

Canadian Railway and Marine World.

May, 1913.

The Creosoting Process of Treating Railway Ties.

The preservation of organic substances against decay has been a subject of considerable prominence through all the ages, the ancients having acquired considerable dexterity in the practice of the art, as evidenced in the wonderful preservation of the Egyptian mummies and other early organic remains. Various materials were employed by the ancients in their preserving against decay, but the two principal ones used in the preservation of the mummies were a substance called natrum, supposed to be a mixture of several sodium salts, and different resins and bitumens. The bodies were supposed to have been immersed in vats containing the preservatives at high temperatures, as the compounds have penetrated to the innermost parts. That the fibres of the body were left as in the original state was demonstrated by an experiment of an English

(the Kyanizing process), sulphate of copper, chloride of zinc, and creosoting. Of these four, the first two have practically disappeared within the last half century, leaving the field clear to the last two, each receiving liberal support, and having its own particular group of supporters, although the general consensus of opinion is that each particular process has its own field of usefulness.

The Dominion Tar and Chemical Co., Ltd., in its plants at North Transcona, Man., and Sydney, N.S., is the only company in Canada employing the creosoting process for the treatment of ties, although there is another plant in this country, that while equipped for this process, is employing another process, which will be described in a later issue.

In Canadian Railway and Marine World for Aug., 1911, mention was made of a

lines of the company whose ties are being treated), are first of all barked. This is performed at the door of the car as they are being drawn out to the pile, and consists simply in shaving the bark off with an adze, removing that part which is most liable to early decay. The ties thus barked are piled in the manner shown in fig. 3. Standard gauge tracks run the length of the grounds a few feet apart, between which are piled the ties. The cars are brought directly to the piling ground, where the ties are stripped and piled.

In the piles, the ties are not placed close together, but are so arranged as to give good circulation, to season rapidly. The time during which the ties must be allowed to remain for seasoning depends entirely on the kind of wood under treatment, and the condition in which it is received at the treating plant. No definite figures can be

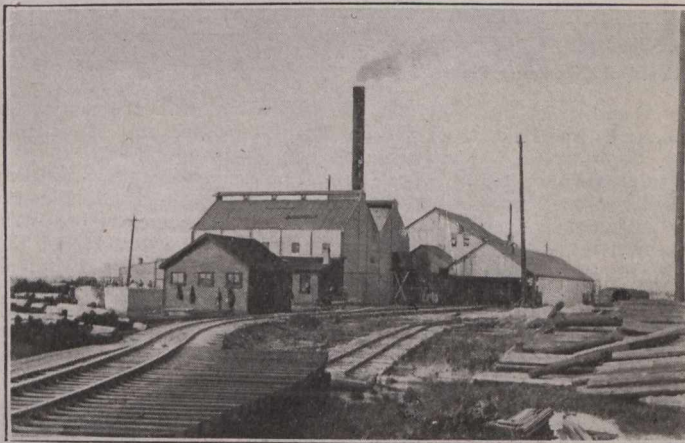


Fig. 2.—The Treating Plant from the South.

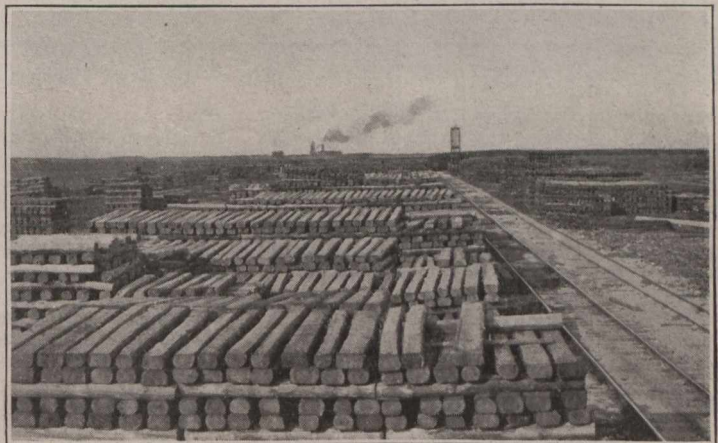


Fig. 3.—Untreated Tie Storage Yard.

scientist, in which the preservatives from the heart of a mummy were completely withdrawn, when, after 3,000 years of perfect preservation, the heart at once began to putrefy. Some light on the lasting qualities of the preservatives is gathered from the discovery that the mummies preserved with solid resin and bitumen products are the best preserved. That the ancients had considerable knowledge of preservatives is beyond question, but the reasons for their beliefs seem to be obscure. They also held the opinion that those woods lasted the longest which were the most odoriferous, implying those that contained the most resin.

From those early days down to the present, there have been repeated endeavors to discover and embody new preservatives, but it is only within the last 200 years that the greatest activity has occurred. As early as 1756, there are reported attempts to impregnate timber with vegetable tars or extracts therefrom, but the first practical process embodying this principle was due to Jno. Bethell in 1838, and it is from this source that the creosoting process is frequently called the Bethell process. Of the many processes tried, the practical ones appear to have, early in the last century, narrowed down to four, embodying respectively corrosive sublimate

contract given by the C.P.R. to the Dominion Tar and Chemical Co. for the treatment of about 1,000,000 ties annually for a number of years. In addition to this, the creosoting company has a large contract to supply creosoted ties for the Canadian Northern Ry., this contract also to run over a number of years. In consequence, a plant of considerable size has developed at North Transcona, the company's main tie treating plant, the plant at Sydney being employed principally on creosoting blocks, and the general treatment of wood products.

The layout of the plant at North Transcona is shown in fig. 1, and the principal buildings, looking from the south, in fig. 2. The plant covers a tract of about 40 acres, but as the company owns a total area of about 110 acres, there is ample room for future expansion. The location is on the open prairie, 6 miles east of Winnipeg, the C.P.R.'s new main line bounding the property on the north, and the C.N.R. Dundee Branch on the south.

To the north and east of the buildings is a large area for the seasoning of the untreated ties, a section of this area being shown in fig. 3, the piles stretching north as far as the box cars shown in the distance. The ties, as they come to the plant, (principally in box cars from points on the

given for these periods, but as a rule jack pine is left for from 2 to 3 months, and spruce and tamarack for from 5 to 6 months. The time of year and drying conditions are other important factors.

Paralleling and close alongside of each of the standard gauge tracks is a narrow gauge service track, on to cars operating on which are piled the ties for treatment. Service cars loaded with ties, and awaiting treatment, are shown in fig. 4. The construction of these is unique, and is best illustrated in fig. 5, showing the cars coming out of the treating cylinder, following impregnation. The car is low set, and attached to the sides are retaining arms, which, with a band over top from side to side of the truck, forms a circle of a diameter slightly smaller than the diameter of the treating cylinder into which the cars are run. The cars are loaded at the seasoning piles, and the retaining bands secured over the top, two bands per car. The individual cars are hitched up into a train, as in fig. 4, the ends of the ties butting up against each other, to all practical purposes forming a single long log the length of the train.

The whole treating process is carried out in the cylinders. At North Transcona there are at present 3 treating cylinders, and a fourth on the way. Of the present

equipment, 2 are 135 ft. long, and the third, 80 ft. The cylinder to come is similar to the first two. All are 6½ ft. diameter. They are simply long barrels constructed of boiler plate, and both ends are capped with dome doors, supported from a small swinging crane, by which they can be swung out of the way, and when in service are secured to the ends of the cylinder by a series of clamps around the outer flange of the cylinder. A tight joint is necessitated. The construction is shown in fig. 5.

Along the bottom of the cylinder are four 4 in. pipes running the full length of

the cylinder of from 15 to 20 ins., and at the same time, steam is turned on in the heating coils under the track, and the temperature of the oil raised in the neighborhood of 200 degrees Fahr., which, in conjunction with the low vacuum in the cylinder, causes the water in the wood to vaporize and be drawn off to the vacuum pump. Early experiments determined that if the wood were subjected to a dry heat of sufficient intensity to drive off the water in it, the fibres would be injured to a certain degree, but that by applying the heat indirectly through the creosote medium and maintaining a vacuum at the

there is a "blow back," that is to say, if there is a rush of oil out of the cylinder on the pressure being removed, it is an indication of the fact that there must be air in the pores of the wood, not permitting the oil to enter freely, necessitating another application of the pressure. If there is no blow back of any consequence, other than that due to the compression of the wood in the cylinder, the ties have been treated sufficiently. The oil is then discharged from the cylinder into the working tank by compressed air, draining out through the bottom of the cylinder. The treated ties are allowed to stand in the

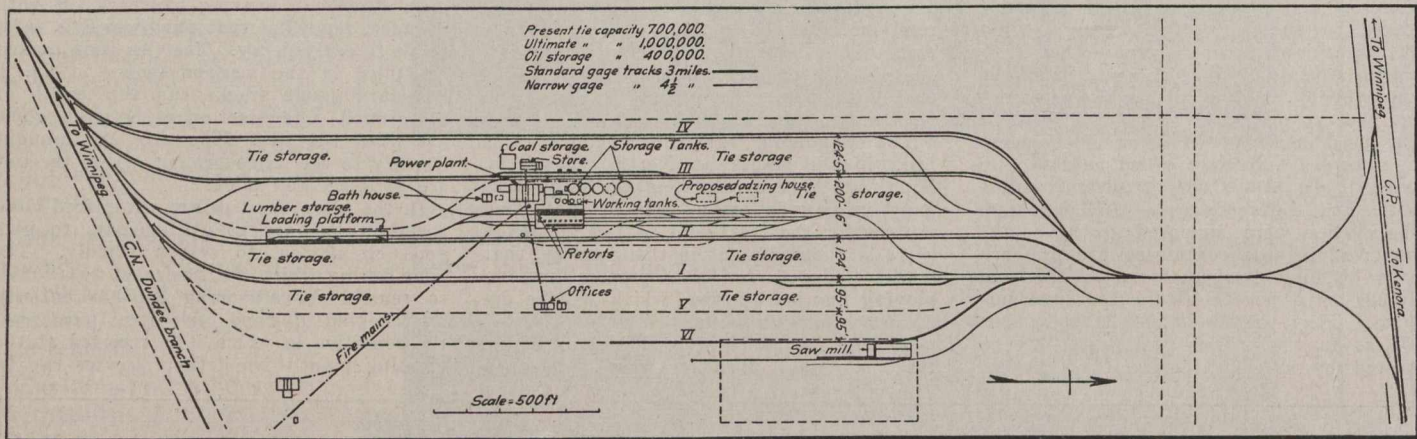


Fig. 1.—Layout of Buildings and Yard of Creosoting Plant.

the cylinder, carrying 135 lbs. of steam. Over top of these steam pipes are tracks for the small service cars, the loaded cars running on these rails just clearing the inside of the cylinder. The trains of tie cars are shunted into the cylinder. At this plant, for shunting purposes, are 2 small narrow gauge switching locomotives, in place of cable transfer systems in use in some other plants. From a railway standpoint, one of the switching locomotives is of peculiar interest. Constructed in Eng-

land, it has all the characteristics of the British design, with slab type frame and other peculiarities foreign to Canadian practice.

After being subjected to a vacuum for over an hour, it is discontinued and more oil allowed into the cylinder, this time under pressure. This pressure is made to gradually rise, taking upwards of 2 hours to reach a pressure of from 100 to 180 lbs., depending on the nature and condition of the wood. In one of the 135 ft. cylinders, about 2,000 gals. over and above that

cylinder for some time after the completion of the treatment, in order that the surplus creosote oil may drain off.

The power house adjoins the building containing the working tanks, and like the other buildings of the plant, is of corrugated iron. In it are two 9 x 14.9 x 13.7 in. vacuum pumps, four 8 x 4 x 10 in. oil pumps, and two compressors, respectively 8 x 8 x 12 in. and 10 x 10 x 14 in., all steam driven. On the wall of the power house are recording and indicating gauges

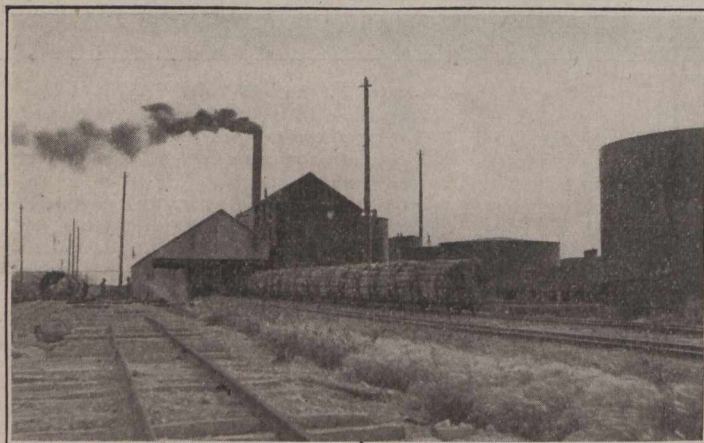


Fig. 4.—Train of Untreated Ties Entering a Cylinder.

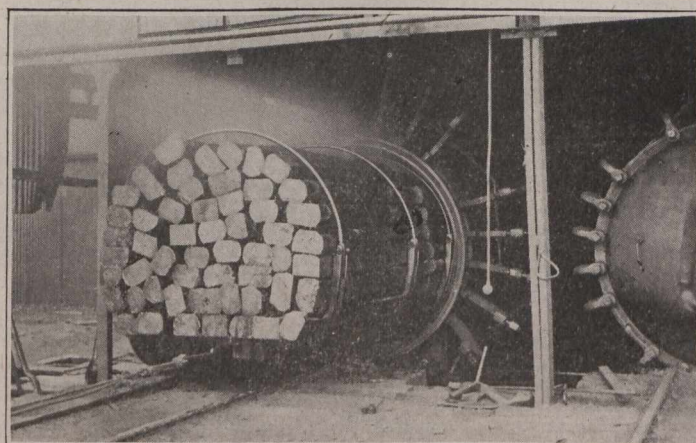


Fig. 5.—Train of Treated Ties Leaving the Cylinder.

land, it has all the characteristics of the British design, with slab type frame and other peculiarities foreign to Canadian practice.

Each cylinder has a creosote working tank 20 ft. diameter and 14 ft. deep, located in a galvanized building to the rear of the storage tanks in fig. 6, between those tanks and the treating cylinders on the left in the illustration. These working tanks are set higher than the cylinders, into which the creosote oil feeds by gravity, after the cylinder end covers are placed. After filling the tanks in this way to the top of the cylinder, a vacuum is created in

introduced by gravity are forced into the cylinder, this amount entering directly into the fibres of the wood. The treating contract calls for the introduction of a minimum of 2 gals. of creosote oil into each tie, but the average runs considerably above this, as much as 4 gals. entering ties of a more open and porous nature.

After leaving the pressure on the ties for a time depending on the condition of the wood, but generally about 6 hours, the pressure is removed. This operation is carefully watched, as the quality of treatment of the batch may be observed by the manner in which the pressure reduces. If

of various kinds. To the rear of the power house is the boiler room, containing two water tube boilers, with a total capacity of 1,000 h.p. The feed water, obtained from wells in the grounds, is treated in a softening plant before entering the boiler, and is heated by a feed water heater. Electrical power is generated in a small building adjoining the main power house, plies the sundry lights about the buildings, and 16 arc lights placed high on poles at various points in the grounds, as shown in figs. 4 and 6. These are made necessary by the nature of the work, which is continuous, day and night.

The ties, on completing the period of draining following the treatment, are drawn out of the cylinder, as in fig. 5, by one of the narrow gauge locomotives, and drawn up the track in the foreground of fig. 2, on to the platform shown in fig. 7, which is at the level of the flooring of the cars on the standard gauge track alongside from a small 50 h.p. generator. This supports the platform. The ties are loaded directly on the awaiting cars when these are available; otherwise they are stored in promiscuous heaps at the far end of this loading platform, as may be noted on the right in the distance. Flat cars and coal

Hector and Field, B.C., which have a maximum grade of 2.2%, will still be used, other spiral tunnels being driven to provide for the second track. The present spiral tunnels were described and illustrated in Canadian Railway and Marine World for Jan., 1911.

In the Selkirk Mountains a route with better grades than those now in use has been located by the recent surveys. Westward from Six Mile Creek the present route, which ascends the side hills of Beaver River Valley and follows its tributary, Bear Creek, to the summit in Rogers Pass, will be abandoned altogether to secure a

Protection for Car Repairers.

As a result of a general discussion of this question at the Board of Railway Commissioners sitting in Ottawa, Dec. 12, 1912, the Board has issued the following circular to railway companies:—"The present practice of using a flag for protection purposes is considered very unsatisfactory, and a simple device, as set forth in the accompanying diagram, has been suggested for use. This could be of light steel or wood, made so as to fold up, and when opened up could hang on the ladder rungs by hooks,

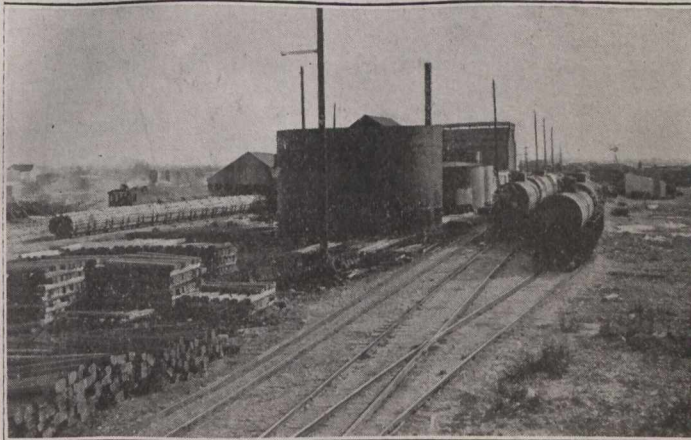


Fig. 6.—Creosote Oil Tank; Cylinders on Left.

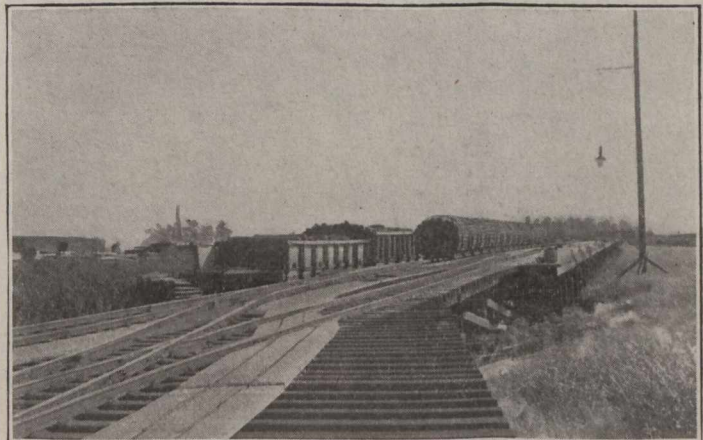


Fig. 7.—Treated Tie Unloading Platform.

cars are the only ones that can be employed for this purpose, as if box cars are used, the creosote oil left in the cars on the removal of the ties renders them unfit for grain service for months.

The creosote oil, as received in tank cars from the company's two plants, is drained from the tank cars on the tracks to the right in fig. 6, into an underground chamber, from which it is pumped up into the large tanks in the centre of the illustration. The combined capacity of these tanks is about 500,000 gallons.

The company's offices are due east of the treating cylinders. The isolated nature of the plant made necessary the erection of buildings to accommodate the employees, of whom there are over 300. These are housed in bunk houses to the east of the plant.

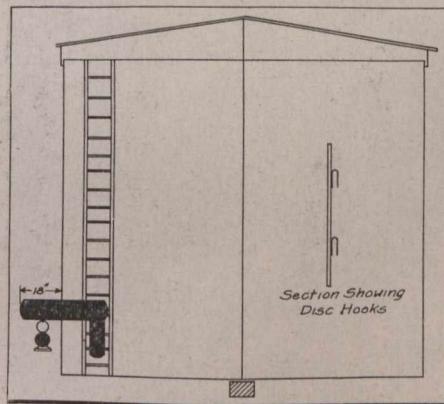
The company's head office is in Montreal, E. Bernard Smith being General Manager. G. G. Roberts is the Local Manager at North Transcona.

Second Track Work on the Canadian Pacific Railway in the Mountains.

The work of double tracking the C.P.R. between Calgary and Vancouver is in progress on the western end of the line, and construction will be begun at several points in the mountains early in the spring. Better gradients are to be secured at the same time that second trackage is provided, and for this reason it is necessary to abandon the present route entirely in some places. Changes in the route across the Selkirk Mountain range will shorten the line about 3 miles, and will involve the construction of a tunnel 5 miles long to eliminate the present summit crossing through Rogers Pass.

For the major portion of the mileage between Calgary and Vancouver the proposed changes will give a maximum gradient not exceeding four-tenths of 1%, the exceptions being on the grades to the summits in the Selkirk and Rocky Mountain crossings. The spiral tunnels in the Rockies between

maximum grade not exceeding 1%. The new line follows the bottom of the Beaver River Valley to the eastern portal of the proposed tunnel, which will do away with the grade up to Rogers Pass and incidentally eliminate 4 miles of snowsheds. The western portal of the tunnel will be a few miles below Glacier in the valley of the Illecillewaet. It is expected that the grade through the tunnel will not be much in excess of 1%. In addition to the grades exceeding four-tenths of 1% which have already been mentioned, there will be one



Proposed Car Repair Protection Disc.

other exception to this as a maximum gradient, which will be in that part of the line between the western portal of the tunnel and Revelstoke. Here the line often skirts the brink of the Illecillewaet Canyon, and great difficulties would attend grade alterations at many points. Fuller particulars of this portion of the work were given in last month's issue.

The cost of the proposed route changes, second tracking and driving the tunnel, is estimated at about \$150,000,000, and at least 4 years will be required to complete the work. F. F. Busted, M. Can. Soc. C.E., is in immediate charge of the work, with office at Kamloops, B.C.

as shown in the sectional view. The disc could project 18 ins. beyond the car and be 10 ins. in depth, with a hook on the bottom side for hanging a lantern for night use. This disc would not be as subject to the caprices of the wind as a flag, and would be readily discernible for the full length of any ordinary train. Furthermore, as it can be so easily applied, there will be no excuse for failure of employes to neglect its use. The arm of the disc should be painted blue, and a blue light used at night as required by the standard rules. The Board will be glad if railway companies will give this suggestion careful consideration and let the Board have their views thereon as early as possible."

Taxation of Steam Railways in Ontario.

The Ontario Government collected \$448,515.66 as taxes from the various steam railways operating in Ontario during the financial year ended Oct. 31, 1912. This amount was made up as follows:—Algoma Eastern Ry., \$233.76; Algoma Central and Hudson Bay Ry., \$1,724.51; Bay of Quinte Ry., \$1,405.12; Brockville, Westport and North Western Ry., \$675; Canada Atlantic Ry., \$20,635.74; C.P.R., \$157,166.28; Canadian Northern Ry., \$14,316; Canada Southern Ry., \$32,669; Central Ontario Ry., \$1,984.50; G.T.R., \$181,482; G. T. Pacific Ry., \$8,236.80; Irondale, Bancroft and Ottawa Ry., \$765; Kingston and Pembroke Ry., \$1,551; Lake Erie and Detroit River Ry., \$3,348.20; Niagara, St. Catharines and Toronto Ry., \$553.80; Nonsbonging and Nipissing Ry., \$55; Ottawa and New York Ry., \$853.50; Thousand Islands Ry., \$55; Toronto, Hamilton and Buffalo Ry., \$1,223.05; James Bay Ry., \$9,486.40; Mar-mora Ry. and Mining Co., \$96.

The removal of 78.8 cu. ins. of metal weighing 22 lbs. from a 1 in. square test bar, is the reported performance of a 14 in. high speed file, tested on both sides at a Sheffield, Eng., plant. The file made 120,000 strokes in 39 hours.

Handwritten notes and calculations on the right margin, including a list of railway names and amounts, and a total sum of 438,455.66.

Railway Mechanical Methods and Devices.

Coupler Stripping Press at Michigan Central Shops.

In the M.C.R. shops at St. Thomas, Ont., there is in use a coupler stripping machine, designed by N. Marple, General Car Foreman, in whose department it is used. In wrecks or drawbar accidents, it frequently

moving forward, and carrying along the front cross link with its guided pin and chisel, shearing off the rivet head close against the coupler yoke. The plunger is forced back into its normal position by letting air into the rear end of the cylinder. It will be noticed that the handles for both ends of the cylinder are connected together so as to act in unison.

Spring Leaf Roller at Canadian Northern Railway Shops.

The conventional spring leaf roller in the C.N.R. Winnipeg shops, J. Kiebler, Foreman, has been rearranged to have a power clamping attachment, as shown in the accompanying illustration. In place of the long

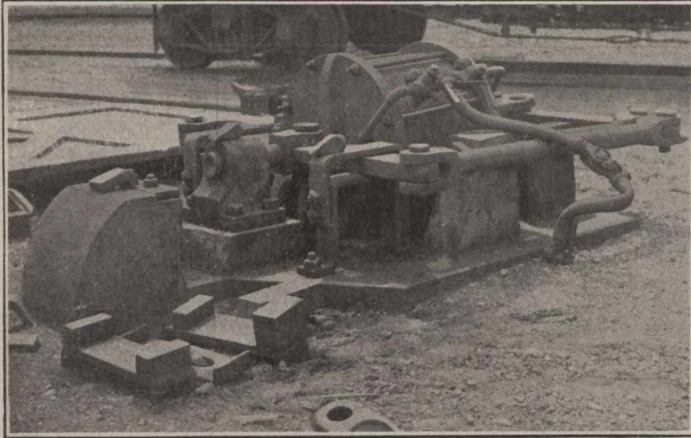


Fig. 1.—Air Operated Coupler Stripping Press.

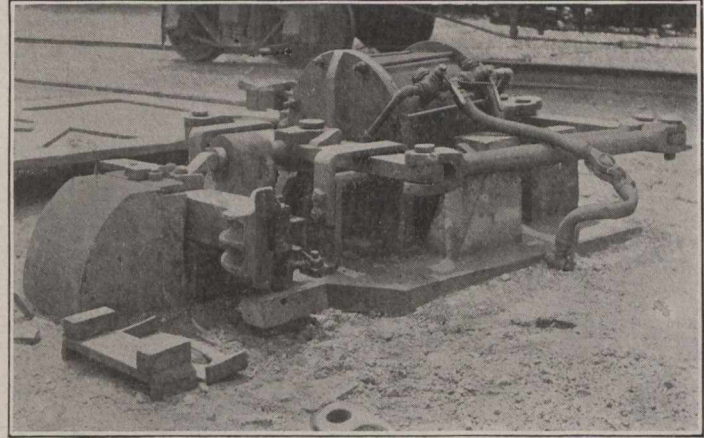


Fig. 2.—Coupler Stripping Press in Operation.

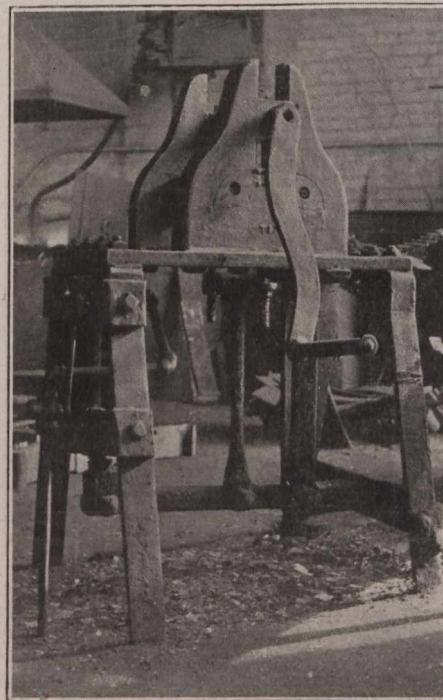
so happens that if the coupler is broken, the coupler yoke is still intact, and vice versa, and it is to save the good portion that this press is employed.

The whole mechanism is mounted on a heavy cast iron base, set into the ground on a solid foundation in the rip track yard. Centrally in this base casting, near the rear end, is mounted an air cylinder, which consists simply of a cast iron shell, to the ends of which are attached cover plates, bolts passing from end to end of the cylinder outside the shell, making a tight cylinder. Air connections for both ends of the cylinder pass in through the cover plates. Through the rear cover of the cylinder passes the plunger, a head on its outer end connecting it with two fulcrumed arms through two pins. The outer ends of these fulcrumed arms connect through links along the side of the machine to a cross member across the front cover plate of the machine. Cast integral with the base on each side of the cylinder is a heavy lug, through which, parallel to the cylinder, passes a heavy threaded bolt, the rear end of which is pin connected to a link, connecting to the fulcrumed levers at the rear, near their outer ends, these outside links acting as the fulcrum rods, the location of the fulcrum being adjustable by means of the threaded end of the bolt in the base lug.

The cross member in front of the cylinder is guided in horizontal ways, and from the front face of the cross member, projects a pin through a cast bearing bolted to the machine base. The outer end of this guided pin is cupped, as shown in fig. 1. From the front end of the base rises a heavy lug.

In stripping the yoke from the coupler, the combined coupler is placed in the machine against the heavy lug in the front end, as shown in fig. 2, with the rivet to be sheared in front of the guided pin. In the cupped end of this pin is placed a cutting chisel, as also shown in fig. 2, the rear end being rounded to fit into the guided pin. Turning on the air into the front of the cylinder, forces back the plunger, forcing out the inner ends of the fulcrumed levers, the links along the sides

Both rivet heads being sheared off, all that remains to be done is to drive out the rivet. One of the big advantages claimed for this method by Mr. Marple is that the rivet is uninjured, and may again be used for a smaller size of coupler. This method is a considerable improvement on the sledge and chisel method formerly in use.



Mechanically Operated Spring Leaf Roller.

G.T.R. Ordered to renew Rails. — The Board of Railway Commissioners has passed a rather unusual order, requiring the G.T.R. to renew the rails on its Barrie Division, between mileage 22 and 26, and until the completion of the work trains between Trout Creek and Powassan, Ont., are not to exceed 15 miles an hour.

fulcrumed foot lever, by means of which the upper roller is brought down on the pair of spring leaves, there is a short lever just the length of the machine base. This is fulcrumed, as usual, at the right end, with a link near its middle connecting with the bearings on each side, which are movable in vertical ways in the frame of the machine.

Between the machine legs, at the left, there is mounted a small air cylinder, the piston rod of which is attached to this fulcrumed lever. On turning the air valve, attached to the frame of the machine, the plunger is depressed, pulling down the upper rollers, and holding them down tightly on the spring leaves while the latter are being rolled, leaving both the blacksmith and helper free to perform the necessary forming operations.

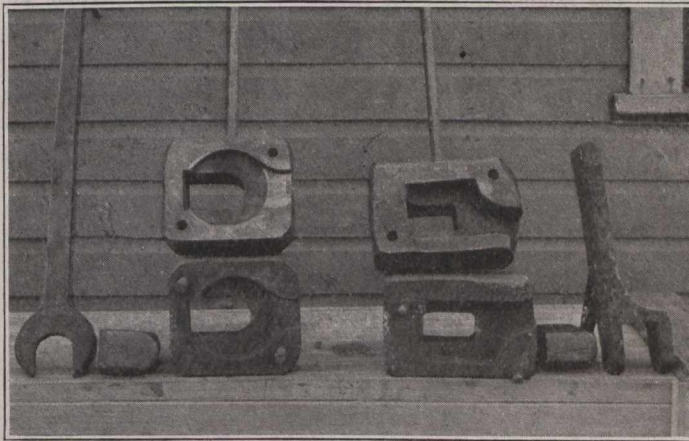
It is the intention to still further improve the roller by having the rolls operated by power. This is to be accomplished by having a long air cylinder attached to the side of the frame directly below the present location of the handle. To the upper end of the cylinder plunger rod will be attached a rack, engaging with a pinion on the handle end of the upper roller, the movement of the plunger thereby turning the roller. Both operators will thus be free of mechanical work. The cylinder will be double acting, to turn the rolls in both directions.

A new method of pushing forward the circular concrete mould has been introduced in the construction of the 90 mile water supply tunnel for New York. On the floor of the rough hewn tunnel head is laid a narrow strip of concrete flooring as the tunnel progresses, the inner surface of which is curved to form the lower portion of the circular formation on completion. This strip serves as a uniform flooring on which a narrow car can be operated, the car carrying the wall mould. The wall mould on the car is pushed forward between settings. The car also carries on its top, a pair of tracks over which the work cars operate, en route to the tunnel shaft.

Steam Hammer Forgings at Grand Trunk Pacific Railway Shops.

The lack of a forging machine at the G. T.P.R. old shops at Rivers, Man., made necessary the development of alternative methods of producing work that would ordinarily be done in the forging machine. For most of the work, the steam hammer has been found to be useful, and by various means the work is now being produced through its use. Some small shops are still called upon to do the work in the same way, but such shops are becoming fewer every year.

In the accompanying illustration are



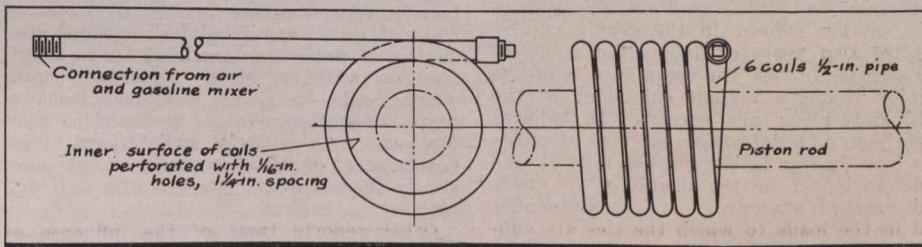
Steam Hammer Forgings and Dies at G.T.P.R. Rivers Shops.

shown completed a spanner and the forked end of an eccentric rod, with the dies and tools used in their production. In both instances, bar stock is drawn down under the steam hammer to roughly the required shape, and formed to final outside shape in the dies shown, the upper die being guided down over the lower one on the two guiding pins. On the outside snape of the pieces being formed in the dies, that is, when the two parts are brought down flush, the flash forming in the upper and lower holes, shearing pins, shown alongside the dies, the shape of these holes are placed therein, and driven through under the steam hammer, forming the openings in the ends as in the spanner and rod ends.

Heater for Bending Piston Rods at Grand Trunk Railway Stratford Shops.

At the G.T.R. locomotive shops at Stratford, Ont., piston rods that after forging are found to be eccentric to a degree that would be inadvisable to attempt to bend cold, are straightened without removal from the lathe. Usually it is necessary to remove the rod to a forge fire, heat and bend back to shape, and then return to the lathe. Straightening them in the lathe, when set up for machining, effects a considerable saving in time, from the fact that it is there that the rods are found to be out of true, so that the error is rem-

edied without removal from that spot. The heater employed for the purpose is shown in the accompanying illustration. It consists of six turns of 1/2 in. wrought iron pipe, coiled, to give an internal diameter of 4 1/2 ins. One end of the pipe is made blind with a pipe plug, and the other end has a tangential section about 3 ft. long, to which a connection is made to a portable air and gasoline mixing tank that is commonly to be found around locomotive shops. Radially inward from the inner surface of the coiled pipe, there is a series of 1-16 in. holes at a 1 1/4 in. spacing, through which the inflammable vapor impinges on the rod, burning with an intense heat, all the small jets of flame being di-



Heater for Use in Bending Piston Rods Without Removal from the Lathe.

A smooth and perfect job results, equal in quality with the forging machine work, but of course, at a much slower rate of production.

The company's repair shops are now located in the new buildings at Trancona, Man., and in consequence, the foregoing method of production has been superseded by more modern means.

In its final report to the U.S. Interstate Commerce Commission, the Block Signal and Train Control Board made the recommendation that all interstate railways should be compelled to adopt the block signal system. The Board also recommended that tracks be inclosed and laws against trespassing be enforced.

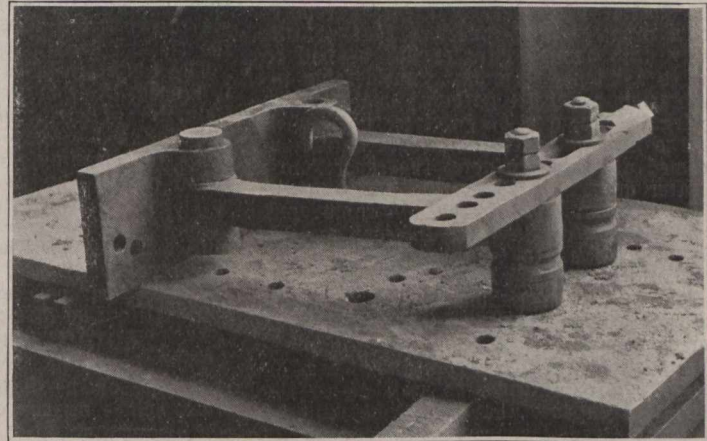
rected towards the centre. The burner, connected by a rubber hose to the supply tank, is slipped over the end of the piston rod in the lathe, and located over the point to be bent. The heat is so intense that a very short time suffices to heat the rod to a bending heat, when it is a simple matter to rectify the error without removing the rod from the centres, or straining the lathe, as might happen if an attempt was made to bend cold between centres.

By means of exhaust fans for the drawing off of fine dust from grinding rooms, the polishing of metals has now become a much more healthful and agreeable business than formerly.

Bulldozer Forming Die at Canadian Pacific Railway Winnipeg Shops.

A handy form of die for attachment to the movable bulldozer head is in use in the C.P.R. shops at Winnipeg. There is a wide range of bending operations performed on the bulldozer in which the whole operation consists simply in bending the two projecting ends of a bar around a stationary block or pin, such, for example, as the various sizes of coupler yokes, eye bolts, and other similar parts. The conventional practice is to make a male and female die for each such part.

With the die as made in these shops, the



Adjustable Bulldozer Forming Die.

one female die may be used with a large number of male dies, reducing the stock of dies required, this being accomplished in a very simple manner, as the accompanying illustration indicates. Instead of the two arms of the female die being solid, with the usual rollers on the outer ends, the two arms are still retained, but are attached to the base of the die by a pin connection in such a manner as to be free to swing on that pin connection. The outer ends of these pinned arms are held in a fixed relation to each other by a cross member, consisting of a piece of flat stock, drilled with spaced holes, and a bolt slot. By bolts in the ends of the arms above the rollers, the rollers are set in any fixed relation to each other, for forming any size of stock around a given mandrel. The nearer roller cannot slip in the holes, but in the slot, the far bolt might be liable to do so if the friction of the bolt and nut were alone depended on. In consequence, there is a set screw in the other end of the cross piece, locating the roller on that side without danger from slippage.

The whole adjustable die is attached to the face of the bulldozer ram. While it would be possible to operate on heavy stock with such a die, it is used for the most part only on lighter stock.

The problem of keeping superheater tubes clean has been solved on one U.S. road, where the flue cleaners are supplied with pocket flash lamps which enable them to see the whole length of the tube, and thus determine whether they are doing effective work.

In order that the mining and transportation of ore might progress even in the coldest weather, the railway ore cars of an Alaska mining company are provided with false bottoms, containing heating pipes, through which steam is passed from boilers at the bunkers. This thaws the ore, and it is said no difficulty has been experienced in handling the ore even at 50 degrees below.

American Railway Engineering Association's Committees' Reports.

The various standing and special committees of the American Railway Engineering Association have been continuing their investigations during the past year along the lines assigned to them. Following is a summary of their investigations and recommendations.

COMMITTEE ON ROADWAY.

One of the subjects assigned to this committee was the presenting of formulae of general use for determining waterway areas under varying conditions, including the consideration of hydraulic features. In the matter of waterway areas it reports some progress, but considers that at this early date enough data cannot be had to derive a simple formula. Considerable information has been gathered dealing with hydraulic features of culverts, but owing to the incompleteness of certain data it is deemed advisable to defer the report until a later date.

On the subject of the allowable unit pressures on roadbeds of different materials, which was to be investigated jointly with the committee on ballast, the committee has been unable to get any new information. Pointing to the present high percentage of rail failures and the probable advent of 100 ton cars and increasing locomotive axle loads, as well as to the time and expense that would be required to make comprehensive tests under service conditions, the committee directs attention to a resolution previously submitted, that an appropriation be made and a special committee be appointed to make such tests.

A large amount of information has been collected on the ventilation of subway tunnels in connection with the study of tunnel construction and ventilation. It is pointed out, however, that the ventilation of railway tunnels used by coal burning locomotives is an entirely different subject from that of city subways and conclusions are withheld until experiments now being conducted on single and double track steam railway tunnel ventilation are completed.

It has agreed with the committees on track, and signals and interlocking on a subdivision of the study of economics in roadway labor, and reports progress along this line. It recommends that the last three subjects for investigation be re-assigned.

COMMITTEE ON BALLAST.

As mentioned in the work of the committee on roadway, these two committees were instructed to investigate the unit pressures on roadbed, the ballast committee to report on the proper depth of ballast of various kinds to insure uniform distribution of the loads. The committee has made tests under artificial conditions as near like regular traffic conditions as possible, but believes that such tests, to be of value, should be made in track under regular heavy traffic. To this end it outlines and recommends a plan for a test to be made on a stretch of track on clay roadbed under heavy traffic, providing successive short lengths of ballast of various kinds and thicknesses, accurate records of maintenance costs being kept, and photographs being taken at regular intervals to show deformation of the roadbed.

Another assignment of this committee was a continuation of the study of physical tests of stone for ballast. No further information is offered on this subject, but certain additions for clearness are recommended in the wording of the Manual on these tests. A record is also presented of a test made by the Pennsylvania Rd. in

regard to the first cost and that for maintaining various sizes of stone ballast.

The other subject under investigation was that of gravel ballast and methods of grading different qualities. Extensive tests have been made by H. B. MacFarland, Engineer of Tests of the Atchison, Topeka and Santa Fe Ry., on samples of gravel ballast from nineteen pits in various parts of the country. His report gives a photographic cut of each sample, a brief description of tests, and a table of the weights of the samples and the percentages of moisture, gravel, sand and dust. The committee presents for adoption a description of the method used in testing grading gravel.

The report includes a description by W. I. Trench, Division Engineer, Baltimore and Ohio Rd., of a method of employing specially designed screens instead of ballast forks for cleaning stone ballast. It was found possible by the use of this method to clean ballast for double track at a cost of \$640 a mile, as compared with \$1,466 a mile with the fork method. The committee recommends that the various methods and the corresponding costs for cleaning stone ballast be investigated during 1913.

COMMITTEE ON TIES.

This committee was asked to report on the effect of the design of tieplates and track spikes on the durability of ties; to continue the study of the stresses to which cross-ties are subjected, and determine their proper size; to report on the economy in labor and material effected through the use of treated ties as compared with untreated ones; and to continue the compilation of information as to the use of metal, composite and concrete ties.

In connection with the first matter, information obtained from 61 railways showed that 27 use tieplates with longitudinal flanges, 15 use plates with transverse flanges, 20 use corrugated plates, 11 use pronged ones, and 13 use flat ones—many of the roads using two or more types. Few of the roads use screw spikes, although several are experimenting with them. The committee was unable to obtain definite information as to the relative effect of the different designs of tieplates and spikes on the life of ties, but it believes that experiments now being conducted will throw some light on the subject in the near future.

After two years of exhaustive study of the stresses in ties, the committee is of the opinion that its findings submitted at the 1912 convention are correct. It believes experiments to determine the size of cross-ties are impracticable on account of the wide variation in the character of track and roadbed standards and maintenance and in the loads to which the ties are submitted.

During the year members of the committee inspected Simplex steel ties, Bates concrete ties, Carnegie steel ties and Universal steel ties on several railways. Information was also received from a number of other steam and electric railways concerning substitutes for wooden ties in service on their lines. It submitted the data received without recommendation as to the value of the substitute ties.

It also reports progress on the subject of economy in labor and material effected through the use of treated ties as compared with untreated ones.

COMMITTEE ON RAIL.

This committee was directed to consider revision of the Manual of the association, to present recommendations on standard rail sections, to continue the investigation

of rail failures and present conclusions drawn therefrom, and to make concise recommendations for next year's work. The committee recommends a number of changes in the wording of the Manual to clarify certain points capable at present of more than one interpretation.

No recommendation is made as to standard rail sections, the committee believing that the sections already under observation have not been so long enough to permit the reaching of definite conclusions. A sub-committee is considering modified sections, and will continue to do so as it learns of weak spots in the present sections. It proposes also to study rail joints and work toward a means of determining the stresses in rail and track under service conditions. In this connection an appendix by P. H. Dudley, Consulting Engineer on rails, tires and structural steel for the New York Central Line, on stream-matograph tests of track under service conditions is presented.

Statistics of rail failures for the year ended Oct. 31, 1911, covering more than 12,000,000 tons of rail, are presented in a report by R. Trimble, Chief Engineer Maintenance of Way, Northwest System, Pennsylvania Lines. His chief conclusions from a study of the statistics are that they give a fair test of the performances of the different mills, showing lack of uniformity in the products of the different mills, or even the individual mills; that wide variations in the specified chemistry for the rails exist, to guard against which it may be necessary to take chemical tests from the finished products as well as from the ingots; that the heavier sections do not show as good average performances as the lighter; that open hearth rail as a whole shows a lower rate of failure than the bessemer, but an increase for the year as against a decrease for the bessemer, suggesting that the open hearth will approach the bessemer figures with increase of age, and that the tops of ingots are inferior to the bottoms, showing an insufficient discard from the top. The committee in calling attention to these conclusions emphasizes the wide range in tonnage and physical characteristics for the different roads, making comparisons between them difficult.

In the line of special investigations it presents various reports from its Engineer of Tests, M. H. Wickhorst, and others from other investigators. One of Mr. Wickhorst's reports gives results of abrasion tests of rails on a revolving machine, consisting of a circular track 20 ft. in diameter, on which revolved a heavy beam which could be given additional load by means of springs. In the tests, which were few and not entirely satisfactory, open hearth steel of 0.74% carbon abraded more slowly than bessemer steel of 0.50 to 0.54% carbon.

Other reports treat of the influence of titanium on bessemer ingots and rails and that of silicon on open hearth ingots and rails. The use of from 0.1 to 0.6% of metallic titanium in tests prevented the honeycombing of the bessemer ingot, but produced a larger and deeper pipe. The heavy segregation in the upper part was largely restrained, but that in the lower part was little affected. The brittle zone in the upper part was avoided, but large internal flaws were found lower down than with plain steel. Tests with up to 0.5% of silicon in open hearth steel showed similar results as to honeycombing, pipes, and segregation. The strength seemed to be increased somewhat, but the ductility remained about the same.

