

The Railway and Marine World

February, 1912.

The National Transcontinental Railway Shops at Transcona.

Progress in the construction of the N.T.R. shops at Transcona has been noted in *The Railway and Marine World* as the work advanced. These descriptions in the various stages of completion were published in Aug., 1909, Aug. and Sept., 1910, and July, 1911. A number of changes, some of which involved considerable rearrangement, have from time to time been made so that the completed scheme, more particularly as it relates to the car department, is materially different from that at first outlined. In view of these changes, and the fact that the shops are now nearing completion, a complete illustrated article describing them in detail has been prepared.

These shops, located at Transcona, some six miles east of Winnipeg, on the

mechanical Engineer and Machinery Expert, and has since then had entire control of the completion of the locomotive shops and construction of the car shops, together with the selection and location of machinery and equipment placed in the locomotive shops, and to be placed in the car shops, and also of all mechanical equipment along the N.T.R. line. D. A. Evans, who is one of his assistants at Winnipeg, has done very good work in connection with the locomotive shop plant.

As above stated, the original purpose of the shops is to provide for repairs for the N.T.R. east of Winnipeg, which line on completion will be operated by the Grand Trunk Pacific Ry. Co. They will also be used for repairs for G.T.P.R. lines west of Winnipeg, though later on

would be capable of a further extension of 100% when traffic conditions should require it.

The various buildings are arranged along a midway running north and south across the property, and are served by a series of standard gauge and industrial tracks. The standard gauges branch off from the yard tracks to the south of the property. Additional communication between the buildings is obtained through the overhead travelling crane shown in fig. 1, which runs the whole length of the midway, serving all the main shops. This crane has 10 tons capacity, and is electrically operated, all exposed parts being covered by hoods in the usual manner. The operator's cage is electrically heated with a heater of the street car type. The runway is of

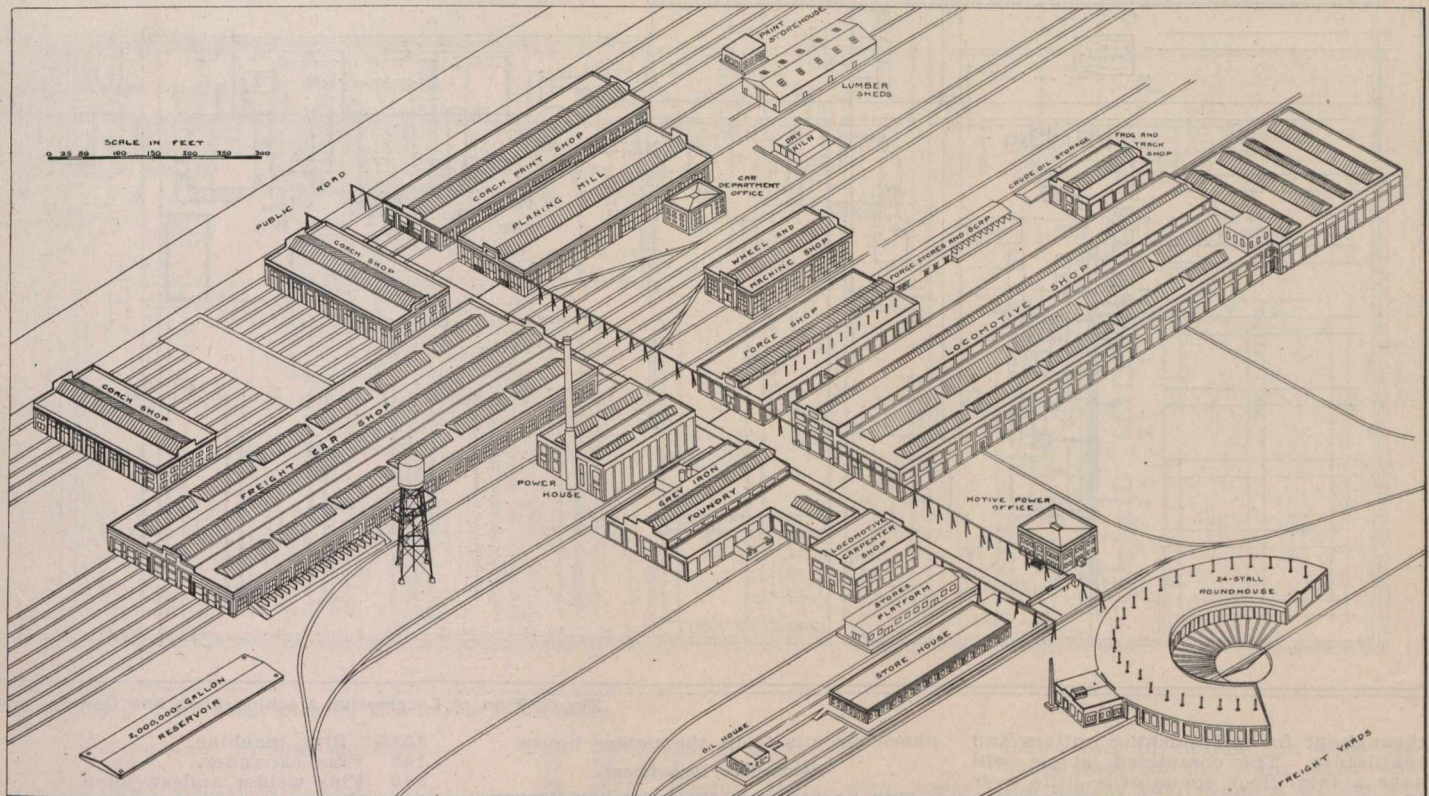


Fig. 1. Isometric Projection of Locomotive and Car Departments. (Copyright.)

N.T.R. main line, are intended to look after the general repairs of 1,800 miles of road, and have been designed with that object in view. In conjunction with the shops to be constructed at Quebec, the whole line from Winnipeg east to Moncton, will be provided for. An idea of their extent may be gained from fig. 1, an isometric scale projection of the shops. It is said that next to the C.P.R. Angus shops at Montreal, they will be the largest in Canada.

The details of the locomotive shop plant were partially developed and constructed under the supervision of F. W. Walker, M.E., Superintendent of Terminal Shops, N.T.R., who, however, resigned on July 1, 1911. W. J. Press, M.E., was, in May, 1910, appointed Me-

chanical Engineer and Machinery Expert, and has since then had entire control of the completion of the locomotive shops and construction of the car shops, together with the selection and location of machinery and equipment placed in the locomotive shops, and to be placed in the car shops, and also of all mechanical equipment along the N.T.R. line.

The site chosen is the prairie, and in order to avoid any trouble from flooding during the spring freshets, the floor level of the shops has been raised about 4 ft. above that of the existing prairie by a heavy gravel fill over the whole area occupied by the buildings.

The various buildings have been grouped together as closely as possible to facilitate intercommunication during the severe winter, the intervening distances being made as short as possible. As will be noted from fig. 1, this feature has been carried out very successfully, considering the fact that the designers had in mind the building of a plant that

steel construction, the steel columns supporting the girders being carried on concrete piers. Wherever possible, this runway is made a part of the adjoining building, dispensing with columns at these points.

As indicated in fig. 1, the car shops are to the north, and the locomotive shops to the south, the midway passing through each group of buildings. The divisional line is the through track running to the north of the power house, the latter being as centrally located as is feasible to reduce power and heat transmission losses to a minimum. The foundry and forge shops, being used by both departments are also centrally located between the groupings, the buildings that are distinctively car or loco-

motive being at the north and south ends of the midway respectively.

The buildings, with the exception of the storehouse, oil house and stores platform, are of steel construction with self-supporting steel frames, with concrete foundations and walls up to the windows. The balance of the superstructure masonry is brick, carried up into a parapet wall all around the building, and capped with a concrete coping. The roof drainage is carried down inside the buildings from receiving hoppers in the roof and through running traps to the sewers. All the large buildings are covered with a built-up roofing composed of felt and asphalt covered with gravel. All windows throughout the plant have 1/8-in. thick ribbed glass, and the skylights are glazed with 3/8-in. wire glass. As additional protection against heavy snow loads on the roof, the skylights are carried on steel ribs with rolled copper sheathing to carry the glass. Copper is used

distributed throughout the various buildings with numerous outlets. The piping distribution system is carried up and down the midway from the power house in a tunnel of sufficient size to permit a passage alongside the pipes, and branches to the various buildings are run from this tunnel in tile conduits packed with asbestos sponge. On entering the building, the piping is carried on the trusses and steel work of the shop. Fuel oil is distributed under pressure from the storage tanks to the furnaces in the boiler, locomotive and forge shops, while an accumulator gives the necessary pressure for the operation of the various hydraulic machines.

The shops are protected from fire by an extensive system of yard piping and fire hydrants, with hose houses at convenient spots. The electric travelling cranes throughout the plant are equipped with alternating-current motors, and are operated directly from the 3-

places, and also has valves for steam, water and air, each pit being a completely equipped unit in itself. A wall bracket crane between every alternate column is also provided. Between each pit there is the usual work bench fitted with the necessary equipment.

The next span is a 60-ft. bay containing all the heavier individual motor-driven machine tools where the bulkier and heaviest parts are handled. This is provided for by two 10-ton cranes for the handling of materials.

At the extreme left of this bay the flue shop is located adjoining the boiler shop contained in an extension to the locomotive shop, and which will be later described. The equipment of this shop is thorough, containing the following machines. (The first column refers to the index number on the illustration by which the machine can be located):

112 Chain rumbler with cleaning chain attachment.

138 Cold cutting-off machine.

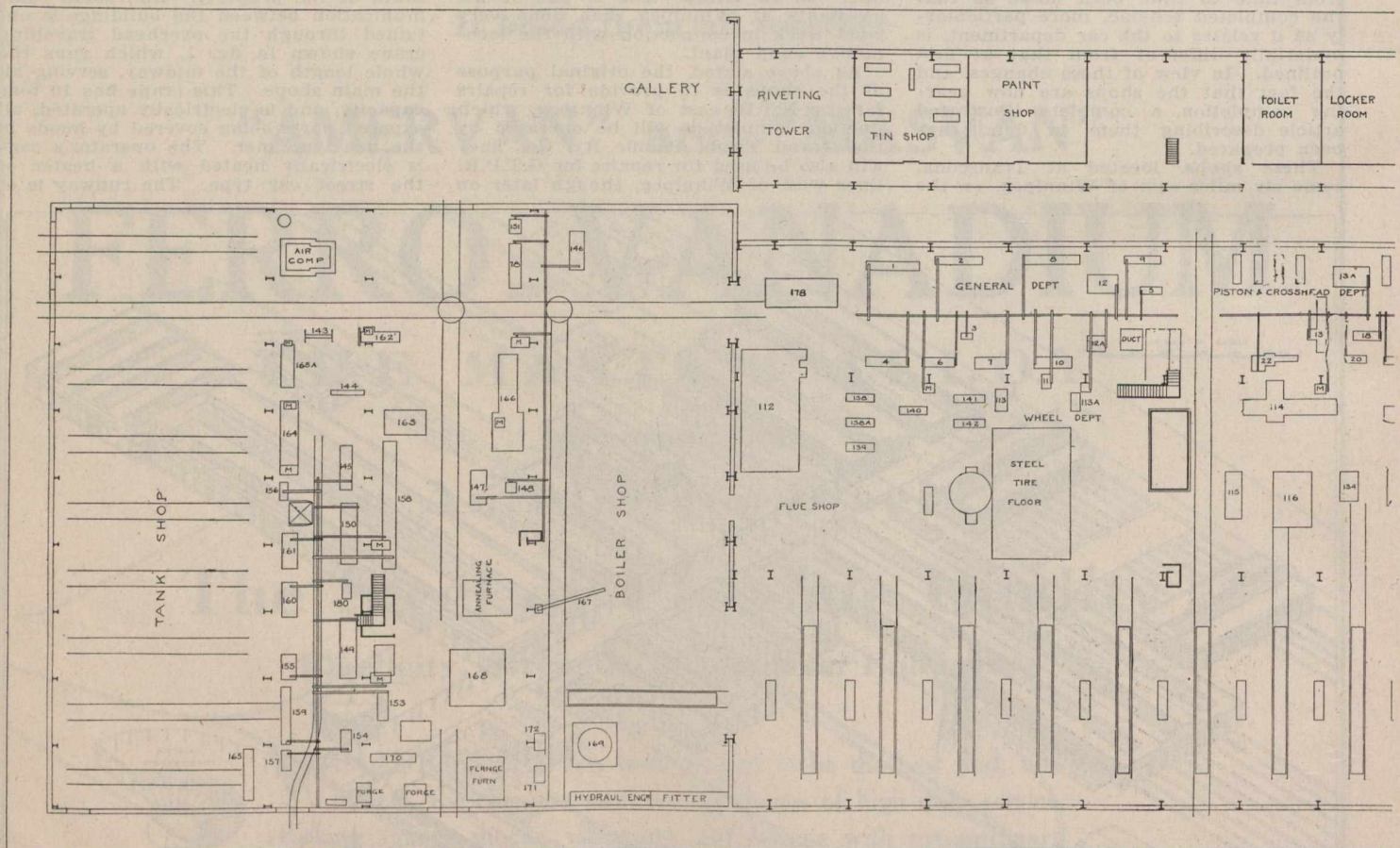


Fig. 2. Plan of Locomotive Machine Shop and Gallery, and

throughout for all flushing gutters and ventilators. The completed shops will have a total floor space of a little over 17 acres.

Mercury arc lights are being used for the principal interior shop illumination, with the lamps and reflectors hung high in the shop. This form of illumination is satisfactory, giving an easy, even light with no sharp shadows. In addition, there will be plug receptacles in all the buildings at frequent intervals for the attachment of lamps on cables for the illumination of boiler interiors and similarly hampered places. Daylight illumination is especially well provided for by ample window areas and wide skylights, giving the maximum of light. The steel-construction makes this possible. To utilize this lighting to the greatest advantage, the interiors of all the shops are painted white, so that the lighting is particularly good.

High and low pressure steam, water, compressed air and drinking water, are

phase circuits from the power house.

Locomotive Department.

THE LOCOMOTIVE, MACHINE AND ERECTING Shop, a plan view of which is given in the double-page illustration, fig. 2, is 615 ft. long, containing three bays. The main bay, which is 70 ft. wide, with a height to bottom of truss chord of 50 ft., is the section shown in the lower part of the illustration. It contains 25 locomotive pits. There are two entrances to these pits, at the sixth pit from each end. The locomotive, when entered, is picked up by a 120-ton electric crane which spans the 70-ft. bay, carrying the locomotive to the desired berth. This arrangement has certain advantages over the transfer table, and long track erecting floor layouts. A 10-ton electric crane of similar span used for general work, handles the majority of the parts.

Each pit is replete with plug connections for electric light cables for dark

- 138A Pipe machine.
- 139 Flue expander.
- 140 Flue welder and swedger.
- 141 Hot saw and expander.
- 142 Cut-off machine.
- Staybolt nipper.
- Pneumatic staybolt breaker.

The stationary machines of this lot are in a group drive, with the exception of 112, which has an individual motor. (Motor drive will hereafter be designated by "m.d." unless otherwise noted).

The wheel department, which is next in order in this bay, is provided with all the necessary equipment, including the following machines:

113 32-in. Draw-cut shaper with crane.

113A 12-in. Slotter.

There is also a large steel tire floor centrally located, with a lye vat of sufficient size that driving wheels, side rods, and similar parts may be completely immersed for cleaning off the grease.

Next in order comes the wheel department. In this section there are the following motor-driven tools:

- 114 60-in. Planer.
- 115 24-in. Slotter.
- 116 96-in. Boring mill.
- 117 Extension gap lathe.
- 119 600-ton Hydraulic wheel press.
- 120 90-in. Driving wheel lathe.
- 121 85-in. Quartering machine.
- 122 80-in. Wheel lathe.
- 134 60-in. Radial drill.

To the right of this section comes the balance of the heavy motor-driven machines, classed as a general department, with the following machine tools:

- 125 60-in. Planer.
- 126 60-in. Planer.
- 128 26-in. Draw cut shaper with crane.
- 129 30-in. Draw cut shaper with crane.
- 130 72-in. Vertical boring mill.
- 131 42-in. Vertical boring mill.

- 5 14-in. Bolt lathe.
- 6 16-in. Shaper.
- 7 60-in. Radial drill.
- 8 32-in. Engine lathe.
- 9 30-in. Engine lathe.
- 10 Horizontal boring mill.
- 11 50-ton Forcing press.
- 12 52-in. Vertical boring machine.
- 12A 42-in. Vertical boring machine.

The piston, crosshead and motion department, which comes next in order, is very complete with a wide range of standard tools for this class of work. The 26 machines in this set have group drive divided into two sections with the heavier machines at the left end of the section in one drive. The complete list is as follows:

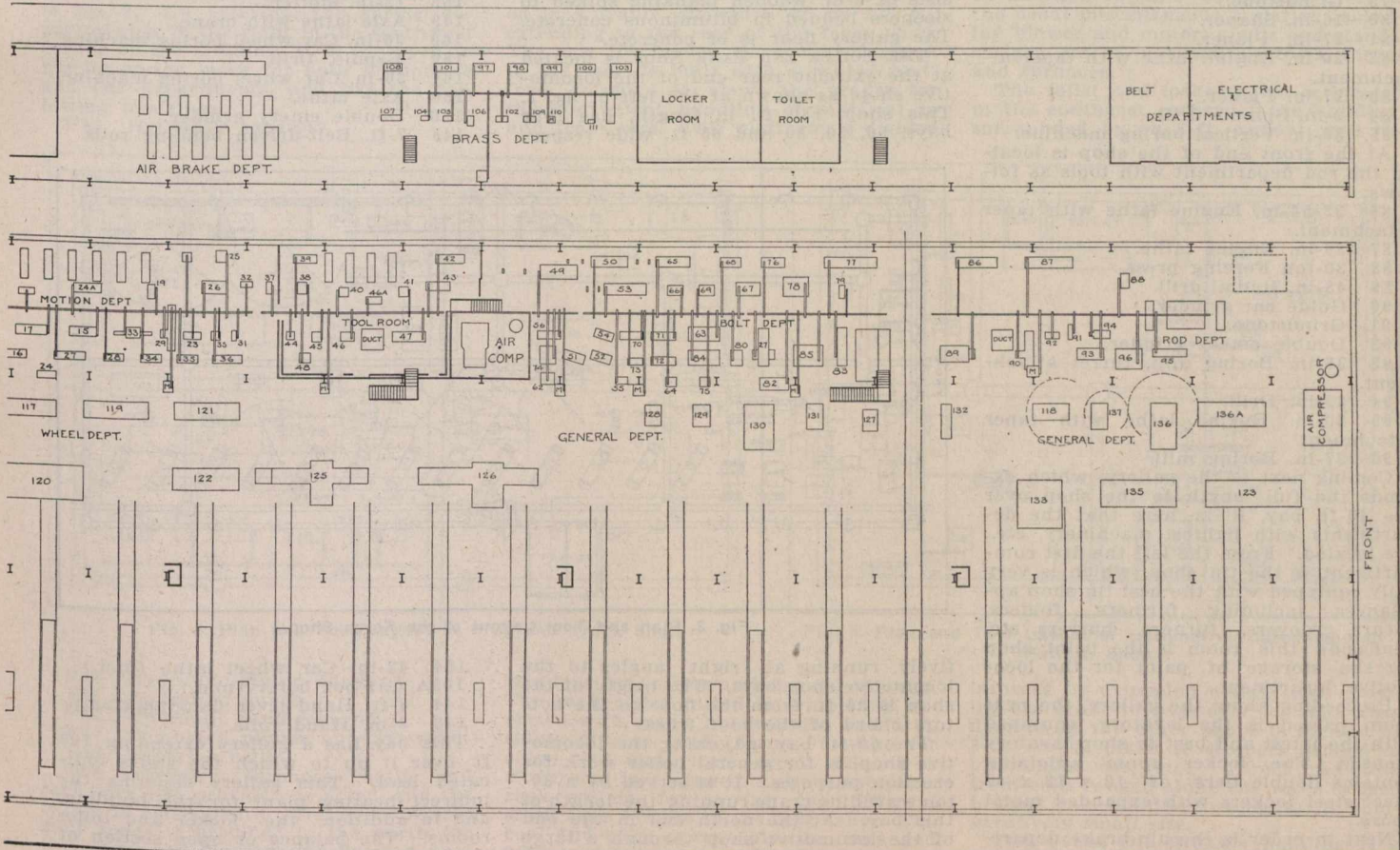
- 13 36-in. Planer.
- 13A Piston grinder.
- 14 Double emery wheel.
- 15 36-in. Radial drill.
- 16 16-in. Bolt lathe with taper attachment.
- 17 66-in. Radial drill.

- 36 18-in. Engine lathe with taper attachments.

Alongside this section is the tool room in a closed partition. It has the usual tool room equipment for a shop of this size, as follows:

- 37 Grindstone.
- 38 16-in. Universal shaper.
- 39 14-in. Tool lathe with taper and relieving attachments.
- 40 6-spindle Drill.
- 41 2-spindle Drill.
- 42 18-in. Tool lathe with taper attachments.
- 43 14-in. Tool lathe with taper attachment and draw-in collets.
- 44 Twist drill grinder.
- 45 Reamer grinder with attachments.
- 46 Tool grinder.
- 46A 12-in. Speed lathe.
- 47 22-in. Engine lathe with taper attachments.
- 48 Milling machine.

An air compressor, electrically operated, in a compartment alongside the



Boiler and Tank Shop, showing Tool Layout in all Shops.

- 127 Combined milling machine.
- 132 18-in. Slotter.
- 118 6-ft. Radial drill.
- 137 26-in. Draw cut shaper with crane.
- 136 18-in. Vertical miller.
- 136A Locomotive rod boring machine.
- 133 60-in. Draw cut cylinder planer.
- 135 Special cylinder borer.
- 123 36 x 36-in. Milling machine.
- 1 26-in. Engine lathe.
- 2 28-in. Engine lathe.
- 3 Double emery grinder.
- 4 26-in., 12-ft. Bed engine lathe.
- 18 48-in. Radial drill.
- 19 50-ton Forcing press.
- 20 16-in. Engine lathe with taper attachment.
- 21 Centreing machine.
- 22 Milling machine.
- 23 18-in. Emery grinder.
- 24 Disc grinder.
- 24A Link grinder.
- 25 16-in. Traverse shaper.
- 26 10-in. Slotter.
- 27 20-in. Engine lathe with taper attachment.
- 28 16-in. Engine lathe with taper attachment.
- 29 20-in. Planer.
- 30 14-in. Drill.
- 31 4-in. Hack saw.
- 32 Buffing machine.
- 33 Universal grinder with all attachments.
- 34 16-in. Engine lathe with taper attachments.
- 35 16-in. Engine lathe with taper attachments.

tool room, in conjunction with the air compressor at the right hand end of the middle bay, supplies all the air required in this shop, thus making it independent of the central plant air compressor in the powerhouse. Moreover, standing connections are provided, connected with the general air distribution for use in case of emergency.

Just past the tool and air compressor rooms is the bolt department, equipped with the machines enumerated:

- 49 3-in. x 36-in. Hollow hex. turret lathe.
- 50 3-in. x 36-in. Hollow hex. turret lathe.
- 51 4-in. Hack saw.
- 52 4-in. Hack saw.
- 53 2-in. x 24-in. Hollow hex turret lathe.
- 54 Automatic lathe.
- 55 Centering machine.
- 56 14-in. Bolt lathe with taper attachment.

- 57 Automatic screw machine.
- 58 Automatic screw machine.
- 62 Emery wheel.
- 63 2-spdl. Drill.
- 64 6-spdl. Drill.
- 65 Hollow hexagon nut facer.
- 66 Nut facer with complete attachments.
- 67 2-in. Bolt cutter.
- 68 1½-in. Screw machine.
- 69 2-in. 4-spdl. Nut tapper.
- 70 14-in. Bolt lathe with taper attachments.
- 71 16-in. Bolt lathe with taper attachments.
- 72 16-in. Bolt lathe with taper attachment.
- 75 6-spdl. Drill.
- 76 16-in. Engine lathe.
- 73 Centering machine.
- 74 1½-in. Triple head bolt cutter.
- 77 30-in. Engine lathe with taper attachment.
- 78 2-in. Triple head bolt cutter.
- 78A 6-spdl. Staybolt threader.
- 79 Grindstone.
- 80 16-in. Shaper.
- 81 27-in. Planer.
- 82 20-in. Engine lathe with taper attachment.
- 83 27-in. Planer.
- 84 2-in. Spindle drill.
- 85 36-in. Vertical boring machine.

At the front end of the shop is located the rod department with tools as follows:

- 86 32-54-in. Engine lathe with taper attachment.
- 87 36-in. Engine lathe.
- 88 30-ton Forcing press.
- 89 48-in. Radial drill.
- 90 Guide bar grinder.
- 91 Grindstone.
- 92 Double emery grinder.
- 93 36-in. Boring mill, turret attachment.
- 94 32-in. Drill.
- 95 20-in. Engine lathe with taper attachment.
- 96 37-in. Boring mill.

Coming next to the gallery, which extends the full length to the shop over the 40-ft. bay, it is here that the departments with lightest machinery, etc., are located. From the left the first compartment is the tin shop, which is very fully equipped with the best tin shop appliances, including formers, folders, shears, groovers, turners, burrs, etc. Alongside this room is the paint shop for the storage of paint for the locomotive department.

Proceeding along the gallery, the next room passed is the lavatory, equipped with the latest and best in shop lavatory utensils. The locker room adjoining contains double tiers of 12 x 12 x 42 sheet steel lockers with expanded metal doors.

Next in order is the air brake department, where all the air brake apparatus is to be tested and repaired. It is fitted out with the usual standard testing devices with the necessary tables and stands as shown.

- The brass department, which comes next, contains a series of brass working tools working from an electric group drive. These machines are as follows:
- 97 18-in. Engine lathe.
 - 98 18-in. Monitor geared head lathe.
 - 99 18-in. Monitor geared head lathe.
 - 100 18-in. Monitor geared head lathe.
 - 101 18-in. Geared head lathe.
 - 102 2-in. Spindle miller.
 - 103 18-in. Monitor lathe with taper attachments.
 - 104 24-in. Radial drill.
 - 105 Turret drill.
 - 106 14-in. Crank-driven shaper.
 - 107 18-in. Engine lathe with taper attachment.
 - 108 16-in. Monitor lathe with taper attachment.
 - 109 Buffing machine.
 - 110 Cock grinder.
 - 111 Bench grinder.

Next to this brass department is a similar set of locker and toilet rooms to those just described. In the corner at the front of the building are the belt and electrical departments.

In addition to the toilet rooms provided in the gallery, there are four urinal stands located at uniform distances down the shop at the columns forming the dividing line between the erecting and electrical departments.

Indirect heating apparatus is installed in the building of sufficient capacity to keep all parts of the shop at a temperature of 60 degs. F. when the outside temperature stands at 20 below zero. Exhaust steam from the powerhouse and the exhaust of the circulating fans is supplied to the heating coils, and the air drawn through these coils is driven by fans through the underground concrete ducts and delivered into the building at floor level through outlets along both walls under the windows.

The flooring of the ground part consists of 3-in. wooden planking spiked to sleepers bedded in bituminous concrete. The gallery floor is of concrete.

THE BOILER AND TANK SHOP is located at the extreme rear end of the locomotive shop, as shown at the left of fig. 2. This shop, 180 ft. in length, has four bays, 60, 50, 30 and 65 ft. wide respec-

- 160 61-in. Throat horiz. hydraulic punch.
 - 162 Single end punch and shear (m.d.)
 - 78 2-in. Triple head bolt cutter.
 - 146 4-spdl. Drill.
 - 151 4-spdl. Drill.
- In addition to these, there are the forges, flange fire and annealing furnace indicated. All power-driven machines are group drive except where otherwise noted. Like the last bay, there is a standard gauge track running its length with end turntable to transfer to the through track.
- The third or 30-ft. bay contains all the lighter machinery, most of which is operated in a group drive. The machines are:
- 165 200-ton Hydraulic wheel press (m.d.)
 - 157 24-in. Drill press.
 - 154 Small punch.
 - 159 80-in. Rod drill.
 - 153 48-in. Rod drill.
 - 155 12-in. Slotter.
 - 149 Axle lathe with crane.
 - 160 36-in. Car wheel boring machine.
 - 180 2-spdl. Drill.
 - 161 36-in. Car wheel boring machine.
 - 150 Axle lathe.
 - 156 Double emery grinder.
 - 145 7-ft. Belt-driven bending rolls.

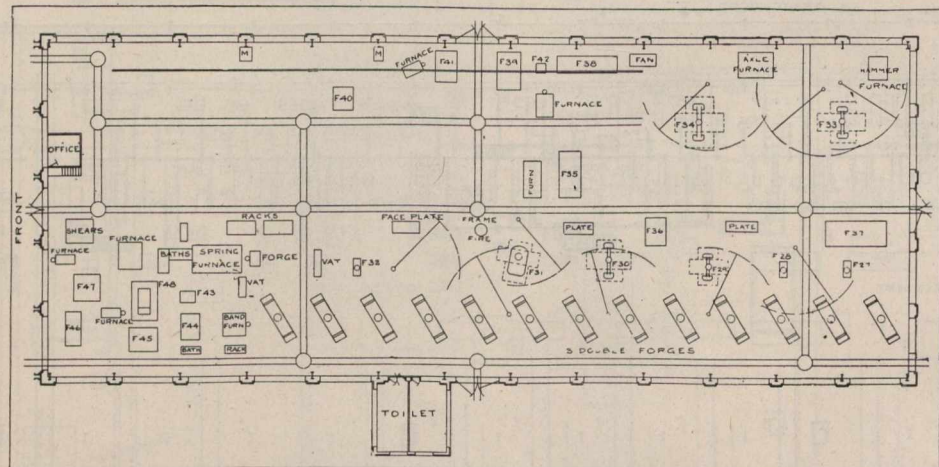


Fig. 3. Plan and Tool Layout of the Forge Shop.

tively, running at right angles to the locomotive shop bays. The height of the shop is 36 ft. from the floor to the bottom chord of the roof truss.

The 60-ft. bay, adjoining the locomotive shop, is for general boiler work for erection purposes. It is served by a 30-ton travelling crane running the length of this bay. At the north end in the end of the locomotive shop through a large opening, located in the usual tower, there is a 17-ft. 6-in. gap rivetter, 178, served by a 20-ton electric crane. This tower is served from the boiler shop by a service track for the transferring of the boilers. At the lower end of the boiler shop bay there is a testing pit, and alongside a 12-in. by 15-ft. hydraulic accumulator, 169. Along the wall are the hydraulic engineers' and fitters' benches.

The second bay, 50 ft. wide, is devoted to heavy machinery and is served by a 10-ton electric crane for the handling of the material. The machine equipment of this bay is as follows:

- 170 12-ft. Flange clamp.
- 172 Triplex 3 x 8 hydraulic pump (m.d.)
- 167 Wall radial drill (m.d.)
- 168 560-ton, 4-col. Hydraulic forging press.
- 147 Punch and shear.
- 148 Grinder.
- 166 14-ft. Horizontal bending rolls (m.d.)
- 158 25-ft. Plate planer.

- 164 42-in. Car wheel lathe (m.d.)
- 165A Car box borer (m.d.)
- 144 8-ft. Hand lever flanging clamp.
- 143 6-in. Hand rolls.

This bay has a gallery extending 100 ft. over it up to which the stairs indicated lead. This gallery contains the indirect heating plant for the building, and in addition the locker and toilet rooms. The balance or open section of the bay is served by a 5-ton electric travelling crane.

The rear or 65-ft. bay houses the tank shop stands, where 9 tracks are provided for tender tank repairs. A 20-ton crane spans this bay and handles the necessary materials.

This building is also heated by indirect radiation, a system of ducts and outlets similar to those in the locomotive shop being used. A 3-in. wood floor of similar construction is also used throughout. In the light-machine bay there is also a motor-driven air compressor, making this shop equally independent of the powerhouse for its compressed air supply. Standby connection is also made with the locomotive shop line.

One characteristic particularly noticeable in this shop is the convenient layout of the tools in such a manner that there is no interference from nearby machines while either one is being operated upon. This feature required special attention, considerable study being devoted to the arrangement of tools to

handle the standard sizes of plates and shapes used in boiler and tank practice. This studied arrangement is especially apparent around the group of machines 144, 143 and 162, where standard boiler plates may be readily flanged, rolled, punched or sheared without interference.

In addition to the equipment enumerated in the foregoing for both locomotive and boiler shops, there is considerable equipment of a miscellaneous nature. This includes such items as 6 each of 50, 40, 35 and 25-ton jacks, 90 bench vises, 18 heavy trucks, taps, dies, etc., chisels, pinch bars, sledges, box wrenches, surface blocks and oil burners.

THE FORGE SHOP is the first building north of the locomotive shop building as indicated in fig. 1. The interior arrangement of the tools and machines in this building is clearly shown in fig. 3. It is 260 by 100 ft., spanned by a single truss providing unhampered space for the location of the equipment.

The front of the building is to the left in fig. 3. On entering, the spring department is to the right in the southwest corner of the building. It is equipped to handle spring work for both locomotive and car departments, and has the following machines:

- F43 Hydraulic squeezer.

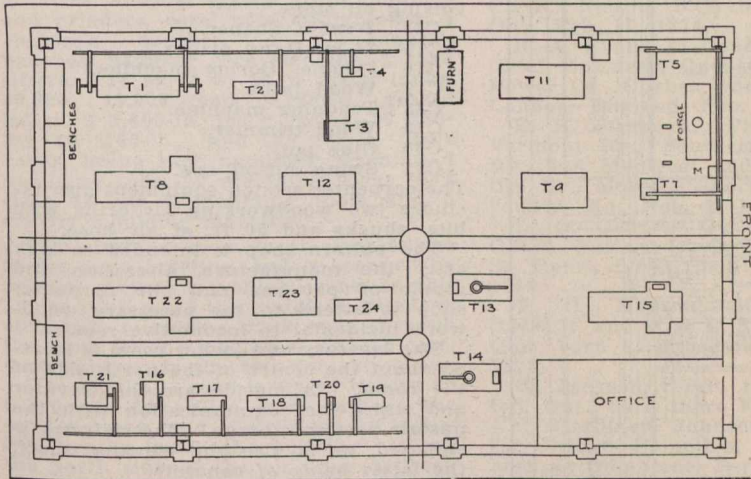


Fig. 4. Plan and Tool Layout of Frog and Track Shop.

Their locations are indicated in the illustration. F35 is a hydraulic bulldozer, with accompanying furnace, and F39 is a 3 1/2-in. forging machine. The balance of large equipment is:

- F38 Cutting-off and centering machine.
- F42 Emery grinder.
- F41 1 1/2-in. Bolt machine.
- F40 Hydraulic bar shear.

The balance of the floor space is for the storage of stock, dies, etc.

A small industrial track with necessary turntables, covers the building. At the front there is a foreman's office, while in a small two-story addition from the south side are the locker and toilet rooms.

The steam to the hammers, exhaust, oil and hydraulic piping are carried in concrete ducts through the shop to the various machines. The building is heated by indirect radiation from coils along the walls under the windows.

FORGE STORES AND SCRAP BINS are housed in a frame structure 30 by 220 ft., extending to the rear of the forge shop. The east 100 ft., i.e., the section furthest to the rear, is built with a roofed platform raised 4 ft. above the grades for the convenient handling of material to and from cars. This platform is divided

- T2 12-in. Railway frog slotter.
- T3 Cold cut-off saw.
- T4 14-in. Double emery.
- T8 Frog and switch planer (m.d.)
- T12 Rail bender for rails up to 100 lbs. (m.d.)
- T11 Bulldozer with crane (m.d.)
- T5 200-lb. Strap hammer with crane.
- T7 125-lb. Strap hammer with crane.
- T9 25-in. Throat punch and shears (m.d.)

- T15 36-in. Planer (m.d.)
- T13 36-in. Radial drill (m.d.)
- T14 36-in. Radial drill (m.d.)
- T24 Cut-off saw (m.d.)
- T23 3-spdl. Drill (m.d.)
- T22 36-in. Planer (m.d.)
- T21 Milling machine.
- T16 16-in. Shaper.
- T17 14-in. Bolt lathe.
- T18 18-in. Engine lathe with taper attachments.
- T20 6 x 36-in. Grindstone.
- T19 24-in. Drill.

In addition to this equipment there is the usual miscellaneous material, including blower and motor, anvils and stands, sledges, set of blacksmith's tools, forges and furnaces.

The toilet and locker room is located in the southeast corner of the building, surrounded by an 8-ft. cement wall re-

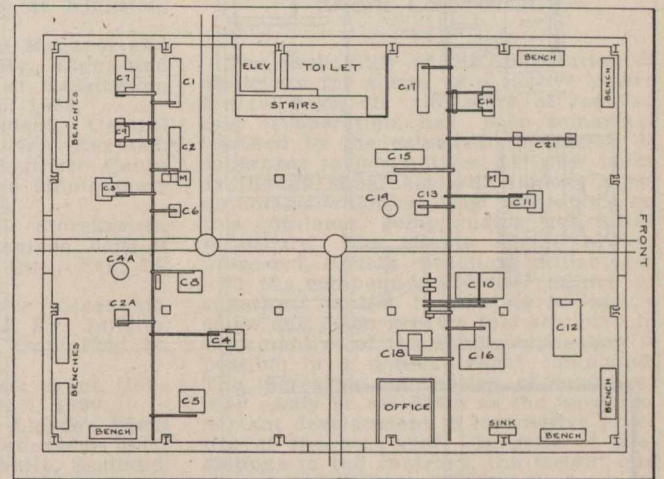


Fig. 5. Plan and Tool Layout of Locomotive Carpenter and Pattern Shop.

- F44 Hydraulic spring bander.
- F45 Hydraulic punch.
- F46 Hydraulic band remover.
- F47 Combined nipper and trimmer.
- F48 Tapering rolls.

The necessary furnaces, baths and racks are also provided as noted, and the whole is conveniently arranged. Ample floor space is provided to the north for the storage of the raw and finished product.

Further down the shop on the same side, there is a row of 13 double forges set at an angle as dictated by good practice. Adjacent to these is a row of six hammers, as follows:

- F27 200-lb. Hammer.
- F28 1250-lb. Hammer.
- F29 1500-lb. Hammer.
- F30 3000-lb. Hammer.
- F31 3300-lb. Hammer.
- F32 200-lb. Hammer.

It is here that the medium weight work is handled. In this section of the shop there is also a frame fire and necessary face plate, as well as these two machines:

- F36 Vertical hydraulic shear.
- F37 Alligator shear (m.d.)

The north side of the shop cares for the heavy work at the rear, where the following two machines:

- F34 3500-lb. Hammer.
- F34 5000-lb. Hammer.

with accompanying furnaces handle the heavier billets. All the steam hammers and large fires are provided with jib cranes for the handling of the work.

into bins for sorting and storage of scrap. The section not raised is completely enclosed with plank lining inside and drop siding outside, and forms storage for coke, coal and iron stock. The iron stockroom is arranged with an extensive rack system for storing the different stock sizes for use in the forge shop. The coal and coke storage bins are arranged with roof hatches in order that cars may be unloaded by a clam shell and crane from the car and the coal or coke dropped through the roof. Industrial tracks connecting with those in the forge shop provide easy access for the entrance of materials and supplies.

FORGE AND TRACK SHOP.—This department is located in a building some distance to the rear of the forge stores and scrap bins. The building is 60 by 100 ft., with a 24-ft. clearance between floor and truss, and is spanned by a 10-ton electric travelling crane for the handling of the work. The shop was designed having in view the looking after of all repairs to frogs, switches, interlocking plants, and general track machine work. Fig. 4 shows the layout.

All the heavier motor-driven equipment occupies the body of the building, while the lighter, group-driven machinery is ranged along the walls. The whole is served by a continuation of the industrial trackage before referred to, with necessary turntables for spur tracks. The machinery equipment is as follows:

- T1 18-in. Double head traverse shaper.

inforced by expanded metal, thus allowing the crane to pass over it. The shop floor as in the other shops is formed of 3-in. wood spiked to sleepers bedded in bituminous concrete. Direct radiation from coils ranged along the walls is used to heat this building, owing to its comparatively small size.

THE CRUDE OIL STORAGE building is a 25 by 60 ft. concrete structure close beside the frog and track shop, and owing to the nature of its contents, is built mostly underground, the floor being 8 ft. below the grade, with the side walls projecting only 2 1/2 ft. above the ground. A concrete roof carried on steel beams closes in the building, making it thoroughly fireproof.

Inside, on concrete foundations, there are four iron storage tanks, each with a capacity of about 8,000 gals. of crude oil. Compressed air connections are made to these tanks and the oil is forced out and distributed to the various buildings requiring it.

The tanks are so arranged that the pressure can be cut off and the tanks filled by gravity from tank cars standing on sidings alongside the building. Piping connections to the outside of the building, fitted with lock-up valves, are supplied for this purpose.

THE STORE HOUSE building is located at the southern end of the midway, directly across from the locomotive erecting shop. It consists of a large reinforced concrete platform 4 ft. above grade in order to have car and platform on the

same level for the handling of supplies from the storehouse to the various buildings.

On the platform there is a brick building 60 by 260 ft. with reinforced concrete roof carried on concrete posts. The front portion of this building is fitted up for an office for the storekeeper and clerks, and has a fireproof vault. The balance of the building is equipped with an extensive system of shelving, racks, reels, etc., suitable for arranging the varied stock of materials which the storehouse contains. Side doors along each side of the building give ready access to the interior from the wide loading platforms.

The building is lighted with incandescent lamps and is heated by a system of direct radiation coils. The office portion of the building has maple flooring throughout and the balance has a cement finish on top of the reinforced concrete, the same as the platform.

THE OIL HOUSE stands about 100 ft. to

form level there is a hydraulic elevator for the handling of barrels and similar material from the basement storage. There is also a stairway to the basement from inside the building, and also a pump running down from the outside.

The building and basement are heated by direct radiation coils and the floor is the same as the balance of the platform. The building is made as fireproof as possible, and the windows are glazed with ¼-in. wire glass.

THE STORES PLATFORM is situated on the midway, alongside the storehouse, and separated from it by two intervening tracks. It consists of a large 56 by 180 ft. reinforced concrete platform similar to those just described. It is carried on concrete posts, and is open below, the deck being at a 4-ft. level. The platform projects 15 ft. into the midway, enabling the midway crane to handle material to and from the other buildings.

On the platform, a light steel frame-

roof are likewise of reinforced concrete, making a practically fireproof room, as all communications with it are protected by fire doors. It is used as a pattern storage and is equipped with shelving and racks for the purpose.

The ground floor has the usual 3-in. wooden floor and is used as the carpenter and pattern shop, being equipped with the following wood-working machines driven from line shafting:

- C1 Pattern-maker's lathe.
- C2 Pattern-maker's lathe.
- C2A Face lathe.
- C3 Band saw.
- C4 Band saw.
- C4A Wood trimmer.
- C5 Small 24-in. planer.
- C6 Combined grindstone and revolving oil stone.
- C6A Glue pot.
- C7 Knife grinder.
- C8 Universal saw bench.
- C9 2-spdl. Shaper.

The foregoing constitutes the machinery in the pattern section at the left or west end of the shop. The balance below comprises the carpenter section equipment:

- C10 Planer, moulder and matcher.
- C11 Band saw.
- C12 Cut-off saw (m.d.)
- C13 Combined grindstone and revolving oil stone.
- C14 2-spdl. Shaper.
- C15 24-in. Hand planer.
- C16 3-spdl. Boring machine.
- C17 Wood lathe.
- C18 Tenoning machine.
- C19 Wood trimmer.
- C20 Glue pot.
- C21 Swing cut-off saw.

The carpenter section equipment also includes two woodworking air drills with bits, chucks and 50 ft. of air hose.

The pattern shop is intended to look after the manufacture, alteration and repair of patterns and the carpenter shop to attend to the necessary woodwork incidental to locomotive repairs.

The lavatory and locker room is located about the centre of the north side of the room. Alongside are the elevator and stairs for communication with the upstairs pattern storage. The stairway is enclosed, as is also the elevator shaft, the latter being of concrete.

THE GREY IRON FOUNDRY is a large building 130 by 200 ft., with a cleaning room annex 60 by 80 ft. It is directly north of the locomotive carpenter and pattern shop, and faces on the midway. The main plan and a couple of the detail views are shown in fig. 6.

The main foundry has a central bay 70 ft. wide and two side bays each 30 ft. wide. The central bay is used for the general moulding floor, and is spanned by a 5-ton electric travelling crane equipped with a 5-ton auxiliary hoist for light lifting. There are also small jib cranes attached to the columns for handling flasks, etc. The 30-ft. bay on the north side has a moulding floor for small castings at the west end, and core room and ovens at the east end, each served by a 1-ton hand-operated travelling crane.

There are three core ovens, two 7 ft. wide, 12 ft. long and 9 ft. high, with shelves and rack cars for general cores, with racks on one side and end, and one 12 ft. wide, 12 ft. long and 9 ft. wide, with racks on both sides and end. The doors of these ovens are of the counter-weighted lifting type. The larger oven has a platform car for cylinder cores and other large work, and is served by a 5-ton jib crane. There is also a portable core oven.

Between the two departments on the north side of the building, the cupola room, 30 by 40 ft., is located. In it are two cupolas, 72 and 84 ins. in diameter respectively, and 50 ft. in height. Each cupola has 12 tuyeres.

The scale room for weighing the charges, and the blower room on an

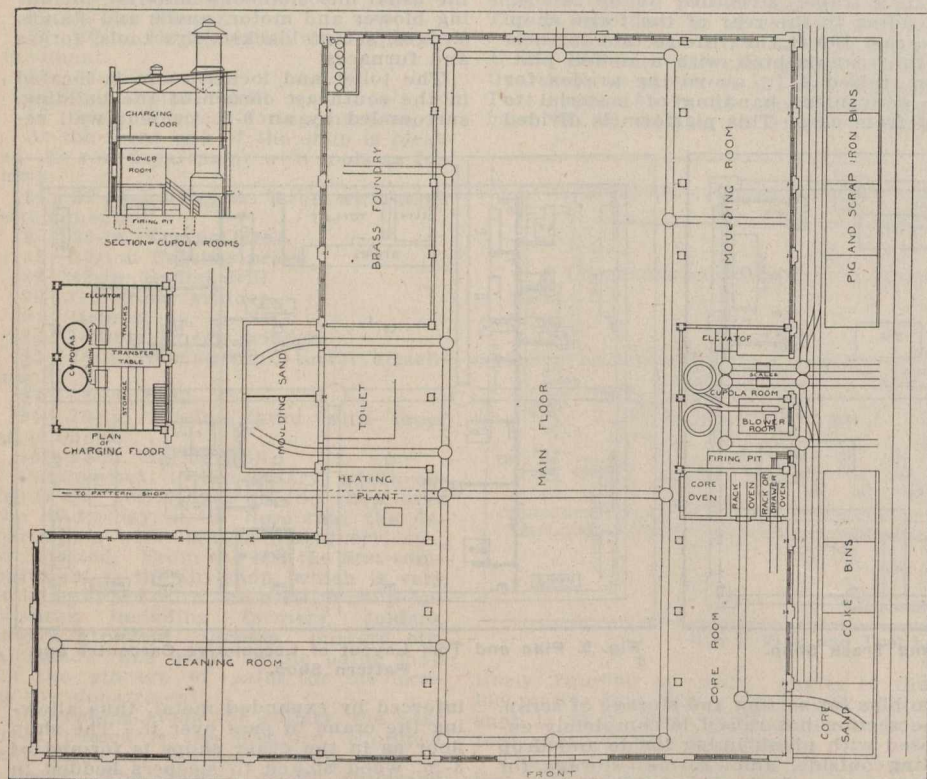


Fig. 6. Plan and Arrangement of Grey Iron and Brass Foundries.

the rear of the store house on a platform 50 by 70 ft., and 4 ft. above the grade the same as the storehouse platform to which it is joined by a connecting platform at the same level. This connecting platform has ramps leading up to it from grade level at both ends.

The oil house has a basement below the platform with a 10-ft. headroom. In this basement on concrete foundations are 9 storage tanks for holding the various kinds of oil in stock. An additional tank for holding gasoline is buried outside the building with a pump connection into the building. The tanks are filled either by gravity through fill pipes from tank cars standing alongside the building, or else from barrels poured into fill boxes set in the platform floor and connected to the tank fill pipes. A system of drainage pipes is arranged for cleaning out the tanks.

On the top of the platform there is a small brick building 30 ft. long, with concrete roof and divided into two rooms by a concrete wall. The oil in the tanks below is handled by Bowser measuring pumps located in one of these rooms. The other room is used for storing oil cans, waste, etc.

Connecting basement and outside plat-

work, enclosed on the sides and ends with corrugated iron and furnished with a roof covered with prepared roofing, furnishes a light protection. A 5-ton hand-operated crane spans the building and has a runway the whole length of the building out on to the front platform through wide crane doors to exchange loads with the midway crane. Access to the building is provided by four doors on the sides and one on each end, opening out to the platform. The building is lighted with incandescent lamps in groups with reflectors.

The stores platform is intended for use as a storage for large, heavy material such as castings and pipe, and thus act as a relief to the general storehouse for this class of material, which will be protected from the weather by the light structure and will be conveniently handled by the small crane.

THE LOCOMOTIVE, CARPENTER AND PATTERN SHOP is a two-storied structure, 70 by 100 ft., facing on to the midway directly north of the stores platform from which it is separated by a track to the latter. It has a self-supporting steel frame on concrete foundation. The upper floor is of reinforced concrete carried on concrete columns. The sides and

elevated steel platform, are also in the cupola room. The core ovens are fired from this room also, keeping all the ash, etc., in one place. The loaded cars after weighing are raised by a 2-ton pneumatic elevator to the charging floor and are here handled by a couple of pneumatic charging machines, one for each cupola. The charging floor has a steel plate floor, and is laid out with a transfer truck and storage tracks for keeping loaded cars on hand ready for charging while the cupolas are running.

The 30-ft. bay on the south side of the building has a small brass foundry at its west end, enclosed by expanded metal screens 10 ft. high. There are 4 brass furnaces 26 ins. diameter, and one 32 ins. diameter, located in the corner of the building. This small foundry is equipped with regular brass foundry equipment, including tongs, shank, core-maker's bench, chipper's bench, band saw, spine cutter, 2 tumblers, 20 by 32 ins. and 24 by 36 ins. respectively, emery grinder and moulding machine. It is served with a one-ton crane.

The iron foundry has the following additional equipment: 20 charging trucks, 6 coke boxes, 10 steel frame yard trucks, 36 x 60 in., cinder mill, 4 tumbling barrels, 36 x 48 in., 2 emery grinders, exhaust system from tumblers and grinders, core wire straightener, 2 chipper's benches, 4 core-maker's benches, hammer core machine, 2 sand sifters, 6 18 by 18 by 36-in. water tanks, 20,000, 10,000 and 4,000-lb. geared ladles, 3 1,800-lb. truck ladles, 20 250-lb., 10 150-lb., and 20 60-lb. ladle bowls, brake shoe moulding machine, 8 moulding tubs, 90 moulding flasks in 4 sizes, 18 sets of moulding tools and a gravity moulding machine.

The cleaning room is at right angles to the main building, and is spanned by a 5-ton electric travelling crane. In this annex are located the tumblers, grinders, etc., and a service track runs through the room for the loading of cleaned castings right on to the cars for shipment.

The moulding sand is stored in bins on the south side, filled from cars on the service track and distributed by industrial tracks inside the building. Along the north side of the building, between the service track and the foundry, as shown in fig. 6, there is a long galvanized iron shed, roofed in and divided into separate compartments. Here are stored direct from the cars, the coke, pig and scrap iron under cover, and these are brought into the foundry on cars running on industrial tracks, also under cover between the bins and the building. Having both material and handling tracks under cover is a valuable feature in all winter weather.

THE MOTIVE POWER OFFICE is south of the locomotive erecting shop and opposite the storehouse. It is a brick structure with steel interior frame, 60 by 68 ft., consisting of two stories and a basement.

The basement is devoted to a large testing laboratory, lavatories and storage. The ground floor has offices for the department's officials and clerks, and on the first floor are the draughting room, file room, and blueprinting room. A vault is carried up from the basement to roof with vaults on each floor.

The floors are of maple on spruce joists carried on the walls and steel work. The interior is plastered throughout and the halls and stairs have a wood wainscoting. The building is heated by direct radiation coils and has incandescent electric lighting fixtures.

The Canadian Northern Ry. reports a total wheat haul for 1911, of 38,750,000 bush., an increase of about 14,000,000 over the previous year. About 8,000,000 bushels are still in elevators along the line.

Birthdays of Transportation Men in February.

Many happy returns of the day to:—

S. A. Baker, Canadian Freight and Passenger Agent, Chicago Great Western Rd., Toronto, born at Morrisburg, Ont., Feb. 1, 1877.

B. H. Bennett, General Agent, Chicago and North Western Ry., Toronto, born at Cobourg, Ont., Feb. 6, 1858.

F. L. C. Bond, Resident Engineer, G.T.R., Montreal, born there Feb. 21, 1877.

T. Britt, General Fuel Agent, C.P.R., Montreal, born there Feb. 3, 1871.

F. W. Churchill, C.P.R. ticket agent, Collingwood, Ont., born in London, Eng. Feb. 6, 1853.

H. R. Charlton, General Advertising Agent, G.T.R., and G.T.P.R., Montreal, born at St. Johns, Que., Feb. 9, 1866.

F. W. Cooper, Resident Engineer, C.P.R., Montreal, born at London, Ont., Feb. 16, 1880.

R. Crawford, Northwest Agent, Northern Navigation Co., Winnipeg, Man., born at Kingston, Ont., Feb. 21, 1870.

R. W. Drew, Division Freight Agent, Kootenay and Boundary Divisions, C.P.R., Nelson, B.C., born at Kingston, Ont., Feb. 17, 1874.

E. A. Evans, ex-General Manager and Chief Engineer, Quebec Ry., Light and Power Co., Quebec, born at Kensington, London, England, Feb. 26, 1855.

E. H. Fitzhugh, President, Central Vermont Ry., Southern New England, Ry., and Montreal and Southern Counties Ry., Montreal, born in Montgomery county, Mo., Feb. 1, 1853.

L. O. Genest, General Storekeeper, C.P.R. Western Lines, Winnipeg, born at St. Henri, Levis County, Que., Feb. 16, 1856.

T. C. Hudson, Master Mechanic, C.N.Q.R. and Q. & L. St. J. Ry., Joliette, Que., born at Brockville, Ont., Feb. 20, 1873.

W. Jackson, C.P.R. ticket agent, Clinton, Ont., born there Feb. 4, 1860.

C. Gardiner Johnson, Lloyds' Agent for British Columbia, Vancouver, B.C., born at Dumbane, Perthshire, Scotland, Feb. 8, 1857.

R. S. Logan, Vice President, G.T.R., Montreal, born at St. Louis, Mo., Feb. 13, 1864.

G. L. McCrea, Local Freight Agent, C.P.R., Vancouver, B.C., born at Springtown, Ont., Feb. 9, 1876.

D. MacPherson, Assistant to Chairman, National Transcontinental Ry. Commission, Ottawa, born at Bath, Ont., Feb. 2, 1858.

T. McNabb, Master Mechanic, Alberta Ry. and Irrigation Co., Lethbridge, Alta., born in Scotland, Feb. 16, 1849.

J. K. McNeillie, Superintendent, District 1, C.P.R., Farnham, Que., born at Toronto, Feb. 23, 1874.

D. C. Macdonald, Division Freight Agent, C.P.R., Regina, Sask., born at Elmsdale, N.S., Feb. 9, 1874.

C. S. Maharg, Superintendent, C.P.R., Calgary, Alta., born in Dufferin County, Ont., Feb. 4, 1867.

G. A. Montgomery, Superintendent, Algoma Central and Hudson Bay Ry., and Algoma Eastern Ry., Sault Ste. Marie, Ont., born at Bradford, Ont., Feb. 11, 1871.

A. Z. Mullins, Commercial Agent, G.T.R., Grand Rapids, Mich., born at Appin, Ont., Feb. 14, 1862.

M. G. Murphy, District Passenger Agent, C.P.R., Toronto, born at Halifax, N.S., Feb. 26, 1878.

G. J. O'Dowd, City Freight Agent, C.P.R., Quebec, born at Montreal, Feb. 4, 1874.

J. E. Proctor, District Passenger Agent, C.P.R., Brandon, Man., born at Sarnia, Ont., Feb. 17, 1878.

A. H. Robinson, Superintendent, Elgin

and Havelock Ry., Havelock, N.B., born at Elgin, N.B., Feb. 2, 1862.

J. E. Robitaille, Accountant and Auditor, Ha Ha Bay Ry., Chicoutimi, Que., born at Quebec, Feb. 17, 1870.

A. E. Rosevear, Assistant General Freight Agent, G.T.R., Montreal, born Feb. 20, 1863.

H. H. Schaefer, Division Freight Agent, Intercolonial Ry., St. John, N.B., born at Cologne, Germany, Feb. 10, 1848.

J. G. Scott, ex-General Manager, Quebec and Lake St. John Ry., Quebec, born there Feb. 13, 1847.

G. Spencer, Superintendent, C.P.R., Sudbury, Ont., born in London, Eng., Feb. 21, 1865.

H. E. Suckling, Treasurer, C.P.R., Montreal, born at Gibraltar, Feb. 27, 1851.

Hugh Sutherland, Executive Agent, Canadian Northern Ry., Winnipeg, Man., born at New London, P.E.I., Feb. 22, 1845.

