R. Schnare, Blandford, N.S.
Elsie T.....	131149	Vancouver, B.C., 1912	" 1 "	30.8	8.0	3.5	6	4	Vancouver, B.C.	J. Taylor, Vancouver, B.C.
G. H. Nottter.....	130935	Grenville, Que., 1912	" 5 "	51.7	14.0	5.5	33	16	Montreal	G. Dansereau, Grenville, Que.
H. Mason.....	131068	Lunenburg, N.S., 1911	" 1 "	41.0	10.4	5.2	11	10	Lunenburg, N.S.	C. Mason, M.O., Eastern Points, N.S.
Howker.....	131072	Tancook, N.S., 1912	" 1 "	41.0	11.3	5.9	13	12	"	A. Gates, M.O., Blandford, N.S.
Iskum.....	131156	Vancouver, B.C., 1912	" 6 "	68.6	17.4	9.2	62	42	Vancouver, B.C.	Clayoquot Sound Canning Co., Victoria, B.C.
Janet B.....	130713	Kenora, Ont., 1912	" 5 "	44.0	11.2	4.0	20	13	Kenora, Ont.	J. Boucha, Kenora, Ont.
Joe Goodwin.....	131084	Toronto, 1912	" 5 "	48.4	14.0	6.0	38	26	Toronto	J. Goodwin, Toronto.
Kimsquit.....	131145	Mamu, B.C., 1912	" 5 "	43.9	10.2	4.5	15	10	Vancouver, B.C.	Draney Fisheries Ltd., Vancouver, B.C.
Kwasind.....	130818	Toronto, 1912	" 8 "	71.0	15.0	5.7	47	32	Toronto	Royal Canadian Yacht Club, Toronto.
Lady Auto.....	131122	Hull, Que., 1909	" 3 "	50.2	10.1	4.6	17	12	Ottawa	J. and P. Hupe, J.O., Hull, Que.
L'Original Bay.....	130931	L'Original, Ont., 1912	" 4 "	54.2	13.5	5.1	33	16	Montreal	E. Cote, L'Original, Ont.
Lunenburg.....	131074	Tancook, N.S., 1905	" 1 "	40.2	10.2	5.0	11	10	Lunenburg, N.S.	G. Baker, Cross Island, N.S.
Makehewi.....	131150	Pt. Blakeley, Wash., 1910	" 2 "	35.1	11.2	4.0	14	9	Vancouver, B.C.	W. Sulley, Jr., Vancouver, B.C.
Margaret F.....	130972	Collingwood, Ont., 1912	" 6 "	56.2	11.5	5.0	31	19	Collingwood, Ont.	J. F. Monck, Hamilton, Ont.
Margaret M. Gray.....	130592	Mahone Bay, N.S., 1912	" 1 "	54.2	13.4	8.5	25	23	Halifax, N.S.	A. Gray, et al., Pennant, N.S.
Mary Maude.....	131071	West Dover, N.S., 1912	" 1 "	40.2	10.0	5.5	11	10	Lunenburg, N.S.	G. Johnson, West Dover, N.S.
Mink.....	131085	Gravenhurst, Ont., 1912	" 11 "	78.0	14.5	4.9	89	60	Toronto	W. Hanna, et al., J.O., Port Carling, Ont.
Moon Light.....	131037	Vancouver, B.C., 1912	" 11 "	60.6	17.4	7.9	63	43	Vancouver, B.C.	T. G. McBride, et al., Vancouver, B.C.
Myfanwy.....	130890	Tacoma, Wash., 1911	" 1 "	35.2	9.3	3.6	10	5	Victoria, B.C.	A. W. Bridgman, Victoria, B.C.
Nelmar.....	130888	Seattle, Wash., 1911	" 1 "	27.4	7.4	3.6	5	3	"	L. L. Adamson, Sidney, B.C.
Ohamel.....	131151	Ruby Creek, B.C., 1912	" 1 "	30.0	7.0	3.0	5	3	Vancouver, B.C.	A. Forrest, Ruby Creek, B.C.
Operator.....	130886	Tete Jaune Cache, B.C., 1912	" 15 "	141.7	34.8	5.2	698	439	Victoria, B.C.	J. W. Stewart, Vancouver, B.C.
Ouaniche.....	130929	Lachine, Que., 1912	" 2 "	36.5	9.7	4.6	12	8	Montreal	D. W. Ross, Jr., Westmount, Que.
Paipoonge.....	130840	Cleveland, O., 1888	" 186 "	292.0	40.8	21.0	2517	1635	Port Arthur, Ont.	J. Whalen, Port Arthur, Ont.
Plunger.....	131152	Vancouver, B.C., 1912	" 11 "	55.7	17.0	7.8	57	38	Vancouver, B.C.	B. T. Brynson, Vancouver, B.C.
Port Moody.....	131146	" 1911	" 2 "	34.0	8.6	3.2	11	7	"	A. M. Leitch and G. Taylor, Vancouver, B.C.
Prince Arthur.....	110131	Hull, Eng., 1898	" 716 "	290.5	38.0	16.5	2041	700	Yarmouth, N.S.	Boston and Yarmouth Steamship Co., Montreal.
Prince George.....	110003	"	" 716 "	290.5	38.0	16.5	2040	714	"	"
Pronative.....	131153	Vancouver, B.C., 1912	" 16 "	57.3	17.0	7.5	55	37	Vancouver, B.C.	Progressive Steamboat Co., Vancouver, B.C.
Reliance C.....	130650	Elk Lake, Ont., 1911	" 5 "	47.8	10.2	4.0	19	16	Ottawa	J. Lashley, Toronto, and W. Kervin, Callander, Ont., J.O.
Robt. R. Rhodes.....	131109	Cleveland, O., 1887	" 80 "	246.3	40.0	18.6	1599	957	Montreal	F. E. Hall, Montreal.
Robinette.....	131154	Vancouver, B.C., 1912	" 2 "	33.1	8.1	3.9	9	6	Vancouver, B.C.	H. Williamson, Vancouver, B.C.
Roseway.....	130509	Shelburne, N.S., 1912	" 2 "	71.8	17.7	8.1	42	37	Shelburne, N.S.	Roseway Fish Co., Shelburne, N.S.
St. Charles Lachenaie.....	131105	Montreal, 1911	" 2 "	35.5	6.9	3.0	4	4	Montreal	Z. Therrien, Lachenaie, Que.
Saint Elme.....	131106	Lachine, Que., 1905	" 1 "	28.1	5.5	2.5	2	2	"	"
Shibley.....	130762	Pictou, Ont., 1912	" 2 "	40.2	10.0	4.4	12	11	Kingston, Ont.	J. Shibley, Battle, Ont.
Stephen C. Hall.....	130432	Grand Haven, Mich., 1880	" 374 "	161.0	30.0	10.0	511	307	Sarnia, Ont.	G. Horn, Wolfe Island, and G. Y. Chown, Kingston, Ont.
Thomas Crosby.....	131147	Vancouver, B.C., 1912	" 20 "	83.4	18.5	9.0	116	79	Vancouver, B.C.	J. H. White, Sardis, B.C.
Trader S.....	126656	Midland, Ont., 1912	" 16 "	71.1	15.2	6.0	96	66	Midland, Ont.	Playfair Preston Co., Midland, Ont.
Wabasso.....	131155	Vancouver, B.C., 1912	" 1 "	33.9	8.1	3.9	8	6	Vancouver, B.C.	R. J. McLaren, Vancouver, B.C.
Waldren W.....	130961	Grand Entry, Que., 1912	" 20 "	42.5	13.2	4.6	14	11	Magdalen Islands, Que.	W. Rankin, et al., Magdalen Islands, Que.
Willard.....	130761	Rideau Ferry, Ont., 1912	" 1 "	44.4	9.0	3.5	27	18	Kingston, Ont.	M. A. Code, Smiths Falls, Ont.