Another report deals with two ingots made by a special process, acid open hearth steel being treated with titanium.

The ingots were cupped down at the top, but contained no interior pipe. Another report describes a method for determining the transverse ductility of the bottom of the rail base and the load required to break the flanges of a rail supported near the flange edges. All of these reports were made by Mr. Wickhorst.

A description by Dr. Dudley of the ductility and elongation tests of the New York Central Lines, is given. The influence of seams or laminations in base of rail on rail failures is treated in a report by H. B. McFarland, Engineer of Tests of the Santa Fe System. J. R. Onderdonk, Engineer of Tests of the Baltimore and Ohio Rd., contributes a paper on the effect on the finished rail of piping, cavities and porous spots in ingots. C. D. Young, Engineer of Tests, and F. N. Pease, Chemist, of the Pennsylvania Rd., make a joint report on transverse or internal fissures in rail heads. Other reports are made on the Hadfield method of making sound ingots and on rail tests from a foreign viewpoint.

The committee recommends that investigations for the coming year be aimed at various methods in the making of both ingots and rails, at their composition, and at several special topics.

COMMITTEE ON TRACK.

The work of this committee was directed along three lines. The first was to present general specifications for track bolts, nutblocks, tieplates, and common and screw track spikes. The chief recommendations as to tieplates are that they shall be 6 in. or more in width, long enough to provide safe bearing area on the tie, and not less than $\frac{5}{8}$ in. in thickness along either edge of rail base; each plate must have a shoulder at least $\frac{1}{2}$ in. high, so placed as to give a greater projection of the plate outside than inside of the rail base, must be shaped to support screw spikes if such spikes are to be used, and must have punching to correspond to the slotting in the splice bars.

Bolts should be as large as possible. Anti-creepers should be designed to fit two or more different weights of rail, must be easily placed and removed under full ballasted track, should have a few movable parts as possible, the controlling parts to be non-rustable, should have sufficient takeup to allow proper tightening, and must not loosen when in place. It also gives specifications for the various track appurtenances above mentioned.

For the second topic, the design of main line turnouts, the committee presents typical plans for nos. 8, 11 and 16 main line turnouts, is preparing similar ones for crossovers, and is securing data as to the height of centre of gravity of new locomotives and tenders and allowable speeds through turnouts and various curves with varying superelevation of outer rail.

The third topic is economics in track labor. The committee has adopted an outline for future study to extend over a period of several years. The work of the past year was directed toward means of securing a better class of section foremen, and the committee concludes that the principle of apprenticeship should be applied to promising track laborers for a definite period, after which those considered suitable should be made assistant foremen with increased pay, and eligible to become foremen; that there should be periodical meetings for instruction and discussion and that where possible educational articles on the best practices should be sent to foremen and assistant foremen, after which they should be examined to determine their suitability for promotion.

The committee also presents a supplement for the table of junctions of the ten-

chord spiral on pages 102-110 of the Manual.

COMMITTEE ON BUILDINGS.

On two of the subjects assigned to this committee—the design of inbound and outbound freight houses and methods of heating and lighting and sanitary provisions for medium sized stations—the committee makes no report other than that progress is being made.

A complete report is made on roof coverings, combining the last two previous reports, with some corrections and additions. Numerous classes of material and their applications are discussed, and conclusions are drawn that metallic roofings and those using Portland cement are valuable if properly used and protected, and that iron and steel for roofs should be of the best quality. It is therefore recommended that the previous finding in the Manual, that steel or impure iron materials should be avoided, no matter how protected, should be changed to cover these conclusions.

The other topic for investigation was the advantages and disadvantages of various types of freight house floor construction. The report on this subject states that freight house floors should be built to carry a uniformly distributed load of at least 250 lb. per sq. ft., that they should be of materials which will not in any way damage any articles placed upon them, that they should present a smooth and durable surface, and that they should be easily repaired. The merits of various types of construction are stated somewhat briefly, but no specific rules or recommendations are set forth.

WOODEN BRIDGES AND TRESTLES.

This committee presents a series of tables, standard drawings and other data on the practices and experiences of 61 railways relating to guard rails and rerailing devices for bridges, their effectiveness, and the manner of securing them to bridge floors; also reports are printed from 19 railways concerning fire protection for wooden bridges and trestles. On the latter subject it makes no recommendations.

On the subject of guard rails, it is recommended that guard timbers be used on all open floor bridges, that metal guard rails extend not less than 50 ft. beyond the ends of bridges, that guard timbers and rails be so spaced that derailed trucks will strike the latter without striking the former, and that the height of the guard rail be not more than 1 in. less than that of the running rail.

On the other topic assigned to the committee—formulae for determining the strength of sheet piling—it reports progress and recommends that in the coming year the report on this matter be completed; it also recommends that docks and wharves be studied.

COMMITTEE ON MASONRY.

This committee has been continuing its study of waterproofing of masonry and bridge floors, and has been investigating the effect on concrete structures of the rusting of the reinforcement, and also as to the principles of design of plain and reinforced-concrete retaining walls, abutments and trestles. No recommendations are made, but in the matter of disintegration of concrete and corrosion of reinforcing metal a report is presented, pointing out the effect of sea water on concrete, as described in a number of recent papers and publications, to which reference is made; that of water containing acids or alkalis; the behavior of cinder concrete under various conditions and the effect of electric currents. It indorses the conclusion of 1908 that steel embedded in good concrete will not corrode, whether above or below fresh or sea water level, but that it will in the

presence of moisture if the concrete is porous.

SIGNS, FENCES AND CROSSINGS.

One of the subjects assigned to this committee was a study of the relative advantages of different kinds of fence posts. The committee presents data from 44 railways on the kind of wooden posts they use, and their cost and length of life. It also presents data from manufacturers of steel and concrete fence posts, and from railways experimenting with them. The data include descriptions, dimensional drawings, cost figures, and service records.

The committee concludes that concrete posts are practical and economical; that they should taper upward, being not less than $5\frac{1}{2}$ in. at the base and 4 in. at the top; that the reinforcement should be about $\frac{1}{2}$ in. from the surface; that the proportions should be one part of cement to four parts of run of pit gravel, or one part of cement, two parts of sand and four parts of crushed rock or screened gravel not smaller than $\frac{1}{4}$ in. nor larger than $\frac{1}{2}$ in.; that great care should be taken to give the posts a smooth finish, molds with a vibratory motion when the concrete is being introduced being desirable; and that the posts should be cured for at least 90 days before being set or shipped. It also recommends that a series of tests be made to determine the comparative strengths of different types of posts.

Another line of investigation followed by the committee was that of track construction and flangeways in paved streets. It recommends that 141 lb., 9 in. girder rails or similar sections should be laid on treated ties, with tieplates and screw spikes, the ties to be laid on a bed of ballast 8 to 12 in. thick; that the roadbed should be drained with a 6 in. or larger vitrified tile drain with open joints on each side of the track, outside of the ties; and that the ballast should be carried up to the bottom of a 2 in. sand cushion for the pavement, which should preferably be of stone blocks.

It also endeavored to get data as to means of securing a suitable fence wire to resist corrosion and be durable, but obtained little useful information, and recommends that the subject be dropped for the present and that various kinds of signs for railway purposes be made a subject for investigation.

SIGNALS AND INTERLOCKING.

This committee continued its investigation, extending over several years, of an outline description of a comprehensive and uniform signal system suitable for general adoption. It now recommends upper quadrant signals with three fundamental positions—the horizontal position, indicating "stop"; the vertical, "proceed," and the intermediate oblique, "proceed with caution." It also offers two other more elaborate schemes based on these fundamental positions, but providing for other degrees of speed and caution. Four methods of designating stop signals operated under automatic block system rules are suggested.

Another line of investigation followed by the committee was that of the effect of treated and metal ties on track circuits. It points out that in the case of metal ties each rail must be completely insulated from the ties to prevent a short circuit, and that defective insulation at both ends of any tie will throw the track circuit out of service.

The effect of creosoted ties the committee finds to be not serious. As to the effect of zinc treated ties, it summarizes the information received, in response to requests, from 92 railways as follows:—That track circuits a mile long are rendered inoperative by the extensive use of zinc treated ties; that circuits 2,000 ft. long may

be operated successfully even with 50% or more of ties so treated; that 10 to 15% renewals annually will not materially affect such circuits; that renewals of 15 or 20 adjacent ties cause much greater leakages than those made singly at uniform intervals; that while the surface salts are present, leakage in wet weather is greater than with untreated ties; that dry hot weather brings the salts to the surface and causes leakage; and that after from three months to a year the salts disappear and no leakage is noticeable.

On the third subject for investigation—economics in labor of signal maintenance—the committee defers its report until the convention in 1914.

RECORDS AND ACCOUNTS.

This committee has during the year reviewed the forms in the Manual with a view to recommending revisions, but finds that there are no changes that would seem to be especially desirable. The subject of economical management of store supplies has been studied to some extent, and a typical layout of a store is presented. It is also recommended that the classification of material should conform to that adopted by the Railway Storekeepers' Association.

The other matter under consideration by the committee was a subdivision of primary account no. 6—roadway and track. Such a subdivision is presented and defined, nine sub accounts being recommended. Other elements suggested to help secure uniformity of labor costs and efficiency in handling work are the adoption of proper methods of doing work, the economical distribution of material, the proper selection and care of tools, the right choice of season of the year for doing various kinds of work, and organization and supervision. It is pointed out that little study has thus far been given to methods of efficiency of maintenance of way work.

RULES AND ORGANIZATION.

This committee, continuing its work of previous years, recommends changes in the wording of certain existing rules regarding the government of maintenance of way employes and the conduct of work, and recommends the adoption of others that it has prepared covering track materials and standards, tools, signs, crossings, platforms, the protection of unsafe or obstructed track, and the use of hand, push, motor and velocipede cars.

COMMITTEE ON WATER SERVICE.

The design and relative economy of track pans from an operating standpoint was one of the subjects assigned to this committee. The committee asks more time for its final report, but presents as information a paper on track tanks by G. W. Vaughan, Engineer Maintenance of Way, New York Central and Hudson River Rd. Following a preliminary history of track tanks, he discusses various designs, and draws the conclusions, among others, that such tanks should be on tangents where good water is abundant and good drainage can be provided and where a speed of at least 25 miles an hour can be made; that they should be 2,000 ft. long, 7 in. deep and 19 in. wide in the clear; that the direct heating system should be used, and that duplicate pumps should be installed to insure continuous service.

Another subject for study was the design of water stations using deep well pumps as the source of supply. The committee submits a report outlining the various types of deep well pumps and the conditions favorable to their use. Plunger, centrifugal, propeller and air displacement pumps and air lifts are described, and the committee finds that each type has its particular field of usefulness, which is defined.

Two other subjects are not yet ready for

reports. One is recent developments in pumping machinery, in which connection the committee is considering internal combustion engines, centrifugal pumps and turbines, and the use of electric power for water stations. The other is water treatment, and on this subject a study is being made of water softeners from an operating standpoint.

YARDS AND TERMINALS.

As a part of the work of this committee typical situation plans of passenger stations of both through and stub types were studied, with a view to analyzing their working capacities and different methods of estimating such capacities. Six large terminals were analyzed, a working diagram was devised for use in such analyses, and conclusions were reached that a holding yard should be directly connected with the platform tracks to provide for a quick emptying and refilling of the latter; that where large quantities of baggage or express must be handled it should be done by elevators from a higher or lower level than the train floor; that a maximum curvature of 6 deg. should be used for storage or loading tracks and that no sharper curvature for throat switches should be allowed than that of a no. 8 slip switch.

It solicited information from a number of large railways as to hump yards recently built, but believes that only two large hump yards were built during the year. These two are described and plans and profiles shown; they were not, however, in operation at the time of the report, and it is suggested that a careful study of the operating conditions of all hump yards should be made to see if improvements cannot be made in some of them to secure more efficiency. The committee recommends that the grades leading to tracks set aside for holding empty cars be increased to give such cars the same velocity as loaded cars switched to adjacent tracks have. It also recommends the "cut-list" system of handling cars on a hump, which consists essentially of a list of the cuts to be made in switching a train, and the number of cars in each cut, made out in advance by the yard clerk, a copy to be furnished to each switchman or towerman concerned.

The committee has also made a study of the mechanical freight handling equipment in service at various terminals, the investigation including telfer systems at two terminals and electric trucks and various other devices at other points. Descriptive matter, drawings, and cost and other figures are included in the report, but no formal recommendations are made.

IRON AND STEEL STRUCTURES.

This committee, which has been for the past year continuing its work of compiling rules for the instruction and guidance of inspectors in mill, shop and field, presents 90 such rules and recommends their adoption. As a preface to the rules, the committee discusses the responsibility and the authority of the inspector, and suggests certain desirable mental, temperamental and educational characteristics. A minority report by A. W. Buel, Consulting Engineer, on which the committee has not taken action, criticizes present practice and advocates a different sort of inspection organization, with a well paid manager at the head.

The committee reports progress in the investigation of built up columns, and is also investigating a conflict in previous recommendations adopted by the association with reference to clearance diagrams for third rail and those for bridge structures.

ECONOMICS OF RAILWAY LOCATION.

This committee has done little as a committee during the past year. Two indi-

vidual investigations have been conducted, however, one by A. K. Shurtleff, Office Engineer, Chicago, Rock Island and Pacific Ry., and chairman of the committee; the other by R. N. Begien, Assistant General Superintendent, Baltimore and Ohio Rd. main line system, and vice chairman of the committee.

Mr. Shurtleff's investigation was to determine the approximate general laws affecting such maintenance of way accounts as are influenced by changes in physical characteristics of locations. Maintenance cost data from 55 railways are analyzed, and from them are derived conclusions which are recommended for adoption, the opinion being expressed that their adoption would open the way for a further study of questions entering into economics of location.

Mr. Begien makes an extensive analysis of dynamometer tests on the Baltimore and Ohio Rd. to determine factors of train resistance, and continues with a discussion of these factors. The committee recommends the substitution for conclusion 2 on page 436 of the Manual, Mr. Begien's conclusion that there is no absolute value for train resistance; the elimination of conclusions 3 and 7 and the substitution of his four formulae for ratings for different temperatures, and his table of adjustments for different grades and the substitution for conclusion 4 of his recommendations as to compensation for curvature.

WOOD PRESERVATION.

Part of the work assigned to this committee was a continuation of the investigation of the proper grouping of different timbers for antiseptic treatment, and another part was a study of the merits of various preservatives, giving special attention to oil from water gas tar and the use of refined coal tar in creosote oil. The committee makes no recommendations as to either of these subjects, except that the investigations be continued for another year, and that the attention of the U. S. Forest Products Laboratory be called to the desirability of a study of the regional variation in wood structure by species in reference to the absorption of preservatives.

Another matter on which the committee had been working for more than a year was the consideration of the specifications for fractionation of creosote oil. In this connection tables are given of analyses made by seven railways to compare the merits of the flask and the retort. The committee finds that the fluctuations are about the same with the one as with the other, and sees no reason to change from the present retort method.

The other assignment continued from 1911 was the recommendation of forms for the inspection of preservative processes. Two forms are submitted—one providing for a record of the treatment and the determination of the absorption of the penetration by gauge readings, the other providing for a measure of the absorption by weighing.

It also recommends that the unfinished investigations and the compilation of records of service tests be continued, and that a joint committee consisting of members of this committee and the committee on grading of lumber draw up a standard specification for timber for treatment.

COMMITTEE ON ELECTRICITY.

On the subject of clearances this committee has been following up the progress of the year on third rail installation, and has brought the table accompanying last year's report up to date. Data are also being collected and studied as to overhead clearances, and during the coming year it aims to take the subject up with commit-

tees of the American Electric Railway Association and the American Railway Association, so that joint recommendations may be made. As to the interference between the clearance diagrams for third rail and for bridge structures previously mentioned, it is recommended that as much of the bridge clearance diagram as interferes with the third rail be eliminated.

Another subject for study was crossings for transmission lines carrying voltages higher than 70,000. In this investigation it reports progress, but requires more time before making recommendations.

Electrolysis was the other subject assigned to it. The committee points out that while this subject was of little interest to railway engineers until the comparatively recent advent of the electric locomotive, electric railway engineers have been studying the matter for many years without reaching unanimity of opinion. The committee has therefore compiled a series of descriptions of the methods of preventing electrolysis employed in various important cases and localities, but it makes no recommendations as to the best methods. It also presents a bibliography on the subject.

CONSERVATION OF NATURAL RESOURCES.

This committee makes no recommendations, but calls attention to the work of the national conservation commissions of the United States and Canada: and follows with a comprehensive report of the work along these lines being done in Canada, covering tree planting and reforestation, prevention of fires from railways, and the natural resources of coal, peat, gas and petroleum.

SPECIAL COMMITTEES.

The special committee on uniform-contract forms presents a form of agreement between railroad company and contractor for construction contracts and a series of stipulations covering the general conditions of such contracts. It recommends that the standing committees which have prepared specifications be instructed to harmonize them with the approved contract form by the elimination of provisions which duplicate or nullify clauses of the contract form, and that the special committee itself be discharged, having completed the work assigned to it.

The special committee on grading of lumber has submitted the rules adopted last year to the various lumber manufacturers' organizations, and has obtained the approval of the respective associations interested in Southern yellow pine, hardwoods and Douglas fir, with slight modifications of the rules. The white pine rules were not acceptable to the Northern Pine Manufacturers' Association. The committee has also during the year made studies of rules for classes of lumber not already covered by adopted rules, and recommends that the rules for cypress, submitted for information last year, be adopted.

Action on Committees' Reports.

Most of the recommendations presented by the various committees for insertion in the Association's Manual were adopted with or without modifications. Those accepted by the association are briefly summarized in the following notes:

BALLAST.—Additions were made to the previously adopted information on "Physical Tests of Stone for Ballast" by specifying whether the maximum or the minimum results as to weight, hardness and other characteristics previously enumerated should govern in selecting stone for ballast.

A method of testing the quality of gravel for ballast was adopted as follows: Five samples of about 1 cu. ft. each are to be taken from different parts of the pit and

run over screens of specified sizes to separate the ingredients, these ingredients then to be measured in percentages by volume of the original volume.

RAIL.—A revision of the specifications for carbon steel rails was adopted, together with four forms—a "Report of Mill Inspection," a "Certificate of Inspection," a "Laboratory Rail Report" and a "Tabulation of Results of Mill Inspection of Rails."

TRACK.—Typical plans of nos. 8, 11 and 16 main line turnouts were adopted, as well as a table of functions of the ten chord spiral to supersede a part of the table previously printed in the Manual.

Three rules as desirable agencies in obtaining a better class of section foremen were adopted.

General principles or specifications, or both, were adopted covering steel, wrought iron and malleable tieplates, track bolts, spiral spring nutlocks, ordinary track spikes, screw spikes, and anti creepers. The recommendation prescribing a minimum thickness of 5/8 in. for the parts of tieplates under the edges of rails was rejected, and other slight modifications were made in the rules as presented.

BUILDINGS.—The association indorsed the committee's conclusions as to the value of metallic roofings and those using Portland cement, either with reinforced concrete or with asbestos, and authorized the committee to print in the Manual an abstract of the information presented on roofing materials.

The information on filled in freight house floors was adopted as presented.

WOODEN BRIDGES AND TRESTLES.—The recommendation to use guard timbers, so constructed as to space the ties properly and hold them securely in place, on all open floor bridges was adopted, but the one recommending the use of guard rails on all bridges was referred back to the committee. Where they are used, the recommendations governing them were accepted substantially as presented.

SIGNS, FENCES AND CROSSINGS.—The comprehensive rules presented for use and manufacture of concrete fence posts, were adopted with slight modifications.

The specifications and standard cross section for track construction proposed, were adopted after certain changes had been made, the principal one being the elimination of the maximum limit of 12 in. set for depth of ballast below tie.

SIGNALS AND INTERLOCKING.—The recommended rules for signal practice, using the upper quadrant, and using certain additional signals to give supplementary information were adopted.

RULES AND ORGANIZATION.—Certain modifications of previous rules were accepted, as well as additional rules of a general nature. Of the 40 new rules proposed for minor track officers, all but two were adopted, a number of them being rewritten before adoption. The new rules pertain to tieplates, gauging, curve casement, switches and frogs, switch ties, guard rails, track posts and signs, care of track tools, road crossings, platforms, fences and cattle guards, track jacks, flagging, slow orders, signals, obstructing track, and use of hand-push, motor and velocipede cars.

YARDS AND TERMINALS.—The recommendations as to passenger station layouts were adopted as proposed, except that it was voted that "where practicable" curvature for throat switches should not exceed that of a no. 8 slip on tangent.

The recommendations relating to hump yards were adopted with the slight alteration that cut lists should be made in multiple as required.

IRON AND STEEL STRUCTURES.—The 80 rules presented for the guidance of

inspectors in mill, shop and field were all adopted (with three or four slight modifications), except no. 23, which provided for certain assembling work at the shop to insure the accuracy of field connections. Two additional rules proposed and accepted provide for checking the dimensions of the materials used in each member and for checking the accuracy of the weighing and of the scales.

ECONOMICS OF RAILWAY LOCATION.—The recommendations as to train resistances, ratings for different temperature ranges, and compensation for curvature, as embodied in the report of R. N. Begien, were adopted as presented, superseding all previously adopted conflicting rules.

UNIFORM GENERAL CONTRACT FORMS.—A form of agreement and series of stipulations covering the general conditions for a construction contract were adopted substantially as recommended. The few changes made widen the range of the contract as to both character and magnitude of undertakings.

GRADING OF LUMBER.—The lumber grading rules for cypress, as published last year in Bulletin 144, were adopted.—Engineering Record.

Canada Southern Railway Bond Issue.

The Canada Southern Ry. Co. recently offered in England at 106 3/4% \$2,000,000 consolidated guaranteed 50 year 5% gold bonds, due Oct. 1, 1962, being the remainder of \$22,500,000 issue and outstanding, out of a total authorized issue limited to \$40,000,000. The remaining \$17,500,000 bonds can only be issued (1) to refund \$130,000 first mortgage bonds of the Leamington and St. Clair Ry. Co. (now amalgamated with The Canada Southern Ry. Co.) which are due Oct. 1, 1945, and are secured upon 14 miles of line. (2), to acquire the undertaking of any other railway, railway bridge, or railway tunnel company, or to acquire the stocks, or other securities of such a company. The issue of the \$17,500,000 is regulated by the mortgage deed and cannot exceed an average of \$3,000,000 per annum.

The Bonds are secured by a First and Refunding Mortgage dated Oct. 1, 1912, made between The Canada Southern Ry. Co., The Michigan Central Rd. Co. and Guaranty Trust Co. of New York as trustee upon the company's 380 miles of railway (subject to the mortgage for \$130,000 above referred to) and upon its equipment and other property now owned or hereafter acquired, including the entire capital stock of the Niagara River Bridge Co. but excluding any other shares or bonds owned by the company.

Railway Building in British Columbia.

The B.C. Minister of Finance, in speaking in the Legislature, Feb. 25, on the finances of the province, said:—"During 1912 there were considerably over 2,000 miles of railway under construction. The lines under construction and for which practically all the contracts have been let, were:

	Miles.
"Canadian Northern Pacific on Mainland and Island	600
"Canadian Pacific on Vancouver Island	70
"Pacific Great Eastern	450
"Kettle River Valley	270
"Grand Trunk Pacific	702
"Kootenay Central	170
"British Columbia Central	30
"Others	12
"Total	2,304

"And I may say that for 1,500 miles of these lines the policy of this Government is directly responsible. These huge operations involved an actual expenditure of about \$25,000,000 during 1912."

Canadian Pacific Railway Observation Cars on the Austrian State Railways.

On account of the increasing importance of Vienna, the Austrian capital, as a point of interest to tourists visiting Europe, the C.P.R. opened an important agency there for the convenience of its passengers and other Canadians visiting that city.

After the introduction of the observation cars on the C.P.R., which have proved such an attraction to tourists and other travelers between Montreal, Toronto and the west, and especially through the mountain scenery in the Rockies and Selkirks, representations were made to the Austrian government that in view of the great natural beauty of the Arlburg Pass route between Switzerland and Vienna, similar cars would be a great attraction to passengers. After considerable negotiation, a concession was granted to the C.P.R. for the operation of observation parlor cars between Buchs and

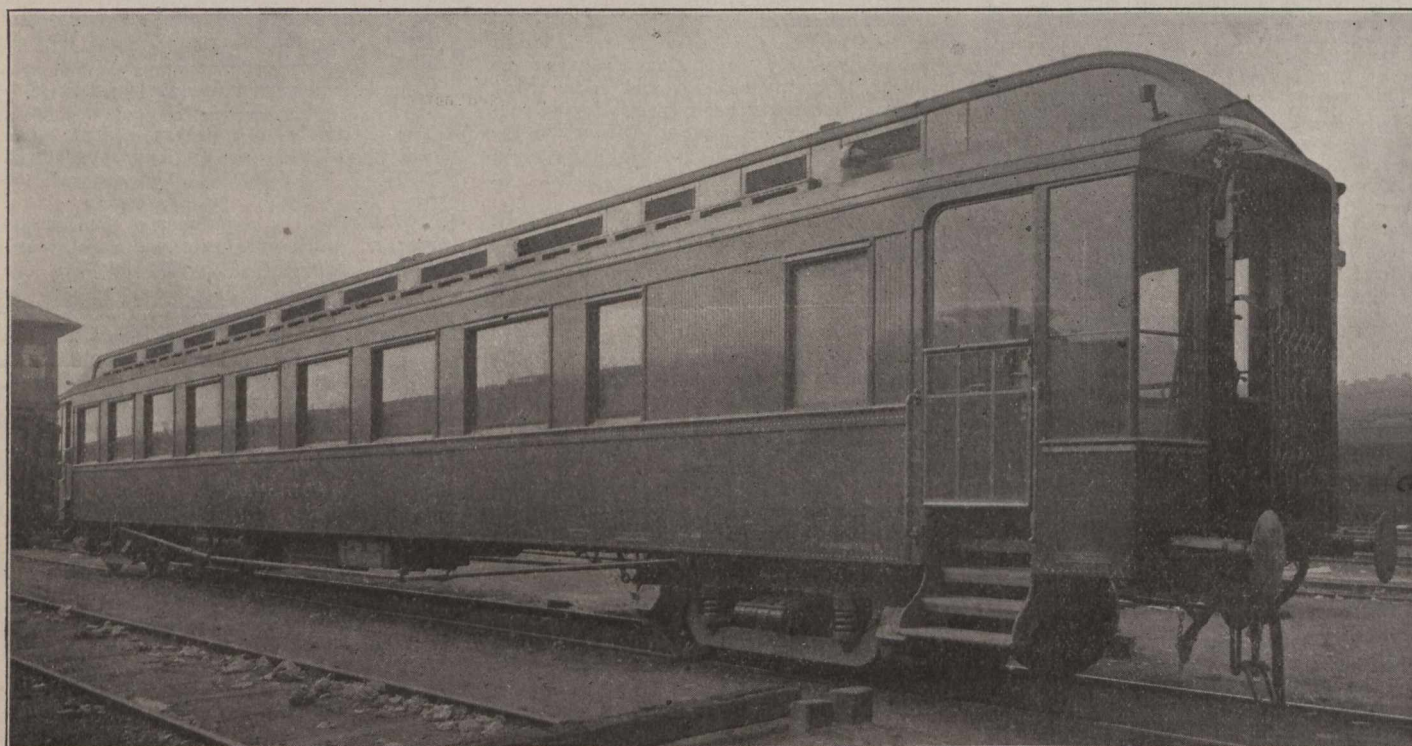
the cars were built at the Ringhoffer works, Smichow, Prague. These three were put into service during the past summer, and the balance of five will be delivered during this spring. The service has already become exceedingly popular, and officials of the Austrian State Railways are so pleased with the operation of the service that they are anxious to extend the use of the cars to other routes.

The accompanying illustrations show that the appearance of the Canadian car has been closely obtained. The bodies of the cars are 71½ ft. over buffer plates, and 9 ft. 5¼ ins. wide over eave moulding, and an over all height of 13 ft. 6⅜ ins. The underframe is of steel, that being standard on Austrian State Railway cars. The buffers, vestibules and underframe in general are all of standard Austrian State Ry. con-

ing it in glass, which have proved entirely successful. Unfortunately, it was found necessary to fit a vestibule to the observation end on account of there being no turntables of sufficient length to turn the cars at the ends of some of the runs, and as they had to be handled backwards for short distances the railway authorities insisted on the vestibules being applied.

The cars are sheathed outside in mahogany and lettered "Canadian Pacific," and the appearance throughout of a standard Canadian Pacific parlor car is maintained as closely as possible. The Burnett 4 wheel all steel truck, recently adopted as standard by the C.P.R., is used, it being considered by the Austrian State Railways as decidedly superior to their standard type.

In order that the cars built in Austria should be as closely similar in construction and finish as the C.P.R. cars from which they are modelled, sample sections of the C.P.R. cars were made up in the Angus shops in Montreal, and shipped bodily to Austria as a guide to the finish desired. The main thing sent was a full cross sec-



C.P.R. Observation Cars Built for the Austrian State Railways.

Vienna on the Arlburg Pass route, and between Vienna and Trieste on the line to Italy, the arrangements being very similar to those under which Pullman sleeping cars are operated on many lines in the United States and some in Canada.

It was thought that the cars should as closely as possible resemble those used in Canada, in order that they might reproduce the latest types of construction and provide the greatest degree of comfort to passengers. It was of course impossible to duplicate the actual C.P.R. equipment on account of the differences in the clearance, coupling and vestibule arrangements, etc. Negotiations were entered into with the Nesseldorfer Co., the largest car builders in Austria, and H. H. Vaughan, Assistant to the Vice President, C.P.R., visited Vienna and arranged for the construction of cars that while resembling as closely as possible C.P.R. equipment, would be suitable for operation on the Austrian State Railways. On account of labor troubles at the Nesseldorfer works, three of

construction. The body of the car is divided into two compartments—one for smoking and the other non smoking. The floor plan is very similar to that of an ordinary C. P.R. parlor car, the chief novelty being the use of two baggage compartments, which are required on account of the large amount of hand baggage usually carried by European travellers. In order to provide storage space for this, the porter of the car checks each piece of hand baggage from the passenger and thus avoids it being laid on the floor of the car or occupying seating capacity. The chairs are the C.P.R. parlor car chair of the "slumber" type. Ten are placed in the smoking compartment and 24 in the non smoking compartment. The equipment and finish are of the latest on C.P.R. parlor car style, and the lighting system is also similar, excepting that the system which is standard on the Austrian State Railways is used.

On account of the objections of the Austrian authorities to the open vestibule platform, arrangements were made for enclos-

tion of a standard C.P.R. observation car, including the desk and book case, showing the style of finish and marquetry. The other sample parts sent included a hopper, washstand, water cooler, towel racks, brush racks, soiled towel rack, drinking glass holder, centre and deck lights, deck sash, stencilling and lettering, sample of outside finish, section of car side, sample of doors, door locks and hand rails, deck sash screens, inlaid rubber flooring, roof canvas, inside and lavatory door locks, door holder and door checks, mosaic tiling, cork tiling, carpet strip, toilet room tiling, passage way marquetry, pantasote blinds, toilet room window glass, chairs, and inside lettering.

The photographs on this page and the next, show how successfully the Canadian Pacific type of parlor car has been followed, with the alterations imposed upon it by foreign railway practice, and the car as a whole exceed in comfort, beauty of finish, size and general appearance, any that have ever been operated on the European continent.

Record Performance of an Atlantic Locomotive on the Pennsylvania Rd.

Some results of peculiar interest were developed recently in a series of tests at the Pennsylvania Rd.'s testing plant at Altoona, Pa., on a simple Atlantic passenger locomotive. The locomotive in working order weighs 233,200 lbs., with 22 by 26 in. cylinders and 80 in. driving wheels. The total heating surface is 3631.3 sq. ft., made up as follows: tubes, 2433.2; superheater pipes, 980.1; and firebox, 218. The tubes are 13 ft. 8 $\frac{1}{2}$ ins. long, and the grate area is 55.13 sq. ft.

Some 40 tests were made, at speeds commencing at 120 r.p.m., running up progres-

7,574 lbs.; dynamometer horsepower, 1705; dry fuel per d.h.p., 3.7 lbs.; dry steam per d.h.p., 22.1 lbs.; machine efficiency (ratio of d.h.p. to i.h.p.), 72.55%. Machine efficiencies as high as 91% were developed at speeds of 200 r.p.m., when the dry steam per d.h.p. dropped as low as 20.6 lbs. These figures show the development of 1 i.h.p. per 99.2 lbs. of locomotive weight, a result said to be unequalled.

The foregoing are the figures obtained in these tests, but lower figures were obtained in the test of a smaller Atlantic type locomotive. With an i.h.p. of 1574.8 and d.h.p. of 1339.6 at 46.7 m.p.h., the principal fuel and water results are as follows: dry fuel per i.h.p., 2.3 lbs.; dry steam per i.h.p., 16.1 lbs.; dry fuel per d.

the locomotive is held under steam, nor the fuel consumption on the ashpit and when building fires.

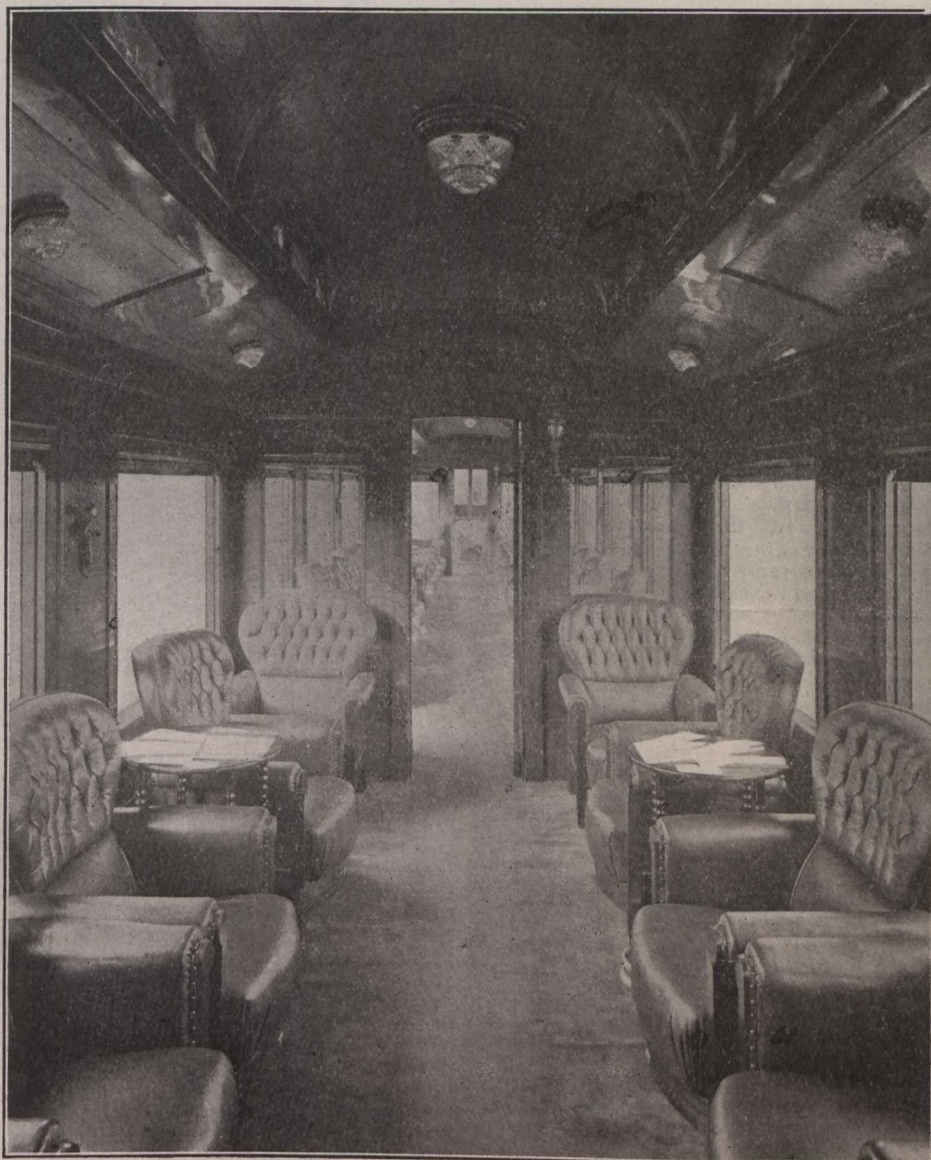
Flour Unloader at Canadian Pacific Railway Fort William Shed.

During last season, the new C.P.R. shed at Fort William, Ont., at which the company's Upper Lakes steamships land, was completed and put in service. It is a double decked structure, 950 by 60 ft., the upper story for the reception of rail freight, and the lower one for freight unloaded from the vessel and loading on cars. For the unloading of the rail freight, there is a trestle along the rear of the building, the height of which is such as to bring the car floor at the level of the freight shed. Along this side are 19 doors, spaced for the freight car door openings. The lower floor of the shed has a similar track and door arrangement along that side for the outgoing rail freight.

One of the principal articles of shipment by water from this point is flour in bags, and for the handling of this product, a flour bag loading machine was devised by R. Armstrong, who was then Superintendent there and is now Superintendent at Saskatoon, and was built into this shed. Along the rear wall, and just under the upper floor there is an endless belt, 26 ins. wide, running the full length of the building, driven from a motor at one end. It is similar in every way to the usual conveyor belt, the upper part running over closely spaced idler pulleys. The belt is open the length of the building. At five points, near one end of the shed, corresponding to the port openings of the vessel to be loaded, there are cross belts of the same width under the floor, at a slightly lower level, enabling the bags of flour on the belt to pass under the floor. These lead to chutes at the front side of the building, to which inclines can be attached for chuting the bags directly into the hold of the vessel.

On this longitudinal travelling belt are dumped the bags of flour from as many cars as are ready to be unloaded, irrespective of the make of the flour, it not being necessary to use the belt for only the one brand of flour at a time, as explained further on. At each of the cross belts on which it is desired to divert the bags into the vessel's hold, there is arranged a vertical board, at an angle of 45 degrees to the motion of the longitudinal belt. This board, coming down just over top of the belt, diverts the bags of flour on to the cross belt, and thence into the hold. These diverting boards are set in vertical guides, each with a rope passing up over a pulley above. At each of the cross belts being operated, there is stationed a man who either leaves the board down and diverts the bag on to the cross belt or raises the board and allows the bag to pass to the cross belt on which it should be diverted. The belts move at a good rate of speed, and consequently, quick action on the part of the board operator is required, but by its means, as many as five different brands can be unloaded on the belt, and be diverted to the proper hold. It is the usual thing to unload as many as five 30 ton cars in an hour, or at the rate of 150 tons an hour. The gang of men employed is remarkably small.

Records of tests made on chrome vanadium steel wheels on the Vandalia Rd., indicate that these wheels offer the means of increasing wheel mileage where conditions have resulted in a great decrease in mileage secured from carbon steel wheels.



Interior View of Observation Cars for Austrian State Railways.

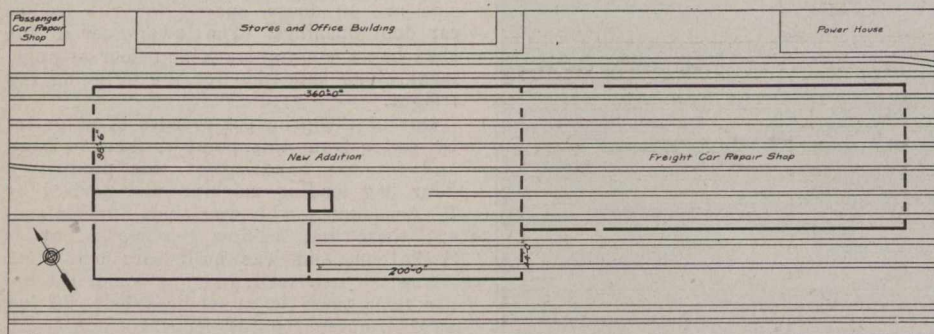
sively to 160, 200, 240, 280, 320 and 360, the latter corresponding to a speed of 84.42 miles per hour. The following are some of the observed results at the latter high speed: cut off, 40.6%; mean pressure, 205.5 lbs. per sq. in.; draft in smokebox, 14.2 ins. of water, and in ashpan, 0.16 in.; dry fuel, 6,380 lbs. per hour and 115.5 lbs. per sq. ft. of grate; water to boiler per hour, 38,846 lbs.; equivalent evaporation, 52,084 lbs.; evaporation per hour per sq. ft. of heating surface, 16.9 lbs., and per lb. of dry fuel, 8.2 lbs.; boiler horsepower, 1509.7; superheat, 233.7 degs.; dry steam to cylinders, 37,594 lbs. per hour; indicated horsepower, 2350.1; dry fuel per i.h.p., 2.71 lbs.; dry steam per i.h.p., 16 lbs.; drawbar pull,

h.p., 2.7 lbs.; dry steam per d.h.p., 18.9.

While it is conceded that the d.h.p. is the best basis in denoting the performance of a locomotive, it must be borne in mind that the peculiar conditions of the testing plant, with the locomotive standing on large rollers connected to absorption brakes, and the drawbar pull measured directly on a traction dynamometer, the locomotive is not subjected to a wind resistance, and has no tender to haul. In consequence, both these resistances must be deducted when the locomotive is taken out for a road test with a dynamometer car. Due consideration must be given to the fact that these are running conditions, and do not take into consideration the standby losses while

Addition to Intercolonial Railway Freight Car Shop at Moncton, N. B.

The existing freight car shop is one of the buildings comprising the mechanical layout commenced in 1906, and is 360 ft. by 138 ft. wide. An addition is under contract, from the northern end of the present shop, extending northerly 360 ft. to the north end of the planing mill, at which point it will be 98½ ft. wide. From the southwestern corner of the planing mill it will extend southerly in line with the west side of the planing mill to the north end of the present shop, 200 ft., then easterly 44 ft. to the northwestern corner of present shop. This addition will cover an area of 51,460 sq. ft. With the present



New Addition to Intercolonial Ry. Freight Car Shop.

shop, the whole area covered will be 101,140 sq. ft., or 2 1-3 acres.

The construction will be similar to the present shop, with foundations and walls of concrete, and well lighted reinforced cinder concrete slab roof covered with a layer of cork insulation 1 in. thick, on which will be 3 plies of asbestos roofing and insulating felt mopped on with Trinidad Lake asphalt. The roof will be well lighted by skylights. The internal frame will be of structural steel, the roof trusses being spaced 20 ft. centres, with a clearance under lower chord of 20 ft. The heating will be by the hot blast system, carried under ground by ducts and registers located at floor line along the walls. The building will be equipped with the most up to date lavatories, and lockers for the convenience of the workmen. It is expected to be ready for occupation by Aug. 1.

Safety First on the Canadian Pacific Railway.

The C.P.R. has taken up the "safety first" movement on both its eastern and western lines, the organization being in most particulars similar to that of the Michigan Central Rd. described in Canadian Railway and Marine World for Nov., 1912, while the aims of both organizations are identical. As the movement on the C.P.R. is much newer than that on several of the U. S. lines, including the M.C.R., the scheme has not as yet been fully developed, but, with characteristic energy, it is being pushed forward, so that it is expected it will be in good working condition in a very short time.

On the Eastern Lines, the system has been in operation for about two years. There are divisional committees, presided over by the general superintendents, the whole to come under the supervision of the general superintendent of transportation. In each division, the several districts have their separate organizations, presided over by the superintendent, or assistant, and

composed of the several higher district officials, with representatives from the engineers, trainmen, yardmen, bridge and building men, roadmasters, gang foremen, agents, train dispatchers, shopmen and carmen. Divisional meetings are called every three months for the discussion of the subject, with district meetings every month, at which the matter is threshed out from the lower man's position. As typical of the matters discussed at a recent meeting of a district in Toronto, the reports received and considered included those from the signal department, car department, yards, bridge and building department, trainmen, shops, and general or miscellaneous.

On the Western Lines, in addition to the general organization, there are division

safety committees, as on the Eastern Lines, composed of the division superintendent, master mechanic, division engineer, and other division officials. In each division there will be a separate organization for each of the several districts, presided over by the superintendent or assistant, with the committee composed of minor officials and representatives from all the different departments, the same as on the Eastern Lines. The movement has been more recently introduced in the West.

The following are a few of the resolutions headed "Safety First," which the men on the C.P.R. have been asked to make this year:—"I will not stand in front of a moving car or locomotive to board the same. I will always respect the blue flag, as the lives of my fellow employes depend on it. I will not stand between the cab and the apron when coaling a locomotive. I will not push a drawbar with my foot or hands when cars are moving or are close together. I will turn down boards with nails sticking out of the same. I will not adjust a coupler, turn an angle cock, or uncouple hose when a car is in motion. I will not hold on to the side of a car when passing platforms, buildings, or obstructions close to the tracks. I will not use 2 in. nails in building a scaffold where 4 in. nails would be safer. I will not push cars into a freight shed or on team tracks without making sure that all men and teams are clear. I will do all I can to stop the loss of life and lessen the injuries to my fellow employes. I will not kick cars into a siding where boarding cars, or cars being loaded or unloaded are standing. I will remember it is better to let a train be late than to cause an accident. I will not take chances. I believe that safety first is simply habit, and I will cultivate the habit. The prevention of accident is a duty I owe to myself, my family, and my fellow employes. I believe that some accidents are not inevitable, and I know that the great majority can be prevented by care. I will immediately take out sufficient accident and life insurance to protect myself and those dependent upon me."

Stresses in Railway Track.