Sir Wm. C. VanHorne, K.C.M.G., director, C.P.R., and President, Cuba Co., Montreal, born in Will County, Ill., Feb. 3, 1843.

Superheating for Locomotives Instead of Electric Locomotives

The probability of the substitution of electricity for steam as a motive power for railways, on the score of reduced cost of operation, has been somewhat lessened by the extended application of superheat to locomotives. It now looks as though superheat will achieve those economies which, at least in practice on this continent, compounding has failed to secure. The simple engine always possessed certain practical advantages over the compound, and the addition of superheat makes it possible to secure equal and often greater fuel economy in a locomotive of the simple type, than is possible in a non-superheat compound. The increasing application of superheat may easily be set down as the most important development in locomotive practice of the past year. In spite of predictions to the contrary, the weight and size of Canadian and United States locomotives, and, to a less degree, of foreign locomotives, continue to increase. Today, in the huge engines built for the Santa Fe Ry., surely the limit has been reached. A passenger locomotive for hauling fast passenger trains weighs 188 tons without the tender. The Santa Fe Mallet freight locomotive, with 24 wheels, 20 of which are drivers, weighs 308 tons, and with the tender, 425 tons, its length over all being 120½ ft.

Canadian Steel.—Experiments made at McGill University by J. W. Evans, of Belleville, Ont., reported in Machinery, have apparently demonstrated that the titaniferous iron ore which abounds in Ontario and Quebec can be converted directly into steel by the electric process, and thus made commercially valuable. Tool steel of a superior quality can, it is said, be produced at a cost of about 2 cts. per lb. One experiment was made with a ½-ton electric furnace, into which 230 lbs. of ore was placed and from which 110 lbs. of steel was produced. The steel was poured directly into moulds and cast into lathe and planer tool shapes, which were ready for use after being hardened, tempered and ground.

The Board of Railway Commissioners will, at its sittings in Ottawa, Feb. 6, consider the matter of requiring all railway companies subject to its jurisdiction to equip their locomotives with dump ash pans, or other appliance, to avoid the necessity of enginemen or others going underneath to clean them.

Mechanical Methods and Devices.

Planer Clamp for Switch Points at the Canadian Steel Foundries' Plant.

The two accompanying illustrations show a very handy planer clamp used at the Canadian Steel Foundries Montreal plant, R. Nickle, Master Mechanic, for such work as planing switch points and

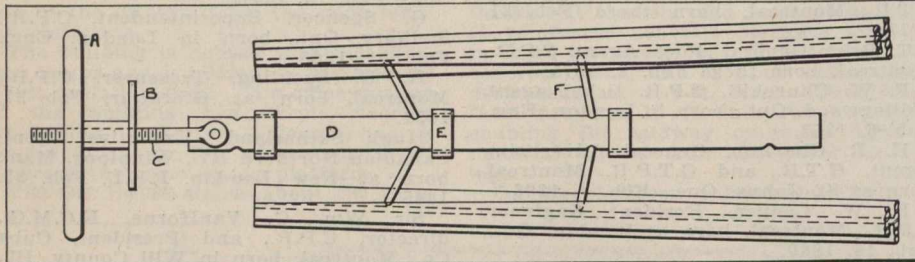


Fig. 1. Mechanism of Planer Clamp for Switch Points.

rails in general. By its use it is possible for the operator to loosen, remove and set up another pair of points ready for planing in five minutes or less.

Referring to figs. 1 and 2, which are similarly lettered, there is a threaded wheel A, bearing against a stationary

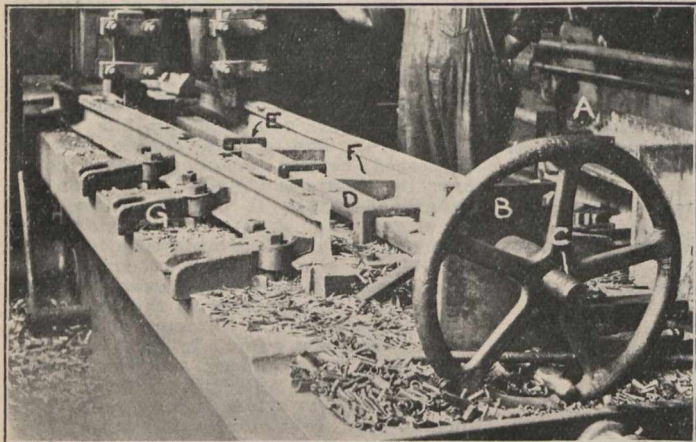


Fig. 2. Planer Clamp for Holding Switch Points.

plate B, bolted to the planer table. A square-threaded bolt C, on which wheel A works, is pin-connected on the other side of plate B to a central bar D passing along midway between the two rails on the table. This bar is guided by enclosed ways E. The central bar D has notched sides, and bearing in these recesses there are short struts F, which when central bar D is drawn back by the hand wheel A, are forced outward against the rail on each side, holding it securely against formed pieces and bolted to the planer table in the proper location to give the requisite taper to the rail edge. These outer holding blocks are so shaped as to fit closely around the rail base, so that when pressed outward against these blocks no further holding down pressure is required.

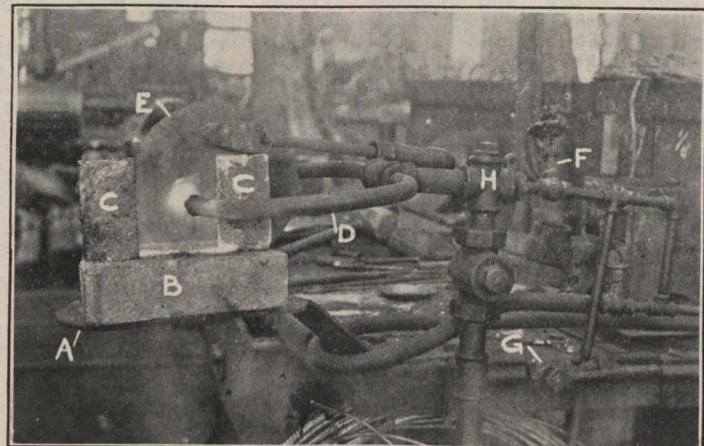
To replace rails, the hand wheel A is released, loosening struts F, which are removed, allowing the rails to be swung up out of their places. As previously mentioned, very rapid setting up is possible. Not only that, but the device acts essentially as a jig, producing duplicate work with but little care on the part of the operator after the first one has been properly located.

The Goderich Elevator and Transit Co., Goderich, Ont., handled 7,250,000 bush. of grain during 1911, against about 4,550,000 bush. in 1910.

Small Bench Heater at the C.P.R. Angus Shops.

A simple little bench heater using gas is employed at the C.P.R. Angus Shops for heating soldering irons and small parts. The general arrangement is shown in the accompanying illustration.

A bent steel plate A of required form, bolted to the work bench, carries a couple of fire bricks B laid flat upon it, with two more bricks C standing on edge forming a combustion chamber. Mixed gas and air enter this chamber from each side through bent tubes D, on to



Small Bench Heater for Shop Use.

which plates E are slipped, concentrating the heat in a small intense zone. In or over this flame the soldering iron or article to be heated is placed as shown.

Air entering through, and regulated by, valve F, and gas through and controlled by valve G, mix at H. The

The hole to be recessed is first drilled the required depth with an ordinary drill, which is then removed, and the recessing tool introduced in its place. On being lowered into the hole (which is the same size as the body of this tool), the pin C strikes the bottom, and

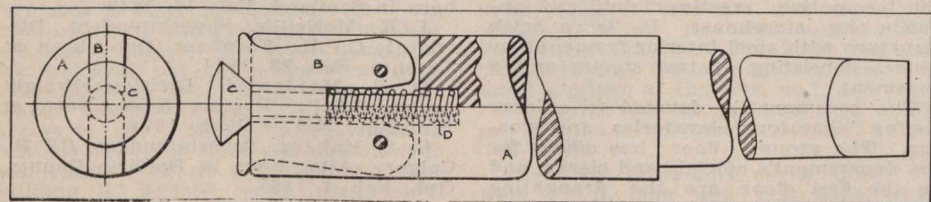


Fig. 1. Tool for Recessing Babbitt Holes in Eccentric Straps.

proper proportions may be simply obtained by the regulating valves.

The Union Pacific Rd. has presented to the engineering section of the McGill University, Montreal, a working model of the electrically operated automatic block signal in use on its lines.

During Nov., 1911, eleven employees were killed and 23 were injured in the course of their work in connection with steam railways in Canada. Of the fatalities, three were due to being run over, two each to collisions, to crushing, to falling material and to being struck by locomotives.

being prevented from proceeding further, forces out the cutters B on its tapered face, as the body continues to lower, the cutting action being thus purely radial.

The jig and process used for this operation are rather interesting, and are shown in fig. 2. The jig, consisting of a square body with a circularly movable plate thereon, is bolted to the side of a radial drill table as indicated. To the movable plate the strap to be drilled and recessed is attached and secured thereto by a clamp. Into the strap a drill jig is placed. In the hole to be drilled and recessed a drill bushing is

Recessing Tool at G.T.R. Point St. Charles Shops.

Babbitt, when used as the lining metal for locomotive eccentric straps, is held in place in the sheave by projecting prongs of babbitt run into holes in the inner face of the strap itself, as all shopmen know. To form the necessary holding recess in the babbitt hole, a neat little tool is used in the locomotive machine shop of the G.T.R. Point St. Charles Shops, Montreal, over which J. Lees is General Foreman.

This tool, shown sectioned in fig. 1 and standing to the left on the jig in fig. 2, consists essentially of a taper-shank body A, pinned in a slot in the end of which are two cutters of form B free to swing radially outward. Their normal position is such that the points fall within the outer surface of the body leaving no projecting edges. The points are of the required shape to give the fan required to the babbitt-holding recess.

A pin of shape C, free to move within limits set by a set screw in the body A fitting into a slot in the side of the shank of C, is held normally in its outer position by a coiled wire spring D in the body of the holder.

slipped, and the movable plate swung around until a level, placed on the face of the drill bushing, indicates that the latter is level. The whole device is securely clamped in this position and the operations proceeded with. Each hole

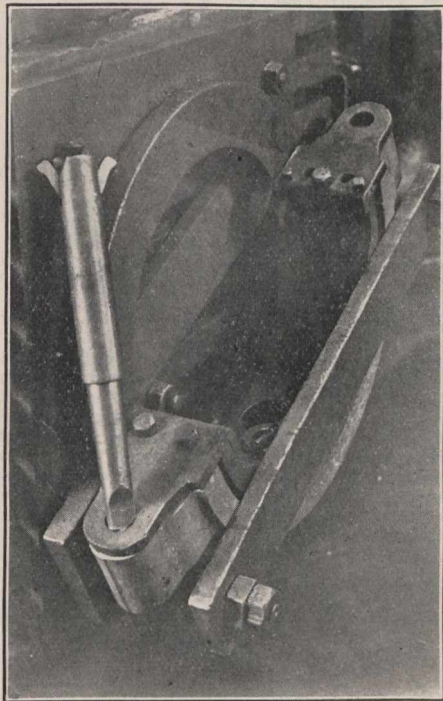


Fig. 2. Jig for Holding Eccentric Straps while Recessing Babbit Holes.

is separately levelled up, drilled and recessed in this manner.

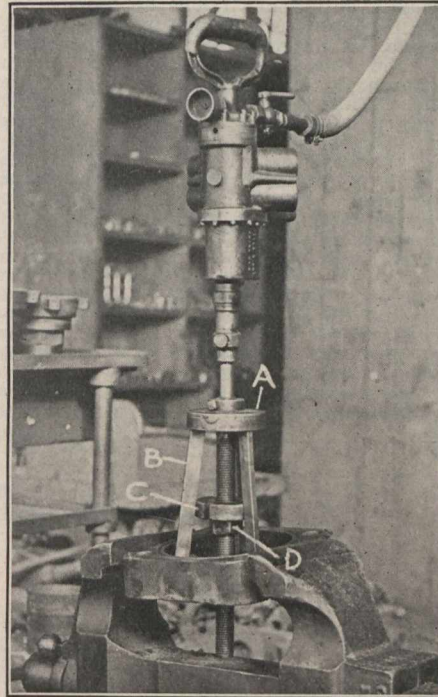
Pneumatic Sledge for Heavy Cutting.

Where there is very much heavy cutting, such as severing staybolts in the firebox side sheets, etc., the employment of a couple of men with sledge hammers proves a slow and expensive means of accomplishing the desired end. To meet the demand for a better method, a heavy pneumatic sledge of the construction shown herewith, was designed and built at the New York Central Lines Beech Grove shops.

The construction of the main portion of the device is very similar to that followed in standard pneumatic chipping

valves. The chamber serves as a reservoir to fill up rapidly the space behind the piston, so that the latter has full air pressure acting on it. Thus, when the valve G is opened by raising lever H, the cylinder has the large reservoir to draw upon, reducing the pressure fluctuations due to the intermittent action of the hammer; this would be large if the supply pipe led directly to the cylinder.

The piston hammer is raised by means of the by-pass pipe-connection I leading

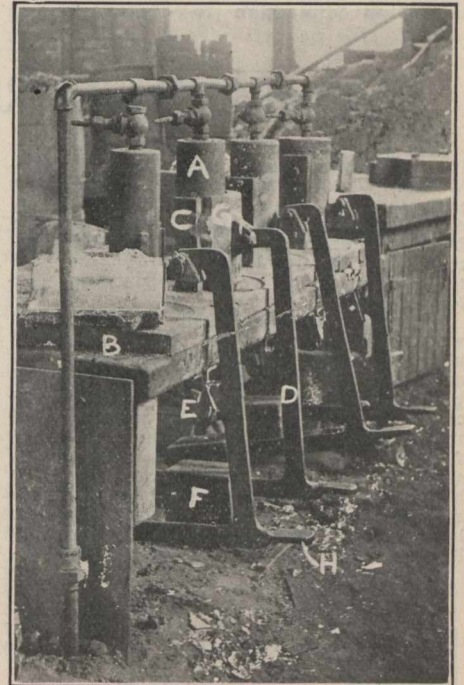


Grinding in Ball Joints.

from the air hose to the bottom of the cylinder, controlled by valve J. In service the operator first raises lever G, which impels the piston hammer. At the end of its stroke, this lever G is returned to its normal position and valve J opened, thereby raising the hammer. This is the cycle of operation. To relieve the air pressure in the cylinder ends after the respective strokes, a 3/8-in. hole is provided near each head through which the pressure quickly dissipates.

the fingers B.

When not in use, the fingers B fit into the grooves in washer C. When ready to be used, the whole device is slipped down inside the ball joint to be ground in, the fingers B lifted out of their slots,



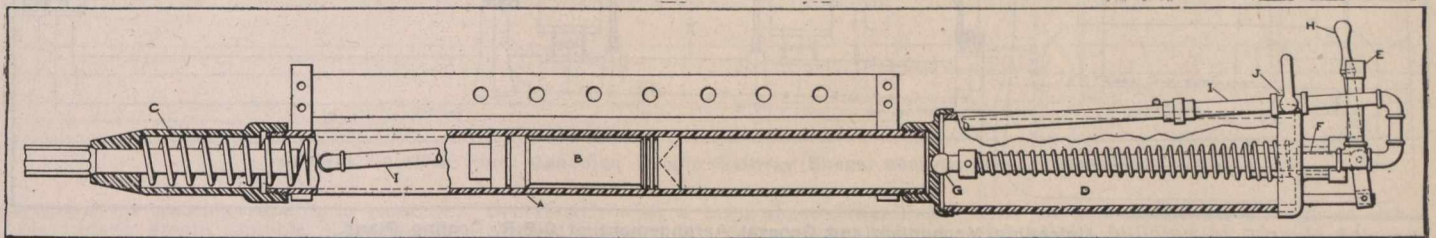
Babbitting Journal Brasses.

and the washer given a slight turn, the fingers dropping back in place on the outer surface of the washer. Screwing up the nut forces the fingers outward against the inner surface of ball joint, gripping it securely.

To release, the operation is reversed. The nut is loosened, washers twisted around until the fingers fall into the slots, and the device is then readily removed. The slots save a lot of lengthwise movement of the nut.

Babbitting Journal Brasses at the Central Vermont Ry. Shops.

An excellent method of babbitting journal brasses is in use at the Central Vermont Ry. shops at St. Albans, Vt.,



Pneumatic Sledge for Heavy Cutting.

and rivetting hammers being made up of a cylinder A in which there is a hardened steel piston B, the latter made a sliding fit in the cylinder. This cylinder body is made of a piece of 4 1/2-in. hydraulic pipe, 4 ft. in length, bored to a 3 1/2-in. diameter. Attached to the lower end is the head C, which holds the operating chisel. Air entering at the top gives the piston plunger its impetus, and air introduced below the hammer raises it for the next stroke.

The manner of controlling the air is interesting and unique. Attached to the upper end of the cylinder there is a chamber D of relatively large size. A direct connection to this chamber is given from the air hose nipple at E through pipe F, with no intervening

Grinding-in Ball Joints at the Intercolonial Ry. Moncton Shops.

The accompanying illustration shows a neat device for the holding of the ball joint while being ground-in to fit its seat. The device as shown is attached to a small air motor which revolves the ball joint at a good speed.

Consider the holding device. A collar A secured to the revolving shaft has three fingers B pinned to it, and free to swing outward. The shaft itself below collar A is threaded, and over this threaded section an unthreaded washer C fits, movable up or down by a nut D. The washer C has three equidistant slots about 1/4-in. deep, of the same width as

the method and the rig used being due to Alex. Tuscany, Foreman Moulder, who has charge of this work. The rig in which the actual babbitting is done is of particular interest.

The device used is shown in the accompanying illustration. A battery of four hollow cylinders A, are mounted on a base plate B. The cylinders have side pieces C bolted to them, against which the flat face of the journal brass is pressed. The journal brass is held in position while babbitting by an arm D, fulcrumed to the supporting table at the point E. A weight F, adjustable along the right-angle arm of the fulcrumed arm D, is secured by a set screw at a sufficient offset to maintain a pressure on the back of the brass at

the holding-on member G. Pressure of the foot on the tread H releases the brass.

The mould forms are made hollow, as just mentioned, in order that water-cooling of the poured babbitt may be obtained. From under the table there is a pipe connection to each cylinder

through which cooling water flows, passing out through the top pipe indicated, the flow in each case being independently regulated by a valve.

When in operation, the water connection is turned on the desired amount. The brass, already heated in a fire to somewhere around the babbitt melting

point, is placed in position on the stand, and the intervening space filled with molten babbitt, which almost instantly sets, being chilled by the water-cooled surface of the mould. The brass can then be taken out at once, no time being lost waiting for the cooling, as required in most methods.

Canadian Pacific Railway Coal Handling Plant at Fort William.

The Canadian Pacific Ry.'s coal handling equipment for its new dock at Fort William, Ont., will consist of two Hulett patented, electrically operated, 8-ton coal unloading machines, one 9-ton rehandling bridge, three 35-ton scale larries, and about 3,000 ft. of bin and trestle system, as well as Christy box car loaders.

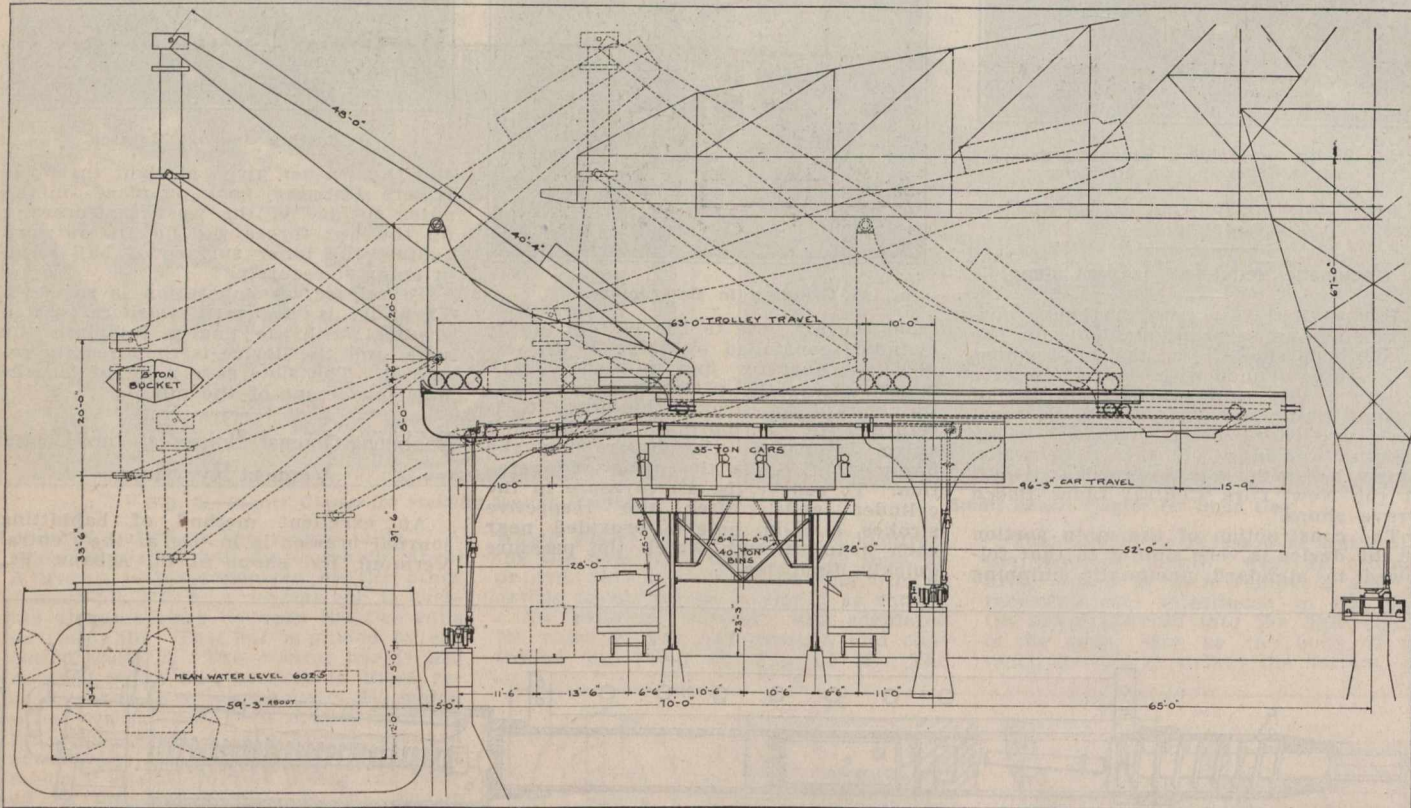
The plan of operation of this plant will be as indicated on the accompanying illustration. Coal will be taken out of the boats with the unloaders and deposited at the front of the dock in a so-called bucket car. The unloader will then immediately go back into the boat for another load. While the unloader is securing this load, the bucket car will be drawn back over the bin and trestle system, and the coal deposited in scale larries for distribution into the various bins. Or, if coal is not wanted for im-

mediate shipment, it will be hauled out side through the supporting posts of the trestle, so that they can start at one end of the bin system and work down through, loading all the cars on one side. While these cars are being hauled away and replaced by empties, the box car loaders will be working back, loading the cars on the other side of the trestle, in this manner giving continuous operation. As the contents of each bin will be weighed in to correspond with the capacity of the car, the car, when released, will be at once ready for main line service without further trimming. This weighing feature is a new departure on coal docks, but has been used extensively on lower lake ore docks for the past two or three years and is considered very successful.

The transfer cars, as well as all other machines on the dock, are to be oper-

provided by an extended cantilever on the rear of the bridge. The bridge will be 520 ft. over all and will carry the largest coal bucket ever constructed, the one bridge being ample to take care of all the coal that the two unloaders can remove from the boats. This dock is intended to handle railway coal only, and no attempt is being made to separate grades; in other words, a screening plant will not be required. The unloaders, bridge and transfer cars will all be protected against the breaking of coal, and it is expected that this new dock will be one of the fastest ever constructed, the unloader being of the same general type as the machines now in use on the majority of lower lake ports, for handling ore and having fully demonstrated their high speed and economical operation.

The important feature of this new de-



Unloading Mechanism and General Arrangement of C.P.R. Coaling Plant.

further on to the cantilever of the unloader and put into a temporary storage pile, this temporary storage pile having the same capacity as a boat, so that the boat can be unloaded and the coal disposed of independently of the operation of the rest of the plant.

Coal which is wanted for immediate shipment and deposited in the bins will be weighed into the bins by the scale larries. There will be 30 bins, 15 on each side of the trestle, each capable of holding a carload of coal. A drag of cars will be brought in on each side of the trestle as shown on the drawing, and broken up and spotted at each of the bins. The box car loaders, which are not shown on this drawing, will travel beneath the bins and will be of special design, working out on either

ated by electricity, 220 volts direct current. The same cars will also be used in rehandling coal for storage, running out on the trestle and receiving their load opposite the rehandling bridge, wherever stationed. The trestle will be a double-track system with suitable cross-overs so that cars can be kept in continuous operation. The coal going into the permanent storage will be rehandled out of the temporary storage pile under the rear of the unloaders by the rehandling bridge. The rehandling bridge carrying a 9-ton bucket will have a cantilever covering this storage pile, as well as extending out over the trestle system. The coal will be taken out of the temporary pile, carried back and deposited in the main storage by this bucket. A still further storage will be

sign is the separation of the unloading from the shipping and rehandling machine. The unloaders, the bin system and the bridge will be all absolutely independent of each other in their operation. The bridge can be shipping out coal from one end of the dock while the unloaders are receiving coal on another portion. The bridge, being of such large capacity, has an opportunity, when there is no boat at the dock to clear the temporary storage and prepare it for incoming boats.

The power for operation will be furnished first as high tension alternating current and be transformed at the dock into a direct current which enables the use of dynamic braking on the machines. These large machines will be

controlled under this principle, in a very simple manner, very similar to the operation of the elevator in an ordinary office building, the motors being used for lowering, as well as hoisting the loads. The manual work which will come upon the operator of the machine will be very simple, enabling high speed operation. The coal being handled in large units and prevented at all points from dropping, will be broken

much less than with the ordinary grab bucket system. It is expected that this plant will very readily handle the largest boats that are in use on the great lakes, in one day's time—10 hours.

To give an idea of the size and capacity of these machines it may be mentioned that the motor equipment on each of the unloaders will consist of a total of 550 h.p., and the bridge will have motors aggregating 700 h.p.

The unloaders will be built entirely of steel and weigh in the neighborhood of 600 tons each. There will be about 1,800 tons of bin and trestle system. The bridge will be approximately 800 tons. The most modern construction will be used in every detail.

The contract for furnishing the coal handling equipment has been given to the Wellman-Seaver-Morgan Co., Cleveland, Ohio.

The Canadian Pacific Railway Shops Near Calgary.

As officially announced in our last issue, the C.P.R. has let a contract for its western shops, which will be located on the main transcontinental line, about 4½ miles east of the present shops at Calgary, Alta.

THE MAIN LOCOMOTIVE SHOP building will contain the erecting shop, machine shop, blacksmith shop and boiler shop. The erecting shop will be of the transverse lift-over type, and will contain 35 bays of 22 ft. each. Its entire area will be served by travelling electric cranes carried on two levels. It will be of structural steel frame on concrete foundations. The exterior walls up to window sills will be of concrete, and the walls, which are carried on steel members, will be of hollow tile, plastered. It will be heated by indirect fan system distributed by concrete and tile ducts.

TENDER AND WHEEL SHOP.—The de-

high speed travelling crane, which will handle all material to and from the cars and from the storage place that is provided between the storehouse and the erecting shop. The concrete foundations will be carried up to bring the floor of the storeroom to car door height, and the walls above will be either brick or hollow concrete blocks, supported on concrete foundation walls, the woodwork of heavy timber comprising slow burning mill construction. The building will be heated by an indirect fan system, and sprinklers will be installed for fire protection.

THE OIL HOUSE, 102 by 42 ft., will be similar in construction to the storehouse.

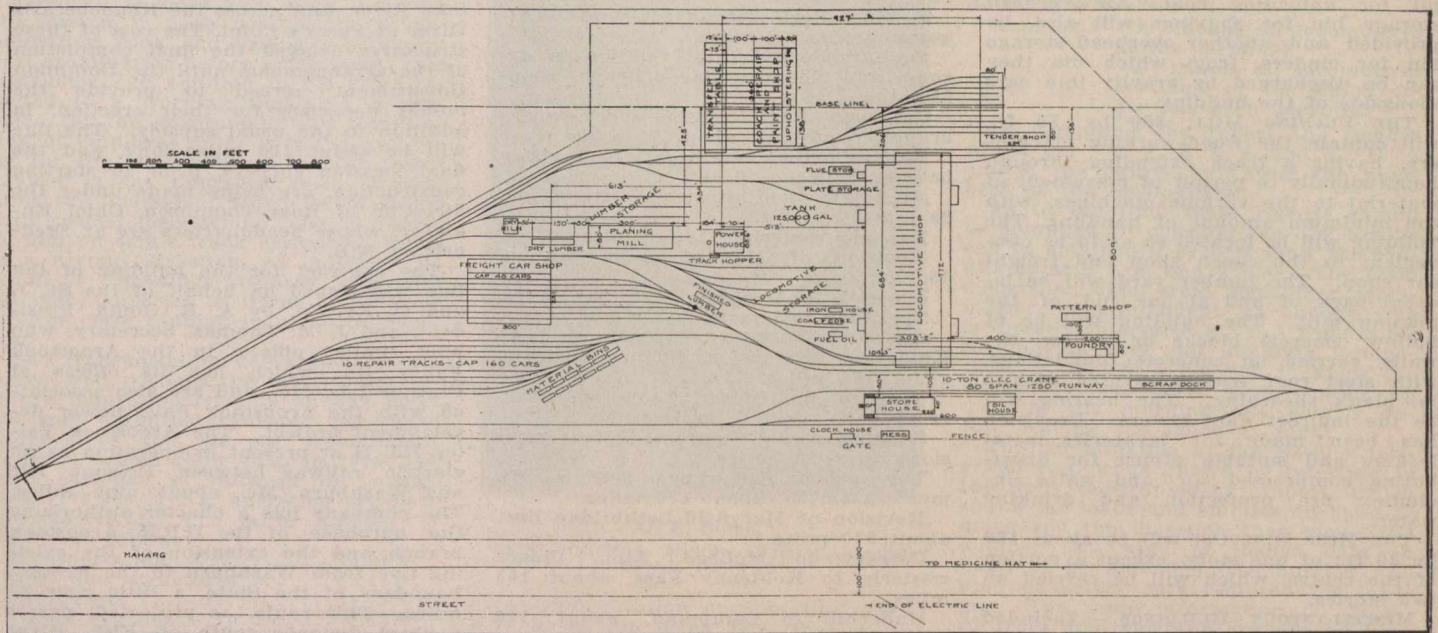
THE FOUNDRY will be 204 by 80 ft., of similar construction to the main building, having two bays, one of these of higher cross section to be served its en-

the foundry to storage or to the main shop, or loading for shipment.

THE PATTERN SHOP, 100 by 30 ft., for pattern storage and pattern making, will be of similar construction to storehouse.

THE COACH REPAIR AND PAINT SHOPS will be contained in one building 362 by 146 ft., having 15 tracks at 24 ft. centres. It will be of slow burning mill construction, having concrete block or hollow tile walls on concrete foundations. It will be heated with the indirect fan system distributed underground in concrete and tile ducts, and protected from fire by automatic sprinklers.

TRANSFER TABLE AND PITS.—For serving the coach shop there will be installed a 75 ft. transfer table of 150 tons capacity, equipped with an electric motor. The transfer pit and track foundations will be constructed of concrete.



General Location Plan, Canadian Pacific Railway Shops, near Calgary. (Copyright.)

partment for making repairs to locomotive tenders, steam shovels, lidgerwoods and other maintenance of way equipment will be contained in an L shaped building 80 by 340 ft., and will be equipped with a 20 ton high speed travelling electric crane having two 10 ton trolleys. There will be a depressed track carried along the ends of the wheel storage tracks outside, to facilitate unloading and loading wheels and axles. The building will be of structural steel frame, with steel roof trusses, and its general construction will be similar to the main locomotive shop.

THE STOREHOUSE AND OFFICE BUILDING will be 250 by 60 ft., two stories, with offices at one end three stories high. It will contain an electric elevator, vaults and platform scales. It will be parallel with the main building, the space between to be spanned by a

tire length with a high speed travelling electric crane. Jib cranes attached to building columns will be provided and so arranged that they may be moved from one location to the other if desired, handled by the travelling crane. In the side bay of lower cross section space will be provided for core making and snap moulding floor. The charging floors and cupola will be located in the centre of the low bay. The heating will be indirect fan system distributing through galvanized iron pipes carried overhead. Steam, air and water service, including fire protection and drinking water, will be provided. The location of this building, alongside yard crane, will enable the unloading of scrap and pig iron to be taken care of by the crane. This close proximity of the foundry to the crane will also reduce to the minimum the handling of the castings from

This pit will extend far enough at either end of the building to provide entrance and egress at both ends.

THE FREIGHT CAR REPAIR SHOP, 300 by 231 ft., is designed to contain eight repair tracks placed in pairs, giving room for an industrial material track between each pair of tracks. A brick wall will partition off a shop 50 ft. wide along one side, which will contain the blacksmith forges, woodworking and machine tools, the heating plant and foreman's office. The location of this building alongside of the lumber yard will permit of handling lumber so that it can be passed through into the shop without rehandling. An overhead trolley beam will be erected to permit of handling timbers with a trolley into the shop. Material bins will be located convenient to the building for storing material used on the cars repaired in the

shop. The building will be constructed with walls supported on concrete foundations having steel posts supporting steel trusses. The roof will be of the saw-toothed construction to afford good daylight lighting. The general construction of the building otherwise will be the same as that described for the other buildings, including fire sprinklers and indirect fan system for heating.

YARD CRANE.—The entire area, about 80 ft. wide, between the storehouse and the locomotive shop will be served by a high speed travelling crane of 10 tons capacity. The runway for this crane will extend for more than 1,200 ft., passing down alongside of the foundry and covering the space occupied by the scrap dock. One of the storehouse tracks will extend through under this crane, giving ample space for the storage of heavy material alongside of the storehouse, foundry and locomotive shop. By this arrangement heavy material will be unloaded, stored and rehandled to the shop or loaded out again for shipment by the crane, practically eliminating manual labor in the handling of all heavy material.

THE POWER HOUSE, 104 by 84 ft., will have sufficient space for boiler equipment necessary to provide steam for heating the shops, and for such other purposes as steam will be required throughout the shops. The building will have brick walls carried on concrete foundations, with steel roof trusses and supports for coal bunkers. The chimney will be of reinforced concrete or masonry. Overhead bunkers for coal will be provided and concrete dumping pit for unloading coal. An overhead storage bin for shavings will also be provided and another overhead storage bin for cinders, from which bin they can be discharged by gravity into cars alongside of the building.

THE PLANING MILL, 300 by 80 ft., will contain the wood-working machinery, having a track extending through longitudinally to permit of movement of material to the various machines, with the minimum amount of handling. The building will be located so as to be convenient to the coach shop and freight car shop. The lumber yard will be located back of and at one end of the planing mill. The building will be of hollow concrete blocks or hollow tile walls, carried on concrete foundations, with steel roof trusses covered with 4 in. plank sheathing. The heating will be the indirect fan system. Provision has been made for lavatories, metal lockers and suitable piping for distributing compressed air and water, including fire protection and drinking water.

THE MESS BUILDING will be about 150 by 30 ft., of one story, except a portion of the centre, which will be carried up two stories.

MISCELLANEOUS BUILDINGS.—Included in the scheme will be dry kiln, scrap docks, material bins, plate and iron racks, and other miscellaneous buildings in the yard, the details of which have not yet been gone into fully.

The cost of the shops will be about \$2,500,000.

We are indebted to J. G. Sullivan, M. Can. Soc. C.E., Chief Engineer, Western Lines, C.P.R., for the foregoing information.

Westinghouse, Church, Kerr and Co., New York, are the contractors.

The C.P.R. recently reported in connection with the eastern movement of grain, that in one day of 24 hours the number of cars of freight moved from Winnipeg eastward was 1,003, and the total number of cars moved to and from Winnipeg on all divisions during that day was 3,389. In the eastward movement, trains consisting of 45 cars were dispatched from Winnipeg at intervals of about an hour.

Large Railway Expenditures to Continue.

Sir Edmund Walker, President, Canadian Bank of Commerce, in his address to the shareholders at the annual meeting recently, said:—

"The extension of the three railways, the Canadian Pacific, the Canadian Northern and the Grand Trunk Pacific has been carried on to a greater extent than at any previous time and the disbursement of money in this connection has materially helped the prosperity of the western provinces. It is likely that these expenditures will continue for some years to come in order to meet the growing requirements of the country."

Approval of Route Plans of Railways Under Dominion Jurisdiction.

The following route plans have been approved by the Minister of Railways. The date of approval was Dec. 21, 1911, unless otherwise stated:—

ALBERTA CENTRAL RY.—Revision between Rocky Mountain House and Yellowhead Pass, about 82 miles.

From main line to Big Horn Coal Fields, about 27 miles.

ALGOMA CENTRAL AND HUDSON BAY RY.—From mileage 83.80 to National Transcontinental Ry. (revision), 92 miles.

CANADIAN NORTHERN ONTARIO RY.—Ottawa-French River line, revision in counties of Pontiac and Renfrew, about 20 miles.

Sudbury-Port Arthur, revision in Algoma district, 18 miles.

Sudbury-Port Arthur, revision in Algoma and Thunder Bay districts, about 95 miles.

CANADIAN PACIFIC RY.—Wilkie-Anglia branch (revision), about 15 miles.

Swift Current, southeasterly, revision between mileage 40 and mileage 102.

Moosejaw southwesterly (revision), 29 miles.

Bassano easterly, 154.08 miles.
Revision of Manitou Lake branch, 48.9 miles.

Shepard to Medicine Hat, 186 miles.
Tantallon to Dysart, 113 miles.

CANADIAN NORTHERN RY.—Moose Jaw-Kindersley Extension further revision, about 132 miles.

Yorkton to Hudson Bay Jct., Sask. (revision), about 27 miles.

Strathcona to Camrose, Alta. (revision), about 9 miles.

Through tps. 1-3, ranges 3-28, w. 4th mer. (Alberta), about 170 miles.

Revision of Maryfield-Lethbridge line, about 240 miles.

Calgary to McLeod, Alta., thence westerly to Kootenay Pass, about 165 miles.

Underhill to Lampman, about 126 miles.

Craven to Yorkton, Sask., about 144 miles.

CANADIAN NORTHERN BRANCH LINES.—Craven towards Hudson Bay Jct., Sask., about 75 miles.

Tp. 23, r. 17 to tp. 29, r. 21, w. 3rd mer., Sask., 46 miles.

EDMONTON, DUNVEGAN AND B.C. RY.—Edmonton to Dunvegan, about 309 miles. approved Dec. 15, 1911.

ESQUIMALT AND NANAIMO RY.—Black Creek to Duncans Bay, about 25 miles.

GRAND TRUNK PACIFIC BRANCH LINES Co.—Lazare to Edgely and Le Bret, about 144 miles.

Edson to Pacific Northern and Omineca Ry. (revision), about 53 miles.
Calgary to Coutts, about 170 miles.

GRAND TRUNK PACIFIC RY.—Mountain Park coal branch, about 27 miles.

Moose Jaw, northwesterly (revision), about 7 miles.

Canora to Etoimami, about 90 miles.
PACIFIC AND PEACE RY.—From east of

Bella Coola and Dean Channel to Dunvegan, about 450 miles.

PACIFIC NORTHERN AND OMINECA RY.—From the 6th to the 8th meridian via Pine Pass, about 325 miles.

The St. John and Quebec Railway Contract.

The St. John and Quebec Ry. Co. has entered into a contract with the New Brunswick Government for the building of a railway between St. John and Grand Falls, N.B., practically following the valley of the St. John River all the way. This company was incorporated by the N.B. Legislature, at the same time as the legislation was passed providing that the province would guarantee up to \$25,000 a mile the bonds of any company entering into a contract to build the line. This guarantee was made conditional upon the building of a line to a certain standard, the obtaining of a grant under the usual terms from the Dominion Government, and the making of an agreement for the operation of the line as a part of the Intercolonial Ry. system.

The surveys were made under the Provincial Government, and after considerable discussion a route was decided upon which will have a gradient of 0.4% going east and 0.6% going west, as between St. John and Fredericton, and not exceeding 1% between Fredericton and Grand Falls. To provide this gradient, however, it will be necessary to build three large bridges on the line, viz., over the St. John River near Grand Falls, on the lower reaches of the Mistake River, and across the Kennebecasis River at Perry's Point. The cost of these structures delayed the final completion of the arrangements until the Dominion Government agreed to provide the money necessary for their erection, in addition to the usual subsidy. The line will be about 210 miles long, and the final location surveys, prior to starting construction, are being made under the direction of Ross Thompson, Chief Engineer, whose headquarters are at Fredericton, N.B.

The contract for the building of the line was signed on behalf of the St. J. and Q. Ry. Co. by A. R. Gould, President, and J. M. Thomas, Secretary, who hold similar offices in the Aroostook Valley Rd., which has its offices at Presque Isle, Me., and are also associated with the Aroostook Falls power development project. The Aroostook Valley Rd. is at present in operation as an electric railway between Presque Isle and Washburn, Me., about nine miles. The company has a charter authorizing the purchase of the C.P.R. Aroostook branch and the extension of the existing line from Washburn to the western boundary of the State, a little over 80 miles. This route, as projected, passes a short distance south of Fish River Lake, crosses the Allegash River south of the falls, and proceeds by way of Umkaskers and Round Lakes to the International boundary in the vicinity of Frontier Lake. Here it is proposed to make connection with a line to be built from Quebec, which it is generally understood is the Quebec and St. John Ry., which was originally projected from Quebec to near Edmundston, and thence via the valley of the St. John River to St. John, but which subsequently had the route changed for one from Quebec to the International boundary. It is claimed that by the use of this combined route, the shortest possible line will be obtained between Quebec and St. John. (See St. John Valley Ry., Jan., pg. 23.)

The Kent Northern Ry., which runs from Kent Jct., on the Intercolonial Ry., to Richibucto, N.B., 27 miles, is said to have been sold to Toronto parties.

Transportation, from a Railway Superintendent's Viewpoint.

By U. E. Gillen, Superintendent, Middle Division, Grand Trunk Railway.

The word "transportation" is defined as the act of transporting, conveying or carrying something from one place to another. When a member of a railway club, or a person engaged in railway service, hears or thinks of the word transportation, he is apt to think, by reason of his association or employment, that it means the moving of passengers, mail or express, package or carload freight by a steam locomotive.

If he considers what mind conceived the idea, his thoughts revert to those whose genius has done so much for transportation, among others, Geo. Stephenson, who is credited with having invented the first successful steam locomotive in 1815; S. F. B. Morse, who invented the telegraph in 1835; Geo. Pullman, who invented the car bearing his name in 1863; Geo. Westinghouse, who invented the air brake in 1869; A. G. Bell, who invented the telephone in 1876; and if in Canada, he is also likely to think of the man at the head of each of the three leading railways of the Dominion, each of whom has done much in the way of providing good transportation facilities.

The transportation rules in use on the principal Canadian railways have been approved by the Board of Railway Commissioners. Each class of employes governed by those rules is required to commit to memory and write correctly the answer to each question in an examination book and pass a satisfactory oral examination before a competent rule instructor. In addition to the rules referred to a working timetable is provided for the government and information of employes only; it is the authority for the movement of regular trains subject to the approved rules, it contains the classified schedules of trains with special instructions relating thereto, and on single track designates trains in a certain direction, as indicated by timetable headings (unless otherwise specified) superior to trains of same or inferior class running in opposite direction.

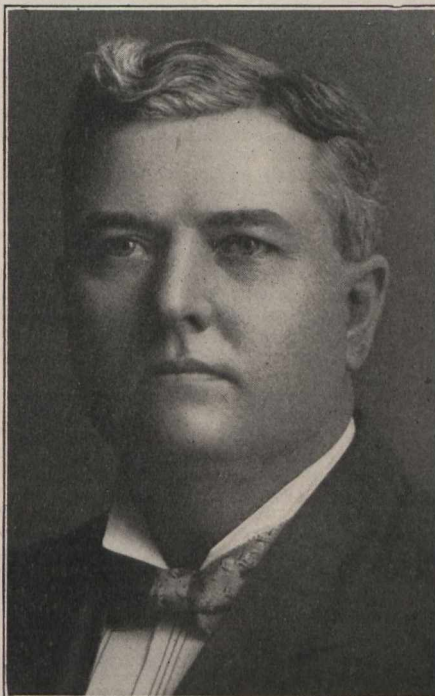
The transportation department is the largest and perhaps the most important of the many departments on any large and well organized railway. We have evidence of this in our Government statistics, which show that, in 1910, the gross earnings of railways in Canada were \$173,956,217.13; operating expenses \$120,405,440.42. The latter amount is divided as follows:—

Transportation	48.94%
Way and structures.....	22.45%
Equipment	21.59%
Traffic expense	3.63%
General expense	3.39%

The principal transportation or operating officer usually has charge of maintenance and construction. This should be so, if for no other reason than that all work of maintenance and construction should be subservient to train movements.

The work of arranging train schedules, assigning car equipment, locomotives and men to the various trains, districts and terminals, the loading of locomotives over each district, in each direction, having due regard to the class of locomotives used, the weather conditions, the class of train to be handled, the maximum gradient over which the load is to be hauled; the shifting of locomotives and train crews from one terminal to another with a view to providing a locomotive and crew so that all regular trains can leave on time; also for extra trains as fast as enough cars accumulate for a full train or the business offered justifies the running of a

train short of full tonnage, and at the same time give men sufficient rest, eight hours out of every 24 and avoid keeping a man on duty more than 16 hours, or a locomotive, locomotive crew or train crew at a foreign terminal longer than necessary to make running repairs to locomotive and allow men sufficient rest, investigate the cause of any delay to a train which prevents it from making schedule time, investigate the cause of accidents of every description directly or indirectly due to, or connected with a locomotive or car movement in yard or road service (take immediate action, so far as it is possible to do so, to avoid similar delays and accidents), make wire and written reports to general officers regarding delays and accidents, examine new employes as to their qualifications, instruct employes in their duties, and assign them to their various positions. This is a part of the daily work



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

of a transportation or operating officer who is on the firing line, that is, the man whose jurisdiction is confined to one or more districts or a division, and the greatest degree of success cannot be obtained without system, supervision, organization and co-operation.

SYSTEM.—In order that the best use may be made of every locomotive, and that cars may be moved without unnecessary delay, it is important that some system be used to keep posted as to the location of every locomotive, the total number of loads and empties at each station to move, the direction they move and whether or not they are through cars or local cars.

The different classes of service can be provided most economically and satisfactorily if a certain type of locomotive is assigned to a certain train or service, it is, therefore, obvious that much care must be exercised in the assigning of locomotives, and in order to properly assign or provide a locomotive you must readily recognize its class by the number and know the location of

every locomotive at any hour of the day or night.

Different methods have been adopted by different officials for obtaining the necessary information about locomotives and cars. The method or system which the writer is most familiar with and regards as most satisfactory and complete, provides for a careful check and record of each locomotive twice daily. The report is compiled in the train dispatcher's office and shows the number of every locomotive recorded on train sheet that is on the road at the time report is compiled, and the terminal to which the locomotive is destined. In addition to this a report is received from each locomotive foreman on the division, giving the numbers of all locomotives at his terminal, the numbers of all locomotives available or for which order has been accepted, the numbers of locomotives in yard, transfer and pilot service, the numbers of locomotives crippled that will be out of service more than 12 hours, and the numbers of locomotives under repair that will be available for service within 12 hours. The numbers thus collected, plus those in big shop, will correspond with total assignment. At the same hour information is collected from locomotive foreman about locomotives, the general yardmasters at all terminals and the agent at principal junction points and stations make a report of the number of loads and empties on hand to move and their destinations. The information is transmitted by the use of symbols with the view of imparting the information by using the least number of telegraph characters.

Example:—"A" means all locomotives at the terminal.

"B" means all locomotives available or for which order has been accepted.

In compiling the report the sender would say "A" 1, 2, 3, 4, and 5, "B" 2 and 4, the figures indicating the numbers of the locomotives.

As to the time these reports should be compiled. I consider the best results can be obtained if reports show the conditions at 5 a.m. and 5 p.m. The train dispatcher, chief train dispatcher, trainmaster, superintendent, or anyone who is directly interested in, and responsible for moving cars and handling locomotives, is then in a position to know the situation immediately after coming on duty in the morning and shortly before leaving the office at night.

The car situation at the smaller telegraph stations is known by referring to the daily telegraphic car report, which shows the loads and empties on hand to move and the direction they move, the number and kind of loaded cars on hand to be unloaded, the number and kind of empty cars required for loading. The same information is obtained from non-telegraph stations by having the conductor of the wayfreight train in a specified direction wire the report from the first open telegraph office.

SUPERVISION.—No man, no matter in what capacity he is employed, whose duty it is to plan, direct, or supervise, should be burdened, as many are, with a class of work that could and should be done by a cheaper man.

ORGANIZATION of forces is highly essential, in order that a united effort may be made to accomplish the same result.

CO-OPERATION of the various departments means success for every department, which is most desirable.

The transportation department men should be, and I believe are, strong advocates of co-operation; they are dependent on the locomotive department for locomotives, and on the car department for cars; without engines and cars they are helpless.

The transportation department is charged with the responsibility for the

proper assigning and handling of locomotives and the moving of cars. Every locomotive and car out of service when needed increases the operating expenses, therefore, I think, the locomotive department should be assessed for every locomotive failure, also for every locomotive held out of service beyond a reasonable time. The car department should be assessed for every car breaking down in service, under fair usage, or held out of service beyond a reasonable time, and the amounts credited to the transportation department. I also think the fuel department should be assessed and the various departments credited with every item of expense directly or indirectly chargeable to poor coal. I say various departments, because I have known of serious damage to locomotives and cars resulting in interruptions to traffic, directly due to poor coal, and, perhaps, indirectly due to neglect on the part of certain employees under very extenuating circumstances.

The cost of operating is constantly increasing, due to increase in wages and increase in cost of materials used by railway companies. It has been said the increased expense is offset by the increased business. The facts are, according to the Railways and Canals Department report for a period of 12 years, 1899 to 1910, inclusive, the earnings per train mile increased 70.8%, and during the same period the cost of running a train one mile increased 80.8%. The average cost per train mile in 1899 was \$0.779; in 1910, \$1.409. In 1910 the average revenue per passenger per mile was 1.866 c.; this rate was .055 below the figures for 1909. The average revenue per ton per mile, which is accepted as representing the freight rate earned by all railways combined was .739 c.; this was .012 higher than the rate for 1909; it was also .067 lower than the rate for 1907. The aggregate passenger revenue for 1910 was \$46,018,879.56; the number of passengers handled was 35,894,575. The average revenue per passenger from ticket sales was \$1.282; revenue from freight amounted to \$116,229,894.06; tons hauled was 74,482,866. The freight handled is classified as follows:—Products of agriculture, 17.31%; products of animals, 3.71%; products of mines, 35.11%; products of forests, 17.54%; manufactures, 13.44% merchandise, 3.39%; miscellaneous, 9.50%. The same authority tells us that 12 roads showed net earnings amounting to \$52,041,937.00, or 97% of the total for all lines in Canada; also that 24 railways in Canada in 1910 showed a deficit or managed merely to make ends meet.

These figures and statements reflect and emphasize the necessity for economy. How railways can economize without impairing the service is worthy of our best thought. The cost per train per mile cannot be reduced under existing conditions; it will likely continue to increase; the average tons per car is 17.13; average cars per train 18.15; average tons per train 311. Can we not increase the load per car and cars per train, thereby reducing the number of cars in service and trains run, without detriment to the service? I believe we can, and as the majority of the lightly loaded cars are those containing package freight, l.c.l. shipments, usually handled by wayfreight trains, let us consider them first. It is not infrequent to see a wayfreight train start out of a terminal with l.c.l. shipments in half a dozen or more cars loaded at as many different places; the tonnage and shipments in those cars could probably be handled in about half the number of cars if the shipments were carefully loaded, and with the view of getting all shipments for the same place in one car and in the order in which the various stations are reached; it would save cars, overtime, loss and damage to

freight. The suggested reloading and transshipping should be done by the station staff at the terminal from which the wayfreight train starts.

Are the through lines not running more trains than necessary to properly handle the business, and if so, why? The average number of cars per train and average tons per train indicate that many locomotives are handling less than two-thirds of a load, and I believe the principal reason is, to move at a high rate of speed certain shipments that represent but a small percentage of the total tonnage handled.

All manifest trains are run at reduced tonnage, and on some through lines, so many manifest trains are run that it is seldom necessary to run a through dead freight train. Does the business warrant the railway companies in providing such expensive service, and do the consignor and consignee make the same effort to expedite the movement of such shipments? I think not. A recent check of 100 cars of fruit showed that the consignee used on an average more than five days per car in unloading, and a recent check showed that an average of more than seven days per car was used in unloading 100 cars of team track delivery freight, other than perishable shipments, calendar days counted in each case.

The yardmaster's idea is to get the cars out of his terminal with as little delay as possible, without due regard for the work necessary to get the train through the next terminal. In many cases time and money would be saved by holding cars at the first terminal 10 or 12 hours, or, if necessary, 24, to get enough cars for a through train, a train that would pass several terminal points without having to set out or pick up a car except to reduce or add to the tonnage of the train; the time lost at the initial terminal would frequently be more than offset by the saving effected in switching at several different terminals.

The present practice of not advising consignee about his shipment until it arrives at destination, and then allow him 24 hours to give placing order, causes delay to car and shipment; it also frequently results in heavy expense in switching movements that could be lessened or entirely avoided if cars for a given point were handled in train lots, the billing reference wired or telephoned to the agent at destination, and placing order obtained prior to the arrival of car.

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

Branch Lines in the Maritime Provinces.—Hon. H. R. Emmerson, M.P., ex-Minister of Railways, brought before the House of Commons, Jan. 10, a resolution favoring the taking over such of the various branch lines now connected with the Intercolonial Ry. as would serve as direct and profitable feeders of the same. The Minister of Railways in a general way endorsed the principle of the resolution, and said: "The Government will be prepared to take them over after investigation to find out what branch lines on the I.R.C. can be taken over that will become feeders of that road, and not milkers of it. It will take them over on a fair and equitable basis."

Railway Lands Patented.—Letters patent were issued during Nov., 1911, in respect of the following railway lands in Manitoba, Saskatchewan, Alberta and British Columbia:—

	Acres.
Calgary and Edmonton Ry.	640.00
Canadian Pacific Ry.	19.54
Grand Trunk Pacific Ry.	46.89
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	1,286.00
Total	1,992.43

Canadian Northern Railway Earnings, Expenses, Etc.

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

Earnings.	Expenses.	Net Earnings.	Net Increase
July \$1,475,900	\$1,114,300	\$361,600	\$13,400
Aug. 1,420,600	1,105,900	314,700	51,700
Sept. 1,576,400	1,157,000	419,400	38,200
Oct. 2,028,900	1,348,500	680,400	99,900
Nov. 2,001,500	1,336,300	665,200	106,300
\$8,503,300	\$6,062,000	\$2,441,300	\$309,500
Inc. \$ 1,712,100	\$1,402,600	\$309,500

Approximate earnings for December, \$1,831,400, against \$1,255,400 for Dec., 1910; approximate earnings for two weeks ended Jan. 14, \$530,600, against \$372,000 for same period 1910.

Canadian Pacific Railway Earnings, Expenses, Etc.

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

Earnings.	Expenses.	Net Profits.	Net Increase
July \$ 9,661,818.14	\$5,958,789.81	\$3,703,028.33	\$218,408.74
Aug. 10,421,904.42	6,346,333.41	4,075,571.01	388,898.68
Sept. 10,049,084.97	6,131,638.17	3,917,446.80	5,847.16
Oct. 11,207,991.99	6,526,887.24	4,681,104.75	175,944.23
Nov. 10,570,694.80	6,583,328.31	3,987,366.49	250,244.23

\$51,911,494.82 \$31,546,976.94 \$20,364,517.88 \$1,034,343.84
Inc. \$4,829,125.67 \$3,794,782.63 \$1,034,343.04

Approximate earnings for December, \$10,568,000 against \$8,603,000 for Dec., 1910; approximate earnings for two weeks ended Jan. 14, \$2,951,000, against \$2,503,000 for same period 1911.

The mileage operated was increased during December to 10,832.