The Canada-Australia Mail Line s.s. Niagara.

Following is a condensed description of the s.s. Niagara, built for the Union Steamship Co., of New Zealand, for the mail route between Canada and Australasia, and which was recently launched at Glasgow, Scotland, by the Dominion Premier's wife, Mrs. Borden.

Length over all, 543 ft.; breadth, moulded, 66 ft.; depth to upper deck, 37½ ft.; depth to boat deck, 64 ft.; gross tonnage, 13,000 tons. Though chiefly designed for passengers, a considerable space will be devoted to cargo, which will be handled to and from the holds by hydraulic hoists, a large part of the hold space being insulated for the carrying of frozen meat, fruit and other perishable commodities. Accommodation will be provided for 281 first class passengers on the main, upper, shelter and promenade decks, amidships, where state rooms are arranged for from one to four passengers, and also in suites. The dining saloon will have accommodation for 190 passengers, arranged in small parties. A large lounge will be placed on the promenade deck, and there will be an electric elevator between the main and promenade decks. The second class accommodation will be for 210 passengers, and will be placed aft, with the dining room on the upper deck, and music and smoke rooms above. Third class passenger accommodation for 176 will be placed forward. Special care has been taken to adopt the best means for heating and ventilating the vessel, having regard to the varying climates she will pass through on her voyage between Australia and Canada. The thermo-tank system has been adopted which will insure an even temperature throughout the trip. These tanks are designed to change the air in any of the compartments to which they are connected, ten times an hour, and will supply a continuous supply of fresh air to all the living quarters in the vessel, which can also be heated to any temperature. The installation will consist of 19 thermo tanks. The lifeboat accommodation will be more than sufficient to provide for all the passengers and crew, and will be equipped with the latest improved davits, chocks and disengaging gear. A wireless