Stresses in railway track are prominent among the unknown factors in engineering regarding which there is need for experimental investigation and the collection of data based on service observations. Emphasis has again been laid on this point in the report of the U.S. Interstate Commerce Commission on the derailment of the Twentieth Century Limited on the New York Central Rd. on March 31, 1912. The finding is that the derailment was due to the spreading of the track, probably because of the inability of the outer rail of the curve, in its shimmed position, resulting from winter conditions, to withstand the thrust of the locomotive running at high speed. The track seems to have been in a condition fulfilling the requirements of the best practice, though the unusually severe winter had necessitated extensive application of the customary measures for maintaining surface at such times. Here is where the argument is raised, in that the line of demarcation between safe and unsafe practice in track construction has not been determined. It is not known what margin of strength is present in track above the immediate demand of the load. Though it is extremely desirable to have this information, there are many difficulties to be met in obtaining it, due to the large number of variables involved. Type of construction, drainage, season and similar factors are involved in the track itself, while speed, condition of equipment, curvature and surface are among the variables affecting the application of the load. But some very good progress has already been made toward definite information. The American Railway Engineering Association is giving attention to the subject, and has made preliminary studies leading toward more accurate knowledge of track strength and stresses. Among these might be mentioned those of last year on roadbed pressures, the tests of spike pulling values and the impact measurements on bridges. The investigations of the Pennsylvania Rd. on the proper depth of ballast, reported to the Association in 1911, also throw much light on the distribution of loads on ties and roadbed. The Canadian Society of Civil Engineers, recognizing the probable existence due to increased loads of stresses not satisfactorily distributed by the old, short ties, has discussed the question of a longer tie. These are indications that an effort is being made to obtain practical data bearing on track. If research is further encouraged, a much more definite basis of design than the present should be obtained, though it may not be practicable to bring it to the exactness of the data underlying the design of steel bridges.

At the Long Island Rd.'s Brooklyn station where a heavy suburban traffic is handled, a ticket issuing machine has been installed. It can be operated by four men, each having a separate recording apparatus. The tickets are issued in amounts from 5 to 35 cts., and are printed directly in the machine. A hundred a minute can be turned out.

The 800,000 lb. Riehle testing machine at Lehigh University, South Bethlehem, Pa., is being utilized for the testing of rails by the American Railway Engineering Association's rail committee. These tests are expected to aid materially in the effort to reduce the number of defective rails. The present phase of the research is that of investigating the rate of reduction of the cross section of rails in rolling from the ingot to the finished rail. One hundred pieces of 100 lb. A.R.A. section, each 2 ft. long, are being used.

Rapid Method for Volume Calculation in Railway Cuts and Fills.

By Chas. W. Rauch, Hanceville Alabama.

The accompanying tables were designed for the rapid computation of yardage in railway work, after the areas of the sections have been figured. The tables are based on a distance between sections of 50 ft., but can be used satisfactorily for other distances by multiplying by the proper factor, i.e. twice the distance between stations in feet, divided by 100. In using these tables, no difficulty need be experienced as to the position of the decimal point if it be kept in mind that the final result in cubic yards is always equal to 8% less than the sum of the two end areas, these being expressed in sq. ft. In the first column of the tables will be seen values of double end area, and opposite the corresponding values of volume between stations in cubic yards, zeros and decimal points being omitted. For instance, 1404 sq. ft. is equivalent to 1300 cu. yds., 28 sq. ft. is equivalent to 25.9 cu. yds., etc.

In using the tables proceed as follows: First add the two end areas of the sections, expressing the result to the nearest tenths; find the nearest value in table 1 and subtract, the figures opposite being the first one or two digits of the result; the remainder are found opposite the values in

area of 244.80. The double end area is then equal to 878.0, giving a yardage of 813.0 on a basis of 50 ft. Since it is 27 ft. we multiply by 0.54 giving us 439.0 cu. yds.

This method is especially valuable to railway resident engineers, as it will save a great deal of time and work in preparing monthly estimates. A little practice with the tables should enable one to perform the operation almost as fast as the result can be set down on paper.—Engineering and Contracting.

Protection of Extra Gangs in Maintenance Work.

The safety of extra gangs in railway maintenance work is a matter deserving special attention in connection with the present widespread movement for the protection of employes from injury. The extra gang is in many cases largely made up of foreigners who are unfamiliar with the English language and with American railway practices and conditions. This renders them particularly subject to danger of injury, and places a greater responsibility for their safety upon the officials in charge of their work and upon their more intelligent associates on the line. The obligation may be in part met by providing for the instruction of such foreigners and by impressing upon the workmen who are better

tons on the lines of other companies, as against 55,152,430 tons originating on the home lines and 24,731,852 tons received from connecting lines, in the previous year. In the following table are the details for the various lines. Figures showing the total freight tonnage on each line were given in Canadian Railway and Marine World for January, pg. 67.

Table with 3 columns: Line Name, Tonnage originating on road, and Tonnage received from connecting roads and other carriers. Lists various railway lines like Alberta Ry. and Irrigation Co., Algoma Central and Hudson Bay, etc., with their respective tonnage figures.

TABLE 1.

Table with 12 columns of numerical values, likely representing the volume calculation results for different area values.

TABLE 2.

Table with 12 columns of numerical values, likely representing the volume calculation results for different area values.

table 2 expressed by the result of the subtraction. As an example assume station 7240 to have an end area of 732.31, and station 7240 plus 50 an area of 243.16. The double end area is then 975.5. In table 1 we find 972 equals 90. Subtracting mentally 972 from 975.5 we obtain 35, and consulting 35 in table 2 we find 324. The result is then 903.2 cu. yds.

For double end areas of values less than 109 sq. ft., table 2 may be used alone. Neglecting temporarily the figure in the tenths place find the corresponding value in the second column; then arithmetically add to this value the digit expressing the tenths of the area value, except it be 7, 8 or 9, when add one less in each case. For instance, 62.3 sq. ft. is equivalent to 57.4 plus 0.3 or 57.7; however 62.8 equals 57.4 plus 0.7 or 58.1 cu. yds.

For larger areas, a combination of these two methods must be used. For example, let us say we have a double end area of 6824.3 sq. ft. In table 1 we find 6804 equals 63; subtract 6804 from 6824, and consult table 2 for 20; this gives us 185. We now add the 3 to 185, giving us 188. The final result is then 6318.8 cu. yds.

As an example of odd stations, let us assume that station 5932 has an end area of 633.24 and station 5932 plus 27 an end

equipped the necessity of great care in the performance of duties affecting the safety of these men. Emphasis was recently laid on some of these points on the Chicago Great Western Rd. in an appeal to American employes to attend closely to such matters as flagging, where the safety of the extra gang men may be involved, and to enforce the closing of camp car doors on the side next to the running track. It was pointed out that increased safety results directly from these efforts and also that the new men learn through the examples thus set. Instructions printed in several languages are often helpful in promoting work of this nature. The United States Steel Corporation has met with encouraging results in its efforts both along educational and direct lines toward the protection of foreign workers, and other large companies are having similar experiences.

Railway Freight Statistics.

The aggregate tonnage of freight carried by Canadian railways during the year ended June 30, 1912, was 89,444,331 tons, against 79,884,282 tons in the previous year. Of the total tonnage 63,186,732 tons originated on the home lines, and 26,257,599

Total 63,186,732 26,257,599

Instructions for Fighting Fires on or near Railway Right of Way.

The Secretary of the Board of Railway Commissioners has notified railway companies that the Board has under consideration the amendment of regulation 15 of order 16570, to read as follows:—"Every such railway company shall give particular instruction to its employes in relation to the foregoing regulations, and shall cause such instructions to be posted and maintained at all stations, terminals and section houses along its lines of railway. Said instructions to employes shall also be included in the employes' time tables in use between April 1 and Nov. 1 of each year. As to lines or portions of lines where, in its judgment, the fire danger is not material, the Board may, upon application, waive the requirements as to the posting of public notices and the inclusion of special instructions in employes' time tables."

The companies have been asked to submit any representations they wish to make in connection with the proposed amendment.

The secretary has also sent the companies a tentative draft of instructions which may be used, if desired, as a basis for the preparation of special instructions to employes, as required in regulation 15 above mentioned. The issuance of these particular instructions is not prescribed. It is, however, considered essential that the instructions to be issued shall embody the substance of regulations 6, 7, 10, 14 and 17 of order 16570. The draft is as follows:—

WORKING INSTRUCTIONS IN CONNECTION WITH ORDER 16570 OF THE BOARD OF RAILWAY COMMISSIONERS FOR CANADA. DATED MAY 22, 1912.

TO ENGINEERS, CONDUCTORS, Brakemen and Firemen:—It will be the duty of train and engine crews on freight and passenger trains, when discovering any fire adjoining the right of way of the railway to stop and use every effort to extinguish it. In the event of this being impracticable, either by reason of the extent of the fire or its distance from the right of way, the train will proceed to the first telegraph station, where the conductor will wire a report to the superintendent giving the exact location of the fire, and the action taken by engine and train crews concerning same. It will also be the duty of engineers to stop and notify the first section gang passed of any fire not extinguished as above.

No employe shall do or cause damage or injury to any of the fire protective appliances on any engine; open the back dampers of any engine while running ahead, or the front dampers while running tender first; or permit fire, live coals or ashes to be deposited on tracks or right of way outside of yard limits, unless same are extinguished immediately thereafter.

TO AGENTS:—Engineers and conductors of all trains have received instructions to report fire along the right of way and adjacent thereto, and it will be your duty to immediately wire the superintendent, giving the location of the fire, extent of same, and any other information which might be of value, particularly as to the number of men needed to control the fire and extinguish it. The local fire inspector of the Railway Commission should be first notified immediately, giving the exact location of the fire, and its extent.

TO ROADMASTERS, ASSISTANT ROADMASTERS, Master Carpenters and other Officials:—In cases where fires are reported, it will be the duty of any division official

to proceed to the scene of the fire as quickly as possible and take charge of the work of fire fighting until he can be relieved by the division roadmaster. The man first on the ground should organize his men to do the best work possible, and, when this is done he should immediately proceed to investigate the origin of the fire, location where it started; get statements from all witnesses and make every effort to learn the origin and responsibility. The law as now interpreted practically makes this company responsible for fires starting within 300 ft. of the track, unless it can be shown that the company is not responsible. It is necessary, therefore, to positively determine the origin in order to relieve the company of the responsibility. The first officer on the ground should endeavor to hold a joint investigation with the local fire inspector of the Railway Commission, or other local forestry officer, and agree upon the origin of the fire. This will avoid disputes later on.

TO CHIEF DISPATCHERS:—In all cases where fires are reported, it will be the duty of the dispatcher to get full information as to the extent of such fire, its location and the number of men necessary to fight it. It will also be the duty of the dispatcher to furnish whatever train service will be required to move extra gangs, section gangs, or bridge crews, to the fire immediately, giving this movement preference if the emergency requires it.

TO SECTION, EXTRA GANG AND Bridge Foremen:—In all cases where fire occurs, it will be the duty of all section crews, extra gangs and bridge crews to immediately proceed to such fire and extinguish same, remaining as long as may be necessary to do this, and it must be understood that this is the most important work that can be done, and the carrying on of your work, which may be important, must be set aside until the fire is under control, and is completely extinguished. The section foreman on whose district the fire occurs, will, in the absence of an official of the company, make a thorough investigation regarding the origin of the fire, submitting full report to the roadmaster.

Between April 1 and Nov. 1 no ties, cuttings, debris or litter upon or near the right of way shall be burned except under such supervision as will prevent such fire from spreading beyond the strip being cleared. Officers of the Railway Commission may require that no such burning be done along specified portions of the line, except with the written permission or under the direction of such officer.

PENALTY (Reg. 17, order 16570):—"If any employe or other person included in the said regulations, fails or neglects to obey the same, or any of them, he shall, in addition to any other liability which he may have incurred, be subject to a penalty of \$25 for every such offence."

Recent tests on freight car trucks have developed the following conclusions:—1st, that the curve friction is almost directly proportional to the degree of curvature; 2nd, that the frictional resistance on new rails is from 10 to 25% less than on old rails; 3rd, that old wheels with high flanges give practically 100% more friction than new wheels; 4th, that a rigidly square track has less friction than a loose one; and 5th, that a truck with atmospheric temperature from 40 to 50 degs. Fahr., when lubricated with winter oil, has about 43% less friction than others lubricated with summer oil.

The C.P.R. hotel at Banff, Alta., will be open continuously, in future, instead of only in summer as heretofore.

Efficiency in Railway Engineering Work.

The addresses of both the retiring President of the American Railway Engineering Association, Mr. Churchill, and the incoming President, Mr. Wendt, at the recent convention emphasized that more devolves upon the railway engineer than merely the preparation of plans, specifications and rules, which if properly followed will give the desired results. The further duty is to see that they are followed. Mr. Churchill appealed for better workmanship, and noted the tendency to supervise work more closely. Mr. Wendt, pointed to the most effective way of securing good workmanship—by adopting sound and efficient principles of organization—and he finds ample justification for the best organization possible since 55% of railway operating expenses are due to labor. He has just established the unit system of track and roadway maintenance on the Pittsburgh and Lake Erie Rd. Other roads are adopting similar systems. Many managers, however, are sceptical of recent ideas in organization, even though the methods are successfully applied in many industries. The Railway Engineering Association, as a whole, is evidently much interested in the subject, if judged not only by the discussions on the floor but also by the number of committees that have been directed to study labor and organization problems. With the close attention that will be given these matters by the association this year the railways should soon be in a position to judge to what extent and in what ways they can profitably employ in maintenance and construction work the methods of management advocated in recent years.

Food Supplies for Construction Camps.

The following list, compiled by a Canadian Pacific Ry. engineer from several years' store sheets, and representing the daily ration per man in construction camps, will be of interest to engineers and contractors who have to maintain construction camps in the wilds. The bacon and flour may be a little high, but much depends upon work being done, working temperature and cook's ability. If tinned meat be taken, the bacon can be reduced. Beside the supplies in the list, a little lard was used in the cooking, for which no allowance is made. The total of the above ration is 4.32 lb. Other supplies on a per diem basis were:—Soap, 0.05 lb.; candles, 0.01 lb.

DAILY RATIONS.

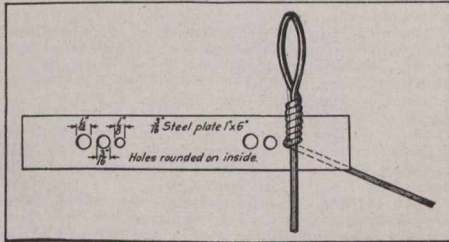
Flour	1.25	lbs.
Bacon and ham	1.40	"
Beans	0.47	"
Dried fruit	0.20	"
Sugar	0.40	"
Tea	0.04	"
Coffee	0.08	"
Baking Powder	0.06	"
Salt	0.10	"
Mustard and pepper	0.01	"
Currants	0.03	"
Raisins	0.01	"
Oatmeal	0.15	"
Rice	0.05	"
Tomatoes or vegetables	0.04	"
Syrup	0.03	"

The use of track troughs for watering locomotive tenders has been practically impossible in Canada, the only line operating them being the Michigan Central Rd. on its Canada Southern Division. Ice on the departing end of the track trough is also experienced even in the milder climates further south, but this trouble has been eliminated on one road by simply laying steam pipes between and on each side of the departing end of the trough, melting the ice, and keeping the roadbed clear.

A Wire Splicer.

By H. C. Swartz, Master of Bridges and Buildings, Grand Trunk Railway, St. Thomas, Ont.

The wire splicer shown on accompanying drawing is used to splice wires without taking out the temper as is apt to be the case when the wire is wound without pinchers. This splicer is of special use in connection with semaphores where the wire has to be

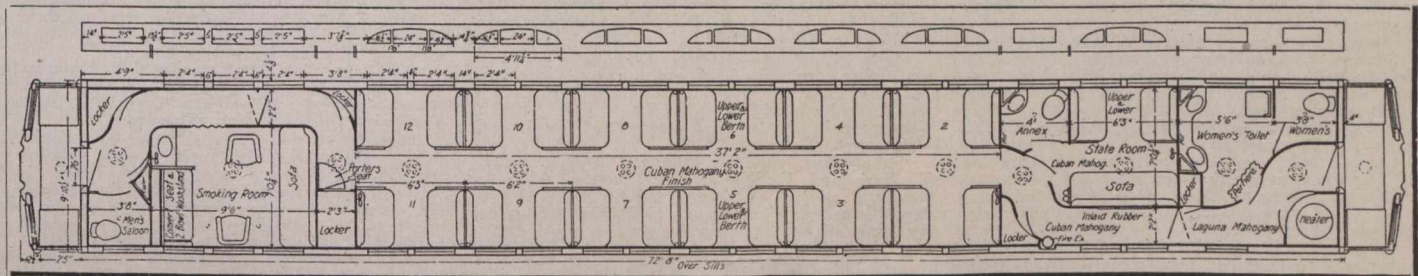


A Wire Splicer.

covered and passes through pipes filled with oil, it being necessary to connect up the hardened wire in the pipes with the regular semaphore wire at either end. It is also useful in making "tell tales" for overhead bridges and for making coil springs.—*Railway Age Gazette.*

New Sleeping Cars for Canadian Pacific Railway.

The C.P.R. has recently had delivered 30 sleeping cars from the United States, a portion of the order it placed there last



Plan of New Sleeping Cars for Canadian Pacific Railway.

year. The length over end sills is 72 ft. 8 ins., with an over all height from top of rail of 14 ft. 5 9-16 ins. The construction is C.P.R. standard throughout, of the usual all wood construction, with the exception of the end framing, which is composed of six 3 by 5/8 in. wrought iron end posts, the ends of which are turned at right angles and secured to the end sills and end plate with 3 by 3 by 5/8 in. corner angles. The underframing is all wood, save the needle beams, which are rolled steel 5 by 8 in. bulb tee irons, 20.2 lbs. per ft.

The interior finish of the body of the car is of the C.P.R. standard mahogany finish, using the best grade of Cuban mahogany, the finish being in the marquetry design of the Chippendale style. The smoking room differs from the body, in so far as the finish is in English oak. Through the whole car, the ceiling is of 1/4 in. agasote, finished in colors. The section seats and sofas in the main part of the car and state room are upholstered in green frieze plush, while the seats and lounges in the ladies' retiring room and the men's smoking room, are upholstered in Spanish leather.

The Gold duplex system of hot water circulation, with Frumweller heater, controlled by a C.P.R. standard heat controller, is the heating arrangement used. The lighting is electric, using a 24 volt axle

generator, with 24 cells of storage batteries arranged in two parallel sets of 12 each. Clusters in opal shades in the clerestory of the car provide the main lighting, with individual seat lighting from small opal corner lights at the window side of each seat. The upper berths are also illuminated, and are provided with the latest type of cut out switches, whereby the current is automatically shut off by the closing of the upper berth.

The air brake arrangement is of the Westinghouse L.N. 1612 type, with hand-brake arrangement co-operating therewith, and operating from both ends of the car.

The 6 wheel trucks are of special design, built up of steel. They have a wheel base of 11 ft., and are 6 ft. 10 1/4 ins. wide. They are equipped with 3 3/4 in. cast steel wheels, mounted with Krupp steel tires, and are designed for a capacity of 80,000 lbs. The journals are 5 by 9 ins. The trucks are provided with Simplex brake beams, American Brake Shoe and Foundry Co.'s cast steel back brake shoes, McCord journal boxes, and Susemihl side bearings.

In general points of comfort, they compare with the usual standard type of C.P.R. car, and differ only in minor improvements, which are constantly being introduced in the company's rolling stock.

A Bolt Puller.

By H. C. Swartz, Master of Bridges and Buildings, Grand Trunk Railway, St. Thomas, Ont.

The shackle bar is of use for withdrawing bolts without heads, as shown in the illustration. By pressing down on the bar,

the toe of the bar and the shackle grip two sides of the bolt and the harder the bar is pressed down the tighter is the grip. By raising the bar slightly the shackle is loosened and a new grip can be secured. Where the bolt is too far down in the timber to secure a grip, a little adzing will usually enable the device to secure a hold on the bolt.—*Railway Age Gazette.*

Improvements in Grand Trunk Railway Ottawa Shops.

A number of minor improvements have been introduced in the G.T.R. shops at Ottawa, Ont., which were taken over on the absorption of the Canada Atlantic Ry. In the locomotive house, an air jacking system is in use in the pits. At the front of the pit are located two 24 in. cylinders, side by side, the upper end of the plungers of which are flush with the top of the rail. These are supplied with 110 lb. air. They are found very useful in jacking up the front ends of locomotives for the removal of driving springs, for which operation they are used mostly, though the field of usefulness is more extensive.

The air storage capacity has been increased by the substitution of two tanks, 5 ft. diam. by 15 ft. high, for three smaller

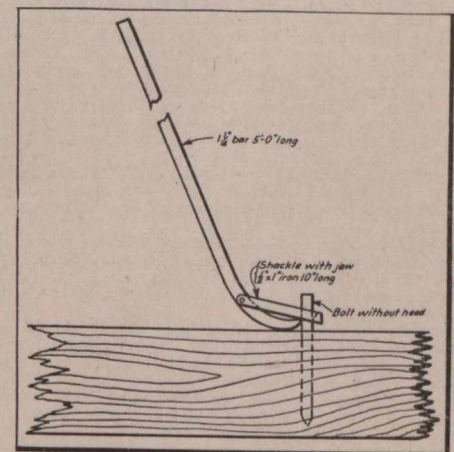
tanks, the combined capacity of these latter being only equal to one of the new tanks.

The steam, water and air connections in the locomotive house all come down the same column between the pits. Trouble is of more or less frequent occurrence in keeping the valves on these several connections tight, so that it is no uncommon sight in a locomotive house to see the floor around the base of the service column, flooded with drip water. In this locomotive house, no trouble is experienced with the present arrangement, which consists of a concrete shell box, 4 ft. square, rising to a height of 18 ins. above the floor, which surrounds the service column. The drips fall into this and are drained into the adjoining pit, from which they escape to the sewer.

The locomotive house has three driving wheel drop pits, the central one of the three having an additional drop for removing cylinders. This central pit is ordinarily kept free at all times, so that the driving wheels from the locomotives on the outside drop pits, may be removed to the central pit, and run out to the shop.

In the machine shop, group drive has been substituted for central drive. Formerly, there was a central a. c. motor, driving two lines of shafting, one on each side of the shop. As this was overloaded, small auxiliary steam engines were added at three points in the shop. All this arrangement has been taken out, and each side of the shop made a separate unit, with two d. c. motors mounted on high concrete piers for each. Incidental to this change, the whole shop has been rewired to meet the government requirements, all the cables running through conduits.

The rusting of track bolts has been considerably reduced on one U.S. road by having the track walkers go over the line, about once a year, and daub the nuts with



Shackle Bar for Withdrawing Bolts from Timber.

a low grade of lubricating oil, this being done on one of their regular track inspection trips. The necessity of splitting the nuts with a chisel, when removing a rail, has thus been greatly minimized.

Tps., mileage 31.54 to 38.54; and rescinding order 17803, Oct. 18, 1912.

19036. Apr. 12.—Approving Toronto Suburban Ry. plans of proposed undercrossing of C.P.R. at Mimico River, Etobicoke Tp., Ont.

19037. Apr. 11.—Amending order 18570, Jan. 24, re highway crossing on C.P.R. Swift Current Northwestern Branch.

19038. Apr. 12.—Amending order 18908, Mar. 20, re C.P.R. spur at Neebing Ave., Fort William, Ont.

19039. Apr. 14.—Approving revised location of portion of Campbellford, Lake Ontario and Western Ry. (C.P.R.) from Division St., Cobourg, Ont., mileage 119.66 from Glen Tay, to Lot 25, Con. A, Hamilton Tp., mileage 121.98.

19040. Apr. 14.—Authorizing C.P.R. to build bridge 47.8 over Ruby Creek, Cascade Subdivision, B.C.

19041. Apr. 12.—Authorizing C.P.R. to build highway across its line in part of Sec. 21-24-25, w. 2 m., Sask.

19042. Apr. 14.—Authorizing C.P.R. to build bridge 79.1, Cascade Subdivision, B.C.

19043. Apr. 12.—Authorizing Canadian Northern Ry. to build across 4 highways on its Craven Northeastly Branch, Sask.
Authorizing Canadian Northern Ry. to build across 4 highways on its Craven Northeastly Branch, Sask.

19044. Apr. 14.—Authorizing G.T.R. to build two sidings for Asbestos Manufacturing Co., Lachine, Que.

19045 to 19047. Apr. 14.—Authorizing C.P.R. to build spurs for Matthew Laing, Limited, Fort William, Ont.; Imperial Oil Co., Stettler, Alta., and from existing spur in Lot Cadastral 1642, southwesterly of Bethune Ave., Westmount, Que.

19048. Apr. 15.—Authorizing C.P.R. to build two sidings for H. B. Harrison, Owen Sound, Ont., and rescinding order 19007, Mar. 15.

19049. Apr. 14.—Authorizing Canadian Northern Ry. to change its location from near intersection of Dee St. and Logan Ave., Winnipeg, to Sec. 21-11-2, w.p.m.; and to build across C.P.R.

19050. Apr. 15.—Extending for 30 days from date time within which Canadian Northern Ry. shall install electric bell at crossing of first highway, east of Joliette, Que.

19051. Apr. 14.—Ordering C.P.R. to install gates at crossing of Centre St., Chatham, Ont.

19052. Apr. 7.—Approving location of G.T. Pacific Ry. Prince Rupert Western line, mileage 0 to 2.25, at Seal Cove, r. 5, Coast District, B.C.

19053. Apr. 10.—Approving location of C.P.R. Bassano Easterly Branch from Sec. 17-21-18, mileage 0 to 115.49, and authorizing its building across 115 highways.

19054. Apr. 7.—Relieving G.T. Pacific Ry. from erecting fences from Junkins, 870 miles west of Winnipeg, to mileage 1073.5, and from Prince Rupert easterly to mileage 164, until land on either side becomes settled or improved.

19055. Apr. 15.—Approving G.T.R. plan of proposed connection and interchange track with C.P.R. at Orillia, Ont., each company to bear half cost of construction and maintenance, and rescinding order 18966, Apr. 2.

19056. Apr. 15.—Amending order 18884, Mar. 18, re Campbellford, Lake Ontario and Western Ry. (C.P.R.) road crossing, etc., mileage 52.73 from Glen Tay, Ont.

19057. Apr. 15.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance between Lots 20 and 21, Con. 1, Darlington Tp., mileage 151.52 from Glen Tay, Ont.

19058. Apr. 16.—Authorizing C.P.R. to build spur for Northwestern Brass Co., Calgary, Alta.

19059, 19060. Apr. 15, 14.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build road diversion in Lot 16, Con. 1, Hope Tp., mileage 129.65 from Glen Tay; to build over same by a bridge and to close crossing of highway between Lots 16 and 17, and rescinding orders 17575 and 17953, Sept. 23 and Nov. 8, 1912; and to build across highway between Lots 8 and 9, Con. 1, Murray Tp., under bridge authorized by order 19033, Apr. 11, and rescinding order 18711, Feb. 13.

19061. Apr. 14.—Recommending for approval of Governor in Council, G.T.R. Signal Rules governing Transportation Department.

19062. Apr. 15.—Authorizing G.T.R. to build siding on and along Maitland Road, thence northwesterly for 300 or 400 ft.

19063. Apr. 16.—Amending order 19004, Apr. 7, re crossing of G.T.R. by Montreal and Southern Counties Ry., at mileage 7.45 from Montreal.

19064. Apr. 15.—Authorizing C.N. Ontario Ry. to build bridge over Mink Creek, Pentland Tp., mileage 185.52 from Ottawa.

19065. Apr. 15.—Authorizing Canadian Northern Ry. to build extension to spur for Shevlin Clarke Co., Port Frances, Ont.

19066. Apr. 14.—Amending order 18943, Apr. 1, re location of certain G.T. Pacific Ry. stations in British Columbia.

19067. Apr. 15.—Ordering Michigan Central Rd. to move farm crossing in Lot 13, Con. 11, South Norwich Tp., Ont.

19068. Apr. 16.—Ordering that interlocking plant at crossing of Fredericton St. by Port

Arthur and Fort William Electric Ry. be operated by day and night watchmen; as soon as gates are in operation, provisions of order 7601 are rescinded in so far as they provide for such operation by conductors of cars; and apportioning cost.

19069. Apr. 1.—Ordering that telegraph companies transmit and receive for delivery, both plain and code language Japanese telegrams, and providing certain conditions. The details of this order are given fully on another page, under Telegraph, Telephone and Cable Matters.

19070. Apr. 16.—Authorizing C.N. Ontario Ry. to build branch line across Toronto-Sudbury Branch and across Don River, at mileage 4.8 from Yonge St., Toronto.

19071. Apr. 16.—Authorizing East Kootenay Logging Ry. to build over British Columbia Southern Ry. by a bridge 1½ miles west of Jaffray station, B.C.

19072. Apr. 16.—Authorizing Winnipeg Electric Ry. to build extension along Arlington St. from William to Logan Ave., and across C.P.R. spur along Ross St.

19073. Apr. 16.—Authorizing G.T.R. to build siding and three spurs therefor for Canadian Explosives, Ltd., Chambly West Parish, Que., to be completed within three months from date.

19074. Apr. 17.—Authorizing Canadian Northern Ry. to build diversion of its Oak Point Branch across 9 highways in Rosser, Man.

19075. Apr. 16.—Authorizing C.P.R. to build spur for Northern Electric and Mfg. Co. in Calgary, Alta., to be completed within three months from date.

19076. Mar. 26.—Ordering Campbellford, Lake Ontario and Western Ry. (C.P.R.) to install improved automatic electric bell at crossing between Lots 2 and 3, Con. 4, Scarborough Tp., Ont.

19077. Apr. 17.—Relieving C.P.R. from providing protection at crossing 350 yds. south of Crossfield station, Alta.

19078. Apr. 7.—Authorizing C.P.R. to build its Bergen Northeastly Branch across 7 highways, mileage 0.71 to 5.88, Manitoba.

19079. Apr. 17.—Authorizing C.P.R. to divert portion of main line from Beavermouth, mileage 63.0 from Field, B.C., to mileage 89.0 at Ross Peak.

19080, 19081. Apr. 18.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across Division St., Cobourg, Ont., by a bridge, at mileage 119.76 from Glen Tay; to widen excavation on each side of subway, sod slopes, put in concrete sidewalks, and leave roadway in good condition and well gravelled; and to build its ballast pit spur across 3 highways in Scarborough Tp.

19082. Apr. 18.—Authorizing C.P.R. to build spur for Seaman, Kent Co., Outremont, Que.

19083, 19084. Apr. 15, 17.—Authorizing C.N. Ontario Ry. to build bridge across Sturgeon River (middle crossing), Field Tp., mileage 257.6 from Ottawa; and to build its revised branch connecting its Toronto-Sudbury line with its Toronto-Ottawa line across C.P.R., near Donlands station, and rescinding order 18548, Jan. 17.

19085. Apr. 18.—Authorizing C.P.R. to build diversion of road allowance in Sec. 5-10-16, near Taber, Alta.

19086. Apr. 17.—Establishing express collection and delivery limits in St. John, N.B.; and ordering charge of extra toll for delivery of express freight in West St. John. This order is quoted fully on another page under Among the Express Companies.

19087. Apr. 16.—Approving Lake Erie and Northern Ry. location from station 0 at Lorne Bridge, Brantford, to station 1113+90, at Main St., Galt, Ont.

19088. Apr. 21.—Limiting publication of statutory advertisement of notice of application for approval of amalgamation agreement between Canadian Northern Ry. and C.N. Branch Lines Co.

19089. Apr. 21.—Approving location of C.N. Ontario Ry. station grounds at Dana, mileage 275.8 from Ottawa.

19090. Apr. 18.—Authorizing C.P.R. to take for its Windsor St. station and terminals and for rearrangement of tracks leading thereto certain lands in St. Andrew Ward, Montreal, and ordering it to extend a certain foot passage connecting it with remainder of Lot 1637 by stairway.

19091. Apr. 10.—Authorizing C.P.R. to cross Portland St., St. John, N.B., with spur for J. W. McCready & Son.

19092. Apr. 21.—Approving proposed location of C.P.R. temporary station on Hardisty Ave., Edmonton, Alta.

19093. Apr. 10.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across 5 highways in Cobourg, Ont.

19094. Apr. 21.—Approving location of G.T. Pacific Ry. station at Geikie, Alta.

19095. Apr. 19.—Authorizing Bay of Quinte Ry. to build spur for Canadian Sulphur-Ore Co., Elzevir and Madoc Tps., Ont.

19096. Apr. 19.—Authorizing Niagara, St. Catharines and Toronto Ry. to build siding for Port Dalhousie Canning Co., and approving revised location of its line between points A and B in Louth Tp. and Port Dalhousie, Ont.

Birthdays of Transportation Men in May.

Many happy returns of the day to:—

W. R. Baker, Secretary, and Assistant to President, C.P.R., Montreal, born at York, Eng., May 25, 1852.

G. S. Cantlie, General Superintendent Car Service, C.P.R., Montreal, born there May 2, 1867.

M. Donaldson, M. Can. Soc. C.E., Vice President and General Manager, Grand Trunk Pacific Ry., Winnipeg, born near Edinburgh, Scotland, May 1, 1851.

A. E. Duff, ex-District Passenger Agent, G.T.R., Toronto, now of Winnipeg, born at Sherbrooke, Que., May 1, 1872.

G. C. Dunn, District Engineer, G.T.P.R., Winnipeg, born at Quebec, May 13, 1862.

G. I. Evans, Superintendent, Angus Locomotive Shops, C.P.R., Montreal, born there, May, 1880.

M. A. Fullington, A.M. Can. Soc. C.E., Assistant Engineer, Eastern Division, C.P.R., Montreal, born at Johnson, Vt., May 12, 1880.

D. J. Hackett, Superintendent, Canada Division, Michigan Central Rd., St. Thomas, Ont., born in Cass County, Mich., May 1, 1868.

G. H. Hedge, Master Mechanic, Central Division, Canadian Northern Ry., Winnipeg, born at Neath, Wales, May 26, 1865.

T. Henry, Manager, Eastern Lines, Richelieu and Ontario Navigation Co., Montreal, born there, May 29, 1865.

B. R. Hepburn, M.P., President and General Manager, Ontario and Quebec Navigation Co., Ltd., Picton, Ont., born there, May 27, 1876.

G. A. Hoag, Superintendent, Central Ontario Ry., Trenton, Ont., born at Walker's Falls, Ont., May 31, 1866.

W. T. Huggan, Accountant and Auditor, Prince Edward Island Ry., Charlottetown, P.E.I., born at Halifax, N.S., May 24, 1851.

J. Irwin, Superintendent, District 3, Canadian Northern Ry., Dauphin, Man., born at Clinton, Ont., May 28, 1866.

H. B. Sherwood, Superintendent, Bay of Quinte Ry., Napanee, Ont., born at Auburn, N.Y., May 25, 1847.

W. Stapleton, District Passenger Agent, Canadian Northern Ry., Saskatoon, Sask., born at Bristol, Eng., May 20, 1884.

E. Tiffin, Member, Government Railways Managing Board and General Traffic Manager, Government Railways, Moncton, N.B., born at Hamilton, Ont., May 5, 1849.

J. H. Walsh, General Manager, Quebec Central Ry., Sherbrooke, Que., born at Quebec, May 12, 1860.

H. K. Wicksteed, B.A.Sc., M. Can. Soc. C. E., Chief Engineer of Surveys, MacKenzie, Mann & Co., Ltd., Toronto, born at Quebec, May 25, 1855.

James Yeo, ex-Roadmaster, Intercolonial Ry., Riviere du Loup, Que., born at Bideford, Devonshire, Eng., May 1, 1830.

Clerks Wanted by G.T.R.—The Railway Magazine, London, Eng., says:—"We learn that owing to the rapidly extending lines of the Grand Trunk Ry. system, there are a limited number of vacancies for freight audit clerks in the offices of that company at Montreal. Experience in freight audit office or goods station experience is essential, but promotions are very rapid. Applications for positions should be addressed to F. C. Salter, European Traffic Manager, London."

The New Jersey legislature has passed a bill calling for the elimination of all grade crossings in that state at the entire expense of the railways. The railways are trying to have the act declared unconstitutional.

Railway Development

Projected Lines, Surveys, Construction, Betterments, Etc.

Algoma Central and Hudson Bay Ry.—We are officially advised in reference to reports that it was intended to proceed with the construction of dock and other terminal facilities at Sault Ste. Marie, Ont., at once, that there will be no further construction on terminal facilities this year. The only work that will be done will be the finishing up of the work practically completed last season, and which was described and illustrated in our Feb. issue. No definite decision has been reached as to the building of the proposed coal dock at Sault Ste. Marie. (April, pg. 168.)

Algoma Eastern Ry.—The Dominion Parliament has extended the time within which the line from Sudbury to Little Current, on Manitoulin Island, Ont., may be completed. (Jan., pg. 20.)

Athabaska Northern Ry.—The Dominion Parliament has extended the time within which the projected railway from Edmonton to Athabaska Landing may be built. (Dec., 1904, pg. 604.)

Atlantic, Quebec and Western Ry.—Quebec Oriental Ry.—The Minister of Railways stated in the House of Commons, Mar. 31, that the Government had under consideration a proposal to take over these lines and operate them as a branch of the Intercolonial Ry. The Q. and O. Ry., formerly known as the Atlantic and Lake Superior Ry., extends from Matapedia on the Intercolonial to New Carlisle, 100 miles, and the A., Q. and W. Ry., from the latter place to Gaspé Basin, Que., 104 miles. (Sept., pg. 450.)

Bruce Mines and Algoma Ry.—The Ontario Legislature has authorized the company to change the title to the Lake Huron and Northern Ontario Ry. Co. The existing line extends from the shore of Lake Huron through Bruce Mines for 17 miles to some copper mines at Rock Lake, but it has not been operated to any great extent. The company is given power to extend the existing line to a junction with the National Transcontinental Ry. between Cochrane and Hearst, and in connection with this project the company is authorized to purchase 1,000,000 acres of land along its route at 25c. an acre for 3,000 acres a mile of line built, and 50c. an acre for an additional 1,000 acres a mile of line built; the company agreeing to place on the lands 250 settlers a year for five years, and 500 settlers a year for a second five years; the investment of \$3,500,000 on wood working plants within three years; and the provision of roads, bridges and schools for the territory opened up. (April, pg. 168.)

It is said that the organization of the new company which has taken hold of the B.M. and A. Ry. has not been completed, but that when it is, a contract for a section of the line will be let to M. J. O'Brien, of Renfrew. J. H. McCaul, of the O'Boyle Construction Co. is also interested in the project, and R. A. Lyon, Toronto, has been looking after the financing.

Calgary, Edmonton and Fort McMurray Ry.—The Dominion Parliament has incorporated a company with this title to build a line from Calgary to Edmonton, Fort McMurray, Alta., and other points in Alberta. (April, pg. 168.)

Canada and Gulf Terminal Ry.—Negotiations are said to be in progress for the construction of the extension of the line from

the present terminus at Matane to Gaspé Basin, Que., 223 miles. The surveys being made are for a line having a maximum gradient of 0.6%. H. J. Lyons, Matane, Que., is Vice-President. (April, pg. 168.)

Canadian Western Ry.—The Dominion Parliament has incorporated a company with this title to build a railway to connect Winnipeg, Pas, Man.; Prince Albert, Battleford, Sask.; and Lethbridge, Man. (April, pg. 168.)

Cariboo, Barkerville and Willow River Ry.—An extension of time has been granted by the Dominion Parliament for the building of this projected railway. The act also authorizes the building of an extension from Barkerville to the junction of the Clearwater and North Thompson Rivers, and an additional branch to Bear River, B.C. (Dec., 1912, pg. 604.)

Central Ry. of Canada.—An action has been entered by C. J. Wills and Co., general contractors for the building of this railway, asking that the company be ordered to deposit in court \$750,000 to guarantee the cost of building the line from Montreal to Midland, Ont. The contractors claim that they have already built 20 miles and done other work for which they claim \$230,000. The company has filed a counter claim for \$100,000, alleging that the contractors have failed to carry out their contract with due diligence. (April, pg., 168.)

Clay Line Ry.—The Alberta Legislature has incorporated a company with this title to build a line from sec. 2, tp. 11, range 6, northerly to sec. 2, tp. 12, range 6, west of the 4th meridian, thence to Medicine Hat, and to operate the same by any motive power. The provisional directors are: H. O. Knowles, S. G. Bannan, L. Hunt, Medicine Hat, Alta.

Dominion North Western Ry.—The Dominion Parliament has incorporated a company with this title to build a railway from Regina, Sask., to Tuxford, on the C.P.R., thence to Red Deer, Alta., with a branch through Battleford, Sask., to Fort McKay. M. J. O'Connor, Ottawa, is interested in the project. (Dec., 1912, pg. 604.)

Edmonton, Dunvegan and British Columbia Ry.—Track is reported to have been laid to 75 miles northwest of Edmonton, Alta., and it is expected that tracklaying will be completed to the Athabasca River, 120 miles, during the summer. Ballasting will be started at once, a steam shovel being put in at Irish Creek, 65 miles from Edmonton. Supplies are being sent in for the construction gangs. The right of way has been cleared to 25 miles beyond the Athabasca River, and the line has been located to beyond Lesser Slave Lake. Contracts will shortly be let, it is reported, for the grading and masonry work westerly of the Athabasca River. J. D. McArthur, Winnipeg, is President, and A. C. Galbraith, Edmonton, is General Superintendent of Construction. (April, pg. 168.)

Esquimalt and Nanaimo Ry.—We are officially advised that a contract has been let to E. R. Doe and Brother, Victoria, B.C., for the erection of a 10 stall locomotive house, a machine shop 120 by 60 ft., a boiler house and store on the Songhees reserve, Victoria. The work is to be completed by Aug. 31. (April, pg. 168.)

Fredericton and Grand Lake Coal and Ry. Co.—We are officially advised that very little in the way of construction has been

done on the line since Dec., 1912. The masonry for the bridge over Nashwaak River has been completed and the steel superstructure completed. The substructure for the bridge over the Noornan Brook is finished, and the steel superstructure is to be put in place immediately. The work of completing the line is now being gone on with, and it is expected to have it opened from near Fredericton to Minto by Aug. 31. The contract for grading, bridging, track-laying and ballasting the Marysville branch has been let to A. E. Trites and Sons. It will be 2.84 miles long, leaving the main line about half a mile from Gibson. The work is to be completed by Aug. 31. H. W. D. Armstrong, Fredericton, N.B., is Chief Engineer. (April, pg. 168.)

Glengarry and Stormont Ry.—Application is being made to the Dominion Parliament for the incorporation of a company with this title to build a railway from Polycarp station, Ont., on the C.P.R., southwesterly through Williamstown to Cornwall, Ont. Pringle, Thompson and Burgess, Ottawa, are solicitors for applicants. (Aug., 1912, pg. 411.)

Huron and Ontario Ry.—The Dominion Parliament has authorized the company to change its name to that of the Toronto and North Western Ry., and has given an extension of time for the building of the projected railway. T. H. Kilgore, Toronto, is Secretary. (Dec., 1912, pg. 604.)

Intercolonial Ry.—The Sydney, N.S. Board of Trade has asked the Minister of Railways to take up the question of providing suitable railway and dock terminal facilities at that port.

The Maritime Board of Trade sent a deputation to Ottawa recently to urge the Minister of Railways to take up the question of locating a new route for the Intercolonial Ry. between Amherst and Truro, N.S. The purpose of the new route is to avoid the heavy gradients over the Cobequid Mountains. M. Lodge, President of the Board, on returning to Halifax, Mar. 31, stated that in all probability another survey would shortly be made. Previous surveys had shown that in order to obtain a line with a gradient of 0.4 to 0.6% between Amherst and Truro, the distance would be increased by 13 miles.

Tenders are under consideration for the building of a spur line of 1.50 miles from Pugwash, on the Oxford Branch, to Pugwash Harbor, N.S. (Feb., pg. 83.)

Kettle Valley Lines.—The Dominion Parliament has authorized the company to enter into agreement with the C.P.R.: has extended the time for the building of authorized lines, and has given power to build the additional lines described in Dec., 1912, pg. 605.

It is reported that a 50 mile stretch of line west of Carmi, B.C., has been handed over to the operating department, and that a regular train service will be established at an early date. A further section of the line is expected to be completed during the summer. The route of the line between Osprey Lake and Penticton has not been finally steeled, but Chief Engineer McCulloch says that this will shortly be decided on, and that the entire line from Grand Forks to the Fraser River will be completed by the end of 1914.

In connection with the Spokane and Republic Ry., which is the section of the line in the United States, the difference with the Great Northern Ry., as to the route of the line in the San Poil Valley, for the extension from Republic to Spokane, Wash., which has been a matter for litigation during the past few years, has been settled, by the G.N. Ry. withdrawing all claims to the route. (April, pg. 169.)

Mainly About Transportation People.

JAS. McCREA, ex-President, Pennsylvania Rd., died in Philadelphia, Mar. 28.

SIR MONTAGU ALLAN has donated a cup for the hunter class at the Montreal Horse Show.

T. BELL, of the C.P.R. advertising department, Montreal, has resigned, to take a business position in Winnipeg.

J. P. MORGAN has been elected a director of the New York Central and Hudson River Rd., to succeed his late father.

H. G. KELLEY, Vice President, G.T.R., has been elected a director of the G. T. Pacific Ry., vice E. H. Fitzhugh, resigned.

W. WAINWRIGHT, Vice President, G.T.R., and the Misses Wainwright, returned to Montreal from Atlantic City early in April.

MRS. C. A. HAMMOND, mother of the late H. C. Hammond, formerly President, Northern Navigation Co., died in Toronto, April 24, aged 93.

G. D. PERRY, General Manager, Great Northwestern Telegraph Co., and Mrs. Perry, left Toronto, April 24, for a trip to England.

W. H. C. MUSSEN, of Mussens, Limited, contractors and railway supplies, has been re-elected President of the Thistle Curling Club, Montreal.

W. WAINWRIGHT, Vice President, G. T.R., accompanied by Misses M. and G. Wainwright, returned to Montreal, April 2, from Atlantic City, N.J.

MRS. O'BRIEN, wife of M. J. O'Brien, railway contractor, mine owner, etc., was seriously injured at Renfrew, Ont., April 23, in a runaway accident.

GEORGE BURY, Vice President, C.P.R., delivered an address on "Women's Place in the Business World" at the Women's Press Club, Winnipeg, April 10.

SIR MONTAGU ALLAN, accompanied by Lady and Miss Allan, sailed for Great Britain, from Halifax, N.S., on the s.s. Empress of Ireland, Apr. 4.

ALFRED PRICE, General Superintendent, Alberta Division, C.P.R., Calgary, made a trip east recently, spending a short time in Toronto.

D. M. McINTYRE, K.C., Chairman, Ontario Railway and Municipal Board, is to be given the degree of LL.D. by Queen's University, Kingston, Ont.