Grand Trunk Railway Earnings, Expenses, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R. for Nov., 1911, as compared with those for Nov., 1910:—

GRAND TRUNK RAILWAY.		
	1911.	1910.
Earnings	\$3,152,800	\$2,989,500
Expenses	2,489,200	2,340,100
Net earnings	\$ 663,600	\$ 649,400
CANADA ATLANTIC RAILWAY.		
	1911.	1910.
Gross earnings	\$ 188,100	\$ 176,700
Expenses	163,800	138,800
Net earnings	\$ 24,300	\$ 37,900
GRAND TRUNK WESTERN RAILWAY.		
	1911.	1910.
Gross earnings	\$ 534,200	\$ 477,100
Expenses	424,600	427,800
Net earnings	\$ 109,600	\$ 49,300
DETROIT, GRAND HAVEN AND MILWAUKEE RY.		
	1911.	1910.
Gross earnings	\$ 226,000	\$ 202,200
Expenses	160,000	136,000
Net earnings	\$ 66,000	\$ 66,200
TRAFFIC RECEIPTS OF THE SYSTEM.		
Aggregate from July 1 to Dec. 31:—		
	1911.	1910.
Grand Trunk Ry.	\$4,133,320	\$3,696,455
Canada Atlantic Ry.	225,032	199,456
Grand Trunk Western Ry.	704,053	627,425
Detroit, Grand Haven and Milwaukee Ry.	252,834	218,388
Totals	\$5,315,239	\$4,741,724

It has been decided, commencing with the January statement, to include in future monthly revenue statements, the balance of income from rentals, outside operations and hire of equipment, the balance of revenue from these sources having been previously shown in the half yearly accounts, but not included in the monthly revenue statements.

The Temiskaming and Northern Ontario Ry.'s Porcupine branch is reported completed to Schumacher, in the Pearl Lake district.

The Quebec and Saguenay Ry. is being sued by J. Slevin, for \$17,500 damages alleged to have been sustained through the railway running its line over his property without an agreement having been previously reached.

Rebuilding the C.P.R. Bridge over St. Lawrence River at Lachine.

The major portion of the new bridge being constructed across the St. Lawrence River at the Lachine rapids has been completed, and it is expected to finish the work in the coming summer.

Traffic on this portion of the line—the section from Montreal to Farnham on the main line to St. John, N.B., and Halifax—has increased tremendously, not alone due to the great expansions of the C.P.R., but also to the increased business handled by the St. Lawrence

The bridge is located at the upper end of the Lachine rapids, crossing between Lachine and the Indian village of Caughnawaga. At this point the current is quite rapid, running up to 8 and 10 miles an hour, even exceeding this in the spring when the ice floes come down. These difficulties were successfully overcome, work having been continuously pushed forward for more than a year, through the winter season. To facilitate work as much as possible the pier addi-

possible, around the old 240 ft. spans bridge, and the extension of the old piers in a similar manner as indicated in fig. 2. The building of the piers in deep water is shown in fig. 4.

A different method of building the piers was followed in the deeper water. A caisson was sunk at the outer point of the new stationary pier, and from this outer stationary point, a coffer dam was built around to the existing position of the pier, work proceeding as before.

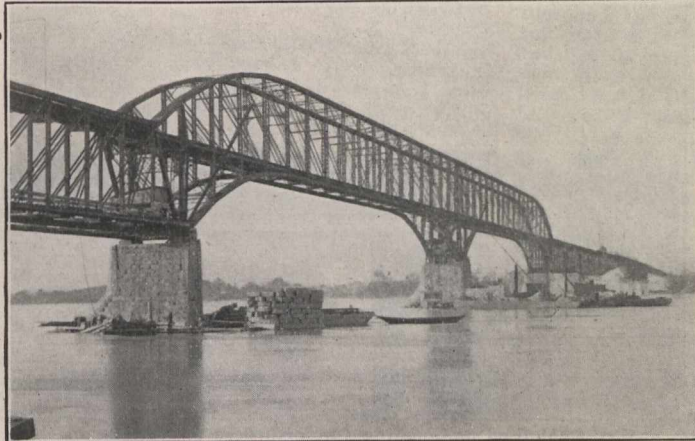


Fig. 1. The Old Bridge from the South Shore.



Fig. 2. New and Old Bridges from the Lachine Shore.

and Adirondack Ry. and the Rutland Rd., two units of the New York Central Lines, which also reach Montreal over this Lachine bridge. These conditions made it imperative to double-track the line from Montreal to Farnham if the traffic was to be handled expeditiously. This included double-tracking the bridge.

The old bridge, nearly three-quarters of a mile in length, was erected in 1886, a year after the completion of the transcontinental line, and was then considered a most remarkable feat in bridge-building. Webster's Dictionary cites it as an example of cantilever bridges, while an article in a magazine

tions were all made on the downstream side.

The original bridge had 17 spans from the Lachine end as follows: 3 shore girders 80 ft. long, 7 ft. deep; 8 river girders 240 ft. long, 35 ft. deep; franking span 270 ft. long; 2 cantilever spans 407 ft. long; franking span similar to the other side of cantilever, and 1 girder 240 ft. long, 35 ft. deep. It was decided to change the design to the extent of making the first four 240-ft. spans on the Lachine end into eight 120-ft. spans by building new abutments as shown in figs. 2 and 3, and by replacing the two cantilever spans by heavy girders. Building

The first steel work was done for the Lachine end, up to which point the line had been double-tracked, facilitating the removal of work train, crane, etc. A light truss of the form shown on the further track of the first span in fig. 3 was built across on the piers to be spanned. This formed a temporary supporting beam, on which the permanent beam was built up piecemeal. When completed, this temporary truss was taken out and moved to the next span. Construction work was carried on by a heavy travelling crane on the existing bridge. This procedure was followed until the eight 120-ft. spans were completed. Traf-

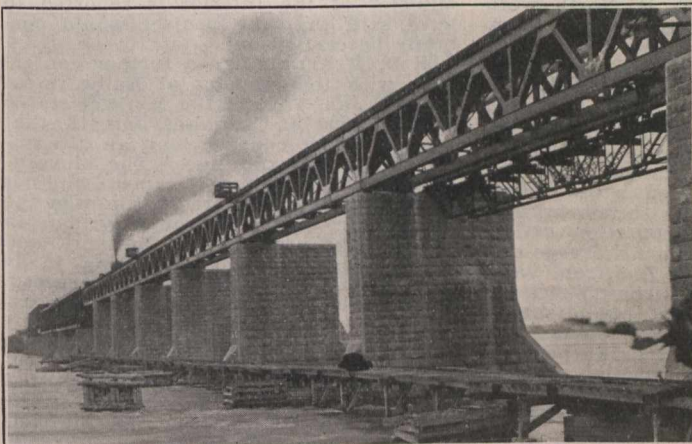


Fig. 3. Construction Work with Old Spans Removed.

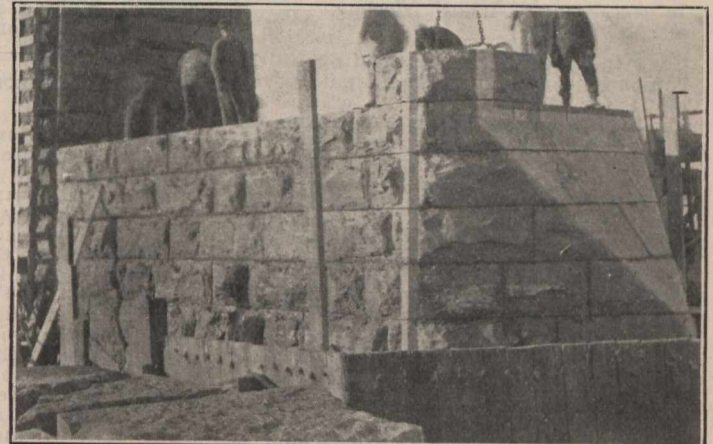


Fig. 4. Pier Extension Work in Deep Water.

of 1888 describes it as "a remarkable structure, light, airy, graceful, with many interesting features." But, while sufficient to meet all requirements of that time, 26 years ago, rolling stock has increased in size so greatly during that period that the capacity of the bridge was not considered sufficient, resulting in its replacement entirely by a complete new double-track bridge of a heavier and more modern construction, designed by P. B. Motley, M. Can. Soc., C.E., Engineer of Bridges, C.P.R.

A little consideration will emphasize the big task undertaken in this project.

new piers at the Lachine end to shorten the spans was considered the best plan, for at that end of the bridge the water is shallow, the navigable section of the river being beneath the cantilever spans of fig. 1.

The plan adopted at the Lachine end for building the piers, was to drive piling around the place for the pier, forming a cofferdam, and after removing the water, to build up a concrete foundation to water level, on which the masonry was laid. This concrete foundation extends 18 ins. beyond each side. The new piers were built as complete as

fic was then diverted on to this new section of the bridge, a cross-over near the end of the new section carrying the tracks back to the old section not yet replaced. The old spans were then removed, a temporary span being also employed for this purpose. The piers up to this stage are shown in fig. 5.

An ingenious method of constructing and placing the new spans was adopted, the method being shown in fig. 6. Each girder of the span is built up separately on the piers, close alongside the existing span where it is easy to get at the parts while being built together.

On completion, by means of a block and tackle from the end of a projecting pole (fig. 6), the girder, supported on rollers, is rolled out to its location, and the inner girder built in the same location.

The Foundation Co. built the piers, and the Dominion Bridge Co. had the contract for the steel work. The latter company, having its construction works near by, needed no field shop. The Foundation Co., however, has quite an extensive shop on the south side of the river. As shown in fig. 1, there is a small industrial railway running out to the first water pier, supported on the

it was later adjourned to Jan. 22 to enable another petitioner's case to be heard. He believed that the original order was made under a misapprehension of the governing facts, and hoped that the outcome of the hearing would be that the Board had no intention to deprive the capital invested of a fair and reasonable return, having regard to the risks run, and to all the conditions pertaining to the construction, maintenance and operation of a railway in semi-arctic regions.

O. L. Dickeson, whose appointment as President, in succession to the late

The Railway to Hudson Bay.

The Dominion Parliament has voted \$1,166,666.66 on account of construction work on the railway from Pas Mission to Hudson Bay, a contract for the building of the first section of which has been let to the, J. D. McArthur Co. Winnipeg.

J. D. McArthur, in an interview at Winnipeg recently, stated that there would be no disturbance of the contract he had for the building of the first section of 185 miles of the line

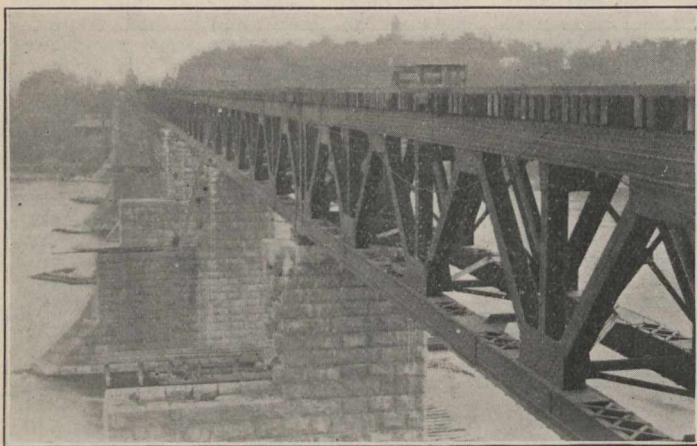


Fig. 5. New Spans and Uncompleted Piers, looking towards Lachine Side.

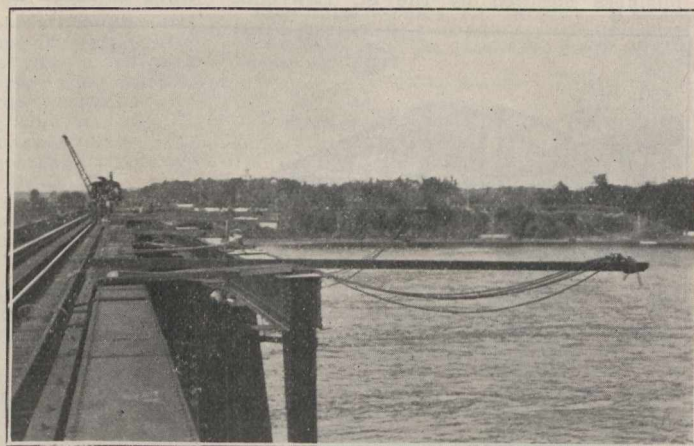


Fig. 6. Method of Locating Outer Girders of New Spans.

lower chord of the existing truss. On the Lachine end, there is a more elaborate system of staying out to the new piers, where more work was done. A couple of tugs and several scows were used for the carrying back and forth of materials for the isolated piers.

Work on the balance of the bridge, including the replacing of the cantilever spans, will be completed in the spring. All the work is being carried forward under J. H. Barber, M. Can. Soc. C.E., of the C.P.R.'s engineering department.

White Pass and Yukon Railway Company's Annual Meeting.

At the recent annual meeting of the company, in London, Eng., apology was made for the late date at which the meeting had been called, which was due to the hope that the proceedings regarding rate matters, now before the Board of Railway Commissioners, would have been concluded. The report showed that income tax was about £1,000 higher than in 1910, and that the dividends on shares in the local companies were about £8,000 less, and the profit for 1911 about £7,500 less than in the previous year. The sinking fund is now about £183,000, against £157,000 in 1910, the net profit being £40,871. Deducting from this, £18,285 for the sinking fund and £13,750, representing a dividend of 1% on the ordinary shares, there is a balance of £8,836, which is carried forward to the current year's accounts.

C. C. Macrae, Chairman, in referring to the rate question at present being dealt with by the Board of Railway Commissioners, said he thought it wise to say as little as possible while the matter was sub judice. The position was, that last spring the Board made an order, which, if enforced, would have had a serious effect on the local companies. Proceedings were taken to have the order reversed, and eventually an order for a re-hearing was granted. This was fixed to take place in November last, and took place on Dec. 6, after an adjournment in consequence of the death of the President, S. H. Graves, and

S. H. Graves, was announced by the Chairman, said that the gross earnings were down owing to the unsettled state of the Dawson market, due to the pending decision of the Board of Railway Commissioners on the question of rates, but although the gross earnings were lower, the net receipts had not decreased in the same ratio. By increasing the number of boats, the company had been enabled to carry all the tonnage to its destination, and it was encouraging to know that negotiations were under way, whereby the company expects to furnish oil fuel for dredge operations to take the place of the diminishing supply of wood.

C. C. Macrae and E. F. North were re-elected directors for the current year.

British Columbia's Railway Policy.

In an interview at Victoria, Jan. 8, Premier McBride is reported to have stated that the Government's railway policy would be announced in the course of a few weeks. This statement was made in reply to a deputation which waited upon the Government to urge the importance of building a line from Vancouver to the Peace River district, in support of which project public meetings have been held in Vancouver and other places in the province during the past three months.

The Legislature opened Jan. 11, and press dispatches state that the Government policy includes the building of a line to connect Vancouver with the northern parts of the province. The question whether the line will be built and operated by the Government has not been definitely settled, but as several companies already hold charters covering the territory, it is probable that the Government will build the line and arrange for its operation. It is reported that three firms have been negotiating with the Government for the building of the line. (See Vancouver and Peace River Ry., Jan., pg. 23.)

The Canada and Gulf Terminal Ry., R. Dupont, Traffic Manager, has been admitted to membership of the Eastern Canadian Passenger Association.

from Pas Mission. As the result of his interview with members of the Government, he would have a large force of men at work during the winter cutting out the right of way, and getting in supplies. In the spring the grading gangs would be sent out to begin the actual work of construction.

Work has been resumed by Mackenzie, Mann and Co. on the construction of the bridge across the Saskatchewan River at Pas Mission. The piers to carry the superstructure have been completed, and the plant and material for the steel spans were reported as being in transit, Dec. 30.

Speaking at Winnipeg, Dec. 29, the Minister of the Interior is reported to have said that the project would certainly be carried out.

J. D. McArthur had a further conference with the Minister of Railways, at Ottawa, Jan. 12, and the Minister stated in the House of Commons, Jan. 16, that he had under consideration an alternative route for the line. The Government had not yet ascertained whether Fort Churchill or Port Nelson was the better harbor on Hudson Bay, but in view of the urgency of the work and unanimity of opinion endorsing it, he had ordered construction to proceed. He believed, however, that another expedition would be necessary to definitely settle the harbor question. He had no doubt that the line could be built within two or three years. He had another project in view if the Hudson Straits were not found satisfactory for the running of boats. There would, he said, be two strings to the bow by establishing a line of boats from the port chosen across James Bay to the Nottaway River in Quebec, by which grain could be transferred to the National Transcontinental and shipments made from Atlantic ports. This, the Minister pointed out, would cut the haulage distance from Prince Albert and such points in the west by over 600 miles.

A deputation from Prince Albert, Sask., waited on the Government, Jan. 12, and asked for the building of a line from Prince Albert, Sask., to Split Lake, the terminal point of the section of the line under contract from Pas Mission. Consideration of the proposal was promised.

RAILWAY DEVELOPMENT.

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta Central Ry.—The Board of Railway Commissioners has approved location plans for the main line from mileage 100 to 140 west of Red Deer, Alta., and for the location of a branch from mileage 135 on the main line to the Big Horn Range coal fields, 28 miles.

We are officially advised that the Alberta Central Ry. has been taken over by the C.P.R.

The Alberta, Peace River and Eastern Ry. Co. is applying to the Dominion Parliament to extend the time within which it may build its projected railway. Grand and McCarthy, Ottawa, are solicitors for applicants. (July, 1910, pg. 547.)

Algoma Central and Hudson Bay Ry.—We are officially advised that during 1911 the company laid track on the extension of its line between Pangissin and Hobon, on the C.P.R. transcontinental line, as follows:—From mileage 81.6 to 99, a distance of 17.4 miles, and between mileage 115 and 153, a distance of 38 miles. It also completed the work on the branch line from Magpie Jct., on the Michipicoten division, to Magpie Mine, 9.42 miles; and laid about 10 miles of sidings, including yard track, at Sault Ste. Marie, Ont. The work on the main line to the C.P.R. transcontinental line is expected to be completed by August next. Progress is also being made on the extension of the line from Hobon, on the C.P.R., to the National Transcontinental Ry., 99.16 miles; and this work it is expected to have completed by Aug. 1912. The contractors are the Superior Construction Co., Espanola, Ont., the principals of which are T. J. Kennedy, Espanola, and J. D. McArthur, Winnipeg. A reconnaissance survey has been made for a further extension of the line from the National Transcontinental Ry. to Hudson Bay. (Jan., pg. 21.)

Bagotville and St. Lawrence Ry.—The Quebec Legislature is being asked to incorporate a company with this title to build a railway from Bagotville to Murray Bay or Baie St. Paul, Que., and from one or other of the two latter places by the most direct and advantageous route to Quebec. L. A. Cannon, Quebec, is solicitor for applicants.

British Columbia and Dawson Ry.—The company in an amended notice is asking the Dominion Parliament to extend the time within which it may build the lines authorized to be constructed by the act of incorporation of May, 1911, and to build three branch lines. The only variation from the previous notice is that the third line is to be from Vancouver to the main line at or near Lillooet. (Jan., pg. 21.)

British Pacific Coal Fields Co.—In connection with the development of the company's property on Graham Island, it is reported that a line of 1.5 miles will be built from the collieries to a deep water port. W. G. McMorris is Managing Director.

Bruce Mines and Algoma Ry.—Application is being made to the Ontario Legislature for authority to build a line from Rydal Bank station northerly and easterly to Hannah Bay, or other point on James Bay, Ont.; to build branch lines not exceeding 12 miles in length, and to extend the time within which the already authorized lines may be built. Lennox and Lennox, Toronto, are solicitors for the company. (July, 1911, pg. 645.)

Canada and Gulf Terminal Ry.—No new construction was undertaken during 1911. The company has under con-

sideration the extension of its line from Matane, the present terminus, to Gaspe Basin, Que., 189 miles, and from St. Flavie, the junction with the Intercolonial Ry., to St. Eleuthere, near the Quebec-Maine boundary. (June, 1911, pg. 505.)

Central Ry. of Canada.—A Montreal dispatch of Jan. 21 says:—"It is announced that preparations are complete for the building of this line, and that the first section from Montreal to Ottawa will be completed by the end of this year, while the further portion, from Ottawa to Georgian Bay, will be built shortly after. The company has changed its original plan, and the route, instead of passing through St. Benoit, will follow along the shore of the Lake of the Two Mountains, passing through St. Placide and Oka, crossing from the mainland to Ile Jesu at St. Eustache, and reaching the Island of Montreal at Cartierville. It will then parallel the Riviere des Prairies, crossing the C.P.R. tracks at Jacques Cartier Jct., and reaching the Harbor Commissioners' line on the waterfront at Tarte pier. This will be the freight entrance into the city. A passenger entrance is planned from the west, and it is expected that the terminus will be the G.T.R.

Churchill and Athabasca Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build a railway from Fort Churchill, on Hudson Bay, westerly to Lake Athabasca, Alta. Bishop, Pratt and Delavault, Edmonton, Alta., are solicitors for applicants.

Dominion Atlantic Ry.—The Board of Railway Commissioners has approved revised location plans for the line from the west side of St. George St., Annapolis, N.S., to the west side of Allen's Creek, 2790.5 ft., and for the rebuilding of the bridge across Allen's Creek. (Dec., 1911, pg. 1137.)

Edmonton, Dunvegan and British Columbia Ry.—We are advised that the press reports that a contract had been let to G. H. Webster, Calgary, Alta., for the construction of the first section of this projected railway were premature, that the matter is not yet definitely settled, but that it is expected a decision will be reached early in Feb. T. Turnbull, Edmonton, Alta., is Chief Engineer. (Jan., pg. 21.)

Esquimalt and Nanaimo Ry.—The first through train over the extension to Port Alberni was run Dec. 20, R. Marpole, Vice President, taking a party of C.P.R. officials, including Vice President Bosworth, over the line.

The Board of Railway Commissioners has approved location plans for the extension projected from Black Creek to near Duncan's Bay.

Several conferences have been held between the railway, municipal and provincial authorities as to the disposal of the portion of the Songhees reserve, Victoria, which has been reserved for railway terminal purposes. The C.P.R. interests claimed to have premier rights, but the Premier said the matter must start anew. A union terminal is favored, and — Holman, who designed the terminals at Seattle, Wash., has been authorized to draw up plans for a union terminal. (Jan., pg. 29.)

Fraser River Bridge.—The Minister of Public Works for British Columbia, speaking at Vancouver recently, said the Government railway bridge over the Fraser River at New Westminster was spoken of as a "white elephant" when it was first built. But the traffic over it has increased so largely that the ques-

tion of building another bridge to accommodate the Great Northern Ry., and the other railways that were heading towards Vancouver, would have to be considered in the near future. Unfortunately the present bridge had been so planned that it would be impossible to add more trackage, consequently a new bridge would have to be built. (See Fraser River Bridge, Mar., 1911, pg. 207.)

Fredericton and Grand Lake Coal and Ry. Co.—A meeting of directors was held in Fredericton, N.B., Jan. 10. In an interview, Sir Thos. Tait is reported as having stated that the railway will be built this year. Local press reports state that tenders for the building of the line are under consideration, and that it is likely a contract will be let at an early date. Sir Thos. Tait is reported to have purchased outright or to have acquired a controlling interest in additional coal areas in the district to be served by the projected railway.

We are advised that Sir Thos. Tait has taken over the company's charter and has been elected President. (Dec., 1911, pg. 1137.)

Ha Ha Bay Ry.—We are officially advised that track was laid during 1911 on the main line from Riviere du Moulin bridge to Laterriere village, Que., 10 miles, and that the building of a branch line from Mathias Jct. to Jonquiere village, five miles is under consideration.

A press report states the company has under consideration a project for the building of a line from Mathias Jct., Chicoutimi to Roberval, Que., about 125 miles. There is a charter for the building of a railway under the title of the Roberval and Saguenay Ry., and the section of the Ha Ha Bay Ry., already built, would, with the projected Mathias Jct.-Roberval section, give the connection between Roberval and the Saguenay River. (Oct., 1911, pg. 935.)

High River, Saskatchewan and Hudson Bay Ry.—High River and Hudson Bay Ry.—At a meeting of the Saskatoon, Sask., Board of Trade, Jan. 2, reference was made to this projected railway. The route proposed is from an at present unsettled point on the western boundary of Alberta, near tp. 15, northeasterly to Saskatoon, and thence to Pas Mission, connecting there with the Dominion Government railway to Hudson Bay. (Jan., pg. 21.)

Hudson Bay, Peace River and Pacific Ry.—A special meeting of the shareholders was called to be held at the offices, 408 McArthur Building, Winnipeg, Jan. 22, for the purpose of authorizing the sale of a further block of stock. H. W. Adcock is Secretary. (Dec., 1911, pg. 1137, and Aug., 1911, pg. 733.)

Intercolonial Ry.—The Dominion Parliament has voted the following sums to be expended upon capital account:—

To increase accommodation	\$ 14,583.33
To strengthen bridges	26,250.00
Truro, N.S., Increased accommodation	29,966.66
Mulgrave, N.S., Improvements	17,500.00
Moncton, N.B., Office building	28,291.66
Fredericton, N.B., Improvements	10,500.00
Campbellton, N.B., Improvements	15,750.00
Hampton, N.B., Spur line	8,750.00
New Glasgow-Guysboro, N.S., line	583,333.33
Dartmouth-Dean Settlement, N.S., line	583,333.33
Alva-Baddeck, N.S., line	116,666.66

(Jan. pg. 21.)

Kettle Valley Lines.—Application is being made by the municipality of Penitction to the British Columbia Legislature for an act confirming a bylaw granting a bonus to the Kettle River Valley Ry., for building its line in and through the corporation limits.

J. J. Warren, President, on a recent visit to Victoria, B.C., is reported to have stated that 30 miles of line at the Merritt end had been completed, and that construction had so far progressed on other sections that it was expected to have the entire line built by the middle of 1913.

Surveys are being made for the location of the projected line from Vernon to Penticton. (Jan., pg. 22.)

The Iron Range Ry. Co. is applying to the Ontario Legislature for an extension of time within which it may build the lines authorized to be constructed by chap. 277 of the statutes of 1908. Dowler and Dowler, Fort William, Ont., are the solicitors. (April, 1910, pg. 271.)

Joliette and Lake Manuan Colonization Ry.—Press reports, Jan. 11, state that construction is being proceeded with on a section of the line between Joliette and Lake Manuan, Que., and that it is expected to have about 60 miles of track laid by the end of the year.

The company is said to be considering plans for the extension of the line southerly to Montreal, and it is stated that the line will cross the Back River and enter the city by a route entirely new among the city's railway connections. (Jan., pg. 22.)

London and Port Stanley Ry.—Speaking at the inaugural meeting of the London, Ont., city council, Jan. 8, the mayor said he had reason to know that an offer would shortly be made by a company for the electrification of the line. The prospective offer was a reason why the city should take up the question of studying the matter of controlling the road directly, and making it an up-to-date radial line.

The line is being operated under a lease by the Lake Erie and Detroit Ry., the Canadian end of the Pere Marquette Rd., which lease is about expiring. It is said that the Lake Erie Coal Co. is the company from which the proposition to electrify the line will come, and that it desires simply to have the right to haul coal trains over the line, leaving the city free to make such arrangements with other companies for the operation of passenger and general freight trains as may be desirable. (Dec., 1911, pg. 1139.)

Michigan Central Rd.—We are officially advised that the work going on at the locomotive house at St. Thomas, Ont., consists of an addition of 16 stalls to the 24 built in 1910. This will make a 40 stall house. The work is about completed. The building is of concrete and brick, 95 ft. in depth, with the stalls spread 14 ft. centres on the inner circle. (Jan., pg. 22.)

Minnesota and International Ry.—Press reports state that arrangements are being made for the purchase of the line from Funkley to Kelliher, Minn., owned by the Crookstown Lumber Co., and its extension from Kelliher to Winnipeg, Man. It is also reported that new and heavier steel is to be laid from Brainerd to Kelliher this spring, and that when the entire work is completed the Northern Pacific Ry. will operate a direct and fast service between Minneapolis and Winnipeg. The M. and I. Ry. is a subsidiary of the Northern Pacific Ry., which owns or is interested in charters authorizing the building of a number of lines in Manitoba. (Dec., 1907, pg. 889.)

Minnesota, Dakota and Western Ry.—United States press reports state that it is proposed to build an extension of this line from Thief River Falls to International Falls, Minn., this year. The company has in operation a freight service over a line from International Falls to Lowan, Minn., 23 miles, and makes connection with the Duluth, Rainy Lake and Winnipeg Ry. at Falls Jet., Minn., and with the Canadian Northern Ry. at Fort Frances, Ont. E. W. Backus, Minneapolis, Minn., is President, and the head offices are at International Falls, Minn.

Montreal and Northern Colonization Ry.—Application is being made to the Quebec Legislature for an extension of time for the building of the line already

authorized from Montreal to a junction with the National Transcontinental Ry. It is also desired to have power to secure an entrance into Montreal by means of a tunnel. (May, 1911, pg. 411.)

Montreal Transcontinental Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build a railway from Montreal, northerly and northwesterly to the National Transcontinental Ry., at or near Lake Victoria, Que. C. L. deMartigny, Montreal, is solicitor for applicants.

Moose Mountain Ry.—The Alberta Legislature is being asked to incorporate a company to build a railway from about 3½ miles west of Cochrane, and 26 miles west of Calgary, westerly and southwesterly to the base of Moose Mountain, about 20 miles. Millican and Millican, Calgary, Alta., are solicitors for applicants.

The Mountain Park Coal Co., which has been incorporated under the joint stock companies act, with office at Edmonton, is applying to the Alberta Legislature for authority to build a colliery railway from its coal properties in tps. 45 and 46, ranges 23 and 24 west of the 5th meridian, to a junction with the Grand Trunk Pacific Ry.'s Alberta coal branch and the Canadian North Western Ry. Brazeau line, or either of them. Short, Woods, Biggar and Collisson, Edmonton, Alta., are the solicitors.

Ottawa, Abitibi and Hudson Bay Ry.—Application is being made to the Quebec Legislature to incorporate a company to build a railway from Hull northwesterly along the Coulonge River valley to the Grand Lake Victoria, thence to the National Transcontinental Ry., near Mattagami, and thence to James Bay. H. S. Ross, Montreal, is solicitor for applicants.

Ottawa, Montreal and Eastern Ry.—The Dominion Parliament is being asked for an extension of time within which the line and bridge or tunnel across or under the St. Lawrence River near Montreal, authorized to be built by chap. 141 of the statutes of 1910, may be constructed. Power is also sought to have the capital stock increased to \$10,000,000. Laffamme, Mitchell and Chenevert, Montreal, are solicitors for applicants. (May, 1910, pg. 353.)

Prince Edward Island Ry.—The Dominion Parliament has voted the following sums to be expended upon capital account:—
Original construction\$ 583,333
Line, O'Leary to West Point 29,166.66
Line, Kensington to Stanley Bridge. 58,333.33
(Jan., pg. 23.)

Quebec and Saguenay Ry.—Application is being made to the Quebec Legislature for an act to renew all the rights conferred on the company by chap. 55 of the statutes of 1906; ratifying and confirming the organization of the company, and all the acts of the directors prior to the passing of that act; declaring that the company may build a line from St. Joachim, near the terminal of the Quebec Ry., Light and Power Company's line, following the shore of the St. Lawrence River as far as Ste. Irene and Malbaie, on to the Saguenay River, and across the same to the eastern boundary of the province, as well as branch lines; and extending for three years the time within which the line now being built to Murray Bay may be built, also extending for seven years the time within which the rest of the line may be built.

A. H. N. Bruce, Chief Engineer, is quoted as having stated in an interview Jan. 3, that surveys would be started at an early date for the location of the section of the line from Baie St. Paul to the Chicoutimi district, about 80 miles.

The route will be through the primeval forest to Ha Ha Bay and the Grande Discharge. (Jan., pg. 23.)

Quebec Bridge Construction.—The Dominion Parliament has voted \$1,166,666.66 on account of the building of the bridge across the St. Lawrence River near Quebec, and a further sum of \$320,833.33 as a refund of the subsidies voted by the Quebec Legislature and the city of Quebec to the old Quebec Bridge and Ry. Co. in aid of the building of the bridge which collapsed. (Sept., 1911, pg. 831.)

Rat River Ry.—Application is being made to the Quebec Legislature to incorporate a company with this title to build a railway to be operated by steam, electricity or other motive power, from the copper mine of the East Canada Smelting Co. in Weldon tp., to St. Gerard, Que., on the Quebec Central Ry. Cate, Wells and White, Sherbrooke, Que., are solicitors for applicants.

Tobique Valley Ry.—A deputation from Windsor county waited on the New Brunswick Government, Jan. 4, and urged the subsidizing of an extension of the T.V.R. from Plaster Rock to Riley Brook. The company, under the title of the Tobique and Campbellton Ry., proposes to extend the line from Plaster Rock, via Riley Brook, to a junction with the International Ry. of New Brunswick. The section of the line at present built to Plaster Rock is operated under lease by the C.P.R., and it was stated that any further extension would be similarly operated. (See Tobique and Campbellton Ry. in C.P.R. Betterments, Oct., 1909, pg. 739.)

The Toronto, Hamilton and Buffalo Ry. built during 1911 two additional spur lines in Hamilton, Ont., viz.:—the Westinghouse spur, 0.42 mile, and the Grasselli spur, 0.57 mile. (Sept., 1911, pg. 855.)

Winnipeg, Salina and Gulf Rd.—Press reports state that application has been made to the State Government of Kansas, for authority to issue bonds to provide funds for the building of the Kansas section of the proposed line from Kansas City, Mo., to Des Moines, New Mexico. It is also proposed to build a line from Omaha City to Oklahoma City, Okla. (See Midland Continental Ry., Sept., 1911, pg. 855.)

American Boiler Manufacturers Association.—The 24th annual convention of this association, together with its associate members, and the Supplymen's Association, will be held in New Orleans, La., March 12 to 15. Some very important papers will be presented, and there will be other important business of interest to all boiler manufacturers, and to supply houses dealing with the boiler and tank industry. An extensive programme of entertainment has been arranged, and a large number of boiler manufacturers and supplymen is expected to be in attendance. Information relative to rates, hotel accommodations, etc., will be furnished by F. B. Slocum, Secretary, Supplymen's Association of the American Boiler Manufacturers Association, Continental Iron Works, Brooklyn, N.Y.

St. Boniface Stock Yards.—The Public Markets, Limited, is being organized in Winnipeg to take over and control the union stockyards at St. Boniface, Man. The company will represent the three railways, the shares being divided among them as follows:—C.P.R., 3,334; Canadian Northern Ry. and G.T. Pacific Ry., 3,333 each. The directors will be F. W. Peters, Assistant to the Vice President, for the C.P.R.; J. R. Cameron, Assistant General Manager for the C.N.R., and H. H. Brewer, General Superintendent for the G.T.P. Ry. It is expected that the yards will be opened for business by Oct. 1.

The Canadian Northern Railway's Montreal Entrance.

One of the many problems which the Canadian Northern Ry. management has had to solve in its very romantic history has been its entry into Montreal. The problem was this: Given two rich and powerful trunk roads firmly entrenched, one of them for over 50 years, the other for 25, how is a new and struggling railway only a little over 10 years old, scarcely known to the east, except as the owner and sponsor for some 600 or 700 miles of unprofitable road in the province of Quebec, to gain a foothold in a city where property is held for miles out from its centre at so many dollars per square foot, and where the level street crossing has been condemned for 20 years or more. To come in alongside the existing roads was a matter of prohibitive cost, and it meant only destruction to existing interests everywhere. Nobody wanted it or felt the need of it, and for ten miles out at least it would be only a dead line, incapable of creating any new traffic for itself or of sharing in the existing business.

Something better than this had to be looked for. It was possible to get into the outskirts of the city no doubt, but what chance was there in such a situation of competing with the two roads above mentioned, giving the best service perhaps that any city on the continent possesses—to Toronto, to Ottawa, to Winnipeg, to Vancouver, and to every point of importance which the Canadian Northern touches. It was a central location which the occasion demanded, or nothing at all. This was the problem presented to the C.N.R. staff, and the following is an account of how it was solved, and the various steps and arguments taken and used in the solution:—

The C.N.R. had a bridge over the Ottawa River at Hawkesbury, acquired through the Great Northern Ry. of Canada, and as the C.P.R. short line monopolized the south bank of the Ottawa to Vaudreuil, it seemed most reasonable that the line should use this bridge and come down from the west on the north side, especially as by doing so it would have a monopoly of the trade of several small towns, such as Carillon, St. Andrews, St. Placide, St. Benoit, and a portion of that of St. Eustache. Arrived at the latter point it was obviously essential to cross the Back River, skirt along it behind the mountain, and join the existing line out of the east end of the city, and through it get access to the freight yard in Maisonneuve and the Harbor Commissioners' transfer track.

This was obviously the first step, and in itself this gave the road a fairly good position from a freight standpoint, especially as the backbone of the island was crossed at a low elevation, and by gradients only one-third of those obtaining on the C.P.R., but this was no solution of the passenger traffic problem. No one would want to travel 118 miles from Ottawa, for instance, and be landed three miles from the centre of Montreal when he could go 112 on the C.P.R. and be landed directly at that centre. But the problem had become narrowed down. The data were now: A suitable spot in the centre of the city and a line running past at a distance of six miles or so. How can the two be connected? Any bright schoolboy would answer, "Drop a perpendicular from the point on to the straight line," and this is just what the Canadian Northern did, but the line crossed over a mountain top 800 ft. high. A bold spirit said tunnel it, but the financiers shook their heads and laughed. Where was the money to come from, and if it could be got, how was the interest to be paid by a struggling road even after it was completed? The question was a hard one to answer, and it was not fully answered until six years

after, when the question had become urgent.

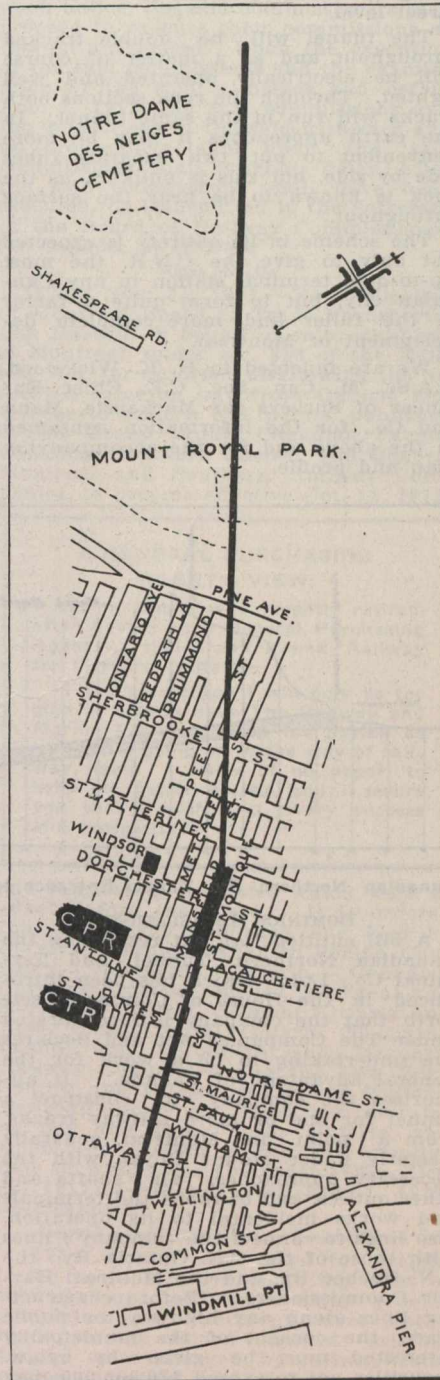
But in the meantime the following arguments had been presented and weighed. First, Montreal has grown continuously up and down the narrow strip between the mountain and the river until its length is ten miles, and its breadth less than two; a most awkward shape for a city. The wealthier residents, in their effort to get away from

Obviously the tunnel when built would do more than bring the C.N.R.'s long distance traffic into town; it could be developed into a most important factor in the building up of a greater and more compact Montreal by bringing these desirable lands within ten minutes of the city's heart. This traffic would in itself probably be profitable, but further than this it was bound to enhance the value of the lands in question. Why should not the C.N.R. itself profit by the enhanced value. Why should the real estate men be the only gainers from a vast expenditure of money to which they would not contribute one cent? Here then was the key of the problem of financing, if only the lock would be found which it fitted, and the astute financiers very soon found the lock and opened the door of the financial safe. But this is a story by itself, and a romantic one, which will be told some day.

There were other arguments and other schemes more or less closely allied. It was proposed, for instance, to come in on the north slope of the mountain, where the cutting would be comparatively light, and where merely depressed tracks arched over with concrete and steel could be used. It was concluded that this would be cheaper, but an investigation did not show that this would be the case. It was contended that it would be more quickly constructed, but even this seemed to be doubtful, for the quicker construction depended on the work being started at and carried on from a number of different points simultaneously and this entailed the carting away of an immense quantity of material through the city streets for several miles—a matter of both great difficulty and expense. Another serious drawback was that this northern route led only to an uptown station north of Phillips Square, which meant a dead end station for all time, because continuation eastward towards the river meant crossing St. James St., and the district between it and the harbor at their very busiest and most congested portions—a matter of prohibitive cost and difficulty. As a matter of fact there was only one narrow belt which could be traversed, that is between the two existing railway terminals and Victoria Square, and this belt, butting up against the canal basin on the east, happened to be one of the most attractive situations for a freight terminal in all Montreal.

This last consideration settled the choice of route. The arguments could not be controverted, and this decision, narrowed the choice of a terminal passenger station down to very small limits, viz., to a site near St. Catherine St. and somewhere between Dominion Square and Beaver Hall Hill. The existence of the big St. James Cathedral on the one side, and Birks', Rea's, and some other expensive buildings on the other, narrowed this still more; the offer of the large unbroken block of land to the east of Dorchester St., belonging to the Joseph estate, at a reasonable price, the existence of another block immediately west, covered almost entirely by second rate and old buildings, finally settled the matter and brought the choice of site to a focus.

A further consideration was the levels of the different streets to be crossed. Grade crossings of any of the main thoroughfares were not to be considered, either in the interest of the city or the railway, and it so happened that it was only on this line they could be well avoided. At the end of St. Monique St., for example, Lagachetiere is about 40 ft. above St. Antoine, and St. James about 5 ft. lower. This admits of the line coming out under the former and above the second with a sufficient clearance, and over the third with a liberal margin. St. Antoine rises south, Lagachetiere and St. James do not. So that



The Canadian Northern Railway Entrance to Montreal, showing Station Site between Mansfield and St. Monique Sts.

the dust and smoke and heat, had climbed up the slopes of the mountain to the very top and gone out to Lachine and Dorval, and had even pushed past the end of the mountain at Snowdon and Outremont; but the beautiful western slope towards the Back River remained undeveloped, because inaccessible without a long ride of 40 minutes from the business centre.

even the difference of a block would have made a great difference in this respect.

The above steps in the argument led then to the choice of route which may be briefly described as follows:—The line from Ottawa crosses the Riviere des Prairies, or Back River, near Ste. Dorothee, to the Island of Montreal and skirts along its east or right bank to Cartierville, where a large block of land has been secured for a divisional point and shops. It then goes on in the same direction to near Jacques Cartier Jct., where the freight line mentioned above leaves the tunnel line and proceeds to a junction with the C.N. Quebec Ry. line near the Montreal Locomotive Works at Longue Point. The tunnel line, of which the profile is shown herewith, deflects sharply to the right and ascends directly towards the centre of the mountain on a gradient of 40 ft. to the mile to a point about half a mile south from the C.P.R.'s Outremont yard, where the grade reverses its direction and carries the line under the tracks of the older road and into the heart of the old volcano. At this tunnel portal will be Northmount station, and it is probable that half a mile further on there will be a shaft and an elevator down to a subterranean substation somewhere near the St. Catherine's Road. From there on, the depth below the surface becomes very great, as much as 600 ft., but it may be considered commercially practicable in the future to sink a similar shaft from the

It will be seen from the foregoing that the company's plans, while bold and somewhat original, are by no means extravagant or fanciful. A subway has been talked about for years back, approximately along the line of St. Catherine St., to relieve the surface congestion and has now become a necessity. The scheme under discussion would, as far as its suburban traffic is concerned, be supplementary to this and is designed to pass under it. Provision will be made for the transfer of passengers from one to the other without their going out of doors at all, or climbing to street level.

The tunnel will be double tracked throughout and as a matter of course will be electrically operated and well lighted. Through the rock sections both tracks will run in the same tunnel. In the earth approaches it may be more convenient to put two separate tubes side by side, but this is unlikely, as the rock is known to be near the surface throughout.

The scheme in its entirety is expected not only to give the C.N.R. the most up-to-date terminal station in any Canadian city, but to form quite a factor in the fuller and more complete development of Montreal.

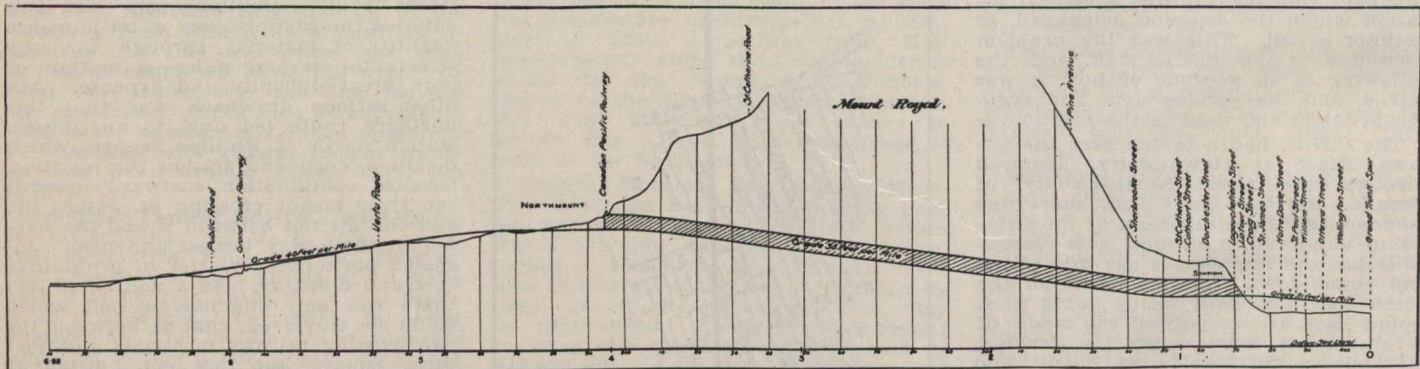
We are indebted to H. K. Wicksteed, B.A.Sc., M. Can. Soc. C.E., Chief Engineer of Surveys for Mackenzie, Mann and Co., for the information contained in the above and for the accompanying plan and profile.

Great Northern Railway Lines in Canada

Fort William-Port Arthur, Ont.—It was reported in Port Arthur, Ont., Jan. 4, that an English syndicate had acquired 900 acres of land, partly within the municipality of McIntyre, and that this had been done in the Great Northern Ry interest. Countenance is given to the report by the presence in the city of the engineers attached to the G.N.R. staff, and the fact that they have been prospecting in the neighborhood for a considerable time past, making surveys for lines converging on this property. It is stated that a line will be built to the International boundary, and find an outlet at Duluth, Minn., and that another line will be built to Winnipeg to connect there with the Midland Ry. of Manitoba. Beyond these reports nothing is known of the project.

Midland Ry. of Manitoba—Midland Great Northern Ry.—The G.N.R. operates its trains from the International boundary over the Canadian Northern Ry. from Emerson, and then on to its own line from near Oak Point into the new freight terminals on Isabella St. Winnipeg. The work at the terminals was expected to be fully completed by Jan. 20.

Wenatchee to International Boundary.—It is reported that an agreement has been reached with the Washington State authorities as to the right of way for the projected line from near Wenatchee northerly to Oroville, a station on one



Profile of Canadian Northern Ry. Tunnel Entrance to Montreal.

lookout station in the Mountain Park, which would allow of the abolition of the present unsightly inclined railway up the north face of the mountain. The grade again approaches the surface at Sherbrooke St., where it is some 80 ft. underground, and at St. Catherine St. about 50 ft.

Between St. Catherine and Lagauchetiere Streets on the west and east, and between St. Monique and Mansfield Streets on the north and south, will be the main station, with tracks depressed, as above mentioned, 50 ft. below street level. The station will be exactly similar in principle to the Pennsylvania Rd. Station in New York City. The line will emerge into daylight immediately after crossing Lagauchetiere St. and will then run on a high level above St. Antoine, St. James, Notre Dame St. and other streets, to near the Lachine canal basin. A freight yard will be provided for between Nazareth and Dalhousie Streets. Practically the whole of the property required for these purposes has already been acquired by the company. An elevated freight yard seems at first sight a very extravagant arrangement, but when one reflects that the amount of material to be disposed of from the east end of the tunnel and station ground will be sufficient to fill an area of 10 or 12 acres to a depth of 20 ft. the arrangement will be seen to be one of economy rather than the reverse. The company's plans, however, are not entirely settled in this respect.

DOMINION LEGISLATION.

A bill entitled "An act respecting the Canadian Northern Tunnel and Terminal Co., Ltd.," which has been introduced in the House of Commons, sets forth that the company is incorporated under The Companies Act and declares the undertaking to be a work for the general advantage of Canada. It authorizes the company to construct a tunnel for one or more railway tracks, from a point in Montreal, generally westerly under Mount Royal, with the necessary approaches, air shafts and other outlets, and of tubes and terminals and works incidental to its operation, also lines to connect the company's lines with those of the C.N. Ontario Ry., the C.N. Quebec Ry. and the Montreal Harbor Commissioners. Before constructing lines along any highway, or public place, the consent of the municipality interested must be given by bylaw. Securities not to exceed \$20,000,000 may be issued. The construction of the tunnel, or railway, shall be commenced within two years after the passing of the act.

The Minister of Railways for British Columbia has approved of the increase of the directors of the Canadian North Eastern Ry. from five to seven.

The Department of Railways and Canals received tenders to Jan. 29 for the supply of 650,000 tons of bituminous coal for the Intercolonial Ry., and 13,000 tons for the Prince Edward Island Ry.

of the sections of the Vancouver, Victoria and Eastern Ry. which bends into the state, and that construction will be started within six months.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—Tenders are being asked for the dredging at the proposed new piers on the company's Burrard Inlet water front, Vancouver. It is estimated that 150,000 cubic yards of material will have to be excavated. (Jan., pg. 27.)

Grant, Smith and Co. and McDonnell, Limited, has been incorporated under the Dominion Companies Act, with a capital of \$100,000 and office at Vancouver, B.C., to carry on a railway and general contracting business, and to take over as a going concern the business of Grant, Smith and Co. and McDonnell. The provisional directors are: Grant Smith, Angus McDonnell, J. Sims, Vancouver, B.C.; E. V. Hauser, W. E. Hauser, New York city.

Manitoba Public Service Commission.—Speaking at Winnipeg, Jan. 4, Premier Roblin stated that a measure will be laid before the Legislature at the forthcoming session to establish a public service commission for the province. It is intended to bring under the control of this commission steam and electric railways, gas and electric light companies, telegraphs, telephones, elevators, and any other public utility or public service that may be considered in the interests of the people of the province.

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.

Rates on Macaroni, Spaghetti and Vermicelli.

15635. Nov. 21, 1911.—Re application of the Transportation Bureau of Montreal Board of Trade, on behalf of Montreal Wholesale Grocers' Guild, under sec. 321 of the Railway Act, for an order reducing the classification of macaroni, spaghetti and vermicelli from 2nd to 4th class for less than carloads, and 4th to 5th class for carload shipments. It is ordered that a supplement to Canadian Classification 15 be issued, reducing the carload rating of macaroni, spaghetti, and vermicelli, from the 4th to the 5th class, to become effective not later than Jan. 15, 1912.

The Regina Rate Case.

15659. Dec. 19, 1911.—Re order 12520 dated Dec. 10, 1910, made upon application of city of Regina, Sask., directing Canadian Pacific and Canadian Northern Ry. Cos. to publish and file new freight tariffs, as provided in the order, to take effect not later than Apr. 1, 1911. A stay having been granted to permit the railway companies interested to appeal to the Supreme Court of Canada from the order, and the appeal having been dismissed by the Supreme Court, it is ordered that the effective date of the new freight tariffs required to be filed under the order be changed to Apr. 1, 1912.

Interswitching at Brandon.

15672. Dec. 22.—Re order 14606, Aug. 21, 1911, fixing, subject to provisions of order 14107, and general interswitching order 4988, July 8, 1908, the toll of the Brandon, Saskatchewan and Hudson's Bay Ry. for service of interswitching traffic transferred to it by the Canadian Pacific or the Canadian Northern Railways, for delivery to the C.N.R. or the C.P.R. respectively, at Brandon, Man.; and the application of the Brandon, Saskatchewan and Hudson's Bay Ry. to amend the order to provide for a charge covering certain empty movements where C.P.R. cars are being returned home by the C.N.R., and the C.N.R. cars are being returned home by the C.P.R. It is ordered that order 14606 be amended by adding after paragraph 4 the following paragraph:

4. (a) On empty cars transferred between the C.P.R. and the C.N.R., on which the Brandon, Saskatchewan and Hudson's Bay Ry. does not receive loaded revenue under the provisions of this order, the Brandon, Saskatchewan and Hudson's Bay Ry. toll shall not exceed \$2 a car; the toll to be collected from and paid by the C.P.R., or the C.N.R., or both, as may be mutually arranged by the said companies.

White Pass and Yukon Route Rates.

15719. Jan. 2.—Re application of British Yukon Ry., British Columbia Yukon Ry., and Pacific and Arctic Ry. and Navigation Co., for a rehearing, pursuant to the order of the Governor in Council, dated June 16, 1911, and of the Board's order of Jan. 18, 1911; and re application on behalf of Dawson Board of Trade, under sec. 63 of the Railway Act, and the rules governing the procedure before the Board, for an order directing commissions to issue to take evidence in a foreign country, in connection with the said application. It is ordered as follows:—Commissions may issue directed to W. M. Tisdale, attorney at law, Redlands, Cal., and J. P. Hartman, attorney at law, Seattle, Wash., named by and on behalf of the complainant for the examination, viva voce, of witnesses on behalf of the said complainant at Redlands and Seattle aforesaid, before the said commissioners. The respondent companies shall, within three days after the service of this order

upon their counsel, F. H. Chrysler, K.C., file with the Board the names of agents at Redlands and Seattle, who shall represent them and upon whom the commissioners herein appointed may serve notice of the time and place for the taking of evidence authorized under the commission. In the event of the failure of the respondent companies, through their counsel, to appoint such agents, or the failure of the agents to attend at the examination before the commissioners, upon notice, the said commissioners may proceed to execute their commissions as therein authorized. Upon the execution of the said commissions and the examination of the said witnesses and before Feb. 1, 1912, the said commissions and the depositions of the said witnesses and all proceedings taken upon the said commissions shall without delay, after the said commissions shall have been executed, be transmitted to the Secretary of the Board of Railway Commissioners for Canada, at Ottawa.

Rates on Hay.

15724. Nov. 21, 1911.—Re application of Montreal Board of Trade Transportation Bureau, on behalf of shippers of hay in Montreal, under sec. 323 of the Railway Act, for an order disallowing the increased rates on hay from Ontario and Quebec to eastern U.S. points, published by the Grand Trunk, Canadian Pacific, Canadian Northern Quebec, and Quebec, Montreal and Southern Railway Companies, to become effective Oct. 16, 1911,

A GENERAL PURCHASING AGENT'S VIEW.

Adolph Butze, who recently retired, after having been General Purchasing Agent of the Grand Trunk Railway for 16 years, writes:—

"I can assure you I will only be too glad to always have The Railway and Marine World to keep me posted as to what is going on in the way of railway news. I know of no paper to keep me better posted, and I assure you that I wish you every success and prosperity."

and reinstating the rates which were in effect before that date. It is ordered that the tariffs published and filed by the Grand Trunk, Canadian Pacific, Canadian Northern Ontario, Canadian Northern Quebec, Quebec, Montreal and Southern, Central Vermont, Ottawa and New York, Central Ontario, Thousand Island, and Lotbiniere and Megantic Railway Companies, and the New York Central and Hudson River and Rutland Railroad Companies, increasing the rates on hay and straw from Ontario and Quebec to eastern points, the effective date of which was (by order 15080, Oct. 12, 1911) postponed until Jan. 1, 1912, be disallowed.

General Inquiry into Western Freight Rates.

15754. Jan. 2.—Re rates for freight traffic upon railways operating west of Port Arthur. Whereas many general complaints and petitions have been made to the Board against existing freight rates charged by railway companies operating west of Lake Superior, and the Board had been delaying the consideration thereof until the final determination of the Regina rate case; and whereas the Supreme Court of Canada has dismissed the appeal of the Canadian Pacific and Canadian Northern Ry. Cos. from order 12520, Dec. 10, 1910, re application of city of Regina, requiring the discrimination in favor of points in Manitoba, and against points in Saskatchewan and Alberta, to be removed by reducing the class freight rates from Port Arthur and Fort William, and points east thereof, to the said points in

Saskatchewan and Alberta, and the said dismissal having left the Board free to undertake a wider investigation; and whereas the tolls of railway companies operating in British Columbia are already the subject of enquiry by the Board, upon the complaints of the Vancouver Board of Trade and the United Farmers of Alberta; and whereas the Board is empowered by the Act, upon its own motion, to hear and determine any matter or thing which, under the Act, it might enquire into, hear, and determine upon application or complaint; therefore it is declared to be advisable that a general enquiry be at once undertaken by the Board into all freight tolls in effect in Manitoba, Saskatchewan, and Alberta, and in Ontario, west of and including Port Arthur, with the view that, in the event of its being determined that the tolls, or any of them, are excessive, they shall be reduced as the Board may determine. The Board will sit at Ottawa on Feb. 13, to consider the procedure upon the enquiry and give directions with reference thereto.