telegraph installation and the latest fire extinguishing appliances will also be included in the equipment.

The machinery will comprise a combination of reciprocating engines and low pressure turbines. Steam will be supplied by ten cylindrical boilers, each fitted with four furnaces and forced draught. The working steam pressure will be 220 lbs. The furnaces will be so arranged that either oil or coal may be used as fuel, the intention being to use oil, and there will be sufficient capacity to carry oil for the return trip, and also for a supply of coal should it be found necessary to use it. A complete electric lighting plant will be supplemented by an emergency plant placed on the boat deck, so that in case of accident, light may always be maintained.

Electric Propulsion for Ships.

Electric ship propulsion will shortly receive its first trial, for a naval fuel ship, Jupiter, equipped for such driving, was launched recently at the U.S. navy yard at Mare island. The new system is being given a good trial, for this ship is 572 ft. long, 65 ft. beam, draws 27½ ft. loaded and will carry 12,500 tons of coal and 375,000 gal. of fuel oil. Her object, aside from her duty as a fuel carrier, is to demonstrate that economies in fuel consumption on turbine ships can be obtained by using turbo generators furnishing current to motors on the propeller shafts, instead of connecting the turbines directly to the shafts. In the latter combination the efficient speed of the turbine and of the propeller are not the same, and a compromise has been made by raising the propeller speed and decreasing that of the turbine. The propeller is not so efficient as at lower speed, and the weight of the turbines has been greatly increased. By using an electric drive the turbine can be kept down to the dimensions and up to the speed of stationary practice; by using two motors on each shaft all the requirements for propeller efficiency at any speed, ahead or astern, can be readily met. The design of the motors for the Jupiter is not known in detail, but those interested in the general subject will find an important discussion of it in a paper by Mr. Emmet before the American Institute of Electrical Engineers

in February, 1911, in which he explained the details of a design developed by the General Electric Co. for a battleship. According to his figures the total efficiency in pounds of steam per horsepower on the shaft would be substantially constant at speeds ranging from 12 to 21 knots, and far better than ordinary turbine propulsion could show. The total weight of the mechanical equipment of the ship was not lowered by this system of propulsion. The trials of the new ship will be awaited with interest, because the trials of the alternative method of reducing speed between the turbine and the propeller, involving enormous gears, were not wholly successful owing to defective parts in the machinery, something particularly serious in such mechanism. It is doubtless true that the gear transmission will save a great deal of weight in comparison with the electric system, but if the claims made for the efficiency of the latter are borne out in the Jupiter's trials its advocates will be able to make some decidedly pretty arguments when the respective merits of the two systems come up for discussion again.—Engineering Record.

Vessels Removed From the Register.

The following vessels were removed from the register, during August, for the reasons assigned:—Steam—Edna, Vancouver, B.C., 12 tons, dismantled; Hazelton, Victoria, B.C., 236 tons, dismantled; Lara, New Westminster, B.C., 5 tons, dismantled; Rockland, Ottawa, Ont., 50 tons, dismantled; Sea Wolf, Vancouver, B.C., 20 tons, burned. Sailing—Annie Smith, Paspebiac, Que., 249 tons, abandoned; Arclight, Charlottetown, P.E.I., 103 tons, sunk; Dorothy Louise, Shelburne, N.S., 125 tons, missing; Energy, Lunenburg, N.S., 97 tons, stranded; Eva Stewart, Parrsboro, N.S., 98 tons, broken up; Jessie D., Parrsboro, N.S., 8 tons, broken up; Kalevala, Sydney, N.S., 10 tons, wrecked; Laura, Liverpool, N.S., 299 tons, transferred to Barbadoes; Lion, Magdalen Islands, Que., 42 tons, broken up; May Myree, Lunenburg, N.S., 89 tons, stranded; Rosa, Montreal, 140 tons, burned; Seth, Jr., Liverpool, N.S., 199 tons, sold to foreigners, Colon, Panama; Thurston, Parrsboro, N.S., 61 tons, broken up; Trader, Parrsboro, N.S., 73 tons, broken up.