J. P. PENNEFATHER, M.D., who died at Winnipeg, April 14, aged 80, was father of F. R. Pennefather, District Master Mechanic, C.P.R., Cranbrook, B.C.

W. MURPHY, who died at Brockville, Ont., April 15, was father of C. Murphy, General Superintendent of Transportation, Eastern Lines, C.P.R., Montreal.

H. G. KELLEY, M. Can. Soc. C.E., Vice President, G.T.R., returned to Montreal at the end of April, from a trip to Havana, Jamaica and the Panama Canal.

R. W. REFORD, of the Robert Reford Co., Ltd., Montreal, has succeeded his late father as a director of the Crown Trust Co. and the Crown Reserve Mining Co.

SIR THOS. G. SHAUGHNESSY sailed from Halifax, N.S., on the s.s. Empress of Ireland, Apr. 4, for Great Britain, to meet Lady and the Misses Shaughnessy.

F. W. PETERS, General Superintendent, British Columbia Division, C.P.R., and Mrs. Peters, arrived in Montreal, April 11, on their way to England for a holiday trip.

F. A. BOURNE, Paymaster, G.T.R., Montreal, has, on the President's nomination, been appointed Assistant Secretary-Treas-

urer of the G.T.R. Insurance and Provident Society.

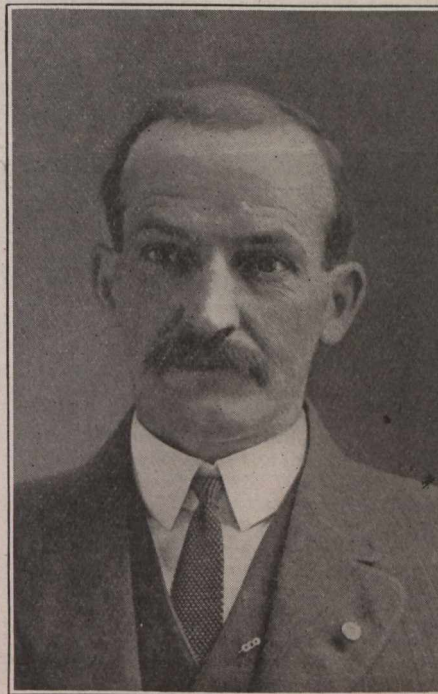
D. F. CREIGHTON was the recipient of a presentation from his colleagues of the Canadian Northern Ry. local freight staff on his recent transfer from Brandon, Man., to Regina, Sask.

Sir Richard W. Scott, formerly Secretary of State, who died at Ottawa, Apr. 23, aged 88, was father of D'ARCY SCOTT, Deputy Chairman of the Board of Railway Commissioners.

A. A. MAVER was chairman, and W. D. Robb and D. Crombie the principal speakers, at the first annual dinner of the apprentices at the G.T.R. Point Charles Shops, held in Montreal, April 11.

MISS N. McNICOLL, daughter of D. McNicoll, Vice-President, C.P.R., has had three pictures accepted for the Royal Society of British artists' exhibition, which opened in London, Eng., April 7.

T. BELL, Assistant General Advertising Agent, C.P.R., Montreal, was presented with a black morocco suit case by the staff



H. J. White,
General Car Foreman, Canadian Northern Quebec Ry., and Quebec and Lake St. John Ry.

of the department, April 18, on his leaving the company's service.

H. W. FLANNAGAN, a sub-contractor on the Grand Trunk Pacific Ry., in British Columbia, is stated to have been engaged in railway construction work, as a sub-contractor, for 47 years.

S. C. STICKNEY, former Vice President and General Manager, Chicago Great Western Rd., and recently in private practice, New York City, has been appointed Assistant to the President, Erie Rd.

H. G. CORAM was presented with an address and a purse of gold by the C.P.R. local freight staff, Winnipeg, recently, on retiring from the position of local freight agent there, to engage in farming.

A. A. ALLAN, of the Allan Steamship Co., Mrs. Allan and Miss Hazel Allan, left Montreal early in April for Great Britain, Mrs. Allan having been selected to christen the company's new s.s. Calgarian.

S. P. BROWN, Chief Engineer in charge of construction of the Canadian Northern Ry. tunnel under Mount Royal, Montreal, gave an address on tunnels before the Montreal Canadian Club, April 14.

The engagement is announced of WALLACE H. ROBB, of the Anchor Packing Co., Montreal, and son of W. D. Robb, Superintendent of Motive Power, G.T.R., to Miss E. H. Burrows, of Belleville, Ont.

L. S. TAIT, who died in Montreal, April 8, aged 24, was a brother of Sir Thomas Tait, President, Fredericton and Grand Lake Coal and Ry. Co., and of H. M. Tait, General Agent C.P.R., Minneapolis, Minn.

A. BRUNET, of Montreal, who died in Paris, France, Mar. 22, was the original director appointed by the Dominion Government on the Grand Trunk Pacific Ry. Board, and served in that capacity until 1911.

W. H. BREITHAUP, M. Can. Soc. C.E., consulting engineer, Toronto, has associated with him C. B. Kingsley, A.M. Am. Soc. C.E., to continue the engineering practice of the late E. H. Keating and Mr. Breithaupt.

MRS. DARLING, wife of T. S. Darling, Manager, Canadian Northern Ry. Land Department, Montreal, who died somewhat suddenly in Duluth, Minn., April 18, was a daughter of A. D. Davidson, Land Commissioner, C.N.R., Toronto.

R. STANLEY, who has been appointed Car Foreman, G.T.R., Allandale, Ont., entered the company's service in 1882 as car repairer and inspector, and from 1903 to Apr. 1, 1913, was leading car inspector at Gravenhurst, Ont.

J. A. FULLERTON was recently presented with a silver loving cup by C.P.R. steamship department officials at Vancouver, B.C., on retiring from the position of C.P.R. Ship's Husband there, a position which he had held for a number of years.

GEORGE BURY, Vice President, C.P.R., returned to Winnipeg, Mar. 28, from a trip to Japan and China. On his way east from Vancouver, B.C., he stopped off at Calgary, Alta., where he was the principal guest at a dinner given by the Board of Trade.

In referring to the appointment of A. P. WALKER, M. Can. Soc. C.E., as Division Surveyor, Ontario Division, C.P.R., Toronto, in our last issue, he was inadvertently described as Assistant Division Engineer, which was his former position.

SIR WILLIAM WHYTE, Lady Whyte and Miss Gladys Whyte, sailed from St. John, N.B., by the s.s. Empress of Britain, Apr. 18, for Liverpool. They will spend a short time in France, and then return to England, expecting to be back in Winnipeg in June.

E. B. WINGATE, who died in Hamilton, Ont., April 22, after a long illness, was engaged some 20 years ago in engineering work on the Toronto, Hamilton and Buffalo Ry. Subsequently he was City Engineer of Hamilton, and afterwards practised privately.

SIR PERCY GIROUARD, director, Sir W. G. Armstrong, Whitworth and Co., of Elswick and Manchester, Eng., is visiting Canada, and it is reported that during his stay he will discuss probabilities of his firm embarking in the shipbuilding business in the Dominion.

W. J. HALLETT, who has been appointed Travelling Car Inspector, Ontario Lines, and part of Eastern Lines, G.T.R., London, Ont., entered G.T.R. service in 1904, and up to 1907 was engaged as car repairer and air brake inspector; 1907 to 1908, Car Foreman at York, Ont.; 1908 to Apr. 1, 1913, Car Foreman at Allandale, Ont.

SIR CHARLES D. ROSE, M.P., who died at London, Eng., Apr. 20, from heart failure, following a trip in an aeroplane, was born in Montreal, and was a son of Sir John R. Rose, a former Minister of Finance for the Dominion. He was a member of the original syndicate which in 1881 undertook the construction of the C.P.R.

W. H. V. HOOPER, who died at St. Lambert, Que., April 6, entered G.T.R. service in the Audit Department in 1880, subsequently going to the C.P.R. service in the Audit Department. He was latterly attached to the President's office staff. He was a resident of St. Lambert for 32 years, and took an active part in public affairs, serving as Mayor in 1910-11.

A. V. COLLINS, who has been appointed General Freight Agent, Canadian Lake Line, Toronto, was born at Island Pond, Vt., Apr. 21, 1868, and entered transportation service, in 1884, since when he has been, to 1886, freight clerk, G.T.R., Sarnia, Ont.; 1886 to 1893, cashier, G.T.R., Sarnia, Ont.; 1893 to 1907, chief clerk, G.T.R., Sarnia Tunnel and Point Edward, Ont.; 1907 to 1913, chief clerk, Traffic Manager's office, Canadian Lake Line, Toronto.

J. E. CROSSLEY, who has been appointed Travelling Passenger Agent, G.T.R., Montreal, was born at Keighley, Eng., Apr. 14, 1879, and entered railway service July, 1897, since when he has been, to June, 1899, stenographer and clerk, District Passenger Agent's office, G.T.R., Montreal; 1899 to 1903, Assistant Ticket Agent, Pullman Co., Montreal; 1903 to Apr. 7, 1913, Ticket Agent, Pullman Co., Bonaventure Station, Montreal.

J. W. PETHERAM, who died at Dallas, Tex., Mar. 26, aged 70, and who retired from active service, as Chief Engineer, Missouri, Kansas and Texas Ry., in 1909, was born in Largo, Scotland, and entered Canadian railway service, June, 1873, as Resident Engineer, Credit Valley Ry., being from Feb., 1875, to Aug., 1879, Assistant Engineer, same road, and from Apr., 1881, to Jan., 1884, Chief Engineer, Georgian Bay and Wellington Ry., and subsequently holding various positions on U.S. railways.

G. P. OSBORNE, who died at Kingston, Ont., Mar. 31, aged 68, on his return from England after an absence of about four years, was, for some years, Secretary-Treasurer of the Kingston and Pembroke Ry., now a part of the C.P.R. He was a brother in law of B. W. Folger, ex-General Manager, Niagara Navigation Co., Toronto, and uncle of W. F. Nickle, M.P., Secretary-Treasurer, and H. C. Nickle, Superintendent, Kingston, Portsmouth and Cataraqui Electric St. Ry.

J. V. MURPHY, whose appointment as District Passenger Agent, C.P.R., Nelson, B.C., was announced in our last issue, was born at Bowmanville, Ont., Mar. 5, 1885, and entered C.P.R. service May 10, 1908, since when he has been, to Aug. 10, 1909, ticket clerk, Calgary, Alta.; Aug. 10, 1909, to Oct. 13, 1910, chief clerk, Calgary Depot, Alta.; Oct. 13, 1910, to June 1, 1912, Travelling Passenger Agent, Calgary, Alta.; June 1 to Sept. 30, 1912, acting District Passenger Agent, Nelson, B.C.; Sept. 30, 1912, to Mar. 10, 1913, Travelling Passenger Agent, Calgary, Alta.

J. J. HENNIGAN, who has been appointed General Agent, Richelieu and Ontario Navigation Co., Hamilton, Ont., was born at Topeka, Kan., Dec. 21, 1884, and entered transportation service July 1, 1903, since when he has been, to May 10, 1904, messenger, Canadian Express Co., London, Ont.; May 10, 1904, to June 21, 1906, clerk in freight office, C.P.R., Fort William, Ont.; June 21, 1906, to Mar. 15, 1908, cashier,

same office; Mar. 15, 1908, to Oct. 1, 1909, rate clerk, same office; Oct. 1, 1909, to Apr. 1, 1913, Local Agent, Inland Lines, Ltd., Hamilton, Ont.

FRANK CLARK, who was recently appointed Locomotive Foreman, Canadian Northern Ry., Radville, Sask., was born at Cowes, Isle of Wight, Eng., Mar. 20, 1884, and commenced railway work Oct., 1898, since when he has been, to June, 1905, apprentice, Isle of Wight Central Ry., Newport; June to Nov., 1905, fitter, London and South Western Ry., Guildford, Surrey; Nov., 1905, to Nov., 1906, locomotive examiner, same company; Dec., 1906, to 1907, fitter, C.P.R., Chapleau, Ont.; 1907 to Feb., 1911, in various capacities, C.N.R., at Dauphin, Man., and Edmonton, Alta.; Feb., 1911, to Jan., 1913, assistant foreman, C.N.R., Dauphin, Man.

W. B. HINES, who has been appointed wharfinger, Richelieu and Ontario Navigation Co., and Inland Lines, Ltd., at Yonge St. Dock, Toronto, was born at Ipswich, Eng., Aug. 28, 1872, and entered transportation service, June, 1903, since when he has been, during the navigation seasons, to 1906, Baggage Agent, Niagara Navigation Co., Toronto; and 1907 to 1912, General Baggage Agent, same company, Toronto; during the winter seasons, from 1909 to 1912, he was Baggage Agent, Florida East Coast Ry., Palm Beach, Fla.; Aug., 1912, to Apr. 1, 1913, Baggage Agent, Richelieu and Ontario Navigation Co. Western Lines, Toronto.

H. J. WHITE, who has been appointed General Car Foreman, Canadian Northern Ry., and Quebec and Lake St. John Ry., Joliette, Que., and whose portrait appears in this issue, was born at Brownington, Vt., Apr. 1, 1871, and entered C.P.R. service May, 1893, since when he has been, to Sept., 1894, Joint Car Inspector, Newport, Vt.; Sept., 1894, to May, 1898, Joint Car Inspector, St. Polycarpe Jct., Que.; 1898 to 1903, Car Inspector, Toronto; 1904 to Sept., 1906, leading hand carpenter at Outremont, Que.; Sept., 1906, to June, 1911, General Car and Wrecking Foreman, North Bay, Ont.; June, 1911, to Mar. 27, 1913, General Car and Wrecking Foreman, West Toronto, Ont.

W. R. HOWARD, whose appointment as Chief Dispatcher and Trainmaster, District 1, Atlantic Division, C.P.R., Brownville Jct., Me., was announced in our last issue, was born at St. Andrews, N.B., Sept. 14, 1871, and entered railway service Sept., 1887, since when he has been, to June, 1889, operator, New Brunswick Ry., at different points; June, 1889, to Oct., 1891, baggage-man, C.P.R., between St. John, N.B., and Megantic, Que.; Oct., 1891, to Oct., 1895, agent and operator at different points, Atlantic Division, C.P.R.; Oct., 1895, to Nov., 1912, dispatcher, C.P.R., Brownville Jct., Me.; Nov., 1912, to Mar. 1, 1913, acting Chief Dispatcher, C.P.R., Brownville Jct., Me.

A. B. MacFARLANE, District Engineer, National Transcontinental Railway, Winnipeg, died suddenly in a bedroom at the Russell Hotel, Ottawa, April 4. He was engaged in railway construction work most of his life, coming to the front in 1890, on his appointment as resident engineer of the Canada Atlantic Ry., since when his record has been: 1898-9, Divisional Engineer, Midland Ry. of Nova Scotia; 1901-4, engineer on construction, Canadian Northern Ry.; 1905, locating engineer, National Transcontinental Ry., Kenora, Ont.; 1906-7, Divisional Engineer, division 7, same railway; 1908-10, Assistant District Engineer, same railway, North Bay, Ont.; 1910-11, general inspector, same railway; Oct., 1911, to his death, District Engineer at Winnipeg.

C. J. SMITH, who has been appointed

Vice President and General Manager, North Ry., Montreal, was born at Hamilton, Ont., Mar. 10, 1862, and entered transportation service in 1879, since when he has been, to 1880, clerk in local freight office, Hamilton and North Western Ry., Hamilton, Ont.; 1880 to 1882, in Audit and Purchasing Department, Chicago and Alton Rd.; 1882 to May, 1885, in Construction Department, C.P.R.; June, 1885, to 1886, in Traffic Department, New York, Lake Erie and Western Rd.; 1886 to 1888, chief clerk to General Manager, Chicago and Atlantic Ry.; Jan. to July, 1888, in Traffic Department, Minneapolis, St. Paul and Sault Ste. Marie Ry.; July, 1888, to Jan., 1890, in Traffic Department, St. Paul, Minneapolis and Manitoba Ry.; Jan., 1890, to Mar., 1898, General Freight and Passenger Agent, Canada Atlantic Ry.; Apr., 1898, to Mar., 1904, General Traffic Manager, Canada Atlantic Ry. and Canada Atlantic Transit Co., Ottawa, Ont.; Mar., 1904, to Mar., 1913, General Manager, Richelieu and Ontario Navigation Co., Montreal.

N. E. BROOKS, M. Can. Soc. C.E., who has been appointed Engineer Maintenance of Way, Western Lines, C.P.R., Winnipeg, was born at Sherbrooke, Que., Dec. 25, 1866, and entered railway service in May, 1886, since when he has been, to Mar., 1887, rodman, Ontario and Quebec Branch, C.P.R.; May, 1887, to Apr., 1888, rodman, Atlantic and Northwest Branch, C.P.R.; Apr., 1888, to Aug., 1889, Resident Engineer on Construction, Atlantic and Northwest Branch, C.P.R.; Aug., 1889, to Sept., 1890, Resident Engineer on Construction, Qu'Appelle, Long Lake and Saskatchewan Ry.; Sept., 1890, to Oct., 1891, Resident Engineer, Calgary and Edmonton Ry.; Oct., 1891, to Sept., 1892, leveller, Crowsnest Pass Branch, C.P.R.; Sept. to Dec., 1892, Resident Engineer, Crowsnest Pass Branch, C.P.R.; Dec., 1892, to Dec., 1895, Assistant Engineer of Construction, Montreal St. Ry.; Jan. 1, 1896, to Aug., 1903, Inspector, Calgary and Edmonton Ry. and Qu'Appelle, Long Lake and Saskatchewan Ry.; Aug. to Nov., 1903, Superintendent, Maintenance of Way and Structures, Calgary and Edmonton Ry.; Nov., 1903, to Apr. 15, 1913, Division Engineer, C.P.R., Calgary, Alta.

E. H. McHENRY, M. Can. Soc. C. E., has resigned as Vice President of the New York, New Haven and Hartford Rd. He has been Vice President in charge of maintenance and construction since 1904, and it has been under his general supervision that electric power system of the railway has been established and extended. Until a short time ago he was in charge of the construction and maintenance departments of the Boston and Maine Rd. also. He was born in Cincinnati, Ohio, Jan. 25, 1859, and was educated at the Pennsylvania Military College at Chester, Penn. He began engineering work in 1883 as a rodman on the Black Hills branch of the Northern Pacific Ry. In 10 years he passed through all the engineering grades from rodman to Chief Engineer. After three years as Chief Engineer of the Northern Pacific Ry., he was appointed Receiver, and on the reorganization of the railway again became Chief Engineer. He resigned in 1901, and after spending two years in Japan, China and the Philippine Islands, became Chief Engineer of the Canadian Pacific Ry. In Oct., 1904, he was made Vice President of the Consolidated Ry., in charge of construction, operation and maintenance of the electric railway lines of the New York, New Haven and Hartford Rd. The office of Vice President in charge of construction and maintenance will be abolished and the duties of the office assumed by different branches of the engineering department.

Canadian Pacific Railway Construction, Betterments, Etc.

Atlantic Division.—We are officially advised that it is proposed to lay 14.2 miles of 85 lb. steel rails on the main line between St. John and McAdam, N.B., releasing a similar mileage of 80 lb. rails. On branch lines of the division 126 miles of line now laid with 48, 56, 60 and 62 lb. steel is to be relaid with 72, 73 and 80 lb. steel. About 90 miles of line between St. John and Vanceboro is being equipped with block signals. Of this mileage 46 miles from Fredericton Jct. to Vanceboro was put in operation April 2, and the mileage between Fredericton Jct. and St. John was expected to be ready very shortly thereafter.

We are officially advised that it is proposed to build a new bridge over the St. John River at the reversing falls, St. John, N.B., some time within the next two or three years, but neither the type of bridge to be used, nor the time when it is to be built, has been decided.

Eastern Division.—The new train shed at Windsor St. station, Montreal, is in course of construction. The main part of the steel work was reported to be in place April 16, and the whole work was expected to be completed by April 30.

The Montreal City Council has granted a permit for the erection of a new car shop at the head of Davidson St. at an estimated cost of \$131,000.

Press reports state that arrangements are being made for the building of the 25 miles necessary to link up the Nominique Valley line, now terminating at Mount Laurier, with the Ottawa, Northern and Western Ry., now terminating at Maniwaki, Que.

Campbellford, Lake Ontario and Western Ry.—It is expected that this new line from Glen Tay to Agincourt, Ont., will be completed by Dec. 1. About 70% of the grading and 65% of the bridgework have been done.

Ontario Division.—The building of the second track from Islington to Guelph Jct., about 30 miles, is the principal work in hand for this season west of Toronto. On the section between West Toronto and Islington, on which the second track has already been built, there is a break, at the bridge across the Humber River, just west of the Lambton Golf Club grounds. Tenders are under consideration for the excavation, masonry and concrete work necessary for making this bridge sufficient to carry a second track. The present bridge across the Humber River, west of Lambton, consists of three spans, deck trusses, on two masonry piers and two abutments, each span being about 157 ft. long. It is proposed to make the bridge capable of carrying a second track by extending the present pier and abutments and adding two additional piers, dividing the two end spans in two, thus making four spans of 78½ ft. each and one span of 157 ft. The present steel span will be replaced with new double track spans. The detail plans for the work have not been finally approved. The work is in charge of A. L. Hertzberg, Division Engineer.

The contract for the second track from west of Islington to Guelph Jct. has been let to Jones and Girouard, Ottawa, and a start was made April 21. The work is being done under the charge of — Wellwood, as Divisional Engineer, with — Morrison as Resident Engineer, from Islington to Streetsville Jct., and — Rayner as Resident Engineer west of Streetsville Jct.

J. W. Leonard, Assistant to the Vice President, in a letter, April 7, informed the Mayor of Stratford that the company had

decided not to reopen the matter of the entrance of the company's line into that city, and that the projected line from Embro to Linwood, via Stratford, would be given up in favor of a connection between Guelph and Bolton.

Guelph and Goderich Ry.—An extension of time has been granted by the Dominion Parliament for the building of the uncompleted portion of this railway.

Lake Superior Division.—We are officially advised that it is intended to add largely to the shops and other buildings at North Bay, Ont., in the near future. The plans and details of the alterations and additions are not fully completed. A report states that the work will cost about \$250,000, and that the buildings will consist of a repair shop with a capacity of 10 locomotives, and a car repair shop.

Manitoba Division.—The lift bridge over the Kaministikwia River at Fort William, Ont., has been completed, and the bridge over the McKellar River, between Islands 1 and 2, at Fort William, is expected to be completed early in June. Both these bridges carry a double track.

The contract for the erection of a 6 stall addition to the roundhouse at Fort William, Ont., is reported to have been let to Carter, Halls and Aldinger, Winnipeg.

Piles are being driven by the Thunder Bay Harbor Improvement Co. for the building of a new freight shed for the C.P.R. at the old coal dock on the Kaministikwia River, Fort William. It will have a capacity of 100,000 tons and will be used for the handling of the hard coal traffic.

Contracts are reported to have been let for the following works:—To A. C. Creelman, Winnipeg, for the erection of frame stations at Arnaud, Edrans, Stonev Mountain; section houses at Oberon, Shanawan, Melbourne; extensions to locomotive houses at Arcola, Minnedosa, Man.; Kenora, Ont. To Carter, Halls, Aldinger Co., Winnipeg, extensions to locomotive houses at Fort William, Ont., and Weston, Winnipeg. To C. W. Sharpe, Winnipeg, warehouses and buildings for sleeping and dining car department at Fort William, Ont. To A. Semons, for extensions to the freight car repair shops at Fort William.

The bridge construction in progress at Winnipeg and vicinity consists of a double track bridge over the Red River, 770½ ft. long, with a 258 ft. swing span; a bridge over the Red River on the new Kildonan cut off, about 1,000 ft. long, with a 312 ft. swing span, and a double track bridge, 428 ft. long over the Assiniboine River west of Winnipeg.

Saskatoon Division.—The route maps, approved by the Minister of Railways, for the projected branch from Lanigan to Prince Albert, 117 miles, shows a line crossing the Canadian Northern Ry. at Humboldt and near Birch Hills, and crossing a branch of the Saskatchewan River near mileage 105.

The Board of Railway Commissioners has authorized the opening for traffic of the second track between Mortlach and Parkbeg, Sask., on the transcontinental line west of Moose Jaw, 8.4 miles.

The track laying gang started work April 7, to complete the line from Wilkie into Kerrobert, and a ballasting gang is at work on the 48 miles of line from Macklin to Kerrobert.

Alberta Division.—A three track bridge, 470 ft. long, is being built across the Bow River, east of Calgary, to replace the present single track bridge and a double track

bridge is being built across the same river 25 miles west of Calgary. The latter bridge will consist of two arch spans, 216 ft. each. On the Suffield-Kipp branch line there will be a bridge 1,035 ft. long over the Bow River.

The high level bridge across the Saskatchewan River at Edmonton, Alta., is expected to be completed in August. The length between abutment approaches is 2,550 ft., the extreme height above mean water level is 152 ft., and the piers are 95 ft. high. The bridge consists of an upper deck 39 ft., and a lower deck, 43 ft. wide—the upper deck will carry the railway track and double electric car tracks, while the lower will be used by vehicles and foot passengers, the sidewalks having a clearance of 8 ft. and the roadway of 23 ft.

Calgary-Vancouver Second Track Work.—There continues to be considerable newspaper speculation as to what is to be done in the way of second track construction on the line between Calgary and Vancouver, the latest report being that it had been decided to drive a tunnel, 16 miles long, through the Kicking Horse Pass at an estimated cost of \$14,000,000. We understand that no surveys having in view the construction of such a tunnel have been undertaken as yet, and that it is scarcely likely that anything will be done at least for some time to come. The section of the second track work which will be first completed, we are officially advised, will be that from Golden into Vancouver. With the completion of the Kootenay Central Ry., which is expected to be ready for operation early in 1914, the company will have two routes easterly, one along the existing main line, and the second via the Kootenay Central Ry. and Crowsnest branch.

The building of the second track easterly from Vancouver is being progressed with, and it was expected to have the mileage to Mission City in operation by May 1.

Kootenay Central Ry.—We are officially advised that a contract for grading 65 miles has been let to Foley Bros., Welch and Stewart, the mileage covered being from 60 miles south of Golden to Skookumchuck, B.C. The contract reported as having been let to Boomer and Hughes was awarded in 1912, and covers from mileage 42 to 60. The construction of this section of the line includes the building of a bridge 602 ft. long.

Shuswap and Okanagan Ry.—The Dominion Parliament has extended the time for building the uncompleted sections of this line.

British Columbia Division.—Tenders are under consideration for grading and other work on the Arrow Lake subdivision.

Plans were filed at Ottawa, April 16, for the proposed tunnel under Vancouver, for the purpose of connecting the lines on the Inlet and the False Creek water fronts. The tunnel will be about a mile long.

The company has completed a new ferry slip at Esquimalt, and a car ferry service with the mainland was started April 12. This is in addition to the present service between the mainland and Ladysmith.

Trail, B.C., to Metaline, Wash.—Press reports state that surveys have been completed for a line from Trail, B.C., to Metaline, Wash., and that a route with a 1% gradient has been secured. H. M. Dibles was engineer in charge of the party. The report states that the C.P.R., or some allied interests, is negotiating for the purchase of the Idaho and Washington Ry., which has a terminal at Metaline, and that the building of a line from Trail to Metaline is a part of the plans. (April, pg. 174.)

Railway Rolling Stock Notes.

The Michigan Central Rd. has ordered 325 steel underframes for box cars from the National Steel Car Co.

The Canadian Northern Ry. has ordered 75 steel ore cars from Canadian Car and Foundry Co.

The G.T.R. is reported to be enquiring prices on 3,000 forty ton box cars and 1,000 fifty ton coal cars.

The Algoma Central and Hudson Bay Ry. has received five consolidation locomotives from Canadian Locomotive Co.

The G.T.R. has received one Pacific type locomotive, 73 in. wheel, from Montreal Locomotive Works; 3 switching locomotives, 20 by 26 in. cylinders, from Canadian Locomotive Co., and 55 box cars from Pressed Steel Car Co.

The Intercolonial Ry. has received 20 refrigerator cars and 91 box cars from the Canadian Car and Foundry Co.; 50 Hart-Otis steel dump cars, built by the Canadian Car and Foundry Co., from the Hart-Otis Car Co.; 16 box cars, 60,000 lbs. capacity from the Nova Scotia Car Works; 5 consolidation locomotives from the Canadian Locomotive Co.; and 2 consolidation locomotives from the Canada Foundry Co.

The Canadian Northern Ry., between Mar. 14 and April 14, received the following additions to rolling stock:—4 Pacific type, and 20 ten wheel locomotives, from Montreal Locomotive Works; 7 first class cars and 200 box cars, from Canadian Car and Foundry Co.; 4 second class cars, and 25 flat cars, 60,000 lbs. capacity, from Crossen Car Co.; 2 combination cars, from Preston Car and Coach Co., and 10 cabooses from the Company's Winnipeg Shops.

The C.P.R., between Mar. 12 and April 12, ordered the following additions to rolling stock:—160 vans, 30 steel colonist cars, 11 stock cars, 1 freight refrigerator car, 2 second class cars, 1 first class car, 2 mail and express cars, 3 baggage and express cars, from its Angus Shops; 2 stores supply cars, from its Winnipeg Shops; 7 Jordan ballast spreaders, 7 Rodger ballast spreaders, 2 wrecking cranes, from F. H. Hopkins and Co.; 1 Bucyrus wrecking crane, from Mussels, Ltd., and 1 wrecking crane from Browning Engineering Co.

The Toronto, Hamilton and Buffalo Ry., J. D. McArthur Co., and the Superior Construction Co., have each ordered one Rodger double plough distributing car, and the C.P.R. has ordered 12 similar cars, from the Hart-Otis Car Co. These cars are being built by the Canadian Car and Foundry Co. Following are the chief dimensions:—

Capacity	30 tons.
Length over end sills	32 ft.
Width over side sills	8 ft. 9 ins.
Height from rail to floor	4 ft. 1 1/4 ins.
Truck centres	23 ft. 8 ins.
Wheel base of truck	5 ft. 2 ins.

The Intercolonial Ry., between Mar. 13 and Apr. 17, ordered the following additions to rolling stock:—2 postal cars, 5 colonist cars, 4 first class and baggage cars, from the Canadian Car and Foundry Co.; 8 first class cars from the Preston Car and Coach Co.; 3 sleeping cars and 2 dining cars from the Pullman Co.; 5 consolidation and 4 Pacific locomotives from the Montreal Locomotive Works; 10 consolidation and 5 switching locomotives from the Canadian Locomotive Co.; and 10 consolidation locomotives from the Canada Foundry Co.

Canadian Steel Foundries Ltd. has received four Hart convertible cars, 40 tons capacity, for use at its works, from Hart-

Otis Car Co. They were built by Canadian Car and Foundry Co. Following are the chief dimensions:—

Length over end sills	36 ft.	8 ins.
Width over side sills	8 ft.	10 ins.
Length inside as hoppers	20 ft.	10 ins.
Length inside as gondolas	34 ft.	8 ins.
Width inside	8 ft.	8 ins.
Width over all	10 ft.	2 1/2 ins.
Width at top	9 ft.	10 ins.
Height from rail to floor	4 ft.	4 1/2 ins.
Height from rail to top of car ..	8 ft.	1 3/8 ins.
Height inside	3 ft.	9 1/4 ins.
Truck centres	26 ft.	8 ins.
Wheel base of truck	5 ft.	4 ins.
Length of hopper door opening ..	17 ft.	8 1/2 ins.
Width of hopper door opening ..	2 ft.	

The C.P.R., between Mar. 12 and April 12, received the following additions to rolling stock:—2 second class cars, 1 dining car, 4 tourist cars, 7 mail and express cars, 6 sleeping cars, 16 suburban cars, 10 baggage and express cars, and 4 class G2 locomotives, from its Angus Shops; 578 steel frame box cars, 58 steel frame flat cars and 48 automobile cars, from Canadian Car and Foundry Co.; 140 steel frame box cars, from National Steel Car Co.; 3 Lidgerwood unloaders, from Allis-Chalmers-Bullock Ltd.; 3 steam shovels and 2 Jordan ballast spreaders, from F. H. Hopkins and Co.; 5 steam shovels, from Mussels Ltd.; 30 air dump cars, from Western Wheeled Scraper Co., and 252 steel frame box cars, from Barney and Smith Co.

Following are chief details of the 10 consolidation superheater locomotives, and 5 are being built by the Canadian Locomotive Co., and 1 consolidation superheater locomotive, by the Canadian Foundry Co., for the Intercolonial Ry., as mentioned in our last issue:—

	Consolidation	Switching
Weight on drivers	208,000 lbs.	150,000 lbs.
Weight, total	236,000 lbs.	160,000 lbs.
Wheel base, rigid	16 ft. 6 ins.	12 ft. 0 ins.
Wheel base, engine, total	25 ft. 5 ins.	40 ft. 7 ins.
Wheel base, engine and tender ..	69 ft. 11 ins.	40 ft. 7 ins.
Heating surface, firebox	207 sq. ft.	157.5 sq. ft.
Heating surface, tubes	1885 sq. ft.	2300.0 sq. ft.
Heating surface, total	2092 sq. ft.	2475.5 sq. ft.
Driving wheels, diar.	63 ins.	51 ins.
Driving wheel centres	Cast Steel	Cast iron
Driving journals	10 x 14 ins.	8 1/2 x 11 ins.
Cylinders, diar. and stroke	24 x 32 ins.	21 x 26 ins.
Boiler, type	Straight top	radial stay
Boiler pressure	180 lbs.	180 lbs.
Tubes, no. and diar.	227 2 ins.	272 2 ins.
	30 5 1/2 ins.	28 5 1/2 ins.
Tubes, length	15 ft. 2 1/2 ins.	12 ft. 5 ins.
Brakes	Westinghouse	American
Superheaters	Schmidt, Type A	
Valve gear	Walschaert	
Weight of tender, loaded	140,000 lbs.	90,000 lbs.
Capacity, water	6,500 gals.	3,800 gals.
Capacity, coal	10 tons	6 tons
Tank, type	Water bot.	Slop. back
Truck, type	Out. equal.	Arch bar
Truck wheel diar.	34 ins.	34 ins.
Wheel, material	W. I. centre, steel tired	W. I. centre, steel tired
Journals	5 1/2 x 14 ins.	4 1/2 x 8 ins.
Brake beams	Steel I sec.	Steel I sec.

The Canadian Car and Foundry Co., between Mar. 14 and April 16, received the following orders for rolling stock:—1 all wood Lidgerwood flat car, from F. H. Hopkins and Co.; 6 forty ton trucks, from Dominion Bridge Co.; 250 forty ton steel frame box cars, 2 all wood postal cars, 4 wood combination first class and baggage cars and 5 wood colonist sleepers, from Intercolonial Ry.; 75 forty ton all steel twin hopper coal cars, from Canadian Northern Ry.; 2 all wood Rodger double plough distributing cars, from Hart-Otis Car Co.; 2,000 forty ton steel underframe box cars, from G.T.R., and 39 quarry cars, from Dominion Iron and Steel Co.; and during the same period delivered 1 all wood Lidgerwood flat car to Allis Chalmers-Bullock, Ltd.; 5 first class cars and 186 thirty ton wood box cars, to Canadian Northern Ry.; 32 steel frame drop bottom box cars, 606 forty ton box cars and

92 forty ton steel underframe flat cars, to C.P.R.; 4 forty ton Hart convertible ballast cars, to Canadian Steel Foundries Ltd.; 1 dump car to Edmonton Radial Ry.; 50 fifty ton Otis dump cars, 142 steel frame box cars and 1 thirty ton refrigerator car, to Intercolonial Ry.; 2 steel street car bodies, to Montreal Tramways Co.; 2 forty ton steel frame box cars and 4 forty ton steel underframe flat cars, to Windsor, Essex and Lake Shore Rapid Ry.; 4 forty ton steel underframe flat cars, and 4 fifty ton trucks, to St. Lawrence Bridge Co.

Great Northern Ry. Lines in Canada.

Press reports recently stated that the G. N. R. proposed to start construction on an extension of the line serving Felon and Great Falls, Mont., to the International Boundary, between Montana and Alberta. The new line, it was reported, was already located to Dupuyer, and the extension of this survey would take the line through the Blackfoot Reserve to the International Boundary near the St. Mary's River. The reports further stated that the G.N.R. has secured, or was negotiating for the purchase of, the Western Dominion Ry. charter, which has power to build a line from the International Boundary into the Alberta coalfields and through Edmonton to Fort St. John, B.C. We were officially advised, April 16, that the G.N.R. Co. had "at present no such plans in contemplation" and that the report mentioned was "purely a newspaper story."

The Vancouver, Victoria and Eastern Ry. and Navigation Co.'s line runs into the United States at several points, and from one of these points south of Grand Forks, B.C., a line had been projected along the San Poir Valley. The Spokane and British Columbia Ry., the United States end of the Kettle Valley Ry., was given rights to build along the same valley. After litigation extending over ten years, the G.N.R. announced, April 1, that it had decided to abandon the project of building this line.

Victoria and Sidney Ry.—An agreement has been made by which the rights and property of this railway have been transferred to the Vancouver, Victoria and Eastern Ry. and Navigation Co. The agreement has been formally approved by the City of Victoria and the British Columbia Government, both of which guaranteed the bonds of the V. and S. Ry. (April, pg. 177.)

Taxation of Railways in New Brunswick.

—The New Brunswick Legislature has passed an act repealing the act of 1870 respecting the taxation of railways which prohibited the province or municipalities taxing railways. The Premier stated that what was no doubt a wise provision when the first act was passed, might not be so under present conditions. Up to 1875 the province expended \$2,000,000 upon subsidies to railways, and since that date \$2,907,000 had been expended. With the exception of Prince Edward Island (where the one railway being Government owned was not subject to taxation), Nova Scotia and New Brunswick, all the provinces of Canada taxed railways. The Government had not decided that railways should be taxed, but it was desired to have power to do so, if, upon investigation, taxation was found to be desirable.

The Province of Ontario received \$48,000 from express companies operating in the province, during the fiscal year 1911-12 as follows: American Ex. Co., \$3,000; Canadian Ex. Co., \$17,000; Canadian Northern Ex. Co., for 1911, \$3,000, for 1912, \$4,500; Dominion Ex. Co., \$19,000.

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The demurrage rate on freight cars, which
has been in force on Canadian railways
since last fall, has been discontinued, and
the old rate of \$1 a day, has been restored.

The Canadian Northern Railway Repu- diates the Industrial Shippers Guide.

It has been brought to the attention of
the Canadian Northern management that
the publishers of a book entitled "Industrial
Shippers' Guide" are using the name of this
railway in soliciting advertising, and that
they also claim that, when finished, the
book will be distributed by the C.N.R.

The C.N. Ry. management desires to make
it perfectly clear to all concerned that if
the name of the railway is being used it is
done without authority, and contrary to
their wishes. The company has no inten-
tion of distributing the Industrial Shippers'
Guide, and has no connection therewith,
and desires to have this matter under-
stood.

Testing of Hearing and Eyesight.—The
Board of Railway Commissioners passed
general order 103, April 9, making a num-
ber of changes in order 17211, July 24, 1912,
approving the regulations governing the
testing of hearing and eyesight of railway
employees.

Railway Lands Patented.—Letters patent
were issued during February covering Do-
minion railway lands in Manitoba, Sas-
katchewan, Alberta and British Columbia,
as follows:—

	Acres.
Calgary and Edmonton Ry.	1,756.00
Canadian Northern Ry.	470.59
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	1,610.40
Total	3,836.99

CANADIAN ALLIS-CHALMERS CO.—
It is announced that the Canadian General
Electric Co. has acquired the properties and
assets of Allis-Chalmers-Bullock, Limited,
in Canada, and that the business will be
carried on as Canadian Allis-Chalmers, Lim-
ited, J. A. Milne continuing as General
Manager. The transaction includes the ex-
clusive right from the Allis-Chalmers Co., of
Milwaukee, Wis., to manufacture its pat-
ented specialities in Canada.

Locomotive Boiler Reports.—The Board
of Railway Commissioners has issued a
circular stating that it is in receipt of in-
formation that there is now, and there has
been for some time past, an unusual num-
ber of locomotive fire boxes damaged by
shortage of water. In many cases the dam-
age has been of a very serious nature,
though fortunately accidents have not re-
sulted in injuries to either enginemen or
trainmen, but have only necessitated the
shopping of the locomotive for heavy fire
box repairs. In order to keep the Board's
records for locomotive boilers correct, it is
of the utmost importance that the Board
be furnished with a report covering all such
damage as is referred to herein. The Board
therefore requests that these reports be
forwarded promptly by the railway com-
panies.

The following officers and directors were
elected for the current year, at the recent
annual meeting of the Montreal Ware-
housing Co.:—President, E. J. Chamberlin;
Vice President, H. G. Kelley; other direc-
tors, W. Wainwright, M. M. Reynolds and
J. E. Dalrymple; Manager and Secretary,
G. H. Hanna

Until recently, the two 500 h.p. gas
engines that supply the power for the
Intercolonial Ry. shops at Moncton, were
provided with gas from a large producer
on the plant. The discovery of natural
gas in the country nearby has made the use
of the latter desirable, so that recently,
the supply of gas for the engines was
changed from producer to natural.

Canadian Pacific Railway Machinery Re- quirements at McAdam Jct.

The following machinery is to be in-
stalled in the machine shop which is being
built by the C.P.R. at McAdam Jct., N.B.:—
1 48 inch belt-driven press, 200 tons pres-
sure.

- 1 double axle lathe, with crane mounted
on the machine.
- 1 42 inch car wheel boring machine.
- 1 80 inch driving wheel lathe.
- 1 24 inch drill press
- 1 ½ inch to 4 inch pipe threading machine.
- 1 24 inch x 12 ft. double back-gear-
ed engine lathe.
- 2 20 inch x 8 ft. double back-gear-
ed engine lathes.
- 1 36 inch x 14 ft. double back-gear-
ed engine lathe.
- 1 universal grinding machine.
- 2 18 inch x 8 ft. double back-gear-
ed engine lathes.
- 1 pneumatic tube welding hammer.
- 1 centering machine.
- 1 nut facing machine.
- 1 51 inch vertical boring mill.
- 1 1,600 lb. steam hammer.
- 1 40 ton hydraulic press, for pressing
brasses in axle.

Dominion Government Railway to Hudson Bay.

A contract is reported to have been let
for the building of two steel barges and
two scows for work in the preparing of
the harbor for the Hudson Bay terminals
of this railway. As soon as they are com-
pleted the rest of the dredging plant will
be got together, and sent to Hudson Bay
for the work. While no decision has been
announced as to the location of the termi-
nal, it is believed that it is to be at Port
Nelson. H. T. Hazen is expected to be plac-
ed in charge of the harbor construction
work, and two parties of engineers have
been sent overland from Cochrane, Ont., to
complete the inshore work, while the s.s.
Minto is being outfitted for a voyage to
Hudson Bay to complete the survey of the
approaches.

The House of Commons has voted a
further sum of \$750,000 on account of the
construction of the railway from Pas to
Hudson Bay, and for the provision of
terminal facilities and elevators in con-
nection therewith. (April, pg. 177.)

Canadian Freight Association, Eastern Lines

At the annual meeting in Montreal, April
18, the following committees were elected:—

ADVISORY—C. A. Hayes, W. M. Kirk-
patrick, G. H. Shaw, J. H. Meglemry.

EXECUTIVE—W. M. Kirkpatrick, F. F.
Backus, G. Tombs, H. C. Martin.

CLASSIFICATION—W. M. Kirkpatrick,
H. C. Martin, G. Tombs, F. J. Watson, E.
N. Todd, L. Macdonald, H. E. Macdonell, G.
T. Pettigrew, R. E. Perry, M. H. Brown.

FREIGHT INSPECTION—R. W. Long,
G. Tombs, M. H. Brown, R. W. Youngs, L.
Macdonald, A. D. Huff, G. H. Clark, W. B.
Bamford, W. S. Elliot.

The New Brunswick Transportation Co.
has been incorporated under the New
Brunswick Joint Stock Companies Act with
a capital of \$99,000 and office at St. John.
N.B., to transport freight and passengers
by means of trucks, wagons or other
vehicles drawn or propelled by electricity
or any other motive power. The provision-
al directors are:—J. C. Berrie, W. A. Doug-
herty, H. A. Powell, W. J. Ingram, W. H.
Harrison, St. John, N.B.

National Transcontinental Ry. Construction.

In the House of Commons, Mar. 31, when a vote on account of construction came up, the Minister of Railways made a statement as to the work done on the line. He said:—"In respect of district A, comprising approximately 256 miles from Moncton to the New Brunswick and Quebec boundary, grading is completed and the track all laid. The telegraph line and about 99% of the bridges have been completed. With regard to district B, comprising 562.54 miles, 15 miles of the western end of which have recently been transferred to district C-D, grading is completed, and track laid for 500 miles. The telegraph line is completed for 357 miles, and 98% of the bridges have been constructed. In the next district, C-D, the length of which is 412 miles, grading has been completed to the extent of 395 miles, or 95%, and 391 miles of track have been laid. On the main line 82.9% of siding and yards have been laid, of the telegraph line, 242 miles, and, of the bridges, 42% have been completed, in district C and 98% in district D. In district E, the length of which is 195 miles, 150 miles of grading have been completed, and 195 miles of track laid. That is the section between Cochrane and Graham, 400 miles. We have laid the track over that route, but grading is not fully completed. District F is over 376 miles long. Grading has been completed, and 382 miles of track have been laid, including double track from Transcona to Winnipeg; 132 miles of sidings have been laid, 304 miles of telegraph lines have been completed, and 93% of the bridges have been constructed. A recapitulation of these figures is as follows:—Total length of line from Moncton to Winnipeg, 1,804 miles; grading completed, 1,695 miles, or 94%, in 21 contracts; track laid, 1,720 miles; sidings, 383 miles; telegraph lines, 1,170 miles; bridges, 85% completed. It is expected that the road will be running into Quebec before Sept. 1."