Car Ferry and Standard Gauge Railway for Prince Edward Island.

The Prince Edward Island Ry. is 3½ ft. gauge, and is owned and operated by the Dominion Government. Connection with the mainland is maintained by Dominion Government icebreaking steamships during the winter, and by privately owned steamships, subsidized by the Government during the open season of navigation. It has always been claimed by the province that one of the terms upon which it entered Confederation was that adequate provision should be made by the Dominion for continuous connection with the mainland, and there has been a constant agitation going on for improved facilities. About 20 years ago a project was under consideration for the construction of a tunnel, and from 1896 onward the project was discussed in and out of parliament. The late government declared itself in favor of the building of a tunnel, but took no active steps toward carrying out the project. Some years ago an alternative project for the operation of a car ferry was put forward, but nothing was done to further it. This company proposed to transfer standard gauge cars to the Island for loading and unloading, thus saving at least one handling of the freight.

An Ottawa dispatch, Dec. 28, stated that an announcement had been made by the Premier that the Government had determined to undertake the establishment of a car ferry service between the Island and the mainland, and that the proposal of the Government would involve the change of the narrow gauge on the island railway to standard. We have since received confirmation of this from the Prime Minister.

At a meeting held in Charlottetown, Jan. 5, a resolution was passed endorsing the project and the standardizing of the gauge of the railway on the Island. W. B. Mackenzie, Chief Engineer of Government railways, who spoke, said that a car ferry was feasible, but it would require to be more powerful than any now in existence. The points between which the ferry would operate were being considered. As to the suggested tunnel its cost would be enormous; the total length, including land tunnels, would be about 12 miles, and at the point where the tunnel would come under the water of the strait there would be 150 ft. of water between the top of the tunnel and the surface.

The main estimates laid before the House of Commons, Jan. 11, contain an appropriation of \$400,000 to provide a car ferry, and make the necessary alterations incidental thereto, including change from narrow to standard gauge.

Canadian Pacific Railway Construction, Betterments, Etc.

Megantic, Que.—Press reports state that engineers are endeavoring to locate a new divisional point nearer the International boundary than Megantic, Que., and that Lowelltown will probably be selected. In a recent interview D. McNicoll is reported as having stated that the divisional headquarters had been moved from Farnham to Sherbrooke, Que., with advantage, and that the question of the removal of the terminals at Megantic to a more suitable centre was under consideration.

St. Martins Jct.-Ste. Therese Grade Revision.—The Board of Railway Commissioners has approved plans for the grade revision between St. Martins Jct. and Ste. Therese, Que., and the carrying of a double track across six highways between the two points.

Ontario Division, Block Signal.—We are officially advised that it is intended to instal a block signal system on the Ontario division between West Toronto and Bolton, Ont., on the Owen Sound-Sudbury line, and on the Toronto-Windsor line between Islington and Streetsville Jct., Ont. It is expected that the work will be started at an early date.

Campbellford, Lake Ontario and Western Ry.—The plans for this line, which will give an alternative route into Toronto, were filed Jan. 10. The new line starts at Glen Tay, on the present Montreal-Toronto line, to which point the second track has been completed from Montreal, and proceeding southwesterly crosses the Kingston and Pembroke Ry. at Parham, and continues southwesterly to Belleville, thence keeping along the shore line south of the Canadian Northern Ontario Ry.'s Toronto-Ottawa line, passes through Brighton, Colborne and Grafton, and joins up with the C., L.O. and W. Ry. location, which was previously approved by the Government. This shows a route along the shore line passing through or near Cobourg, Port Hope, Newtonville, Newcastle, Bowmanville, Oshawa, and thence keeping midway between the G.T.R. and the Canadian Northern Ontario Ry. to a junction with the present line near Leaside Jct.

Georgian Bay and Seaboard Ry.—This recently completed line from Port McNicoll, Georgian Bay, to Bethany Jct., on the Montreal-Toronto line, was passed for traffic by the Dominion Government's inspecting engineers at the end of 1911. The section from the Bay to Coldwater Jct., about 14 miles, has been operated for some time, and a through service is now being operated over the entire line of 88 miles. A description of the terminal facilities at Port McNicoll was given in our last issue.

South Ontario Pacific Ry.—There have been deposited with the Secretary of State at Ottawa a duplicate of a mortgage securing an issue of bonds for the building of this line from Guelph Jct. to Hamilton, Ont., 16.3 miles, and a duplicate of the lease of the same to the C.P.R. for 999 years from Jan. 1.

Collingwood Southern Ry.—Press reports state that C.P.R. engineers are making surveys out of Collingwood for a line to Baxter, on its Toronto-Sudbury branch, and from Collingwood to Utopia, also on the Toronto-Sudbury line.

Manitoba Division Construction.—The new lines under construction in the Manitoba Division include an extension of the branch from Lauder, now ending at Tilston westerly to the provincial boundary, 3.2 miles; an extension of the branch from Virden, now ending at Two Creeks, to McAuley, on the Kirkella-Lanigan line, 23 miles, and a line from Lauder, southeasterly direction to Boissevain, 36 miles.

Saskatchewan Division Construction.

—The new track exclusive of second track and sidings laid on the Saskatchewan Division during 1911 totalled 257.4 miles, and was distributed as follows:—Ageura to Viceroy, on the extension westerly from Weyburn, 23.8 miles; Silton southerly to Valeport on the line south from Bulyea, 7 miles; Imperial southerly to Valeport on the Regina-Colonsay line, 59 miles; Moose Jaw Jct. southerly to Dunkirk, 26.8 miles; from near Anglia to Conquest, 53 miles, on the Moose Jaw-Lacombe-Kerrobot line; from Wilkie Jct. to Cutknife, 27.8; from Swift Current Jct. southeast to Neville, 27 miles; Swift Current northwest to Cabri, 27.8 miles. Steel was laid on 17.3 miles of second track, and there are 5.9 miles under construction between Pasqua and Caron. The extensions under construction are as follows:—Provincial boundary near Tilston westerly to Alida, 21 miles, on the extension from Lauder; an extension of 2.2 miles on the extension of the line westerly from Weyburn; Estevan to Neptune, on the Estevan-Forward line, 55 miles; from Dunkirk to Expanse, on the extension southwesterly, 8.2 miles; from Outlook to Conquest on the Moose Jaw-Lacombe line, 8.0 miles; from Kerrobot to near Tramping Lake, 25 miles; from Wilkie southeast to Kelfield, 35 miles; from Cutknife northerly on the branch from Wilkie, 4.2 miles; from Neville to Vanguard on the branch from Swift Current southeasterly, 18.0 miles, and an extension of two miles on the branch from Swift Current northwesterly.

Lauder Extensions.—The Board of Railway Commissioners has approved revised location plans of the branch from Lauder, Man., between mileage 32.28 and 54.63 in Sask. This line will link up with the Stoughton-Weyburn line at Griffin, Sask.

Weyburn to Lethbridge Branch.—The Board of Railway Commissioners has authorized the opening for traffic of the extension of this line from Ogema, mileage 52.2, to Viceroy, mileage 75.85, Sask.

Moose Jaw to Pasqua, Sask., Second Track.—The Board of Railway Commissioners has authorized the opening for traffic of the second track between Moose Jaw and Pasqua, Sask., mileage 127.68 to 134.43.

Swift Current to Brooks.—The Board of Railway Commissioners has approved of revised location plans of this branch to mileage 35.32, and has authorized the opening of the branch for traffic from mileage 0 to 33.

Wilkie-Anglia Branch.—The Board of Railway Commissioners has approved of location plans for this branch from mileage 24.90 to 40.66, and has authorized the crossing and diversion of 14 highways between the same mileages, in Saskatchewan.

Manitoba Lake Branch.—The Board of Railway Commissioners has authorized the opening for traffic of the Manitou Lake branch from Wilkie to Cutknife, Sask., mileage 0 to 29.8.

Alberta Division Construction.—The company laid 96.3 miles of new track, exclusive of second track and sidings, during 1911, on lines in Alberta, distributed as follows:—Lethbridge to Aldersyde, 56.8 miles; Castor to Coronation, on the extension of the Lacombe branch easterly; and Nightingale to Standard, 17.5 miles, on the line from Irricana easterly. The lines at present under construction are the extension of the Lacombe branch easterly from Coronation to Monitor, 38 miles, and from Bassano to Irricana, 36 miles.

Medicine Hat, Alta.—Press reports state that work was started Jan. 4 on the enlargement of the bridge across the river at Medicine Hat, Alta., so as

to enable a second track to be laid over it.

Calgary Shops.—The bylaw confirming the agreement between the Calgary city council and the C.P.R. with respect to the establishment of shops there was carried by 535 votes to 21, Jan. 9. Under the agreement the company agrees to build car shops at a cost of not less than \$2,000,000, and to maintain the same for 21 years, and to convey to the city not less than five nor more than 10 acres as a site for a sewerage disposal plant. The city will release the company from the necessity of maintaining the present car shops, and agrees to have the city boundaries extended so as to take in the lands on which the new shops are to be built, to open up certain highways, and do other works, the most important of which is the extension of the city electric railway to the shops. A second bylaw providing for the extension of the electric railway, the sewage system and the water system to the site of the shops was carried on the same day by 537 votes to 18. A full description of the new shops, with ground plan, is given on another page of this issue.

Strathcona-Edmonton Bridge.—F. W. Peters, Assistant to the Vice President, was in Strathcona, Alta., recently to discuss with the city council the question of the approaches to the high level bridge now under construction over the Saskatchewan River. The principal point in connection with the matter arises out of the high bank necessary. The city desires that the C.P.R. should assume responsibility for the maintenance of the roadway for a number of years in case the bank should slip.

British Columbia Division Construction.—The new track, exclusive of second track and sidings, laid on the British Columbia Division during 1911, totalled 35 miles, 10 miles being on the Waldo branch, and the remainder on the Kootenay Central Ry. between Colvalli and Fort Steele, B.C. The lines under construction at the end of the year were the Kootenay Central Ry. from Golden south to Spillawachen Landing, 42.0 miles, and Fort Steel to Skookumchuck Creek, 21 miles; a branch from Three Forks to McGuigan, 3.6 miles, and a spur line of 3.2 miles at Port Moody.

Rossland Branch.—We are officially advised that the company has under consideration plans for the electrification of its Rossland branch. Recent press reports state that the section of the line to be electrified will be from Castlegar to Rossland.

Port Moody to North Vancouver.—A route plan has been filed with the Department of Railways at Ottawa, for a line from Port Moody, along the north side of Burrard Inlet, to North Vancouver. The plan shows a line starting at mileage 115 on the main line, Cascade subdivision, and terminating at the shore line at D.L. 555. The North Vancouver council, Jan. 9, asked the Minister of Railways not to approve of the plans until the council could be heard on the matter. (Jan., pg. 28.)

The principal new work to be done on the Western lines this year, for which over \$20,000,000 has been appropriated, is dealt with in a separate article on another page of this issue.

The C.P.R. has offered to supply a special train to the Ontario Department of Agriculture to demonstrate and illustrate various schemes for better farming. The train will consist of three baggage cars for material, some cars for lectures, a dining car and sleeping car, for the staff. It will be known as the Better Farming Special, and is expected to start on its itinerary through the province towards the end of February.

The C.P.R. Appropriates \$20,000,000 for Western Lines.

George Bury, Vice President and General Manager, Western Lines, Canadian Pacific Ry., spent about a week in Montreal, in the middle of January, consulting with the President, Sir Thos. G. Shaughnessy as to the work to be done west of Lake Superior during the current year. As a result, over \$20,000,000 has been appropriated for betterments and new construction, in addition to \$2,500,000 previously appropriated for the Calgary shops, and to a large amount which will be spent in additions to the hotel system.

The following branch line construction will be undertaken:—

The branch from Weyburn, Sask., to Lethbridge, Alta., already built to Viceroy, Sask., about 75 miles from Weyburn, will be extended west for about 100 miles, and a start will probably be made on this line in Alberta, and at least 25 miles built there. This line, when completed between Viceroy and Lethbridge, will give a through route from Winnipeg via the Crows Nest Pass, to Nelson, etc., entirely independent of the main transcontinental line.

The branch from Swift Current northwesterly, on which track has been laid for 33 miles to Cabri, will be extended for about 85 miles. It is the intention to connect this branch with the main transcontinental line again at Bassano, or in that vicinity, which will give an alternative route with the present main line via Medicine Hat. The new line will be only three or four miles shorter than the main line route, but it is being built to a 0.4 gradient, and will therefore be better adapted for freight traffic.

A branch from the main transcontinental line, some 50 miles west of Medicine Hat, will be built for between 30 and 40 miles southwesterly into the southwest Alberta irrigated land section.

The second tracking of the main transcontinental line will be gone on with at the most congested points. Already there is a second track between Port Arthur, Ont., and Brandon, Man., 555.8 miles, and between Pasqua and Caron, Sask., 23 miles. This year second track will be laid between Regina and Pasqua, 34.9 miles, and between Caron and Chaplin, Sask., 37.8 miles, which, with the second track already built between Pasqua and Caron, will give a continuous second track from Regina to Chaplin, 95.7 miles. From Regina east to Brandon and Winnipeg, in addition to the main transcontinental line, there is the alternative route via Stoughton, Reston and Souris.

A second track will be built for about 5½ miles from Maharg, the site of the new shops, 4.5 miles east of Calgary station, to about one mile west of Calgary station. This will provide for the heavy traffic near Calgary, especially between that place and the new shops site.

A second track will also be built between Hammond, B.C., and Vancouver, 24.1 miles.

One of the most important of the year's works will be the relaying of nearly 500 miles, with 85 lb. steel rails, to replace the present lighter weights. Of this mileage over 300 miles will be laid on the line between Portage la Prairie, Man., and Edmonton, Alta., via Saskatoon, and the balance on various other sections.

A press report from Winnipeg to the effect that the company was preparing to change its main line route by abandoning the Kicking Horse pass in favor of the Crows Nest pass, is not believed to have any foundation, and there appears to be little doubt that the whole of the present main transcontinental line from Port Arthur to Vancouver will be gradually completed as a double track

route. The line between Macleod, Alta., and Crows Nest is, however, to be considerably improved, by reducing the present 1% gradient to 0.6 west bound and 0.4 eastbound.

At Fort William, coal docks and a coal handling plant, an illustrated description of which appears on another page, will be built on Island no. 1, at a cost of over \$1,000,000. A freight shed with 25,000 tons capacity will also be built there, as well as a dock to handle steel rails and an addition of 500,000 bush. to the elevator capacity.

The great increase of traffic and the consequent congestion of the very large yards at Winnipeg has rendered it imperative to establish larger yards, where much more room can be obtained. Two schemes are under consideration, but it appears probable that a cut-off will be built on the main transcontinental line, from East Selkirk, on the Red River, 20.8 miles below Winnipeg, to Reaburn, 35.3 miles west of Winnipeg, necessitating a bridge over the Red River. Should this scheme be finally decided on the yards will probably be established at or near Reaburn, so that through freight trains would not pass through Winnipeg. Similar congestion at Vancouver will be got over by establishing a large yard at Coquitlam, B.C.

At Brandon, Broadview, Man., Regina and Outlook, Sask., the yard capacity will be doubled. At Moose Jaw and Swift Current, Sask., the yard capacity will be increased a third. At Alyth, Alta., 2.3 miles east of Calgary, there will be an addition of a fourth to the capacity of the new yards. Extensive improvements and extensions will be made to the freight sheds, team tracks, etc., at Saskatoon, Sask.

Extensive improvements are planned for Vancouver, including additions to freight sheds, yards, etc., involving large expenditures, but the plans, including those for a new passenger station, are not yet completed.

A handsome station will be built at Edmonton, Alta., and about 75 stations at other points.

Block signalling is to be installed between Fort William and Winnipeg, and also in the Calgary district.

Air Brake Equipment for all Trains.

The Board of Railway Commissioners will consider at Ottawa, on Feb. 6, the amending of order 8145, Sept. 14, 1909, as follows:—

"Every such railway company shall not run any train which is not equipped with air brake connection between the conductor's van, or van on rear end of train, and the locomotive engineer. Where cars are handled in trains which are not equipped with air brakes but fitted with straight air pipe, no two such cars shall be placed together in any part of the train. Every such railway company shall be liable to a penalty of not exceeding \$25 for every failure to comply with the foregoing regulations within the time for their coming into force and thereafter."

Hon. F. M. Young, of Manitoba, has been elected Chairman of the Senate Committee on Railways, Telegraphs and Harbors.

C. Morrow, formerly agent, Quebec Central Ry. at Thetford Mines, who was recently charged with misappropriation of funds, and discharged on account of irregularities in the preliminary hearing, was again before the King's Bench at Quebec, Jan. 11, on the same charge. The matter was adjourned for a month for consideration of a motion to dismiss the case.

Canadian Northern Ry. Coal Dock at Port Arthur.

The Canadian Northern Coal and Ore Dock Co., Ltd., a subsidiary of the Canadian Northern Ry. has under construction an extension of its coal dock at Port Arthur, Ont. Some work was done during 1911, and the new work when completed will double its capacity. The cost of the original dock was about \$1,000,000, and the addition will cost about \$500,000. There will be three unloading towers, and a most complete coal handling plant and storage sheds, the machinery being operated by a steam plant of 1,000 h.p. The plant will be capable of unloading a 10,000-ton steamer in 18 hours, and can at the same time load direct from the vessel 225 cars of coal in 10 hours, or pick up from the pile 175 cars of coal in the same time. During the last season the plant handled 957,000 tons of coal of all kinds.

The dock when completed will have a frontage of 616 ft. to the harbor, and the unloading tracks, with the three towers, will extend along this for about 450 ft. The area devoted to the plant extends for a depth of 2.525 ft. from the harbor front. Running through the centre are railway tracks on which the coal is loaded from the various coal pockets which are fed by the conveyors running from the unloading plant. Beyond these coal pockets are three storage sheds, no. 1 having an area of 288 by 244 ft., and the other two being 276 by 205 ft. each. These are also served by the conveyor system, and have their separate coal pockets for loading the coal into cars brought in on the spur railway tracks. At the inshore line there is located the office, and just outside on the spur line are the track scales. Shed no. 3, with its coal pockets and tracks, is outside, but adjoining the area already mentioned, so that at the inshore line the plant covers an area of about 1,000 by 300 ft.

The actual work of the extension will consist of improvements to the south side of the dock, adding bituminous coal storage to the present dock of 250 ft. wide by approximately 2,000 ft. long, removing the old anthracite coal shed and building a 60,000 anthracite shed, adding 144 ft. additional loading pockets for the bituminous coal, also adding a double pick up storage bridge on the south side, together with rearranging the trackage and scales. The dock end improvements will consist of putting in a revetment wall along the south side and across the outer edge of the dock some 2,600 ft. of heavy tongue and groove sheet piling. The Barnett-McQueen Co. has a contract to put in the foundation for the dock; the company owning the dock will do the filling work itself, either by ballast trains or by hydraulic dredging, and the equipment will be supplied by the firms manufacturing it.

St. John's Ambulance Association on the Government Railways.—A centre of the St. John's Ambulance Association has been formed for the Dominion Government Railways, the patrons being the Minister and Deputy Minister of Railways; the President and Vice Presidents, being the members of Government Railways Managing Board, with W. C. Paver, Secretary, Insurance and Provident Society, as Secretary, and the following as an executive committee: G. R. Joughins, Superintendent Motive Power; T. C. Burpee, Engineer of Maintenance; J. T. Hallisey, Superintendent, Truro, N.S.; Y. C. Campbell, Superintendent, New Glasgow, N.S.; E. Price, Superintendent, Campbellton, N.B.; and G. A. Sharp, Superintendent, P.E.I. Ry., Charlottetown.

S. P. Porter, Deputy Minister of Railways and Telephones for Saskatchewan, has resigned.

Canadian Northern Railway Construction, Betterments, Etc.

Canadian Northern Quebec Ry.—We are officially advised that the projected line from St. Jerome to St. Eustache, Que., is an old project for which a trial line was run some years ago, but which it was not deemed advisable to build until the Montreal approaches were completed. The building of this piece of line will give a more direct connection between Montreal and the old Great Northern Ry. than at present exists. It is also expected that a cut off between St. Stanislas and St. Justin will be located during the winter. By this it is hoped to cut out some six or eight miles of the distance between Montreal and Quebec, and to eliminate heavy curves on the original Great Northern Ry. and the Laurentide Ry., bringing the entire line to a 0.4 and 0.5 standard gradient, as between Quebec and Port Arthur. Another object of the work is to place Shawinigan Falls on the main line for passenger traffic, instead of on a branch. A trial line was run for this piece of work during 1910-11 by A. W. Whitney, and the present surveys are being made by Jno. Congdon, under the direction of H. K. Wicksteed, M. Can. Soc. C.E., Chief Engineer of Surveys.

The development of the company's plans in the vicinity of Montreal are dealt with separately on another page.

Canadian Northern Ontario Ry.—The Board of Railway Commissioners has authorized the company to use for construction purposes only, pending the completion of an interlocking plant, a crossing of the C.P.R. at Chaudiere Jct., Ottawa.

Press reports from Ottawa states that G. H. Shaw, General Traffic Manager, is negotiating with business interests in the city regarding the building of a spur line to serve the industrial concerns west of the C.P.R. tracks near Carling Ave.

The Board of Railway Commissioners has approved of revised location plans for the line through Loughborough tp., authorized the building of a branch line from Oshawa station to Oshawa town, to connect there with the projected Toronto Eastern Ry., 3.95 miles, and also authorized the building of a spur line by the G.T.R. for joint use with the C.N.O. Ry. on the Don Esplanade, Toronto.

The plans for the entrance of the company's line from Toronto into Hamilton, were expected to be filed Jan. 20. It is reported that the entire right of way has been acquired, and that over 300 houses and other buildings will have to be taken down or moved. Local reports state that the plans will give rise to considerable discussion before they are approved by the city council.

The construction of the Ottawa-Pembroke section of the line to Port Arthur, the contract for which has been let to J. P. Mullarkey, covers the building of two large bridges. That above Chats Fall, on the Ottawa River, will consist of 20 spans, while that at Portage du Fort will be somewhat smaller. The Board of Railway Commissioners has approved of the revised location of the line between mileage 162 to 176 in this section.

The Board of Railway Commissioners has also approved of revised location plans for the line between mileage 325.23 and 343.55 from Montreal, which carries the line to a point between the C.P.R. and the G.T.R. lines at Nipissing Jct., and for the location of the line between mileage 346.37 and 366 from Montreal, and between Capreol Jct., mileage 0 and 71.81. These mileages come within the contract between Ouatin and Pembroke, which Angus Sinclair has. Ouatin is at mileage 276 on the line from Toronto northerly via Gowganda Jct., and the work is to be

pushed easterly from there with a view of getting the line into North Bay by the end of the present year, and having it completed through to Pembroke, to connect up with the J. P. Mullarkey contract by the end of 1913. Sub-contracts are reported to have been let for the first hundred miles of the work, and work is reported to have been started at North Bay, both easterly and westerly.

The Board of Railway Commissioners has approved of revised location plans through unsurveyed territory in Algoma between mileage 148 and 166; between 209 and 225.42; between 287 and 327. and between 497.16 and 498, all from Sudbury Jct.

Canadian Northern Ry.—Press reports state that some negotiations are in progress which will result in the building of lines which will provide a connection between the terminus of the C.N.R. branch line at Gunflint Narrows on the International boundary, and Duluth, thus giving a shorter and more direct connection between Port Arthur and Duluth than is now afforded.

The completed report of the construction department for 1911, shows that 446.10 miles of track was laid on lines in Manitoba, Saskatchewan and Alberta, and that 369.09 miles of grading was completed within the same provinces. A considerable mileage of grading was carried over from 1910, and of the grading done in 1911, track will not be laid on considerable mileage until the summer. Grading was done on 11.5 miles of what is known as the Winnipeg and Northern Ry. branch, and on the Shellmouth branch track was laid from Hampton, Man., northerly for 12.96 miles, and 12.2 miles of grading have been completed. Work was done on the following lines in Saskatchewan:—Track laid from Grosse Isle northerly for 26.37 miles on the Grosse Isle branch; on the Maryfield branch 0.31 mile of track was graded and 27.3 miles of track laid from Ceylon, westerly; on the Swift Current branch 31 miles of grading were completed; grading was completed on the Jackfish branch on 19 miles, and track was laid from Walta northerly for 17.41 miles; grading was done on 9.12 miles of the branch from Denholm easterly; track was laid from Shellbrook westerly for 37 miles on the Prince Albert-Battleford branch; on the Thunderhill branch track was laid from Pelly westerly for 34.26 miles; from Delisle southerly 46 miles of track were laid on the Delisle extension, and 1.37 miles of grading done, while on the Moose Jaw branch track was laid from Radville northerly for 82 miles, and 25.16 miles of grading was done. In Alberta, grading was done for 0.28 of a mile on the Vegreville-Calgary branch, and track was laid southerly from Red Deer River for 22.3 miles; grading for 41 miles was completed on the Strathcona-Camrose branch line; on the Brazeau branch track was laid for 65 miles from Stewartyn westerly, and 62.93 miles of track laid; on the main line, called the Canadian Northern Alberta Ry., 104.85 miles of grading was completed, and 20 miles of track laid from St. Albert westerly; on the Morinville branch, track was laid for 55.5 miles from Morinville northerly, and 32.67 miles of track laid; while on the Peace River branch, 17 miles of grading was completed.

Duluth, Winnipeg and Pacific Ry.—We are advised that during 1911 track was laid on 50 miles between West Duluth and Paleface River, Minn.; and that an extension of two miles from West Duluth to the water front at Duluth is under construction. The contractors are Foley, Welch and Stewart, St. Paul, Minn. The completion of this line will give the Canadian Northern Ry. a direct line into Duluth from Winnipeg and Port Arthur via Fort Frances, Ont.

Canadian Northern Pacific Ry.—It was reported in Vancouver Dec. 31, that there were 5,400 men at work on the section of the line under construction between Port Mann and Kamloops, B.C. Representatives of Twohy Bros., who have a sub-contract on the line from Kamloops easterly, have arranged for wharfage accommodation at Kamloops, B.C., for getting in supplies for their work on the line near Louis Creek. In order to get in a steam shovel on the work they had to move it a couple of miles from near Ashcroft, and build a bridge across the North Thompson to get it on the job. At the Tete Jaune Cache end of the line the contractors have got in large quantities of supplies and materials for the building of two steamboats for use on the river. Certificates have been issued by the Minister of Railways for British Columbia, approving of plans for level crossing and diversion of wagon road at Spences Bridge, and for the diversion of wagon road at Ashcroft Bridge; and for a connection with the New Westminster Southern Ry. near Port Kells, 8.6 miles from New Westminster bridge.

Vancouver Island.—The Minister of Railways for British Columbia has approved plans for overhead bridges at Burnside Road, mileage 5.2, from Victoria; Atkins road, mileage 6.0 from Victoria, and for a number of level crossings between mileage 5.2 and 23.6 from Victoria. Work has been started by Moore and Pethick on the 40 mile section of the line extending beyond the summit at the west end of the Esquimalt and Nanaimo Ry.'s Cowichan Lake line.

Canadian North Eastern Ry.—The Minister of Railways for British Columbia has authorized the operation of the railway from the wharf at Stewart to Glacier Creek station, five miles. While the certificate is dated July 21, 1911, it was not made public until Dec. 21.

Eastern Canadian Passenger Association.

At the annual meeting in Montreal, Jan. 4, officers and standing committees for the current year were elected as follows:

Chairman, A. J. Parr, G.F. & P.A., Temiskaming and Northern Ontario Ry. Executive Committee, W. Stitt, G.P.A., Eastern Lines, C.P.R.; T. Henry, T.M., Richelieu and Ontario Navigation Co.; H. G. Elliott, G.P.A., Grand Trunk Ry.

Rules Committee, W. Stitt, H. G. Elliott, G. Tombs, G.F. & P.A., Eastern Lines, Canadian Northern Ry., J. W. Hanley, G.P.A., Central Vermont Ry., C. Hartigan, G.P.A., Rutland Rd., F. F. Backus, G.F. & P.A., Toronto, Hamilton and Buffalo Ry., W. H. Underwood, A.G.P.A., Michigan Central Rd., J. M. Lyons, G.P.A., Intercolonial Ry., R. L. Fairbairn, A.G.P.A., Eastern Lines, Canadian Northern Ry.

Secretary, G. H. Webster.

Immigrant Traffic for Western Canada.—The Trans-Atlantic lines for many years past have been carrying immigrants through United States ports to Western Canada exclusively via Port Arthur, for example, from New York over the New York Central Rd. to Montreal or Prescott, thence by C.P.R. via Port Arthur to Winnipeg, thence to destinations beyond Winnipeg. The Grand Trunk Ry., in view of a new immigrant tariff about to be issued, desired to secure a portion of this traffic by the Lehigh Valley Rd. from New York to Niagara Falls, thence by G.T.R. to Chicago and connecting lines to Winnipeg, thence beyond by G.T. Pacific Ry. on exactly the same basis of fares as apply via Port Arthur. After considerable negotiations this new representation via Chicago to G.T.P.R. stations has been conceded.

THE Railway and Marine World

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TORONTO, CANADA, FEBRUARY, 1912.

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Index to The Railway and Marine World for 1911.

At the commencement of this issue
will be found a very complete index to
The Railway and Marine World for
1911, which can easily be detached for
binding with the issues of that year.

The index, which is divided into four
sections, Steam Railway and General
Matter, Electric Railway Department,
Marine Department, and Personal, cov-
ers eight pages of closely printed mat-
ter, and will prove invaluable for refer-
ence purposes.

An examination of it will show the
great range of matter published and
subjects dealt with, and how thoroughly
the whole transportation field through-
out Canada is covered.

All departments of steam and electric
and marine transportation interests are
dealt with, our paper combining techni-
cal articles for the mechanical and en-
gineering departments, practical matter
for the maintenance of way, operating
and traffic and other departments, and
a great volume of news of interest and
value to anyone engaged in any branch
of transportation business.

Accuracy is our chief aim; no effort
is spared to secure it, and, as a result,
we know that our matter is relied on
and appreciated. As a result our sub-
scription list shows a most satisfactory
increase during the whole of the past
year. The increased volume of adver-
tising speaks for itself.

Transportation Conventions in 1912.

Mar. 12-15.—American Boiler Manu-
facturers' Association, New Orleans, La.

Mar. 17.—American Association of
Railroad Superintendents, Chicago, Ill.

Mar. 19-21.—American Railway En-
gineering Association, Chicago, Ill.

Mar. 28.—Eastern Association of Car
Service Officers, Boston, Mass.

May 12.—Railway Industrial Associa-
tion, Kansas City, Mo.

May 14-17.—Master Boller Makers'
Association, Pittsburgh, Pa.

May 15.—Freight Claim Association,
Buffalo, N.Y.

May 15.—American Association of
General Baggage Agents, New York
City.

May 15.—American Railway Associa-
tion, New York City.

May 20-22.—Railway Storekeepers'
Association, Buffalo, N.Y.

May 22.—Association of Railway Claim
Agents, Los Angeles, Cal.

May 22-25.—International Railway
Fuel Association, Chicago, Ill.

June 12-14.—Master Car Builders'
Association, Atlantic City, N.J.

June 16-18.—Wood Preservers' Asso-
ciation, Chicago, Ill.

June 17-19.—American Railway Mas-
ter Mechanics' Association, Atlantic
City, N.J.

June 18.—Train Dispatchers' Associa-
tion of America, Louisville, Ky.

June 18-21.—American Association of
Freight Agents, Chicago, Ill.

June 24.—Association of Railway Tele-
graph Superintendents, New York City.

June 26.—Association of American
Railway Accounting Officers, Quebec,
Que.

Aug.—Travelling Engineers Associa-
tion.

Sept. 10-13.—Master Car and Loco-
motive Painters' Association of United
States and Canada.

Sept. 10-12.—Roadmasters' and Main-
tenance of Way Association, Buffalo,
N.Y.

Oct. 15-17.—American Railway Bridge
and Building Association, Baltimore,
Md.

Oct. 17-19.—American Association of
Dining Car Superintendents, Denver,
Col.

Nov. 6-10.—Association of Railway
Electrical Engineers, Chicago, Ill.

Nov. 15.—American Railway Associa-
tion, Chicago, Ill.

Dec. 12-13.—Association of Transpor-
tation and Car Accounting Officers,
Louisville, Ky.

Passenger Rate Meetings at Detroit.

The annual meetings of the Niagara
Frontier Summer Rate Committee, the
Great Lakes and St. Lawrence River
Rate Committee and the International
Water Lines, Passenger Association were
held at Detroit, Mich., in January. The
rate clerks, as usual, met on Jan. 17 and
18 and revised the rates to be submitted
to the general meetings.

The International Water Lines Pas-
senger Association met Jan. 18, when
the retiring president, T. Henry, Traffic
Manager, Richelieu and Ontario Naviga-
tion Co., was presented with a gavel, the
presentation being made by B. W.
Folger, General Manager, Niagara Navi-
gation Co., on behalf of the donors. A.
A. Heard, General Passenger Agent,
Champlain Transportation Co., Albany,
N.Y., was elected President, and M. R.
Nelson, Northern Steamship Co., New
York, was re-elected Secretary.

The Niagara Frontier Summer Rate
Committee met Jan. 19, when the retir-
ing chairman, D. N. Bell, A.G. P.A.
Pennsylvania Rd., was presented with a
gavel. L. W. Landman, G.P.A. Michigan
Central Rd., Chicago, was elected chair-
man. Jas. Morrison, chief rate clerk,
C.P.R., Montreal, was re-elected Secre-
tary, the position being made permanent.
The fares as compiled by the rate rep-
resentatives were approved. Application
for membership from the Merchants
Montreal Line and from the Niagara, St.
Catharines and Toronto Ry. and Naviga-
tion Co. were refused.

The Great Lakes and St. Lawrence
River Rate Committee also met Jan. 19.
W. F. Wasley, Manager, Muskoka Lakes
Navigation and Hotel Co., being elected
Chairman. The representatives of the
various steamboat lines announced their
fares for 1912, which the Secretary was
instructed to embody in the proceed-
ings. The Port Huron and Duluth
Steamship Co. and the Chicago and
Duluth Transportation Co. were admitted
to membership.

During the afternoon of Jan. 19 a large
number of those attending the meetings
were the guests of the Michigan Central
Rd. on a special train, and visited the
Detroit-Windsor tunnel and the ter-
minals on both sides of the river.

The meetings in Jan., 1913, will be
held at Ottawa, Ont.

C.P.R. Officials Dinner.—About 150
C.P.R. officials attended the "first family
gathering" at the Place Viger Hotel,
Montreal, Dec. 30, under the chairman-
ship of G. H. Ham, of the headquarters
staff. The President's health was re-
sponded to by his son, A. T. Shaughnessy,
who has since left the company's service
to go into a financial business. Other
speakers were C. E. E. Ussher, V. G. R.
Vickers, H. H. Vaughan, F. P. Gutelius,
Capt. Walsh, M. McDuff, F. R. Perry,
Boston; J. A. Cantlie, J. J. Corbett, W.
Stitt, H. E. Suckling, J. Kent and W.
J. Camp. M. J. Power, the President's
Secretary, gave a very amusing stump
speech. There was a capital musical
programme, and also moving pictures,
showing a trip over the system from
Liverpool to Hong Kong.

The Minister of Railways for British
Columbia has authorized N. McL. Cur-
ran to issue tariffs of tolls for the Cana-
dian North Eastern Ry., and has approv-
ed passenger and freight tariffs prepar-
ed, for use on the line between Stew-
art and Glacier Creek, B.C.

Mainly About Transportation People.

G. R. R. Cockburn, of Toronto, father in law of Sir Thomas Tait, died in London, Eng., Jan. 18.

T. Ahearn, President, Ottawa Electric Ry., returned to Ottawa Jan. 1 from a trip to Switzerland.

D. B. Hanna, Third Vice President, Canadian Northern Ry., returned to Toronto from Great Britain, Jan. 20.

Thos. McClelland, assistant car foreman, C.P.R., Montreal, was fatally injured in the Outremont yards, Jan. 14.

W. Wainwright, Vice President, G.T.R., is one of the directors of the newly incorporated Upper Fraser River Lumber Co.

G. C. Fletcher, for a number of years union ticket agent at the Windsor Hotel, Montreal, has retired to enter private employ.

The engagement is announced of Miss M. Angus, daughter of R. B. Angus, director, C.P.R., to Dr. C. F. Martin, Montreal.

Hon. A. L. Sifton has been appointed Minister, and W. J. Harmer Deputy Minister of Railways and Telephones for Alberta.

S. Buchanan, Superintendent, C.P.R. Upper Lakes Service, Owen Sound, Ont., was married recently to Miss M. Wilson, Detroit, Mich.

The engagement of D. E. Galloway, Assistant to the President, G.T.R. and G.T.P.R., and Miss L. B. Eaton, Toronto, is announced.

W. Wainwright, Vice President, G.T.R., and Second Vice President, G.T.P.R., has been elected Vice President, Guarantee Co. of North America.

T. F. English, who has resigned the position of Local Freight Agent, Calgary, Alta., has been appointed collector of customs there.

C. Arlien, foreman, Michigan Central Rd. boiler shop, St. Thomas, Ont., was presented with a mahogany pedestal by the employes recently.

Miss M. Welch daughter of P. Welch, of Foley, Welch and Stewart, railway contractors, was married to M. Miller, in Spokane, Wash., Jan. 5.

Sir Wm. Whyte has been elected Hon. President of a league which has been inaugurated in Winnipeg to promote immigration to the province.

H. W. Brodie, General Passenger Agent, C.P.R., Vancouver, B.C., and Mrs. Brodie, sailed from that city during Christmas week for Honolulu.

J. W. Higgins, Assistant General Manager, Missouri Pacific Ry., has been promoted to General Manager, succeeding A. W. Sullivan, resigned.

C. C. Van Arsdol, Division Engineer, G.T. Pacific Ry. construction, Hazelton, B.C., returned there after spending Christmas with friends in Idaho.

Hon. J. Sharples, who has been associated with the directorate of railways centering in Quebec city, has resigned the presidency of the Union Bank.

C. Stiff, at one time an official of the old Great Western Ry., has resigned the secretaryship of the Hamilton, Ont., Board of Trade, owing to ill health.

Sir William and Lady Mackenzie returned to Toronto, Jan. 17, via New York, after spending Christmas and New Year in Europe, principally in Paris.

J. Piper, Roadmaster, G.T.R., Brantford, Ont., was the recipient of an address and New Year's gift from the men under him on sections 20, 21 and 22.

H. G. McMicken, European Traffic Agent, Great Northern Ry., London, Eng., and Mrs. McMicken, arrived in Winnipeg, recently for a short holiday.

L. Meagher, who had been engaged in

construction on the Canadian Northern Ry. in Saskatchewan, died at Toronto, Jan. 13. He was a nephew of Lady Mackenzie.

Sir Wm. Mackenzie, President, and Sir Donald Mann, Vice President, Canadian Northern Ry., have been appointed Knights of Grace of the Order of St. John of Jerusalem.

Miss A. Kennedy, daughter of J. H. Kennedy, Chief Engineer, Vancouver, Victoria and Eastern Ry., was married in Vancouver, B.C., Jan. 11, to H. P. Cowan, of Montreal.

H. G. McMicken, European Traffic Agent, Great Northern Ry., U.S., remembered many of his old friends in Canada with some interesting verses and a useful souvenir.

Sir James C. Inglis, past-President of the Institution of Civil Engineers and General Manager and Consulting Engineer of the Great Western Ry. of England, died recently.

F. C. Salter, European Traffic Manager, G.T.R., London, Eng., and P. A. Clews, acting General Agent, G.T.R.,



A. Shields,
General Master Mechanic, Canadian
Northern Railway.

Antwerp, Belgium, arrived in Canada, Jan. 4, on a business trip.

Sir Donald Mann, who has been staying in San Francisco and vicinity for some time, left there Jan. 21 for Vancouver, B.C. He is expected to return to Toronto early in February.

Major Leonard, M. Can. Soc. C.E., Chairman, National Transcontinental Ry. Commission, has given a second donation of \$500 towards the erection of a Y.M.C.A. building in Cobalt, Ont.

J. J. Houghton, who has resigned the position of Chief Inspector, C.P.R. Time Service, was entertained at dinner by the department staff at Montreal recently, and presented with a purse of gold.

J. R. Nutter, chief clerk to the Superintendent of the Eastern Division, G.T.R., Montreal, was presented with an address and a purse of gold recently by the staff on retiring after 28 years service.

J. T. Wallace, Superintendent of the West Jersey and Sea Shore Rd., at Camden, N.J., has been appointed General Superintendent of Motive Power of the

Pennsylvania Rd., succeeding the late R. N. Durborrow.

J. W. Stewart, of Foley, Welch and Stewart, railway contractors, was reported Dec. 25 to be recovering from a severe illness, and it was said he expected to leave Spokane, Wash., for a European trip as soon as possible.

C. W. Spencer, formerly Manager, Mackenzie, Mann and Co.'s eastern lines, and for many years in the C.P.R. service, who died in Montreal recently, left an estate valued at \$127,066 to two sons and a daughter in equal shares.

J. T. Harahan, Sr., ex-president of the Illinois Central Rd., F. O. Melcher, second Vice President, Rock Island Rd., and E. B. Pierce, General Solicitor, Rock Island Rd., were killed in a collision of two Illinois Central trains at Kinmundy, Ill., Jan. 22.

D. J. Scott was given a purse of gold by Canadian Northern Ry. officials, Winnipeg, recently, on his promotion from chief landing master at the C.N.R. Customs to that of the assistant surveyorship for Winnipeg. A diamond brooch was given Mrs. Scott.

G. C. Wells, Assistant to Passenger Traffic Manager, C.P.R., has been appointed as the Eastern Canadian Passenger Association's representative on the standing digest executive committee of the American Association of General Passenger and Ticket Agents.

J. S. Pyeatt, who has been appointed Vice President and General Superintendent, Fort Worth and Rio Grande Ry., and St. Louis, San Francisco and Texas Ry., was, up to the early part of 1911, Superintendent, Canadian Division, Pere Marquette Rd., St. Thomas, Ont.

B. W. Folger, General Manager, Niagara Navigation Co., M. H. Brown, Division Freight Agent, C.P.R., and L. Macdonald, Division Freight Agent, G.T.R., have been elected representatives of the Transportation Lines on the Toronto Board of Trade's general committee.

L. McCrea, Seamen, Sask., who was engaged as section foreman under Sifton, Ward and Co., on the construction of the C.P.R. across the Julius muskeg, east of Winnipeg, in 1877, paid a visit to Winnipeg during the Christmas holidays, after an absence of many years.

John Leadley, who died in Toronto, Jan. 13, aged 87, was father of E. Leadley, of the G.T.R. Freight Claims Department, W. T. Leadley, of the G.T.R. freight department, Toronto, and of A. Leadley, Freight and Passenger Agent, Delaware, Lackawanna and Western Rd., Toronto.

Sir William Mackenzie left Toronto for Ottawa, Jan. 17, soon after his arrival from Europe, and on the following day left Ottawa for the west, accompanied by M. H. McLeod, General Manager, and T. G. Holt, Executive Agent, Canadian Northern Ry., for British Columbia.

H. Souette, railway contractor, Bridge-water, N.S., fell dead in the street there, Jan. 8. He had contracts for building sections of various lines in Quebec, New Brunswick and Nova Scotia during the last 35 years, the last one being a portion of the National Transcontinental Ry. near Edmundston, N.B.

B. E. Bush, President of the Missouri Pacific Ry., has been elected President of the Denver and Rio Grande Rd. also, succeeding E. T. Jeffery, who has been President since 1895. Mr. Jeffery has been made Chairman of the Board of Directors, succeeding George J. Gould, and will have charge of finances.

Hugh Sutherland, Executive Agent, Canadian Northern Ry., Winnipeg, and Mrs. Sutherland sailed from New York Jan. 20 on the s.s. Franconia for Alexandria, Egypt. They will go up the Nile and afterwards visit Italy and other places in Europe, expecting to return to Winnipeg about the end of April.

C. R. Scoles, General Manager, Atlantic, Quebec and Western Ry., New Carlisle, Que., recently gave evidence for the defence in the case against A. W. Carpenter for fraud in connection with the failure of the Charing Cross Bank, London, Eng., which was responsible for the financing of the railway construction.

W. R. Taylor, of Askwith, Taylor and Co., railway contractors, Ottawa, who died in Aylmer, Que., Jan. 14, entered the G.T.R. service in 1885. Two years later he removed to the U.S., going into the Missouri Pacific Ry. service, and returned to Canada in 1895 to become Manager of the Hull Electric Co., which position he resigned in 1909.

D. Bowker, who is said to be the oldest locomotive engineer in the C.P.R. service, retired from the service Jan. 1. He entered the service of the old South Eastern Ry. during its construction in 1869, and continued with the C.P.R. when it took over the line. During his 40 years service hauling passenger trains he never had an accident.

A. Butze, who has retired from the position of General Purchasing Agent, G.T.R., Montreal, under the provisions of the pension fund, was born at Quincy, Ill., in 1845. Prior to entering G.T.R. service in 1895, he served with the Wabash Rd., Missouri Pacific Ry., and the Monon Route. He was a participant in the American civil war.

W. G. Chace, A.M. Can. Soc. C.E., of Smith, Kerry and Chace, Toronto, has removed his headquarters from Winnipeg, where for the past five years the firm has had charge of the construction of the municipal hydro electric plant, to Portland, Ore., where he will have charge of the completion of the Mount Hood Railway and Power Co.'s works.

Henry Osborn, who died in London, Eng., Jan. 4, aged 82, was well known in New Brunswick, having been, from 1860, Manager, New Brunswick and Canadian Ry., St. Stephen. This railway was afterwards known as the New Brunswick Ry., of which he was a director, and for some time, President. He returned to live in England about 1888.

T. Rumney, General Mechanical Superintendent, Erie Rd., has resigned and will become General Superintendent of Motive Power of the Chicago Rock Island and Pacific Ry., at Chicago, Ill., succeeding W. A. Nettleton, resigned. Mr. Rumney is succeeded as General Mechanical Superintendent of the Erie Rd. by W. Schlafge, Mechanical Superintendent at Jersey City, N.J.

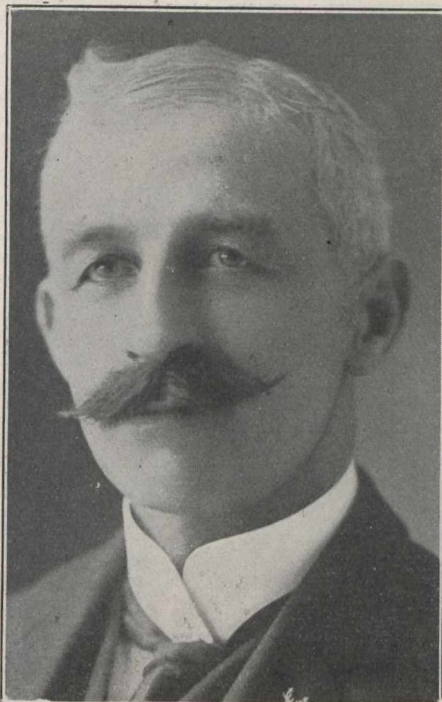
Matthew Neilson, M. Can. Soc. C.E., died in Montreal, Jan. 21, aged 59, of pleuro-pneumonia, and was buried at Kingston, Ont. He was at one time Manager of the St. John, N.B., Railway, and afterwards Consulting Engineer, Montreal St. Ry. Latterly he has practiced as a consulting engineer, and has been acting as Vice President and General Manager, Alberta Central Ry.

The Montreal Star publishes a list of Montreal millionaires numbering 94, including Lord Strathcona, Sir Wm. C. Van Horne, Sir Thos. G. Shaughnessy, Sir H. Montagu Allan, Sir Rodolphe Forget, M.P., J. Ross, C. R. Hosmer, H. S. Holt, T. J. Drummond, G. E. Drummond, W. I. Gear, W. G. Ross, R. B. Angus, R. Reford, M. H. Hersey, N. Curry, E. T. Galt and Hugh Paton.

The Canadian Ticket Agents' Association has had the following additions to its membership recently in Ontario:—S. Young, G.T.R., Lucknow; A. T. Agar, C.P.R., Sudbury; J. H. Welch, K. and P.R., Kingston; R. McKenzie, C.P.R., Thedford; G. Sylvester, C.P.R., St. Joachim; J. J. Corley, C.P.R., Midland; W. J. Jones, C.P.R., Parry Sound; A. M. Chapman, Frankford.

G. H. Massy, Chief Engineer and director, Reid Newfoundland Co., who

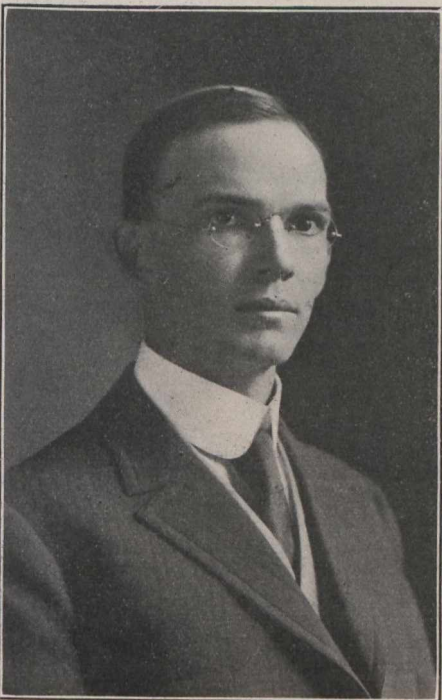
died at Westmount, Que., recently, was born in Ireland. He came to Canada in 1871, and subsequently was engineer in charge of the construction of the Chaudiere bridge, Ottawa, the C.P.R. bridge over the St. Lawrence River at



John Paul,
District Freight Agent, Canadian Northern
Ry., Winnipeg.

Lachine, Que., and the Sault Ste. Marie bridge. He was connected with the Reid Newfoundland Co. since 1897.

Sir Rodolphe Forget, M.P., President, Richelieu and Ontario Navigation Co., and Lady Forget, were passengers on a



J. H. Guess,
General Purchasing Agent, Grand Trunk
Railway.

train between Montreal and Quebec which was in a collision near the latter city, Jan. 8. They escaped injury. Sir Rodolphe was the principal guest at a dinner given by the Choral Society of

St. Louis de France, of which he is honorary vice president, in Montreal, Jan. 11.

A. C. Egan, who has been appointed Auditor of Agencies, Canadian Northern Ry., Winnipeg, was born there Oct. 6, 1883, and entered railway service Aug. 15, 1901, since when he has been, to Aug. 15, 1904, accountant, Local Freight Department, C.P.R., Winnipeg; Aug. 15, 1904, to May 1, 1909, in C.N.R. Audit Department, Winnipeg; May 1, 1909, to Dec. 1, 1911, Chief Travelling Auditor, C.N.R., Winnipeg.

F. N. Gibbs, M. Can. Soc. C.E., eldest son of F. E. Gibbs, Chief Grain Inspector, Western Division, Winnipeg, died in London, Eng., Dec. 28, aged 38, after an operation to remove an abscess near one of his ears. He graduated from the Royal Military College, Kingston, Ont., and at the time of his death was a member of the firm of McDonald, Gibbs and Co., engineers, London, Eng., who are building a railway in Chile. He was buried at Oshawa, Ont.

A. Shields, who has been appointed General Master Mechanic, Canadian Northern Ry., Winnipeg, and whose portrait appears in this issue, entered railway service in 1880, as apprentice, Credit Valley Ry. (now a part of the C.P.R.), Toronto, and from 1886 to 1901 was in the mechanical department, G.T.R., at Port Huron, Mich.; 1901 to 1903, locomotive foreman, C.P.R., and since 1903 he has been in C.N.R. service, latterly as Master Mechanic at Winnipeg.

J. M. Woodman, who has been appointed Superintendent of Winnipeg terminals, C.P.R., is a Canadian by birth, and in 1884 was employed by the C.P.R. as yard clerk at Winnipeg. From 1884 to 1886 he was in Hamilton and Northwestern Ry. service, Hamilton, Ont., since when he has spent the time in the United States, where he has been chiefly associated with the working of terminal yards at various points, mainly St. Louis and Chicago, latterly with the Indiana Harbor Belt Ry.

D. T. Main, who has been appointed Master Mechanic, Sasatchewan Division, C.P.R., Moose Jaw, and whose portrait appears in this issue, was born at Kirkintilloch, Scotland, and came to Canada in 1903, when he entered Mackenzie, Mann and Co.'s service as draughtsman, and in 1904 transferred to the C.P.R., and was, from 1907 to Mar., 1908, locomotive foreman, Minnedosa, Man.; Mar., 1908, to Mar., 1910, locomotive foreman, Cranbrook, B.C.; Mar., 1910, to Jan., 1912, District Master Mechanic, District 1, British Columbia Division, Nelson.

A. E. McMaster, whose appointment as General Agent, G.T.P. Ry., G.T.P. Coast Steamship Co., and G.T.R., at Prince Rupert, B.C., was announced in our last issue, was born at Perth, Ont., Oct. 22, 1885, and entered railway service early in 1903, since when he has been, to 1907, consecutively, clerk, C.P.R., Keewatin, Ont., and in various capacities in C.P.R. freight and ticket offices, Port Arthur, Ont., and chief clerk and acting agent there; Aug., 1907, to Sept., 1908, consecutively, chief clerk to Trainmaster and Locomotive Foreman, chief clerk to Superintendent, and agent, G.T.P.R., Fort William, Ont.; Sept., 1908, to Dec. 31, 1911, agent, G.T.P.R., Prince Rupert, B.C.

O. L. Dickeson, who has been elected President, White Pass and Yukon Route, Vancouver, B.C., was born at Ottumwa, Ia., Sept. 16, 1877, and entered railway service, Jan. 18, 1899, since when he has been, to 1901, stenographer in transportation department, Chicago, Burlington and Quincy Rd.; 1901 to 1905, chief clerk, same department, same road; 1905 to 1908, Superintendent of Transportation, lines west of Missouri River, same road, Omaha, Neb.; 1908 to

Apr. 24, 1911, Special Inspector of Transportation, same road, Chicago, Ill.; Apr. 24 to Dec. 31, 1911, Vice President, White Pass and Yukon Route, Vancouver, B.C., and since Sept., 1911, also General Manager, same company.

J. Kyle, who has been appointed Master Mechanic, Western Division, C.N.R., Edmonton, Alta., was born at Toronto, Apr. 11, 1877, and entered railway service in 1893, since when he has been, to Jan., 1899, apprentice and machinist, G.T.R. shops, Toronto, and Niagara Falls, Ont.; Jan., 1899, to Mar., 1902, machinist, C.P.R. shops, Winnipeg; Mar., 1902, to Jan., 1903, shop foreman, C.P.R. roundhouse, Winnipeg; Jan. to Feb., 1903, acting Locomotive Foreman, C.P.R., Winnipeg; Feb., 1903, to Jan., 1907, General Foreman of Shops, Canadian Northern Ry., Winnipeg; Jan. to Dec., 1907, Assistant Master Mechanic, same road, Winnipeg; Dec., 1907, to Jan., 1912, Assistant Master Mechanic, same road, Edmonton, Alta.

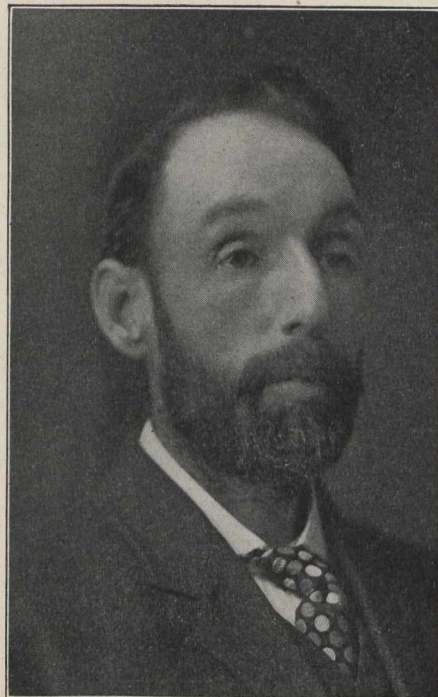
John Paul, who has been appointed District Freight Agent, C.N.R., Winnipeg, and whose portrait appears in this issue, was born in Euphrasia tp., Ont., Sept. 13, 1853, and entered railway service in Aug., 1879, since when he has been, to May, 1881, agent, Northern Ry., Creemore, Ont.; May, 1881, to Oct., 1883, agent, same road, Thornbury, Ont.; Oct., 1883, to Aug., 1885, in private business; Aug., 1885, to Apr., 1890, successively relieving operator, ticket clerk, G.T.R., St. Catharines and London, Ont.; Apr., 1890, to Feb., 1905, City Passenger and Ticket Agent, Michigan Central Rd., London, Ont., and from Nov., 1894, also City Freight Agent, same road; Mar., 1905, to Jan., 1912, General Freight and Passenger Agent, Niagara, St. Catharines and Toronto Ry., St. Catharines, Ont.