List of Sailing Vessels and Barges Registered in Canada during August, 1912

Name.	No.	Where and When Built.	Rig.	Length	Breadth	Depth	Reg. Tons	Port of Registry.	Owners.
A. Laffeur	130934	Yamaska, Que., 1912	Sloop	102.4	23.1	6.4	106	Montreal	A. Laffeur, Notre Dame de Pierreville, Que.
Alleen Gladys	130591	Ship Harbor, N.S., 1912	Schr.	45.0	13.0	6.0	16	Halifax, N.S.	G. E. Siteman, M.O., Ship Harbor, N.S.
Ashigamik	130889	Seattle, Wash., 1894	"	27.6	11.0	5.3	7	Victoria, B.C.	A. J. Davidge, Victoria, B.C.
Auburn	131181	Peterboro, Ont., 1912	Scow	110.0	27.4	7.1	190	Peterboro, Ont.	Minister of Railways and Canals, Ottawa.
Chippewa	111967	Marine City, Mich., 1890	Schr.	222.0	36.0	22.0	1105	Pictou, Ont.	Ontario & Quebec Navigation Co., Pictou, Ont.
D. G. 3.	131029	Eburne, B.C., 1911	Scow	79.0	32.2	4.4	182	Vancouver, B.C.	Dewdney Gravel Co., Vancouver, B.C.
Edna R. Hines	130369	Ingonish, N.S., 1912	Schr.	41.0	12.9	8.0	18	Sydney, N.S.	A. J. Hines, Ingonish, N.S.
Fraser Mills No. 5	130495	Fraser Mills, B.C., 1910	Barge	83.2	34.6	8.5	227	New Westminster, B.C.	Canadian Western Lumber Co., Fraser Mills, B.C.
G. B. Zwicker	116352	Port Medway, N.S., 1912	Schr.	40.8	11.0	5.8	13	Port Medway, N.S.	C. Zwicker, Port Medway, N.S.
Goderich	122612	Goderich, Ont., 1911	Dredge	82.0	30.0	7.0	259	Goderich, Ont.	W. Marlton and W. L. Horton, J.O., Goderich, Ont.
Geo. Dansereau	130926	Grenville, Que., 1912	Barge	110.5	22.0	7.5	148	Montreal	G. Dansereau, Grenville, Que.
Ida M. Cunningham	126347	East Pubnico, N.S., 1912	Schr.	41.3	12.9	6.2	16	Barrington, N.S.	B. F. Cunningham, Cape Island, N.S.
Justice H.	130593	Fouchu, N.S., 1912	"	60.0	18.4	8.2	48	Halifax, N.S.	A. B. Hooper, Fouchu, N.S.
Lola R.	131078	Lunenburg, N.S., 1907	"	42.6	11.2	5.6	13	Lunenburg, N.S.	J. Reno, Herring Cove, N.S.
Old Glory	130883	Buffalo, N.Y., 1894	Dredge	84.0	31.6	7.5	199	Amherstburg, Ont.	J. G. Mullen, Amherstburg, Ont.
P. S. B. 6	131157	Vancouver, B.C., 1909	Schr.	89.0	32.0	7.4	202	Vancouver, B.C.	Progressive Steamboat Co., Vancouver, B.C.
P. S. B. & D. Co. Dredge No. 1	131038	Seattle, Wash., (Unk.)	Dredge	119.0	31.2	8.7	484	"	West Coast Bridge and Dredging Co., Vancouver, B.C.
P. W. D. No. 109	131123	Duluth, Minn., 1905	"	133.6	43.4	8.7	766	Ottawa	Minister of Public Works, Ottawa.
R. M. & S. No. 1	130319	Toronto, Ont., 1902	Scow	100.0	28.0	7.5	174	Toronto	Roger Miller & Sons, Toronto.
R. M. & S. No. 4	130320	" " " " 1912	"	100.0	30.0	7.5	187	"	" " " "
R. M. & S. No. 5	131081	" " " " "	"	100.0	30.0	7.5	187	"	" " " "
R. M. & S. No. 6	131082	" " " " "	"	70.0	24.0	5.5	80	"	" " " "
R. M. & S. No. 7	131083	" " " " "	"	62.0	23.0	5.6	78	"	" " " "
R. M. & S. Dredge No. 2	130317	Milwaukee, Wis., 1895	Dredge	74.2	28.9	5.9	122	"	" " " "
R. M. & S. Scow No. 3	130316	Morrisburg, Ont., 1912	Scow	70.0	20.2	4.3	44	"	" " " "
Romance	130510	Bath, Maine, 1872	Schr.	58.8	17.4	6.0	32	Shelburne, N.S.	Lockeport Cold Storage Co., Lockeport, N.S.
Scow No. (8) Eight	130384	Sault Ste. Marie, Ont., 1892	Scow	111.6	26.6	7.0	208	Amherstburg, Ont.	J. G. Mullen, Amherstburg, Ont.
Scow No. Seventeen	130385	Manitowoc, Wis., 1906	"	100.3	26.0	8.9	232	"	" " " "
Secret	100471	Lunenburg, N.S., 1892	Schr.	78.5	24.1	9.0	76	Magdalen Islands, Que.	W. H. Starratt, Amherst Harbor, Que.
Unity	103803	Tatamagouche, N.S., 1904	"	117.8	31.7	11.7	248	Pictou, N.S.	A. Weatherbie, M.O., Tatamagouche, N.S.