With respect to the terminals in Quebec the Minister said the matter had not moved along as satisfactorily as had been expected, but he hoped to make a definite announcement when the estimates were discussed in detail. It was intended to lay down a track to the Champlain Market, where it would probably be necessary to build a small station. He did not think it a good place for the main terminal of the line, as the means of access were not sufficient for the probable traffic. The line from Moncton to Quebec will be completed by Sept. 1, but the car ferry, which is to operate between Levis and Quebec will not be ready until the spring of 1914. It is being built in Great Britain, on the most up-to-date lines, and will be provided with a mechanical contrivance by which the car deck can be raised or lowered according to the tide. The through traffic will be handled where the railway crosses the bridge, but the Commission, under which the Quebec Bridge is being built, had informed him that the bridge would not be ready before the end of 1917. All the right of way, except one small piece, for the terminal site at Quebec, had been purchased, and the Commission had also bought about 5,000 ft. frontage on the shore between Wolfe's Cove and Champlain market for deep water terminals.

A further sum of \$3,166,666.67 was voted by the House of Commons, April 1, on account of the construction of this railway.

Tenders are under consideration for the building of a 12-stall locomotive house, without machine shop, at O'Brien, Que., about 113 miles east of Cochrane, Ont. (April, pg. 179, and pg. 182.)

Grand Trunk Pacific Railway Construction.

At a special meeting of shareholders in Montreal, April 11, a bylaw, was passed authorizing the directors to issue an additional \$25,000,000 of debenture stock, to complete the line, the provision of rolling stock and other equipment, and for general purposes. H. G. Kelley, Vice President G.T.R., was elected a director, vice E. H. Fitzhugh, resigned.

M. Donaldson, Vice President, returned to Winnipeg, April 5, after having completed a trip of inspection over the company's lines, in operation and under construction. In an interview he is reported to have stated that it is hoped to complete the laying of track into Fort George, B.C., 163 miles, and easterly from the Prince Rupert end, for 115 miles, during this year. On the section to Fort George, two steel bridges have to be completed over the Fraser River. On the section from Prince Rupert, track has been laid to Boulder Gulch, 20 miles east of Hazelton. A steel bridge across the Gulch was expected to be completed by the end of April, when track laying would be resumed. When this work is completed there will remain about 220 miles to be graded and railed to complete the line through from Winnipeg to Prince Rupert. This mileage is all straight work, and unless labor troubles intervened the two sections of the line will be joined up by Sept. 1, 1914. Ballasting and other work is being done on the mileage on which track has been laid.

Contracts are reported to have been let for the building of the following bridges—steel superstructures on concrete and masonry piers and abutments, on the main line:—

248 ft. over McLennan Creek; 129 ft. Little Shuswap; 1,032 ft. Rau Shuswap. 129 ft. Cottonwood Creek; 129 ft. Fifty Mile River; 689 ft. Second Fraser River; 968 ft. Third Fraser River; 459 ft. Willow River; 1,227 ft. Fourth Fraser River; 642 ft. Upper Nechaco River; 154 ft. First Buckley River; 364 ft. Second Buckley River.

The Board of Railway Commissioners has authorized the opening for traffic of the line from New Hazelton, mileage 181, to Beament, mileage 195, easterly from Prince Rupert, B.C.

Work is proceeding on the dock construction at Prince Rupert.

G. T. Pacific Branch Lines.—Application is being made to the Board of Railway Commissioners for authority to build about five miles of spur tracks in connection with the terminals in Fort William, Ont., of the Lake Superior branch line.

The company proposes to lay out its local freight terminals at Fort William in the two blocks bounded by McKellar, Duncan, Vickers St. and Syndicate Ave. The main track into the yards will run down Empire Ave. and cross Vickers St. It is reported that the laying out of the yards will be started at an early date.

In an interview at Winnipeg, April 5, M. Donaldson, Vice President, is reported to have stated that no grading contracts will be let this year, but that the entire attention of the construction staff will be given to completing the lines in progress. It is expected that the branch line from Harte into Brandon will be completed this year. The branch from Regina to the International boundary will be completed and connection made with the Great Northern Ry. branch from Neche, N.D., early in the summer. Track will be laid on the branch northwesterly from Moose Jaw, for 40 miles. This line, it is proposed to extend

to the Saskatchewan River, near Riverside, Sask. It is expected to have the branch into Battleford, Sask., ready to hand over to the operating department by July 1. The bridge work over the Bow River, at the Calgary end of the Tofield-Calgary branch is well forward, and it is expected to have the line completed and in operation by July 31. Grading will be carried on to finish contracts let in 1912, on the Battleford-Cutknife branch, and on the branch from Biggar to join the Tofield-Calgary line.

Hotel Construction.—M. Donaldson, Vice President, in an interview at Winnipeg, April 5, is reported to have said that the Winnipeg hotel will be opened Oct. 1. It is proposed to erect an hotel at Regina, Sask., in connection with the terminals there. The foundations for the hotel at Edmonton, Alta., are practically completed, and work on the superstructure is to be started at once. Nothing will be done in the way of building an hotel in the mountains this year. Plans are being prepared by F. M. Rattenbury, for an hotel at Victoria, B.C., to cost about \$2,000,000. (April, pg. 179.)

Intercolonial Ry. Management.—It was reported from Ottawa, Apr. 4, that considerable changes would shortly be announced in connection with the management of the Government railways. The present Managing Board, it is stated, will be dissolved, and the entire operation placed in charge of a General Manager, for which post, F. P. Gutelius, formerly General Superintendent, Eastern Division, C.P.R., and latterly acting on behalf of the Dominion Government in investigating the cost of construction of the National Transcontinental Ry.



Department of Railways and Canals, Canada.

TRENT CANAL NOTICE TO CONTRACTORS

Lock Gates, Ontario-Rice Lake Division

SEALED TENDERS, addressed to the undersigned and marked "Tender for Lock Gates, Trent Canal," will be received at this office until 16 o'clock on Monday, May 26th, 1913.

Plans, specifications and form of contract to be entered into can be seen on or after April 23rd, at the office of the Chief Engineer of the Department of Railways and Canals, Ottawa, and at the office of Superintending Engineer, Trent Canal, Peterborough, Ont.

Parties tendering will be required to accept the fair wages schedule prepared or to be prepared by the Department of Labour, which schedule will form part of the contract.

Contractors are requested to bear in mind, that tenders will not be considered, unless made strictly in accordance with the printed forms, and in the case of firms, unless there are attached the actual signature, the nature of the occupation, and place of residence of each member of the firm.

An accepted bank cheque for the sum of \$5,000.00 made payable to the order of the Minister of Railways and Canals, must accompany each tender, which sum will be forfeited if the party tendering declines entering into contract for the work, at the rates stated in the offer submitted.

The cheque thus sent in will be returned to the respective contractors whose tenders are not accepted.

The cheque of the successful tenderer will be held as security, or part security, for the due fulfilment of the contract to be entered into.

The lowest or any tender not necessarily accepted.

By order,

L. K. JONES,

Asst. Deputy Minister and Secretary.

Department of Railways and Canals,

Ottawa, 22nd April, 1913.

Newspapers inserting this advertisement without authority from the Department will not be paid for it.—40626.

Canadian Northern Railway, Construction Betterments, Etc.

Canadian Northern Montreal Tunnel and Terminal Co.—The boring of the first two miles of the tunnel under Mount Royal, Montreal, was completed April 5, when the two headings were connected. The bore is being enlarged and lined. There is yet about 8,000 ft. of the tunnel to be bored.

The layout of the city terminus of the line on Dorchester St. is being prepared, and it is stated that the work of preparing the site will be started in June. The main station will be below the street level, and for the purpose of providing the necessary space, the entire area of the two blocks from Cathcart to Lagachetiere St. will be excavated. The buildings will be above the station. Warren and Wetmore, New York, are making the plans for the building.

Montreal-Ottawa-Port Arthur Line.—The Minister of Finance stated in the House of Commons April 2, that the following sums had been paid to the Canadian Northern Ontario Ry. from the proceeds of the loans authorized by chap. 6 of the statutes of 1911 for the construction of this line:—Aug. 30, 1912, \$1,780,843.97; Oct. 19, 1912, \$682,748.90; Dec. 12, 1912, \$1,738,520.13; Jan. 14, \$820,425.69; Feb. 11, \$966,929.90; Mar. 20, \$732,522.25; total, \$6,901,991.25.

Canadian Northern Ontario Ry.—The lift bridge across the Rideau River at Jones Lock, has been completed. The lift span is 57 ft. long, weighs 270 tons, and will be operated by an electric motor.

The Board of Railway Commissioners has approved of revised location plans for the line, mileage 4.35 to 7.21 from Yonge St., through York and Scarboro tps.

By a vote of eight to four, the Toronto City Council, April 8, declined to adopt the resolution of the Board of Control, favoring the annexation by the city of the Leaside townsite, on which the C.N.O. Ry. proposes to lay out terminal yards, and build shops.

Canadian Northern Ry.—The new annex of the C.N.R. elevator at Port Arthur, Ont., was put into use Mar. 23, thereby increasing the storage capacity by 3,000,000 bush.

It was reported from Winnipeg, April 5, that no contracts will be let this season for new construction on Western lines.

The Oak Point Branch is being completed from Deerfield to Sheep's Rock Point, Man., 15 miles, giving access to the gypsum mines. As soon as track laying is completed the plant will be transferred to the Grosse Isle Branch, where there is about 35 miles of track laying to be completed between Inwood and Fisherton, Man.

Tenders are being asked for the building of a six stall addition to the locomotive house at Saskatoon.

Track laying on the branch from Vegreville to Calgary, Alta., has been completed to the Bow River, and when the bridges over this river and the Elbow River in Calgary have been completed, the line will be carried right into the city.

Canadian Northern Pacific Ry.—A. T. Fraser, District Engineer, Tete Jaune Cache, B.C., is reported to have stated in Edmonton, April 4, that it was expected to have track laid to the summit, 350 miles west of Edmonton by the end of July. The end of steel on Mar. 30 was at Macleod River, the bridge across which was practically completed. Track laying would be resumed immediately the bridge was completed and would be gone on with uninterrupted until the Athabasca River was reached, where there would be a short delay pending the completion of the bridge there.

On the section of the line which is being built from Port Mann, B.C., grading and bridge work is so far advanced that it is expected to lay the steel to Kamloops, 243 miles from Port Mann, by Dec. 31. Track has been laid 10.5 miles east of Yale, where a steel bridge is being put in. About 39% of the grading is reported completed between Kamloops and Albeda Summit, on the divide between the Upper Fraser and the North Thompson Rivers.

It is reported that active work will be started on the line between Port Mann and New Westminster, early in June. This is part of the line into Vancouver, which will include a tunnel, about four miles long, to the False Creek flats. It will take about two years to bore the tunnel. T. E. Holt, Executive Agent, Vancouver, is reported to have stated April 1, that special engineers would be engaged immediately to survey and lay out the area acquired for terminals at False Creek. (April, pg. 180.)

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:—

Approval of G.T.P.R. Freight Tariff.

18860. Mar. 13. Re application of the G. T. Pacific Ry., under sec. 327 of the Railway Act, for approval of its Standard Freight Mileage Tariff, C.R.C. 15, including and cancelling C.R.C. 13, to apply between stations in British Columbia, Prince Rupert to Beament, inclusive. It is ordered that the said tariff be temporarily approved, pending the result of the Board's enquiry into rates charged generally by railway companies west of and including Crowsnest, Canmore, and Thornton.

Esquimalt and Nanaimo Freight Tariff.

18866. Mar. 14. Re application of Esquimalt and Nanaimo Ry., for an order further extending time within which it may be permitted to file a revised standard freight tariff for the Board's approval. It is ordered that the time within which the company was required to file the said tariff of maximum freight tolls be further extended for six months from the date of this order.

Interchange Track at Port Hope, Ont.

18838. Mar. 13. Re application of Town of Port Hope, Ont., for an order directing the Canadian Northern Ontario and the Grand Trunk Railway Companies to furnish interchange facilities for the handling of traffic of every description between the two companies, within the limits of Port Hope. It is ordered that the C.N.O.R., at its own expense, construct a transfer track between its railway and the G.T.R., in Port Hope; plans showing the location of the track to be filed within 60 days from the date of this order for the approval of an engineer of the Board, and the work to be completed on or before Dec. 31, 1913.

Rates on Lumber in the West.

18909. Mar. 25.—Re order 18771, Feb. 19, 1913, requiring the Canadian Pacific, Canadian Northern and Grand Trunk Pacific Railway Companies to adjust the special joint tariffs filed so that, without increasing any rates shown therein, the rates on lumber and on other commodities carried at the lumber rates, from shipping points west of and including Blairmore and Laggan, Alta., to Winnipeg, shall not be exceeded for similar or less distances from the same shipping points to points in Alberta, Sas-

katchewan and Manitoba; and directing that schedules, to give effect to this order, be published and filed to become effective by April 1, 1913; it is ordered that the effective date of the schedules be extended until April 2, 1913.

18910. Mar. 25.—Re order 18738, Feb. 19, 1913, directing the Canadian Pacific, Canadian Northern and Grand Trunk Pacific Railway Companies to reduce the local and joint rates on lumber, and on other commodities carried at the lumber rates, from shipping points west of and including Blairmore and Laggan, Alta., to points east of the Red River, so as to graduate less abruptly from the Winnipeg basis to the maximum basis west of Lake Superior; and requiring the said reduced rates to be published and filed to become effective not later than April 1, 1913; it is ordered that the effective date of the reduced rates be extended until April 7, 1913.

Re Rates on Flannelette Sheets.

18944. Apr. 1.—Re application of Montreal Board of Trade for an order requiring flannelette sheets to be added to the dry goods list of the Canadian Freight Classification at the same ratings as are provided for cotton piece goods, namely, l.c.l. 2nd class and c.l. 4th class; it is ordered that the application be refused.

Grand Trunk Railway Betterments, Construction, Etc.

Southern New England Ry.—In a letter to the Governor of Rhode Island, E. J. Chamberlain, President G.T.R., states that \$2,500,000 has already been expended upon this project, and that to complete it will require some millions more than was originally estimated. The company offers to hand over to the state the line as it at present stands, on condition that the state will complete it and operate it on one of two plans. If the state will operate it as a Government line, running powers will be given over the New London Northern Ry., owned by the Central Vermont Ry., from Palmer to Brattleboro, Vt., so as to constitute a complete division, and a traffic agreement will be given by the C.V.R. for a division of through rates on a mileage basis with an addition for terminal charges. Under the second plan the C.V.R. will lease the completed line on a rental of 5% on the actual cost of completing it. If the state will not take any action, Mr. Chamberlain says the work will be definitely abandoned. (April, pg. 181.)

Automatic Block Signalling on C.P.R.—Automatic block signals are now in operation on the Eastern Lines between Vanceboro, Que., and Mattawamkeag; Montreal and Vaudreuil, Que.; Breslay (near Mile End) and Ste. Therese, Que.; Romford Jet. and Sudbury, Ont.; West Toronto and Bolton, Ont.; Islington and Streetsville Jet., Ont. On the Western Lines, automatic signals are being installed between:—Fort William, Ont., and Molson, Man.; Stephen and Field, B.C.; Crowsnest and McGillivray, B.C.

Reports of Accidents in Railway Shops.—The Board of Railway Commissioners has decided that it will not hereafter deal with accidents occurring in railway shops, or other manufacturing establishments the property of railway companies subject to its jurisdiction; and that such accidents need not be reported, but that all accidents occurring on the railway or in connection with the operation of the railway, including locomotive houses, etc., must be fully and promptly reported to the Board.

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.

Canadian Northern Quebec Ry., Quebec and Lake St. John Ry.—H. J. WHITE, heretofore General Car and Wrecking Foreman, C.P.R., West Toronto, Ont., has been appointed General Car Foreman, C.N.Q.R., and Q. & L. St. J.R., vice J. S. Jackson, assigned to other duties. Office, Joliette, Que.

J. S. JACKSON, heretofore General Car Foreman, Joliette, Que., has been appointed Car Foreman, at the recently opened passenger car shops at Limoilou Jet., Que.

Canadian Northern Ry.—A. S. BOISVERT, heretofore joint ticket agent, Chateau Frontenac, Quebec, has been appointed City Passenger and Steamship Agent, Quebec.

T. HOWELL, heretofore General Immigration Agent, Toronto, has been appointed Commissioner of Immigration and Colonization. Offices, Toronto, and Charing Cross, London, Eng. His head office will be in Toronto, as heretofore, and not in London, as stated in the daily press.

W. M. MURDOCH, heretofore Immigration Agent, Toronto, has been appointed Travelling Immigration Agent. Headquarters Toronto.

G. A. NORTH has been appointed City Passenger Agent, Winnipeg, vice N. D. Robinson, resigned to enter private business.

A. H. MURPHY has been appointed Inspector, Sleeping, Dining and Parlor Car, Hotel and News Department, Winnipeg, vice A. B. Webb, resigned.

P. ACKERMAN has been appointed Travelling Dining Car Conductor, Sleeping, Dining and Parlor Car, Hotel and News Department, his duties being to inspect supplies issued to all dining and private cars and to look into the care and storage of them on the cars, also to instruct chefs in the uniform preparation of dishes and proper carving of meats, etc.

R. M. ATKINS has been appointed Immigration Agent at Winnipeg.

W. STOTT, heretofore Travelling Passenger Agent, Saskatoon, Sask., has been appointed City Ticket Agent, Brandon, Man., vice F. J. Creighton, transferred.

F. J. CREIGHTON, heretofore City Ticket Agent, Brandon, Man., has been appointed City Ticket Agent, Regina, Sask., vice K. E. McLeod, transferred.

R. F. McNAUGHTON, heretofore chief clerk to District Passenger Agent, Saskatoon, Sask., has been appointed Travelling Passenger Agent, Saskatoon, Sask., vice W. Stott.

K. E. McLEOD, heretofore City Ticket Agent, Regina, Sask., has been appointed Travelling Agent, Omaha, Neb.

Canadian Pacific Ry.—F. NOWELL has been appointed District Master Mechanic, District 2 and Montreal Terminals, vice W. Borbridge, transferred. Office, Montreal.

T. BELL, Assistant General Advertising Agent, Montreal, has resigned, to enter private business.

J. M. BURKE, heretofore District Master Mechanic, Ottawa, has been appointed District Master Mechanic, District 4, Eastern Division. Office, Ottawa.

W. BORBRIDGE, heretofore District Master Mechanic, District 2, Eastern Division, and Montreal Terminals, Montreal, has been appointed District Master Mechanic, District 5, Eastern Division. Office, Smiths Falls, Ont.

N. E. BROOKS, M. Can. Soc. C.E., heretofore

Division Engineer, Calgary, Alta., has been appointed Engineer Maintenance of Way, Western Lines, vice R. C. St. John. Office, Winnipeg.

W. R. BARNARD has been appointed Travelling Industrial Agent, Department of Natural Resources, Winnipeg.

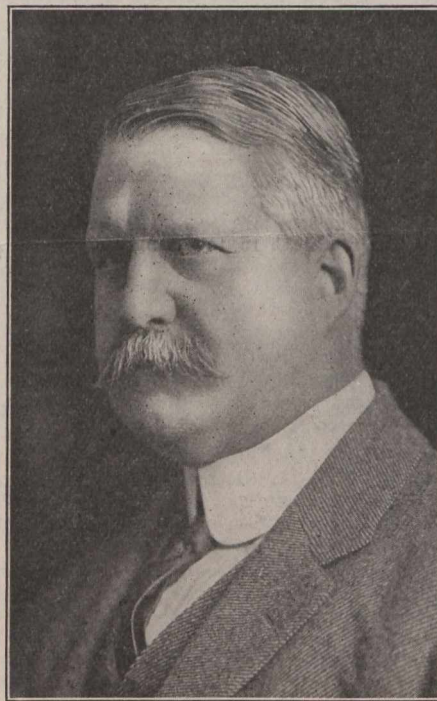
T. MARTIN, heretofore Foreman of repair yard, Winnipeg, has been appointed Foreman, freight car shop, there, vice H. N. Osborne, transferred.

S. J. PIGGOTT, heretofore Assistant Foreman, repair yard, Winnipeg, has been appointed Foreman, vice T. Martin, promoted.

R. HORETZKY has been appointed Travelling Industrial Agent, Department of Natural Resources, Saskatoon, Sask.

E. F. ANDREWS has been appointed storekeeper at Estevan, Sask.

A. G. BROOKER, heretofore ticket agent, Revelstoke, B.C., has been appointed Travelling Passenger Agent, Calgary, Alta., vice J. V. Murphy, appointed District Pas-



C. J. Smith,

Vice President and General Manager, North Ry.

senger Agent, as announced in our last issue.

H. N. OSBORNE, heretofore Foreman, freight car shop, Winnipeg, has been appointed General Car Foreman, Ogden Shops, Calgary, Alta.

W. H. MITCHELL has been appointed Travelling Industrial Agent, Department of Natural Resources, Calgary, Alta.

G. WHARTON has been appointed Assistant Roadmaster, District 2, British Columbia Division, vice C. Fossett. Headquarters, North Bend.

F. YOUNG, Yardmaster at Nelson, B.C., has resigned, effective May 1. Up to the date of going to press, we have not been advised of the appointment of a successor.

J. A. CHARTERS has been appointed Agent, Sleeping, Dining and Parlor Cars and News Service, Vancouver, B.C., vice W. H. Pratt, promoted.

D. C. ALEXANDER has been appointed Travelling Industrial Agent, Department of Natural Resources, Vancouver, B.C.

F. GLANZMANN has been appointed

Agent, Atlantic Steamship Lines, at Trieste, Austria.

Chicago, Milwaukee and St. Paul Ry.—H. H. STEVENSON has been appointed City Ticket Agent, New Westminster, B.C., reporting to the Commercial Agent, Vancouver.

Grand Trunk Ry.—W. FYFE has been appointed General Yardmaster, Montreal Terminals, vice R. Gilmour, appointed Superintendent, Montreal Terminals, as announced in our last issue.

J. E. CROSSLEY, heretofore Ticket Agent, Pullman Co., Bonaventure Station, Montreal, has been appointed Travelling Passenger Agent, G.T.R., reporting to District Passenger Agent, Montreal.

A. RODGER has been appointed Telephone Inspector, for the line between Brockville and Montreal, and for the terminal dispatching system, Montreal Terminals. Office, Montreal.

D. GODIN, has been appointed Telephone Inspector for the line between Toronto and Brockville. Office, Belleville, Ont.

JAMES ANDERSON, heretofore chief clerk, City Passenger and Ticket Agent's office, Hamilton, Ont., has been appointed Travelling Passenger Agent, Toronto, reporting to the District Passenger Agent, there.

R. STANLEY, heretofore leading car inspector at Gravenhurst, Ont., has been appointed Car Foreman at Allandale, Ont., vice W. J. Hallett, promoted.

R. E. WAUGH, heretofore Agent at Stratford, Ont., is reported to have been transferred to the Transportation Department at Hamilton, Ont.

W. J. HALLETT, heretofore Car Foreman at Allandale, Ont., has been appointed Travelling Car Inspector, Ontario Lines, and Districts 8, 9 and 10, Eastern Lines. Headquarters, London, Ont.

H. McDOUGALL, heretofore Travelling Freight Agent, Stratford, Ont., is reported to have been appointed Agent, there, vice R. E. Waugh, transferred to Hamilton, Ont.

J. W. CANATSY, heretofore Yardmaster, Wabash Rd., Montpelier, Ohio, has been appointed General Yardmaster, G.T.R., at Black Rock, N.Y., and Fort Erie, Ont., vice J. R. Hamilton, resigned.

Intercolonial Ry.—W. McKEE has been appointed Car Foreman at St. John, N.B., vice W. Ferguson, deceased.

B. GORHAM has been appointed acting Trackmaster, with territory from Campbellton, N.B., to Ste. Flavie, Que., Moncton and Ste. Flavie District, vice J. Patterson, retired. Headquarters, Campbellton, N.B.

We are officially advised that no appointment has been made to the position of Assistant General Passenger Agent at Montreal, vacant since the death of H. A. PRICE, all correspondence in connection with the office of District Passenger Agent, Montreal, being addressed to the General Passenger and Ticket Agent, at Moncton, N.B.

Kettle Valley Ry.—W. J. McLEAN, heretofore Master Mechanic, Duluth, Rainy Lake and Winnipeg Ry., and Duluth, Winnipeg and Pacific Ry., West Duluth, Minn., is reported to have been appointed Master Mechanic, K.V.R., at Penticton, B.C.

New York Central Lines.—H. L. INGERSOLL, heretofore Assistant General Manager, New York, has been appointed Assistant to Senior Vice President, performing such duties as may be assigned to him by the Senior Vice President (A. H. Smith). Office, New York.

North Ry.—C. J. SMITH, formerly General Manager, Richelieu and Ontario Navigation Co., Montreal, has been appointed

Vice President and General Manager, North Ry., in charge of construction and operation of the line, with general jurisdiction. Office, Montreal. The North Ry. is projected to be built from Montreal to the mouth of the Nottaway River, on James Bay, Que. The Hudson Bay Steamship Co. is projected in the same connection, to develop the fishery and other resources of James and Hudson Bays, and also to carry grain, etc., between the terminus of the Dominion Government railway on Hudson Bay, and the North Ry. terminus on James Bay, thus providing a route from the northwest by water and rail to Montreal.

Pacific Great Eastern Ry.—H. N. MERGLAM has been appointed Division Engineer in charge of construction from Newport to Lillooet, B.C. Office, Lillooet, B.C.

Richelieu and Ontario Navigation Co.—See R. & O.N. Co.'s appointments on pg. 243.

Timiskaming and Northern Ontario Ry.—A. T. MOTH has been appointed Locomotive Foreman at Cochrane, Ont., vice J. Walters, resigned.

Railway Finance, Meetings, Etc.

Algoma Terminal Co.—An issue of \$2,636,500 first mortgage 50 year 5% bonds has been placed on the London, Eng., market. They are guaranteed as to principal and interest by the Lake Superior Corporation. The proceeds of the issue will be expended upon the completion of terminals in Sault Ste. Marie, Ont., and elsewhere, for the Algoma Central and Hudson Bay Ry., and the Algoma Eastern Ry.

Canadian Northern Ry.—A lease of rolling stock from the Imperial Rolling Stock Co. to the C.N.R., numbered series G. 1., was deposited with the Secretary of State, Ottawa, April 3.

Dominion Atlantic Ry.—Passenger earnings for March, \$27,959.04; freight earnings, \$46,969.20; total earnings, \$74,928.24.

Pacific Great Eastern Ry.—The issue of £1,000,000 of 4½% first mortgage debenture stock, principal and interest guaranteed unconditionally by the British Columbia Government, which was offered on the British market recently, is secured by a first mortgage on the line to be built, the rolling stock, equipment, property and franchises, exclusive of terminals and any subsidies that may be granted, and subject only to the payment of working expenses as defined by the Railway Act. The proposed line, which is to run nearly north and south from Vancouver to Fort George, about 450 miles, is intended to form the main trunk route from Vancouver northward through the centre of the province, connecting at Fort George with the G.T. Pacific Ry., with which a traffic agreement has been entered into, and it is anticipated that there will be sufficient returns to ensure profitable working from the outset. The company and its capital stock, property, etc., are exempt from all taxation, provincial or municipal, until July 1, 1926, and the amount of stock or bonds guaranteed is limited to \$35,000 a mile of railway. The proceeds of the issue will be placed to the credit of the Provincial Minister of Finance, to be released on the Government's order, in periodical payments, to the company as construction is proceeded with to the Government's satisfaction.

Temiscouata Ry.—Gross earnings for Jan., \$19,729.16; operating expenses, \$14,877.36; net earnings, \$4,851.80. Aggregate net earnings for seven months ended Jan. 31, \$34,562.

Victoria and Sidney Ry.—The rights and property of the V. and S. Ry., owned by the Great Northern Ry. (U.S.A.), have been transferred to the Vancouver, Victoria and Eastern Ry. and Navigation Co. The agreement provides for the payment to the City of Victoria and to the Provincial Government \$60,000 on account of interest paid on the guaranteed bonds, and the assumption by the V., V. and E. Ry. and N. Co. of the payment of the entire interest during the remaining four years, for which the guarantees run, and the payment of the principal on its becoming due.

White Pass and Yukon Route.—Earnings for two months ended Feb. 28, \$39,639, against \$22,840 for same period 1912.

Winnipeg and Northern Ry.—Application is being made to the Board of Railway Commissioners for a recommendation to the Governor-General in Council sanctioning an agreement for the amalgamation of the W. and N. Ry. with the Canadian Northern Ry.

Lake Erie and Northern Ry. Co's Bond Issue, Etc.

When this line was first projected it was as an electric railway and was, therefore, dealt with in Canadian Railway and Marine World's Electric Railway Department. Some months ago we were officially advised that it would be built, at least at first, as a steam railway. Now, as will be seen below, it is stated that it is to be an electric line.

A prospectus has been issued of \$1,000,000 1st mortgage 5% bonds of the L.E. & N.R. Co. which are offered at 92½ and accrued interest, with a bonus of 25% in common stock. The capitalization authorized and issued is as follows:—1st mortgage 5% bonds, \$1,100,000; 2nd mortgage 5% bonds, \$500,000; common stock, \$1,500,000. The directors are J. Muir, H. Cockshutt, L. Harris, J. Sanderson, W. P. Kellett, Brantford, Ont.; R. Thomson, Paris, Ont.; F. H. Deacon, Toronto; M. N. Todd, Galt, Ont.; G. W. Farrell, Montreal.

The following are extracts from the prospectus:—The L.E. & N.R. Co. was incorporated by the Dominion Parliament, in 1911. The company is authorized to construct a line of railway from Port Dover on Lake Erie, through Simcoe, Waterford, Brantford and Paris to Galt, on the C.P.R. main line, a total distance of 53 miles. The Dominion Government has granted a subsidy of \$6,400 a mile, or a total grant of approximately \$340,000.

The chief object of the road is to provide a direct route between Brantford and various other municipalities in that district to connect with the C.P.R. at Galt, in addition to providing an outlet on Lake Erie to enable the manufacturers of this district to ship their goods by water, during the open season, to the northwest. It will also greatly facilitate direct importations of raw materials from the United States, such as coal, coke, pig iron, sheet metal, etc., of which these municipalities consume very large quantities. For this purpose it is proposed to put in operation a car ferry service between Port Dover and some port on the U.S. side of Lake Erie. As an example of the strong strategic position this road will occupy, we would instance the northern division from Brantford to Galt, which will give Brantford shippers direct connections with the C.P.R., with a haul of only 20 miles. At present Brantford and Paris freight consigned to the C.P.R. must first go over the Toronto, Buffalo, and Hamilton Ry. to Hamilton, and from Hamilton over the G.T.R. lines to Toronto, a dis-

tance of 62 miles before it reaches the C.P.R. This road will further permit of the T. H. & B. Ry. accepting freight from Hamilton, Buffalo and other points for Paris, Preston, Berlin, and all points along the C.P.R. main lines east and west of Galt.

Contracts have been given out for the building of the road, and an engineering force is at work completing all necessary details to permit of an early start being made in actual construction. The character of the country through which the road passes will permit of easy curves and grades without excessive excavation. There is practically no rock cutting, and the bridges are comparatively few in number and present no engineering difficulties. It is the intention to electrify the entire system from Galt to Port Dover, and throughout a high standard of construction will be maintained, including 85 lb. rails. It is expected that the road will be in operation by the latter part of 1913.

Of the bonds the total 1st mortgage issue was sold to G. W. Farrell & Co., while the 2nd mortgage issue was purchased by the various municipalities through which the road will run in the following proportions:—Brantford \$125,000 and Port Dover, Simcoe, Paris and Galt, \$25,000 each; and the remaining \$275,000 by the directors and other interests closely identified with the road. The proceeds of the above 1st and 2nd mortgage bonds, together with the subsidy of approximately \$340,000, is all available for the construction of the road, and is sufficient to provide for the building of a line costing considerably over \$30,000 a mile. In view of the favorable character of the country through which this road will pass it will be evident that more than ample allowances have been made for all requirements.

It is difficult to estimate the revenue of a new road, but the earnings of roads in adjacent territory will serve as a fair basis for comparison. The net earnings per mile of main line of the Toronto, Hamilton and Buffalo Ry. are over \$6,500. The net earnings per mile of main line of the Galt, Preston and Hespeler St. Ry. running north of Galt and connecting with the C.P.R. are over \$3,700. To pay interest on the 1st and 2nd mortgage bonds of the L.E. & N.R., including sinking fund, and to pay 4% dividends on the common stock would require net earnings per mile of approximately \$2,800. It is unreasonable to expect that the L.E. & N.R. will equal the earnings of the T., H. & B.R. for some years at least, but there is every reason to believe in view of its strategic position and the many favorable features surrounding it, that the L.E. & N.R. should, within a very few years, show a substantial rate of earnings on its common stock.

The directors include a number of the most prominent manufacturers in Brantford and Paris, all of whom are in a position to influence a very substantial proportion of the freight originating in that territory. A traffic agreement with the C.P.R., on completion of the road, will ensure the L.E. & N.R. the handling of all freight consigned C.P.R., inbound and outbound, along the whole district between Galt and Port Dover. As the L.E. & N.R. will serve as a very valuable feeder to the C.P.R. and will give it direct access to Brantford, the support and good will of the latter corporation is assured.

G. W. Farrell & Co., Montreal, advise us that the bonds were all sold before the prospectus was issued.

The Canadian Society of Civil Engineers has removed to its new quarters, 176 Mansfield St., Montreal.

Telegraph, Telephone and Cable Matters.

F. Kenny has been appointed local manager, C.P.R. Telegraphs, Lethbridge, Alta., vice — Miller, resigned.

C. E. Lillie, local manager, Great North Western Telegraph Co., Québec, Que., was recently presented with a silver tea service by the local staff, on leaving the company's service.

F. Boomer, heretofore chief operator, Ottawa, has been appointed local manager, Great North Western Telegraph Co., at Québec, vice C. E. Lillie, resigned to enter private business.

The case against G. Hogarth, local manager, Great North Western Telegraph Co., Toronto, for allowing the company's wires to be used for the transmission of messages relating to betting, was dismissed, Apr. 2.

The Great Northwestern Telegraph Co. has reopened its offices at Beamsville, Ont., and Coteau Jet., Dunham, Little Metis, Little Metis Light House and Matane Light House, Que. It has changed the name of Cedar Hall, Que., office to Valbrillant.

The Postmaster General has given notice in the House of Commons, that he will introduce a bill to provide for more advantageous conditions for telegraphic communication between Canada and Great Britain and other parts of the British Empire. It is said that the changes will involve the establishment of a board to have charge of the landing licenses for cable lines, and other matters.

C. E. Lillie having resigned his position as Manager of the Great Northwestern Telegraph Co., Québec, Que., F. D. Boomer, chief operator at Ottawa, has been appointed in his place. Mr. Lillie, who had been in the company's service for a number of years, has been appointed office manager of the Canadian Import Co. A silver tea service was presented to him by the Québec staff on his leaving the service.

W. J. Rooney, Superintendent of Plant, G.T. Pacific Telegraph Co., is reported to have stated in Winnipeg, recently, that the telegraph construction for the current year, will include the following lines:—from Harte to Brandon, Man.; completion of Regina-International Boundary, and Regina-Moose Jaw branch lines, Sask.; completion of the Young-Prince Albert branch, Sask.; a portion of the Battleford section through the Cutknife District, Sask.; an extension from Biggar, Sask., and the completion of the Tofield-Calgary line, Alta. The erection of telegraph lines on the main line between Tete Jaune and the Shuswap River, B.C., is proceeding, and will keep pace with the laying of steel on the G.T.P.R.

The C.P.R. Telegraph Department has equipped two of its wires between Montreal and Toronto with the printing telegraph. Each circuit is worked duplex so that on the two wires two messages can be sent in each direction simultaneously. At the sending end, is a keyboard somewhat similar to a typewriter and all that has to be done to transmit a message is for the sending operator to depress the keys in the same way as though writing a letter or telegram on the typewriter; with the instrument is a recorder which shows exactly what keys have been depressed and whether any mistake has been made. At the receiving end the operator simply feeds in ordinary message blanks as required and the messages are printed automatically on them.

The C.P.R. Telegraph Department, in conjunction with the Commercial Cable Co.,

on Apr. 13, established direct communication with London, Eng., from Montreal, Toronto, Winnipeg, Vancouver, Victoria and Bamfield, B.C., where the Pacific Cable Board's station for the New Zealand cable service is situated. A number of congratulatory messages were sent from the cities mentioned, chiefly to Lord Strathcona. The telegraphic codes in use in Great Britain and on the American continent are different, but this has been got over by having a number of operators at each point conversant with the British or continental code. The question of the adoption of a universal telegraphic code is one which might with advantage be taken up by the various systems, and as all the cable companies and wireless telegraph companies, and all countries operating telegraphs, apart from the American continent, use what is termed the continental code, it might with advantage be made universal.

At the end of Dec., 1911, the Russian Postal Department ordered three wireless stations for the northeastern district of Asia. Each station was to consist of two steel towers 250 ft. high, with antennæ and counterpoises, two kerosene motor sets of 24 h.p. each, coupled to 15 kilowatt, 500 cycle, alternate current generators, a transmitter of 7.5 kilowatts capacity and receiving an auxiliary apparatus. The three stations now completed and have been taken over by the Department, which has opened them up to public service. They are located respectively at Ochotsk, Nayachan, and Novomariinsk. Ochotsk, about 1,200 miles from Vladivostok, is a small town of 300 inhabitants on the western coast of the Ochotsk Sea. Nayachan, about 1,700 miles from Vladivostok, is in an entirely uninhabited tract at the north coast of the same sea, while Novomariinsk, about 2,200 miles from Vladivostok, is a fishing hamlet on the north coast of the Behring Sea on the mouth of the River Anadyr. Nayachan and Novomariinsk are touched twice a year by the mail steamers of the Voluntary Fleet.

The Board of Railway Commissioners has ordered telegraph companies to transmit and receive for delivery both plain and code language Japanese telegrams at code language count, maximum of ten letters a word, between points in Canada and on Canadian portions of the service in, and in connection with, transmission and receipt of such telegrams to and from inland points outside Canada, until such time as a sufficiently comprehensive dictionary, including Japanese language, is prepared and approved, it being understood that code words of more than ten letters must be counted and charged at cipher rate, viz., five letters to a word, but genuine words of more than ten letters may be used in their ordinary sense in a code message or in plain language message, and in such case shall be counted at the rate of ten letters to a word. Plain language telegrams to be composed of plain Japanese words written in Roman letters and authorized by current usage of Japanese language; code language telegrams to be constructed of words, whether genuine or artificial, written in Roman letters and formed of syllables capable of pronunciation, according to current usage of the English language; such tolls to be made effective not later than June 1. (The question as to who is to judge whether a word of more than ten letters is authorized by current usage of the Japanese language, and therefore chargeable at the rate of ten letters to a word, or whether such a word is a code word, and chargeable at the rate of five letters to a word, appears to be left open. The percentage of clerks receiving telegrams for transmission who are in-

timately acquainted with the Japanese language is, naturally, infinitesimal.—EDITOR.)

Among the Express Companies.

W. S. Martin has been appointed agent, Dominion Ex. Co., Portage la Prairie, Man.

P. G. Donnelly, heretofore messenger, Dominion Ex. Co., has been appointed agent at Levis, Que.

C. Dowling, heretofore agent, Dominion Ex. Co., Winnipeg, has been appointed General Agent there.

E. C. Miner, heretofore Assistant to General Agent, Canadian Ex. Co., Montreal, has been appointed General Agent, there, vice R. Murphy, resigned.

C. N. Spooner, formerly route agent, Dominion Ex. Co., Winnipeg, has been appointed Assistant Superintendent, Western Division, with office at Moose Jaw, Sask.

F. Deno, heretofore claims clerk, Winnipeg, has been appointed acting route agent, Dominion Ex. Co., Winnipeg, vice C. N. Spooner, transferred to Moose Jaw, Sask.

The annual meeting of the Canadian Ex. Co., was held recently. Following are the directors for the current year:—E. J. Chamberlin, Chairman of the Board; John Pullen, President; F. Scott, Secretary-Treasurer; M. M. Reynolds, H. Paton and W. Wainwright.

The Board of Railway Commissioners has defined the express delivery and collection limits for St. John, N.B., and has ordered that for the collection and delivery of express freight within the municipal limits of West St. John, a charge of 10c. for each single shipment of one and more packages of a gross weight of 100 lbs. gross weight or less, and 5c. for each single shipment of one or more packages of a gross weight of 500 lbs. or less, and greater than 100 lbs., in addition to the ordinary toll for rail carriage to or from the St. John railway station, may be made, such additional charge to include the ferry toll.

A press dispatch from Ottawa, Apr. 23, states that the Board of Railway Commissioners has ordered a 20% reduction in express rates in Prairie Provinces and British Columbia, with rates in the east left untouched, until the Board has obtained further information as to the working of the reductions made some time ago. The Canadian Ex. Co., it is stated, has shown a falling off in its profits, from 13.1% to 6.09% in 1912, which it is considered is due more to increased expenses than to reduction in rates. The Canadian Northern Ex. Co. made a profit of 24.7% in 1912, and the Dominion Ex. Co. also did well in the West. The companies claim that the cost of doing business in the west is greater than in the east, but the Board considers this has been unduly emphasized, and therefore orders a reduction of 20% in the standard maximum tariffs for traffic classified as merchandise, in the prairie provinces and British Columbia, the present minimum charge of 25c. not being interfered with, to become effective, July 15.

The Board of Railway Commissioners has recommended the Governor in Council to sanction an agreement made between the Canadian Northern Ry., the Midland Ry. of Manitoba, the G.T. Pacific Ry., the National Transcontinental Ry., and the Minister of Railways and Canals, providing for the running of the Midland Ry. of Manitoba's trains into Fort Garry Union Station, Winnipeg.

Electric Railway Department.

Results of the Edmonton Radial Railway's Operation.

The Edmonton Radial Ry., which is owned by the City of Edmonton, Alta., and is under the control of the city commissioners, has 30.25 miles in operation, located in and between Edmonton and Strathcona.

The following comprehensive report on the result of the operations for 1912, with proposals for changes, especially in fares, for this year, was made recently by the Superintendent, W. T. Woodroffe:—

Now that preliminary statements have been prepared for Oct., Nov. and Dec., 1912, I am able to make out a report showing the operations during the year 1912, and also the prospects during 1913. These figures are not final, but are sufficiently correct to show exactly the financial conditions existing in this department.

THE CAPITAL ACCOUNT for this department was increased in 1912 by \$602,006.67, bringing the total at the end of 1912 to \$1,582,453.33. This increased the capital charges against revenue, in April, 1912, from \$5,372.54 to \$9,147.25. A considerable amount of money appropriated by this department in 1912 was not used; it appears to me that in future it would be a good policy not to raise any money unless it is decided to proceed with the work at once. As soon as debentures are issued the department is charged with 7% interest; for instance, \$60,000 were appropriated for the new car barns some years ago, and \$92,000 for the high level bridge.

The department has been paying 7% on these debentures since that time, although the new car barns were only started last July, and there is still a large balance in the high level bridge account.

OPERATION, 1912.—The receipts and expenses were as follows:—

Month.	Receipts.	Expenses.	Profit.	Deficit.
January	\$27,266.62	\$33,069.77	\$	\$5,803.15
February	26,033.76	28,111.67	.....	2,077.91
March	29,966.20	35,084.61	.....	5,118.41
April	33,441.45	31,663.68	1,777.77	.....
May	39,276.30	44,312.74	.....	5,036.44
June	41,009.31	38,393.60	2,615.71	.....
July	44,926.25	41,244.64	3,681.61	.....
August	50,961.83	47,113.02	3,848.81	.....
September	43,433.58	48,380.44	.....	4,946.86
October	46,834.59	52,441.82	.....	5,607.23
November	46,142.55	51,119.40	.....	4,976.85
December	47,161.47	52,013.75	.....	4,852.28
			\$11,923.90	\$38,419.13
				11,923.90
Total deficit				\$26,495.23

Only in June, July and Aug. was a profit recorded. April cannot be considered, as an item was left out of the capital charges, which accounted for this apparent profit; the following month, when the charge was transferred, an extra large deficit was shown in consequence. The reason for there being a profit during June, July and Aug. was the fact that the receipts per car mile were very high, while the expenses per car mile remained the same. These receipts in September dropped owing to the fact that extra cars were put on and the services improved on several lines, the expenses per car mile had also been reduced, but not sufficiently to maintain the surplus shown in June, July and Aug. One important reason for the expenses keeping up since September is the fact that a large increase in wages was granted to motormen and conductors, and car repairers, on Sept. 1; this

increase amounts to an average of 17%. Since this change in the wage schedule was put into effect it has increased the expenses of this department as follows:—

Month.	Motormen and Conductors.	Car Repairers.
Sept.	\$1,683.66	\$ 750.00
Oct.	1,752.85	800.00
Nov.	1,837.11	1,000.00
Dec.	1,925.00	1,200.00
	\$7,198.62	\$3,750.00
		7,198.62
Total		\$10,948.62

Another charge against this department since August has been for repairing, etc., the low level bridge; these charges aggregating \$11,611.39, one-third of which is charged against this department. These two items will give you some idea as to the heavy expenses which this department is up against at the present time.

Analyzing carefully the earnings, we find that every dollar earned is expended as follows:—

Maintenance of way and equipment	14%
Operation	38%
Power charges	39%
Capital	19%
Total	110%

This shows a deficit of 10%; we therefore come to the conclusion that the receipts must be increased or the expenses reduced. Every effort is being made to cut down expenses without sacrificing an efficient service or allowing the maintenance to fall behind, but no great benefit can be expected along these lines, until the system as a whole is put into better condition. We will take each item of the expense separately, in order to find whether this portion of the expense can be cut down:—

2. Maintenance of equipment can be reduced by building a new car barn (which is now being done), and installing efficient tools and labor saving devices.

3. Power charges can be reduced only by using every means to economize power; this can be done by doing away with electric heaters, cutting down the time schedule, and properly instructing motormen how to handle the controllers. The cost of production can also be reduced so that the price per k.w.h. could be cut down.

4. Capital charges can be cut down by doing only work which is absolutely necessary, and work that will reduce the maintenance charges at the same time. No capital should be raised for any work, unless it is the intention to proceed with the work immediately. Money borrowed and not used increases the capital charges.

PROSPECTS FOR 1913.—I propose to increase the capital account in 1913 by approximately \$1,500,000; this expenditure is to replace all present temporary track with permanent track construction; provide permanent junctions at intersecting lines; provide sufficient rolling stock to give a good service; provide substations and a proper system of power distribution; complete the new car barns and equip them with the necessary tools; build only those extensions which are absolutely necessary, and these to be put down in permanent construction.