J. H. Guess who has been appointed General Purchasing Agent, G.T.R., Montreal, and whose portrait appears in this issue, was born at Raleigh, N.C., Feb. 5, 1878, and entered railway service in 1895, since when he has been, to May, 1900, telegraph operator, Seaboard Air Line Ry.; May, 1900, to Feb., 1901, clerk to Vice President and General Manager, Seaboard Air Line Ry.; Feb., 1901, to Mar., 1902, clerk to Vice President and General Manager, Atlanta, Birmingham and Atlantic Rd.; Mar., 1902, to Sept., 1905, Assistant General Purchasing Agent, National Ry. of Mexico, and in 1905, was also appointed Assistant Secretary-Treasurer, same road; Sept., 1905, to Sept., 1910, General Purchasing Agent, National Ry. of Mexico; Sept., 1910, to Jan. 1, 1912, Assistant General Purchasing Agent, G.T.R., Montreal.

In the New Year's list of honors conferred by the King, the following persons associated with Canadian transportation interests were included:—E. B. Osler, M.P. for West Toronto, director, C.P.R., President, Niagara Navigation Co., and director, St. Lawrence and Chicago Steam Navigation Co., knight bachelor; T. Skinner, director, C.P.R. and Dominion Atlantic Ry., and Deputy Governor, Hudson's Bay Co., London, Eng., baronet; Lt.-Col. Rodolphe Forget, M.P. for Charlevoix and Montmorency, Que., President, Richelieu and Ontario Navigation Co., and Quebec Ry., Light, Heat and Power Co., director, Toronto Ry. and Canadian General Electric Co., knight bachelor; Col. the Hon. J. M. Gibson, Lieut.-Governor of Ontario, formerly President, now director, Dominion Power and Transmission Co., Knight Commander of the Order of St. Michael and St. George.

Lieut. J. P. Dickson, who died at Ottawa, Jan. 4, was a son of M. C. Dickson, formerly District Passenger Agent, G.T.R., Toronto, later G.T.R. agent at Woodstock, Ont., and now Industrial Commissioner for the town of Wood-

stock. He was born at Bothwell, Ont., in 1874, and entered railway service in 1886, in the General Passenger Department, C.P.R., Montreal; 1887 to 1888, in Division Engineer's Office, C.P.R., Chatham, Ont., remaining in that de-



G. H. Hedge,
Master Mechanic, Central Division, Canadian Northern Railway.

partment, as assistant, until the completion of the line from London to Windsor; 1891 to 1895, chief clerk to Superintendent, C.P.R., Ottawa; 1895 to 1906, Secretary, Canadian Railway Accident Insurance Co., Ottawa. He then



D. T. Main,
Master Mechanic, Saskatchewan Division, Canadian Pacific Railway.

became interested in the Cobalt mining district. In 1900 he went to Europe, and later spent some time in New Mexico and Bermuda, but, on account of his illness, had eventually to give up business altogether.

G. H. Hedge, who has been appointed Master Mechanic, Central Division, C.N.R., Winnipeg, and whose portrait appears on this page, was born at Neath, Wales, May 26, 1865, and entered railway service in 1879, as machinist apprentice with the Great Western Ry., England. He came to Canada in 1884, since when he has been, from Mar., 1884, to 1890, fitter in C.P.R. shops at Ottawa, Schreiber, Montreal, Hochelaga, and again at Montreal, where he was leading hand; 1891 to 1893, Locomotive Foreman, C.P.R., Megantic, Que.; in 1893 he was transferred to Farnham, Que., and subsequently to Montreal; 1896 to 1901, General Locomotive Foreman, C.P.R., Farnham, Que.; 1901 to 1902, Locomotive Foreman, C.P.R., Medicine Hat, Alta.; 1902 to Jan., 1903, Locomotive Foreman, C.P.R., Brandon, Man.; Jan., 1903, to June, 1908, Locomotive Foreman, Canadian Northern Ry., Port Arthur, Ont.; June, 1908, to Jan., 1912, Assistant Master Mechanic, C.N.R., Winnipeg.

Matthew Neilson, M. Can. Soc. C.E., died in Montreal, Jan. 21, aged 59, of pleuro-pneumonia, and was buried at Kingston, Ont. He was born at Almonte, Ont., May 26, 1852, and from 1875 to 1877 was an apprentice with F. W. Nash, C.E., on construction and general office work on the Kingston and Pembroke Ry.; 1880, Resident Engineer of 13 miles and later transitman on location, Chicago, St. Paul, Minneapolis and Omaha Ry.; 1881 to 1885, Resident Engineer of 14 miles, C.P.R.; 1886, Resident Engineer of 14 miles, Minneapolis and Pacific Ry., and later in charge of the construction of 40 miles of the Winnipeg and Hudson's Bay Ry., and in 1887 appointed Division Engineer of the Atlantic and North West Ry. International extension. He was at one time Manager of the St. John, N.B., Railway, and afterwards Consulting Engineer, Montreal St. Ry. Latterly he has practiced as a consulting engineer, and was acting as Vice President and General Manager, Alberta Central Ry.

Ross Thompson, who has been appointed Chief Engineer, St. John and Quebec Ry., Fredericton, N.B., was born at Newry, Ireland, Jan. 1, 1865, and commenced his railway career in 1880, since when he has been, to 1882, roadman on construction, Limavady and Dunvigen Ry., county Derry, Ireland; 1882 to 1883, leveller on survey, Great American and European Short Line Ry., Pugwash to Pictou, N.S.; 1883 to 1886, Assistant to Division Engineer on construction, Lake Superior Division, C.P.R.; 1886 to 1888, Right of Way Agent and Paymaster on C.P.R. construction, Lachine to Sherbrooke, and through Maine; 1888 to 1889, transitman on location C.P.R. branches in Manitoba; 1889 to 1892, office manager on construction, Port Arthur, Duluth and Western Ry.; 1892 to 1899, Manager, Port Arthur, Duluth and Western Ry.; 1899 to 1900, in charge of tracklaying and ballasting, Canadian Northern Ry., Port Arthur westerly; 1900 to 1902, Trainmaster, Sydney and Louisburg Ry.; 1902 to 1909, in private practice, Sydney, N.S.; 1909 to Jan., 1912, Manager of Construction and Operation, Aroostook Valley Ry., Maine.

Michael McNamara, G.T.R. outside ticket agent and Great North Western Telegraph Co.'s agent at Walkerton, Ont., died there Dec. 31, age 70, of arterial sclerosis. He was born in County Clare, Ireland, came to Canada when 11 years old, and went to Walkerton 42 years ago. For some time he was in business as a jeweller. He was the G.N.W.T. Co.'s agent there for 42 years, and in 1882 was appointed outside ticket agent for the old Great Western Ry., when he was installed by E. de la Hooke, now Secretary of the Canadian Ticket Agents' Association, who was then on the Great Western Ry. General Passen-

Steam Railway Track Laid in 1911.

ger Agent's staff. In March, 1898, he was appointed G.T.R. outside ticket agent. He joined the Canadian Ticket Agents' Association in 1893, was its Second Vice President in 1900 and 1901, First Vice President in 1902, President in 1903 and 1904, and a member of the executive committee from 1907 until his death. In 1904 he represented the Association at the American Association of General Passenger and Ticket Agents annual meeting at Old Point Comfort, Va. He was a conservative and a Roman Catholic. Both he and Mrs. McNamara were regular attendants at the Association's annual meetings for many years. W. Jackson, Chairman, Executive Committee, represented the Association at the funeral. Mr. McNamara is the third ex-president of the C.T.A.A. who has died within the past twelve months, the other two being W. Bunton, Peterboro, and C. E. Morgan, Hamilton.

W. J. Camp, who has been appointed Assistant Manager of Telegraphs, C.P.R., Montreal, was born at Oakville, Ont., Apr. 22, 1855, and at about the age of 17 was engaged in the G.T.R. freight office at Prescott, Ont., where he learned telegraphy. He entered the Dominion Telegraph Co. service Sept., 1874, as operator, and took up the study of wire testing and switching. In 1875 he was moved to Montreal as bookkeeper same company, and in 1876 was appointed local manager same company at Watertown, N.Y. Leaving this service towards the end of the same year, he was engaged at various points on the New York Central and Troy and Boston Rys., and for the Western Union Telegraph Co. at Albany, N.Y., re-entering the Dominion Telegraph service at Montreal, in 1877, becoming night chief operator; Jan., 1878, appointed train dispatcher, Quebec, Montreal and Ottawa Ry., now a portion of the C.P.R., returning later to the Dominion Telegraph Co. as night chief operator, and on the consolidation of the Dominion and Montreal Telegraph Cos., was appointed assistant day chief operator; local electrician, same company, Montreal, until July, 1883; July, 1883, to Sept., 1884, operator, C.P.R., Hochelaga, Que.; Sept., 1884, to Apr., 1886, in private business; Apr., 1886, to Dec., 1899, Chief Electrician, C.P.R. Telegraphs, Montreal; Dec., 1889, to Nov., 1903, Superintendent of Telegraphs, Eastern Division, covering territory between Louisburg, N.S., and Port Arthur, Ont.; Nov., 1903, to Jan. 1, 1912, Electrical Engineer, C.P.R. Telegraphs. F. E. Camp, Inspector of Construction and Maintenance, C.P.R. Telegraphs, British Columbia Division, is his elder son.

The Railway to Hudson Bay.

A return was presented in the House of Commons Jan. 15, giving details of tenders submitted for the building of the Pas Mission-Split Lake section of the line. Tenders were received from four firms—three Canadian and one United States—each bidder submitting two prices based on slight variations in the work. The United States tender was ruled out on account of some irregularity, and the lowest, that of J. D. McArthur, Winnipeg, was accepted. The figures submitted by the three Canadian firms were:—

J. D. McArthur	\$3,078,354	\$3,167,104
Northern Construction Co.	3,080,109	3,087,059
M. J. O'Brien	3,368,537	3,295,787

Niagara Fruit Growers Tramways Co.

—Press reports state that the Ontario Legislature will be asked at the current session to incorporate a company with this title to build tramway lines in the Niagara Peninsula. Nothing has been disclosed as to the routes of the projected lines, or as to the interests behind the project.

In the particulars of steam railway track laid in 1911, published in our last issue, the figures for some of the lines were estimated. Complete returns have since been received in response to our requests and the revised figures are given below. They show some variations from those given in our last issue, but do not materially affect the totals on the different lines, while the actual mileage laid is increased from 1,827.33 to 1,851.98, which is about 18 miles under that laid in 1910. In some sections of the country tracklaying had to be suspended earlier than was anticipated, hence the alteration of the mileages which it was estimated would be laid on some of the C.P.R. lines, and a shortage of steel was experienced on Canadian Northern Ry. and G.T. Pacific Ry. branch lines. Following are the revised and complete figures:—

ALBERTA CENTRAL RY.—		
Red Deer to Red Deer River	7.00	
ALGOMA CENTRAL AND HUDSON BAY RY.—		
Mileage 81.6 to 99	17.40	
Mileage 153.0 to 115	38.00	
Magpie branch, m. 5.4 to 9.42	4.02	59.42
ALGOMA EASTERN RY.—		
Espanola to Spanish River, Ont.	4.60	
Espanola southerly, Ont.	1.50	6.10
ATLANTIC, QUEBEC AND WESTERN RY.—		
Barachois to Douglastown, Que.	20.50	
BRANDON TRANSFER RY.—		
Brandon, Man.	1.20	
CANADIAN NORTHERN ONTARIO RY.—		
TORONTO-OTTAWA LINE FROM WEST OF OSHAWA TO DESERONTO.		
Mileage 44.6 to 69.4	24.80	
Mileage 71.7 to 71.8	.10	
Mileage 96.6 to 133.9	37.30	
SUBBURY-PORT ARTHUR LINE.		
Gowganda Jct. to Ruel, Ont.	13.00	75.20
CANADIAN NORTHERN PACIFIC RY.—		
Port Mann to Chilliwack, B.C.	46.00	
CANADIAN NORTHERN RY.—		
MANITOBA.		
Shellmouth branch from Hampton	12.96	
SASKATCHEWAN.		
Grosse Isle northerly	26.37	
Ceylon westerly	17.41	
Walta northerly	17.41	
Shellbrook westerly	37.00	
Pelly westerly	34.26	
Delisle southerly	46.00	
Radville northerly	32.00	
ALBERTA.		
Red Deer River southerly	22.30	
Morinville northerly	55.50	
St. Albert westerly	20.00	
Stewartwyn westerly	65.00	446.10
CANADIAN NORTH EASTERN RY.—		
Mileage 7.5 to 13.5 from Stewart, B.C.	11.00	
CANADIAN PACIFIC RY.—		
ONTARIO.		
Coldwater Jct. to Bethany Jct.	76.50	
SASKATCHEWAN.		
Moose Jaw Jct. to Dunkirk	26.80	
Swift Current Jct. to Neville	27.00	
Swift Current north to Cabri	33.00	
Wilkie Jct. to Outknife	27.80	
Imperial to Valeport	59.00	
Near Silton to Valeport	7.00	
Ageard to Viceroy	23.80	
Near Anglier to Conquest	53.00	
ALBERTA.		
Lethbridge-Aldersyde	56.80	
Castor-Coronation	22.00	
Nightingale to Standard	17.50	
BRITISH COLUMBIA.		
Colvalli-Fort Steele	25.00	
Galloway-Waldo	10.00	465.20
ESQUIMALT AND NANAIMO RY.—		
Cameron Lake to Port Alberni, B.C.	26.00	
GRAND TRUNK RY.—		
Birch to Tay, Ont.	8.90	
GRAND TRUNK PACIFIC RY.—		
SASKATCHEWAN.		
Balcarres to Regina	61.00	
Meacham to Wakaw	42.00	
ALBERTA.		
Red Deer southerly	22.00	
Bickerdike southerly	30.00	
Pedley, on main line to B.C. boundary	74.00	
BRITISH COLUMBIA.		
Yellowhead westerly	25.00	254.00
HA HA BAY RY.—		
Riviere du Moulin to Laterriere, Que.	10.00	
KETTLE VALLEY LINES—		
Midway to Westledge, B.C.	25.00	
Merritt to Coldwater, B.C.	30.00	55.00

MIDLAND RY. OF MANITOBA—		
From C.N. Ry. to station in Winnipeg	8.00	
NATIONAL TRANSCONTINENTAL RY.—		
NEW BRUNSWICK.		
Mileage 184 to 184.73	.73	
QUEBEC.		
At points between mileage 283.15 and 454.45	59.74	
Mileage 676.97 to 710.33	33.36	
Mileage 772.02 to 834.23	62.21	
ONTARIO.		
Mileage 1131.24 to 1197.45	66.21	
Mileage 1450.04 to 1508.04	58.00	280.25
QUEBEC AND SAGUENAY RY.—		
Mileage 56.54 to 64, near Murray Bay	7.50	
SOUTH ONTARIO PACIFIC RY.—		
Guelph Jct. to Progression, Ont.	5.90	
SYDNEY AND LOUISBURG RY.—		
Morien to Birch Grove	2.50	
TEMISKAMING AND NORTHERN ONTARIO RY.—		
Iroquois Falls to Timmins	33.71	
North Bay Jct. to Nipissing Jct.	3.53	37.24
TORONTO, HAMILTON AND BUFFALO RY.—		
Spur lines Hamilton, Ont.	0.97	
VANCOUVER, VICTORIA AND EASTERN RY.—		
Princeton to Coalmount	12.00	
Abbotsford to Kilgard	6.00	18.00
Total	1,851.98	

Actual track laid in 1910 1,869.24
Of this mileage 1,609.65 miles were laid in connection with three systems, the following being a comparison of the mileage laid by the same lines in 1910 and 1911:—

	Miles.	Miles.
	1911.	1910.
Canadian North Eastern Ry.	11.00	11.00
Canadian Northern Ontario Ry.	75.20	71.70
Canadian Northern Pacific Ry.	46.00	46.00
Canadian Northern Ry.	446.10	521.96
Canadian Pacific Ry.	578.30	593.66
National Transcontinental Ry.	465.20	286.58
Grand Trunk Pacific Ry.	280.25	312.00
	254.00	309.00
	534.25	521.00

Total of the three systems 1,609.65 1,651.24
The remaining 242.33 miles were laid by 13 lines.

In addition to the new track laid on the Canadian Northern Ontario Ry.'s Toronto-Ottawa line, three miles of track were laid on a revision of location of the Bay of Quinte Ry. between Harrowsmith and Sydenham.

Divided by provinces the track laid during 1910 and 1911 compares as follows:—

	1911.	1910.
	Miles.	Miles.
Saskatchewan	630.74	518.84
Ontario	394.44	308.98
Alberta	392.10	365.63
British Columbia	216.00	117.80
Quebec	193.31	232.10
Manitoba	22.16	141.49
Nova Scotia	2.50	4.00
New Brunswick	0.73	180.40
	1,851.98	1,869.24

St. Lawrence and Adirondack Ry.—A dividend of 4% for the past year has been paid. The last previous dividend paid was in respect of 1908 and was also 4%. The stock is held by the New York Central Lines.

Oregon-Washington Rd. and Navigation Co.—A Vancouver dispatch, Jan. 18, says J. D. Farrell, President of the O.-W. Rd. and N. Co., has announced that it is intended to build a direct line from Seattle, Wash., to Vancouver, B.C. No statement was made as to when it is expected to start operations.

The cases against four clerks in the C.P.R. ticket office, Toronto, for forgery and theft in connection with rebates on unused portions of tickets, were disposed of Jan. 3, as follows:—B. A. Bennett, two years' imprisonment for forgery and theft; J. J. McPherson, three months in jail on similar charges; J. J. Adamson, forgery, dismissed on the ground that there was no intent to defraud, and R. Lalor was acquitted.

Transportation Appointments Throughout Canada.

Algoma Central and Hudson Bay Ry., Algoma Eastern Ry.—F. K. Allen has been appointed Purchasing Agent, vice W. G. Webber, appointed Purchasing Agent, Algoma Steel Co., and Lake Superior Iron and Steel Co. Mr. Allen is also Purchasing Agent, International Transit Co., Trans-St. Mary Traction Co., Lake Superior Power Co., Tagona Water and Light Co., and Algoma Commercial Co. Office, Sault Ste. Marie, Ont.

Canadian Northern Ry.—I. L. Healey, heretofore Contracting Freight Agent, Toronto, has been appointed Travelling Freight Agent, Toronto, vice R. A. Lennox, transferred to Hamilton, Ont.

C. H. Green, heretofore Contracting Freight Agent, Hamilton, Ont., has been appointed Contracting Freight Agent, Toronto.

R. Logan, heretofore in General Freight Agent's office, Toronto, has been appointed Contracting Freight Agent, Hamilton, Ont., vice I. L. Healey, transferred to Toronto.

R. A. Lennox, heretofore Travelling Freight Agent, Toronto, has been appointed Travelling Freight Agent, Hamilton, Ont.

T. Grimes, formerly General Yardmaster, Toronto terminals, C.P.R., has been appointed Yardmaster, C.N.R., Port Arthur, Ont., vice W. C. Turner, assigned to other duties at Winnipeg.

A. Shields, heretofore Master Mechanic, has been appointed General Master Mechanic. Office, Winnipeg.

A. C. Egan, heretofore Chief Travelling Auditor, Winnipeg, has been appointed Auditor of Agencies, on all lines west of Port Arthur, Ont., and all balance sheets and debit and credit papers and correspondence in connection therewith are addressed to him. Office, Winnipeg.

G. H. Hedge, heretofore Assistant Master Mechanic, Winnipeg, has been appointed Master Mechanic, Central Division. Office, Winnipeg.

John Paul, heretofore Freight and Passenger Agent, Niagara, St. Catharines and Toronto Ry., St. Catharines, Ont., has been appointed District Freight Agent, C.N.R., Winnipeg, vice J. B. Sheppard, resigned.

M. L. Flett, heretofore hotel clerk, has been appointed chief clerk, Sleeping, Dining and Parlor Car, Hotel and News Department, Winnipeg, vice W. W. Swinden, chief clerk and accountant, appointed Chief Accountant.

W. W. Swinden, heretofore chief clerk and accountant, has been appointed Chief Accountant, Sleeping, Dining and Parlor Car, Hotel and News Department, Winnipeg.

J. E. Hutcheson has been appointed Manager, C.N.R. Prince Edward Hotel, Brandon, Man.

R. R. Marsales has been appointed Contracting Freight Agent, Brandon, Man., vice T. J. Peterson, resigned.

F. Creighton, heretofore assistant ticket agent at Saskatoon, Sask., has been appointed city ticket agent, Brandon, Man.

J. Kyle, heretofore Assistant Master Mechanic, Edmonton, has been appointed Master Mechanic, Western Division. Office, Edmonton, Alta.

Canadian Pacific Ry.—W. M. Godsoe, heretofore local manager, C.P.R. Telegraphs, Halifax, N.S., has been appointed Superintendent, Atlantic Division, C.P.R. Telegraphs, vice F. J. Mahon, transferred to Montreal. Office, St. John, N.B.

D. L. Jones, heretofore District Master Mechanic, Brownville Jct., Me., has been appointed District Master Mechanic and Trainmaster, District 2, Atlantic Division. Office, Woodstock, N.B.

A. Williams, heretofore Trainmaster at Woodstock, N.B., has returned to his former position as Chief Dispatcher there.

W. F. Grant has been appointed District Master Mechanic, Brownville Jct., Me., vice D. L. Jones, transferred to Woodstock, N.B.

W. F. Hackman, heretofore Resident Engineer, Schreiber, Ont., has been appointed Resident Engineer, Brownville Jct., Me., vice F. B. Tapley, acting Resident Engineer, appointed Resident Engineer, London, Ont., as announced in our last issue.

It is persistently rumored that F. P. Gutelius, M. Can. Soc. C.E., General Superintendent, Eastern Division, will receive an important appointment in connection with the Dominion Government Railways. An Ottawa press dispatch, Jan. 26, says he will be appointed, in conjunction with G. Lynch Staunton, K.C., of Hamilton, Ont., to investigate the circumstances attending the construction of the National Transcontinental Ry.

John Corbett, General Foreign Freight Agent, Montreal, is reported to have resigned to go into general insurance brokerage business, particularly marine insurance, under the style of John Corbett and Co., Ltd.

S. Houghton has been appointed Chief Inspector of Time Service, vice J. F. Houghton, resigned. Office, Montreal.

E. P. Flintoft and Jas. McNaught have been appointed Assistant Solicitors at Montreal.

W. A. Cowan, formerly Resident Engineer at Farnham, Que., has been appointed one of the assistant engineers in the Assistant Chief Engineer's office, Montreal, and not Inspecting Engineer, as previously mentioned. This appointment, which was mentioned in our last issue, was misplaced. It should have appeared under the heading of Canadian Pacific Ry., instead of Canadian Northern Ry.

J. G. Galley, heretofore chief rate clerk, Import Freight Agent's office, Montreal, has been appointed Contracting Import Freight Agent, Atlantic Steamship Lines, vice A. T. Shaughnessy, resigned to go into financial business. Office, Montreal.

W. J. Camp, heretofore Electrical Engineer, C.P.R. Telegraphs, has been appointed Assistant Manager, C.P.R. Telegraphs. Office, Montreal. The position of Electrical Engineer has not yet been filled.

J. Fletcher, heretofore Superintendent, C.P.R. Telegraphs, British Columbia Division, Vancouver, has been appointed Superintendent of Traffic. Office, Montreal.

D. H. Bowen, heretofore local manager, C.P.R. Telegraphs, London, Ont., has been appointed Assistant Superintendent, Ontario Division C.P.R. Telegraphs. Office, Toronto.

C. W. MacDonald, heretofore assistant night chief operator, Toronto, has been appointed local manager, C.P.R. Telegraphs, London, Ont., vice D. H. Bowen, promoted.

J. M. Woodman, Chicago, Ill., has been appointed Superintendent of Winnipeg Terminals, vice J. McLellan, who has been granted indefinite leave of absence on account of continued ill health.

W. E. Woodhouse, heretofore Superintendent of Shops, Winnipeg, has been appointed Assistant Superintendent of Motive Power, Western Lines, vice C. H. Temple, recently appointed Superintendent of Motive Power and Car Department, Western Lines. Office, Winnipeg.

R. A. Pyne, heretofore Master Mechanic, Alberta Division, Calgary, has been appointed Superintendent of Shops, Winnipeg, vice W. E. Woodhouse, promoted.

W. R. Rutherford, heretofore local manager, C.P.R. Telegraphs, Winnipeg, has been appointed Supervisor, C.P.R. Telegraphs, Souris, Man.

W. D. Neil, heretofore chief clerk to Superintendent, C.P.R. Telegraphs, Alberta Division, Calgary, has been appointed local manager, C.P.R. Telegraphs, Winnipeg, vice W. R. Rutherford, promoted.

W. Kennedy, heretofore agent, C.P.R. Telegraphs, Regina, Sask., has been appointed assistant city representative, Winnipeg.

W. K. Thompson, heretofore agent, C.P.R. Telegraphs, Saskatoon, Sask., has been appointed chief operator, C.P.R. Telegraphs, Winnipeg, vice W. J. Kane, promoted.

W. J. Kane, heretofore chief operator, C.P.R. Telegraphs, Winnipeg, has been appointed Supervisor, C.P.R. Telegraphs, Winnipeg.

J. McAnany, heretofore Road Foreman of Locomotives, District 3, Alberta Division, Macleod, has been appointed District Master Mechanic, District 3, Saskatchewan Division, vice T. Patterson, assigned to other duties. Office, Saskatoon.

D. T. Main, heretofore District Master Mechanic, District 1, British Columbia Division, Nelson, has been appointed Master Mechanic, Saskatchewan Division, vice A. T. Shortt, transferred. Office, Moose Jaw.

A. T. Shortt, heretofore Master Mechanic, Saskatchewan Division, Moose Jaw, has been appointed Master Mechanic, Alberta Division, vice R. A. Pyne, promoted. Office, Calgary.

G. Moth, heretofore acting District Master Mechanic, Medicine Hat, Alta., has been appointed Road Foreman of Locomotives, District 3, Alberta Division, Macleod, vice J. McAnany, promoted.

R. F. Richardson, heretofore chief clerk to Local Freight Agent, Calgary, Alta., has been appointed Local Freight Agent there, vice T. F. English, resigned on his appointment as collector of customs, Calgary.

W. J. Meakin, heretofore charge hand, Strathcona roundhouse, has been appointed Locomotive Foreman, Castor, Alta., vice J. Jensen, assigned to other duties in the Car Department.

M. J. Scott, heretofore locomotive engineer, District 1, British Columbia Division, Revelstoke, has been appointed District Master Mechanic, District 3, British Columbia Division, vice D. T. Main, promoted. Office, Nelson.

W. Pimlott, heretofore Storekeeper, Field, B.C., has been appointed Storekeeper at Nelson, B.C., vice J. W. Cormode, appointed chief clerk to Divisional Storekeeper at Calgary, Alta.

Jas. Osborne, General Superintendent Ontario Division, Toronto, is to be transferred to Vancouver, B.C., as General Superintendent, British Columbia Division, and will remain there about the middle of February.

Duluth, Rainy Lake and Winnipeg Ry.—J. Conery, heretofore dispatcher, has been appointed Chief Dispatcher, Virginia, Minn., vice C. W. Houston, appointed Superintendent.

Grand Trunk Pacific Coast Steamship Co.—F. Waterhouse has been appointed Manager, G.T. Pacific Dock, Seattle, Wash.

J. J. Carroll, heretofore Superintendent, G.T. Pacific Dock, Seattle, Wash., has been appointed agent, G.T.P. Coast Steamship Co., and the former position has been abolished. Office, 130 G.T.P. Dock, Seattle, Wash.

Grand Trunk Pacific Ry.—A. W. Lar-mour has been appointed Travelling Freight Agent. Headquarters, Winnipeg.

H. E. Bissell, heretofore Assistant Right of Way and Claims Agent, has been appointed Right of Way and Claims Agent, vice G. H. Pope, superannuated. Office, Winnipeg.

J. B. Shelton has been appointed Car Foreman at Transcona, Man., vice J.

Flynn, transferred to Edmonton, Alta.

R. W. Gibson has been appointed agent at Cabot, Man.

A. Bell, heretofore Locomotive Foreman, Wainwright, Alta., has been appointed Locomotive Foreman, Transcona, Man., vice R. Gardiner, assigned to other duties.

G. E. Brooks has been appointed Locomotive Foreman at Wainwright, Alta., vice A. Bell, transferred.

J. Flynn, heretofore Car Foreman at Transcona, Man., has been appointed Car Foreman at Edson, Alta.

T. C. Chalmers has been appointed Agent at Prince Rupert, B.C., vice A. E. McMaster, appointed General Agent, as announced in our last issue.

Grand Trunk Ry.—C. M. Hays, President, issued the following circular Jan. 1: "It is with great regret that I announce the retirement of A. Butze, General Purchasing Agent, under provisions of the pension fund. Mr. Butze since his connection with this company for the past 16 years, has filled the important position he held with exceptional faithfulness and fidelity, and his friends and associates among officers and employes of the company, as also others who know him, will I am sure join me in the earnest wish that he may have many years of well earned rest."

J. H. Guess, heretofore Assistant General Purchasing Agent, has been appointed General Purchasing Agent, vice A. Butze, retired. Office, Montreal.

R. Johnson, heretofore chief clerk, Stores and Purchasing Departments, has been appointed Assistant General Purchasing Agent, vice J. H. Guess, promoted. Office, Montreal.

The following agents have been appointed:—Trenton, Ont., A. J. Adams; North Bay, Ont. (freight), W. A. McCutcheon; Hamilton, Ont. (Stuart St. pass.), P. A. Robertson; Burford, Ont., C. S. Kerton; Barrys Bay, Ont., F. O. Parent (relieving).

Hudson Bay Ry.—J. P. Gordon, Winnipeg, is reported to have been appointed Assistant Chief Engineer of the Dominion Government railway from Pas Mission, Sask., to Hudson Bay.

Intercolonial Ry.—W. A. Dube, Superintendent at Levis, who has been under suspension, as mentioned in our last issue, has been dismissed. The charges of political partisanship were not sustained, but the commissioner appointed by the Minister of Railways to make the investigation reported that charges of personal misconduct had been proved.

J. S. Leighton, Claims Agent, and F. X. Talbot, lost freight tracer, Moncton, N.B., have been dismissed.

Lehigh Valley Rd.—W. T. Grier has been appointed General Coal and Freight Agent. All correspondence and reports relating to coal and coke traffic should be forwarded to him, and he will also have charge of such other traffic or assume other duties as may hereafter be assigned to him. Office, 143 Liberty St., New York.

S. A. Story has been appointed Through Freight Agent. Office, Buffalo, N.Y.

Minneapolis, St. Paul and Sault Ste. Marie Ry.—W. R. Sheldon, General Agent, Helena, Mont., is reported to have been appointed District Freight and Passenger Agent, Calgary, Alta.

National Transcontinental Ry.—The Minister of Railways has introduced a bill in the House of Commons to abolish the commission of four members, which has hitherto administered the affairs connected with construction, and to vest all the powers in one commissioner. This will place the whole work under the present Chairman, R. W. Leonard, M. Can. Soc. C.E.

The position of Purchasing and Right of Way Agent, District F., Winnipeg, hitherto held by T. L. Morton, is reported to have been abolished on the ground

that it is no longer a necessity for that district.

New York Central Lines.—Carl Howe, in addition to his duties as Manager of the N.Y.C. fast freight lines, has been given jurisdiction over all the outside agencies located at points off or beyond N.Y.C. lines.

R. J. Ross has been appointed Commercial Agent of the New York Central and Hudson River Rd., West Shore Rd., Boston and Albany Rd., Pittsburg and Lake Erie Rd., Cleveland, Cincinnati, Chicago and St. Louis Ry., Lake Shore and Michigan Southern Ry., Michigan Central Rd., Chicago, Indiana and Southern Rd., Lake Erie and Western Rd., Toledo and Ohio Central Ry., Zanesville and Western Ry., New York and Ottawa-Ottawa and New York Rys., Merchants Despatch, Merchants Despatch-Dairy Line, Red Line, White Line, Blue Line, Canada Southern Line, West Shore Line, Nickel Plate Line, North Shore Despatch, Jersey Central-Lake Shore Despatch, Jersey Central-Michigan Central Despatch, Rutland-Michigan Central Line. Office, Bank of Nova Scotia Building, Winnipeg.

C. H. Hogan has been appointed Assistant Superintendent of Motive Power, Eastern District, Hudson, Harlem, New York and Poughkeepsie, River, Mohawk and Adirondack Divisions. Office, Albany station, N.Y.

A. J. Fries has been appointed Assistant Superintendent of Motive Power, Western District, Buffalo, Rochester, Western Ontario, St. Lawrence and Pennsylvania Divisions. Office, Depew, N.Y.

L. H. Raymond has been appointed Superintendent of Shops, West Albany, N.Y.

H. Wanamaker has been appointed Superintendent of Shops, Depew, N.Y.

The positions of District Superintendent of Motive Power at West Albany and Depew have been abolished.

Pere Marquette Rd.—J. E. Williams having resigned as Assistant General Freight Agent, to accept service on the Uniform Classification Committee, the duties of his office will be assumed by the General Freight Department, under the immediate direction of R. P. Paterson, Assistant General Freight Agent.

A. H. Greenly has been appointed Chief of Tariff Bureau, in charge of the compilation and publication of tariffs, reporting to the Assistant General Freight Agent. Office, Detroit, Mich.

F. G. Bement, heretofore Trainmaster, G.T.R., Durand, Mich., has been appointed Inspector of Transportation, P.M. Rd. Office, Detroit, Mich.

Quebec Ry., Light and Power Co.—A circular issued by Sir Rodolphe Forget, President, Quebec, Ry., Light, Heat and Power Co., announces that H. G. Matthews, heretofore Assistant to the President, has also been appointed General Manager, vice C. E. A. Carr resigned. Another circular issued by W. G. Ross, President Quebec Ry., Light and Power Co. announces that Mr. Matthews has been appointed to a similar position in that company. The Quebec Ry., Light, Heat and Power Co. is the holding company, the railways being operated by its subsidiary the Quebec Ry., Light and Power Co.

Reid Newfoundland Co.—The position of Chief Engineer has become vacant by the death of G. H. Massy, M. Can. Soc. C.E.

E. J. Hoskins has been appointed Assistant to the Superintendent. Office, St. John's.

St. John and Quebec Ry.—Ross Thompson, heretofore Manager of Construction and Operation, Aroostook Valley Ry., has been appointed Chief Engineer, St. J. and Q.R. Office, Fredericton, N.B.

Thousand Islands Ry., Oshawa Ry.—H. W. Cooper, heretofore chief clerk,

Treasurer's Department, G.T.R., Montreal, has been appointed Secretary and Treasurer, T.I. Ry. and O. Ry., vice C. A. Milliner, resigned. Office, Deseronto, Ont.

Wabash Rd.—F. H. Wegener, heretofore Travelling Freight and Passenger Agent, Seattle, Wash., has been appointed General Agent, Seattle, Wash., vice W. D. Stubbs, resigned to engage in other business.

White Pass and Yukon Route.—O. L. Dickeson, heretofore Vice President and General Manager, has been elected President, vice S. H. Graves, deceased. Office, Vancouver, B.C., in summer, and Chicago, Ill., in winter.

Railway Finance, Meetings, Etc.

Alberta Ry. and Irrigation Co.—The company's railway, coal mines, lands and other properties passed under the control of the C.P.R. Jan. 1. The C.P.R. acquired the whole of the outstanding common stock of the company at 150, and under the terms of the lease will pay as rental an amount sufficient to pay a dividend of 6% on the common stock, and the interest on the outstanding debenture stock.

Notice is given that the London, Eng., share register was permanently closed on Dec. 31, and that in future any transfers must be forwarded, together with the stock certificates, to the Bank of Montreal, London, for transmission to the Royal Trust Co., Montreal, who are the registrars of the company in Canada, for the issuance and return to the owners of new certificates with endorsement thereon of the Canadian Pacific Ry. Co.'s guarantee of interest at the rate of 6% per annum, payable July 1 and Jan. 1 in each year, as provided by the agreement of lease and sale to the C.P.R. Co.

Atlantic, Quebec and Western Ry.—Respecting the conviction of A. W. Carpenter, in connection with the failure of the Charing Cross Bank, London, Eng., which was chiefly concerned in the financing of this railway, it is stated, that British investors are interested in the 5% first mortgage bonds issued in 1906, of which £325,500 was issued to contractors. Interest has been regularly paid, and it is stated that the subsidies, when received, will be deposited with the trustees for the debenture holders, and should be sufficient to meet the interest until Dec. 31, 1915. The bonds are not quoted on the London Stock Exchange, but transactions have recently taken place at about 10% discount. The issue prices were 96 and 98.

Brockville, Westport and Northwestern Ry.—Mackenzie, Mann and Co. have been directed to pay into court in Toronto \$8,972 to the credit of eight unknown bondholders in connection with the purchase of the railway. As Mackenzie, Mann and Co. were already holders of all the bonds of the company except the eight in question, an order was made dispensing with the payment into court of the rest of the purchase money.

Canadian Pacific Ry.—A cablegram of Jan. 4 says application has been made to the London, Eng., Stock Exchange for the listing of £1,000,000 of non-cumulative 4% preferred stock, and £1,000,000 of consolidated 4% debenture stock.

Dominion Atlantic Ry.—Passenger earnings for Dec., 1911, \$51,200; freight earnings, \$62,400; total, \$113,600; against \$85,700 total for Dec., 1910.

Grand Trunk Pacific Ry.—Application is being made to the Dominion Parliament for authority to make a further issue of perpetual or terminable debenture stock not exceeding in the whole £5,000,000, the proceeds to be applied to the completion of the company's main and branch lines, and the purchase of rolling stock.

Grand Trunk Railway.—The Dominion Parliament is being asked to authorize the company to acquire or otherwise deal with the first mortgage bonds issued by the G.T. Western Ry., not exceeding \$30,000,000; to aid or assist other companies in various ways in the name of the G.T.R. or the G.T. Pacific Ry., or in the name of trustees for the benefit of either of them; and for these purposes to issue further G.T.R. consolidated 4% debenture stock to an amount the interest upon which shall not exceed £250,000.

Quebec Central Ry.—Gross earnings for Nov., 1911, \$112,294; expenses, \$78,131.30; net earnings, \$34,162.70, against \$85,619.02 gross earnings; \$59,140.29 expenses; \$26,478.73 net earnings for Nov., 1910. Aggregate gross earnings for five months ended Nov. 30, 1911, \$622,557.07; expenses, \$401,572.57; net earnings, \$220,984.50, against \$549,486.71 aggregate gross earnings; \$353,733.31 expenses; \$195,753.40 net earnings for same period 1910.

Temiscouata Ry.—Gross earnings for Nov., 1911, \$16,417.31; expenses, \$13,583.64; net earnings, \$2,833.67.

Victoria and Sidney Ry.—Press reports from Victoria, B.C., state that the V. and S. Ry. is likely to pass into the hands of the Canadian Northern Ry. interests. The line is at present owned by the Great Northern Ry.

White Pass and Yukon Ry.—Aggregate gross earnings from Jan. 1 to Dec. 14, 1911, \$1,063,220, against \$1,194,370 for same period 1910.

The Kent Northern Railway Changes Ownership.

The Kent Northern Ry. has been sold to a Toronto syndicate, which has already taken possession. The syndicate is headed by Sir Henry M. Pellatt, stock broker, and Thos. Walmsley, insurance agent, etc., Toronto, who hold the control between them, the syndicate having acquired practically all the capital stock. The syndicate is said to have had an option on the property for several years, and to have paid amounts on account from time to time, the balance having been paid towards the end of last year. The purchase price is said to have been about \$115,000, which is said to include a mortgage of about \$50,000 on the property. The new proprietors contemplate establishing steamship connection with Prince Edward Island, and also developing gravel pits which they own about three miles from the junction with the Intercolonial Ry.

The line was built in the early eighties, and extends from Kent Jct., on the Intercolonial Ry., to Richibucto, N.B., 27 miles. The Commissioners appointed in 1909 by the Dominion Government to investigate the branch lines connecting with the Intercolonial Ry. reported that the line runs through a flat country, sloping towards Northumberland Strait, the maximum gradient being 1.5%, except in the case of a few local sags of a few hundred feet in length; there are a few curves, and these are of ample radius. The track is laid with 56 lb. rails bought from the Intercolonial Ry., and the largest bridge structure has a 16 ft. span. The Commissioners mentioned various works necessary to bring the line up to a standard which would permit its being taken over as a branch line. In addition to the station buildings there is a three stall enginehouse at Richibucto. The rolling stock consists of two locomotives, one passenger car, one combination freight and express car and two snow ploughs.

For the first 20 years of its existence the railway was managed by J. C. Brown, the principal stockholder. About the end of 1902 the line was sold to a

local syndicate consisting of T. O. Murray, K. Phinney, W. D. Carter, J. Jardine and G. M. Robertson, and a new act of incorporation was obtained from the New Brunswick Legislature. Until the sale to the new syndicate the officers of the company have been: President, J. Jardine; General Manager, T. O. Murray; Secretary, R. Phinney; Treasurer, W. S. Carter. It is stated that T. O. Murray will remain as Manager.

Subsequent to building the K.N. Ry., the Richibucto and St. Louis Ry. was built. This line is an extension of the K.N. Ry., from Richibucto to St. Louis, seven miles. It was operated for some time under lease by the K.N.R., but fell into bad repair, and on the bridge over the Kouchibouguacis River becoming unsafe, its operation was abandoned. The Dominion Government Commissioners' report says: "This line could be operated in connection with the K.N. Ry. at very small cost, and would give accommodation to a population (2,000) now deprived of it."

The Dominion Government report shows the capital of the Kent Northern Ry. outstanding at \$75,000, with \$50,000 of bonds, and that of the Richibucto and St. Louis Ry. at \$20,000, with no bond issue. Bonuses in aid of the building of the K.N. Ry. were voted as follows: \$58,334.27, including the value of used rails, from the Dominion Government; \$135,000 from New Brunswick, and \$5,000 from municipalities; while there was paid to the R. and St. L. Ry. \$22,400 by the Dominion Government, and \$21,000 by the New Brunswick Government. The net earnings of the K.N. Ry. during each year for the year ending June 30, 1906, to June 30, 1910, have been as follows: \$8,075, \$6,664, \$8,191, \$4,792, and \$6,056. The figures for the year ended June 30, 1911, are not yet available.

National Transcontinental Railway Construction, Etc.

The Minister of Railways stated in the House of Commons, Jan. 12, that the three members of the Commission for the building of the transcontinental railway, appointed by the late Government, C. A. Young, C. F. McIsaac and W. S. Calvert, had been asked to resign, and that the positions would not be filled. The Government proposed to have the act appointing the commission amended to suit its new policy, and to place the whole work in charge of the present Chairman, R. W. Leonard, M. Can. Soc. C.E.

Grand Trunk Pacific Railway Construction, Etc.

C. M. Hays, President, and W. Wainwright, Second Vice President, interviewed members of the Government at Ottawa Jan. 8, when, it is said, that the whole situation connected with the financing of the balance of the construction of the line between Winnipeg and Prince Rupert was considered, and the question of the operation of the Moncton-Winnipeg section discussed. It is said that a further loan, probably amounting to \$15,000,000, was asked for.

E. J. Chamberlin, Vice President and General Manager, returned to Winnipeg Jan. 13, from Montreal, and in an interview, gave details of construction projected for the current year, stating that the work would involve an expenditure of about \$20,000,000. He has been advised by the Chief Engineer that the boring of the tunnels in the Kitselas district has been completed, which will enable track to be laid during the year to 185 miles easterly from Prince Rupert. It is expected also that 150 miles of

track will be laid westerly from Tete Jaune Cache during the year, leaving about 200 miles of the main line to be completed in 1913. The only difficulty in the way of accomplishing this is the obtaining of sufficient men. During 1911 there were over 10,000 men engaged in construction on the main line, and it is hoped to have that number increased during the current year. While it is expected to have track laid through to the coast by the end of 1913, it is not expected to have the line in operation until some time in 1914.

The section of the line west of Tete Jaune Cache, which it is hoped to complete during the coming year, extends from the Cache to Fort George, B.C., and on this mileage sub-contracts are reported to have been let as follows:—H. E. Carleton and Co., Edmonton, 25 miles westerly from the Cache; Burns, Jordan and Co., Spokane, Wash., the next 50 miles; Sims Bros. and Keary, St. Paul, Minn., 75 miles.

In an interview at Victoria, Jan. 11, D'Arcy Tate, K.C., the company's solicitor at Winnipeg, is reported as having stated that he had just returned from Prince Rupert after ratifying the contract for the last section of the line between Tete Jaune Cache and Aldermere, B.C. Instructions had been given that the work was to be pushed with all possible dispatch, and he was satisfied that he was quite within the mark when he said that the line would be completed by the end of 1913.

As to branch line construction it is hoped during the summer to link up the main line with Brandon, Moose Jaw, Calgary, Lethbridge, Prince Albert and Battleford. Regina was linked up in the fall of 1911, and it is proposed to provide terminal accommodation, and to build a large hotel there during the current year. The extension of the line from Regina to the International boundary is expected to be completed this year. A considerable amount of grading had been done on the branch lines, and more steel would have been laid during 1911 but for the fact that the rails ordered could not be delivered, the deliveries being some 18,000 tons short. If the company can get the necessary rails it is hoped to lay 600 miles of track on branch lines this year. The following gradings are ready for tracklaying:—Hart-Brandon branch, 20 miles; Regina to International boundary, 143 miles; Regina to Moose Jaw, 56.5 miles; Moose Jaw northwesterly, 57.6 miles; Prince Albert branch, 51 miles; Battleford branch, 57 miles; Cutknife branch, 50 miles; Biggar-Calgary branch, 60 miles completely and 40 miles partially graded; Tofield-Calgary line, 94 miles; Brazeau coal branch, 23 miles. Further grading will be done on these lines, and it is expected to let a contract at an early date for the grading of a line from Calgary to Lethbridge, about 150 miles.

A very complete, illustrated description of the Prince Rupert marine terminal, dry dock, ship repairing plant, etc., is given in the Marine Department, further on in this issue.

Canadian Railway Club.—The tenth annual dinner was held in Montreal, Jan. 19, A. A. Goodchild, President, in the chair. The speakers to the various toasts included the President, the Minister of Railways, H. H. Vaughan, F. P. Gutelius, W. McNab, G. H. Ham, F. Gardiner, N. Curry, President of the Canadian Car and Foundry Co., and Professors McLeod and McKay of McGill University. The club, which was organized with less than 100 members, now has over 800.

The International Railway Fuel Association's fourth annual convention will be held at the Hotel Sherman, Chicago, Ill., May 22-25. T. Duff Smith, Fuel Agent, Grand Trunk Pacific Ry., Winnipeg, is President.

Orders by the Board of Railway Commissioners.

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

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

15628. Dec. 15.—Approving Alberta Central Ry. location from mileage 100 to 140, west of Red Deer.

15629. Dec. 20.—Authorizing G.T.P.R. to operate trains over overhead crossing of C.N.R. in sec. 14, tp. 53, r. 24, w. 4 m.

15630. Dec. 12.—Extending until Feb. 1, 1912, time for installation of power brakes on electric cars by Hull Electric Co.

15631, 15632. Dec. 18, 15.—Authorizing C.P.R. to build spurs for A. E. Burns, near Henry Ave., Winnipeg, and Rock Springs Sootless Coal Co., near Elcan ballast pit spur, Alta.

15634. Dec. 20.—Approving Esquimalt and Nanaimo Ry. location from Black Creek to near Duncan's Bay, Vancouver Island, B.C.

15635. Nov. 21.—Ordering that supplement to Canadian Classification 15 be issued reducing carload rating of marconi, spaghetti and vermicelli, from 4th to 5th class to become effective not later than Jan. 15, 1912, on application of Montreal Board of Trade Transportation Bureau.

15633. Dec. 16.—Authorizing C.N.O.R. to use for construction purposes only C.P.R. crossing at Chaudiere Jct., near Ottawa, until June 1, 1912, pending completion of interlocker.

15636, 15637. Dec. 13.—Ordering that Wash Rd. and G.T.R. install gates at Manitoba St., St. Thomas, Ont., before May 1, 1912; also electric bell at St. George St., Chatham, Ont., before Feb. 1, 1912, 20% to be paid from railway grade crossing fund in each case.

15638. Dec. 16.—Extending to June 1, 1912, time for installation of interlocking plant at crossing of C.P.R. and G.T.R. by C.N.O.R., near Ottawa.

15639. Dec. 19.—Relieving C.N.R. from further protection at crossing east of switch at Dauphin, Man.

15640, 15641. Dec. 20.—Authorizing C.N.R. to build across public road and two highways on its Maryfield extension, Sask.

15642. Dec. 20.—Authorizing C.N.R. to cross and divert highway on its Rossburn line, Sask.

15643 to 15645. Dec. 20.—Approving revised location of C.N.O.R. Montreal-Port Arthur line through Ross tp., through unsurveyed territory in Algoma district, mileage 148 to 166 from Sudbury Jct., and through Loughborough tp.

15646 to 15649. Dec. 20.—Authorizing C.P.R. to build spurs for Carbon Oil Co., Rosser, Man.; city of Moose Jaw, Sask.; Continental Oil Co., Lethbridge, Alta., and Eley Bros., near Woods, Man.

15650. Dec. 21.—Amending order 15594 of Dec. 12, 1911, re Esquimalt and Nanaimo Ry. by striking out words "Canadian Pacific Railway Company."

15651, 15652. Dec. 20.—Authorizing T.H. and B.R. to operate two spurs into premises of Laidlaw Bale Tie Co., and Canadian Drawn Steel Co., Hamilton, Ont.

15653. Dec. 20.—Approving G.T.R. plans for new station at Exeter, Ont.

15654. Dec. 16.—Ordering that upon conveyance by Petrolea Wagon Co., Petrolea, Ont., of land necessary, an interchange track be built by G.T.R. or M.C.R., cost to be divided equally between companies.

15655. Dec. 20.—Authorizing city of Fort William, Ont., to widen Victoria Ave. by 14 ft., across C.N.R. at Vickers St.

15656. Dec. 20.—Ordering C.P.R. to submit plans for station at Dysart, Sask., by April 1, 1912.

15657. Dec. 13.—Authorizing British Columbia Electric Ry. to cross C.P.R. at foot of Twelfth St., New Westminster.

15658. Dec. 21.—Approving location of C.N.R. station at Veregin, Sask.

15659. Dec. 19.—Extending to Apr. 1, 1912, time for C.P.R. and C.N.R. to file freight tariffs to apply between Fort William, Port Arthur and points east thereof, and Regina, Moose Jaw and other western points, as required by order 12520, Dec. 10, 1910.

15660. Dec. 20.—Authorizing C.P.R. to build spur for T. Kinnear and Co., Peterboro, Ont.

15661. Dec. 22.—Ordering T.H. and B.R. to maintain light on electric bell at Mohawk Road crossing, Brantford, Ont., and then

relieving company of speed limitations there.

15662. Dec. 21.—Relieving C.P.R. from further protection at crossing between Makaroff and Togo, Sask.

15663 to 15666. Dec. 21, 22.—Approving location of C.N.O.R. station grounds at Lombardy, Perth Road, Loughborough tp., Elgin and Bedford.

15667. Dec. 15.—Authorizing G.T.R. to build spur for St. Marys Portland Cement Co., and Horse Shoe Quarry, Blanchard tp., Ont.

15668. Dec. 21.—Extending to Jan. 31, 1912, time for G.T.R. to complete overhead bridge in lieu of subway at Queen St., Palmerston, Ont., as required by order 14164, June 24.

15669. Dec. 16.—Authorizing G.T.R. to build bridges at Mill, Peter, Barrett, and Ontario Sts., Port Hope, Ont.

15670. Dec. 16.—Ordering payment of taxed costs to W. H. Miles by G.T.R., re taking of lands at Etobicoke tp., Ont.

15671. Dec. 22.—Authorizing G.T.R. to build track on east side of Metcalf St., Simcoe, Ont.

15672. Dec. 22.—Amending order 14606, Aug. 21, 1911, par. 4, re interswitching at Brandon, Man., \$2 a car to be revenue of Brandon, Saskatchewan and Hudson Bay Ry. on empties transferred between C.P.R. and C.N.R.

15673. Dec. 22.—Approving location of C.N.R. at Cushing, Que.

15674. Dec. 23.—Approving location of South Ontario Pacific Ry. (C.P.R.) station at Waterdown, Ont.

15675. Dec. 23.—Relieving G.T.R. from further protection of first crossing west of Port Robinson, Ont.

15676. Dec. 22.—Authorizing C.N.O.R. to cross and divert public road between cons. 1 and 2, South Elmsley tp.

15677. Dec. 23.—Approving location of C.N.O.R. through Chisholm and Ferris tps., mileage 325.23 to 343.55 from Montreal.

15678. Dec. 16.—Amending order 15151, Oct. 12, re erection of gates by G.T.R., at Royce Ave., Toronto, by providing that they be put outside C.P.R. track, and that new plan be filed.

15679. Dec. 23.—Authorizing C.P.R. to cross highway at mileage 202.77 with its Moose Jaw Northwesterly branch, Sask.

15680. Dec. 26.—Authorizing C.P.R. to open for freight traffic its line from Coldwater to Bethany, mileage 12.2 to 88.2, Ont.

15681. Dec. 26.—Authorizing C.P.R. to rebuild bridge 127.2, Mountain subdivision, British Columbia Division.

15682. Dec. 26.—Authorizing C.P.R. to open for traffic its second track, Moose Jaw subdivision, from Moose Jaw to Pasqua, mileage 127.68 to 134.43, Sask.

15683. Dec. 23.—Recommending to Governor in Council for approval, G.T.R. Transportation Department rules.

15684. Dec. 26.—Extending to June 30, 1912, time for completion by Toronto Eastern Railway of spurs for Durham Rubber Co., Bowmanville, Ont.

15685. Dec. 23.—Ordering Central Vermont Ry. to ballast its entire line between St. Lambert and Waterloo, Marieville and St. Cesaire, Farnham and Friersburg, and Iberville and Farnham, and to repair all bridges, farm and highway crossings, and fences, ballast to be 6 ins. lift; work to be completed by Oct. 1, 1912, and that within 30 days from date of order, frogs and guard rails be filed, under penalty of \$25 a day.

15686, 15687. Dec. 27.—Authorizing C.P.R. to rebuild bridge 127.2, Mountain subdivision, British Columbia Division, and 94.8, over Wascana Creek, Moose Jaw subdivision, Saskatchewan Division.

15688. Dec. 27.—Authorizing C.P.R. to build spur for Park Fuel and Lumber Co., Calgary, Alta.

15689 to 15691. Dec. 27, 23.—Approving location of C.N.O.R. through unsurveyed territory in Algoma District, mileage 287 to 327, from Sudbury Jct., and approving revised location through Alice, Fraser and Richards tps., mileage 209 to 225.42 from Montreal.

15692. Dec. 27.—Ordering C.P.R. to install improved type of electric bell at crossing of County Road, 1 1/4 miles east of Ivanhoe station, Ont., 20% to be paid from railway grade crossing fund.

15693. Dec. 27.—Authorizing C.N.R. to build spur to Ritchie Coal Co.'s yards, Edmonton, Alta.

15694. Dec. 27.—Authorizing C.P.R. and G.T.P. Branch Lines Co. to operate trains over crossing in n.w. 1/4 sec. 32, tp. 17, r. 19, w. 2 m., Sask., pending installation of interlocker required by order 13663, May 16.

15695. Dec. 28.—Recommending to Governor-in-Council for sanction, lease between C.P.R. and Dominion Atlantic Ry.

15696. Dec. 27.—Authorizing C.P.R. to open for traffic portion of its Weyburn-

Lethbridge line from Ogema to Viceroy, mileage 52.2 to 75.85.

15697. Dec. 28.—Authorizing Esquimalt and Nanaimo Ry. to use bridges at mileage 14.0, 54.4, 131.7 and 132.3.

15698. Dec. 26.—Relieving C.P.R. from further protection of crossing at mileage 45.1 from Place Viger station, Montreal.

15699. Dec. 29.—Approving revised location of C.P.R. Swift Current-Brooks branch, mileage 0 to 35.32, Sask.

15700. Dec. 28.—Authorizing C.P.R. to build its Wilkie Northwesterly branch across highway at mileage 7.64, Sask.

15701, 15702. Dec. 29.—Authorizing C.N.O.R. to cross three highways in Trafalgar and Nelson tps.

15703. Dec. 27.—Authorizing C.N.R. to build spur north of 17th St., Saskatoon, Sask.

15704. Dec. 28.—Authorizing G.T.R. to operate trains, without stopping, through Alford Jct., Ont.

15705. Dec. 28.—Authorizing G.T.R. to build spur for National Brick Co., St. Constant, Que.

15706. Dec. 28.—Approving certain alterations in G.T.P.R. revised location in North Alberta District.

15707. Dec. 28.—Authorizing C.N.O.R. to cross seven highways in Nelson and Trafalgar tps.

15708. Dec. 28.—Approving location of C.P.R. Wilkie-Anglia branch, mileage 24.90 to 40.66, and to cross and divert 14 highways, mileage 25.55 to 40.66, Sask.