Stranding of the s.s. Lake Champlain.

The following judgment was delivered Sept. 6, by Commander H. St. G. Lindsay, Wreck Commissioner, in the matter of the stranding of the C.P.R. s.s. Lake Champlain, in the St. Lawrence river, near Dominion park, Montreal, Sept. 3. The finding was concurred in by Capt. F. Nash, and T. Perron, pilot, who acted as nautical assessors.

The cause which led to the stranding was an error of judgment on the part of L. Z. Bouille, the pilot, being deceived by the glare of light from the north shore, in calculating his distance from Longue Pointe buoy on rounding same, and on account of the leading lights and all other lighted buoys in the channel to the westward being obscured by smoke or passing mist, being unable to judge his position accurately, and thinking he was too far to the north side of the channel. The court is of opinion that, under the circumstances, it is not necessary to deal with his license, and recommends that greater care should be exercised in future under all conditions, and speed reduced when any uncertainty as to the position of the vessel prevails. The court also suggests that seeing the conditions which prevailed at the time of the accident with regard to lights being obscured, are not unusual and are not likely to improve, range lights to the eastward, if such could be arranged, would be of great service under similar weather conditions, for vessels either up or down bound, and it would also recommend that compass courses be used when applicable in navigating the long stretches of the river, and is of opinion that had a compass course been set after rounding Longue Pointe buoy, the accident would in all probability not have occurred.

Shipbuilding in British Columbia.

The Victoria Board of Trade's committee on trade, commerce and transportation has recently reported that it considers it desirable that the board should renew its efforts to prevail on the Dominion government to encourage shipbuilding in Canada, claiming that Canadian shipbuilders suffer a great disadvantage in being in competition with British shipbuilders, in consequence of British built vessels being admitted into Canada duty free. The wages paid in Canada are higher than in Great Britain, owing to the tariff, and in addition, material has to be imported, and duty, ranging up to 52%, paid thereon, representing on a properly equipped vessel, approximately 15% of the total cost. In case of government work, the fair wage clause which is inserted in the tender form, imposes a serious handicap on British Columbia shipbuilders in competing with eastern shipbuilders, and an even greater handicap in competing with British shipbuilders. No allowance seems to be made when considering tenders, for the duty which the Canadian shipbuilders have to pay another department of the government on imported materials required for the construction of the vessel. The board of trade directed the government's attention to these conditions in 1906 and about the same time brought the matter to the notice of the Royal Commission on Transportation, with the result that that body made a recommendation in favor of protection for Canadian shipbuilders. The committee recommends that the board of trade obtain from the Pacific coast shipbuilders a definite statement in support of a request for a bonus, say equal to the difference of cost of construction, or, at

least, the admission into Canada duty free of all the materials required in the construction of a vessel. The committee also urges strongly the importance of developing shipbuilding on a large scale, which would create a large field for subsidiary enterprises.

Changes in the Allan Royal Mail Steamship Line.

Announcement was made in Canadian Railway and Marine World for October of the retirement of Sir H. Montagu Allan and B. J. Allan from the Allan Line board, which with the previously announced retirement of J. Smith Park, left three vacancies. The Montreal Star's London correspondent recently stated that the vacancies had been filled by the election of F. W. Taylor, Thos. Reynolds and Sir Thos. Skinner, and continued to the effect that Sir Thos. Skinner's acceptance, he being a director of the C.P.R., will have a tendency to confirm the repeated reports of closer future relations between the Allan Line and the C.P.R.