I have made considerable investigation into the prospects for 1913, and the following statement shows the probable receipts and expenses for 1913; this is as near as can be estimated, and is made after very careful study of this system since its inception.

In preparing this statement it is assumed that the same rates for tickets is maintained as at the present time, viz.:—cash fares, 5c. straight, 5c.; red tickets, 6 for 25c, 4 1-6c.; yellow tickets, 8 for 25c., 3 1/2c.; green tickets, 12 for 25c., 2 1-12c.; blue tickets (\$1 books), 4c.

You will notice from this statement that probably at the end of 1913 we will show a profit of \$16,163.00; the statement shows, however, that for seven months of the year a deficit will be recorded; during the summer months, in May, June, July and Aug. a good profit will be shown, and this profit more than makes up the deficit of the remaining months, leaving a fair sized balance. It would appear from this as if

Month.	Receipts.	Expenses.	Profit.	Deficit.
January	\$46,000.00	\$49,297.25	\$	\$3,297.25
February	44,000.00	47,647.25	.....	3,647.25
March	50,000.00	50,747.25	.....	747.25
April	55,500.00	59,067.25	.....	3,567.25
May	65,500.00	60,347.25	5,152.75	.....
June	68,000.00	61,647.25	6,352.75	.....
July	75,000.00	67,747.25	7,252.75	.....
August	90,000.00	77,347.25	13,152.75	.....
September	73,000.00	74,267.25	.....	1,267.25
October	77,500.00	76,527.25	972.75	.....
November	78,000.00	79,947.25	.....	1,947.25
December	80,000.00	82,247.25	.....	2,247.25
			\$32,883.75	\$16,720.75

1. Maintenance of way.—The only way these charges can be reduced is by laying permanent track in place of open track, on mud bottom, now existing. The estimates for 1913 provide for replacing all temporary track with permanent construction.

the prospects for 1913 are not any too reassuring. We will possibly come out all right, but we have no reserve nor anything left over for depreciation and contingent fund. The question arises, "Is it advisable to continue in the present manner?" The cost of labor and material is advancing

year by year, the wages paid are higher than anywhere else in Canada, and material of all kinds is costing more. Would it not be advisable under the present condition to raise the rates for service given, until such time as the department is on a good footing and has a substantial reserve account to its credit? Should not the public, who use the car service, pay for it, instead of showing a deficit which is charged against the city as a whole?

THE RATES charged at present are as cheap as any city in Canada, in fact, our receipts per passenger show lower than most cities, being very little over 4c. per passenger carried. Our traffic rates are divided as follows:—Cash fares, 17%; red tickets, 56%; yellow tickets, 14%; green tickets, 4.5%; dollar books, 8.5%. Total, 100%. For 1913 I estimate that the passengers carried for the various classes of tickets will be as follows:—

Cash fares	3,280,000
Red tickets	10,710,000
Yellow tickets	2,710,000
Green tickets	880,000
Dollar books	1,640,000
Total	19,220,000

SUGGESTIONS FOR INCREASING RECEIPTS.—There are several ways in which earnings could be increased by increasing the rates, which are as follows:—1. Charge at uniform rate of 5c. straight, with transfer privileges; 2. Do away with the yellow labor ticket; 3. Do away with the blue dollar book of tickets; 4. Do away with transfer privileges.

I have estimated that the effect of each of these changes on our revenue during 1913 would be as follows:

1. Five cents straight. Probable revenue, \$961,000; probable expenses, \$786,837; balance, \$174,163.

2. Do away with yellow tickets. Probable revenue, \$831,230; probable expenses, \$786,837; balance, \$44,393.

3. Do away with blue tickets. Probable revenue, \$805,500; probable expenses, \$786,837; balance, \$18,663.

4. Do away with transfer privileges. During 1912, 1,501,578 transfers were issued. We can assume that if these had not been issued we might have received 50% of the transfers in extra fares. This would mean 750,000 extra fares at 4c. or \$30,000 additional revenue, and would make:—Probable revenue, \$833,000; probable expenses, \$786,837; balance, \$46,163.

5. Do away with red and blue tickets and raise the price of children's tickets. This would mean that except during limited hours a straight 5c. fare would be charged. The rates would then be as follows:—1. Unlimited hours, straight 5c.; 2. limited hours, 5 a.m. to 8 a.m. and 5 p.m. to 6.30 p.m. weekdays only, yellow tickets, 8 for 25c.; 3. children's tickets good at all hours, 10 for 25c. The effect of this on the revenue during 1913 would be as follows:—Probable revenue, \$888,180; probable expenses, \$786,837; balance, \$101,343.

This, I think, is the best method of increasing the rates and getting higher revenue, and is the one that I recommend be carried out. Of course, against the question of raising the rates is the argument that our passenger receipts will not be as heavy if we do anything to increase the fares. I do not think, however, that this should be considered, as it would not affect, to any great extent, the results shown in this report.

The Board of Railway Commissioners has recommended to the Governor General in Council for approval, bylaws passed by the Hamilton Radial Ry. Co. and the Brantford & Hamilton Ry. Co. on Feb. 24, adopting books of operating rules.

Questions and Answers on Miscellaneous Electric Railway Subjects.

Officials of Canadian electric railways have furnished replies as follows to enquiries addressed to the American Electric Railway Association's question box:—

LIFE OF TREATED AND UNTREATED TIES.—What is considered the life of untreated and treated ties embedded in concrete or in open tracks? C. B. Vorce, Engineer of Construction, British Columbia Electric Ry.:—"We have taken out untreated fir ties which have been embedded in concrete for 14 years and found them in as good condition as when first put in."

HEADER BLOCK MATERIAL.—What kind of material is considered the best for header blocks next to rail in connection with asphalt pavements? What is considered the most durable paving material to be used between rails? C. B. Vorce, Engineer of Construction, British Columbia Electric Ry.:—"The only paving material that will stand next to the rail is two rows of concrete. We have found granite sets the most durable pavement between the rails."

WEEDS ON TRACK.—What method is considered the best in getting rid of weeds on the track, and about what is the cost per mile? What is the cost of weeding a track by hand under average conditions, and how often is it necessary during a year to weed? J. D. Evans, Construction Engineer, Electric Bond and Share Co., New York, formerly Chief Engineer, Montreal Tramways Co.:—"In the spring the weeds on the track should be cut down with a weed-hoe for the full distance between the rails and at least 3 ft. outside. The weeds should also be removed about Aug. 1. The rest of the right of way should be mowed the last of June and again the last of Sept., and the grass and weeds burned up. This is, of course, the ideal condition, but gives a good appearance to the track and right of way, and if kept up can be done with a minimum amount of work."

PEENING OF ARMATURE BEARINGS.—How can the peening of armature bearings best be accomplished? Will peening increase the life of rebabbitted armature and axle bearings, and if so, how much? W. R. McRae, Master Mechanic, Toronto Ry.:—"Solid armature bearings only are used in our equipment. Babbit is rolled whilst bearing is in jig prior to boring out. The same method could, of course, be used in the case of split bearings. I favor rolling, instead of peening bearing of armatures shaft sizes. The result is more uniform throughout the bearing. The use of a pneumatic air hammer for peening open bearings is both quick and efficient. The rolling of bearings has given satisfactory results on this property, enhancing the life of same by approximately 10%."

BREAKING OF SHOULDER BOLTS.—What trouble has been experienced from breaking of shoulder bolts in the motor cases and bearing cups of the older type of equipment, and what steps have been found effectual in overcoming that condition? W. R. McRae, Master Mechanic, Toronto Ry.:—"We have experienced very little trouble from shoulder bolts breaking in motors, but have had a considerable number of broken bearing cups. Our remedy for this is, in the case of single trucks, to remove spring suspension from side frame of truck, bolt suspension bar solid to truck side frame and suspend motor from same in a manner similar to a double truck suspension, using in both double and single trucks, springs with ample deflection to allow for all twisting motion between axles and truck side frames, care being taken not to tighten hanger bolt to such an extent as to interfere with free spring movement. This practice has been very successful in stopping breakage of bearing cups, and no doubt will assist in overcoming the breaking of shoulder bolts."

Niagara Gorge Railroad Company.

This company's double track from Niagara Falls to Lewiston, N.Y., is 6.83 miles long, with 1.07 miles of switches. It leases 8.50 miles from Lewiston to Youngstown and Fort Niagara, N.Y., and has trackage rights on one mile of the International Ry.'s double track in Niagara Falls, N.Y.

The gross earnings for the year ended June 30, 1912, were \$165,817.70, compared with \$169,234.52 for the previous year, a decrease of 2.019%; operating expenses were \$84,816.62, against \$84,965.64, a decrease of 0.175%; net earnings from operation were \$81,001.08, to which has been added such other items of income as interest, rentals, etc., amounting to \$8,132.84 and from which has been deducted the loss in operating the Lewiston and Youngstown Division, amounting to \$4,039.84, making a total available income of \$85,094.08. The fixed charges and taxes were \$53,703.52 which, after being deducted from the total available income, leaves a balance of \$31,390.56 which has been added to surplus.

The total number of revenue passengers carried on the Niagara Gorge Division during the year was 507,953, the average revenue per passenger being 32.10c. compared with 519,108 revenue passengers carried during the previous year at an average revenue of 31.99c. The total number of revenue passengers carried on the Lewiston and Youngstown Division during the year was 111,369, the average revenue per passenger being 9.86c., compared with 129,657 revenue passengers carried during the previous year at an average revenue of 10.41c.

Moose Jaw Electric Railway Traffic Statistics.

A regular car service was started at Moose Jaw, Sask., Sep. 4, 1911. The following statistics show the very satisfactory growth of the traffic from that date to the end of 1912:—

Month.	Total Car Earnings.	Average No. Cars in Use.	Average Earnings per Car Mile.	Passengers Carried.
Sept., 1911	\$1,667.18	4.4	15 2-3 cts.	36,595
Oct., 1911	2,070.46	5.1	14 1-3 "	47,165
Nov., 1911	2,144.81	4.9	15 "	47,728
Dec., 1911	2,708.30	5.	15 1-2 "	60,782
Jan., 1912	2,814.67	5.5	15 1-3 "	63,489
Feb., 1912	3,736.54	7.	14 2-3 "	84,207
Mar., 1912	4,274.16	7.65	15 1-2 "	100,282
April, 1912	4,650.97	8.	15 3-4 "	104,814
May, 1912	5,192.21	8.	17 1-3 "	116,777
June, 1912	5,789.00	6.5	22 "	129,634
July, 1912	6,614.60	5.8	27 1-3 "	149,183
Aug., 1912	7,426.47	7.1	24 1-2 "	166,253
Sept., 1912	6,715.89	7.2	21 1-2 "	151,845
Oct., 1912	7,328.31	8.3	20 2-3 "	165,975
Nov., 1912	8,100.39	9.09	20 1-3 "	181,638
Dec., 1912	8,573.08	9.3	23 1-2 "	193,673

British Columbia Electric Railway Employees' Luncheon Club.

The social club connected with the B.C. Electric Railway Co.'s office organization at Vancouver, has recently entered upon a new field of activity by the organization of a luncheon club. This auxiliary organization has as its aim the furnishing of a daily luncheon at moderate cost to its members. The plan has been in operation for several weeks and the results seem to indicate that it will be successful. The B.C.E.R. Co. management loaned to the club the entire initial outfit, including the full equipment for a gas kitchen, china, cooking utensils, furniture, etc., as well as providing the cost of alterations incident to the arrangement for a kitchen and dining room, about \$1,500. The social club gave part of its games room for use as a kitchen, and the balance of this room is used during the lunch hour for dining quarters, the room being changed again for the purpose of games at night. The price charged for meals is \$1 for the five days of the week, no meals being served for less than one week. From 100 to 125 persons have taken advantage of the offer during the first two weeks of the club's operations, and it is probable that the membership will grow now that the organization has been successfully launched. The management of the club is vested in a committee of five selected by the members, a representative of the company's management and a representative of the social club. The only labor employed by the club is a cook and his helper, the luncheon being arranged on the cafeteria plan, each member waiting upon himself. The result of the first week's operations was a deficit of \$12, but on the second week this was turned into a balance of \$6, this demonstrating that it is possible to work out the objects for which the club was organized.

The members of the staff generally agree that the project is a good one, as the luncheon club affords the members an opportunity of securing a substantial mid-day meal at a moderate price, the food and service provided being far better for the money than it is possible to obtain at public dining places in the city. One of the best results of the luncheon club is that it brings the men who usually meet each other only hurriedly and in a business way, to the club quarters, where they meet round the dining table in social intercourse and thus become better acquainted with each other. The provision made by the club of reading room, billiard room, social hall, etc., adjoining the dining room, makes the after dinner gatherings to the various quarters a real pleasure for the employees.

Prohibition of Intoxicating Liquors on Electric Cars.

The Dominion Power and Transmission Co., Hamilton, Ont., which controls the Hamilton St. Ry., Hamilton and Dundas St. Ry., Hamilton Radial Electric Ry., Hamilton, Grimsby and Beamsville Electric Ry., and Brantford and Hamilton Electric Ry., has amended its bylaw regulating travel on cars by adding a clause prohibiting the drinking of intoxicating liquors. The bylaw as amended, and which has been approved by the Board of Railway Commissioners and the Ontario Railway and Municipal Board, is as follows:—

"1. (a) Smoking tobacco or carrying a lighted pipe, cigar or cigarette, except while in smoking compartments provided for that purpose, or except on the three rear seats of open cars only, or expectorating,

except in proper receptacles, or the commission of any nuisance in or upon the trains or cars, passenger stations or other premises used or occupied by the company, is hereby forbidden and declared unlawful, and any person found guilty of a violation of this rule shall be liable to a penalty not exceeding \$5.

"(b) Drinking intoxicating liquors or offering intoxicating liquors to others in or upon the trains or cars of this company is hereby forbidden and declared unlawful, and any person found guilty of a violation of this rule shall be liable to a penalty not exceeding \$10.

"2. Passengers other than policemen in uniform, city detectives and company officials shall not be allowed to ride on the front platform of any closed car, nor to ride on the rear platform of any closed car when there is room or space which may be occupied by them inside the car, and women or children shall not ride on the front platform or seat of any open car, and passengers refusing to comply with this rule shall be considered disorderly persons and subject to a penalty in the violation of this rule not exceeding \$10, and may also, on such refusal, be ejected from or put off the car.

"3. The conductor must politely call the attention of passengers violating, or who appear to intend to violate, the last two rules herein set forth, to the provisions of the said rules and firmly request observance thereof before taking any further or other action."

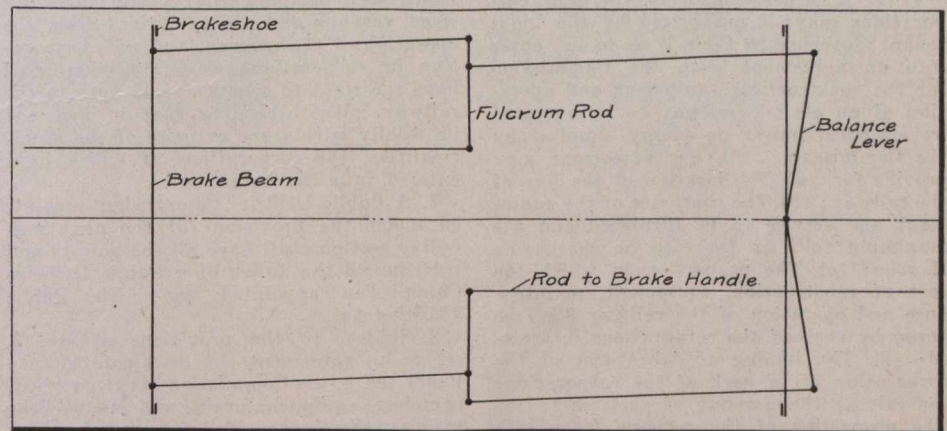
strict develops, that a good freight business will be built up, milk, produce, etc., being taken from the agricultural sections to supply Victoria. Plans are being made for the location of industries along the line and two large cement plants are already located at points which will be tapped by the route.

The rolling stock, which has been allotted to the line, consists of 4 passenger cars, 2 baggage and express cars, 1, 45 ton locomotive, and 25 box cars. It is proposed to inaugurate the service by the operation of 2 train cars, with 3 train cars to be used as the business develops. Sites have been allotted for about 20 stations, located about a mile apart. Shelter structures of the usual interurban type will be provided at each of these points.

Ottawa Electric Railway Brake Rigging.

Nearly all the Ottawa Electric Ry.'s single truck cars have been equipped in its shops with the brake rigging shown in skeleton in the accompanying illustration, constructed to the designs of R. A. Baldwin, Master Mechanic, who is responsible for its introduction.

The rigging is outside hung, with brake beams in position across the front of the wheels, the brake shoes attached thereto. Under the centre of the car are two fulcrum rods are supported under the car, attach the rods from the brake handle rod in the motorman's vestibule, the one not in use being locked in position. These ful-



Ottawa Electric Ry. Outside Hung Brake Rigging.

British Columbia Electric Railway's Victoria-Saanich Line.

The interurban line from Victoria to Deep Cove, which will be placed in operation May 15, extends from the City of Victoria, for 23 miles to the north. It passes through the centre of the Saanich Peninsula, which is an arm of land at the south eastern corner of Vancouver Island, with the Gulf of Georgia on one side and the Saanich Inlet on the other. The district is capable of great development as an agricultural centre and also provides admirable facilities for the location of suburban homes. The Victoria press unites in stating that the opening of the district by the interurban line will do more to advance the growth of the country surrounding Victoria than could be done in any other way. The line will be the second largest interurban line operated by the B.C. Electric Ry., the longest division of the company's system being that from Vancouver to Chilliwak, 76 miles. The B.C.E.R. Co. controls several large holdings along the route of the new line, which will be developed as model town sites. It is also probable, as the dis-

crumbed rods are supported under the car, but not fastened in position. Rods from the ends of the brake beams attach to the other end of the fulcrum lever. One of the brake beams has mounted on its back a balance lever fulcrumed on the beam at the centre, and to the outer ends of which the rods from the central fulcrum rod attach, instead of directly to the brake beam as at the other end. By this means, a balance is maintained in the rigging, regardless of the position in which the off brake handle is locked. Its use has been most satisfactory.

The New Brunswick Legislature has extended the powers granted to the St. Stephen Electric Ry. Co., in its charter, so as to enable it to generate electric power and to dispose of same for commercial purposes.

The Guelph, Ont., City Council is applying to the Ontario Legislature for authority to place the operation of its various public utilities, comprising the supply of water, gas, electric light, heat, sewage disposal, public works generally, and the Guelph Radial Ry., under a single commission.

Public Construction and Operation of Electric Railways in Ontario.

On April 6, Hon. Adam Beck introduced a bill in the Ontario Legislature to provide for the construction and operation of electric railway lines in connection with the Hydro Electric Power Commission's power transmission lines. It is of such importance that it is given here in full, as follows:—

1. This Act may be cited as The Hydro Electric Railway Act.

2. In this Act, "Commission" shall mean The Hydro Electric Power Commission of Ontario. "Corporation" shall mean a municipal corporation, other than the municipal corporation of a county.

3. Whenever required by the Lieutenant-Governor in Council so to do the Commission may enquire into, examine, investigate and report upon (a) The cost of constructing and operating an electric railway, in any locality in which electrical power or energy may be supplied by the Commission under The Power Commission Act; (b) The municipalities, the inhabitants of which will be served by such railway; (c) The population of each of such municipalities as shown by the last enumeration thereof by the assessors; (d) An estimate of the probable revenue from the railway; (e) The practicability of the undertaking and its economic value to the locality to be served by it.

4. (1) A corporation or two or more corporations may, if authorized by the Lieutenant Governor in Council so to do, enter into an agreement with the Commission for the construction, equipment and operation of an electric railway to be operated by electrical power or energy supplied by the Commission. (2) The agreement may provide for, (a) The location of the line of the railway; (b) The character of the equipment and service to be furnished and the maximum tolls or fares to be chargeable thereon; (c) The proportion in which the cost of construction, equipment, maintenance and operation of the railway shall be borne by each of the corporations interested; (d) The issuing of debentures of the corporation or of each of the corporations for raising the amount of such cost; (e) The proportion of the revenue from such railway to be paid annually by the Commission to each corporation after deducting the charges hereinafter mentioned; (f) The construction of the railway upon any right of way acquired by the Commission for the transmission of electrical power or energy under The Power Commission Act and the amount chargeable to the railway by way of rental or otherwise for the use of such right of way. (3) Instead of providing for the construction and operation of the railway by the Commission, the agreement may provide for its construction by the Commission and for its operation by the corporation, or for its construction and operation by the corporation or corporations, and in either case for the supply by the Commission of the electrical power requisite for the operation of the railway on such terms and conditions as may be agreed on between the corporation or corporations and the Commission. (4) Where the railway is to be constructed and operated by the corporation or corporations, the Commission may agree with them to permit the railway to be constructed upon the right of way or other lands of the Commission on such terms and conditions as may be agreed on. (5) The agreement shall not come into effect until it has been sanctioned by the Lieutenant Governor in Council and has been approved by bylaw passed with the

assent of the municipal electors of each municipality.

5. (1) The council of every corporation entering into an agreement with the Commission under this act shall annually raise and pay over to the Commission such sums as may be required by it in the construction, equipment, maintenance and operation of the railway including the costs of the supply of electrical energy to the extent and in the proportions fixed by the agreement and for that purpose may issue debentures of the corporation payable in not more than 40 years from the date of the issue thereof. (2) It shall not be necessary to obtain the assent of the electors to the passing of any bylaw for incurring a debt under this section.

6. Where the agreement provides for the construction and operation or for the operation of the railway by a corporation or by two or more corporations it shall also provide for the management of the railway and its operation by a Public Utilities Commission to be approved by the Lieutenant Governor in Council, and it shall provide as to the mode of appointing the members of the Commission and for the proportions in which each corporation shall contribute to the cost of its construction, maintenance and operation and for the proportion in which each of them shall share in the income, revenue and profits derived from the operation of the railway, and such corporation or corporations or Commission shall have the right to construct and operate the railway notwithstanding that it does not lie wholly within one or more of the municipalities, the corporations of which have entered into the agreement.

7. A Public Utilities Commission appointed under the provisions of the next preceding section shall have all the powers and perform all the duties of a Public Utilities Commission appointed under The Public Utilities Act.

8. Subject to the provisions of sec. 5, where an agreement has been entered into under sec. 4, the Commission may construct, complete, equip, maintain, and operate the railway therein provided for, and for that purpose shall have and may exercise the powers of a company incorporated by special act for the construction of such a railway under the provisions of The Ontario Railway Act, so far as the same are applicable.

9. Where land is required for any of the purposes for which land may be acquired or expropriated under The Ontario Railway Act, the Commission in respect thereof shall have the powers and shall proceed in the manner provided by The Public Works Act, where the Minister of Public Works takes land or property for the use of Ontario, and the provisions of the said act, shall, mutatis mutandis apply.

10. The Commission shall apply the revenue derived from the operation of the railway to the payment of working expenses of the railway and after payment of the same shall annually pay over the balance, if any, to the corporations, parties to the agreement in the proportions fixed thereby.

11. All sums received by the corporation or corporations shall be applied in the first place in the payment of the principal and interest of any debt incurred under the authority of this act in the manner prescribed by the Commission.

12. Secs. 68 to 97 of The Ontario Railway Act shall not apply to the Commission or

to any railway constructed or operated by it.

13. Secs. 8 to 12 shall apply only where the agreement provides for the construction of the railway by the Commission.

14. No action or prosecution shall be brought against the Commission or any member thereof or any of its officers under The Ontario Railway Act without the consent of the Attorney General of Ontario.

15. Neither the Province nor the Commission nor any member thereof shall incur any liability by reason of any error or omission in any estimates, plans or specifications prepared or furnished by the Commission.

16. Every railway and the works, property and effects held and used in connection therewith, constructed, acquired, operated and maintained by the Commission under this act shall be vested in the Commission in trust for the corporations' parties to the agreement for the construction and operation of the railway.

Moose Jaw Electric Railway Finances, Extensions, Etc.

To meet expenditures for plant extensions and equipment during the past year, having in mind additional expenditures of the same nature in the immediate future, and for the purpose of providing working capital for increased operations, the directors decided recently to issue \$125,000 of stock, in addition to the \$500,000 previously issued, and offered the same to shareholders at \$95 a share, in the proportion of one new share for every four shares held. In view of the possibility that some shareholders might not take up the new stock offered, it was decided to receive from shareholders applications for shares in addition to those they were entitled to, the result being that the issue was largely oversubscribed.

The directors have, in view of satisfactory earnings, decided to pay a quarterly dividend for this year at the rate of 6% per annum. The first payment of 1½% was made April 1.

The company has recently installed a Mirless Diesel oil engine of the enclosed type, capable of developing 465 b.h.p. at Moose Jaw's altitude, when running at 2 r.p.m. Also an interpole wound generator, 275 k.w., 550 volts no load, and 600 volts full load. The order also included one spare armature and two spare volt coils.

A large addition to the car ban which was in course of erection collapsed recently and is being rebuilt.

British Columbia Electric Railway Track Extensions.

In Victoria a line will be built from Pandora Ave., along Quadra St. to Bay St., and thence easterly to Shelbourne St., the route serving the suburban section of the city which is now rapidly developing.

In South Vancouver an extension of the track on Westminster Road nearly a mile long will be laid, provision being made for further extending the line along Westminster Road to the limits of the municipality in the future. This track will be of permanent type and will be laid in connection with permanent pavement which will be constructed this year.

Another extension to the line in South Vancouver which is planned for this year is a line connecting the South Vancouver lines with the city line, terminating at Cedar Cottage, in the extreme south eastern part of Vancouver. This line will run from Westminster Road to Cedar Cottage and will be nearly a mile long.

Electric Railway Projects, Construction, Betterments, Etc.

Amherstburg to Kingsville, Ont.—Press reports state that a United States syndicate has under consideration the construction of an electric railway along the Edison power line, from Amherstburg to Kingsville, Ont. The line would follow the Lake Erie shore through Masonic Park at Bar Point, and would serve a number of summer resorts.

Aroostook Valley Ry.—Press reports state that location surveys are being made from Washburn, Me., westerly to the International Boundary between Maine and Quebec, and that construction will be started at Washburn during the summer. This line is projected, with others in New Brunswick and Quebec, to give a short line between St. John, N.B., and Quebec. The entire project is known as the St. John and Quebec Ry., and the section of the line from St. John to Great Falls, N.B., is under construction. Power for the operation of the line in Maine will be obtained from the Maine and New Brunswick Power Co. at Aroostook Falls, Que.

Berlin and Northern Ry.—The Berlin, Ont., City Council's special committee informed the committee of the Wilmot and Waterloo townships council, that the city will not submit another bylaw to aid in the construction of the line by a guarantee of bonds and a grant of \$6,000 towards the construction of a bridge. It is said that another proposal will be submitted for consideration. (Dec., 1912, pg. 622.)

British Columbia Electric Ry.—Grading on the line connecting Port Moody and Coquitlam, B.C., is practically completed. The line will be operated for some time at any rate by steam, and will be used at first to get in the machinery for the Vancouver Power Co.'s new plant.

The company's chief engineer has submitted to New Westminster City Council plans showing the work necessary to install a loop system of car operation.

Arrangements are being made for the erection of a new substation in South Vancouver at a cost of \$90,000. The equipment will consist of three motor generator sets of 1,000 k.w. capacity each, and a transforming equipment of 7,000 k.w. capacity.

The company recently submitted to the Victoria City Council plans showing a number of proposed extensions. The present city and suburban system consists of 36 miles of track, of which 8.7 miles were laid last year. The extension to Saanich, 22.5 miles, has been completed, and arrangements are being made for yards and stations. (April, pg. 185.)

Calgary Municipal Ry.—The estimated expenditure on electric railway construction for the year includes \$510,149 on the completion of lines, and \$127,469 on sub base work on streets for further extensions. (Feb., pg. 90.)

Cape Breton Electric Co.—Press reports state that it is proposed to expend \$350,000 on building a second track on existing lines, and putting in additional sidings; enlarging the car barns and adding to the power plant at Sydney; and providing an auxiliary steam plant at North Sydney, N.S. (Feb., pg. 90.)

Chestermere and Calgary Suburban Ry.—An extension of time has been granted by the Alberta Legislature for the construction of this projected electric railway. The authorized capital has also been increased from \$250,000 to \$750,000, and the company's bonding powers have been increased from \$12,000 to \$20,000 a mile. (Mar., pg. 141.)

Edmonton Radial Ry.—Plans have been approved by Edmonton, Alta., City Council for building 10 miles of electric railways in certain suburbs. These lines will be built on the local improvement plan and by private owners and the city is to be guaranteed against loss in operating them for two years. The first line to be built will be from Highlands east to Beverly Heights, about two miles. (Mar., pg. 141.)

Forest Hill Electric Ry.—The Ontario Legislature has incorporated a company with this title to build lines on Bathurst and Dundas Streets, north of Forest Hill Road, and along Forest Hill Road to St. Clair Ave., where a connection may be made with the Toronto civic car line. (April, pg. 185.)

Fredericton St. Ry.—Plans have been prepared, press reports state, for the building of a five mile electric railway to connect Fredericton, St. Marys, Gibson and Marysville, N.B. (July, 1910, pg. 584.)

Humber Valley Electric Ry.—Plans have been filed with the Ontario Railway and Municipal Board for this projected railway, which will extend from the extension of Bloor St., where it crosses Dundas St., near Islington, southerly to the Lake Shore Road, following the Humber River. The maximum gradient will be 2%, and the sharpest curve a radius of 150 ft., which will be at the subway on Queen St. The plans have been approved, and it is reported that construction will be started at once. The City of Toronto, which is interested in the development of the property to some extent, proposes to submit a bylaw to the taxpayers to secure authority to acquire the line, or to provide the money for its construction and operation as part of the city system. R. Home Smith, Toronto, is the principal promoter. (Feb., pg. 90.)

Lethbridge Municipal Ry.—The Lethbridge, Alta., City Council is considering a proposal to build an extension to No. 6 Mine, and Hardieville, two miles, during the summer. The city has \$10,000 worth of material on hand, and would only require to purchase the steel rails. (April, pg. 185.)

Lethbridge Radial Tramway Co.—The Alberta Legislature has authorized the City of Lethbridge to build the following lines:—From Lethbridge to Raymond; from Lethbridge to Stafford; from Lethbridge to ten named points in Tps. 9 and 10, Ranges 20, 21 and 22, west of the 4th Meridian.

Montreal and Southern Counties Ry.—Negotiations, which have for their object the securing of a terminal station in Youville Square, Montreal, are reported to be nearly completed. With the approval of the City Council the company proposes to erect a station 70 by 300 ft., and to pave the square. (Mar., pg. 141.)

Morrisburg and Ottawa Electric Ry.—Negotiations are being carried on with the Brockville, Ont., City Council with a view of extending the projected line to that point, and building a city system. A committee of citizens has been appointed to consider the matter. J. J. Kilt, Ottawa, is President. (Mar., pg. 141.)

Niagara, St. Catharines and Toronto Ry.—The Dominion Parliament has extended the time within which the company may build the lines authorized by paragraphs b, c. and d., Sec. 1, Chap. 132 of the statutes of 1906, and by Sec. 8, Chap. 77 of the statutes of 1909.

The Board of Railway Commissioners has approved revised location plans for the extension from St. Catharines to Niagara-on-

the-Lake, Ont., mileage 8.7 to 11.1. (Mar., pg. 141.)

Niagara, Welland and Lake Erie Ry.—Material is reported to be on hand for starting construction on the company's lines. The projected lines extend from Niagara Falls to Welland and Port Colborne, and thence east along the lake front to Fort Erie, Ont. Some extensions in Welland are also contemplated. T. R. Cummings is reported to have been engaged as Chief Engineer. C. J. Laughlin, Welland, Ont., is General Manager. (Feb., pg. 90.)

Ottawa Electric Ry.—Press reports state that the company proposes to construct a second track on Creighton St., between St. Patrick and Sussex Streets, 1.50 miles, to be laid with 75 lb. steel. (Feb., pg. 90.)

Ottawa, Rideau Lakes and Kingston Ry.—Following are the officers and directors for the current year:—President, N. M. Clougher, London, Eng.; directors—Hon. W. Dennis, R. H. McElroy, H. D. Ball, G. L. Dickenson. Surveys for the line are reported completed, and negotiations are said to be well advanced for financing construction. (Oct., 1912, pg. 521.)

Quebec Ry., Light and Power Co.—It is reported that the extension of the line to Limoilou, Que., will be built, now that the Drouin bascule bridge across the St. Charles River has been opened. (Sept., 1912, pg. 468.)

Regina and Moose Jaw Interurban Ry.—We are officially advised that it is intended to start construction on this projected line from Regina to Moose Jaw, Sask., 43 miles, early in the summer and to have it opened for traffic, by the fall 1915. Self generating gas electric cars will be used, and a freight and passenger business will be done. The line will pass through Grand Coulee, Pence and Belle Plain. The provisional directors are:—G. A. McCallum, W. P. Wells, J. G. Boyd, Regina, Sask.; A. Hitchcock, J. H. Grayson, Moose Jaw, Sask.; J. Friedman, Saskatoon, Sask.; W. B. Lawson, Chesterville, Ont. (Apr., pg. 185.)

Regina Municipal Ry.—The street railway committee of the Regina, Sask., City Council, is considering plans for the extension of its electric railway lines for 1914. It has been decided to build a second track on Victoria St., from Broad to Albert St., and to extend the Thirteenth Ave. line across the creek to the C.P.R. Annex. (April, pg. 185.)

St. John Ry.—The New Brunswick Legislature authorized the company to extend its lines throughout Kings county, subject to agreements being made with the highway boards of the different parishes. (Apr., pg. 185.)

St. John Suburban Ry.—The New Brunswick Legislature has incorporated a company with this title to build single or double track railway lines from the Suspension bridge at St. John, to different points in the parish of Westfield; to Spruce Lake, Loch Lomond, and from the parish of Simonds, within the city of St. John to points in the parish of Rothesay; electricity, gasoline, steam or any other motive power to be used for operating the cars. The municipal authorities of the parishes within which the company has power to build lines, may make agreements with the company granting the use of highways, bridges, etc., and such agreements shall run for 40 years. The operation of the company in St. John shall not interfere with any exclusive privilege granted to the St. John Ry., and the company is debarred from taking fares within certain areas in St. John. The company has to spend \$50,000 on construction before Jan 1, 1914;

a further \$50,000 before Jan. 1, 1915; a further sum of \$100,000 before Jan. 1, 1916, and within three years has to make an arrangement with a company for the supply of electric power for the operation of the line. The provisional directors are:—J. R. Graham, H. W. Cushman, Bangor, Me.; M. W. Doherty, C. F. Inches, D. K. Hazen, St. John, N.B.

Local press reports state that the following lines are projected under the provisions of the act:—To Loch Lomond, 10 miles; to Rothesay, nine miles; to Milidgeville, three miles, and to Westfield, 14 miles. The company has been organized by the interests promoting the New Brunswick Hydro Electric Co., which is proposing to expend \$1,000,000 on the development of a water power near St. John. J. R. Graham is President of the Bangor (Me.) Railway and Electric Co., and H. W. Cushman is President of the Merrill Trust Co.

At a meeting of those interested in the project held in St. John, April 4, the company was formally organized, the following being elected directors:—J. R. Graham, H. W. Cushman, M. W. Doherty, H. P. Robinson, J. M. Robinson, P. W. Thomson.

St. Stephen Electric St. Ry.—The New Brunswick Legislature has authorized the company to generate electric power and to dispose of the same for any purposes. (Mar., 1912, pg. 143.)

Saskatoon Municipal Ry.—The Saskatoon, Sask., City Council has accepted the offer of a real estate syndicate to build a line from Saskatoon to Sutherland, by way of 8th St., and to hand the same over to the city for operation. The contract, which was signed April 10, is with the Saskatoon and Sutherland Contracting Co., and calls for the completion of the line by Aug. 15. E. Hanson, electrical engineer, prepared the specifications. (Mar., pg. 141.)

Stratford Ry.—The Ontario Legislature has extended the time for building this line, and ratified an agreement with interests allied to the Canadian Northern Ry. for a franchise in Stratford, Ont. The act contains a clause excepting from confirmation paragraph 15 of bylaw 1932, known as the "power clause," and prohibits the carrying of freight on certain streets except between 11 p.m. and 6 a.m. (Feb., pg. 91.)

Toronto and York Radial Ry.—The Ontario Legislature has authorized the company, subject to an agreement with the municipal authorities interested, to build lines connecting the Metropolitan Division with the Kingston Road Division to the east and the Lake Shore Division to the west.

The Ontario Railway and Municipal Board has made an order fixing \$79,245.07 as the price for the section of the Lake Shore Division from Sunnyside to the Humber River, which the City of Toronto is taking over under the franchise agreement. The company asked \$148,843.80 for the property, and the city offered \$32,000. On their failing to agree, the valuation of certain specific portions of the property was referred to the Board. (Apr., pg. 186.)

Toronto Eastern Ry.—We are officially advised that the location has been approved by the Board of Railway Commissioners from Bowmanville to Pickering, Ont., and that the location from Pickering through Scarboro township, passing Rosebank just north of the G.T.R. to a junction with the Toronto and York Radial Ry.'s Scarboro division, is before the Board for approval. The location west of that point has not been definitely determined. A contract for construction was let to Ewen Mackenzie, of Toronto, who commenced work in May,

1912. A branch line from the Toronto Eastern main line to the Canadian Northern Ry. station at Oshawa has been built for the purpose of making an interchange there. Between Bowmanville and Oshawa nearly 90% of the grading has been done, between Oshawa and Whitby, about 50%, and between Whitby and Pickering a little over 50%, or, on the whole line between Bowmanville and Pickering, about 65% of the grading, and the Oshawa spur, which is about 2 miles long, has been completed. The track on the Oshawa spur is practically all laid and about a mile has been laid on the Toronto Eastern main line through the town of Bowmanville. It is expected to start tracklaying on the Toronto Eastern main line during May. There is very little curvature on the line, not averaging more than 4 degrees, with one curve of 10 degrees. It is hoped to have the ruling gradient of not more than 2.7%. The formation of the country is very rolling, and it was on account of not being able to get a reasonable gradient at ordinary cost that the Canadian Northern Ontario Ry. is located further north.

Toronto Suburban Ry.—Work is expected to be started May 1 on a line in West Toronto to connect Annette St. and Pacific Ave.

Plans have been filed showing the proposed route of the Weston-Woodbridge line, now nearing completion, from Weston into Toronto, about six miles. They show a route from the power line right of way at the intersection of Davenport and Weston Roads, through the Silverthorn Heights property, and in a general line with the C.P.R. and G.T.R. for two miles to Weston, and thence on to the Chew farm near the C.P.R.

Work has been resumed on the line from Lambton to Guelph at several points. Preparations are being made for putting in a subway under the C.P.R. at the Mimico River, a short distance east of Islington station, for which the Board of Railway Commissioners approved plans April 12. It is expected to get the line ready for opening as far as Cooksville by the end of summer.

West of Cooksville, S. Mackenzie and A. Kee, are grading some miles in the direction of Meadowvale. The principal work, however, is being done directly by the general contractor, Ewen Mackenzie. The right of way is reported to have been secured for the entire distance into Guelph, although the price to be paid has not in all cases been settled. (Dec., 1912, pg. 623.)

Vancouver Island Hydro Electric and Tramway Co.—Press reports state that construction will shortly be started on an electric line from Nanaimo to Nanoose, and on another from Nanaimo to Departure Bay, on Vancouver Island, B.C.

White Pass to Dawson, Y.T.—We are officially advised that the owners of the railway and steamers, etc., operated as the White Pass and Yukon Route, are not interested in any negotiations reported to be in progress for the building of an electric railway from White Pass to Dawson, Y.T. (April, pg. 186.)

Height of Electric Railway Car Steps.—The Public Service Commission, First District, New York State, considered recently various complaints received from some of the women's clubs in regard to the high step necessary in entering many of the surface cars in New York City. The following decision was given:—"In view of the fact that it seems unlikely that any new cars will be ordered for use in the City of New York with high entering steps rather than the folding steps, no order need be made relative to the height of steps on any such new equipment. Under the circumstances stated it seems advisable to make an order requiring the New York Railways Co., and all of the companies of the Brooklyn Rapid Transit Co.'s system, on or before Jan. 1, 1914, to reconstruct all of their closed cars for passengers, so that none of the steps will be more than 15 ins. from the ground, and requiring the New York and Queen's County Ry., the New York and Long Island Traction Co., and the Long Island Electric Ry., on or before Jan. 1, 1914, similarly to reconstruct 50% of their closed equipment; and the remainder of such closed equipment on or before Jan. 1, 1915."

Edmonton Radial Railway Co's Extensions, Betterments. Etc.

On another page is a comprehensive report of W. T. Woodroffe, Superintendent, on the electric railway owned by the city

of Edmonton, Alta. We are officially advised that the following permanent track work has been decided on for this year:—

Feet.	Street.	From	To	Estimated Cost.
1,778	24th	Jasper	Stoney Plain	\$15,280
7,120	24th	Short	Alberta	72,800
5,900	Athabasca	24th	Stoney Plain	65,000
3,802	Kirkness	Norwood	Alberta	26,700
6,062	Alberta	Kirkness	C.N.R.	38,150
3,796	Saskatchewan	Ninth	Curry	32,800
2,600	Jasper East	Bridge	Kinnaird	16,370
1,580	Kinnaird	Jasper	Pine	9,960
970	Pine	Kinnaird	Agnes	6,110
1,185	Agnes	Pine	Willow	7,470
1,995	Curry	Saskatchewan	McDougall	17,400
600	Whyte	Fourth West	Fifth West	5,160
1,000	Whyte	Seventh East	Mill Creek	8,600
3,740	5th St. E.	Whyte	11th St. N.	17,200
3,730	S'cona Road	S. End Br.	S. Side 11th N.	41,100
1,080	Kinnaird	Spruce	Oak	11,890
4,250	First	C.N.R.	Boulevard	46,750
1,480	Norwood	First	Syndicate	11,400
2,080	Main	Whyte	6th Ave. S.	22,900

Total length of permanent track work 54,748 ft., estimated on double track basis. Reduced to miles on a single track basis this would be 20.7 miles.

The special track work for the above construction has been ordered in the United States, and will be of hard centre construction.

The new car barns on the north side are almost completed. It is intended to erect a new barn on the south side to hold from 15 to 20 cars, which will be designed so that it will be possible to extend from time to time as the requirement arises.

A number of new tools have been ordered for use in repair shops.

The company proposes to spend approximately \$36,000 this year on new feeders, both positive and negative.

The following rolling stock will be added to the equipment this year:—35 single end semi convertible p.a.y.e. cars ordered from the Preston Car and Coach Co.; 1 simplex dump car ordered from Canadian Car and Foundry Co., and 1 more to be ordered; 1 5,000 gal. sprinkler car, ordered in the U. S.; 1 line car to be built in the company's shop.

The Electric Railway Situation in Montreal.

A conference was held, April 17, between E. A. Robert, President, Montreal Tramways Co., and the City Board of Control, with respect to the best way of improving street car conditions in the city. In an interview subsequently, Mr. Robert said the interview had been satisfactory, but that until the matters which had been discussed had been considered by the directors, no announcement could be made. It was reported that the suggestions favorably considered include, in addition to the rearrangement of some existing routes, the establishment of some new routes; and the provision of additional cars. These matters refer entirely to the question of the relief of existing congestion; the question of providing for future developments being left for further discussion.

The present congestion of traffic in Montreal has been the subject of considerable discussion for some time. Three experts were engaged by three of the city newspapers to make reports. These reports have been prepared by J. P. Fox, of New York, for the Montreal Star; D. McDonald, formerly General Manager, Montreal Tramways Co., for the Montreal Herald, and A. J. Lavoie, for La Presse. The City Council referred these reports to the City Engineer, and its railway engineer, April 12, for consideration and report.

We gave on pg. 188 of our last issue a summary of J. P. Fox's preliminary report. The complete report has now been issued. It points out that the questions now at issue should be settled, before anything is done in the way of discussing a new contract. The relief of overcrowding must not be confused with other questions. The various suggestions made in the preliminary report are discussed in detail.

A. J. Lavoie, in his report, makes suggestions for the relief of congestion at the rush hours; suggests a new type of car; the double tracking of Notre Dame St.; the building of new lines so as to give additional routes, and the construction of subways, so as to make the connection between certain lines possible.

D. McDonald's report has not been made public.

Ontario West Shore Ry. Investigation.

A report by H. W. Middlemist, A.M. I.C.E., of Toronto, upon the condition of the partly built O.W.S.R., was published in Canadian Railway and Marine World for April. The situation appears to be that in 1906, J. W. Moyes, of Toronto, who has on several occasions been employed by the City of Toronto, the Toronto Board of Trade, and as "an expert" on transportation questions, secured control of the line and induced the towns of Goderich, Kincardine, Ashfield Tsp. and Huron Tsp. to guarantee bonds to the extent of \$400,000 to build the road. About 14 miles of line from Goderich were built and rails laid, but little or no work has been done for the balance of the distance to Kincardine. The entire \$400,000 has been absorbed, and Mr. Moyes has apparently abandoned the road. Nothing was done on it last year. Mr. Moyes is said to claim that \$639,000 has been spent upon the enterprise up to date.

The municipalities employed Mr. Middlemist to make a report on the cost of completing the road as intended, and what amount had been expended upon it. According to his report less than \$300,000 has been put into the line.

The Ontario Railway and Municipal

Board has received applications from each of the four municipalities to investigate the affairs of the company, which can be done under legislation of last session. An appointment would have been issued some time since, but Mr. Moyes' solicitors asked for some delay, it being said that he was in the Southern States. It was announced, April 16, that an appointment would shortly be taken out and the whole situation investigated by the board.

Meanwhile the company is in default in payment of interest on the bonds. To protect the interest of the municipalities a bill was introduced into the legislature April 16 to vest in trust for the municipal corporations that have guaranteed the bonds, subject to the rights of the bondholders, the interests of the company.