15709. Dec. 29.—Authorizing C.P.R. to build two spurs for Imperial Oil Co., near Alexander Ave., Winnipeg.

15710. Dec. 29.—Authorizing C.N.O.R. to cross three highways in Nelson tp.

15711. Dec. 30.—Authorizing C.P.R. to rebuild bridge 15.3 over Isaac Creek, Arrow Lake subdivision, B.C., and rescinding order 15681, Dec. 26, which authorized rebuilding of bridge 127.2, Mountain subdivision, B.C.

15712. Dec. 29.—Authorizing C.P.R. to cross with its Estevan-Forward branch 39 highways in Saskatchewan.

15713, 15714. Dec. 30.—Approving C.N.O.R. revised location near Nipigon, mileage 497.16 to 498 from Sudbury Jct., and to cross eight highways in Toronto tp.

15715. Dec. 19.—Authorizing G.T.R. to take certain lands in Kingston, Ont., for enlarged facilities.

15716. Dec. 27.—Suspending G.T.P.R. local and joint passenger tariff C.R.C. 129, relating to baggage of excess size, until all parties can be heard.

15717. Dec. 19.—Approving C.P.R. grade revision between St. Martins Jct. and Ste. Therese, and authorizing it to build double track across six highways.

15718. Dec. 15.—Amending order 7112, May 18, 1909, which authorized M.C.R. to cross with two additional tracks, Sandwich St., Windsor, Ont., and approving temporary bridge, by substituting another plan and providing that new bridge be built during 1912.

15719. Jan. 2.—Appointing W. M. Tisdale, attorney at law, Redlands, Cal., and J. P. Hartman, attorney at law, Seattle, Wash., as commissioners for examination of witnesses in rate case of Dawson Board of Trade vs. White Pass and Yukon Route.

15720. Nov. 27.—Dismissing application of J. Hoolahan, Ste. Agathe des Monts, Que., re C.P.R. rates on perishable goods.

15721. Dec. 30.—Authorizing G.T.P.R. to build transfer track to connect with C.N.R. at Portage la Prairie, Man.

15722. Jan. 2.—Authorizing Midland Ry. of Manitoba (C.N.R.) to operate C.N.R. and G.T.P.R. crossings in St. Boniface parish, Man., for construction purposes only until Mar. 10.

15723. Dec. 30.—Authorizing C.N.O.R. to build bridge over Rideau canal and river at Smiths Falls.

15724. Nov. 21.—Disallowing tariffs of G.T.R., C.P.R., C.N.O.R., C.N.Q.R., Quebec, Montreal and Southern Ry., Central Vermont Ry., Ottawa and New York Ry., Central Ontario Ry., Thousand Islands Ry., Lotbiniere and Megantic Ry., N.Y.C. and H.R. Rd. and Rutland Rd., increasing rates on hay and straw from Ontario and Quebec to eastern U.S. points.

15725. Dec. 16.—Ordering C.P.R. before May 1, 1912, to give S. Plunkett, Vaughan tp., Ont., as good grade over new crossing as over old one before track elevation.

15726. Jan. 3.—Extending to Feb. 15 time for filing tariffs by G.N.R. on fertilizer from Vancouver and New Westminster, for W. H. Haight, Pipers Siding, B.C.

15727. Dec. 19.—Ordering G.T.P.R. to build station on lot 882, and restraining it from locating station on lot 851, group 1, Cassiar district, B.C.

15728. Jan. 3.—Authorizing C.N.O.R. to cross public road between southeast and southwest parts of lot 15, con. 1, Toronto tp.

15729. Jan. 2.—Authorizing C.P.R. to build

spur for Shawinigan Water and Power Co., Notre Dame du Mont Carmel parish, Que.

15730. Jan. 2.—Dismissing G.T.P.R. application for approval of location of its Prince Rupert Westerly line, mileage 0.00 to 3.23, r. 5, Coast District, B.C.

15731, 15732. Jan. 3.—Ordering C.P.R. before May 1 to provide suitable farm crossing for J. Connelly, Macleod, Alta., and before June 1, to build cattle pass for J. Smith, Wolfston, Sask.

15733. Jan. 4.—Authorizing C.P.R. to operate siding to Union stock yards, Toronto.

15734. Jan. 3.—Amending order 15580, Dec. 11, 1911, by providing that cost of protection of crossing by T.H. and B. Ry. over G.T.R. and Hamilton Radial Ry., Hamilton, Ont., be paid one-third by G.T.R. and balance by T.H. and B.R.

15735. Jan. 2.—Ordering G.T.P.R. to remove sufficient rock fill at Cameron Bay, Prince Rupert, B.C., and to file with Board before Feb. 15, plan showing location of opening and depth of girders for carrying track, etc., re obstruction caused to navigation.

15736, 15737. Jan. 5.—Approving location of C.N.O.R. Montreal-Port Arthur line through Widdifield, Cimmamda, Beaucage, and Pedley tps., Nipissing District, mileage 346.37 to 366 from Montreal, and through Capreol tp., mileage 0 to 71.81 from Capreol Jct.

15738. Jan. 4.—Authorizing C.P.R. to build two spurs for Port Arthur Wagon Co., Port Arthur, Ont.

15739. Jan. 3.—Authorizing C.N.O.R. to build branch from Oshawa station to Oshawa, mileage 0 to 3.95, to connect with Toronto Eastern Ry.

15740 to 15742. Jan. 4, 3, 2.—Authorizing C.P.R. to build spurs for Strome Milling and Grain Co., Strome, Alta.; Swift Canadian Co., Winnipeg, Man., and E. Julian and Co., Quebec, Que.

15743. Jan. 4.—Authorizing C.P.R. to rebuild bridge 63.8, Brandon subdivision, Man.

15744. Jan. 3.—Relieving C.P.R. from further protection at crossing in Campbellville, Ont.

15745. Jan. 3.—Authorizing T.H. and B.R. to build spur for Armstrong Supply Co., Hamilton, Ont.

15746. Jan. 3.—Authorizing G.T.R. to build spur for Schell Bros. and Blow, North Cayuga tp., Ont.

15747. Jan. 3.—Relieving G.T.R. from further protection at crossing 1½ miles east of Glencoe, Ont.

15748. Jan. 4.—Authorizing C.N.O.R. to cross public road in Nelson tp.

15749. Jan. 3.—Authorizing city of Winnipeg to extend Ellice Ave. across C.P.R. Pembina branch.

15750. Jan. 3.—Approving location of South Ontario Pacific Ry. station at Progression, mileage 5.32, East Flamboro tp.

15751. Dec. 14.—Ordering G.T.R. to employ watchman from May 1 to Oct. 1, each year at crossing just east of Grimsby Beach, Ont., 15% to be paid by Grimsby tp.

15752. Jan. 3.—Extending to June 1 time for G.T.R. to make changes to water standpipes at Alexandria, Ont.

15753. Jan. 11.—Approving G.N.R. plans for spur for W. H. Haight, Piper's Siding, B.C.

15754. Jan. 8.—General order re freight rates to Western Canada; this order is given in full on another page.

15755. Jan. 8.—Authorizing C.P.R. to build spur for Bardsley and Peterson in n.e. ¼ sec. 4, tp. 2, r. 7, w. 2 m.

15756. Jan. 8.—Authorizing G.T.R. to build spur for Lautz Co., Bridgeburg, Ont.

15757. Dec. 28.—Ordering Atlantic, Quebec and Western Ry. to provide joint farm crossing for A. Lelievre, Little River East, with that ordered by order 15456, Nov. 22, 1911, for A. Shannon.

15758. Jan. 8.—Authorizing C.N.O.R. to build from Central Ontario Ry. at Stanley St., Trenton, to a railway bridge across Trent River.

15759. Jan. 8.—Authorizing express collection and delivery limits for Strathcona, Alta.

15760. Jan. 4.—Authorizing C.P.R. to divert road allowance in Mara tp., Ont., mileage 41.56 from Port McNeill.

15761, 15762. Jan. 4.—Authorizing C.N.O.R. to take lands, etc., of G. W. Burgess and J. Penny, in Belleville, Ont.

15763. Jan. 8.—Authorizing G.T.P. Branch Lines Co. to cross with its Melville-Regina line, public road at mile post 42, Lebret, Sask.

15764. Jan. 9.—Ordering that G.T.R. crossing over Yonge St., Simcoe, Ont., when watchman is not on duty, be protected by flagman for all switching movements.

15765. Jan. 5.—Ordering C.N.R. to erect by Feb. 15, under penalty of \$10 a day, wind breaks, etc., just east of Melfort, Sask.

15766. Dec. 13.—Approving plans and location for G.T.R. new station at Stoney Point, Ont.

15767. Jan. 3.—Authorizing C.P.R. to cross with its Swift Current-Brooks branch, 23 highways in Saskatchewan.

15768. Jan. 11.—Authorizing C.P.R. to build sidings into Union Stock Yards, Toronto.

15769. Jan. 9.—Authorizing C.N.O.R. to open for traffic its line from Harrowsmith to Sydenham, mileage 160.50 to 163.50 from Don Jct.

15770. Jan. 11.—Authorizing Saskatchewan Government to divert highway and cross C.P.R. at Foam Lake, Sask.

15771. Jan. 9.—Authorizing G.T.P. Branch Lines Co. to cross with its Melville-Regina branch, and divert highways at mileage 85.9 to 58.9, Sask.

15772. Jan. 9.—Authorizing T.H. and B.R. to discontinue operation of its interlocking appliances at Hamilton St. Ry. crossing, Barton St. East, Hamilton, until May 1, crossing to be protected by flag during passage of trains.

15773. Jan. 11.—Authorizing C.P.R. to operate spur for Lowe Bros., Sorauren Ave., Toronto.

15774, 15775. Jan. 10.—Extending to Mar. 31 and May 31, respectively, time for completion by C.P.R. of subways at sec. 34, tp. 24, r. 2, w. 5 m., and at Jane St., West Toronto.

15776. Jan. 12.—Approving Lachine, Jacques Cartier and Maisonneuve Ry. location, 400 ft. west of C.P.R. crossing at Iberville St., to terminal at St. Catherine St., Montreal, through C.P.R. lands, subject to agreement between the two companies.

15777. Jan. 8.—Ordering C.P.R. before June 15, to provide interchange track with G.T.R. in Goderich, Ont.

15778. Jan. 9.—Authorizing express collection and delivery limits for Brighton, Ont.

15779. Jan. 10.—Ordering Canadian Ex. Co. to file tariff before Jan. 25, abolishing extra charge between Pictou, N.S., and Charlottetown, P.E.I., except when it be necessary, owing to weather conditions, for traffic to be carried to Georgetown, P.E.I.

15780. Jan. 4.—Directing C.P.R. not later than Feb. 10 to provide two passenger trains a day each way between Ottawa and Prescott, Ont.

15781. Jan. 8.—Authorizing C.N.R. to cross overhead with its Vegreville-Calgary branch, the C.P.R. Macleod branch in s.w. ¼ sec. 11, tp. 24, r. 1, w. 5 m., Alta.

15782. Jan. 9.—Authorizing N.Y.C. and H.R. Rd. to rebuild interlocking plant at G.T.R. crossing, Cecile Jct., Que.

15783, 15784. Jan. 8.—Correcting omissions and errors in G.T.P. Branch Lines Co.'s Regina-Boundary branch location.

15785. Jan. 10.—Authorizing C.P.R. to build its Wilkie-Anglia branch across 12 highways, mileage 0 to 19.37, Sask.

15786. Jan. 10.—Authorizing G.T.R. to build siding for International Varnish Co., and Pinchin, Johnson and Co., Toronto.

15787. Jan. 10.—Authorizing T.H. and B.R. to build five spurs for Verity Plow Co., Brantford, Ont.

15788. Jan. 12.—Authorizing C.N.R. to open for traffic its line from Grosse Isle, Man., to end of track, 31 miles, fencing, etc., to be completed by Aug. 1.

15789. Jan. 12.—Authorizing G.T.R. to rebuild bridge 39 at mileage 216.51, over Pike's Creek, District 18, Ont.

15790. Jan. 4.—Authorizing C.N.O.R. to take property of J. Britnell, Belleville, for diverting Bay St.

15791. Jan. 10.—Authorizing C.P.R. to rebuild bridge 43.8, Farnham subdivision, Montreal terminals.

15792. Jan. 13.—Authorizing British Columbia Government to build highway crossing over Columbia and Western Ry. at Eholt.

15793. Jan. 13.—Authorizing C.P.R. to build spur for Standard Fish and Fertilizer Co., Calgary, Alta.

15794. Jan. 11.—Authorizing C.P.R. to build its Kerrobert Northeasterly branch across highways from mileage 1.52 to 19.16, Sask.

15795. Jan. 12.—Authorizing C.N.R. to use for construction purposes only, until July 1, its Deslisle extension crossing of C.P.R. Moose Jaw-Lacombe branch.

15796. Jan. 11.—Authorizing C.N.R. to build spur for Saskatoon Milling and Elevating Co., Saskatoon, Sask.

15797 to 15799. Jan. 15.—Approving C.N.O.R. Montreal-Port Arthur line location through unsurveyed territory, Algoma District, mileage 327 to 343.15, and from Sudbury Jct. and Montreal-Port Arthur line location through Nepean, March and Tarbolton tps., mileage 14.3 to 27, and through Ross, Westmeath and Pembroke tps., mileage 67 to 83.45 from Ottawa.

15800. Jan. 12.—Authorizing city of Toronto to maintain wires across C.P.R. and G.T.R. and G.N.W. Telegraph Co. and C.P.R. telegraph wires at Queen St., Toronto, and rescinding order 13817, May 31, 1911.

15801. Jan. 11.—Authorizing C.P.R. to build public crossing at mileage 70.06, Cartier subdivision, Ont.

15802. Jan. 11.—Authorizing Canadian Copper Co. to build spur across Algoma Eastern Ry. at grade, and C.P.R. overhead, interlocking semaphores to be installed.

15803. Jan. 15.—Relieving C.P.R. from erecting fences and cattle guards between Woodstock and Andover, N.B.

15804, 15805. Jan. 15, 16.—Correcting errors in location of G.T.P. Branch Lines Co.'s Biggar-Calgary and Regina-Moose Jaw branches.

15806. Dec. 21.—Ordering G.T.R. to install improved electric bell at Edward St., Prescott, Ont., 20% to be paid from railway grade crossing fund.

15807. Nov. 27.—Authorizing C.N.O.R. to connect with Montreal Terminal Ry. and C.N.Q.R. near Montreal.

15808. Jan. 17.—Amending order 15655, Dec. 20, 1911, which authorized city of Fort William, Ont., to widen Victoria Ave. across C.N.R. at Vickers St., by striking out, at Vickers St.

15809. Jan. 17.—Authorizing C.N.R. to build spur at Neepawa, Man.

15810. Jan. 4.—Dismissing application of Sanitaris, Ltd., Arnprior, Ont., re express classification on returned empties.

15811. Jan. 9.—Authorizing C.P.R. to take certain lands in Toronto, and build branch across G.T.R. and join tracks used jointly with G.T.R., also to cross Toronto Ry. at junction of Spadina Ave. and Front St., Toronto.

15812. Jan. 18.—Authorizing C.P.R. to build spur for Stone Fertilizer Co., North Oxford tp., Ont.

15813, 15814. Jan. 16, 18.—Approving plans of Gilbert drain along M.C.R. right of way, to be built by Southwold tp., Ont.; also plans and character of Chauvin drain, under G.T.R. in Tilbury North tp., Ont.

Canadian Ticket Agents' Association.

At a meeting of the executive committee in Toronto Jan. 18 it was decided to hold the next annual meeting at Ottawa, Oct. 8 and 9, with headquarters at the Chateau Laurier, and a trip will be made to Montreal.

J. A. McKenzie, outside ticket agent, G.T.R., Woodstock, Ont., and an ex-President of the Association, was appointed to represent the Association at the American Association of General Passenger and Ticket Agents annual meeting at Seattle, Wash., next autumn.

An invitation to send a representative to the American Association of Passenger Agents annual meeting was referred to a special committee to be dealt with when the place and date of meeting are announced.

J. F. Dolan, city ticket agent, R. and O.N. Co., Montreal, and ex-President of the Association, was elected a member of the executive committee, vice M. McNamara, deceased.

A resolution of sympathy in connection with the death of Mr. McNamara, ex-President, was adopted.

The Association's honorary counsel, J. H. Flock, K.C., of London, having given an opinion that the amendments to the constitution, including a change of the Association's name, which were adopted at the annual meeting at Sault Ste. Marie in Oct., 1911, were ultra vires, it was decided not to act upon them.

C. E. McPherson, Assistant Passenger Traffic Manager, Western Lines, C.P.R., Winnipeg, dropped in during the meeting and was warmly welcomed.

What is said to be the longest and heaviest train ever operated, reported by Machinery, was recently run from Altoona to Enola, Pa., 127 miles. Its length was 4,888 ft.—nearly a mile—and it consisted of 120 steel gondola cars loaded with 6,450 tons of coal. It was pulled at the rate of 13 miles an hour by a single locomotive of the Pennsylvania H-6-B type. The locomotive was in communication with the caboose by telephone. The train was run as a test to determine the capacity of freight locomotives over the improved sections of the line where grades have been removed and curves compensated.

Railway Rolling Stock Notes.

The G.T.R. has ordered 250 refrigerator cars, 30 tons capacity, from the Canadian Car and Foundry Co., Montreal.

Mussens, Ltd., have ordered four steel underframe flat cars, 40 tons capacity, from the Canadian Car and Foundry Co., Montreal.

Cavicchi and Pegano, railway contractors, have ordered 16 dump cars, 30 tons capacity, from the Canadian Car and Foundry Co., Montreal.

The Dominion Equipment and Supply Co., Winnipeg, has ordered three Lidgerwood flat cars from the Canadian Car and Foundry Co., Montreal.

The Grand Trunk Pacific Ry. has ordered two complete sets of top ploughs from F. H. Hopkins and Co., Montreal, and two spreaders from the United States.

The Grand Trunk Pacific Ry. has received eight Pacific type locomotives, nos. 1101 to 1108, and four switching locomotives, nos. 402 to 405, from the Montreal Locomotive Works.

The Central Vermont Ry. is reported to have ordered four Pacific type locomotives from the Baldwin Locomotive Works, and three switching locomotives from the Lima Locomotive and Machine Co.

The G.T.P.R. has ordered 300 forty ton steel underframe Hart-convertible ballast and construction cars, for delivery in the spring, and three Rodger double plough distributing cars, from the Hart-Otis Car Co., Montreal.

The Charlottetown, P.E.I., Board of Trade passed a resolution, Jan. 10, urging the Dominion Government to build in the local shops, locomotives and other rolling stock required for the proposed re-construction of the P.E.I. Ry. to standard gauge.

The Grand Trunk Pacific Ry. has ordered 25 consolidation locomotives, with Schmidt superheaters, from the Montreal Locomotive Works, and 15 consolidation locomotives, with Schmidt superheaters, in addition to the 25, details of which we gave in our last issue, from the Canadian Locomotive Co.

The Canadian Northern Ry. between Dec. 15, 1911, and Jan. 15, received the following additions to rolling stock:—one first class car, five snow ploughs and 70 box cars, from the Canadian Car and Foundry Co.; 90 box cars from the Crossen Car Co.; one consolidation locomotive from the Canada Foundry Co., and 80 box cars from the Nova Scotia Car Works.

The Intercolonial Ry., since Dec. 19, 1911, has received the following additions to rolling stock:—18 box cars, 60,000 lbs. capacity, 85 steel frame box cars, 60,000 lbs. capacity, and 46 Hart-Otis steel dump cars, 100,000 lbs. capacity, from the Canadian Car and Foundry Co.; four switching and five Pacific type locomotives, from the Canadian Locomotive Co., and four box cars, 60,000 lbs. capacity.

The C.P.R., between Dec. 14, 1911, and Jan. 18, received the following additions to rolling stock:—two flangers, two snow ploughs, four vans, 10 baggage and express cars, one dining car, two G1, two G2 and four D4 locomotives from its Angus shops, Montreal; eight D4 locomotives from the Montreal Locomotive Works; 50 ballast cars from the Canadian Car and Foundry Co., Montreal, and one wrecking crane from the U.S.

The C.P.R., between Dec. 14, 1911, and Jan. 18, ordered the following rolling stock:—one flanger, 66 wooden box cars, five vans, two superintendents' business cars, 308 stock cars, 201 freight

refrigerator cars, 10 P1 locomotives and 10 U3 switching locomotives, from its Angus shops, Montreal; 50 D10 locomotives from the Montreal Locomotive Works; 400 flat cars from the Canadian Car and Foundry Co., and 200 stone cars from the Nova Scotia Car Works.

The Mond Nickel Co. has ordered 12 Otis type, all steel short cars, 50 tons capacity, for its ore service, from the Hart-Otis Car Co., Montreal. Following are the chief dimensions:—

Length over end sills	21 ft. 9½ ins.
Length inside	19 ft. 1 in.
Width over all	9 ft. 11¼ ins.
Width inside	9 ft. 6 ins.
Height inside	4 ft. 6 ins.
Height from rail to top	8 ft. 10¾ ins.
Height from rail to floor	4 ft. 4¾ ins.
Truck centres	11 ft. 11 ins.
Wheel base of truck	5 ft. 4 ins.
Doors on each side	Four
Width of door opening	2 ft. 2 ins.
Length of door opening	19 ft. 1 in.

The G.T.R., for the three months ended Dec. 31, 1911, ordered the following rolling stock:—2,000 box cars from the Canadian Car and Foundry Co., and 44 passenger cars, 23 baggage cars, 1,000 box cars and 1,000 coal cars in the United States; and received the following additions to rolling stock:—six passenger cars and five baggage cars from its Point St. Charles shops, Montreal; one snow plough from its London, Ont., shops; 926 box cars from the Canadian Car and Foundry Co., and 10 freight locomotives from the American Locomotive Co. Details of these have been given in previous issues.

The Canadian Car and Foundry Co., Montreal, between Dec. 15, 1911, and Jan. 15, made the following shipments of rolling stock:—two first class passenger cars, two sleeping cars, five snow ploughs, 118 box cars and five steel underframe flat cars, for the Canadian Northern Ry.; one 40-ton steel frame drop bottom box car and 48 fifty-ton steel frame box cars, for the Canadian Pacific Ry.; 46 fifty-ton Otis dump cars and 108 thirty-ton steel frame box cars for the Intercolonial Ry.; 252 thirty-ton steel frame box cars for the Grand Trunk Ry.; one tourist car for the Grand Trunk Pacific Ry., and two pay-as-you-enter composite passenger cars for the Montreal St. Ry.

Following are chief details of the rotary snow plough which the Canadian Northern Ry. is having built by the Montreal Locomotive Works,—

Cylinders, diar. and stroke	17 by 22 ins.
Truck wheels, diar.	33 ins.
Boiler, diar.	60 ins.
Boiler pressure	190 lbs.
Firebox, length and width	92 by 50 ins.
Tubes, no. and diar.	202 2 ins.
Tubes, length	9 ft. 8 ins.
Heating surface, tubes	1,022 sq. ft.
Heating surface, firebox	130 sq. ft.
Heating surface, total	1,152 sq. ft.
Grate area	31.9 sq. ft.
Drum, width	10 ft.
Cut width	10 ft. 7 ins.
Rotary wheel, diar.	9 ft. 8½ ins.
Length over all	38 ft. 3 ins.
Height, extreme	15 ft.
Weight on forward truck	82,000 lbs.
Weight on rear truck	70,000 lbs.
Weight, total	152,000 lbs.
Tender capacity, water	5,000 imp. gals.
Tender capacity, coal	10 tons

It was reported in Chicago recently that several of the steam railways terminating there were about to install Edison storage battery cars for suburban service. Among those mentioned were the Illinois Central Rd. and the Chicago Great Western Rd. Inquiry at the offices of these companies elicited a statement that the companies had not placed any orders for these cars, but were considering the question carefully, and that the limited clearances for overhead construction and for third rails made the freedom from these factors an important merit of storage battery cars.

Grand Trunk Railway Construction, Betterments, Etc.

New England Plans.—Application was made to the General Court of Massachusetts, Jan. 13, for authority to build a railway into Worcester and Boston, and to operate steamships within the Commonwealth's jurisdiction. One of the routes by which entrance is desired into Boston is from Blackstone on the Southern New England Ry., which is to be built into Providence, R.I., and a second is from Bellows Falls on the Central Vermont Ry., while entrance is sought into Worcester by a branch from Douglas on the Southern New England Ry. The application is made by the Southern New England Ry., a subsidiary of the Central Vermont Ry., which is controlled by the G.T.R.

The board of aldermen of Providence, R.I., passed an ordinance, Dec. 29, authorizing the laying of track to the water front of that city by the Southern New England Ry.

Central Vermont Ry.—The Board of Railway Commissioners has ordered the company to ballast its entire line between St. Lambert and Waterloo, Que.; Marieville and St. Cesaire, Que.; Farnham and Frielsburg, Que.; Iberville and Farnham, Que.; and to repair all bridges, farm crossings, highway crossings, and fencing; the ballast to be six inches lift, the entire work to be completed by Oct. 1.

Kingston, Ont.—Application has been made to the Kingston, Ont., city council for the supply of 1,000 h.p. to operate drills and crushing machinery at a granite quarry in the vicinity of the city. The granite, it is stated, is to be used for the ballasting of the main line, in place of gravel. The matter was considered by the city council Jan. 8, and steps are being taken to provide the power, which is wanted in April.

Orillia, Ont.—A press report states that a site has been purchased in Orillia, Ont., on which to erect an office building. It is further stated that a new station will be built opposite the C.P.R. station on Mississaga St., and that a loop line is to be built to connect Orillia with Washago, round the west side of Lake Couchiching.

Canada Atlantic Ry.—The company is arranging, according to press reports, to carry out an extensive programme of improvements on the C.A. Ry. through the Algonquin Park. The Highland Inn, it is stated, will have a 40 room addition built to it in time for next summer's tourist traffic. (Jan., pg. 20.)

Kingston and Pembroke Ry. Management.—A Kingston, Ont., dispatch of Jan. 24 says:—"Sir Thos. Shaughnessy has made the announcement that the C.P.R. intends shortly to take over the Kingston and Pembroke Ry., and make extensive improvements."

The C.P.R. is reported to be arranging to lay out and operate an experimental farm in New Brunswick.

The Dominion Government has refused to advise the disallowance of the Alberta Legislature's act cancelling Alberta and Great Waterways Ry. Co.'s franchise and the contract between the Alberta Government and the company for its construction.

The C.P.R. will run a farm special over its eastern lines during the summer, starting in Ontario in March, passing through Quebec, and completing the service in New Brunswick. The train will consist of three exhibit cars for agricultural products, three lecture cars and a staff of lecturers provided by the various provincial agricultural departments. The whole will be in charge of H. P. Timmerman, Industrial Commissioner, C.P.R.

Electric Railway Department

British Columbia Electric Railway Company's Locomotives

The B.C. Electric Ry. Co. has recently added two more electric locomotives to its rolling stock.

They were designed for operation on 600 volts direct current. They are of the double-truck, central-cab type and are required to haul cars around curves of 75 ft. radius and to traverse curves of 34 ft. radius when running alone. The trucks have equalized pedestals, square frames forged in one piece, half-elliptic springs and cast-steel rigid bolsters. The bolsters are cast in one piece with the brake lever fulcrums and side bearings, and are provided with suitable lugs on which part of the weight of the motors is distributed.

The frame is composed of four 12-in. channel longitudinal sills with cast-iron bumpers. Diagonal braces, 1 1/4 by 9 in., reinforce the frame between the middle and outside sills. The frame bolsters are made of 1 3/4 by 15 in. plates, and the transverse cover plates are 7/8 by 15 in. The bumpers have lugs to which the longitudinal sills are riveted and are cast in one piece with the coupler pockets and poling sockets. The cab is built of steel plate and can be entered from either end. Brakes are provided on all wheels, and are both hand and pneumatically operated. The equipment includes sand-boxes, pilots and automatic couplers at each end; also a bell and whistle. The couplers are so arranged that, if desired, extension drawbars may be used.

The principal dimensions are as follows:—

Wheelbase, rigid	6 ft. 8 in.
Wheelbase, total	22 ft. 2 in.
Distance between truck centres	15 ft. 6 in.
Distance between coupler knuckles	31 ft. 1 in.
Driving wheels, diameter, outside	36 in.
Driving wheels, diameter, centres	30 in.
Journals	5 ft. 6 in.
Width	9 ft. 6 in.
Height	12 ft.
Weight	90,000 lb.

Each locomotive carries four motors, one motor geared to each axle with a ratio of 17:60. The weight of the motors is carried by the two axle bearings and by a nose which rests directly on the truck transom. To facilitate repairs the wheels, axles and motors can be dropped into an overhauling pit, or one end of the cab can be jacked up, and a truck run out.

The motors are of the no. 307-D interpole type. The box type frame is of steel cast in one piece and is so constructed that the armature and bearing housings can be easily removed. The brush holders are also readily accessible. The field frame contains four interpole coils and four main field coils wound with flat copper strap, which is insulated with asbestos tape and impregnated with an insulating, heat-conducting and waterproof compound. This insulation will not be injured if a temperature of 100 deg. C. is sometimes reached in service. The motors operate efficiently on potentials ranging from 300 to 600 volts. The normal rating of the motor is 150 h.p. at 500 volts and 260 amp. with blowers. The approximate continuous rating, with blowers, is 175 amp. at 300 volts. The weight of each motor, including gears, gear cases, pinions and axle bearings, is 5,510 lbs.

The current for the H.B. (hand-operated) unit switch control is obtained from a low-voltage storage battery, eliminating all heavy current-carrying parts in the controller. This control apparatus is small, light and extremely simple. Powerful forces are used to operate the switches and reverser, thereby providing great momentary

overload capacity. An exceptionally powerful magnetic blowout is employed to insure long life to the contact tips and other wearing parts. The use of an independent control circuit enables the motorman to throw the reverser in case of emergencies or in case the power should go off the line.

The simple operation of the type H.B.



End View of Electric Locomotive.

control makes it very easy for the locomotive motorman to lean from the cab window and watch for signals while manipulating his controller. Many of the heavier K or L types of controller require practically all of a motorman's strength to operate. Another advantage of type H.B. control over the K. and L. types is that it is impossible for the

following apparatus:—Two no. 264 line switches, two no. 264 switch groups, two no. 1764 reversers, two no. 133 master controllers, one no. 351 control cut-out switches, two no. 430 junction boxes, four no. 448 train line receptacles, two no. 449 train line jumpers, one set grid resistances, one set pneumatic details.

The motors are connected in series and in parallel in conjunction with the necessary resistance. This provides three running positions, namely: four motors in series, two motors in series, two motors in parallel, and four motors in parallel. There are seven resistance steps with the motors connected in series, six with the motors in series parallel and five with all motors in parallel. Reversing is accomplished by means of two pneumatically-operated reversers, each reverser operating two motors. The control combinations are effected by two pneumatically-operated unit switch control groups. A master controller of the locomotive type is located in each end of the cab.

The brake equipment is the Westinghouse E.L. type, which provides for automatic operation of the locomotive and train brakes. Air for the brakes control system is furnished by a no. C-60 motor-driven compressor, which has a delivery capacity of approximately 50 cu. ft. of free air per minute. Each locomotive has a motor-driven centrifugal blower set which furnishes forced ventilation to the motors.

The motors and auxiliary apparatus have sufficient capacity to enable the locomotive to exert continuously a tractive effort of 6,800 lbs. with forced ventilation. Without forced ventilation the continuous tractive effort is 3,500 lbs. The locomotive is also able to exert a maximum tractive effort of 12,800 lbs. at approximately 17.5 m.p.h. for one hour. With clean dry rails the maximum tractive effort is 20,000 lbs. at 500 volts, at all speeds up to 15 m.p.h. With sand a momentary tractive effort of 26,000 lbs. can be exerted.

The hauling capacity of the locomotive



British Columbia Electric Railway Locomotive.

motorman to stop between notches and draw an arc. He must advance his control handle a whole notch with every forward movement. Another important feature of the type H.B. control is its ability to control locomotives in multiple or "double-heading" when handling heavy traffic.

The control equipment consists of the

tive is as follows:—

Number of Cars Each Weighing 45 Tons with Load at 17.5 m.p.h. at 550 Volts.

	Straight.			*Maximum Grade.		
Level road	1/2%	1%	2%			
39 cars	15 cars	9 cars	5 cars			

*On fairly level and straight road the load to be handled is determined by the maximum grade.

The figures given for "straight, level

track" show the load which may be handled in switching service. The foregoing values given under maximum grade are safe when the grade requires a pull of but five minutes or ten minutes duration. In any particular case the number of cars that can be handled may be greater or less than the values above tabulated, depending upon the profile, curves and operating conditions.

The Baldwin Locomotive Works, Philadelphia, Pa., built the cab, trucks and all mechanical parts, the Westinghouse Electric and Manufacturing Co. built and installed the electrical equipment, including motors and control.

The Canadian Street Railway Association

By James Anderson, President.

At the dawn of a new year, it might not be amiss for me to give a short retrospect of the past few months from an electric railway point of view.

The past year has been an unusually busy one for the company with which I am identified (the Sandwich, Windsor and Amherstburg Ry.) and also for a great many of the other companies composing the Canadian Street Railway Association. This association was organized about eight years ago and has nearly every system in the Dominion, with the exception of municipally owned lines, represented on its membership roll. About 90% of the mileage in Canada is included in the association, the annual meetings of which are held during the

The classification of accounts used by most of the systems in Canada is that of the American Association.

Our policy is to assist in solving the problems of the different companies and to give them the best advice that we can from the association of practical men in the different departments. Some of us do not have the same opportunities as others of going around and seeing what is done in communities larger than our own. If we did perhaps we should, like myself, sometimes feel ashamed of our home conditions. The public is not always to blame for its severe criticism of us; in fact, I am inclined to think we are often let down too easily.

In conclusion, let me say to the members of the Canadian electric railway fraternity that, although we have not as yet decided where we shall hold our next annual meeting, I trust that wherever it may be you will attend with all the representatives that your company can afford or spare from the service.

Edmonton Radial Railway.

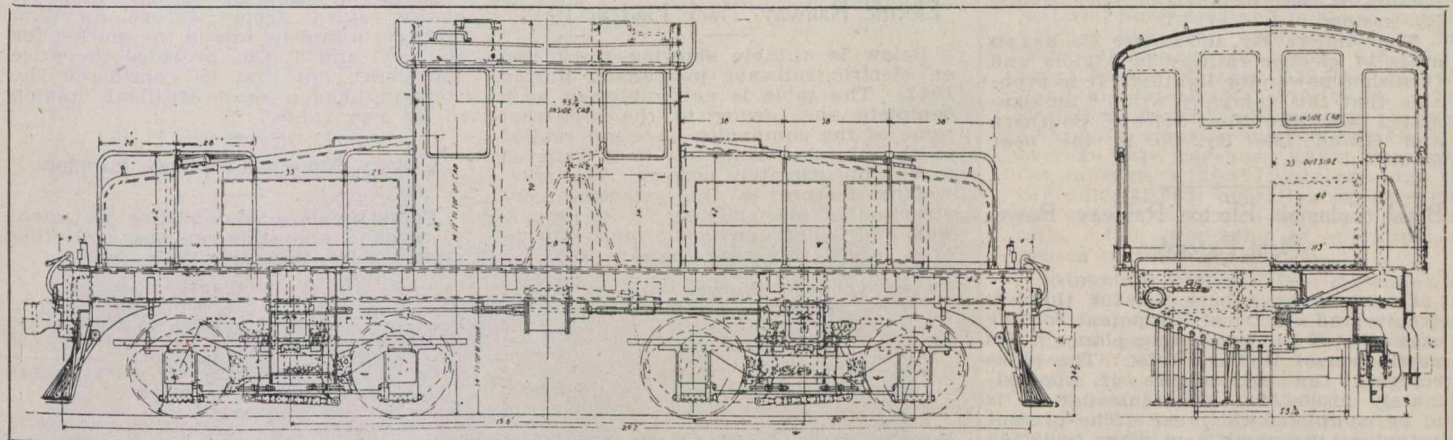
The city of Edmonton, Alta., which owns and operates the Edmonton Radial Ry., is adding 15 double truck, double end, pay-as-you-enter cars to its equipment. Following are the principal particulars:—

Length of car body	30 ft. 6 ins.
Length overall, approximately	45 ft.
Width overall	8 ft. 10 ins.
Width over side sheathing, approximately	8 ft. 6 ins.

carried numbered 381,922 and the receipts were \$15,982.34. The Edmonton Capital says:—"Figuring the cost of carrying each passenger at the cost for Nov., the system will show a deficit for Dec. of \$4,625.37. In Nov. the deficit was \$3,672.40. However, the proportion of cost per passenger will be less, providing power charges are the same as the month previous, for the reason that the operation expenses will be no greater, overhead will remain fixed, likewise capital charges. Consequently, the average loss per passenger might reasonably be expected to be less than 7 mills, the loss for Nov. It has been a fact that in the past the more passengers are carried the greater the loss has been. In short, the traffic has constantly been becoming heavier and the deficit greater."

Jurisdiction Over Montreal Street Railway

The city of Montreal has lost its appeal to the British Privy Council against the Montreal St. Ry. The case involved the question of whether the Board of Railway Commissioners had jurisdiction over provincial railway companies or companies operating under provincial charter connected with lines operating under Dominion charter. About a year ago the Board of Railway Commissioners, on the complaint of certain residents of Mount Royal ward, Montreal, ordered that the Montreal St. Ry. reduce fares on its Mount Royal ward service, so as to



British Columbia Electric Railway Locomotives. Side and End Elevations.

early part of June. There are about 20 member companies. They are separated by the width of the Dominion, and include Halifax and St. John on the east and Vancouver on the west. Yet at the meeting in Windsor, Ont., last June, all parts of the Dominion were represented and those present took a keen interest in the discussion of the papers and practical talks that were given on that occasion. There is no doubt of the good service which the association is doing among its members, or of the valuable information that the small corporations can get from the experts in the different departments of the larger companies by meeting together. In fact, the opportunity of hearing and discussing the papers presented at our meetings is one which should not be missed by any Canadian electric railway official.

It has been my pleasure and privilege to attend several meetings of the Central Electric Railway Association and I believe that this association has done more to bring about uniformity and standardization of electric railways in Ohio, Indiana and adjoining States than any other influence that exists. It is by keeping in close touch with the other fellow that we are able to keep in the front rank ourselves.

Our association is working along the same lines, desiring to get uniformity in the operating rules which were approved by our association last July and have been submitted to the Board of Railway Commissioners for approval.

They will have a seating capacity of 36 passengers. The framing will be steel. The steps and doors will be folding and operated together by the one handle. The interior finish will be cherry, and the ceiling three-ply veneer bird's eye maple. The trucks will be 27G1 and they will have rolled steel wheels and Westinghouse air brakes. There will be two longitudinal seats at each end, each 5 1/4 ft. long and five pairs of reversible cross seats each 3 ft. long. Twill weave rattan will be used for the seats.

The car barn to be built will be of brick and concrete, with a capacity of approximately 100 cars, and will have a repair shops and offices. The extreme length of the entire building is approximately 558 ft., extreme width 225 ft. The main storage will contain 12 tracks each 300 ft. long. In the rear of this will be a transfer table, without pits, working across the full width of the building. Beyond this will come the repair section, 120 ft. long, a part of which will also be used for storage. In the rear and to one side of the repair pits will be located the various shops. The barn will be heated from a central plant by hot air. It is proposed to locate a power sub-station at the barn which will have an ultimate capacity of approximately 1,600 k.w.

In 1911 the number of passengers carried was 660,768 and the revenue \$27,382.74, an average per passenger of 4.13 cents. In Dec., 1910, the passengers

afford people in that district transportation at the same rate as that enjoyed by the residents of Notre Dame de Grace.

The Montreal St. Ry. contended that the Board of Railway Commissioners had no right to give such an order, and claimed that it could only be controlled by the Provincial Government, which granted its charter. The Supreme Court of Canada upheld the Montreal St. Ry.'s contention, Sir Louis Davies and Judge Anglin dissenting. The city of Montreal obtained leave from the Privy Council to appeal from the Supreme Court's judgment, and it is this appeal which has been dismissed.

Levis County Railway Company's Annual Report.

The receipts for the year ended June 30, 1911, were \$66,656.98; expenses, \$57,755.03; net earnings, \$8,901.95. The interest on bonds and loans for the year was \$12,728.48, leaving a profit and loss debit of \$3,826.53, which, added to \$28,386.58 as the debit account, June 30, 1910, leaves a total profit and loss debit balance of \$32,213.11.

Following are the directors and officers elected for the current year:— President, S. H. Ewing; Vice President, Hon. R. Turner; Secretary-Treasurer, E. A. Macnutt; other directors, J. A. Richardson, J. Forman, Col. C. E. Allen-Jones, J. C. Blouin.

C. E. A. Carr's Removal from Quebec.

C. E. A. Carr, who since Jan., 1910, has been General Manager of the Quebec Railway, Light, Heat and Power Co., has resigned on being appointed General Manager of the New Orleans, Southern and Grand Isle Ry. and of the Algiers Ry. and Lighting Co., at New Orleans, La.

On Jan. 8, he was presented by the staff, with a gold watch and fob, and a silver purse for Mrs. Carr, and they both left Quebec on the following day for New Orleans.

Mr. Carr's move is from one extreme climate to another, and it is a peculiar coincidence that Quebec and New Orleans are the oldest cities on the continent.

The New Orleans Southern and Grand Isle Ry. runs from Algiers, La., which is situated on the south side of the Mississippi River, opposite New Orleans, practically paralleling the river down stream to Buras, 59.6 miles. It is contemplated to build a line from Myrtle Grove, about 25 miles south of New Orleans, to Grand Isle on the Gulf of Mexico, where a harbor will be established. It is standard gauge and its equipment consists of eight locomotives, 10 passenger cars and 139 freight and miscellaneous cars. The President is C. D. Warren, Toronto, formerly President of the Lake Superior Corporation, and at one time largely interested in the Metropolitan Ry., now a portion of the Toronto and York Radial Ry. system.

The Algiers Ry. and Power Co. has six miles of electric railway in Algiers and furnishes power for lighting. It is probable that this company will be amalgamated with the New Orleans, Southern and Grand Isle Ry. Co. in the near future.

British Columbia Electric Railway Power Plant Extension.

Contracts have been let for the hydraulic and electrical equipment for the extension of the generating plant on the north arm of Burrard Inlet. The plans represent an expenditure of approximately \$1,000,000. The installation is to be completed this year. The present output at the north arm plant is 43,500 h.p., which includes one unit of 10,500 h.p. which was placed in operation on Jan. 8. There is also a steam auxiliary plant in Vancouver of 12,000 h.p., one unit of 3,000 h.p. at this station having been put into service during the latter part of December.

The plans for the development at the north arm call for an additional installation of 42,000 h.p. This will give the company an available output of 85,500 h.p. from this station, which means the creation of a power station giving three times the amount of power furnished from any other similar plant in Western Canada.

The company has also recently awarded contracts for the development of its steam auxiliary, making the plant available for an output of 20,000 h.p., and this work will be completed early this year. The combined power at the hydro electric and steam plant which the company will have available at the close of 1912 will be 105,500 h.p., or over 1 h.p. for every two persons within the area of greater Vancouver, the city which is the centre of the company's operations on the mainland. As the company's territory on the mainland is, roughly, 20 by 80 miles, provision will be made for 66 h.p. per square mile over the entire district. Plans are now in hand for the development of other power sites which will bring its total output up to 200,000 horse power.

The development of the north arm

plant will be carried on in connection with the construction of the dam at the mouth of Lake Coquitlam, 90 ft. high. This will give a storage capacity in Lake Coquitlam of 9,000 million cubic feet. During December the company completed the enlargement of the hydraulic tunnel connecting Lake Coquitlam and Lake Buntzen, from which latter point the north arm generating plant is fed at a head of 400 ft. This tunnel was originally 9 by 9 ft., but has been increased to 190 sq. ft. on section.

The new equipment at the north arm station, for which contracts have been awarded, will consist of three units, each of 14,000 h.p. The John McDougall Caledonian Iron Works of Montreal will supply the 14,000 h.p. waterwheels, which will be of the Doble type. They will be the largest units of this kind in America. The electrical equipment will consist of three generators, each of 9,000 k.v.a. capacity, and capable of overload to the maximum of the hydraulic equipment. The three new units will be housed in an independent generating station, located on the north arm waterfront, about 2,000 ft. south of the existing generating station. To convey the water from Lake Buntzen to the station a hydraulic tunnel will be driven through solid granite. It will be 2,250 ft. long, with an internal diameter of 15½ ft., and will be concrete lined throughout to lower the friction factor to the lowest possible point.

Electric Railway Track Laid in 1911.

Below is a table showing track laid on electric railways in Canada during 1911. The table is not published as a complete one, owing to the fact that some of the companies have not replied to the circular sent, but it is believed to be approximately correct. The noteworthy feature is the extensive construction of electric lines in Saskatchewan and Alberta, which promises to be even larger this year than in 1911.

	Miles.
BRITISH COLUMBIA ELECTRIC RY.—	
Various extensions in Vancouver, New Westminster and Victoria	29.00
CALGARY MUNICIPAL RY.—	
Various lines	24.50
GUELPH RADIAL RY.—	
Centre of city easterly for	1.25
LEVIS COUNTY RY.—	
Extension in upper town	0.66
MONCTON TRAMWAYS, ELECTRICITY & GAS CO.—	
King St. to John St.	2.00
MONTREAL AND SOUTHERN COUNTIES RY.—	
St. Lambert to Country Club	1.25
MONTREAL PARK AND ISLAND RY.—	
Two extensions	0.82
MONTREAL ST. RY.—	
Two extensions	0.66
MONTREAL TERMINAL RY.—	
One extension	0.12
MOOSE JAW ELECTRIC RY.—	
Various lines	8.35
QUEBEC RY., LIGHT AND POWER CO.—	
Beaufort to Kent House Park	3.58
REGINA MUNICIPAL RY.—	
Various lines	10.50
SHERBROOKE RY. AND POWER CO.—	
Extensions on two lines	2.14
TORONTO RY.—	
Extensions and additions (estimated)	7.00
WINNIPEG ELECTRIC RY.—	
Eight extensions	10.75
Total	102.58

Cape Breton Electric Co.'s Earnings.

Following are the figures for the year ended Sept. 30, 1911:—

	Increase.
Gross earnings	\$333,471.47 \$15,738.40
Operating expenses	172,401.82 1,479.76
Net earnings	\$161,069.65 \$14,258.64
Interest charges and taxes	60,108.32 *163.44
Balance	\$100,961.33 \$14,422.08
Sinking and Imp. funds	13,685.00 *15.00
Balance	\$ 87,276.33 \$14,437.08
*Decrease.	
Construction charges since Jan. 1, 1911	\$41,805.51

Hamilton District Electric Railways.

Hamilton, Ont., press reports concerning electric railways state that negotiations are in progress for the taking over of the Dominion Power and Transmission Co.'s railways and other properties, and for their amalgamation with the extensive electric railway projects which are controlled by Mackenzie, Mann and Co. The report is denied by the Dominion Power and Transmission Co., but is persisted in, and it is further stated that involved in the whole is the provision of an entrance into Hamilton for the Canadian Northern Ontario Ry. line from Toronto to Buffalo. The Mayor of Hamilton stated recently that he had received a request from the C.N.O. Ry. authorities to defer action on the granting of an extension of line for the building of the Hamilton, Waterloo and Guelph Ry., which J. Patterson is projecting. The Toronto Suburban Ry., a Mackenzie, Mann and Co. line, has power to build a line covering practically the same route as the H.W. and G. Ry., and the report says that in order to secure the right of way at Dundurn Park granted the H.W. and G. Ry., the M., M. and Co. interests will acquire that charter also. The whole situation at present seems very much involved, owing to the various denials, as well as to the activities of officials and agents of M., M. and Co. interests in Hamilton and vicinity.

In an interview at Toronto, Jan. 17, on his return from Europe, Sir Wm. Mackenzie said he was in the market for the D.P. and T. Co., provided the price was right, but that he considered the company had a most excellent opinion of its own value.

Calgary Municipal Railway Earnings.

Following is a comparative statement of revenue, operating expenses and other statistics for 1911 and 1910:—

	1911.	1910.
REVENUE.		
Passenger earnings	\$37,956.15	\$21,499.80
Miscellaneous earnings	472.85	855.66
	\$38,429.00	\$22,355.46
OPERATING EXPENSES.		
Maintenance of way and structures	\$ 1,031.70	\$ 369.08
Maintenance of equipment and cars	3,775.51	1,114.03
Transportation	17,916.26	9,980.18
General expenses	1,748.77	976.91
	\$24,472.24	\$12,240.20
Balance of revenue over expenses	13,956.76	9,915.26
Contingent account, 5% of gross receipts	1,921.45	1,117.77
Interest and sinking fund	5,263.33	2,715.88
Net profits	6,771.98	6,081.61
	\$38,429.00	\$22,355.46
Revenue per car mile	28.382c.	35.617c.
Operating expenses per car mile	18.074c.	19.819c.
Gross profit per car mile	10.306c.	15.798c.
Cost of power per car mile	5.293c.	6.783c.
Proportion of operating expenses to revenue	63.6%	55.5%

The Toronto Ry., during 1911, paid to the city, as its percentage of earnings, mileage and taxes, \$687,650.44, against \$596,297.35 in 1910. The percentages of earnings paid to the city range from 8 to 20% on a sliding scale. Mileage is paid at the rate of \$800 a single track mile.

Press reports state that the New York State Rys. Co. has increased its stock. This is believed to be a preliminary step in a plan to build a series of trolley lines across New York State. This company is owned by the New York Central Rd. Co. and has acquired a number of interurban lines in the state for the ultimate purpose of connecting these lines, completing a chain parallel to the New York Central.

Regina Municipal Railway.

Following are extracts from the report of H. Doughty, Superintendent, up to Oct. 31, 1911:

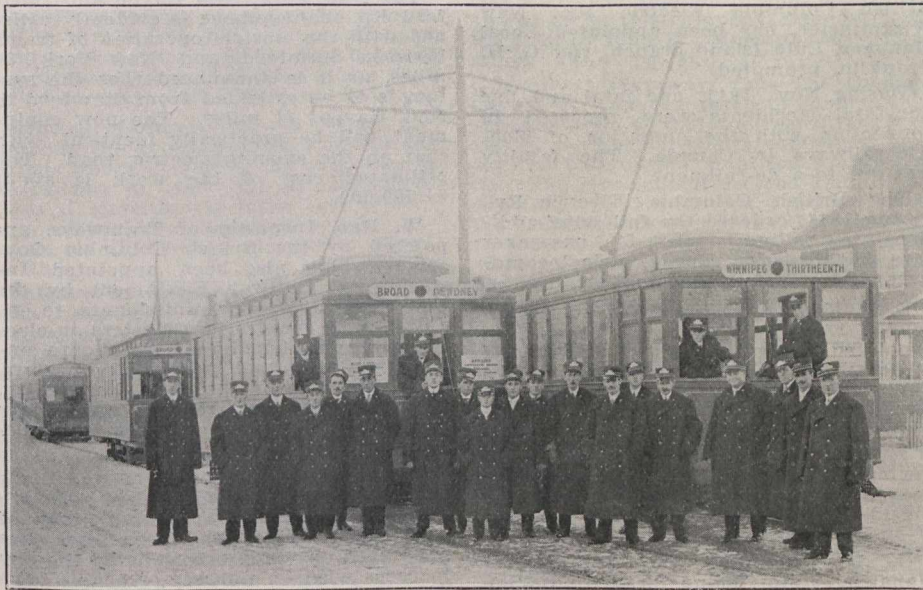
The construction of the Regina Municipal Ry. was started, April 20, 1911, partly by day labor and partly by contract, the work then authorized consisting of some 6½ miles of single track. About the beginning of August, contracts were placed for street pavements, and as street railway tracks had to be installed beforehand, it was deemed expedient to undertake the construction of an extra four miles of single track. This work was authorized on Aug. 7 and the whole layout of track decided upon for the year was installed complete and ready for operation by Nov., such consisting in bulk of 10½ miles single track, made up as follows:—21,000 ft. single track, 60 lbs. steel rails, gravel ballasted; 9,780 ft. single track, 80 lbs. steel rails, concreted and partly paved; and 25,500 ft. single track, or 12,750 ft. double track, 80 lbs. steel rails, concreted and paved, or a total of 57,280 single track complete with all track intersections and overhead construction from April 20 to Nov. 7 in 172 working days, making a daily average of 333 ft. single

to the exhibition grounds to be constructed and operated thereon. They were ready for operation on July 26. At that time the street railway unit was installed, but only four cars were in the city assembled ready to put into operation. On the evening of July 27, a trial run was made over the tracks as mentioned above, while on the following day, the railway was declared open and ready for operation by the Lieutenant Governor and the Mayor, the service afterwards for the day being given free to the public. During the two weeks of the exhibition, the railway earnings totalled \$5,881.55, the passengers carried numbering 117,431. As the various parts of the system have been completed, they have been put into operation, and cars are now operating over all tracks laid.

The following figures give the results of operation from the commencement to Oct. 31, showing that it will in the immediate future be on a paying basis, fully taking care of operating expenses, besides providing for payment of interest and sinking fund on capital expenditure:—

Gross earnings	\$14,065.78
Operating expenses	9,028.51
Net earnings over operating expenses. .	\$ 5,037.27

The railway up to the above date has



Regina Municipal Railway. Cars and Car Crews.

track. The cost of the above work is, approximately, as follows:—

60 lbs. single track ballasted, labor and material at \$.49 per single foot.	\$ 52,222.96
80 lbs. double track, concreted and paved, labor and material at \$12.95 per double foot	165,108.26
80 lbs. single track, concreted and paved, labor and material at \$5.40 per single foot	52,836.96
Track intersections, consisting of wyes, crossovers, turnouts, specials, etc., labor and material costing	101,648.24

Making a cost of all tracks installed complete at

complete at	\$371,816.42
Basing the above figures per foot on the laying of track per mile complete with overhead construction, the same is as follows:—	
60 lbs. steel rails, ballasted track, labor and material per mile single track	\$13,049.20
80 lbs. steel rails, concreted and paved track, labor and material per mile single track	28,512.00
80 lbs. steel rails, concreted and paved double track	68,376.00

These prices compare most favorably with tracks of similar kinds laid in other cities.

On account of the Dominion Exhibition being held in Regina in the first and second weeks in August, it was decided that the tracks from the post office

been in operation 81 days, showing a daily net revenue over operating expenses of \$62.19. The total number of passengers carried to that date was 277,428.

The rolling stock consists of four single truck cars, two double truck cars and one snow sweeper, entailing an expenditure of, approximately, \$36,000. An additional six cars are being provided, but cannot be procured until early spring. An up-to-date car barn has been built sufficient for future requirements, capable of handling 25 cars. Machinery and all necessary equipment have been ordered; these, together with car barn tracks, building, etc., will cost about \$40,000.

It is as yet impossible to determine the total amount of the year's expenditure on street railway work, but it will be, approximately, about \$510,000.

T. P. Shonts, President of the Interborough Rapid Transit Co., which operates the elevated and subway lines in the boroughs of Manhattan and Bronx, New York City, has been elected President of the New York Railways Co., successor to the Metropolitan Street Ry. Co., which has been in the hands of a receiver for the past few years.

Electric Railway Finance, Meetings, Etc.

Berlin and Waterloo St. Ry.—The profit for 1911 on this line, which is operated by the town of Berlin, after providing for payment of interest, etc., on debentures, and general maintenance and improvements, was \$4,500.

British Columbia Electric Ry.—Gross earnings for Nov., 1911, \$488,699; working expenses, \$302,489; net operating earnings, \$186,210; renewal funds, \$37,935; net earnings, \$148,275; approximate income from investments, \$25,000; net income, \$173,275; against \$355,292 gross earnings; \$201,891, working expenses; \$153,401, net operating earnings; \$25,417, renewal funds; \$127,984, net earnings; \$20,000 approximate income from investments; \$147,984, net income for Nov., 1910. Aggregate gross earnings for five months ended Nov. 30, 1911, \$2,278,391; net earnings, \$788,417; against \$1,602,414, aggregate gross earnings; \$670,628, net earnings for same period, 1910.

Calgary Municipal Ry.—The annual report of operations for the year 1911 shows:—Passenger earnings, \$361,757.06; miscellaneous earnings, \$7,112, a total of \$368,869.06. Operating expenses, \$191,654.58; net revenue, \$177,214.48. After deducting debenture interest of \$34,110; sinking fund, \$18,159.99; taxes, \$4,528.35, and bank interest, \$5,604.50, there was a surplus of \$114,869.06. This includes \$3,784.70 of material purchased and in stock, and the balance has been appropriated as follows:—Contingent account, \$16,426.50; grant in aid of taxes, \$75,500; cash on hand and receivable, \$19,100.44. The statistics showed:—Passengers carried, 8,838,057; transfer passengers, 864,736; average fare revenue, 4.081; passenger car mileage, 1,126,807; car earnings per car mile, 32.063; operating expenses per car mile, 17.008; cost of power per car mile, 5.180; proportion of operating expenses to revenue, 51.95%.