We have been advised that W. J. Dott, Manager at Liverpool; J. A. Martin, Manager at Glasgow; and W. McK. Roden, General Passenger Manager at London, have been elected directors of Allan Bros. & Co. of the United Kingdom, agents of the Allan Line for Europe.

In connection with the various rumors as to the acquirement of control of the Allan Line by the C.P.R., which have had currency during the past two or three years, and which have been revived with continued persistency in the last few weeks, Sir Thos. Shaughnessy, President, C.P.R., is reported to have stated that the arrangements between the C.P.R. and the Allan Line are the same now as they have been for years past, and that no change is contemplated in them.

B. J. Allan, who has acted for the Allan Line in Boston, Mass., for several years, has also stated that there has been no amalgamation between the Allan Line and the C.P.R., and that the rumors all proceed from a mutually satisfactory arrangement for the handling of business at St. John, N.B., during the winter.

The reports as to the amalgamation with, or acquirement by, the C.P.R., chiefly emanate from Glasgow, where it is claimed that developments of an extraordinary nature, regarding the future control of the company, will be announced early in 1913.

These, it is stated, will include the retirement of Hugh A. Allan and Andrew A. Allan, and in fact, the severance of all the Allan associations with the company's management.

A Montreal press report quotes a cablegram received there as saying:—"The joint stock companies registration in Edinburgh of the Allan Line Steamship Co. shows that the Royal Trust Co. of Montreal holds 57,637 shares, the total being 60,639 shares. Sir Montagu Allan is registered as holding 500 shares. Allan Bros. and Co. is the title of a separate company."

The Loss of the s.s. Eric.

The following judgment, concurred in by Capt. N. Hall and J. W. Harrison, was delivered by Commander H. St. G. Lindsay, Dominion Wreck Commissioner, recently, in the matter of the stranding and subsequent loss of the British s.s. Eric, on Sable island, N.S., Aug. 14:—

After reviewing the evidence, which, on account of all log books, documents, etc., being lost, was given entirely from memory, the court finds that the vessel was well found and equipped and apparently navigated in a proper and seamanlike manner, up to the morning of Aug. 14, and that the cause which led to the stranding, was owing to the master, W. G. Corner, being over confident as to his position, and in approaching, and trying to make, such a well known danger as Sable island, and presuming his position on Aug. 13 to be correct he showed very poor judgment on finding the water shoaling so perceptibly, in not taking another cast of the lead or hauling off to the eastward, or stopping his vessel until the weather cleared or he was able to find out his position, and therefore the court suspends his certificate for three months from Aug. 26.

The court also criticized the want of cooperation by the officers in the working up of the vessel's position, and compass errors, as a check on the master's work.

During August, four employes were killed, and six were injured in the course of their work in connection with the navigation of Canadian waters. Two of the fatalities were due to drowning, and one each to falling from the mast head, and to scalding, while of the other accidents, two were caused by falls, and one each by scalding, falling material, machinery, and by being crushed.

Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during September, 1912:

ARTICLES			CANADIAN CANAL	U. S. CANAL	TOTAL
Copper.....	Eastbound.....	Short tons	208	12,804	13,012
Grain.....	".....	Bushels	2,542,593	2,192,097	4,734,690
Building stone.....	".....	Short tons			
Flour.....	".....	Barrels	269,220	923,354	1,192,574
Iron ore.....	".....	Short tons	4,950,988	2,389,237	7,340,225
Pig Iron.....	".....	".....	20	20	40
Lumber.....	".....	M. ft. b. m.	1,211	88,950	100,161
Silver ore.....	".....	Short tons			
Wheat.....	".....	Bushels	9,957,593	7,348,829	17,306,422
General merchandise.....	".....	Short tons	2,393	32,689	35,082
Passengers.....	".....	Number	1,846	2,789	4,635
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Coal, hard.....	Westbound.....	Short tons	67,794	326,732	394,526
Coal, soft.....	".....	".....	304,553	1,176,482	1,481,035
Flour.....	".....	Barrels			
Grain.....	".....	Bushels			
Manufactured iron.....	".....	Short tons	30,615	50,158	80,773
Iron ore.....	".....	".....	3,472		3,472
Salt.....	".....	Barrels	3,045	77,932	80,977
General merchandise.....	".....	Short tons	89,816	108,231	198,047
Passengers.....	".....	Number	3,280	1,790	5,070
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Summary.....					
Vessel passages.....	".....	Number	1,049	2,164	3,213
Registered tonnage.....	".....	Net	3,610,160	4,620,787	8,230,947
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Freight—Eastbound.....	".....	Short tons	5,335,466	2,962,338	8,297,804
Westbound.....	".....	".....	496,635	1,673,283	2,169,918
Total freight.....	".....	".....	5,832,151	4,635,631	10,467,782

Telegraph and Cable Matters.