Halifax Electric Tramways Co. Legislation

The Nova Scotia Legislature has had under consideration for some time two bills affecting the H.E.T. Co.'s interests. The first is an application of the City of Halifax for authority to acquire the company's property and franchises on securing authority to do so from the citizens. The second part of the bill provides that the price to be offered shall be \$2,980,000, being the amount of the bonded indebtedness, \$600,000, and \$170 a share for the common stock. In the event of this amount not being accepted by the shareholders then the price to be determined by arbitration. The third part of the bill provides for the formation of a commission to operate the railway and other properties to be required.

The second bill is an application of E. A. Robert, J. W. McConnell, W. G. Ross, F. H. Wilson, Montreal; O. E. Smith, W. M. P. Webster, H. H. Smith, J. E. Wood, J. A. Neville, Halifax, N.S.; Sir Frederick Borden, Canning, N.S.; P. J. McIntosh, New York, for the incorporation of the Halifax Tramways and Power Co., having for its object the purchase, leasing or construction of tramways and street railways within the province; the development of water powers, and the distribution of electric energy for all purposes. The bill provides for the purchase of the Halifax Electric Tramway and Power Co., subject to certain conditions.

After having been discussed for some time by the Committee on Railway and Municipal Legislation, it was decided, April 16, to recommend the Legislature to read both bills that day three months; in other words, to kill them for the session.

The British Columbia Electric Railway in Burnaby Municipality.

The Burnaby Municipal Council submitted to the voters on April 26 a tram franchise bylaw in favor of the British Columbia Electric Ry. Co. The bylaw provides that the company shall construct extensions of its lines on Hastings St., east from Vancouver, and an extension of its New Westminster city lines along the North Road. The term of the franchise will be about 36 years, the general terms of the agreement being similar to the agreement under which the company now operates its systems in South Vancouver and Point Grey municipalities.

The B.C.E.R. was granted a 40 year franchise in Burnaby by the municipal council in 1909. With the passage of this measure the company built a line passing through Burnaby and connecting Vancouver with New Westminster, this line being now in operation. In 1911 a question was raised as to the validity of the company's fran-

chise in Burnaby, because of the fact that the agreement was not ratified by the voters. The question was taken into the British Columbia courts, and last year Mr. Justice Murphy decided that the franchise was valid. Notice of an appeal from the decision of the B.C. court to the Privy Council has been given by the municipality. In the meantime negotiations were carried on which have resulted in the forming of another franchise. The passage of the measure will naturally result in the municipality abandoning its appeal to the Privy Council. Should the measure be defeated the company will press before the Privy Council for a decision that its franchise granted in 1909 is valid.

The municipality of Burnaby is developing very rapidly and the district touches both Vancouver and New Westminster, and suburban settlement for these cities is steadily advancing from either boundary. The terms of the tram agreement now proposed by the B.C.E.R. Co. would do much to assist in the development of the district.

Toronto and York Radial Railway Arbitration.

The Ontario Railway and Municipal Board delivered judgment in the arbitration between the company and the City of Toronto, Apr. 7, in the matter of the taking over by the City of the portion of the Toronto and York Radial Ry., built under the franchise granted to the Toronto and Mimico Ry. and Light Co., and situated within the city limits, together with certain land, buildings and appurtenances. The award is based on a report made to the Board at the instance of the company and the City, by W. P. Kellett, and places a value of \$79,245.07 on the property to be taken over by the City. No order was made as to costs, but the City is required to pay \$500 for the engineer's fee for the report, the cost of law stamps being divided between the City and the company.

Nipissing Central Railway Report for 1911-12.

The report of the operations for the year ended Oct. 31, 1912, is contained in the report of the Timiskaming and Northern Ontario Ry. Commission, by which the line is operated for the Ontario Government.

The revenue from transportation was \$53,170.44, of which \$52,747 were passenger fares; the miscellaneous revenue was \$691.25, making a total revenue of \$53,861.69. The expenditures were: Maintenance of way and structures, \$4,911.82; maintenance of equipment, \$2,041.07; traffic expenses, \$504.96; transportation expenses, \$23,583.80; general expenses, \$2,785.63; total, \$33,827.28. The net revenue was \$20,034.41.

Traffic statistics:—Passenger car hours, 14,413; passenger car miles, 144,131; passengers carried, 723,203; average daily receipts, \$145.27; average receipts per car hour, \$3.69; average receipts per car mile, \$0.37.

General balance sheet:—Assets, \$594,523.25, made up of value of line and equipment, \$186,123.74; value of North Cobalt townsite property, \$252,095; working assets, \$35,707.05; franchise, \$120,597.46. Liabilities:—Capital stock, \$530,000; working liabilities, \$33,157.63; deferred credit item, \$7.50; profit and loss, free surplus, \$31,358.12. This latter sum is made up of the balance at Oct. 31, 1911, of \$10,978.11; net revenue for 1911-12, \$20,034.41; received from townsite, \$345.60.

The Street Railway Situation in Toronto.

The proposal for the acquirement by the city of the Toronto Ry., which has been before the public for several years in various forms, was again revived, Apr. 17, when Mayor Hocken introduced the matter to the Board of Control, and subsequently to a special meeting of the City Council. He stated that he had reason to believe that a good opportunity had arisen for the city to purchase the Toronto Ry., and with it the Toronto Electric Light Co., and that the basis for negotiation would probably be the acquirement of the railway stock at 160, and the electric light stock at 135, which latter is the same price at which it was acquired by its present owning company. The special meeting of the council was called to authorize immediate application to the Ontario Legislature for authority under which negotiations for purchase might be carried on, and he asked the council not to attempt any discussion at the moment, as such preliminary negotiations as had been made, had not advanced sufficiently for any public good to be gained by discussion, but he hoped that on the return of Sir William Mackenzie, the President, from England, they would be completed, and a final recommendation on the matter laid before council.

A bill was immediately prepared and introduced into the Legislature the same evening, when it was given its first and second readings. Generally speaking, the bill gives the city authority to purchase the rights and interests of all companies owning or operating street or electric railways within the city limits, including real and personal property, and all the assets, rights and franchises of the Toronto Electric Light Co., and for such purpose to borrow the money by the issue of 40 year debentures, without the necessity of submitting the question of the issue to the ratepayers. The debentures are to be secured by a mortgage on all the electric railway and electric light systems owned by the city, including those purchased under the authority of the bill, and the management of the systems is required to be vested in a Public Utilities Commission of not less than three nor more than five members, of whom the mayor, for the time being, shall not, ex-officio, be a member.

At a subsequent meeting of the Board of Control, it was decided to withdraw the bill, but on a special meeting of the council being called, the council declined to authorize its withdrawal, and reaffirmed its previous decision. In the meantime an objection had been voiced by Hon. Adam Beck, Chairman of the Ontario Hydro Electric Commission, on the ground that the acquirement of the properties by the city would necessitate the continuance of the power contracts between the Toronto Ry., Toronto Electric Light Co., and the Toronto Power Co., for the remainder of the term of the railway franchise, which he claimed the city could not carry out, under the terms of its contract with the Hydro Electric Commission, which confines the city to the use of power supplied by the Commission.

The third reading of the bill, which was fixed for Apr. 21, did not take place, a different course having been adopted. The original bill was almost entirely remodelled, and referred to the Private Bills Committee. A new clause was inserted providing that no agreement for the purchase of the Toronto Electric Light Co. shall be submitted to the electors until it is approved by the Ontario Hydro Electric Commission, and the Lieutenant Governor in Council,

and another clause was added prohibiting the amalgamation of the T.E.L. Co.'s properties with those of the Civic Hydro Electric System. The bill was passed Apr. 23, with all reference to the Toronto Electric Light Co. eliminated, the previous legislation giving authority to purchase this company being still in force. It is thus necessary to submit two bylaws to the vote, instead of one as originally intended.

The issue of the whole matter is a subject for considerable speculation, as it is understood that should the companies actually desire to sell, the two properties, the Toronto Ry. and the Toronto Electric Light Co., must be taken over by the city together, while the legislation being promoted is to provide for submitting the taking over of the properties to the ratepayers separately. In such case, it is possible that the decision may be in favor of taking over one and discarding the other, and in that event the whole legislation may prove futile.

Following are some details of the Toronto Ry. Co. and other allied companies:—

THE TORONTO RY. CO. has an ordinary share capital of \$11,000,000; first mortgage 4½% bonds of \$3,059,940 redeemable in 1921, and 6% debentures of \$600,000 redeemable in 1914. It owns outright two thirds, and through a subsidiary company controls the remaining one third of the issued capital stock of the Toronto Power Co.; and owns the whole of the ordinary capital stock of the Toronto and York Radial Ry. Co., and has guaranteed the last mentioned company's bonds for \$1,620,000.

THE TORONTO POWER CO. has an authorized share capital of \$6,000,000, of which \$3,000,000 is issued and fully paid, and which is owned and controlled by the Toronto Ry. Co., and it has £2,857,670 of 4½% consolidated guaranteed debenture stock redeemable in 1941, and £349,347 of 4% debenture stock redeemable in 1918. It owns the entire capital stock of the Toronto Electric Light Co., and 96½% of the ordinary shares, and over 50% of the first mortgage bonds of the Electrical Development Co. of Ontario.

THE TORONTO ELECTRIC LIGHT CO. has an ordinary share capital of \$4,000,000, owned by the Toronto Power Co., and also \$1,000,000 of 4½% debenture stock redeemable in 1916.

THE ELECTRICAL DEVELOPMENT CO. OF ONTARIO has an issued share capital of \$6,000,000, divided into \$3,000,000 of preference shares and \$3,000,000 ordinary shares, 96½% of which latter is owned by the Toronto Power Co., and there are first mortgage 5% bonds amounting to \$9,953,000 repayable in 1933.

THE TORONTO AND YORK RADIAL RY. CO. has an ordinary share issue of \$2,000,000, all of which is owned by the Toronto Ry. Co., and there are \$1,620,000 of 5% first mortgage bonds guaranteed by the Toronto Ry. Co.

New Rolling Stock for British Columbia Electric Railway.

The additional rolling stock which will be demanded for the B.C.E.R. Co.'s lines during this year will represent an expenditure of over \$750,000. The principal item consists of 65 passenger cars, an order for which was given the Preston Car and Coach Company during the latter part of 1912, and delivery of which is to be made during the summer. In addition there will be 16 passenger cars for city service. For its interurban lines the company will require 3 additional passenger coaches, 3 baggage and

express cars and 2 combination mail cars, the latter probably being built in the company's shops from material now on hand. For the freight service there will be required 50 box cars, 30 flat cars and 25 steel dump cars. The company's plans also call for the purchase of 3 snow sweepers.

During the past month the company received two 50 ton locomotives from the Westinghouse Co., this equipment having been ordered last year. They are of the latest type, and will be used on the Fraser Valley Division of the company's lines.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for Feb., \$546,040; operating expenses, \$346,052; net operating earnings, \$199,988; renewal funds, \$51,620; net earnings, \$148,368; approximate income from investments, \$35,000; net income, \$183,368, against \$473,036 gross earnings; \$290,661 operating expenses; \$182,375 net operating earnings; \$37,935 renewal funds; \$144,440 net earnings; \$25,000 approximate income from investments; \$169,440 net income for Feb., 1912. Aggregate gross earnings for eight months ended Feb. 28, \$4,566,538; net earnings, \$1,571,079, against \$3,791,667 aggregate gross earnings; \$1,339,531 net earnings, for same period 1911-12.

The percentage of earnings paid to the City of Vancouver for Feb., was \$3,542.95, against \$3,303.67 for Feb., 1912.

Cape Breton Electric Co.—Gross earnings for Feb., \$26,141.44; operating expenses and taxes, \$17,005.50; net earnings, \$9,135.94; interest charges, \$4,881.26; balance, \$4,254.68; sinking and improvement funds, \$1,190; balance for reserves, depreciation, etc., \$3,064.68, against \$26,693.29 gross earnings; \$15,356.19 operating expenses and taxes; \$8,337.10 net earnings; \$4,495.83 interest charges; \$3,841.27 balance; \$1,140 sinking and improvement funds; \$2,701.28 balance for reserves, depreciation, etc., for Feb., 1912. Aggregate gross earnings for two months ended Feb., 28, \$57,976.87; net earnings, \$23,210.88; interest charges, sinking funds, etc., \$11,894.45; balance, \$11,316.43, against \$52,020.73 aggregate gross earnings; \$19,169.23 net earnings; \$11,271.66 interest charges, sinking funds, etc.; \$7,897.57 balance, for same period 1912.

Lethbridge Municipal Ry.—The total earnings for March were \$4,960.32. Passengers carried during the month, 117,153.

London St. Ry.—Gross earnings for March, \$26,589.78; expenses, \$18,531.43; net earnings, \$8,058.35; deductions, \$2,467.75; net income, \$5,590.60. Aggregate gross earnings for three months ended Mar. 31, \$76,689.59; expenses, \$53,367.56; net earnings, \$23,304.03; deductions, \$7,139.85; net income, \$16,164.18.

Montreal Tramways Co.—At a recent special meeting of shareholders the directors were authorized to issue \$18,000,000 of capital stock, as and when required for the expansion of business and for new lines. In the course of a conversation, subsequently, E. A. Robert, President, is reported to have said that the first issue would probably be between \$3,000,000 and \$4,000,000, but no decision had been arrived at as to when such an issue would be made, much depending on the reports and estimates in course of preparation, and on any agreement which might be arrived at with the city.

An interim dividend of 5% on the paid up capital stock has been declared. It is also announced that an issued of \$1,000,000 of new capital stock will shortly be made at par.

Nelson St. Ry.—The operating account for the year ended Dec. 31, 1912, shows re-

ceipts of \$13,232.50, and expenditures of \$17,394.42. Deducting from the latter amount the value of supplies on hand \$2,900, the loss for the year was \$1,261.92. The general balance sheet shows liabilities of \$45,245.06, and assets of \$67,158.31. Following are the directors for the current year:—J. E. Taylor, Jas. Johnstone, A. S. Herswell, G. F. Mohon, W. Dauche, W. R. Maclean, M.P.P.; C. R. Hamilton, K.C.; E. A. Crease, W. J. Meagher, Dr. W. O. Rose.

Ottawa, Rideau Lakes and Kingston Ry.—The following have been elected directors for the current year:—N. M. Clougher, President; Hon. W. Dennis, R. McElroy, G. L. Dickenson and H. D. Ball.

The Public Service Corporation, which is a subsidiary of the Montreal Tramways Co., is arranging for the issue of \$1,250,000 5% gold mortgage bonds, with a bonus of 100% of common stock. It is stated that the proceeds will be used in payment for the franchises of the Dominion Light, Heat and Power Co., and the St. Paul Electric Light and Power Co. The authorized capital stock of the Public Service Corporation is \$5,000,000.

St. Thomas Street Ry.—Cash fares for March, \$462.68; tickets, \$1,138.75; total, \$1,601.43, against \$1,114.10 for Mar., 1912. Passengers carried 45,718, against 32,460 in Mar., 1912.

Toronto Ry., Toronto and York Radial Ry., and allied companies.—Gross earnings for Feb., \$718,313; operating expenses, maintenance, etc., \$377,483; net earnings, \$340,830, against \$640,246 gross earnings; \$320,408 operating expenses, maintenance, etc.; \$319,838 net earnings, for Feb., 1912. Aggregate gross earnings for two months ended Feb. 28, \$1,495,241; net earnings, \$716,603, against \$1,296,356 aggregate gross earnings; \$649,276 net earnings, for same period 1912.

Winnipeg Electric Ry.—Gross earnings for Feb., \$320,431; operating expenses, \$177,897; net earnings \$142,534, against \$299,246 gross earnings; \$164,942 operating expenses; \$134,304 net earnings, for Feb., 1912. Aggregate gross earnings for two months ended Feb. 28, \$671,928; net earnings, \$294,500, against \$618,680 aggregate gross earnings; \$278,325 net earnings, for same period 1912.

Electric Railway Notes.

The Edmonton Radial Ry. has received a dump car from Canadian Car and Foundry Co.

The Montreal Tramways Co. has received 2 steel street car bodies, from Canadian Car and Foundry Co.

The Halifax Electric Tramway Co. has ordered six closed street cars from the Nova Scotia Car Works.

The duties of Superintendent of the Saskatoon Municipal Ry., Saskatoon, Sask., are being performed by E. Hanson, City Electrical Engineer.

The Moose Jaw Electric Ry. has recently received two semi convertible, single truck cars, equipped with Westinghouse 89 motors, etc., from Ottawa Car Co.

The Ontario Legislature has approved of a section in the Toronto and York Radial Ry. Co.'s bill, authorizing it to operate Sunday cars on its Metropolitan Division.

The Windsor, Essex and Lake Shore Rapid Ry. has received 2 forty ton steel frame box cars, and 4 forty ton steel underframe flat cars, from Canadian Car and Foundry Co.

The Port Arthur and Fort William Electric Ry. has recently received four semi convertible, pay-as-you-enter trailer cars,

46½ ft. long over all, mounted on 27-G-1 trucks, from Ottawa Car Co.

The Dominion Power and Transmission Co., Hamilton, Ont., has received 12 double truck city cars, mounted on 27-G-1 trucks, with Westinghouse 101-B-2 motor equipment, from Preston Car and Coach Co.

The Montreal and Southern Counties Ry. has recently received four interurban cars, 50 ft. long over all, equipped with Westinghouse H.L. multiple unit control motor equipment, and Westinghouse air brakes, from Ottawa Car Co.

It was recently suggested at a meeting of the Toronto City Council that the Toronto Ry. be asked to sell annual tickets for the use of the public, and in response the General Manager stated that the rates of fares were settled by the Council at the time the franchise was granted and the company has no power to depart from them, but if the Council decided on a change the company would probably comply with the request, being influenced, of course, by the rate proposed to be charged for such annual tickets.

In what is known as the Vipond-Lovett case, now before the Quebec courts, the question of the production of a certain document connected with the formation of the Montreal Tramways Co., has been under discussion for some time. An order was made by Justice Charbonneau, early in March, that this document should be produced by E. A. Robert, President M.T.C., and Secretary Mallison of the Imperial Trust Co. Several motions have been made on the matter since, and Justice Charbonneau, April 17, made an order directing the parties to appear and "show cause why such condemnation should not be meted out to them" for disobeying the order to produce.

Personal Paragraphs.

F. D. BURPEE, Superintendent, Ottawa Electric Ry., was married in Oswego, N.Y., recently.

P. G. GOSSLER, of New York, formerly of Montreal, has been elected First Vice President of the Macon Ry. and Light Co., Macon, Ga.

T. AHEARN, President, and JAS. D. FRASER, director and Secretary-Treasurer, Ottawa Electric Ry., returned to Ottawa early in April, after a trip to Panama, etc.

JAMES ANDERSON, General Manager, Sandwich, Windsor and Amherstburg Ry., returned to Windsor, Ont., early in April, from a trip to the Mediterranean.

J. C. GRACE, Secretary, Toronto Ry. Co., and Mrs. Grace, left Toronto for England early in April to place their daughter at school, intending to return about the middle of May.

H. LONG, heretofore Electrical Engineer, Lac du Bonnet water power generating station, Winnipeg Electric Ry., has been appointed Electrical Engineer for the company, vice — Ross, resigned.

A. T. GOWARD, Manager British Columbia Electric Co., Victoria, B.C., was presented with a cabinet of silver by the local officials and employes of the company and its other concerns, April 11, on the occasion of his approaching marriage.

REDMOND QUAIN has been elected a director of the Ottawa Electric Ry., to fill the vacancy caused by the death of G. P. Brophy. He is a native of the city, and was one of the pioneers and one of the first directors of the old street railway there.

S. B. THOMPSON has resigned as Mechanical Superintendent, British Columbia

Electric Ry., Vancouver, and has become associated with J. A. Roosevelt, formerly of the Third avenue Ry., New York, N.Y., under the firm name of Roosevelt & Thompson, to investigate and report on electric railway and light properties.

H. C. DONECKER, Secretary-Treasurer, American Electric Railway Association, has been appointed Assistant General Manager, Public Service Ry., Newark, N.J., from July 1. He will continue in charge of association matters until after the next convention.

M. F. WERTH, heretofore chief clerk to Mechanical Superintendent, British Columbia Electric Ry., Vancouver, has been appointed acting Mechanical Superintendent, vice S. B. THOMPSON, Mechanical Superintendent, resigned to enter private business.

International Transit Co's Earnings, Etc.

Following is a comparison of this company's earnings of 1911 and 1912, the figures including the operation of an electric railway in Sault Ste. Marie, Ont., and a ferry service between that town and Sault Ste. Marie, Mich:—

	1911.	1912.
Gross earnings	\$123,668	\$143,372
Operating expenses, taxes, etc.	73,836	73,071
Net earnings	\$49,832	\$70,301
Bond interest	14,000	13,000

Surplus

	1911.	1912.
Surplus	\$35,832	\$57,301

The amount required for bond interest is reduced each year by \$1,000 owing to an annual repayment of principal of \$20,000, the next payment of that amount being due July 1, 1913. This will then leave only \$240,000 of the bonds outstanding.

Pennsylvania Rd. Electrification.—The directors have authorized the expenditure of nearly \$4,000,000 for the electrification of the main line between Philadelphia and Paoli for suburban passenger traffic. The plan includes increasing the track capacity at the Broad St. station, the acquisition of all the property on Filbert St. and the release of such property to the city as may be needed for the Parkway.

Railway Electrification in England.—The electrification of the London, Brighton and South Coast Ry. Co.'s suburban railways, near London, has given excellent results in the economy and the number of passengers carried. Comparing steam and electric traction, the number of trains in and out of Victoria station in one day has risen from 496 to 739. At London Bridge the number has risen from 663 to 901. The number of passengers carried on the South London line since electrification has increased over 4,500,000 each year over that carried during the last year of steam operation. The cost of maintenance of the overhead equipment has worked out at about \$107 a mile per year, and the other conditions of maintenance are stated to be equally satisfactory.

Conductor and Ticket Agent Imprisoned.—A. Collins, conductor, and J. A. Bailey, ticket clerk, at Three Rivers, Que., were sentenced at Montreal recently to nine months imprisonment for conspiracy to defraud the C.P.R. Co. After selling tickets to passengers the ticket clerk would board the train, and after Conductor Collins had taken up the tickets he returned them unpunched to the ticket clerk, who caught the first homeward bound train and resold the tickets the same day. The judge told the prisoners that they were liable for seven years imprisonment, but it being their first offence he was inclined to deal leniently with them.

NIAGARA, ST. CATHARINES AND TORONTO NAVIGATION Co., ST. CATHARINES, ONT.
 Dalhousie City J. W. Maddick J. H. Brown
 Garden City G. Blanchard H. R. Welch
 ONTARIO CAR FERRY CO. LIMITED, MONTREAL
 Ontario No. 1 F. D. Forrest J. A. Nicoll
 NORTHERN NAVIGATION CO. LIMITED, SARNIA, ONT.
 City of Midland C. Hill J. Osburn
 Doric S. Hill Jas. Cameron
 Germanic F. G. Moles S. Burgess
 Harmonic R. D. Foote Jas. Wilson
 Huronic A. L. Campbell F. T. Norris
 Ionic R. Laing Jas. Adams
 Saronic A. M. Wright E. H. Spencer
 Waubic G. W. Kinnee
 NORTH VANCOUVER FERRY CO., LIMITED, NORTH VANCOUVER B.C.
 North Vancouver No. 1 W. Fatke A. Mackintosh
 North Vancouver No. 2 R. Spencer D. Becker
 North Vancouver No. 3 W. J. Spracklin W. Whitworth
 I. Butler
 OTTAWA RIVER NAVIGATION CO., LIMITED, MONTREAL
 Empress A. Blondin N. Chartier
 Princess E. Gauthier F. Piche
 OTTAWA TRANSPORTATION CO. LIMITED, OTTAWA, ONT.
 Dolphin Z. Lavigne D. Maranville
 Florence E. Lefebvre P. Trotter
 George A. Harris F. Pilon A. Madore
 Glen Allan A. G. Clark G. Beaudet
 Hall J. C. Barclay E. Vezinas
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 Quebec L. R. Demers A. Ouzilleau
 Rapids Prince G. Batten D. J. Leslie
 Rapids Queen J. P. Stephenson A. Charbonneau
 St. Irenee J. Dougal A. Gagnon
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 SINCENNES-McNAUGHTON LINE, LIMITED, MONTREAL
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 Hudson C. Legault N. Rousseau
 J. O. Gravel G. Mongeau R. E. Roy
 John Pratt I. Beaudry D. Vezina
 Mathilda J. Cournoyer N. Moreau
 Nathalie R. A. Goulet P. N. Rousseau
 Rival S. Parisien N. Lavallee
 Rosalie L. Z. Mongeau F. Denis
 Sin-Mac L. Legault A. Baribeau
 Spray L. Lemay A. Rousseau
 Virginia P. Bibeau F. Rousseau
 Yvon A. Rajotte A. Lemay
 SPARROW LAKE STEAMER LINE, SPARROW LAKE, ONT.
 Glympe A. F. Stanton J. Bourneman
 Lakefield F. Stanton A. Heye
 TIMISKAMING NAVIGATION CO., HAILEYBURY, ONT.
 Jubilee W. Merchant W. Leclair
 Meteor McC. Burns J. Seguin
 Silverland J. Burns J. D. Andrews
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 UNION STEAMSHIP CO. LIMITED, VANCOUVER, B. C.
 Camosun A. E. Dickson A. Beattie
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 Cassiar G. Gaisford G. W. Mathews
 Chelohsin J. F. Edwards G. H. Foster
 Comox J. Brown A. T. Roy
 Coquitlam N. Grey R. Holbourn
 Cowichan C. Moody R. Whyte
 Venture J. Park C. Arthur
 UPPER OTTAWA IMPROVEMENT CO. LIMITED, OTTAWA
 Albert J. Snowden J. Desrochers
 Alert A. Stewart P. Rouleau
 Alexandra J. Tierney G. Houde
 Alex. Fraser T. Draper D. McKay
 Beaver P. Veineau J. Latour
 C. B. Powell J. Ellis J. Reagan
 Castor D. Farquharson A. Laganier
 E. H. Bronson J. C. Merchant L. Boisvert
 G. B. Greene J. Chartier G. Noel
 G. B. Pattee A. Smith W. Desrochers
 Hamilton W. J. Toner R. Spooner
 Hercules B. Lablanc R. Mackie
 Hiram Robinson J. Richard C. C. Berlinguette
 Lady Minto E. Gray C. Marcellus
 Mink C. Hutchinson W. Desrochers
 Muskrat L. Gray F. Buck
 Pembroke O. Blondin H. Latour
 Pollux C. Thrasher P. Ferrigan
 Samson W. C. Russell M. Fournier
 Wabis D. Tierney
 VALLEY STEAMSHIP CO. LIMITED, ANNAPOLIS ROYAL, N. S.
 Granville C. W. Collins J. McCollough
 VICTORIA NAVIGATION CO. LIMITED, OTTAWA, ONT.
 Victoria F. Elliott P. Belanger
 VICTORIA STEAMSHIP CO. LIMITED, BADDECK, N. S.
 Blue Hill D. MacRae H. Jones
 VANCOUVER TUG AND BARGE CO. LIMITED, VANCOUVER, B. C.
 Clayburn H. Jones A. McGuire
 Dola W. Verge W. McGuire
 WALKERVILLE AND DETROIT FERRY CO., LIMITED, WALKERVILLE, ONT.
 Ariel F. A. Wilkinson P. McLaren
 WESTERN NAVIGATION CO. LIMITED, FORT WILLIAM, ONT.
 Kaministiouia E. L. Stephen H. Young
 WESTERN STEAMSHIP CO., LIMITED, TORONTO
 J. A. McKee R. G. Bassett A. M. McInnes
 Wexford B. Cameron Jas. Scott
 WHITE PASS AND YUKON ROUTE, VANCOUVER, B. C.
 Alaska W. A. Blair G. Leach
 Casca C. H. Bloomquest J. R. Gaudin
 Dawson J. O. Williams J. R. Young
 Gleaner J. G. Roberts J. Lauderdale
 Scotia J. McDonald D. Sullivan
 Selkirk G. H. McMaster W. C. Vey
 Selwyn C. H. Gardner P. Bourne
 Whitehorse W. H. Turnbull P. Larssen
 Yukon J. C. Green J. W. Pearson

The New Atlantic Mail Service Contract.

The Postmaster General announced in the House of Commons, Apr. 7, that a contract had been entered into for the carriage of mails between Great Britain and Canada. He stated that up to the present, the Atlantic mail service had been performed by practically four steamships, on a weekly basis. Some other lines had received small amounts in connection with the service, but in the past, a great part of the mail had been carried via New York. During the past six years, the Dominion had been paying about \$185,000 a year for its mails going to Great Britain by way of New York. The Canadian service had been performed by the steamships Victorian and Virginian of the Allan Line, and the Empress of Britain and Empress of Ireland of the C.P.R. Under the new contract there will be a mail service three times a week in the summer and twice a week in the winter, instead of once a week as under the former contract, and instead of four vessels engaged, there will be 12. The contract includes four companies, viz.: Allan Line Steamship Co., C.P.R., Canadian Northern Steamships, and White Star-Dominion Line. During the summer the Allan Line will employ the steamships Victorian, Virginian, Corsican and Tunisian, and, until the Alsatian and Calgarian are ready for service, the Grampian and Hesperian will also be used; the C.P.R. will use the Empress of Britain and Empress of Ireland; the Canadian Northern Steamships, Ltd., the Royal Edward and Royal George, and the White Star-Dominion Line, the Laurentic and Megantic. In the winter service, the Alsatian, Calgarian, Victorian, Virginian, Empress of Britain, Empress of Ireland, Royal Edward, and Royal George will be employed, while the White Star s.s. Teutonic will act as an extra vessel both summer and winter, to take the place of any of the others that may be laid up.

The summer sailings will be on Tuesdays, Thursdays and Saturdays, from any port that the companies may please, provided they are Canadian ports, the ones named being, Montreal and Quebec in summer, and Halifax and St. John in winter. The annual subsidy to be paid for the service, both ways, is \$1,000,000. The landing ports in Great Britain are also at the option of the companies, either Liverpool, or Bristol, but the Hesperian and Grampian, which will only be in service for a short period, will continue to make Glasgow their port, until the Alsatian and Calgarian are ready. For the purposes of apportionment of the amount of the subsidy, the total is to be divided into weekly portions, and then divided among the vessels engaged, on a basis to be agreed upon, thus while the total amount paid for the winter service is the same each week, as in the summer, the amount for each vessel will be greater, owing to the lesser number engaged, and the increased difficulties of the service. The White Star-Dominion Line vessels will not carry mails during the winter as their winter port is at Portland, Me., but the Teutonic will be at the call of the Dominion Government, in case of accident to any of the other vessels.

The keel of the first vessel to be built by the Coquitlam Shipbuilding Co., was reported to have been laid down at the yards at Pitt River, recently. The vessel will be steam driven, using liquid oil as fuel, and she will measure 236 ft. over all, with 187 ft. keel and 43 ft. beam, and will have capacity for about 1,500,000 ft. of lumber.

Report of the Commission on the St. Lawrence Pilotage.

The report of the commission appointed by the Dominion Government to enquire into the St. Lawrence pilotage system was presented to the Minister of Marine, April 10. The commissioners, Commander Lindsay, Dominion Wreck Commissioner; T. Robb, Manager Shipping Federation of Canada, and A. Lachance, Chairman of Pilots, Quebec, agreed on the report, with the exception of the recommendation for the abolition of the Quebec Corporation of Pilots, to which Mr. Lachance did not agree, and in a minority report gave his reasons for his dissent. Following are the recommendations made:—

That the Corporation of Pilots for and below the harbor of Quebec be abolished and the charter cancelled.

That the pension fund should be taken over and managed by the Minister of Marine and Fisheries.

That the Government should appoint a superintendent of seagoing experience in full charge of the district to organize and administer its affairs and be directly responsible to the Minister. That he should not have been a pilot of the district at any time, and qualified assistants should be appointed as may be found necessary.

That a change should be made in the present apprenticeship system. That the indentures should be made to the Minister. That public notice should be given when there are vacancies for apprenticeship. That examinations of candidates should be carefully conducted under proper supervision, either in English or in French, each candidate having previously passed the physical and eyesight tests.

That branch pilots should not be allowed to take work outside of their pilotage district, or be employed in any other occupation than pilots within that district.

That the eyesight test should be on a standard basis and should not be left altogether to the theories of the examining oculist, and that one standard should apply to all.

That the number of branch pilots be reduced, the maximum to be 70 and the minimum 60.

That the age of retirement for branch pilots should be 65 years, with a limited yearly extension to men who can pass the semi-annual examinations and that retirement be compulsory at the age of 70.

That an improved pilot tender be provided at Father Point. That a pilot launch be provided at Quebec.

That a chart of the Saguenay River be immediately prepared and made available to navigators, showing lights, buoys and dredged channel near Chicoutimi and that additional aids to navigation as recommended in the evidence be installed in the river.

The report states that the evidence in regard to the Montreal pilotage district is mainly of a favorable nature, the shipping companies being unanimous in favor of being allowed to select their men. The administration of the district was found to be in good condition, the discipline well maintained and the change to the authority of the Minister of Marine had been a complete success.

The official in charge of the Quebec office appears to the commission to be thoroughly incompetent to fill this responsible position, and an immediate remedy is suggested if the working of the system is not to be disorganized. It is suggested, first, that the number of selected apprentices be restricted to four and that the number of entrants for apprentices be limited to meet probable requirements; that the vacancies

for apprentices should be notified by public advertisement; that the length of service of an apprentice should be reduced to six years in place of seven, two years of which should be at sea on a vessel employed in the Canadian trade to the St. Lawrence; that either English or French be used for examination purposes; that permission should be given to liner pilots to work for more than one firm; that the tariff be increased; and that certain exemptions for the Montreal district be allowed.

The commission recommends that the superintendent at Quebec have control of both Montreal and Quebec pilotage. The opinion is expressed that the pilotage tariff at Quebec is too high, having been fixed in the days of the sailing ships, when trips to Quebec sometimes occupied several days. The lowest rate prevailing is in advance of the Montreal rate, although the responsibilities of the latter are much more severe.

In regard to Quebec pilotage the report says that the whole system is loose and unsatisfactory. The superintendent appointed by the Government has generally superintended nothing, but got all the information from the secretaries of the corporations who submitted it to the department as coming from themselves. The commission recommends the appointment of a pilotage commission, with functions partly executive and partly administrative. The executive functions would deal with the making of orders, the constitution, the regulation of pilotage at ports and the passing of bylaws, all subject to the approval of the Minister.

Mr. Lachance, in his minority report, differs from the other commissioners mainly in reference to the suggested abolition of the Corporation of Pilots at Quebec. He suggests that some restrictions be made to oblige small craft to keep out of the narrow channel when there is sufficient water elsewhere; that their lights should not be all around the horizon, and that vessels from the lakes should be forced to submit to the rule of the road when navigating the St. Lawrence River. He also suggests an increased tariff on ocean steamers, believing that the Montreal tariff is very low. He believes, in conclusion, that the Corporation of Pilots for and below the harbor of Quebec should be maintained with all its rights, especially in relation with the sharing of the earnings.

The pilotage earnings of the Montreal district in 1911 were \$87,928.55, and of the Quebec district \$143,741.87.

Montreal Harbor Improvements for 1913.

The improvement programme which the Montreal Harbor Commissioners have outlined for the current season involves the expenditure of approximately \$2,000,000, and marks the commencement of the second stage of the plan adopted three years ago, and which will be spread over 12 years. The chief work for the season covers the decreasing of the velocity of the St. Marys channel current to within the safety margin for vessels navigating the harbor, and which will probably reduce the necessity for the semaphore signalling system which has been under consideration. In dealing with the current, dredging will be undertaken at the guard pier to the south of St. Helens Island, and the artificial works at Moffat Island. The east quay wall embankment on the south of the guard pier will also be extended, thus backing the volume of water below the Victoria

pier across the channel towards Moffat Island. The construction of the artificial embankment will also be continued, and tracks laid thereon, and on completion the whole will form a part of the harbor railway terminal system. Extensions to the Alexandra, King Edward and Jacques Cartier piers are also contemplated, but it is said that such work cannot well be undertaken until the completion of the dredging operations at the guard pier, and the alteration of the entrance to the Lachine Canal. A 15 ton electric hoist, capable of taking full teams to the second floor of the Allan and White Star Lines' sheds, is to be erected at once. The addition of 1,500,000 bush. capacity to elevator no. 1 has already been announced; elevator no. 2 is to have its conveyor galleries completed, leading from the elevator to shed 1, on the Victoria pier. The high level tracks between Victoria and Racine piers are to be ballasted, trimmed and made permanent, and a 500 ft. wharf is to be built at Point aux Trembles. Other work will comprise the levelling up of the dry dock site, so that the erection of the machine shops, etc., in connection with the dry dock and ship-building plant can be proceeded with.

Dominion Government Fisheries Patrol Steamboat for Lake Winnipeg.

The Dominion Government is considering tenders for the construction, equipment, dismantling, re-erection and delivery of a first class twin screw, steel, wood sheathed fisheries patrol steamboat, for Lake Winnipeg, to be delivered at Selkirk, Man. Following are the principal dimensions:— Length between perpendiculars, 140 ft.; breadth, moulded, 26½ ft.; breadth, extreme, 27 ft. 9¼ ins.; depth moulded, 13½ ft.; load draught level keel to bottom sheathing, in fresh water, 7½ ft.; deadweight on above draught, 60 tons; indicated horse power, 900; complement, officers and men, 15.

The vessel is to be of steel throughout, except where otherwise specified, and to be built and engined in accordance with the specifications, under Government survey, and to be classed 100 A1 at Lloyd's for lake service, under their special surveys. She is to be fitted with water ballast, and full equipment to the Board of Trade or Canadian Steamboat Regulations, with five main transverse water tight bulkheads. A water tight flat at bow and stern, with the bulkheads adjoining, will form the trimming tanks. The general construction outline will be with straight stem, cruiser stern and two decks, the main deck being continuous, and the lower deck extending from the stem to the forward boiler room bulkhead. It is specified that the steel and all material, equipment, auxiliaries, stores, etc., shall be of Canadian or British manufacture throughout. The engines are to be of the twin screw, triple expansion, jet condensing type supplied with steam by two Scotch boilers working under forced draught, and for a working pressure of 180 lbs. a square inch. Complete electric light installation, with steam driven turbo generator is to be supplied, and all auxiliary pumps, steam windlass, steam capstan, steam steering gear, etc.

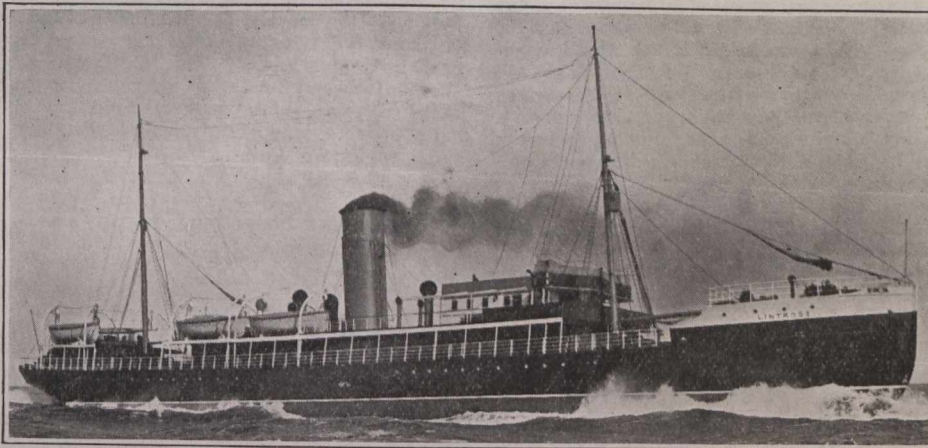
The vessel is to be erected, dismantled and the various parts painted and numbered, and together with the engines, boilers, auxiliaries, equipment, etc., packed ready for shipment to Selkirk, Man., eight months after the awarding of the contract, and then forwarded to Selkirk, where the final assembling, erection, launching, completion and trials will be made.

The Reid Newfoundland Company's s.s. Lintrose.

The mail steamship Lintrose, which has been built at Newcastle on Tyne, Eng., for the Reid Newfoundland Co., to run between Port aux Basques, Nfld., and North Sydney, N.S., made her trial trips early in March, the President, W. D. Reid, representing the owners, and shortly afterwards she left for Newfoundland, arriving towards the end of March, when she was immediately placed on her route with the s.s. Bruce. The accompanying illustration is from a photograph taken during one of the trial runs.

The Lintrose is exceptionally strongly constructed for running through the ice which she will frequently find on her route, and is very finely modelled. She has accommodation for over 30 1st class passengers, including three special rooms for one passenger each, and a ladies' room holding 10. There is a fine smoking room on the promenade deck and a dining saloon, and a ladies' room on the shelter deck; all the 1st class passenger accommodation is amidships. Accommodation for 150 2nd class passengers is provided in the after part. Both the promenade deck and the shelter deck form spacious promenades for passengers.

The Lintrose is 255 ft. long, by 37 ft.



The Reid Newfoundland Co.'s Steamship Lintrose.

beam, and in addition to the usual installations, of electric light, steam heating, etc., wireless telegraph is fitted. The propelling machinery consists of single screw triple expansion engines, supplied with steam by four large boilers working under forced draught. On the trial trips the machinery worked without the slightest hitch, giving satisfaction to all concerned. A maximum speed of nearly 16 knots was attained. (Mar., pg. 145.)

The Canadian Pacific Railway's Pacific Steamship Service.

The C.P.R.'s new steamship Empress of Russia sailed from Liverpool, Eng., April 1, via the Mediterranean, Suez Canal, Colombo, Singapore, for Hong Kong, China, to take her place on the Pacific service between British Columbia, Japan and China, and she is expected to reach Vancouver, June 7. She carried a considerable number of passengers.

The second of the company's new vessels, the Empress of Asia, will leave Liverpool, June 14, and will proceed via Maderia, Cape Town, Durban, Colombo, and Singapore.

When the Empress of Russia and the Empress of Asia commence their regular runs on the Pacific, cabin fares on the Em-

press of India and the Empress of Japan will be reduced, and special rates will be charged with the privilege of travelling by one of the new Empresses, one way, on a round trip.

Steam Car Ferry for National Transcontinental Railway at Quebec.

The N.T.R. Commission has let a contract for building a steam car ferry to Cammell, Laird and Co., Birkenhead, Eng., to be used near the City of Quebec for the transportation of trains across the St. Lawrence River, pending the completion of the Quebec bridge.

The principal dimensions, etc., will be as follows:—Length on 15 ft. water line, 304 ft.; length over fenders, about 326 ft.; breadth, extreme, about 66 ft. 9½ ins.; depth moulded, 23 ft.; mean draught with train load of 1,285 tons (gross), 15 ft.; speed, with train load of 550 tons (gross), 15 statute miles per hour.

The vessel will be of the twin screw type, with a third ice breaking propeller fitted at the fore end, for the carrying of passenger and freight trains at all seasons of the year, these trains being of standard type and composed as follows:—Standard passenger train: 1 locomotive, 70 ft.; 3 express and baggage cars, 67 ft. each; 3 passenger cars, 80 ft. each; 3 sleeping cars,

crossing the St. Lawrence in winter and for breaking ice at the landing berth. She is to be well heated and ventilated, fitted with hot and cold water service and lighted throughout by electricity.

The main propelling machinery will consist of two sets of triple expansion surface condensing engines, exhausting into one condenser, and eight single ended cylindrical boilers of the return tube type worked under natural draught. The main engine will have cylinders of the following sizes:—Diameter of high pressure cylinder, 23 ins.; diameter of intermediate cylinder, 35 ins.; diameter of low pressure cylinder, 55 ins.; stroke, 33 ins. The machinery for the forward ice propeller will be one set of direct acting, inverted, compound surface condensing engines. Reversing gear to be combined hand and steam, working pressure 165 lbs. per square inch. Cylinders: diameter of high pressure, 15 ins.; diameter of low pressure, 32 ins.; length of stroke, 21 ins.

Delivery of the vessel is to be made at Quebec Harbor on or before May 15, 1914.

Richelieu and Ontario Navigation Company's Appointments.

The following appointments, which cover the vessels of the Niagara-Toronto Division, and of Inland Lines, Ltd., have been made, in addition to those mentioned in our last issue:—

E. E. HORSEY, heretofore General Manager, Lake Ontario and Bay of Quinte Steamboat Co., Kingston, Ont., has been appointed Assistant to the Manager, Western Lines, R. & O. N. Co. Office, Kingston, Ont.

JOHN BELL, heretofore General Agent, Inland Lines, Ltd., has been appointed Superintendent of Terminals, Toronto, and in charge of operation of all vessels.

W. B. HINES has been appointed Wharfinger, Yonge St. Dock, Toronto, in charge of all traffic going over the terminal.

T. E. COLEMAN has been appointed Wharfinger, Bay St. Dock, Toronto, in charge of all traffic going over the terminal.

DR. J. E. ELLIOTT has been appointed Surgeon for the companies, at Toronto, and all officers and employes, ashore or afloat, will in case of accidents or sickness, communicate with him. In the event of his not being able to be found, and the matter is urgent, the nearest physician should be sent for.

J. J. HENNIGAR has been appointed General Agent in charge of freight and passenger traffic, cartage service, coal company and terminals, at Hamilton and Burlington Beach, Ont. Office, Hamilton, Ont.

J. A. VILLENEUVE, who was Comptroller and Treasurer, R. & O. N. Co., at Montreal, until the reorganization of the staff recently, retires on a pension from May 1.

The Prudential Trust Co. has been appointed transfer agent for the company, and the Royal Trust Company has been appointed registrar.

To mark the opening of the 1913 season of lake navigation, a spectacular sailing of grain laden vessels was arranged to take place from Thunder Bay, when 60 of the largest grain vessels engaged in the Canadian trade, left the harbors of Fort William and Port Arthur, with about 12,250,000 bush. of grain. The sailing has been recorded by cinematograph, and will be reproduced throughout the world. Prior to the vessels leaving the ports, the captains were entertained to dinner by the Fort William Board of Trade.

80 ft. each; or, standard freight train: 18 loaded freight cars, 45 ft. each.