Edmonton Radial Ry.—Revenue for 1911, \$239,258.61, an increase of 65.8% over that for 1910. The number of passengers carried was 5,748,157, an increase of 67.7%. There were increases in the cost of power, capital charges and track maintenance, amounting to \$29,313.68, this being greater than the total deficit in 1910. The deficit for 1911 was \$34,826.07.

Halifax Electric Tramway.—Railway receipts for Dec., 1911, \$18,922.97, against \$17,822.31 for Dec., 1910.

Hamilton, Grimsby and Beamsville Electric Ry.—The annual meeting was held at Hamilton, Ont., Jan. 22. Following are the officers and directors for the current year:—President, Jas. Dixon; Vice President, John Dickerson; Treasurer, John Knox; Secretary, G. D. Fearman.

Montreal and Southern Counties Ry.—Montreal press reports Jan. 22 state it is regarded as almost certain that the M. and S.C. Ry. will before very long be absorbed by the Montreal Tramways Co. The M. and S.C. Ry. is practically owned by the G.T.R.

Montreal St. Ry.—Passenger earnings for Dec., 1911, \$425,164.02; miscellaneous earnings, \$5,774.65; total earnings, \$430,938.67; operating expenses, \$268,328.54; net earnings, \$162,610.13; city percentage on earnings, \$20,621.23; interest on bonds and loans, \$15,832.45; rental leased lines, \$607.49; taxes, \$5,000; total charges, \$42,061.17; surplus, \$120,548.96; expenses per cent. of earnings, 62.27, against \$371,691.09 passenger earnings; \$5,583.08 miscellaneous earnings; \$377,274.17 total earnings; \$235,209.36 operating expenses; \$142,064.81 net earnings; \$17,005.37 city percentage on earnings; \$15,384.22 interest on bonds and loans; \$552.50 rental leased lines; \$4,700 taxes; \$37,642.09 total

charges; \$104,422.72 surplus; 62.34 expenses per cent. of earnings, for Dec., 1910. Aggregate total earnings for three months ended Dec. 31, 1911, \$1,293,-807.84; operating expenses, \$761,106.50; net earnings, \$532,701.34; total charges, \$113,075.89; surplus, \$419,625.45; expenses per cent. of earnings, 58.83, against \$1,130,060.17 aggregate total earnings; \$668,401.32 operating expenses; \$461,658.85 net earnings; \$101,653.23 total charges; \$360,005.62 surplus; 59.15 expenses per cent. of earnings, for same period 1910.

Montreal Tramways Co.—A press report says that the plan of amalgamation of the Montreal Tramways Co. and the Canadian Light and Power Co. has been decided upon and that the amalgamation will be effected by a holding company taking up the common stock of the two companies to be absorbed. The holding company will be the Montreal Tramways and Power Co., with a London, Eng., charter and a capital of \$20,000,000. The shareholders of the Montreal Tramways Co. and the Canadian Light and Power Co. will receive 1½ shares of Montreal Tramways and Power Co. for each share now held by the shareholders. The holders of \$2,000,000 common stock of the Tramways Co. will receive \$3,000,000 of the consolidated company stock and the holders of the outstanding \$6,000,000 of Canadian Light and Power stock will receive \$9,000,000 of the consolidated company's stock. The Montreal Tramways and Power Co.'s outstanding capital will, therefore, be \$12,000,000 of the \$20,000,000 authorized.

Ottawa Electric Ry.—A bonus of 3%, in addition to the usual 2% bonus and 10% dividend, making a total of 15%, was paid to shareholders, Jan. 16, in respect of the past year's operations.

Winnipeg Electric Ry.—Gross earnings for Nov., 1911, \$355,825; working expenses, \$181,446; net earnings, \$174,379, against \$341,560, gross earnings; \$171,539, working expenses; \$170,021, net earnings for Nov., 1910. Aggregate gross earnings for 11 months ended Nov. 30, 1911, \$3,509,848; net earnings, \$1,778,002, against \$2,944,059, aggregate gross earnings; \$1,466,980, net earnings for same period, 1910.

Electric Railway Notes.

The Toronto Suburban Ry. has ordered two double truck cars.

The Calais (Me.) St. Ry. has discontinued the sale of school children's tickets.

The Winnipeg Electric Ry. has ordered 60 car trucks, complete with axles, in the United States.

The Canadian Street Car Advertising Co., Ltd., has surrendered its charter under the Ontario Companies Act.

The Calgary Municipal Ry. has received two single truck cars from the Preston Car and Coach Co., Preston, Ont.

The Galt, Preston and Hespeler St. Ry. has ordered two interurban cars from the Preston Car and Coach Co., Preston, Ont.

Superintendent Doughty, of the Regina, Sask., Municipal Ry., was presented by the employes with a gold locket, Jan. 1.

The Toronto Suburban Ry. is reported to have placed an order for motors and other car equipment with the Canadian General Electric Co.

Accident reports show that during 1911, 19 persons were killed on, or in connection with, the street railway in Toronto, and 28 in Montreal.

The Grand Valley Ry. has notified the Brantford, Ont., city council that it is

about to operate a freight service between that city and Paris, Ont.

The Buffalo, Lockport and Rochester Ry. is said to be considering plans for a station to be built near the Dodge opera house square in Buffalo, N.Y.

M. Urwin has been appointed Secretary, British Columbia Electric Ry., London, Eng., vice G. Kidd, appointed Comptroller at Vancouver, B.C., some time ago.

The Toronto and York Radial Ry. has ordered five interurban cars, and has received one double truck interurban car, from the Preston Car and Coach Co., Preston, Ont.

The city of Lethbridge, Alta., has ordered five single truck and five double truck cars, for its street railway, from the Preston Car and Coach Co., Preston, Ont.

The Dominion Power and Transmission Co., Hamilton, Ont., has ordered three double truck city cars from the Preston Car and Coach Co., Preston, Ont.

E. A. Macnutt, of the Sun Life Assurance Co., Montreal, has been appointed Secretary of the Western Railways and Light Co., of Champaign, Ill., succeeding J. B. Maccauley.

E. Sterling, heretofore Trainmaster, British Columbia Electric Ry., New Westminster, has been appointed Local Manager, Lulu Island branch, vice G. H. Franklin, promoted.

During Nov., 1911, one fatal and five non-fatal accidents were reported in connection with the operation of electric railways in Canada. The fatality was due to a de-railment.

The British Columbia Electric Ry., during 1911, ordered the following additions to rolling stock:—58 passenger cars, 25 box cars, four electric locomotives, and one steam locomotive.

D. R. Kennedy, heretofore Superintendent of Electrical Construction, has been appointed Superintendent of Power and Lines, British Columbia Electric Ry., Vancouver, vice W. T. Woodroffe, resigned.

A bylaw providing for the operation of cars on the Winnipeg Electric Ry. in the municipality of Kildonan, Man., has been prepared and will be submitted for consideration at the February meeting of the council.

G. H. Franklin, heretofore Local Manager, Lulu Island branch, British Columbia Electric Ry., Vancouver, has been appointed Manager, Interurban Division, New Westminster, vice Allan Purvis, resigned.

The Berlin, Ont., Light Commissioners, operating the Berlin and Waterloo St. Ry., are purchasing two double truck, 45 ft., pay-as-you-enter cars, and are considering the advisability of establishing a 10-minute service between Berlin and Waterloo.

A British Columbia Electric Ry. motorman has been fined \$15 for not slowing down his car when it was passing another car that was discharging passengers in Vancouver. This is the second prosecution that has taken place under the B.C. Tramways Inspection Act.

The Lethbridge, Alta., city council has ordered from the Preston Car and Coach Co., Preston, Ont., five 41½ ft. car bodies on trucks, and five 32 ft. 10 in. car bodies on trucks at a cost of \$40,158; and from the Canadian Westinghouse Co. 10 complete equipments with air brakes for five cars at a cost of \$19,755.

C. D. Warren, of Toronto, is one of the directors of the Keokuk, Nauvoo and Fort Madison Electric Ry. Co., recently incorporated in Illinois, to build an electric railway from Keokuk, Ia., through Hancock county, Ill., with branches to

Nauvoo and Carthage. The head office is at Nauvoo, and the capital stock \$650,000.

W. T. Woodroffe, Superintendent of Power and Lines, British Columbia Electric Ry., Vancouver, has resigned on his appointment as City Electrician for Vancouver. W. H. Elson, Local Manager, B.C. Electric Ry., New Westminster, has also resigned, no appointment to that position having been made to Jan. 15.

Sir Rodolphe Forget, President, Quebec Railway, Light, Heat and Power Co., E. A. Robert, President, D. McDonald, General Manager, and Patrick Dube, Secretary, Montreal Tramways Co., are associated with the Montreal South Land and Improvement Co., which has recently purchased about 950 arpents of land at Longueuil, on which it is reported a model city will be built.

F. Swayze, who has been conductor on the Niagara, St. Catharines and Toronto Ry., running between St. Catharines and Niagara Falls, Ont., is reported to have been appointed General Manager of the Niagara, Welland and Lake Erie Ry., which has done some track laying in Welland, Ont. It is said that construction will be continued to Niagara Falls, Port Colborne and other points.

The New York, New Haven and Hartford Rd. management is evidently satisfied with the electric operation of trains between Stamford and New York, 34 miles, as it is announced that the system is to be extended from Stamford to New Haven, 41 miles. The new equipment will be practically identical with that on the existing electric road. The estimated cost of the work is about \$4,000,000.

W. Rae, Inspector of Tramways, appointed by the British Columbia Government, has also been appointed Inspector of Railway Equipment by the Board of Railway Commissioners, to enable him to enquire into matters on electric railways, portion of which are under Dominion and provincial charters, as in the case of the B.C. Electric Ry. Co. He does not receive any salary from the Board of Railway Commissioners.

The Milwaukee Electric Ry. and Light Co. owns a hospital car, which, although designed primarily for taking care of passengers injured by street cars, has been used on many occasions by the city in cases where a number of people have been injured. It is fitted with two leather couches and it has a sink with water heated by electricity and electrically heated pads which are used in place of hot water bottles. It also has a case fitted with instruments and necessary appliances for first aid work.

The Guelph Radial Ry., which is owned by the city of Guelph, Ont., has been reorganized as follows:—Mayor, G. J. Thorp, Chairman; J. W. Lyon, J. W. Pequegnat, C. E. Howitt and W. E. Buckingham. On account of being opposed to the extension of the line to the city limits in St. Patrick's ward, J. J. Drew, K.C., who has been a member of the board since its formation, resigned, and the Treasurer, G. E. Ryan, also resigned for that and other reasons.

A circular issued by Sir Rodolphe Forget, President, Quebec Ry. Light, Heat and Power Co., announces that H. G. Matthews, heretofore Assistant to the President, has also been appointed General Manager, vice C. E. A. Carr, resigned. Another circular issued by W. G. Ross, President, Quebec Ry. Light and Power Co., announces that Mr. Matthews has been appointed to a similar position in that company. The Quebec Ry. Light, Heat and Power Co. is the holding company, the railways being operated by its subsidiary, the Quebec Ry. Light and Power Co.

Electric Railway Projects, Construction, Betterments, Etc.

Brandon, Man.—The city council received up to Jan. 16 offers for the franchise for an electric railway in the city, which are now under consideration. (Jan., pg. 38.)

The British Columbia Electric Ry. laid 29 miles of new track in 1911, exclusive of the reconstruction of part of the existing tracks on account of new paving on 11 miles of streets, and new part track on new paved streets for 2.5 miles.

Negotiations are in progress for a settlement of the Point Grey franchise difficulty, but in the meantime the company is appealing against the recent judgment declaring the franchise valid.

A proposition has been made by certain interests on Nanaimo St., Vancouver, to offer the company a bonus of \$55,000 for the building and operation of a line from Hastings St. to Broadway, about 18 blocks. (Jan., pg. 38.)

Buffalo and Fort Erie Ferry Ry.—A proposition is under consideration by which the company will build a line from Crystal Beach to Port Colborne, Ont., connecting there with the Niagara, St. Catharines and Toronto Ry. The proposal is that the latter company shall operate the line as a part of its system. The B. and F.E.F. Ry. also proposes to build a second track on its line between Crystal Beach and Fort Erie. (See Fort Erie Ferry Ry., Feb., 1910, pg. 147.)

Calgary Municipal Ry.—A bylaw authorizing the expenditure of \$442,000 for various works, including the extension of the railway to the site of the C.P.R. shops at Maharg, 4½ miles east of Calgary station, was approved by the taxpayers at the recent elections. (Jan., pg. 38.)

Calgary to Shepard, Alta.—The Alberta Legislature is being asked to incorporate a company to build an electric railway from Calgary to Shepard, Alta. Lathwell and Waters, Calgary, are solicitors for applicants.

The Dunnville, Wellandport and Beamsville Electric Ry. Co. is applying to the Dominion Parliament to extend the time within which the lines authorized may be built, and also to declare that the company may use other motive power than electricity. J. R. Roaf, Toronto, is the solicitor. (Oct., 1911, pg. 973.)

Humber Valley Electric Ry.—Application is being made to the Ontario Legislature to incorporate a company to build an electric railway from Dundas St., Lambton Mills, Ont., southerly to the Humber River, thence to Bloor St., crossing the river, and thence southerly along the east bank of the river to the Lake Shore road at Humber Bay, and easterly along the Lake Shore road to Sunnyside Ave., with power to build branch lines, and to make connections with other lines. W. H. Price is solicitor for applicants. The railway is projected as a part of the plans for the development of the Humber boulevard property of which R. Home Smith, of Toronto, is the promoter.

Kawartha Transportation Co.—The Ontario Legislature is being asked to incorporate a company with this title to build an electric railway from Peterboro, through Lakefield, to Clear Lake, thence to Stony Lake, to Apsley, Ont.; from Peterboro to Cobourg Lake, and from Peterboro to Rice Lake, Ont. Hall, Hayes and Hall, Peterboro, Ont., are solicitors for applicants.

Lethbridge, Alta.—Following the approving of the bylaw authorizing the building of an electric railway as a municipal undertaking, the city council Jan. 10 authorized the purchase of a site for a car barn, the erection of the neces-

sary structure, and appointed Superintendent Reid as General Superintendent of the Power, Light and Street Railway Department. At a previous meeting additional equipment for the power house, in order to provide for the operation of the railway, was ordered. Contracts have been let for the paving, steel rails, materials for overhead work, car equipment, etc., all for speedy delivery. (Jan., pg. 38.)

London Street Ry.—Local press reports state that a definite proposition will be made by the company to the London, Ont., city council for the taking over of the lines. The franchise does not expire until 1925, but as the company must make a considerable expenditure upon betterments and extensions it is thought that the present is a favorable time for a change in ownership. The price put on the property is stated to be \$800,000. (Jan., pg. 38.)

The Monarch Radial Ry. Co. is applying to the Ontario Legislature to extend the time within which the projected railway may be built; to increasing the bonding power from \$25,000 to \$30,000 a mile; and to change its name to the Toronto, Barrie and Orillia Ry. Co. Lennox and Lennox, Toronto, are the solicitors. (Dec., 1911, pg. 1171.)

Moncton Tramways, Electricity and Gas Co.—The line built and placed in operation by this company extends from King St. to John St., Moncton, N.B., two miles. (Jan., pg. 38.)

Montreal Tramways Co.—The Quebec Legislature is being asked to confirm the amalgamation of the Montreal Street Ry. and its various subsidiary companies under the title of the Montreal Tramways Co. The city council decided Jan. 13 to ask that the bill be not considered by the Legislature's committee before Feb. 15 in order that the city may be heard in opposition. The Provincial Secretary has authorized the M.T. Co. to do business in the province of Quebec, with E. A. Robert as its principal agent. (Jan., pg. 39.)

North Midland Ry.—The St. Marys, Ont., ratepayers have ratified a bylaw granting \$5,000 in aid of the building of the N.M. Ry. into the town. London, Ont., ratepayers have ratified a bylaw granting the company a bonus of \$25,000. (Jan., pg. 39.)

Owen Sound, Ont.—A conference has been arranged with the town council in connection with a proposal to establish an electric storage battery car line in the town. (Dec., 1911, pg. 1173.)

Ontario West Shore Ry.—A meeting of the representatives of the town and township municipalities which guaranteed the bonds of this company was held in Goderich, Ont., Jan. 12, to consider the position. The four municipalities interested guaranteed the interest on \$400,000 of bonds, on condition that an additional \$200,000 was expended upon construction. About 15 miles of the line has been completed from Menez, across the river from Goderich in the direction of Kincardine, but it is not being operated. The municipalities have been called upon to pay an instalment of interest. A suggestion has been made that the municipalities take over the line, complete it and operate it as a municipal work. A report is current that the C.P.R. has been considering the taking over of the line. J. W. Moyes, Toronto, is President. (Dec., 1911, pg. 1171.)

Quebec Ry., Light and Power Co.—Press reports state that the company has secured the water power rights on the first 30 miles of the Saguenay River out of Lake St. John, Que., and that it is proposed to develop 50,000 h.p. for industrial purposes in Quebec and district. (Jan., pg. 39.)

The Rainy River Radial Ry. Co. is asking the Dominion Parliament to ex-

tend the time within which the lines of railway authorized to be built by chap. 152 of the statutes of 1910, may be built. Machin and Ap'John, Kenora, Ont., are the solicitors. (Mar., 1910, pg. 233, and June, 1910, pg. 433.)

The Rennell Sonnet Development Co., which is incorporated under the British Columbia Companies Act, is applying to the B.C. Legislature to authorize it, among other things, to build tram lines on Graham Island.

The Rural Ry. Co. of Manitoba is asking the Manitoba Legislature for power to amalgamate with other similar companies. Mulock, Loftus, Armstrong and Lindsay, Winnipeg, Man., are the solicitors. (June, 1911, pg. 577.)

St. Thomas St. Ry.—A bylaw authorizing the expenditure of \$210,000 for the extension of the municipally owned electric railway in St. Thomas, Ont., to Port Stanley, Ont., was defeated by a large majority at the municipal elections Jan. 1. (Jan., pg. 39.)

Toronto Civic Car Lines.—A bylaw providing for the building of a tube railway to be operated by electricity from Front St. to St. Clair Ave., along Bay Terauley and Yonge Streets, was defeated by a majority of about 3,000 at the civic elections Jan. 1. (Jan., pg. 40.)

The Toronto Suburban Ry. Co. is asking the Ontario Legislature for an extension of time for the building of the company's lines and extensions; for authority to build an extension from near Guelph to near Berlin, Preston, Hespeler and Galt, thence to Hamilton; for the insertion after the words county of Peel in sec. 1 of the Act of 1910, the words "or from some point on its authorized Hamilton line at or near Cooksville"; for power to increase the capital stock and for authority to issue debenture stock for the purpose of providing bridges, terminals, station houses, generating plants, etc.

The York tp. council, Jan. 15, granted permission to the company to extend its line from the northerly limits of Weston village to the northerly limits of the township. The plans show a line running along the Weston road for 0.6 of a mile, and then across country by a private right of way to Woodbridge. The extension will be between nine and ten miles. The surveys for the extension of the Lambton line, which were completed some time ago, mainly on a private right of way as far as the Etobicoke River, have now been extended into Peel county. Crossing the Etobicoke River, the surveyed route gets to the south of Dundas St. just west of Summerville, and continuing on a private right of way gets to the C.P.R. near Dixie station and runs alongside the steam railway tracks to Cooksville station, whence it strikes northwesterly. Surveys for several routes beyond this have been made. It is said that work will be gone on with on the extension to Woodbridge, and the extension from Lambton as far as the crossing of Dundas St., at the C.P.R. tracks, Cooksville, this season. (Dec., 1911, pg. 1173.)

Winnipeg Electric Ry.—The question of the further extension of the company's lines is under consideration, but it is not expected that any announcement will be made until shortly after the annual meeting, which is fixed for Feb. 14.

The St. Boniface city council has approved of several extensions of lines in the city which are to be completed by July, 1913.

A bylaw to raise \$25,000 by debentures for a power distribution plant, and another for the purchase of 100 h.p. electric power from the Winnipeg, Selkirk and Lake Winnipeg Ry., have been approved by the taxpayers of Selkirk, Man. The W.S. and L.W. Ry. is a subsidiary of the W.E. Ry. (Jan., pg. 40.)

Marine Department

The Grand Trunk Pacific Ry. Marine Terminal, Prince Rupert.

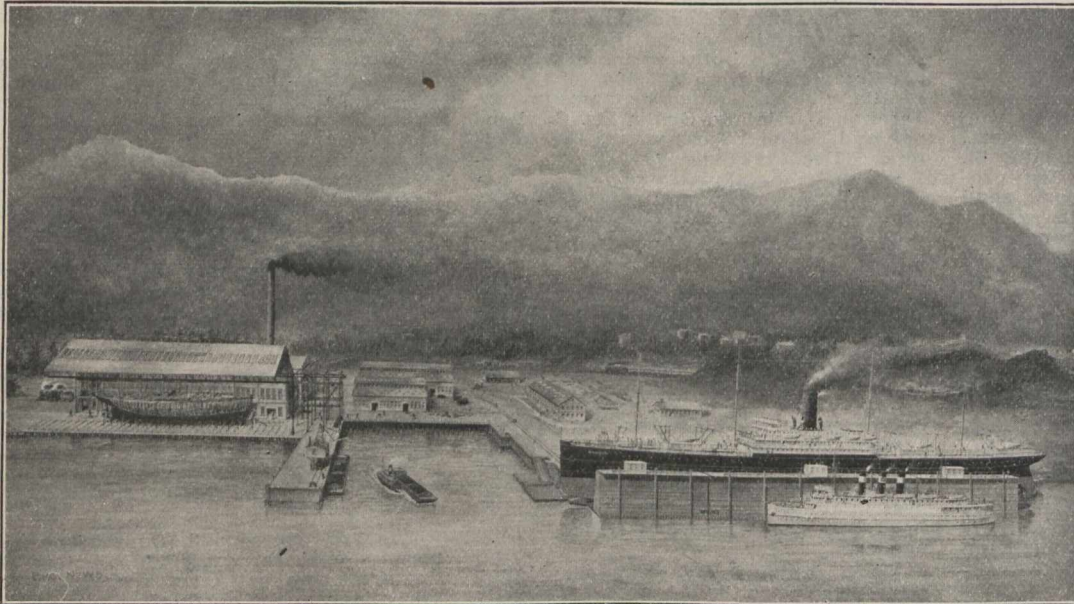
By F. E. Kirby and W. T. Donnelly, Members of the Society of Naval Architects and Marine Engineers.

When, in 1910, the authors of this paper were retained to visit the Pacific Coast for the purpose of studying the shipping and marine repair facilities and to visit Prince Rupert, the western terminus of the Grand Trunk Pacific Ry., they were at a loss how to proceed, for not only was Prince Rupert

through the narrow waterways which were literally the submerged valleys of the Coast Range, they arrived on the evening of the third day in Prince Rupert harbor and were, for the first time, fully convinced that such a location actually existed. Those who are especially interested

posed to be unnavigable. Actual surveys show it to be one of the most easily entered and satisfactory harbors on the Pacific coast. The entrance, which is from the south, is about three-eighths of a mile wide. It is entirely unobstructed with a depth of water nowhere less than 20 fathoms. The entrance may be said to extend northward for three miles, when the harbor is reached, extending north-east for four miles, with an unobstructed width of from one and a half to three-quarters of a mile.

The city of Prince Rupert is located on Kaien Island, which forms the right of the entrance, and the southeast of Prince Rupert harbor. The city proper is laid out over an area three and a half miles long by one mile in breadth, on the shores of the island, with a background rising to an elevation of from 1,600 to 2,000 ft., the general characteristics reminding one very forcibly of the city of Montreal with Mount Royal behind it. The G.T.P.R. will reach the coast by the Skeena River valley, about 15 miles to the south, and crossing to Kaien Island at its southern end, will closely



Drydock, Ship Repair and Shipbuilding Plant, as they will appear when completed.

beyond their geographical knowledge, but it also failed to appear upon any available map or charter. However, with an abiding faith in the G.T.P.R. they undertook the commission. Proceeding to the Pacific coast over the

and desire to extend their geographical knowledge, are referred to the most recently published charts of the Northern Pacific and Alaskan coasts, on which Dixon's Entrance, north of Graham Island between 54 and 55 degrees north

follow the shore to and along the water front of Prince Rupert.

The general character of the shore of Prince Rupert is bold and rocky, falling off very rapidly to a depth of approximately 20 fathoms. A careful examin-

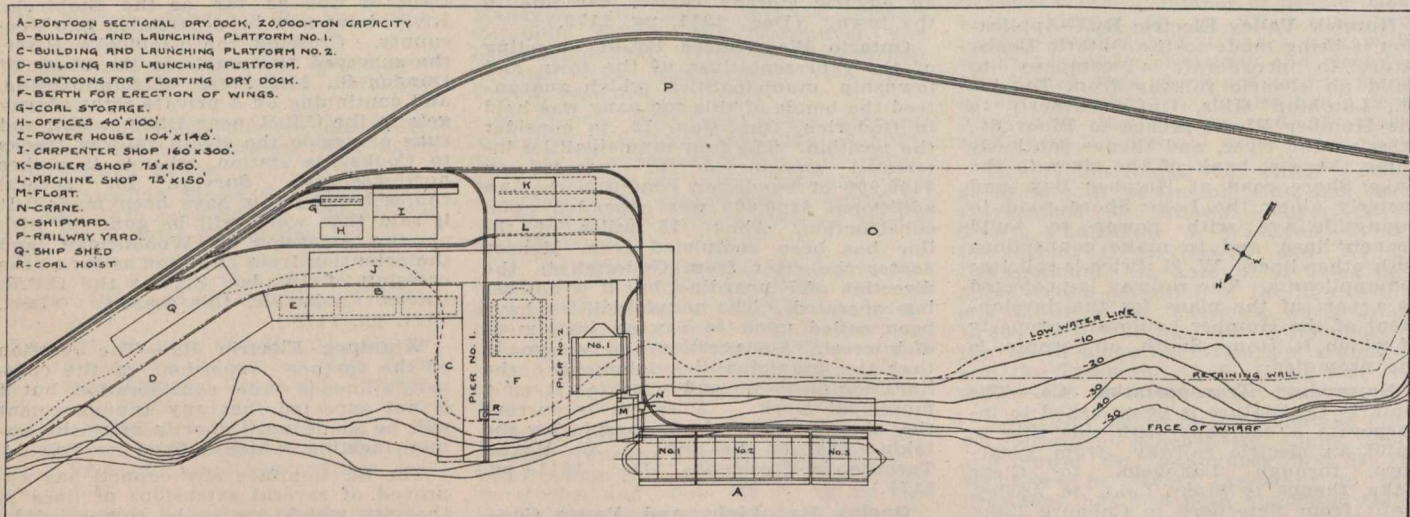


Fig. 1. Location of Drydock, Ship repair and Shipbuilding Plant, Prince Rupert.

Northern Pacific Ry., they visited Portland, Seattle, Tacoma and Bremerton in the U.S., and Victoria, Vancouver and New Westminster, B.C., finally proceeding from Vancouver on a C.P.R. steamship northward through the inland passage, and after three days steaming

latitude, can be readily located. To the east of Dixon's Entrance, Brown Pass leads to Chatham Sound and across this to the east, between Digby and Kaien Islands, is found Prince Rupert harbor. So hidden away and unprepossessing is the entrance that until 1906 it was sup-

ation of the entire length of the harbor front of Kaien Island determined Hays Cove as the only practical place for such a development as was contemplated; that is, a floating dry-dock of 20,000 tons lifting capacity, so designed as to be capable of operating in sections as

a number of smaller docks, an adequate shore plant comprising electric power generating plant with air compressors, machine shop, boiler and blacksmith shop and covered construction shed under which the pontoons of the floating dry-dock could be built.

The dock is to be of such a design and construction as to be almost entirely built upon the site. To accomplish this, the general plan provides for the practical completion and equipment of the shore plant before the dry-dock is commenced.

One of the controlling features in the general plan of this development was the fact that Prince Rupert will be 600 miles from the nearest base of supply or point where any considerable assistance, mechanical or otherwise, can be obtained. It was, therefore, determined at the outset that the mechanical equipment, large tools, etc., must be of the very best and most complete. Also, that on account of the high price of labor on the Pacific coast, ample provision for the use of power in every way possible should be made. This has resulted in the design of an electric power generating station with ample capacity for all present needs and with a large possibility of extension.

As the plans were laid out in such a manner as to make the development progressive, constructing those parts first which could, when completed, be used in the construction of the remainder, this outline will be followed in the description.

Fig. 1 gives a general plan of the plant, showing location of dry-dock, piers and buildings.

PIER AND PLATFORM WORK.—The first work to be undertaken will be the pier, marked "Pier no. 1" on the general plan. This will be 420 by 60 ft., the piling being on 10 by 5 ft. centres. The pier will require about 600 piles.

At the same time, there will be built the platform at the shore end of this pier 80 by 930 ft., having an area of 74,400 sq. ft., and will require about 1,600 piles on 5 by 10 ft. centres.

At the western end of this platform there will be an extension off shore 350 by about 100 ft., and at right angles to this, an extension 560 by 80 ft. for the attachment of the floating dry-dock. A double line of diagonal bracing is used in the pile work. This is on account of the excessive rise and fall of tide, which for spring tide is 25 ft. The tops of the piles are thoroughly secured by double 6 by 12 clamps and connected by 12 by 12 caps. The decking is to be of 4 by 12 planking. Piles are to be creosoted. The total area of the platform and pier work will be 181,400 sq. ft. The completion of this work, it is expected, will provide ample space for the landing and handling of materials for the rest of the plant.

LAUNCHING PLATFORM.—In front of the main platform, east of the pier, there will be built a launching platform for side launching. This will be 80 by 440 ft. and will be carried on 16-in. piles on 5 by 10 ft. centres, braced and reinforced by heavy piling along the edge, over which the launching will take place. The general arrangement and bracing of this piling can be seen by referring to fig. 2, showing the platform in connection with the building shed. It will be noticed that the outer half of the building platform has a slope of 1 3/4 ins. to the ft., which is approximately the launching grade for side launching.

POWER HOUSE.—The general location of the power-house will be seen by referring to fig. 1. Electric power is to be furnished for operating the pumping machinery of the floating dry-dock, for compressing air and to operate machinery in the various shops; also, for furnishing electric lighting for the plant. The building is to contain both boilers

and power plant under one roof with fireproof dividing walls, and is to be 104 by 148 ft., having a covered area of 15,392 sq. ft. It will be of modern steel-frame construction, the walls and roof to be of reinforced concrete.

There will be installed 6-400 h.p. water tube boilers, supplied with automatic stokers, chain-grate type, such as are known to give good satisfaction with Pacific coast coals. Provision is made for adding two extra boilers. There is also a provision for the installation of an economizer, in case it is found that the load factor warrants the expense. Draught will be obtained by a steel or concrete chimney 175 ft. high and 11 ft. in diameter. An overhead trolley is provided for handling coal from storage to hoppers above the stokers and also for handling ashes.

COAL HANDLING AND STORAGE.—Provision is made for receiving coal both by water and rail. Coal by water will be received at the outer end of the pier, for the unloading of which there is provided a standard grab-bucket installation, so arranged as to load cars beneath the hoppers, the cars to be handled by small yard locomotives to

These machines are to be direct current, 220 volts. There is also to be a motor-driven exciter of 25 k.w. capacity, the motor for this machine to be a 35 h.p., 3-phase, 25-cycle, 550-volt alternating current squirrel-cage-type motor.

CRANES.—There will be provided for the erection of this machinery in the power plant, a 15-ton overhead travelling crane. This will be operated by electricity and the current supplied will be from one of the steam-driven exciter sets.

AIR COMPRESSOR.—For furnishing compressed air to the shops of the plant, there will be provided a compound Corliss air compressor having a displacement of 1,580 cu. ft. of free air per minute when operating at 150 revs. This compressor is to be designed for a steam pressure of 175 lbs. per sq. in. and for an air pressure of 100 lbs. The distribution of the air will be by means of underground piping through the yard.

SWITCHBOARD AND DISTRIBUTION SYSTEM.—The entire system of light and power throughout the plant is to be controlled from the switchboard located on the main floor of the power-house. The switchboard is to consist of 15 panels.

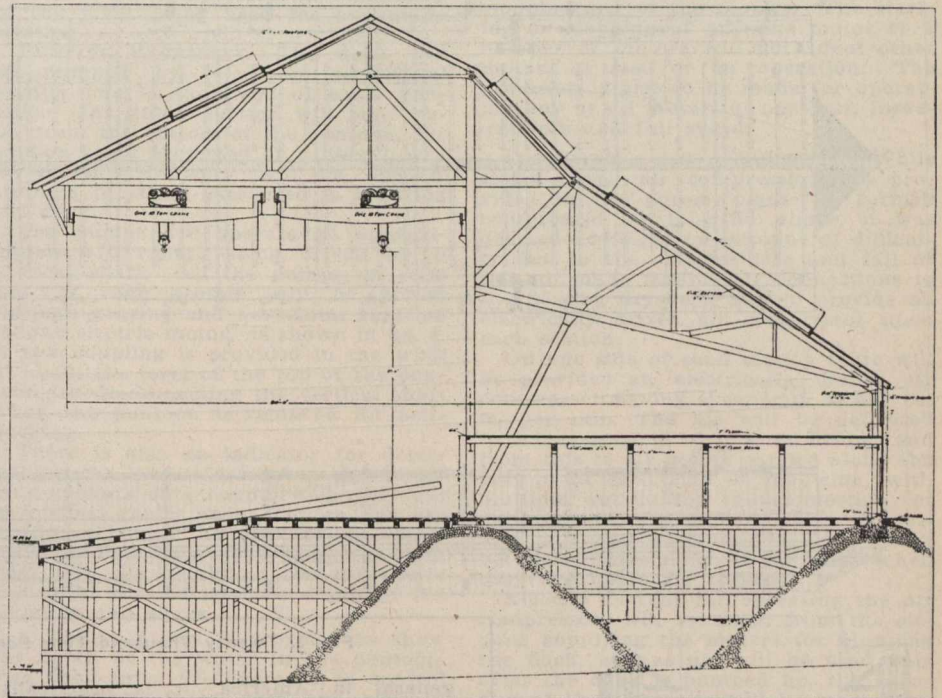


Fig. 2. Cross Section of Ship Shed, Prince Rupert.

the coal pocket of 1,000 tons capacity, located adjacent to the boiler house. Coal received by rail will be delivered direct from the G.T.P.R. cars, which pass at the rear of the property, to the coal pocket approached by an incline.

MAIN ENGINES.—There will be two main engines of 900 h.p. each, and while vertical reciprocating compound engines are specified, using steam at 175 lbs. pressure and 258 r.p.m., turbine engines will be considered as an alternative.

CONDENSERS.—Jet condensers are planned, but alternate figures will be taken for service condensers. The type to be used will depend upon local conditions as to the cost of water at the time of installation. Condensing water will be obtained through the rock cutting and shaft sunk within the power-house, the circulating water being handled by a vertical centrifugal pump operated by an electric motor.

GENERATORS.—Electric generators are to have a capacity of 600 k.w., 3-phase, 25-cycle, 550-volt alternating current. For these generators there will be provided two steam-driven exciters, one of 50 k.w. and one of 25 k.w. capacity.

The construction throughout is to be most substantial and thorough, fully meeting the best standards of central station distribution.

CUT AND FILL AND FOUNDATIONS.—By referring to fig. 1, showing the natural conditions of the site, it will be seen that the ground is very difficult, all the property either having to be cut down or raised to grade by fill. The location of the power-house was determined by the condition of the ground, which, at this location, is of rock which will have to be reduced to the grade required. The cut and fill work is intended to go forward at the same time as the pier work, and the power plant will be commenced as soon as the site can be levelled. The rock cut for the power-house and yard grading will amount to 18,000 cu. yds., the rock fill for retaining walls, 57,000 cu. yds., and the earth fill for grading, 73,000 cu. yds. The dredging between the pier and dry-dock bulkhead will amount to 100,000 cu. yds. to obtain a depth of water of 20 ft. at low tide.

BOILER AND BLACKSMITH SHOP.—The combined boiler and blacksmith shop is to be 76 by 150 ft., the central part to be 33 ft. wide, provided with a 15-

ton travelling crane. The design is of the usual steel-frame shop construction with side bay, and will, in this instance, be covered with wood. The flooring will be of concrete with heavy foundations for the large tools. The tool equipment will be very complete, comprising heavy punch and shears, rolls, plate planer, flanging clamps, etc., heavy steam-hammer and a full equipment of blacksmiths' tools.

THE MACHINE SHOP will be constructed from the same set of plans as the boiler and blacksmith shop. The flooring will be of concrete with special foundations for large tools. Ample provision is made for thorough lighting and the building will be steam-heated throughout. A very complete equipment of machine tools will be provided, comprising all machinery necessary to handle the heaviest crank and other shafting of large steamers; also, boring, drilling and turning machinery for repairing all the secondary machine equipment of steamships. Large tools will be driv-

development, the possibility of shipbuilding was carefully considered, and while there is no immediate prospect for the building of steel vessels so far from the base of material, it was thought advisable, in preparing for the building of the pontoons under cover, to make the construction of a permanent nature, suitable for shipbuilding, to be used in the immediate future for wooden shipbuilding and later on for steel shipbuilding. To accomplish this, the building shown in fig. 2, has been developed. This building is located over the launching platform and over part of the general platform extending eastward from pier 1, with foundations carried down to rock.

It will be seen from the general plan, fig. 1, that the property is laid out for side launching, this being the only practical development that was possible under existing natural conditions. The building about to be described is the result of these conditions. While side launching is unusual in Europe and

reserved until the last from the fact that, as previously stated, it is to be almost entirely constructed at and by the plant of which it is to be the principal feature.

This dock is to have an over-all length on keel blocks of 604 ft. 4 ins., a clear width of 100 ft., and a width over-all of 130 ft. The lifting power is the aggregate of 12 pontoons of timber construction, each 130 ft. long corresponding to the width of the dock, 44 ft. wide in a direction corresponding to the length of the dock and 15 ft. deep. These pontoons are to be united by steel side walls or wings 38 ft. high, 15 ft. wide at the bottom, and 10 ft. wide at the top, the walls being divided so that the whole structure may be used under ordinary conditions as three separate docks, one of six pontoons, with an over-all length of 269 ft., and two of three pontoons each, with an over-all length of 164 ft. each. The largest commercial ship upon the Pacific Coast at the present time is the Minnesota, the

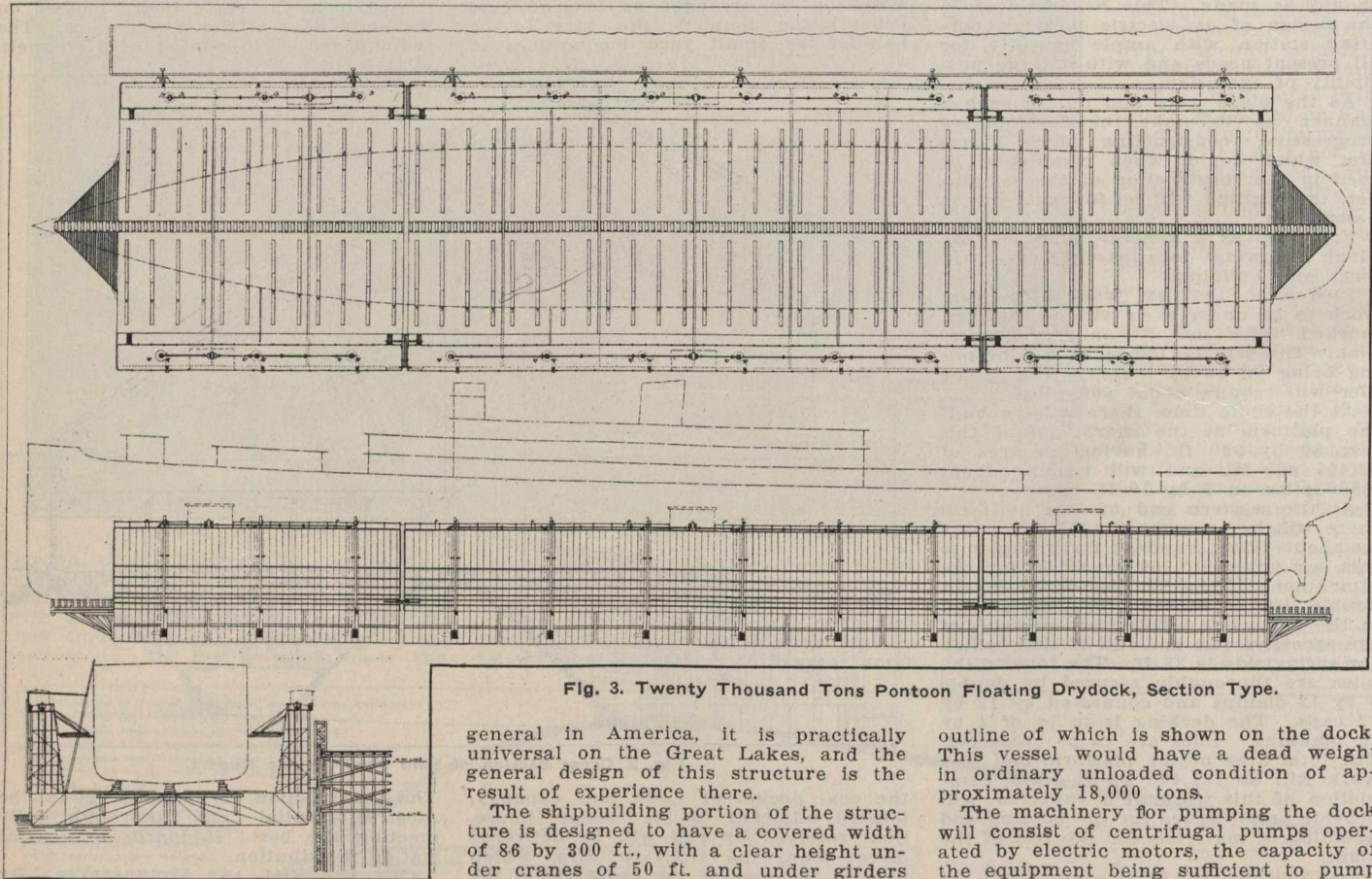


Fig. 3. Twenty Thousand Tons Pontoon Floating Drydock, Section Type.

general in America, it is practically universal on the Great Lakes, and the general design of this structure is the result of experience there.

The shipbuilding portion of the structure is designed to have a covered width of 86 by 300 ft., with a clear height under cranes of 50 ft. and under girders of 56 ft. The shop section of this building is to be 80 by 300 ft. The ground floor will be used for machinery and the upper floor will be used as a laying-out floor. The equipment of woodworking machinery will be most complete, comprising large re-saw band saw, timber sizer, rip and crosscut saws and other woodworking and finishing machinery.

ADMINISTRATION BUILDING.—There will be an office and administration building 40 by 100 ft., constructed of wood two and a half stories high. This will be fitted up with draughting room, accounting and bookkeeping department and private offices. The exact location of this building has not been determined, as this will depend largely upon the opening and grading of streets approaching the property.

TWENTY THOUSAND TON PONTOON Floating Dry-dock.—Referring to fig. 3, there will be seen the general design drawing of a 20,000-ton pontoon floating dry-dock, description of which has been

outline of which is shown on the dock. This vessel would have a dead weight in ordinary unloaded condition of approximately 18,000 tons.

The machinery for pumping the dock will consist of centrifugal pumps operated by electric motors, the capacity of the equipment being sufficient to pump the entire lifting power of the dock in less than two hours. A detailed description of the pumping machinery will be given later.

The structure as a whole is secured to the shore by the engagement of clamps on the dock with a vertical truss secured to the pile platform or pier in such a way that it is free to rise and fall with the tide, and when being raised or lowered with a ship. The location of these attachments is such that when it is desired to use the dock in three separate sections, the bow section may be detached and moved around the corner of the pier work located as shown on the general plan alongside the platform, and secured in the same manner as provided for in its original position. To make the other two sections available as separate docks, it is only necessary to detach the middle section, comprising six pontoons, from the pier work and advance it the length of the detached section, when the sliding clamps upon the wings will coincide

en by individual motors, the smaller tools being arranged for group driving. A 15-ton overhead travelling crane will be provided for both boiler and machine shops. The building will be supplied with compressed air and a special room will be fitted up for the repair and care of air tools.

By referring to fig. 1, it will be seen that the location of the machine shop is such that ready access may be obtained from the dry-dock and water front, and it will be noticed that provision is made for entering the boiler and machine shops with railway cars. Provision is also made for the extension of these shops as the business develops.

BUILDING SHED AND WOODWORKING SHOP.—On account of the excessive rainfall in Prince Rupert, it will be necessary to do the work of building the pontoons for the floating dry-dock under cover.

In laying out the general plan for the property and in view of its future

with those used for the previous section when the dock was operated as a whole. This will allow ample space between the centre and stern sections for the overhang without interference of vessels which may be docked on them.

As the feature of a sectional dock to be used as a whole or separately is somewhat new, it is desired to call attention to the fact that the three largest commercial docks in the United States, namely, the 10,000-ton floating dry-dock of the Tietjen and Lang Dry-Dock Co., built in 1900; the 12,000-ton dock of the Mores Dry-Dock Co., built in 1902 (both in New York harbor), and the 10,000-ton dock of the port of Portland, Oregon, are sectional docks in five sections each. All of these docks are of timber construction, and are giving excellent service.

PONTOONS.—As previously stated, the pontoons for this dock are to be 12 in number, constructed entirely of timber. They are to be 130 ft. by 44 ft. by 15 ft. deep, with a crown of 3 ins. at the centre, and will have 15 trusses spaced on 3-ft. centres. There will be a centre water-tight bulkhead 12 ins. thick, and above this bulkhead the centre will be reinforced for carrying keel blocks. There will be three partial bulkheads on each side to stiffen the pontoons. All diagonal braces are heavily reinforced with anchor stocks. The arch brace is made up of planking through-bolted with screw bolts, and is intended to take the reverse stresses when the dock is floating light. This is a considerable amount when it is considered that the wings are superimposed weights carried at the extreme ends of the trusses, supported by an evenly distributed pressure over the entire bottom. Six by 12-in. deck beams are worked across the upper and lower truss members, carrying the 5-in. deck and bottom planking parallel to, and reinforcing the truss members for the maximum stress. This construction also makes it possible to get in double vertical tie rods alongside of bulkheads in such a manner that they may be replaced at any time. The whole structure is made water-tight by caulking with white pine wedges.

To protect the exterior from teredo and other marine worms, it is first thoroughly grained with tar poisoned with arsenic, then sheathed with two layers of hair felt, each thoroughly saturated with tar and arsenic, and then with creosoted lumber, also treated with arsenic and thoroughly secured with galvanized nails. This treatment, together with the facility for inspection afforded by the possibility of detaching and docking any pontoon, has been found to give satisfactory protection.

Each pontoon will require approximately 330,000 board ft. of lumber or a total, including outrigger or prow on the end pontoons, of 4,000,000 board ft. The entire bill of lumber will be of selected grade of Oregon pine or Douglas fir.

As previously stated, it is the intention to have these pontoons built upon the launching platform under the building shed, using the tools and equipment provided for the plant. Sufficient room has been allowed to build three pontoons at the same time. As soon as they are launched they will be moved into the basin between the pier and dry-dock platform and temporarily united together in correct relative position by timber clamps, when they will be ready for the erection of the steel wings.

THE STEEL WINGS consist of channel and angle frames on 3-ft. centres corresponding to the trusses of the pontoons, and a covering of plating varying in thickness from $\frac{1}{2}$ to 5-16 in. The construction is greatly facilitated by reinforcing the plating against water pressure on the outside by horizontal angles. This does away entirely with troublesome intercostal connections and gives

the material used very much greater value in the construction as a whole.

There will be required about 2,200 tons of steel. Where the wing meets the deck of the pontoon there is a steel shoe secured to the frame of each pontoon and a corresponding shoe riveted to each frame of the wing. These are connected together by a steel link about 15 ins. long and pins, the upper one of which is tapered $\frac{1}{2}$ in. to the foot. The driving of this pin wedges the pontoon and wing together. At the point of contact, the bottom of the wing is reinforced by a 12 x $\frac{1}{2}$ in. plate and made water-tight by canvas packing saturated with red lead. On the outer side of the wing the method of securing is similar, except that the shoe on the pontoon is replaced by a cast-steel strap through-bolted to the pontoon.

Provision is made for multiple punching on uniform centres of 3 ins. and 6 ins. throughout, and the intention is to have the material fabricated in Europe or the eastern part of the United States, all frames assembled and shipped by water to Prince Rupert. The erection of the first section is to be commenced as soon as the first three pontoons are launched, the compressed air machinery of the plant being used for pneumatic riveting.

PUMPING MACHINERY.—The dock will be pumped by 24 12-in. centrifugal pumps, one in each end of each pontoon. The pump suction will take water from the bottom of the pontoon, the suction being protected by a liberal area of screen. Delivery will be directly through the flood-gate used in lowering the dock.

The pumps will operate at approximately 275 r.p.m., being driven by a vertical shaft. All the pumps on each side of each section will be driven through gearing and horizontal shafting by one electric motor, as shown in fig. 3. A jaw coupling is provided in the wing at about the level of the top of the pontoon for disconnecting the vertical shaft when the pontoon is removed for self-docking.

There is also an indicator for determining the level of water in the wings. This consists of a counterweighted float in vertical guides and a vertical rod extending through the deck of the wing. As the water enters the wing, the float rises and the height of the rod above the deck will indicate the depth of the water in the wings.

A similar device is provided to show the depth of the water in the pontoon. The flood-gates are operated to control the lowering of the dock and also to control the pumping collectively and individually of the different pumps, it being understood that with the pumps running, no water will be delivered if the flood-gates are entirely closed, and that, by a regulation of the gates without altering the speed of the pumps, any degree of control or any distribution of control can be accomplished. In case one side is rising too rapidly, the partial closing of the gate on that side, without disturbing the operation of the machinery, will effect the control, or the gates may be left at the same opening and the machinery stopped.

By this method, a much quicker and more powerful control may be obtained, as not only will the discharge of water from the dock stop, but will immediately commence to enter, thus doubling the power of control which would be obtained by closing the gates.

ELECTRICAL EQUIPMENT.—As previously explained, the group of pumps on each side of each section of the dock will be operated through horizontal and vertical shafting by one electric motor. Thus, for the two smaller sections of three pontoons each there will be required four 100 h.p. motors, and for the larger section of six pontoons there will be required two 200 h.p. motors. The

motors are to be alternating current, 3-phase, 25-cycle, 550 volt, and will operate at approximately 500 r.p.m. They are to have wound rotors and slip rings for variable speed control. The armature shaft is to be extended both ends and will operate the distribution shafts through reduction gearing at a speed of approximately 215 r.p.m.

There will be two motors on each section, one on each wing. The power circuit on the pier is connected to the power circuits on the sections by flexible cables. The power circuits of each section are independent from the main circuit, so that each section receives its power independently, but the control system is to be so arranged that the two motors on any section may be operated from one master panel or the combination of any two sections may be operated from the master panel on either of the two sections, and lastly, when all three sections are used together, all six motors are to be controlled from the master panel on the middle or larger section.

THE MASTER PANEL is to consist of a panel or drum having suitable contacts or switches for independently starting or stopping any of the motors. The starting or stopping of any one motor or a number of motors will not affect other motors at rest or in operation. The provision is also to be made for operating any or all motors at one-half, three-quarters and full speed.

COMPRESSED AIR EQUIPMENT.—While steam-driven air compressors are provided in the power plant to furnish compressed air for the shops, it was deemed advisable on account of difficulty due to the extreme rise and fall of tide, to make flexible air connections to the floating dry-dock and to provide an electrically driven air compressor upon each section.

On one side of each section there will be provided an electrically driven air compressor having a capacity of 500 cu. ft. per min. The air will be delivered to a receiver in the wing below, and from this to air piping carried along the bottom to each side of the wing, with multiple outlets for the connection of air hose to the pneumatic tools. Provision will also be made for connection between the sections of the dock when they are operating together.

Electric current for operating the air compressors will be taken from the circuits supplying the motors for pumping the dock, and as air will be used only after the dock is pumped up, the capacity of these circuits will be more than ample.

OPERATING EQUIPMENT, BILGE BLOCKS, Keel Blocks, etc.—The keel blocks are to be of oak 12 x 16 ins. x 4 ft. long, and are to have a height of 4 ft. The bilge blocks are to be on about 12-ft. centres, and operated according to the usual American practice by means of a galvanized chain on the floor of the dock and a leading rope through 6-in. sheaves secured to the wing near the deck, leading up and returning over the pipe railing around the tops of the wings. The return rope leads to the tall dog and is used in tripping the dog and pulling the block out when the ship is leaving the dock. The bilge blocks are provided with an elevating screw which has been found to be of great service for removing blocks one at a time for painting.

In the American practice of handling floating dry-docks, side shoring is not used. There is a general practice, however, of using centring rams for locating and steadying the vessel in position until firmly at rest upon the keel and bilge blocks. The arrangement of these rams can be seen in fig. 3, showing the general design of the dock.

ILLUSTRATIVE DISPLAY DRAWING.—There is submitted herewith an illustrative

display drawing or perspective view (see half-tone illustration, pg. 51), carefully prepared as to relative scale and proper angular projection from the plans, the background being worked in from actual photographs taken, approximately, from the view point of the illustration. The vessel as shown requiring the full lifting power of the dock is the Minnesota, and lying alongside, to convey more clearly the scale of the structure, is shown the new G.T.P.R. steamship Prince Rupert, running between Prince Rupert and Vancouver. While such a drawing is unusual, its value as a ready means of conveying information must be apparent to all. The use of similar illustrative plans is customary with architects, and it is believed that the practice may be adopted to advantage by engineers generally.

The foregoing article was read before the Society of Naval Architects and Marine Engineers in New York recently. We are indebted to Engineering News for the half-tone illustration.

Niagara Navigation Co.'s Annual Meeting.

Following are extracts from the report for the year ended Nov. 30, 1911, presented at the annual meeting in Toronto Jan. 9:—

As announced in circular to shareholders, Nov. 27, 1911, the steamers Turbinia, Modjeska, Macassa, and wharf properties at Hamilton belonging to the Turbine Steamship Co., and the Hamilton Steamboat Co., have been acquired. Payment for these properties will be made with 1,981 shares of Niagara Navigation Co. stock, and \$122,660 cash.

One thousand and two shares of Niagara Navigation Co. stock will be allotted to shareholders at par, and thus our authorized capital stock is practically exhausted. In order to provide for future developments it is proposed to increase the capital stock by \$2,000,000, making the total capitalization \$3,000,000.

After providing for dividend, interest on debentures, writing \$9,725.33 off steamer values, and placing \$60,000 to renewal and betterment fund, the balance to credit of profit and loss account stands at \$157,756.53.

ASSETS.	
Steamboats	\$809,725.33
Less written off	9,725.33
	\$ 800,000.00
Dock properties, Toronto and Niagara River	352,700.00
Accounts receivable	10,196.05
Cash in bank	121,284.52
	\$1,284,180.57

LIABILITIES.	
Capital stock authorized	\$1,000,000.00
Subscribed and paid	\$ 701,700.00
Debentures outstanding 4½%	227,000.00
Accrued interest	4,278.75
	231,278.75
Reserve for renewals and betterments	100,000.00
Accounts payable	1,877.29
Mortgage on Yonge St. dock property due Dec. 5, 1912	63,500.00
Dividend 4%, payable Jan. 3, 1911	28,068.00
Balance at credit of profit and loss	157,756.53
	\$1,284,180.57

PROFIT AND LOSS ACCOUNT.	
Balance Dec. 1, 1910	\$141,317.30
Net earnings for year	152,515.56
	\$293,832.86
Interest on debentures	10,215.00
Written off steamboats	9,725.33
Appropriated for renewals and betterments	60,000.00
Dividend 4% paid July 3, 1911	\$28,068.00
Dividend 4%, payable Jan. 3, 1912	28,068.00
	56,136.00
Balance carried forward	157,756.53
	\$293,832.86

Sir Edmund Osler, President, who occupied the chair, said that of the 1,002 new shares offered to shareholders, all but 18 had been subscribed for. In regard to the increase of capital proposed, he pointed out that of \$1,000,000 capital stock authorized \$701,700 was subscribed and paid up. The issue of 1,981 shares to pay for the Hamilton Steamboat Co. and the Turbine Steamship Co.'s properties would absorb \$198,100, and the issue of 1,002 shares to shareholders, amounting to \$100,200, brought the total up to \$1,000,000, so that it was most desirable to increase the capital. He thought navigation companies should have no liabilities to the public. It was not proposed to issue the whole of the new capital stock suggested until it became necessary to do so, but it would be issued as required to pay off the debentures outstanding, \$227,000, and the mortgage on the Yonge St. dock property, \$63,500, due Dec. 5 next. It had become necessary to build another steamboat for the Toronto-Niagara-Lewiston run, to cope with the increased traffic offering, which would cost about \$350,000.

The report was unanimously adopted, as also was a resolution confirming the purchase of the Hamilton and Turbine Companies, and a bylaw authorizing the increase of the capital stock to \$3,000,000.