The Canadian Northern Telegraph Co. has opened an office at Morrin, Alta.

The Western Union Telegraph Co. will shortly move its Victoria, B.C., offices to the Central block, where a considerable expenditure will be made in bringing the office thoroughly up to date.

G. A. C. Phillips, heretofore assistant local manager C.P.R. Telegraphs, Toronto, has been appointed local manager at Calgary, Alta., and has been succeeded at Toronto by G. Paton, heretofore accountant there.

W. W. Ryder, heretofore General Superintendent of Telegraphs, New York Central Lines, Chicago, Ill., has resigned on his appointment as Manager of the Western Union Telegraph Co.'s railway department, with office at New York.

G. A. C. Phillips, heretofore assistant local manager, C.P.R. Telegraphs, Toronto, has been appointed local manager at Calgary, Alta. He entered the service 20 years ago, and has been continuously connected with the Toronto office.

The Great North Western Telegraph Co. was charged at the Toronto police court, Oct. 10, with wilfully assisting in gaming, wagering and betting by the transmission of telegrams relating to betting on horse races. The case was sent for trial.

The Great North West Telegraph Co. has opened offices at Gorrie and Lions Head, Ont., and Ha Ha Bay Jct., Que., and has closed its offices at Clifton House, Niagara Falls; Crediton, Formosa and Wheatley, Ont., Lotbiniere and Richmond, Que.

At the annual meeting of the Western Union Telegraph Co. in New York, Oct. 9, T. N. Vail, President, advocated the com-

bined use of the plants of the Western Union Telegraph Co., and the American Telephone and Telegraph Co., of which he is also President.

E. C. Keenan, heretofore Superintendent of Telegraphs, Lake Shore and Michigan Southern Ry., Cleveland, O., has been appointed General Superintendent of Telegraphs, New York Central Lines, west of Buffalo, N.Y., and will also represent the Western Union Telegraph Co., with office at Chicago, Ill.

The annual meeting of the Great North West Telegraph Co. was recently held at Toronto, when the financial statements for the past year were submitted and adopted by the shareholders. The meeting was subsequently adjourned to a date to be decided on later, when the officers for the current year will be elected.

The Great North West Telegraph Co., on account of the increase in traffic, has been compelled to lease additional space over its present office in Winnipeg, and Superintendent of Equipment Davies recently left Toronto for Winnipeg for the purpose of making the necessary changes in, and additions to, the electrical equipment there.

F. F. Riefel, heretofore Assistant Division Superintendent, Franklin division, Lake Shore and Michigan Southern Ry., has been appointed Superintendent of Telegraphs, vice E. C. Keenan, appointed General Superintendent of Telegraphs, New York Central Lines, west of Buffalo. He will also represent the Western Union Telegraph Co., with office at Cleveland, Ohio.

The C.P.R. has opened telegraph offices at Cadogan, Purple Springs, Alta.; Cedar, Clanwilliam, Glenogle, Tappen, B.C.; Marconi, Murdoch, Man.; Loon, Meadowside, Ont.; Baring, Belbeck, Bounty, Cabri, Conquest, Cutknife, Dafoe, Horizon, Kennedy, Meeta, Mozart, Neville, Pennant, Piapot, Plunkett, Primate, Regina Beach, Stranraer, Success, Vanguard, Viceroy, Waseca, Wymark, Sask.

A London press dispatch states that the Pacific Cable Board, operating the cable between Canada and Australia, is considering the question of installing a high power wireless telegraph system, instead of, as has been proposed, duplicating the existing cable. It is stated that expert opinion has decided that with such a wireless system supplementing the present cable, the best possible service would be provided. It is also announced that the Board is conducting negotiations with the U.S. companies with a view to a reduction of 3c. a word on press messages to and from Australia.

The city of Hamilton, Ont., has applied to the Board of Railway Commissioners for an order to compel telegraph, telephone and other companies using overhead wires to place their wires under ground in the central portion of that city. Plans for the carrying out of such work have been submitted by the city engineer, and it was claimed at the recent hearing at Toronto, that they were feasible and reasonable, and that there was no danger in placing high and low tension wires in the same conduits so long as they were separated by vitrified terra cotta. In opposition to this it was stated by Prof. Herdt, of the Electric Service Commission, Montreal, that the cost of installing services had not been reckoned with, and his experience in Montreal showed that this in addition to being a most difficult engineering problem, was one of enormous expense. The Great North Western Telegraph Co. contended that the burden was commercially impossible for that company, as its entire revenue from Hamilton was only \$18,486, and the operating expenses over \$15,000 a year.