The trains will be supported on three lengths of track carried on a tidal deck, the length of each track being about 272 ft. The tidal deck will be supported on columns, and is to be manipulated by means of screw shafting, so that it may be raised or lowered at the rate of 1 ft. a minute when fully loaded, the total range being 18 ft. At each end of the tidal deck, an adjustable hinged gangway, 28 ft. long, is to be fitted, suitable for the conveyance of the trains to and from the land tracks. The tidal deck will be raised or lowered by vertical screws hanging in suspension, and working on ball bearings, engine of the high pressure type, cylinder, 15 ins. dia., and 21 ins. stroke.

Above the highest position of the cars on the tidal deck will be a promenade 4 ft. wide to be arranged all round the vessel. Accommodation will be arranged on the platform deck below the upper deck forward on port side for captain, mate, chief engineer, 2nd engineer, 4 deck hands and 6 firemen, with galley, mess room and cook's room on starboard side.

The vessel is to be built under special survey, in accordance with the requirements of Lloyd's Register, and to be classed 100 A1. She will be specially strengthened for

The Shipping Federation of Canada's Annual Meeting.

The Shipping Federation of Canada held its annual meeting at Montreal Mar. 25, when the following officers were re-elected for this year:—President, A. A. Allan; Chairman, Executive Council, J. Thom; Treasurer, J. R. Binning; other members of executive council:—D. W. Campbell, W. R. Eakin, R. W. Reford, A. Mackenzie.

The following statistics were submitted of the business of the port of Montreal:—

	1912.	1911.
Regular lines, tons	552,937	484,560
Tramp tonnage, tons	81,189	77,846
Total	634,126	562,406
Increase in line tonnage 1912		68,377
Total increase tonnage 1912		71,720

Following are the main portions of the President's report:—

The first ocean vessel to open the season was the s.s. Zieten of the Canada Line, on May 2, and the last ocean vessel to leave was the s.s. Bray Head, on Dec. 3.

The number of seagoing vessels that arrived in Montreal during the season was 415, with a tonnage of 1,790,518 tons, as compared with 398 vessels of 1,714,354 tons in 1911, an increase of 17 vessels and 76,164 tons. The passenger trade was exceedingly busy, and large increases on both eastbound and westbound traffic are shown compared with the previous year. In the exports there were decreases in the following commodities as compared with 1911; cheese, 74,661 boxes; butter, 132,777 packages; flour, 61,138 sacks, and 12,096 barrels; meats, 35,004 cases; hay, 19,205 bales; cattle, 38,810 head; sheep, 3,276 head; while increases are shown in lard of 141,002 packages; wheat, 12,635,437 bush.; barley, 1,135,684 bush.; oats, 838,358 bush.; apples, 60,378 barrels, and 22,619 boxes; and lumber, 5,528,949 ft.

One new berth for ocean vessels (no. 16) has been added to the accommodation this year, and two new sheds were taken into use on the Tarte Pier. The water in the harbor was at a higher level than in 1911, and relieved the anxiety of the shipowners in that respect.

The season passed almost without friction on the wharves, though there were some slight troubles. There was a sufficiency of labor available all through until about the close, when some of the lines finishing earlier than others, their men mostly left for the lumber camps and their homes.

The Federation employed independent engineers to enquire into the probable effect of the Chicago drainage scheme, on the water levels, in the lakes, and resultantly in the River St. Lawrence. The results of these investigations were startling enough to put on record here, and show the lowering as recorded at the Lower Lachine Lock, during the period of seven years beginning in 1884. The height is in feet above mean sea level:—

	September, Lowest.	October, Lowest.	October, Lowest.
1884-1890	23.05	22.72	23.04
1891-1897	21.35	20.87	20.94
1898-1905	20.43	20.72	20.36
1906-1911	18.75	18.30	18.10

The opinion given as to the cause of this lowering is, the effect of the dredging away of the natural bars, in the profile of the river bed, without artificial compensating works being erected, and the level may be expected to continue to fall until such works are adopted. What form these works should take is not definitely stated, but no dams or other works should be allowed to be constructed which would interfere with the free flow of the surface water or form ice bridges. In view of this

report, I am strongly of the opinion that before the deepening of the ship channel to 40 ft. is proceeded with further, the government should be urged to have stringent inquiry made into the causes of the lowering of the water levels, that a scheme of compensating works should be considered, and that all data required with regard to currents, velocity, etc., should be systematically collected. This is a serious matter for the shipping interests, and I think that steps should be taken to remedy it, and that no time should be lost in bringing the same to the notice of the Government and asking their immediate consideration.

The new system of distinguishing lights in the ship channel is giving every satisfaction, and is admitted to be a great improvement on that previously in use. The aids to navigation under the control of the Marine Department, have been well maintained during the season, and any defects have been promptly attended to. Thirty eight defects were reported by masters and pilots to this office direct.

In the annual report of 1910, the congestion on the wharves was fully entered into. The scheme for a master portorage system was blocked by the Harbor Commissioners refusing to lease the sheds to the shipping companies, unless they withdrew their scheme, which was done, and the old system still obtains. Before the close of that year we received a letter from the Montreal Board of Trade pointing out the necessity of some system for the quicker and easier handling of freight on the wharves, as complaints had been received about the time wasted in getting delivery. In my opinion, however, no improvement can be looked for until the Harbor Commissioners, withdraw their instructions re the leasing of the sheds, which would then give the shipping companies an opportunity of introducing a system of master portorage, and reduce the cost of handling freight, besides do away with the congestion.

Alleged Discrimination Against Ontario Vessels in Montreal Harbor.

At the Pilotage Commission's sitting in Montreal Mar. 3, F. King, Counsel, Dominion Marine Association, protested against what he contended was unjust discrimination against Ontario vessels in Montreal harbor. He pointed out that all vessels trading between the ports of Quebec, Nova Scotia, New Brunswick, Prince Edward Island and even Newfoundland and the Atlantic coast as far as New York are exempt from the compulsory payment of pilotage dues, while vessels trading from Ontario ports to those in other provinces are required to pay these dues. He contended the amendments passed by Parliament in 1908 rendered the discrimination more marked than it was before, because it deprived Ontario of even the limited measure of exemption that its vessels enjoyed when drawing less than 16 ft. of water, thus making all vessels which had passed through the St. Lawrence 14 ft. canals liable to dues in Montreal harbor, including pilotage dues every time the vessel moved in that harbor.

Mr. King suggested five changes as follows: 1. The inclusion of the word "Ontario" in clause C of sec. 477 of the Canada Shipping Act. 2. The right that Ontario masters and mates should procure licenses such as are proposed under sec. 487. 3. That rules be devised whereby sec. 435 be made operative, and apprentices licensed to perform the lesser duties which might be required of a pilot on an inland boat. 4. That a tow barge does not require a pilot,

and, logically it should not be required to pay pilotage dues. 5. That the moving charge ought to be done away with throughout the whole of Montreal harbor, so that an inland vessel whose natural destination is that harbor, unless she is engaged in the pulp wood trade, or as at present in the steel trade with Sydney, will not have to pay this charge when she enters or moves in that harbor.

We are advised that the Montreal pilots and the Shipping Federation of Canada contend that vessels from Ontario are not to be trusted to navigate Montreal harbor or the river below. In support of this contention they promised to file a list of alleged accidents or threatened accidents. A copy of this list, subsequently supplied to Mr. King, named seven cases since 1898. On behalf of the Dominion Marine Association it is claimed that of the seven cases only three were real collisions and of these only one involved a vessel from Ontario and that was a small side-wheel tug of only 147 net registered tons, which was undoubtedly at fault, but which suffered in the collision just as much from the improper conduct of those on the other ship as from her own failure to carry a licensed pilot. It is claimed that some of the other cases were absolutely ludicrous in the childishness of the suggestions made. Four of them involved U. S. vessels, and an investigation in one of these cases disclosed the fact that the master had a certificate good only on the Great Lakes, that is as far east as Ogdensburg. This destroys the effect of these cases with reference to Ontario vessels whose masters hold certificates which extend right down the St. Lawrence to Father Point.

The Cunard Steamship Company's s.s. Andania.

The Cunard Steamship Co., which since 1911 has been operating three steamships, the *Ascania*, *Ansonia* and *Ultonia*, between London, Southampton and Canada, carrying second cabin and third class passengers, will add two more vessels during the summer, the *Anlania* and the *Alunia*. The *Andania* was launched at Greenock, Scotland, Mar. 22. She is a twin screw vessel of 13,000 tons. Her length is 540 ft., breadth 64 ft., and depth 46 ft., and will be propelled by two sets of quadruple expansion engines, balanced. She will have accommodation for 2,140 passengers—520 second cabin and 1,620 third class. She has large bilge keels, water tight doors and bulkheads. She will be fitted with wireless apparatus and submarine signalling.

The second cabin dining saloon will be on D deck. The dining rooms for both classes will be on the same deck, extending in both cases across the whole breadth of the ship; on the same deck also will be kitchens, situated between the two dining rooms. The writing room will be on A deck, and the lounge on the same deck, amidships. Immediately aft of the lounge will be a gymnasium. The smoking room will adjoin the lounge on A deck. It will be lighted by windows affording a view over the stern.

The second cabin state rooms will be entirely on B and C decks. In the third class accommodation there will be a ladies' room, two smoking rooms, and a large general room where concerts can be held. All third class passengers will be berthed in cabins, of which there will be a considerable number for two persons. The majority, however, will accommodate four or six passengers, the latter being intended for families and parties.

Dyke in Livingstone Channel, Detroit River.

An Ottawa press dispatch says that the Canadian contentions in the Livingstone Channel case are upheld by the International Waterways Commission...

The commission recommends the construction of a dyke to the west of and parallel with the Livingstone Channel and extending about 4,400 ft. from a point below the channel between Sugar Island and Amherstburg...

The Reid Newfoundland Co's s.s. Kyle.

The R.M.S. Kyle, which is being built for the Reid Newfoundland Co. at Newcastle on Tyne, Eng., was launched there, April 7, being christened by Mrs. R. G. Reid...

structured for running through the ice which she will frequently meet. She is 220 ft. long by 32 ft. beam and will be rigged as a two masted schooner.

She is to be fitted with accommodation amidships for 68 first class passengers, including dining saloon with seating capacity for 32, ladies' room, smoking room, etc., and there will be a good promenade deck for the passengers use.

The trial trips will probably be made about May 5, and she is expected to leave for Newfoundland early in June.

The Richelieu and Ontario Navigation Co's New Incorporation.

The Richelieu and Ontario Navigation Co., Ltd., has been incorporated under the Dominion Companies Act with a capital of \$15,000,000, and office at Montreal, to provide the advantages of steam navigation for the inhabitants of the districts of Montreal, Three Rivers and Quebec...

parts, and on all the rivers falling into the St. Lawrence, and also on the lakes in the provinces of Quebec and Ontario, and to enable the inhabitants to derive that benefit which the construction of the wharves and landing places already, and hereafter to be built, offers to them;

The C.P.R. steamboat Beaver has resumed service between New Westminster and Chilliwack.

Capt. J. T. Walbran, who died at Victoria, Mar. 31, aged 65, was for some time in the Canadian Pacific Navigation Co.'s service, and in 1891 entered the Dominion Government service, superintending the construction of the steamboat Quadra...

List of Steam Vessels Registered in Canada during Jan., Feb. and March, 1913.

Table with columns: No., Name, Port of Registry, When and Where Built, Length, Breadth, Depth, Gross Tons, Reg. Tons, Engines, Etc., Owner or Managing Owner. Lists various steamships like Accrescent, Aurora, Casarco, Chief Zibassa, etc.

a) Foreign name Ethel May. (b) Foreign name Giant. (c) Formerly Minoco. (d) Foreign name Challenge. (e) Formerly Lily. (f) Foreign name Josie. (g) Formerly Zara

List of Sailing Vessels and Barges Registered in Canada during Jan., Feb. and March, 1913.

Table with columns: No., Name, Port of Registry, Rig, When and Where Built, Length, Breadth, Depth, Reg. Tons, Owner or Managing Owner. Lists sailing vessels like B. A. S. Co. No. 1, C. F. No. 1, etc.

Atlantic and Pacific Ocean Marine.

The Quebec Steamship Co. has declared a dividend of 4% for 1912, payable May 1. This makes the 66th dividend paid.

The C.P.R. has opened large waiting rooms, with a creche to accommodate 20 children, at Liverpool, for its third class Atlantic passengers.

The C.P.R. has had its Atlantic Empress steamships fitted with electric radiators in all outside first class staterooms, the library and the first class smoking room.

The Donaldson Line s.s. Cassandra was driven on to the dock wall, at Glasgow, Scotland, Mar. 30, during a high wind, and her bows were considerably damaged.

Donaldson Bros., Ltd., owning and operating the Donaldson Line of steamships between Canada and Scotland, has been registered in Great Britain with a capital of £200,000 in £1 shares. The directors are, W. C. C., W. B., and N. P. Donaldson.

The Union Steamship Co. of New Zealand's s.s. Niagara, recently built at Glasgow, Scotland, for the service between Australia and Canada, sailed from Great Britain about the middle of March for Australia.

The Cunard Co.'s s.s. Aquitania, the largest steamship built in Great Britain, was launched at Glasgow, Scotland, Apr. 21. She is built with a double hull, and has lifeboat accommodation for the full complement of passengers and crew.

The Royal Mail Steam Packet Co. is reported to be making arrangements for a considerable extension of its service, by building a number of vessels to operate between Great Britain, Spain, Cuba, Jamaica, through the Panama Canal, to Vancouver, B.C., and calling at one or more U. S. Pacific coast ports.

H. Milburne, who has been acting as Marine Superintendent, Canadian Northern Steamships, Ltd., at Halifax, during the winter, since the appointment of Capt. F. J. Thompson to the command of the s.s. Royal George, will continue to act in that capacity at Montreal, during the coming season.

Elder Dempster and Co.'s s.s. Sokoto opened the navigation season on the St. Lawrence, Apr. 21, being the first vessel to arrive in Montreal harbor on that date. The captain was awarded the usual gold headed cane presented by the Harbor Commissioners to the captain of the first vessel arriving in each season.

A press report from Montreal, Apr. 21, stated that the appeal of Capt. Harrison, late commander of the Canadian Northern Steamships, s.s. Royal George, from the judgment of the Dominion Wreck Commissioner, in the matter of the wreck of the vessel near Quebec, in Nov., 1912, when his certificate was suspended for a year, has been allowed.

The s.s. Harley has been transferred from the British to the Canadian register, in the name of C. W. Harrison, London, Eng., as managing owner. She was built at Hartlepool, Eng., in 1906, and is screw driven with engine of 336 n.h.p. Her dimensions being: length 359.8 ft., breadth 50.2 ft., depth 26.4 ft.; tonnage, 4,171 gross, 2,707 register.

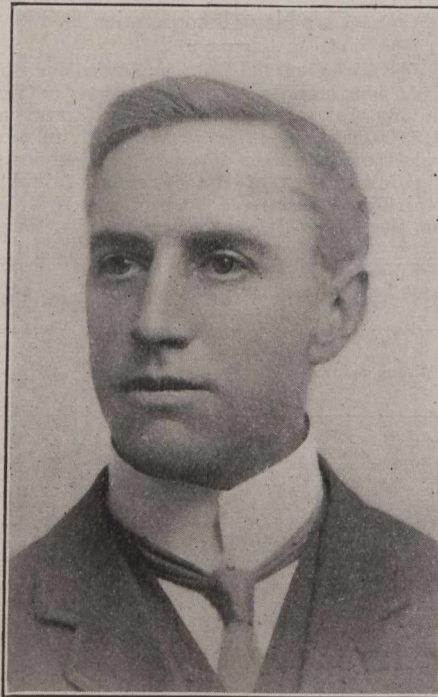
The C.P.R. commenced its Austro-Canadian steamship service towards the end of March, by the sailing of the s.s. Ruthenia, formerly Lake Champlain, from Trieste, Austria, for Halifax and St. John. This was followed four weeks later by the s.s. Tyrolia, formerly Lake Erie, sailing for Quebec and Montreal, to which latter ports

all sailings will be made during the St. Lawrence navigation season.

The Montreal Harbor Commissioners have allotted berths for ocean going vessels using the port, as last year, with the exceptions, that the C.P.R. will, in addition to the berths occupied last year, have no. 15, which was formerly used by the Canada Line; the Canada Line and the Austro-Americana Line have been allocated to berth 16, and La Cie. Generale Transatlantique to berth 10, which it will share with Canadian Northern Steamships, Ltd.

In regard to a number of press reports respecting the proposed Government subsidy for the operation of an improved steamship service between Canada and the West Indies, in which it has been repeatedly stated that arrangements have been made with the C.P.R., and Pickford and Black, respectively, for such service, the acting Minister of Trade and Commerce stated in the House of Commons, recently, that the reports were incorrect, that the matter was still under consideration and had not been decided.

The Ocean Freight Line, Ltd., of Toronto,



J. I. Hobson,
Comptroller and Treasurer, Richelieu and Ontario
Navigation Co.

has acquired the s.s. Moldegaard, which was built at Bergen, Norway, in 1906, and overhauled at Brooklyn, N.Y., in 1912. She is screw driven by engine of 270 n.h.p., and is of the following dimensions: length 321.1 ft., breadth 45.2 ft., depth 20.6 ft.; tonnage, 2,864 gross, 1,660 register. We are informed that this company intends operating the vessel from New York in the sea going trade. The Canadian office is located at 16 King St. West, Toronto. The President, T. K. Seward, has his office in New York.

The Newfoundland Marine Court has decided that the loss of the Furness Line s.s. Florence, Dec. 20, 1912, while running between Halifax, N.S., and St. John's, Nfld., was due to neglect in not taking soundings when approaching the Newfoundland coast. The master knew that he was approaching Cape Pine, and a lookout was kept, but as no observations could be taken on account of the weather, it is difficult to understand why soundings were not taken. No blame was attached to J. H. Hedley,

the second officer, who was one of those saved, as everything that occurred during his watch was reported to the captain, who was also on the bridge less than an hour before the vessel ran ashore.

The appeal of the White Star Line in England, against the decision of the Admiralty Court, in the case of the collision between the s.s. Olympic and H.M.S. Hawke off the Isle of Wight, Sept. 2, 1911, has been dismissed, and the decision of the lower court sustained, that the Olympic was responsible for the collision, which could have been avoided almost up to the last moment. This was the case which aroused so much interest in the matter of the effect of suction, caused by the passage of a large vessel in the near vicinity of a smaller one. At the time of the collision, the Olympic was in charge of Capt. Smith, who was later transferred to the s.s. Titanic, which was lost on her maiden trip, Apr. 12, 1912.

Maritime Provinces and Newfoundland.

The name of the steamboat Neptune, registered at St. John, N.B., has been changed by order in council to Excudit.

Capt. C. T. Dakin, a native of Digby, N.S., who had been connected with coast navigation for a number of years, and formerly commanded the Dominion Government s.s. Lansdowne, died at Rednerville, Ont., Mar. 27, aged 80.

The s.s. Westport III, while running between St. John, N.B., and Digby, N.S., was discovered to be on fire, recently. The crew kept the fire under, and the vessel was eventually beached, the damage being chiefly confined to the cargo.

The Crystal Stream Steamship Co. is reported to be negotiating for the purchase of the old Star Steamship Co.'s wharf at Fredericton, N.B. The price asked by the St. John River Steamboat Co., the present owner, is given as between \$8,000 and \$9,000.

The Fredericton Steamship Co. is applying for incorporation under the New Brunswick Companies Act, with \$5,000 capital, and office at Fredericton, to purchase the steamboat Hampstead, to acquire other vessels, and to carry on a general navigation business on the St. John River and its tributaries. The incorporators are: E. G. Hoben, W. G. Clark, F. W. Porter, H. Rogers, Fredericton; and F. D. Swim, Blissfield, N.B. The Hampstead is owned by the St. John River Steamship Co., South Bay, N.B., and was built at Hampton, N. B., in 1893. She is screw driven by engine of 20 n.h.p., and is of the following dimensions: length 94 ft., breadth 17.7 ft., depth 7 ft.; tonnage, 235 gross, 159 register. It is reported that she is to be renovated and operated between Fredericton and Gagetown this season.

Province of Quebec Marine.

Capt. H. Kjerland has been appointed Superintendent of the Quebec Salvage and Wrecking Co., Quebec, vice G. T. Davie, resigned. He assumed his duties on the opening of navigation on the St. Lawrence River.

The Quebec Harbor Commission is extending shed 25 on the west end of the breakwater, by 300 ft., to cover the whole of the breakwater to the public entrance, and provide an additional berth for steamship accommodation.

The Montreal Harbor Commissioners returned, Apr. 1, from a tour of inspection of various U. S. ports. It is said that they

have decided that, owing to physical conditions, the port must be developed along lines closely following those adopted at European ports, rather than such as have been followed in the U. S.

Navigation in Montreal harbor was officially opened Apr. 11, thus establishing a record for the shortness of the closed season, which dated from Jan. 3. The latest date on which navigation has been closed, prior to the one mentioned, was Jan. 1, 1912, and the previous earliest date for the opening was Mar. 30, in 1879.

The Minister of Marine introduced a bill in the House of Commons, Mar. 31, as an amendment to the Quebec Harbor Commissioners Act of 1889, to remove any doubt as to the right of the Commission to perform shunting operations at the harbor. The bill is similar to that enacted for the Montreal Harbor Commission in 1909.

The Postmaster General recently announced that a contract had been awarded for the construction in Glasgow, Scotland, of a powerful ice breaking car ferry steamboat, to connect the sections of the National Transcontinental Ry., on the north and south shores of the St. Lawrence, until the completion of the Quebec Bridge. The contract price is stated to be \$558,000. Full particulars of the vessel are given on another page of this issue.

The Sincennes-McNaughton Line's steam tug *Adolphe V. Roy* was launched at Sorel, Apr. 5. Her dimensions are: length 105 ft., breadth 21 ft., depth 9 ft., with 6½ ft. draught, when loaded. She is equipped with fore and aft compound engines, with cylinders 13 and 26 ins. diam., by 18 ins. stroke, giving her a speed of about 12 knots an hour.

The River Lievre Navigation Co., Ltd., has been incorporated under the Dominion Companies Act, with \$50,000 capital, and office at Buckingham, Que., to own and operate steam and other vessels, and to conduct a general navigation and land transport business. The incorporators are G. Bothwell, G. N. Bothwell, A. MacLaren, A. O. Anderson and R. MacL. Kenny, Buckingham, Que.

The bill which the Minister of Marine has introduced into the House of Commons, as an amendment to the Quebec Harbor Commissioners Act, repeals par. c., subsection 2, sec. 22, of the 1899 Act, and more clearly defines the Commission's powers as to the operating of railway tracks in the harbor, by it, and especially regarding the operation of switching locomotives. A similar amendment was made to the Montreal Harbor Commissioners Act in 1909.

In the House of Commons, Apr. 7, the acting Minister of Trade and Commerce stated that the Government has a contract with the Campbellton and Gaspé Steamship Co. of Fraserville, extending to the close of navigation 1915, for a service between Campbellton, N.B., and Gaspé, Que., for which an annual subsidy of \$20,000 is paid. The contract provides for the Government control of rates for passengers and freight. The s.s. *Canada* performs the service.

The Minister of Marine recently introduced into the House of Commons, a bill providing that the Government may from time to time make advances, not exceeding \$3,500,000 in the aggregate, to the Quebec Harbor Commission, for the construction of such terminal facilities as are necessary for the proper equipment of the port. Provision is also made for the deposit of the city debentures to the value of the advances made, repayable in 25 years with interest at 3½%.

The Montreal Transportation Co.'s electrically propelled vessel *Tynemount*, the first seagoing vessel of this type, was launched at Middlesbrough, Eng., recently. She is 250 ft. long, 42½ ft. wide, and 19 ft. deep, and about 2,400 tons. The propeller is driven by electric motor, power for which is obtained from two Diesel type engines. A full description of this vessel and its arrangement of machinery was given in *Canadian Railway and Marine World* for Nov., 1912.

The Cabotia Steamship Co., Ltd., has been incorporated under the Dominion Companies Act, with \$50,000 capital, and office at Montreal, to own and operate steam and other vessels, and to carry on a general navigation, warehousing and transportation business. The incorporators are: C. A. Pope, G. Barclay, W. B. Scott, R. E. Moyses and A. A. Wanklyn, Montreal. The s.s. *Hiawatha* has recently been acquired from the Receivers of the Gilchrist Transportation Co., Cleveland, Ohio, and she has been transferred to the Canadian register under the name of *Cabotia*. She was built in 1880, and is equipped with fore and aft compound engines of 700 i.h.p., supplied with steam by a Scotch boiler 12 by 12½ ft. at a pressure of 125 lbs. Her dimensions are: length 234 ft., breadth 36 ft., depth 20 ft., tonnage, 1,398 gross, 1,159 register.

Ontario and the Great Lakes.

The Welland Canal was officially opened for traffic for the season, Apr. 15.

The Governor General in Council has approved the regulations for the ferry across the Niagara River between Queenston, Ont., and Lewiston, N.Y.

The name of the steamboat *Robert Girdwood Allan Weaver*, registered at Toronto, has been changed by order in council to *R. G. A. Weaver*.

Forwarders, Ltd., Kingston, which owns the steamboat *Port Colborne*, is adding another vessel to its service, which it is hoped to have ready for June, and which will be named *W. H. Dwyer*.

Dredging was commenced in Hamilton Bay, Apr. 12. This is a portion of the general improvement works there which the Government has undertaken, and for which appropriations have been made.

The Toronto Harbor Commission will shortly issue bonds amounting to \$1,000,000, guaranteed by the city, for reclamation work at Ashbridges Bay and the general improvement of the factory district. The Commission has power to issue bonds for \$12,000,000.

A press dispatch from Kenora, Apr. 13, stated that the Dominion Government had decided to comply with the request of that town for the construction of a lock and dam at Ash Rapids. It is said that a survey will be made as soon as possible, and estimates submitted.

The Lake Carriers' Association, the U.S. organization controlling vessels on the Great Lakes, has decided to continue the wage scale in force in 1912, and to adopt the three watch system for firemen on all vessels owned by members. This system was in vogue on some of the vessels last season and proved a success.

The Northern Navigation Co.'s new vessel is to be launched at Port Arthur, May 24. Though the name has not been definitely decided on, it is probable that it will be *Noronic*, a combination of the chief letters of the names, Northern Navigation

Co., Richelieu and Ontario Navigation Co., and Inland Co.

The Imperial Oil Co., Sarnia, Ont., has transferred its steamships *Imperial* and *Iocoma*, from the British to the Canadian register. They were built at Wellington Quay, Eng., and Dundee, Scotland, in 1898 and 1912, respectively, the former being 796 gross tons, and the latter, 1,669 gross tons.

Canadian owners of vessels on the Great Lakes have secured more favorable rates for marine insurance, owing to the Canadian Lake Protective Association's efforts. The underwriters have agreed on a 4¼% rate for the upper lakes, 5¼% to Ogdensburg, N.Y., and 6¼% to Montreal for fleets with approved records.

Canada Interlake Line, Ltd., which recently acquired the steamships *Kenora*, *Regina* and *Tagona*, from the Canadian Lakes Transportation Co., has transferred them from the British register to the Canadian register. The three are sister vessels, and were built at Dumbarton, Scotland, the first two in 1907, and the last, in 1908.

Navigation opened on Lake Ontario, Apr. 1, when the Richelieu and Ontario Navigation Co.'s s.s. *Macassa* left Toronto for Hamilton. The first vessel to enter Toronto harbor, from an outside port, the captain thus winning the silk hat awarded by the harbor master, was the *Niagara*, St. Catharines and Toronto Navigation Co.'s s.s. *Dalhousie City*, which arrived Apr. 2.

The Toronto Harbor Commission announced recently that contracts will be awarded during May, for the construction of a breakwater in connection with the general scheme of waterfront improvements. A. C. Lewis, Secretary, is reported to have stated that plans were well under way, and it was anticipated that a considerable portion of the work would be done this season.

It is reported that *Jas. Whalen*, Port Arthur, has acquired the ice breaking steamboat *St. Ignace*, from U.S. owners. This vessel has been in use in Lake Michigan for some years, and has been successfully used for ice breaking purposes. She has been taken to Sault Ste. Marie, and equipped with wireless telegraphy, and will be employed in Thunder Bay during the winter months.

The steamboat *Jessie Bain*, owned by the Richelieu and Ontario Navigation Co., and recently acquired in the taking over of the Thousand Island Steamboat Co., has been sold to Capt. Hanelin and Brunelle, Champlain, Que. She was built at Clayton, N. Y., in 1888, and is screw driven by engine of 14 n.h.p. Her dimensions are: length 70.8 ft., breadth 14.8 ft., depth 5 ft.; tonnage, 67 gross, 41 register.

The steamships *Saturn* and *Uranus*, recently bought from the receivers of the Gilchrist Transportation Co., Cleveland, O., by the Algoma Central Steamship Line, as mentioned in a previous issue, have been transferred to the Canadian register and renamed *Frater* and *Franz*, after the Vice President of the company, J. Frater Taylor, and the Vice President and General Manager, W. C. Franz, respectively.

The Ojibway and Detroit Ferry Co., Ltd., has been incorporated under the Dominion Companies Act, with \$500,000 capital, and office at Sandwich, Ont., to operate a ferry between Sandwich, Ont., and Detroit, Mich., and in connection therewith, to own and operate steam and other vessels, wharves, docks, piers, etc. The incorporators are: R. J. McRae, L. H. Coombes, A. U. Gulliford, T. H. Kilgore and M. Gordon, Toronto.

In connection with the collision between the s.s. S. S. Curry, owned by W. A. and A. H. Hawgood, Cleveland, Ohio, and the Meaford Transportation Co.'s s.s. Bothnia, June 23, 1912, in which the Bothnia was sunk in the St. Clair River, just above Star Island, judgment was delivered in the U.S. Court, Detroit, Mich., Apr. 8, when the sole responsibility for the casualty was placed on the S. S. Curry. The Meaford Transportation Co. sued for \$28,000 for the loss of the vessel, the cargo and the crew's belongings.

The U.S. Lake Survey reports the levels of the Great Lakes, in feet above tide-water, for March, as follows:—Superior, 601.54; Michigan and Huron, 580.16; Erie, 572.44; Ontario, 246.71. Compared with the average March levels for the past ten years, Superior was 0.16 ft. below; Michigan and Huron, 0.03 ft. above; Erie, 0.66 ft. above, and Ontario, 0.91 ft. above. It was anticipated that Superior would remain stationary during April, and that Michigan and Huron would rise about 0.3 ft., and Erie and Ontario about 0.6 ft.

The Richelieu and Ontario Navigation Co. has taken over the Lake Ontario and Bay of Quinte Steamboat Co., which owns the steamboats Caspian and North King, operating from the Bay of Quinte to Thousand Islands and Rochester, N.Y., and a local service in the Bay of Quinte, between Kingston and Belleville. The Caspian was built at Kingston in 1846, and is a paddle wheel steamboat, with engine of 58 n.h.p., her dimensions being: length 177.6 ft., breadth 43.4 ft., depth 6.7 ft.; tonnage, 957 gross, 543 register. The North King was built at Montreal in 1868, and remodelled at Kingston, in 1891, and is paddle wheel driven by engine of 500 n.h.p., her dimensions being: length 175 ft., breadth 43 ft., depth 10 ft.; tonnage, 873 gross, 499 register. E. E. Horsey, heretofore General Manager, has been appointed Assistant to the Manager, Western Lines, Richelieu and Ontario Navigation Co., with office at Kingston.

The Peoples' Steamboat Co.'s s.s. Frontier was sold, Apr. 19, at Toronto, by order of the Admiralty Court. This vessel has had a chequered career. At one time known as Empress of India, she was built at Mill Point, Ont., in 1876, and was owned by the Lake Ontario Navigation Co. of Picton, Ont. She was partially rebuilt at Picton in 1899, and her name changed to Argyle. The Lake Ontario Navigation Co. was wound up in 1908, and the vessel, which was practically the company's only asset, was sold under an order of the court. The Argyle Steamship Co., Ltd., was formed later at Toronto, to operate her, and after some difficulties, was also wound up, and The Peoples' Steamboat Co., Ltd., was incorporated in 1912, under the Ontario Companies Act, with \$150,000 capital, and office at Toronto, to take over the business, with the intention of running the vessel on the Niagara route, between Toronto and Lewiston, N.Y. This was done for the latter portion of the season, and just before the close, she was towed to Port Dalhousie in almost a waterlogged condition, where she sank before she could be dry docked. The company has been suing the owners of the dock at Port Dalhousie for damages, alleging neglect on their part, and the order for the sale is the outcome of this action. During the portion of 1912 that the vessel was operated she was run under the name of Frontier. Her dimensions are: length 185.1 ft., breadth 26 ft., depth 9.7 ft.; tonnage, 700 gross, 374 register, and she is equipped with engine of 274 i.h.p., driving paddle wheels.

Manitoba, Saskatchewan and Alberta.

The Hyland Navigation and Trading Co.'s steamboat Bonnitoba was reported to have broken from her moorings in the Red River, and to be drifting down the river in an ice jam, and to have partly sunk, Apr. 10.

The Dominion Department of Marine and Fisheries received tenders to Apr. 25, for the construction of a steel wood sheathed twin screw steamboat to act as a patrol vessel, and of the following dimensions, length between perpendiculars 140 ft., breadth moulded 26½ ft., breadth extreme 27 ft. 0¾ in., depth moulded 13½ ft., with engine of 900 i.h.p. She is to be delivered at Selkirk, Man.

British Columbia and Pacific Coast Marine.

The C.P.R. s.s. Princess Sophia struck a rock at Sentinel Island, Apr. 13, tearing a large hole in the bow. She proceeded to Vancouver under her own steam.

The fishing vessel Bonita, owned in Tacoma, Wash., and seized by the Dominion Government for poaching in B.C. waters in July, 1912, has been ordered forfeited to the Government.

The work of removing the Parthia shoal, off Brockton Point, Vancouver, which has been in progress for some time, has been completed, and a depth of 30 ft. at low tide is now reported over the spot.

It is announced that the C.P.R., which was to have had its s.s. Princess Mary lengthened by 40 ft., for the present season, has abandoned the idea until the autumn, owing to the necessity of having the vessel in service for the summer trade.

Twohy Bros., contractors for the construction of a portion of the Canadian Northern Pacific Ry., to the north of Kamloops, will during the season operate three steamboats on the North Thompson to facilitate the transportation of men and supplies.

The Minister of Marine in the House of Commons, Apr. 8, moved a resolution to incorporate the Vancouver Harbor Commission, vesting in it the control of all lands situated within the harbor limits, heretofore vested in the Government, and the revenues received therefrom.

The C.P.R. coast steamship Princess Sophia has been converted from a coal to an oil burner, making seven of the company's vessels using oil fuel. She is now running between Vancouver and Victoria in place of the s.s. Princess Alice, and during the summer will run on the Alaska route.

Contracts are reported let in the United States for the steel work in connection with the dry dock for the G.T. Pacific Ry. terminals at Prince Rupert, and also for the reinforced concrete power house and for the superstructure of other buildings, to the Wineland Building and Engineering Co., Vancouver.

C. Gardner Johnson and Co. have been appointed agents for the Hamburg-American and East Asiatic Steamship Cos., at Vancouver. These companies are utilizing the Johnson Wharf Co.'s dock and warehouses, at present, and we are officially advised that there is no truth in the recent reports that either of the steamship companies, nor the Johnson Co., is negotiating for waterfront properties at Vancouver or Victoria.

Forager Transportation Co., Ltd., has been incorporated under the British Columbia Companies Act, with \$10,000 capital and office at Victoria, to acquire the steam-

boat Forager, and to own and operate other vessels and conduct a general transportation business. The Forager was formerly owned by Steamer Forager, Ltd., Victoria, and is a screw driven vessel with engine of 13 n.h.p., her dimensions being, length 84ft., breadth 18.8 ft., depth 6.6 ft.; tonnage, 90 gross, 57 register.

A recent press dispatch from Victoria stated that D'Arcy Tate, Vice President, Pacific Great Eastern Ry., has announced that as soon as the company is able to operate trains from Newport easterly, it is intended to establish a direct steamship service connecting the mainland with the Vancouver Island, and that in the near future it is intended to operate a daily steamship service calling at Vancouver, Victoria and Seattle, ultimately extending to Tacoma, Puget Sound ports and San Francisco.

The American Yukon Navigation Co. has recently been incorporated in West Virginia to operate steamboats on the Yukon River between Dawson, Yukon and Fairbanks, Alaska, in connection with the British Yukon Navigation Co.'s steamboats, both lines forming portions of the White Pass and Yukon Route. Two steamboats are in course of construction at Seattle, Wash., to be named Alaska and Yukon respectively. These will be dismantled at Seattle and shipped to White Horse, Yukon, where they will be assembled and made ready for service by about June 1. They will be the most up to date boats on the Yukon. The U.S. Government recently declared Fairbanks to be a subport of entry for Canadian bottoms, and this will allow the British Yukon Navigation Co. to run its vessels between Dawson and Fairbanks, should the trade warrant it.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

60. Mar. 18. British Columbia. Vancouver channel. Channel Rocks, gas and eastern channel. Channel Rocks, gas and whistling buoy to be established.

61. Mar. 18. British Columbia, chart of Arthur and Telegraph Passages issued.

62. Mar. 18. British Columbia, Chatham Sound, Holland Island, fog alarm established.

63. Mar. 18. British Columbia, Queen Charlotte Islands, Hecate Strait, Skidegate Inlet, eastward of Deadtree Point, amended characteristic of gas buoy light, off Lawn Point, change in position and color of gas and bell buoy, spar buoy to be established.

64. Mar. 18. United States of America, Strait of Georgia, Haro Strait, Patos Islands light station, Alden Point, fog signal to be temporarily discontinued.

65. Mar. 19. New Brunswick, south coast, Bay of Fundy, Chignecto Channel, Cape Enrage, bell buoy to be established off Long Reef.

66. Mar. 19. Quebec, River St. Lawrence, Rimouski, hand fog horn at light station.

67. Mar. 19. Quebec, River St. Lawrence, Quebec, permanent back range light.

68. Mar. 19. Quebec, River St. Lawrence, ship channel between Quebec and Montreal, Roche a l'Oiseau, gas buoy established.

69. Mar. 22. Quebec, River St. Lawrence, mouth of Saguenay River, Prince Shoal, lightship No. 17 to be replaced by lightship No. 7.

70. Mar. 22. Quebec, River St. Lawrence below Quebec, Traverse of St. Roche, lower end, lightship No. 7 to be replaced by lightship No. 19.

71. Mar. 31. Ontario, Lake Ontario, Kingston harbor, rearrangement of buoys marking Carruthers shoal and Frederick shoal.

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 distinctly to understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

THE GOLDSCHMIDT THERMIT CO., New York City, has established a plant and opened an office in Chicago in charge of H. S. Mann.

THE NATIONAL STEEL CAR CO., Hamilton, Ont., announces that it is contemplating erecting an electric car building plant, in addition to its steam railway car plant.

VANADIUM steel frames have been specified for 4 Pacific type locomotives recently ordered by the Canadian Northern Ry. from the Montreal Locomotive Works. These locomotives will have a total weight in working order of 213,000 lbs.

HUNT-SPILLER MANUFACTURING CORPORATION, Boston, Mass., manufacturers of Hunt-Spiller gun iron castings for locomotives, has appointed the Canuck Supply Co., Ltd., 404 St. James street, Montreal, as Canadian representatives.

THE SAFETY CAR HEATING AND LIGHTING CO., New York, N.Y., has issued "Aids to navigation, lighting apparatus for coasts, harbors and rivers," a booklet containing excellent illustrations of gas lighted buoys and beacons, apparatus for lightships, lighthouses and lighthouse tenders, electric, gas and oil range lights, etc.

THE DEARBORN CHEMICAL CO., of Chicago, on account of the rapid development of its business in Canada, has organized a Canadian company to carry on the business there, and make further extensions. A manufacturing plant of reinforced concrete is being built at West Toronto, with shipping facilities on both the C.P.R. and G.T.R. The building will be completed about midsummer. The investment that is being made by the Canadian company in building, grounds and equip-

ment will exceed \$100,000. The active head of the Canadian enterprise, as Vice President and General Manager, A. W. Crouch, who will make his home at Toronto, has been connected with the Dearborn Chemical Co. for 15 years, having established its Pittsburgh office, where he has been for the past eight years district manager, in charge of a number of the branches. The Canadian company will specialize on the analysis and scientific treatment of boiler feed waters, both for steam railways and stationary steam plants.

THE STANDARD UNDERGROUND Cable Co. of Canada, Ltd., has issued a new price list of Sterling new code rubber covered wire in booklet form. It gives prices of wire for basés, ranging from 13 to 20c. for solid and stranded wire of all commercial sizes. Appended are explanatory notes and a list of electric wire and cables and cable accessories manufactured by the company. The price list will be sent on request.

Transportation Conventions in 1913.

- May.—Association of Railway Claim Agents, Baltimore, Md.
- May 6-9.—Air Brake Association, St. Louis, Mo.
- May 19-21.—Railway Storekeepers' Association, Chicago, Ill.
- May 20.—Association of Railway Telegraph Superintendents, St. Louis, Mo.
- May 21.—American Railway Association, New York.
- May 21-24.—International Railway Fuel Association, Chicago, Ill.
- May 26-29.—Master Boiler Makers' Association, Chicago, Ill.
- May 28.—Association of American Railway Accounting Officers, Atlantic City, N.J.
- June.—American Society for Testing Materials, Philadelphia, Pa.
- June.—Association of Railway Electrical Engineers, Atlantic City, N.J.
- June 11-13.—American Railway Master Mechanics' Association, Atlantic City, N.J.
- June 16-18.—Master Car Builders' Association, Atlantic City, N.J.
- June 17.—Train Despatchers' Association of America, Los Angeles, Cal.
- June 17-19.—International Association of Railway Special Agents and Police, Salt Lake City, Utah.
- June 17-20.—American Association of Freight Agents, Buffalo, N.Y.
- June 18.—Freight Claim Association, Bluff Point, N.Y.
- June 24-25.—Association of Transportation and Car Accounting Officers, Charlevoix, Mich.
- July 22-25.—International Railway General Foremen's Association, Chicago, Ill.
- Aug.—Travelling Engineers' Association, Chicago, Ill.
- Aug. 12-15.—Railway Gardening Association, Nashville, Tenn.
- Aug. 18.—International Railroad Master Blacksmiths' Association, Richmond, Va.

- Sept. 8-12.—Roadmasters' and Maintenance of Way Association, Chicago, Ill.
- Sept. 9-12.—Master Car and Locomotive Painters' Association of U.S. and Canada, Ottawa, Ont.
- Oct. 8.—Association of Water Line Accounting Officers, Philadelphia, Pa.
- Oct. 14.—Railway Signal Association, Nashville, Tenn.
- Oct. 21-23.—American Railway Bridge and Building Association, Montreal.

Transportation 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 Building, 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.
 - Dominion Marine Association, Counsel, F. King, Kingston, Ont.
 - Eastern Canadian Passenger Association, G. H. Webster, 54 Beaver Hal' 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.
 - Great Lakes and St. Lawrence River Rate Committee, Jas. Morrison, Montreal.
 - International Water Lines Passenger Association, M. R. Nelson, New York.
 - Niagara Frontier Summer Rate Committee, Jas. Morrison, Montreal.
 - Nova Scotia Society of Engineers, A. R. McCleave, Halifax, N.S.
 - Quebec Transportation Club, J. S. Blanchet, Quebec.
 - Ship Masters' Association of Canada, H. O. Jackson, 376 Huron street, Toronto.
 - Shipping Federation of Canada, T. Robb, 526 Board of Trade, Montreal.
 - Western Canada Railway Club, W. H. Rosevear, 25½ Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.

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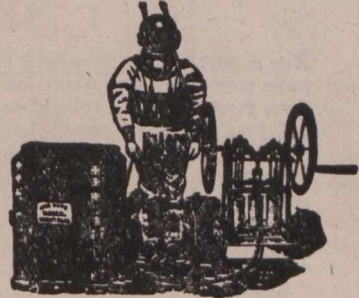
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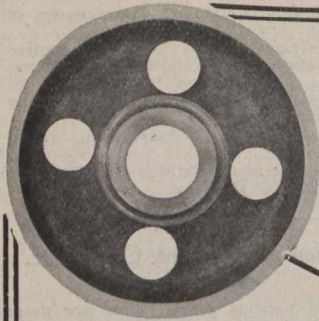
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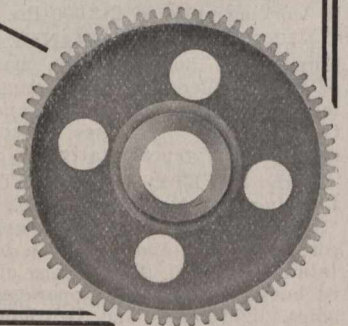
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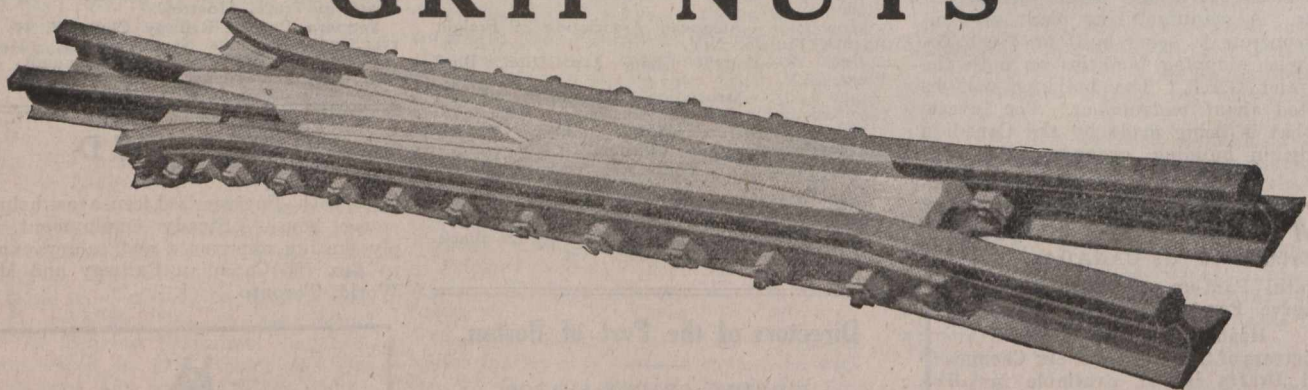
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