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.

E. S. Jenison, formerly with the Henion and Hubbell Co., Chicago, Ill., has been appointed Manager of the pump department of CANADIAN FAIRBANKS-MORSE CO., Ltd., who are now the exclusive sales agents in Canada for the triplex and power pumps, as well as the other lines manufactured by The Goulds Mfg. Co., of Seneca Falls, N.Y.

S. F. BOWSER AND CO., oil tank and oil storage system manufacturers, Fort Wayne, Ind., and Toronto, have appointed E. H. Briggs as railway salesman for the southwest territory, including Texas, New Mexico, Kansas, Nebraska, Arkansas, Missouri, Louisiana, Wyoming and the Dakotas. E. F. G. Meisinger has been given the territory west of the Rocky mountains.

THE OHIO BRASS CO., Mansfield Ohio, has issued Tomlinson Car Coupler Equipment, a 60 page booklet, 11 by 8 ins., thoroughly describing and illustrating this equipment for electric railway service, including automatic radial car couplers, automatic air connecting car couplers, M.C.B. automatic car couplers, spring draw bar carriers, draft gears and accessories. Copies will be sent postpaid on request.

BESLY'S MODERN DISC GRINDING Practice, a book of 111 pages, with 103 illustrations, issued by Chas. H. Besly and Co., Chicago, Ill., has been prepared with a view to answering about every question that may arise in regard to the use of disc grinders. Its contents include the spiral disc grinder, the machine, application of the grinder, amount of stock to be removed, distribution of ground surface, thickness of adjacent stock for absorbing the heat from grinding and for resisting distortion, checking the work, rotary process of flat surface grinding, selecting circles, ring wheel grinders, grinders in the tool room, on the erecting floor and among the vise hands, in the wood pattern shop, automobile factory, gas engine shop and railway shop test department.

THE AMERICAN LOCOMOTIVE CO., which owns the Montreal Locomotive Works, and includes the operation of them in the accounts with its other plants, made a net profit for the year ended June 30, of \$1,867,554.21, which, after paying 7% dividend on common stock, \$1,750,000, left a surplus of \$117,554.21, a decrease of \$1,608,007.55 from 1910-11. The volume of sales for the first half of the fiscal year was at a low ebb, and was equivalent to only 33% of the amount of business necessary to keep the plants running at full capacity. Since Jan. 1, 1912, there has been a much stronger demand for new locomotives with the result that the amount of unfilled orders on the books on July 1 was \$14,450,000, compared with \$6,015,000 at the beginning of the year. Apart from the loss in profits due to the natural decrease in business, the company suffered serious financial loss as a result of a strike of its boilermakers which affected practically all of its plants and lasted from Oct., 1911, to Feb., 1912. During this period production was badly retarded, and at times the plants were practically at a standstill.

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Freight Car Balance and Performance.— The American Railway Association's statistical report of freight car balance and performance, covering six Canadian lines reporting, for June, shows, 116,142 revenue freight cars owned, average number of system cars on line, 74,476; average foreign cars on line, 59,529; total cars on line,

134,005; excess, 17,863; private cars on line, 3,335; percentage of cars in shops, 5.37; freight locomotives owned, 2,025; average cars on line per freight locomotive, 68; total freight car mileage, 103,347,360; average miles per car per day, 25.1; per cent. loaded mileage, 75.3; ton miles of freight, 1,456,578,540; average ton miles, per car

mile, 15.2; per loaded car mile, 21.8; per car per day, 354; gross freight earnings, \$10,381,113; average daily earnings, per car owned, \$2.56; per railway car on line, \$2.62; all cars on line, \$2.49. The report to Sept. 26, showed surpluses of 2,064 box, 51 flat, and 87 other cars, a total of 2,202 cars and shortages of 943 box, 471 flat, and 460 others.

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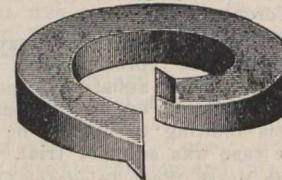
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Tenders for Street Cars.

Sealed tenders for ten Street Cars for the Brandon Municipal Railway will be received until November 15, 1912, at 4 o'clock p.m. All tenders must be addressed to Harry Brown, City Clerk, Brandon, Manitoba, Canada, and must be marked "TENDERS FOR STREET CARS." Copies of plans and specifications may be had upon application to the Street Railway Engineer, Brandon, Manitoba, Canada.

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