The directors who were re-elected for the current year, are: President, Sir Ed-

mund Osler; Vice President, Barlow Cumberland; other directors, Hon. J. J. Foy, Hon. J. S. Hendrie, J. Bruce Macdonald, W. D. Matthews, F. G. Osler.

W. D. Matthews, in response to another shareholder, said the directors hoped to be able to increase the dividend to 10% in the not distant future.

As above mentioned, the Hamilton and Turbine companies' properties were bought for \$122,660 cash and 1,981 Niagara Navigation Co. shares. The market price of these shares at the time of the transfer was 148, or \$293,188 for the 1,981 shares, which would make the total consideration for the properties, which J. C. Eaton receives, \$415,848.

Application has been made to the Dominion Government for the necessary power to increase the capital stock to \$3,000,000.

It is not expected that the Chicora will go on the Toronto-Niagara route at all this year, that service being performed by the Corona, Chippewa and Cayuga. The Toronto-Hamilton route will probably be opened by the Macassa as usual, the Modjeska and Turbinia going on later. When the excursion season opens the Macassa will be run between Toronto and Olcott, N.Y., the Chicora going on the Toronto-Hamilton route.

During Nov., 1911, seventeen employees were killed and seven were injured in the course of their work in connection with the navigation of Canadian waters. Of the fatalities, 12 were due to drowning, two to crushing, two to falls and one to machinery.

The Canadian section of the International Waterways Commission, consisting of T. C. Casgrain, H. A. Powell and C. A. Magrath, held its first meeting, at Ottawa, Jan. 3. L. J. Burpee, heretofore librarian of the Ottawa Public Library, has been appointed Secretary, vice T. Cote.

Dr. H. T. Barnes, Professor of Physics, McGill University, gave an address to the Canadian Club at Montreal, recently, on the ice conditions in the St. Lawrence River. He said that after giving many years to the study of the subject, he believed, with modern ice breakers of the Russian type, the channel could be kept open from Quebec to Montreal all the winter. He also stated that the Government should be encouraged by public opinion to keep the channel open, thus prolonging the season of navigation, preventing the spring floods, and clearing the city's waste, which is allowed to accumulate near the city all the winter.

List of Steam Vessels Registered in Canada during December, 1911

Name	No.	Where and When Built.	Engines, etc.	Length	Breadth	Depth	Gross Tons	Reg. Tons	Port of Registry	Owners
Adelia S.	130,538	St. Gabriel de Brandon, 1911	Screw 1½ n. h. p.	51 0	11 3	3 2	19	13	Montreal	St. Gabriel Lumber Co., Montreal.
D. P. Dobbins	129,590	Old Kilpatrick, Scotland, '11	" 23 "	125 1	48 1	12 5	595	268	Halifax, N.S.	Napier and Miller, Old Kilpatrick, Scotland.
*M. T. Co. No. 1.	130,797	Beach, Wash., 1900	" 6 "	46 5	11 6	4 4	20	14	Vancouver, B.C.	Metropole Transportation Co., Vancouver, B.C.
Phyllis Williams.	130,274	Selkirk, Man., 1911	" 31 "	103 0	21 5	8 0	164	112	Winnipeg	Lake Winnipeg Shipping Co., Winnipeg.
Princess Alice	130,609	Wallsend-on-Tyne, Eng. 1911	" 610 "	290 6	46 1	14 3	3099	1904	Victoria, B.C.	Canadian Pacific Ry. Co., Montreal.
Yaklthik	126,618	Metlakatla, B.C., 1911	" ½ "	30 6	8 6	4 0	9	6	Prince Rupert, B.C.	J. D. Leighton, M.O., Metlakatla.

*Formerly Celtic.

List of Sailing Vessels and Barges Registered in Canada during December, 1911

Name	No.	Where and When Built	Rig	Length	Breadth	Depth	Reg. Tons	Port of Registry	Owners
Ada D. Bishop	130,501	Shelburne, N.S., 1911	Schr.	97.0	22.6	9.7	93	Shelburne, N.S.	C. F. Bishop, Burin, Nfld.
D. P. Dobbins	126,228	Cleveland, O., 1863	"	164.0	32.0	12.0	421	Sarnia, Ont.	J. MacArthur, Sarnia, Ont.
Falka	130,734	LaHave, N.S., 1911	"	106.8	26.4	10.5	100	Lunenburg, N.S.	C. Conrad, M.O., LaHave, N.S.
Fish Seeker	130,654	Caraquet, N.B., 1911	"	40.5	13.5	6.0	20	Chatham, N.B.	G. J. Gallien, Caraquet, N.B.
Gladys E. B.	130,584	Tancook, N.S., 1911	"	47.2	13.2	7.0	24	Halifax, N.S.	W. Brown, M.O., Herring Cove, N.S.
Jennie P. S.	130,735	" 1911	"	59.2	14.0	7.6	34	Lunenburg, N.S.	C. Young, M.O., Hacketts Cove, N.S.
K. & W. No. 8	130,796	New Westminster, B.C., 1907	Barge	64.0	25.8	7.0	97	Vancouver, B.C.	G. C. McKeen, Vancouver, B.C.
Marjorie N Inkpen	130,502	Shelburne, N.S., 1911	Schr.	95.0	22.9	9.8	96	Shelburne, N.S.	E. Inkpen, Burin, Nfld.
Mollie G. Gaskill	130,427	Campobello, N.B., 1911	"	52.4	16.1	6.6	23	St. Andrews, N.B.	J. E. Gaskill, Grand Manan, N.B.
Muriel E. Winters	130,733	Lunenburg, N.S., 1911	"	106.8	26.3	10.4	100	Lunenburg, N.S.	F. Anderson, Lunenburg, N.S.
No. Forty Five	126,673	Port Arthur, Ont., 1911	Scow	72.0	37.2	13.0	726	Port Arthur, Ont.	Western Dry Dock & Shipbuilding Co. Port Arthur, Ont.
No. Forty Six	126,674	" 1911	"	72.0	37.2	13.0	726	"	"
V. I. T. No. 1	130,608	Victoria, B.C., 1911	Barge	90.0	32.0	8.2	193	Victoria, B.C.	Vancouver Island and Towing Co., Victoria, B.C.

Lake Grain Shipments, 1911 Crop.

The following statement, prepared by F. Symes, Acting Grain Inspector, Fort William Ont., shows the bushels of grain shipped from the different elevators at Fort William and Port Arthur of the 1911 crop, from Sept. 1 to close of navigation, 1911, with ports of destination. The last two figures in each column after the period, represent lbs.

Destination	Wheat	Oats	Barley	Flax
CANADIAN PORTS				
Collingwood	230,137.00	280,615.17		
Depot Harbor	284,981.30	1,229,871.21	162,555.35	149,747.40
Goderich	3,275,292.30	110,699.16		
Hamilton	3,560,572.50	1,073,817.00	273,445.08	24,307.12
Kingston	2,246,212.50	872,806.12	26,000.26	65,129.30
Montreal	46,519.50	14,689.24		
Meaford	723,611.00	1,294,292.02	175,935.27	
Owen Sound	27,124.40	20,449.04		
Prescott	746,816.10	448,474.24	60,755.41	
Point Edward	3,865,167.20	262,630.20		
Port Colborne	145,901.40	22,900.00		
Port Stanley		179,304.01		
Quebec	62,000.00			
Thorold	4,576,652.40	1,106,042.24	154,432.10	
Tiffin	1,226,393.50	388,648.02		
Victoria Harbor	50,000.00			
Walkerville				
	21,067,383.50	7,245,240.31	853,125.03	
FOREIGN PORTS				
Buffalo	20,904,275.20	507,562.27	729,502.24	239,184.26
Chicago			56,490.13	483,437.40
Erie	1,956,011.50			
Port Huron	1,436,788.30			
Totals 1911	45,364,459.30	7,752,803.24	1,639,117.40	722,622.10
" 1910	36,846,758.10	5,763,998.17	862,470.36	2,076,606.45

Following is a list of individual shipments by Canadian vessels of 1911 crop, and comparisons with that for 1910 crop:—

	Wheat.	Oats.	Barley.	Flax.
A. E. Ames	61,000.00	93,870.00		
A. E. McKinistry	193,222.50			63,675.06
Acadian	91,859.50	163,000.00	15,791.33	36,058.44
Advance	74,000.00			
Agawa	570,905.30			
Alberta	126,638.10	119,850.01	33,907.12	
Algonquin	75,232.00	56,000.00	163,957.34	
Arabian	101,167.00			
Assiniboia	25,000.00	463,338.02		
Athabasca	105,973.00	251,019.32	35,939.37	
Beaverton	153,750.10	90,101.00		
Bickerdike	91,666.50	88,614.14	14,909.20	
C. A. Jaques	106,538.10	78,465.20		
Canadian	215,919.10			
Carleton	65,000.00	179,304.01		
City of Hamilton	11,179.40			
City of Ottawa		10,000.00	11,881.23	5,000.00
Collingwood	281,931.00	556,340.12		10,000.00
Corunna	81,000.00			
D. A. Gordon	259,000.00	75,000.00		
Donnacona	145,290.20	51,000.00		
Doric	545,679.10	84,902.21	37,333.12	
Dundee	30,499.20	137,876.12		
Dunelm	123,975.00	165,773.20		
E. B. Osler	1,789,966.50			
Edmonton	231,318.40	95,796.24	24,558.41	3,964.09
Emperor	1,228,357.20			
Empress of Fort William	620,064.30	55,824.14		
Empress of Midland	208,901.40	163,034.18	17,000.00	
Fairmount	331,743.20		76,376.26	
G. R. Crowe	151,522.40			
Glenellah	165,399.50	47,472.20		
Glenmount	559,822.10		6,501.09	26,500.12
H. M. Pellatt	53,195.00	72,639.29		
Hamonic	20,000.00			
Huronie	30,000.00			
Ionic	104,000.00	117,083.28	25,000.00	
Iroquois	355,101.10	165,337.27		
J. A. McKee	741,372.30	188,008.18	49,955.10	
J. H. Plummer	72,000.00	124,500.00		
Kaministiquia	111,700.00	176,575.24		
Kenora	260,820.00			
Kinmount	428,513.50			
Keewatin	309,614.40	327,772.31	53,088.26	
Leafield	119,300.00			
Manitoba	141,385.10	82,807.04	28,000.00	
Mapleton	244,580.00			
Midland King	888,656.20	72,637.04		
Midland Prince	1,039,705.20			
Midland Queen	65,850.30	120,000.00	6,101.26	
Meaford	414,708.40			
Neebing	299,500.00			
Neepawah	142,136.00	20,000.00		
Nevada	172,200.00			
Newona	911,845.00	105,000.00		
Paliki	110,700.60	59,999.10		
Prince Rupert	20,414.20	81,413.01		
Regina	127,200.00			
Renvoyle	73,473.40	85,695.30	25,000.00	
Rosdale	103,778.40	103,874.24	32,430.44	48,218.40
Rosemount	171,303.20	119,958.20		
Saskatoon	80,000.00			
Scottish Hero	627,153.50	582,790.16	18,460.33	49,731.32
Seguin	104,000.00			
Stormount	319,863.20	127,000.00		
Stratheona	62,000.00	118,594.12		
Tagana	181,790.50			
Turret Cape		153,663.28	85,000.00	
Turret Chief	298,990.50	246,246.06		
Turret Court	432,403.50			
Turret Crown	171,000.00	355,895.00		
W. D. Mathews	937,154.10	286,620.20		

(Continued on page 98.)

Notes on the Panama Canal Work and Future Operation.

The original estimated date for the completion of the Panama Canal was Jan. 1, 1915. The work has advanced so rapidly that it has become apparent the canal can be used at least a year earlier than this date. In order to determine the approximate time when shipping could pass through, a board was convened during the past year, composed of those charged with the work in progress and contemplated, and their conclusion is that the canal will be ready by July 1, 1913.

At all of the locks, fender chains are to be placed 500 ft. above and 230 below the upper and lower guard gates. When in use, they will be raised to the surface of the water, forming a barrier to the passage of ships. When it is struck by a vessel, the chain pays out against a resistance provided by hydraulic cylinders. The energy of a 10,000-ton ship moving four miles an hour will be absorbed after it strikes the chain before it reaches the gate.

Contracts for emergency or movable dams to check the outflow of water should the gates be carried away, have been awarded. Studies are being made of an electrical plant for operating the canal after completion. A scheme for lighting the canal has been adopted.

Ships will not pass through the locks under their own power. Each ship will be taken in hand by four powerful electric locomotives, one off each bow and one off each quarter. The locomotives will each weigh 70,000 lbs. They will be driven by electric motors operating gears which will engage a rack rail, and the hawsers from the ship will be attached to the windlasses of the locomotives, which will be provided with friction clutches, that will prevent the drums sustaining a pull of more than 25,000 lbs. The speed of the ships, when in tow of the locomotives, will be not over two miles an hour. The provision of rack rail traction, and the power and number of the locomotives, combined with careful operation, will practically eliminate any risks to the locks during the passage of vessels.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

128. Dec. 29.—355. Quebec, Gulf of St. Lawrence, Magdalen islands, position of Alright reef bell buoy. 356. Quebec, River St. Lawrence below Quebec, chart of South Traverse issued. 357. Newfoundland, south coast, Fortune bay, Fortune town, range lights established. 358. Newfoundland, east coast, Melrose, Ragged harbor, range lights established. 359. Newfoundland, south coast, Placentia bay, Flat islands, Davis island, light to be established. 360. Newfoundland, outh coast, Fortune bay, Fortune, light established.

129. Dec. 30.—361. Nova Scotia, southwest coast, Cape Sable, intended change in position of southwest ledge gas and whistling buoy. 362. Nova Scotia, south coast, off Bassoon reefs, bell buoy established. 363. Nova Scotia, Cape Breton island, St. Patrick channel, Baddeck harbor, Kidston island, new lighthouses.

1. Jan. 1. 1. General, important notice, true bearings to be introduced.

2. Jan. 10. 2. Nova Scotia, Bay of Fundy, entrance to Digby gut, Point Prim light station, new fog alarm building, change in fog alarm.

3. Jan. 12. 3. British Columbia, Vancouver Island, southeast coast, entrance to Victoria harbor, McLoughlin Point, fog alarm established.

4. Jan. 18.—4. Ontario, Lake Ontario, north side, chart of Presqu'ile bay issued. 5. Ontario, Lake Superior, Michipicoten island, east end, lighthouse established.

(Continued from page 97.)				
Wahcondah	229,393.20			
Westmount	446,760.20	123,000.00		
Wexford	590,828.30	190,037.32		
Winona	608,133.20		60,755.41	
Yorkton	86,247.40			
Totals	21,532,298.20	7,245,240.31	853,125.18	239,184.26
Totals, foreign, to foreign ports.....	23,832,161.10	507,562.27	785,992.22	*3,964.09
	45,364,459.30	7,752,803.24	1,639,117.40	483,437.40
*Rye.				722,622.10
				*3,964.09

Atlantic and Pacific Ocean Marine.

Capt. John Henderson, commander of the Allan Line s.s. Pomeranian, died at sea, Dec. 31, while en route to St. John, N.B.

A press report states that the C.P.R. will probably discontinue its steamship service between Canada and Bristol, Eng., shortly.

The C.P.R. has lowered its third class fare between Antwerp, Belgium and St. John, N.B., by 25 francs, commencing Jan. 1, making it now 175 francs.

J. T. Walsh, Marine Superintendent, C.P.R., Montreal, it is reported, will be appointed harbor master there, commencing his duties May 1, vice James McShanne, who will retire on a pension.

The s.s. Cape Breton has been chartered by Dodwell and Co., to load freight at Vancouver for Japanese and Chinese ports. She was expected to arrive at Vancouver from the Orient at the end of January.

The Canada West India Co., Ltd., recently incorporated with \$1,000,000 capital, and office at St. John, N.B., is reported to be negotiating in Great Britain, for the purchase of two fast steamships, equipped with large cold storage facilities, for service between the Maritime Provinces and the West Indies.

The Gulf Transport Line s.s. Inkula, running between Liverpool, Eng., and Galveston, Texas, is to be transferred to the Canadian Mexican Pacific Co.'s service, operating between Vancouver and Salina Cruz, in connection with the Tehuantepec Ry. Both the companies named are controlled by Welsford and Co., Liverpool, Eng.

Sir Donald Mann, Vice President, Canadian Northern Ry., is reported to have said, while in California, recently, that the company would shortly inaugurate a steamship service between Canada, Australia and Oriental ports, in addition to a grain service from the Pacific coast, by way of Vancouver and the Panama Canal. Large vessels, suitable for the grain trade would be built for the service.

Following on the withdrawal of the Weir Line of steamships from the Pacific trade, reported to have been the result of an agreement with the Union Steamship Co. of New Zealand, F. Waterhouse and Co., formerly agents for the Weir Line, have chartered the steamships Belle of Scotland, Strathendrick, Strathairn and Henrik Ibsen for the Australian service, with Vancouver as a port of call.

E. J. M. Nash, representing the Royal Mail Steam Packet Co., visited Vancouver and other coast ports recently to study the possibilities for new trade routes which may be opened up on the completion of the Panama canal. The recent merger of steamship interests in Great Britain places this company at the head of 280 steamships aggregating 1,287,950 tons. The companies merged are the Royal Mail Steam Packet Co., Pacific Mail Steamship Co., Elder Dempster Co., Lamport and Holt and the Union Castle Line.

Sir Wm. Mackenzie, President, Canadian Northern Ry., is reported to have stated in London, Eng., Jan. 4, that the rumored proposal of the U.S. Govern-

ment to grant a preference to U.S. vessels passing through the Panama Canal, would be resented by Canada, though he was afraid Canada had not looked far enough ahead. Canadians were naturally expecting a further substantial development of their far eastern trade on the opening of the canal, and they desired perfect freedom of navigation to and from their Pacific ports.

D. B. Hanna, Second Vice President, Canadian Northern Steamships, Ltd., who returned to Toronto Jan. 20 from Great Britain, is reported to have stated that one of his objects in going there was to secure additional steamships for the company's service for the forthcoming season, but so far he had been unsuccessful. He endeavored first to purchase suitable vessels, and then to charter them. Negotiations are proceeding for the charter of one vessel. He also said that all accommodation on the Royal George and Royal Edward had been booked up to April.

Furness Withy and Co.'s s.s. Hochelega, presumably for operation in the Canadian service, was launched at Middlesbrough, Eng., recently. She is of the latest improved type of patent cantilever construction with top side water ballast tanks, built to the highest class of the British Corporation, with a deadweight capacity of about 7,600 tons on a light draught. She will have four holds, all free from obstruction, and will be self-trimming owing to the sloping sides of the top side tanks at each side of the vessel. She will be equipped with triple expansion engines with cylinders 26, 44 and 73 ins. diam., by 48 ins. stroke.

Maritime Province and Newfoundland.

The Dominion Government steamboat Lady Laurier, which struck a shoal in Barrington passage, N.S., Jan. 17, was released Jan. 21 and taken to Halifax for repairs.

The Reid Newfoundland Co. has increased its dry dock and ship repairing facilities at St. John's, Nfld., by the purchase of the Angel Engineering Supply Co.'s marine works.

The Reid Newfoundland Co.'s s.s. Bruce was expected to sail from the Clyde, Scotland, Jan. 20, for St. John's, Nfld. On her arrival she will be run between Port aux Basques, Nfld., and North Sydney, N.S.

The St. John River Dredging and Construction Co. is applying for incorporation, with \$50,000 capital, and office at Fredericton, N.B., to own and operate dredges and vessels of all kinds, and to conduct a general dredging business in the province.

The Island Tug Co.'s annual meeting was held at Charlottetown, P.E.I., Jan. 9, when a dividend of 10% was declared for the past year. The following directors were elected:—J. L. McMillan, H. W. Longworth and S. W. Crabbe, replacing F. W. Hynd, F. R. Heartz and T. B. Riley.

With reference to the recent reports that the contract for the proposed works at Courtenay Bay, St. John, had been awarded, and that work would be immediately started, we are officially advised, Jan. 3, that the contract for the harbor improvements there had not then been placed.

C. W. Morse, who was sentenced to 15 years imprisonment some time ago at New York for fraud, and who was connected with the Eastern Steamship Co., operating between St. John, N.B., and Boston, Mass., has been released and the remainder of the sentence commuted on account of ill health.

The Maritime Dredging and Construction Co., Ltd., has been incorporated under the Dominion Companies Act, with \$750,000 capital, and office at St. John, N.B., to own and operate dredging and construction plants, and to carry on a general construction business, except the construction of railways, telegraph lines, etc.

Job Bros. and Co., St. John's Nfld., have had built at Rotterdam an auxiliary ship, named Netherton. She is fitted with steel lower masts and bowsprit with gaffs and topmasts of pitch pine. The fore, main and mizzen sails were made in St. John's and shipped to Europe. She is equipped with all the modern appliances for rapid handling of cargo.

At a meeting of the St. Stephen, N.B., board of trade recently, the claims of Oak Point harbor were discussed, and it was agreed that a pamphlet describing them be prepared and sent to all members of Parliament. It is claimed that the natural advantages are greater than in any other harbor on the Atlantic, and that the expenditure of about \$2,000,000 would provide all the necessary additional accommodation for large ocean going vessels.

The Eastern Steamship Co., which has operated a line of steamships between St. John and Boston, Mass., for some years has been incorporated with the Metropolitan Steamship Co. and the Maine Steamship Co., under the name of the Eastern Steamship Corporation. The International line, between St. John and Boston direct, and between St. John and Boston, via Lubec, Eastport and Portland, will be operated as the eastern division, and for the purpose of general recognition, the old names will be retained.

Bowring and Co., St. John's, Nfld., and Liverpool, Eng., are having built at Newcastle, Eng., an oil tank steamship to Lloyds 100A1 class on the Isherwood system, three deck rule, with 10 oil compartments and four cofferdams, two pump rooms, and with all necessary equipment for carrying and burning liquid fuel. She will be 420 ft. long, 54½ ft. beam, 32¾ ft. deep, with capacity of 9,300 tons deadweight on 26 ft. draught. She will be equipped with triple expansion engines with cylinders 27 ins., 45 ins., and 75 ins. diam. by 48 ins. stroke, for a speed of 11 knots an hour.

The Renwick Co.'s s.s. Renwick was sunk in collision with the s.s. St. Pierre Miquelon, off Country Harbor, at the end of December. She was owned by the Renwick Co., Toronto, and operated by the Inverness Ry. and Coal Co., and was built at Willington Quay, Eng., in 1890, her dimensions being, length 180 ft., breadth 28.1 ft., depth 13.7 ft.; tonnage, 664 gross, 402 register, and was equipped with engine of 70 n.h.p., driving a screw, and is on the British Register. The s.s. St. Pierre Miquelon was seized at North Sydney, Jan. 2, on a claim of \$45,000 made by the Renwick's owners.

The s.s. Turret Bell was offered for sale recently, at Quebec, by order of the Exchequer Court. She was built at Sunderland, Eng., in 1894, and is of the following dimensions,—length 297 ft., breadth 40 ft., depth 21 ft. 7 in.; tonnage, 2,211 register. She is equipped with triple expansion engines with cylinders 22½, 36½ and 60 ins. diam. by 42 ins. stroke, 233 n.h.p., supplied with steam by two Scotch boilers, and has a dead weight capacity of 3,500 tons on a 20 ft. draught. She is registered at Newcastle, Eng., and was sold with all

equipment, etc., in the condition as she lay at Indian Cove, near St. Joseph de Levis, Que.

Province of Quebec Marine.

Hugh A. Allan, Chairman, Allan Line, has sent \$500 towards clearing off the debt on the Sailors' Institute at Montreal.

The Quebec Waterways Commission held its first meeting of the year at Quebec, Jan. 3. S. N. Parent, formerly Chairman, National Transcontinental Railway Commission, is Chairman.

The Levis Ferries, Ltd. steamboat Colomb, while running into her wharf at Quebec, Jan. 11, collided with the Quebec and Levis Ferry Co.'s steamboat Queen, causing considerable damage.

The Montreal Harbor Commissioners, accompanied by the harbor officials and a number of guests, made a trip down stream, Jan. 1, on the tug Sir Hugh Allan. This is the first time such a trip has been undertaken on Jan. 1, since 1878.

The Dominion Government steamboat Montcalm left Quebec, Jan. 17, for the annual trip to Seven Islands with passengers and supplies. On her return she will be engaged with the steamboat Lady Grey on ice work in the Cap Rouge channel.

The Montreal Harbor Commissioners have laid before the Minister of Marine plans for an expenditure of \$2,000,000 during the forthcoming season. The work proposed covers the completion of the dry dock, new sheds, dredging of the channel and new piers.

The Department of Marine will receive tenders to Feb. 26, for the construction of one or two steel single screw bucket dredges, a steel single screw hopper dredge, one set of compound steam engines, to develop 450 i.h.p. for dredge 37, and fifty steel rock digging buckets with links and pins, all delivered at Sorel.

A meeting of mayors of municipalities on the south shore of the St. Lawrence was held at Levis, Jan. 4, when it was resolved to point out to the Government, that in the event of re-forming the Quebec harbor commission on the same lines as that of Montreal, the south shore municipalities should be represented.

The Richelieu and Ontario Navigation Co., which operates the ferry service from Montreal to Longueuil and Boucherville, ran a special trip on Jan. 1. The regular service closed Dec. 29, finishing the longest navigation season for several years. In 1899, the season was closed on Dec. 30, and in 1881, on Jan. 1, the latter constituting a record.

The Montreal Harbor Commissioners met the city board of control, Jan. 10, to adjust differences regarding the taxation of the commissioners' property. The mayor stated that the right of the municipality to tax the property would have to be settled by the courts, and when this was done, the city would secure such legislation as would enable it to exercise its right without militating against those of the port.

The bill to amend the Quebec Harbor Commissioners Act, recently introduced into the House of Commons by the Minister of Marine, provides for the repeal of secs. 7 to 16 inclusive, and the insertion of new sections to the effect that the commission shall consist of three members appointed by the Governor in Council on the advice of the Minister of Marine, and that they hold office during pleasure; two members shall form a quorum; one of the members may be appointed as president, and each member may be paid out of the harbor revenue, such remuneration as may be determined by the Governor in Council.

Ontario and the Great Lakes.

Capt. R. Walton, a well known Great Lakes mariner, died at St. Catharines, Jan. 10.

Capt. C. McDiarmid, a well known lake tug captain, died at Windsor, Jan. 9, aged 55.

Capt. Thos. Horne, for many years a master mariner on the Great Lakes, died in Stamford tp., Jan. 18, aged 86.

The Black Rock Lock at Buffalo, N.Y., which was completed on Dec. 18, is 600 ft. long, 70 ft. wide, 24 ft. deep, and has a lift of 5 ft. There are five pairs of gates.

A survey party is again working on a route for the proposed new Welland canal, from the mouth of Ten Mile Creek, and commenced boring operations at Thorold, early in January.

What is stated to be a record in late navigation on Lake Ontario, took place, Dec. 27, when the sloop Ariadne loaded grain at Kingston and sailed for Stone Mills on the Bay of Quinte.

R. Read, who commanded various schooners on Lake Ontario, in the old sailing days, and who was engaged since 1896 as master of lock 2, Welland canal, died at St. Catharines, Jan. 2.

During 1911 there were 2,574 vessel passages through the Welland canal, the highest number in its history. The fastest trip was made by the steamboat City of Montreal, which took 9 hrs. 20 mins.

The Rainy River Navigation Co. is reported to have entered suit against the Minnesota and Ontario Power Co. for damage suffered owing to the lowering of the water in the lower part of the river.

The Victoria Navigation Co., Ltd., incorporated under the Dominion Companies Act, has been licensed to carry on business in Ontario, utilizing a capital of \$50,000 in the province, with J. H. Hall, Ottawa, as its attorney.

It is reported that a floating dry dock will shortly be built at Port Stanley, with proper facilities for repairing all vessels coming to the port. O. C. Smith is stated to be interested in the project, together with the Tug Owners' Association.

The Montreal, Ottawa and Georgian Bay Canal Co. is applying to Parliament for an extension of time, to May 1, 1914, for the commencement of construction and for the expenditure of \$50,000 on such work, and to May 1, 1920, for the completion of the canals.

The steamboat John Sharples, which ran aground in lower Lake Ontario in the winter of 1910-11, and was subsequently abandoned to the underwriters, was sold recently to the Reid Wrecking Co., Sarnia. She is now at Port Huron, Mich., where she will be repaired.

The Northern Michigan Transportation Co., of Chicago, Ill., is arranging for the operation of its steamboat Missouri, via Mackinac, to Collingwood, calling at intermediate ports, next season. The Goodrich Steamship Co., Chicago, Ill., will also, probably put its steamboat Arizona on the same route.

The Toronto Harbor Commission held its inaugural meeting, Jan. 4, when the transfer of the Ashbridge Bay property from the city was formally made. E. L. Cousins, who has been in charge of the city of Toronto's bridge and railway work for some time, has been appointed Engineer for the Commission.

The Pelee Sand and Gravel Co. recently organized in Cleveland, Ohio, is reported to have contracted for a steamboat to ply between Point Pelee, Lake Erie and south shore points. It is said the boat will be built at Cleveland, and that she will cost \$80,000, and will be equipped with a self-unloading device,

electric generating plant and other modern machinery. The contract calls for delivery early in May.

The Great Waterways Union of Canada has been formed at Berlin, Ont., to inaugurate a campaign to hasten with all possible speed, the development by the Dominion Government of an ocean waterway to the head of the lakes, by way of the St. Lawrence river and the Welland canal, and to urge the Government not to proceed with the proposed Georgian Bay project, without having first conducted the most complete investigation as to its feasibility.

A. St. Laurent, Assistant Deputy Minister of Public Works, accompanied by C. R. Coutlee, Assistant Engineer of the work in connection with the proposed Georgian Bay canal, are visiting the Panama canal works with the view of obtaining information which may be of use in connection with the Georgian Bay operations. Their return is expected in February, when a report will be prepared for submission to the Department.

The U.S. Lake Survey reports the levels of the Great Lakes, in feet above tidewater, for December, 1911, as follows,—Superior, 601.88; Michigan and Huron, 579.46; Erie, 571.46; Ontario, 244.63. As compared with the average December levels for the past ten years, Superior was 0.56 ft. below; Michigan and Huron, 0.77 ft. below; Erie, 0.2 ft. below, and Ontario, 0.74 ft. below. It was anticipated that during January, Superior would fall 0.3 ft.; Michigan and Huron, 0.1 ft., and that Erie and Ontario would remain stationary.

The proposal to establish a dry dock at Owen Sound, which was submitted to the local council about two years ago, and for which the taxpayers had voted a subsidy of \$50,000, was again introduced, Jan. 20, in amended form. The new proposal covers a much larger scheme than was at first contemplated, involving an expenditure of about \$1,500,000. The plans will be considered by the town council, and it is proposed to ask the town to take \$50,000 of stock and grant an annual bonus of \$10,000 for 20 years.

Jas. Playfair, President, Inland Lines, Ltd., is reported to have stated recently that the Northern Navigation Co.'s steamboat Huronic would not be lengthened during this winter, as at first intended, as it would not be possible to have her ready for the spring service. Some repair work would, however, be undertaken, chiefly to her keel. He also stated that tenders would be invited shortly for the construction of another vessel as soon as the plans were decided on. The new vessel would be the flag ship of the fleet.

A bill which was recently introduced into the House of Commons, providing for the incorporation of the Hamilton Harbor Commission, defines the port and harbor of Hamilton as including Burlington Bay and Cootes Paradise, with all the inlets, dock and other water front property, water lots, piers, shores and beaches along the bay. It is desired that the commission shall consist of three members, two being appointed by the Governor in Council and one by the city on the nomination of the board of control. The appointment to be for three years, each being eligible for re-appointment; two members shall form a quorum, and the members shall elect their own chairman and appoint all officers.

An Ottawa dispatch of Jan. 22 says: "The Government engineers have completed the surveys of the Welland canal and their report with recommendations will be submitted to the Government very shortly. It is believed that the Government is favorably inclined to the proposition to rebuild the canal, and it is rumored that there will be an appropriation to start work in the supple-

mentary estimates. Four routes have been suggested by the engineers. One is from Nioyin Point to Jordan, which would mean an entirely new project. The second is a division of the present canal from Welland to 15-mile creek on Lake Ontario. The third diverts the canal from a point south of Thorold to Port Dalhousie, while the fourth proposed division would end at Ten Mile Creek."

The Dominion Government has decided to abandon the work on the Newmarket canal, which was intended to form a water route between Newmarket and Lake Simcoe, by way of the Holland river. The work was commenced in 1908, on an original estimate of \$328,000, and in March, 1911, a final estimate of \$1,000,000 was submitted to Parliament, and a statement that \$459,832 had been spent to Mar. 31. The work was divided into two sections, section 1 being from Cook's Bay, Lake Simcoe, to Holland Landing, on the east branch of the Holland river, and section 2 extending from that point to Newmarket, 4½ miles. The rise from start to finish was 43 ft., which was overcome by three locks. Lock and dam no. 3 are finished and about 60% of lock and dam no. 2, the excavation for lock no. 1 being partly done, as is also the dock at Newmarket. When completed, some time in 1913, it was intended that the work should form part of the Trent Valley canal system, connecting Lake Simcoe and the Georgian Bay, which latter work, it is reported, is also to be abandoned.

Manitoba, Saskatchewan and Alberta.

It is reported that efforts are being made to get the Government to erect wireless telegraph stations on Lake Winnipeg, for the benefit of navigation, and to extend the telephone system from Icelandic River to the north end of Big Island.

The U.S. Congress is being asked to order a new survey of the Red River, from Fargo, N.D., to the Canadian boundary, with the view of creating a 12 ft. channel, and the ultimate establishment of a through waterway from Fargo to Hudson Bay. It is stated that a navigable waterway can be made by the construction of two, or more, dams, and that with the improvements contemplated by the Dominion Government, a feasible route can be made, by way of the Nelson River and the northern outlet of Lake Winnipeg.

British Columbia and Pacific Coast Marine.

The C.P.R. s.s. Princess Adelaide was taken out of service, Jan. 2, and sent to Seattle, Wash., where oil-burning apparatus was installed.

The C.P.R. s.s. Amur has been sold to the Coastwise Barge Co., Seattle, Wash., to carry ore from Howe Sound, B.C., to Tacoma, Wash.

The North Vancouver ferry steamboats are to be converted into oil burners. It is estimated that this will save about \$8,000 a year.

The C.P.R. s.s. Princess Beatrice, which ran aground on Noble Island, Nov. 14, 1911, has been repaired, and again placed in service on the Queen Charlotte Islands run.

Representations from the Yukon territory are being made to the Dominion Government on the question of securing a seaport. It is suggested that negotiations be opened with the United States, with a view to securing a port on the Lynn canal, either by purchase or exchange.

The Canadian Fish and Cold Storage Co., Ltd., recently incorporated with

\$1,500,000 capital and office at Prince Rupert, is inviting tenders in England for building 16 halibut fishing steamers for use in northern waters this year. A cold storage plant is being erected at Prince Rupert.

C. D. Swan, Government engineer, appointed to report on the proposed harbor improvement scheme at Vancouver, has completed his general inspection, and has left for Europe, where he will inspect various harbors with a view to adopting the latest improvements in a scheme which he will submit in a report on his return.

The C.P.R. s.s. Princess Sophia, which has been built at Paisley, Scotland, is reported to be practically ready for dispatch to the Pacific coast, and she is expected to sail from the Clyde early in February. She is 245 ft. long, 44 ft. beam and 18 ft. deep, and is equipped with triple expansion engines, with boilers and furnaces fitted for either coal or oil fuel.

The turbine s.s. Queen Alexandra, which the C.P.R. recently purchased in Glasgow, Scotland, for its Vancouver, Nanaimo and Comox service, and which was illustrated in our last issue, has been thoroughly overhauled, repaired and altered to make it suitable for its new service, and has been re-named Princess Patricia, after the daughter of H.R.H. the Governor General. The vessel sailed from the Clyde, Jan. 5, for Vancouver, by way of Cape Horn.

With reference to the steamboat which the British Columbia Express Co. is building for operation between Tete Jaune Cache and Fort George, of which mention was made in our last issue, we are advised that it will be 118 ft. long by 24½ ft. beam, arranged for large power on a light draught. The estimated cost is \$50,000. She will run as fast mail, passenger and freight steamboat, and will extend the company's system, so that connections can be made between Ashcroft on the C.P.R. and Tete Jaune Cache, the head of navigation on the Fraser River.

The Shipowners' Association of British Columbia is taking up the question of improving the accommodation of, and approaches to False Creek, Vancouver, including the deepening of the channel, the construction of a Government wharf east of the Granville St. bridge, and a protest against the proposed filling in of a large area there, and the use of the Government dredge Mastodon, in doing any dredging work in connection with the Vancouver, Victoria and Eastern Ry. and Navigation Co.'s improvements, prior to the completion of all dredging work which has been outlined for the general benefit of the port.

The Union Steamship of British Columbia has awarded a contract for extensions to its Vancouver dock, to O'Brien, McCaughey and Lemcke, Seattle, Wash. An office is to be opened by the contractors in Vancouver, and the contract provides for the employment of Vancouver labor and the purchase locally of all material with the exception of creosoted piling. The contract for the shore end improvements has been let to Ironsides, Rannie and Campbell, and that for the office building to J. McNee, Vancouver. Plans for additional extensions to the dock will be further considered in the spring, when J. H. Welsford, President, is due from England for a general inspection of the company's properties.

The C.P.R. s.s. Princess Alice, which arrived at Victoria, recently, was built in England. Her machinery consists of triple expansion engines, with cylinders 27, 42, and 48½ ins. dia., by 39 ins. stroke, supplied with steam by four Scotch boilers, 15.7 ft. outside diameter, by 12 ft. long, with three Morison furnaces, 49 ins. dia. There is a total

grate area of 330 sq. ft., and a heating surface of 10,900 sq. ft. The engines are of 4,390 i.h.p., and are equipped with oil burning apparatus. On her recent trials on a boiler pressure of about 180 lbs. per sq. in., an average of 155 revs. per minute was attained, with an average horse power, for four hours, of 4,280, on a mean draught of 14 ft. 2 ins., making close to 18 knots an hour in a heavy swell.

It is announced that, following the recent visit of C. E. E. Ussher, Passenger Traffic Manager, C.P.R., to the Pacific coast, the C.P.R. will, on May 1, inaugurate a steamship service between Victoria and Tacoma, Wash., leaving Victoria daily at 9 a.m. and Tacoma at 8 p.m. It is stated that the service will be more of an experimental nature, to see if there is sufficient passenger traffic available to justify the service, and if so, it will become permanent.

Twohy Bros., Ashcroft, B.C., who have a contract for the construction of a portion of the Canadian Northern Pacific Ry., are having built at Kamloops a stern wheel steamboat to run on the North Thompson River, for about 100 miles north of Kamloops, or as far as it will permit of navigation. She will be 140 ft. long, 34 ft. beam and about 30 ins. draught, equipped with engine having cylinder 15 ins. dia. by 72 ins. stroke, of 600 h.p. She will be used chiefly for carrying supplies, but will also operate in the passenger trade.

Coasting Regulations for Foreign Vessels

The regulations permitting foreign vessels to carry on a coasting trade in Canada were contained in an order in council of Dec. 17, 1908, and amended, Dec. 28, 1908, being published in our issues of Jan. and Feb., 1909. A further order in council has been made, as follows:—

Steamships of not less than 1,500 tons gross tonnage, each, of the following countries, Italy, Germany, the Netherlands, Sweden, Norway, Austro-Hungary, Denmark, Belgium, the Argentine Republic and Japan, shall be admitted to the coasting trade of Canada in the carrying of goods and passengers coastwise between any port in the province of Nova Scotia and any port in the province of Quebec, and vice versa, on the same terms and conditions as are applicable to Canadian vessels, until Dec. 31, 1913.

Muskoka Lakes Navigation and Hotel Co.

—At the annual meeting in Toronto recently a number of changes were made in the board, J. S. Playfair, who has been President for several years, retiring. The directors for the current year, all of whom live in Toronto, are:—President, H. C. MacLean; Vice Presidents, G. T. Somers and W. W. George; other directors, R. S. Wilson, F. F. Brintnell, and A. McLean Macdonell, K.C. The Manager and Treasurer is W. F. Wasley, and the Manager of the Royal Muskoka Hotel is L. W. Maxson.

D. H. Bowen, who has been appointed Assistant Superintendent, C.P.R. Telegraphs, Ontario Division, Toronto, was presented with \$500 by local business men on his leaving London, Ont., where he had been local manager for the company.

The Board of Railway Commissioners has passed the following order 15559, to which reference was made in our last issue:—"The application of express companies operating in Canada and subject to the Board's jurisdiction, for approval of their standard tariffs, and the Board's judgment of Dec. 24, 1910. It is ordered that the time allowed for the said judgment for the free return of empty packages carried full by the express companies prior to Mar. 1, 1911, be extended to Nov. 1, 1912."

St. Lawrence & Chicago Steam Navigation Co.'s Annual Meeting.

Following are extracts from the report for the year 1911, presented at the annual meeting in Toronto, Jan. 10:—
 The season of 1911 was not generally a very profitable one to vessel interests. A large number of freight steamships usually employed on the lakes were laid up on account of inability to secure profitable cargoes. Your steamships, however, have been kept regularly employed, although at low rates, but the increased rates prevailing in November gave a fair profit making the season's business on the whole fairly satisfactory, and the prospect of increased business in 1912 gives some encouragement for the future.

Acting on the authority granted at the last annual meeting, your directors insured a proportion of the risk on the steamships under a modified form of policy at a reduced rate, and as our steamships had no accidents, nor required docking during the season, we have saved a large sum, which, added to our insurance fund, makes the total at credit of that fund now \$53,802.30, and it is the intention of your directors to continue the same policy, unless insurance rates are reduced to a reasonable basis.

The directors from the earnings of the season have paid a dividend of 5%, and, after providing for same, have carried forward \$5,433.63 to the credit of profit and loss, making a balance at credit of that account of \$141,476.72.

ASSETS.	
Five steamships, viz.: Algonquin, Iroquois, W. D. Matthews, G. R. Crowe, E. B. Osler	\$1,000,000.00
Freights and accounts receivable ..	17,786.22
Balance in bank	37,584.80
	\$1,055,371.02
LIABILITIES.	
Capital stock	\$ 860,000.00
Accounts payable	92.00
Insurance fund	53,802.30
Balance of profit and loss carried forward	141,476.72
	\$1,055,371.02
PROFIT AND LOSS ACCOUNT.	
Balance brought forward, Jan. 3, 1911	\$136,042.89
Steamships' earnings	\$62,210.74
Interest	456.85
	62,667.59
Cost of management, viz.: salaries, taxes, office rent, directors and auditors' fees, etc.	\$ 14,233.76
Dividend 5%, payable Jan. 2, 1912.	43,000.00
Balance carried forward	141,476.72
	\$198,710.48

The directors, who were re-elected for the current year, are:—President, W. D. Matthews; Vice President and Secretary, J. H. G. Hagarty; Managing Director, A. A. Wright; other directors, Jas. Carruthers, Capt. S. Crangle, G. R. Crowe, C. S. Gzowski, Sir Edmund Osler.

Vessels Removed from the Register.

The following vessels were removed from the Canadian register during December, 1911, for the reasons assigned:—Steam—Athens, Victoria, B.C., 8 tons, stranded; Bonanza, Vancouver, B.C., 74 tons, sunk; Circassian, Ottawa, 5 tons, out of existence; Clipper, Ottawa, 3 tons, out of existence; D. W. Gordon, Victoria, B.C., 6 tons, burnt; Eva, Montreal, 4 tons, burnt; Eva, Port Hope, Ont., 12 tons, burnt; Eva Belle, Collingwood, Ont., 7 tons, burnt 15 years ago; Evangeline, Montreal, 16 tons, burnt; Elswood, Kingston, Ont., 17 tons, out of existence; Fern, Vancouver, B.C., 17 tons, burnt; Governor Morton, Port Stanley, Ont., 10 tons, burnt; Grenada, Prescott, Ont., 43 tons, broken up; Harvey Neelon, St. Catharines, Ont., 47 tons,

burnt; Helen, Goderich, Ont., 3 tons, out of existence; Help, Liverpool, N.S., 78 tons, stranded; Ida, Quebec, 9 tons, broken up; Irene, Ottawa, 2 tons, out of existence; Iroquois, Victoria, B.C., 94 tons, foundered; Janet Craig, Ottawa, 6 tons, out of existence; John McDonald, Ottawa, 16 tons, out of existence; Juno, Ottawa, 8 tons, broken up; Kate, Sault Ste. Marie, Ont., 30 tons, burnt; Kate Marks, Sault Ste. Marie, Ont., 43 tons, abandoned as worthless in 1900; Lady Dufferin, Chatham, N.B., 29 tons, broken up; Little Jem, Port Dover, Ont., 2 tons, out of existence; Lizzie, Ottawa, 1 ton, out of existence; Lothair, Port Hope, Ont., 281 tons, out of existence; Marina, Yarmouth, N.S., 16 tons, stranded; North America, Charlottetown, P.E.I., 99 tons, wrecked; Petrel, Winnipeg, 94 tons, wrecked; Plover, Montreal, 27 tons, broken up; R-Tis-3, Charlottetown, P.E.I., condemned; Wasaga, Collingwood, Ont., 1108 tons, burnt. Sailing—A. Gauthier, Ottawa, 137 tons, out of existence; Colborne, Montreal, 302 tons, broken up; Ethel Aggie, Charlottetown, P.E.I., 48 tons, wrecked; Germaine, Montreal, 87 tons, broken up; Hattie Muriel, St. John, N.B., 85 tons, wrecked; Jubilee, Charlottetown, P.E.I., 76 tons, sold to forgers; Julie Plant, Lunenburg, N.S., 62 tons, broken up; Loyal, Lunenburg, N.S., 99 tons, stranded; Marconi, Liverpool, N.S., 199 tons, abandoned at sea; Margaret S., Lunenburg, N.S., 63 tons, transferred to Newfoundland; Marguerite, Yarmouth, N.S., 57 tons, broken up; Maria, Chatham, N.B., 28 tons, lost; Muriel, Lunenburg, N.S., 110 tons, stranded; Nahada, Lunenburg, N.S., 94 tons, transferred to Newfoundland; Naiad, Sarnia, Ont., 276 tons, abandoned; R. W. Smith, Lunenburg, N.S., 74 tons, broken up; Reliance, Shelburne, N.S., 192 tons, wrecked; Renown, Lunenburg, N.S., 79 tons, lost at sea; St. Patrick, Halifax, N.S., 27 tons, wrecked; Scud, St. John, N.B., 56 tons, broken up; Sweet Marie, Charlottetown, P.E.I., 77 tons, wrecked.



TENDERS.

SEPARATE TENDERS addressed to the undersigned, at Ottawa, and endorsed on the envelope either "Tender for Bucket Dredgers," "Tender for Hopper Barge," "Tender for Compound Engines," or "Tender for Dredge Buckets, etc." will be received up to noon of the Twenty-sixth day of February, 1912, for the following:—1. The construction of one or two Steel Single Screw Bucket Dredgers, to be delivered at Sorel. 2. The construction of a Steel Single Screw Hopper Barge, to be delivered at Sorel. 3. The construction of one set of Compound Steam Engines to develop 450 indicated horse-power for dredge No. 37, to be delivered at Sorel. 4. The furnishing of fifty Steel Rock Digging Buckets, Cast Steel Links and Manganese Bucket Pins, to be delivered at Sorel. Tenders may be submitted for one or all of the four items, but in any case a separate tender must be submitted for each item indicated above.

Full information and specifications in connection with the above can be procured on application from the Purchasing and Contract Agent, Department of Marine and Fisheries, Ottawa. There are no special tender forms in connection with this work. Each tender must be accompanied by an accepted bank cheque in favor of the Deputy Minister of Marine and Fisheries equal to ten per cent. (10 p.c.) of the value of the item or items tendered on, which cheque will be forfeited if the successful tenderer declines to enter into a contract with the Department or fails to complete the work contracted for in accordance with the contract to be prepared by the Department. Cheques accompanying unsuccessful tenders will be returned. The Department does not bind itself to accept the lowest or any tender. Newspapers inserting this advertisement without authority will not be paid for same.

ALEXANDER JOHNSTON,
 Deputy Minister of Marine and Fisheries.

Among the Express Companies.

R. Paton McLea, of Montreal, has been elected Vice President, Dominion Ex. Co., to succeed the late C. F. Smith.

The Board of Railway Commissioners has fixed the collection and delivery limits for express companies in Brighton, Ont., and Strathcona, Alta.

The Canadian Northern Ex. Co. has opened an office at Fork River, Man., and has closed its offices at Bellevue, Man., and Carlsberg, Sask.

C. Powers, a Canadian Ex. Co. driver and messenger at Winnipeg, was arrested recently on a charge of theft of \$10,000. He claims that he was made intoxicated by two men and robbed.

The charges against J. D. Chilman and J. Acheson, of robbing the Canadian Ex. Co.'s office at Hamilton, Ont., of about \$8,000, were heard Jan. 14. The latter was acquitted, and the former found guilty of receiving part of the proceeds, and sentenced to one year's imprisonment.

The Board of Railway Commissioners on Jan. 10, ordered the Canadian Ex. Co. to file, before Jan. 25, a tariff abolishing the extra charge between Picton, N.S., and Charlottetown, P.E.I., except when it may be necessary, owing to weather conditions, for traffic to be carried to Georgetown, P.E.I.

The Canadian Ex. Co., Jan. 15, commenced operating over the Temiskaming and Northern Ontario Ry., between North Bay and Cochrane, and has opened offices, with regular agents, at Cobalt, Charlton, Cochrane, Dane, Diver, Earleton, Englehart, Gillies Depot, Hailbury, Heaslip, Iroquois Falls, Latchford, Matheson, Mulock, New Liskeard, North Cobalt, Porcupine, South Porcupine, Swastika, Thornton, Tomiko, Timagami, Uno Park, and Widdfield. Arrangements have also been made to handle traffic for Elk Lake, via stage from Charlton, in the winter, and by boat and stage from Latchford in the summer.

The Dominion Ex. Co., in connection with the recent order of the Board of Railway Commissioners as to the free return of empty packages, quoted on another page, has issued instructions to its agents, pointing out that empties which have been forwarded full over the company's system, and entitled to free return under the classification effective prior to Mar. 1, 1911, and outstanding at that date, may be returned free until Nov. 1, 1912, provided that each shipper entitled to free return of such empties, files with the company a statement showing the dates the full packages were shipped, to what points, the names of the persons, and the number of packages, which must be verified by the agent from his books.

Telegraph and Cable Matters.

The C.P.R. has erected a duplicate wire between Merritt and Vancouver, B.C.

The Canadian Northern Telegraph Co. has closed its office at Carlsberg, Sask.

E. Rawlings, director, Montreal Telegraph Co., died in Montreal, recently, aged 72.

The Board of Railway Commissioners commenced its enquiry into the question of telegraph tolls, at Ottawa, Jan. 8.

J. A. Wisely, heretofore chief operator, has been appointed local manager, C.P.R. Telegraphs, Halifax, N.S., vice W. M. Godsoe, promoted.

L. H. McNamara, publisher of the Bruce Herald, has been appointed agent, Great North Western Telegraph Co., Walkerton, Ont., succeeding his father, M. McNamara, deceased.

C. W. MacDonald, heretofore assistant night chief operator, C.P.R. Telegraphs, Toronto, has been appointed local manager at London, Ont., vice D. H. Bowen, appointed Assistant Superintendent, Ontario Division, Toronto.

D. H. Bowen, heretofore local manager, C.P.R. Telegraphs, London, Ont., has been appointed Assistant Superintendent, Ontario Division. Office, Toronto. He entered the C.P.R. Telegraph service Oct. 1, 1886, as agent at St. Thomas, Ont., and was appointed local manager at London, Ont., Apr. 23, 1890.

J. F. Richardson, whose appointment as Superintendent, C.P.R. Telegraphs, British Columbia Division, Vancouver, was announced in our last issue, was presented with a purse of gold, by the staffs at Montreal, Ottawa and Quebec, on his transfer from the position of Superintendent, Eastern Division, Montreal.

The Pacific Cable Board's new cable, which is to be laid between Australia and New Zealand, will cost about \$875,000, which will be taken from the Board's reserve fund. The cable will be laid between Sydney and Auckland, and it is stated that the Board's headquarters in New Zealand will be moved to Auckland with the view of giving a speedier service.

W. M. Godsoe, who has been appointed Superintendent, Atlantic Division, C.P.R. Telegraphs, St. John, N.B., was born there, and entered the service there in May, 1895, being transferred to Halifax, N.S., in May, 1896. He was subsequently appointed chief operator there, and in May, 1902, Manager. On leaving Halifax, recently, to take up his new position, he was presented by the staff and personal friends, with a gold chain and engraved locket, and fitted travelling suit case.

The Maritime Telegraph and Telephone Co., which recently absorbed the Nova Scotia Telephone Co., has completely reorganized its staff, and contemplates making a number of improvements in the service. The present officers and directors are: President, S. M. Brookfield; Vice President, O. E. Smith; directors, M. Dwyer, H. R. Silver, Hon. B. F. Pearson, R. E. Harris, J. R. McLeod, Halifax, N.S., and C. F. Sise, Jr., and L. B. Macfarlane, Montreal. The annual meeting will be held in February.

The following changes of C.P.R. Telegraph officials in the Manitoba Division, J. McMillan, Superintendent, are reported:—W. R. Rutherford, heretofore local manager, Winnipeg, appointed supervisor at Souris; W. D. Neil, heretofore chief clerk to Superintendent, Alberta Division, Calgary, appointed local manager, Winnipeg, vice W. R. Rutherford; W. Kennedy, heretofore agent at Regina, Sask., appointed assistant city representative, Winnipeg; W. K. Thompson, heretofore agent at Saskatoon, Sask., appointed chief operator, Winnipeg, vice W. J. Kane; W. J. Kane, heretofore chief operator, appointed supervisor, Winnipeg.

The following changes of C.P.R. telegraph officials are announced, in addition to those mentioned in our last issue:—W. J. Camp, heretofore Electrical Engineer, has been appointed Assistant Manager, Office, Montreal. J. Fletcher, heretofore Superintendent, British Columbia Division, Vancouver, has been appointed Superintendent of Traffic, Office, Montreal. W. M. Godsoe, heretofore local manager, Halifax, N.S., has been appointed Superintendent, Atlantic Division, vice F. J. Mahon, transferred to Montreal. Office, St. John, N.B. D. H. Bowen, heretofore local manager, London, Ont., has been appointed Assistant Superintendent, Ontario Division, Office, Toronto.

The Montreal Telegraph Co.'s report,

which was presented at the annual meeting in Montreal, Jan. 11, shows assets of \$2,293,724.72. The capital is \$2,000,000, and the excess in value of property operated by the Great North Western Telegraph Co. over shareholders' capital is \$151,823.85; dividend paid Jan. 15, \$40,000; unclaimed dividends, \$938.76, and contingent fund, \$100,962.11. The system is operated by the G.N.W. Telegraph Co., and its operation and maintenance are guaranteed by the Western Union Telegraph Co., for 97 years from July 1, 1881. The total distribution to shareholders during 1911, comprising dividends and bonuses, was \$165,000. B. McLennan and R. MacD. Paterson were elected directors, succeeding H. A. Allan, resigned, and E. Rawlings, deceased.

In giving evidence before the Board of Railway Commissioners, Jan. 11, in the enquiry into telegraph tolls generally, W. J. Camp, Assistant Manager, C.P.R. Telegraphs, is reported to have stated that the total cost of the company's telegraph system, exclusive of freight charges on the material from point of origin to destinations, was \$6,696,421.40, of which \$3,897,238 was for pole line equipment. This was spread over 12,108 miles of poles, making the average cost per mile, \$321.87. The cost of wires was given as \$2,190,988, and cables \$275,044, the balance being for batteries, instruments, etc. It was also stated that there were 75,782 miles of wire along the right of way, 49,936 miles of this being exclusively commercial, 5,201 exclusively railway, and 20,735 joint railway and commercial. Of the total, 21¾% was given as railway line and 78¼% as commercial, and on that basis it was estimated that \$1,204,267.81 value of the plant was devoted to railway use exclusively, and \$5,492,153 to commercial use. The whole telegraph system of the company is estimated to be worth \$6,156,168.

The Safety Car Heating and Lighting Co., New York and Montreal, has been advised by Julius Pintsch Aktiengesellschaft, Berlin, that the Prussian Minister of Public Works Von Breitenbach, has denied a report, published in various European journals, that by action of the Reichstag at Berlin, the Prussian State Railways were to be equipped with electric light. This denial by the Minister over his signature refutes any contemplated change from gas to electricity as an illuminant on the Prussian State Railways.

NOTICE is hereby given that an application will be made by the Toronto Suburban Railway Company to the Legislature of the Province of Ontario at its next session for an Act authorizing the company:

(a) To extend its line from some point at or near Guelph, in the County of Wellington, to some point at or near Berlin, Preston, Hespeler and Galt, in the County of Waterloo, and thence to a point at or near Hamilton, in the County of Wentworth, passing through or near the Townships of Guelph, Waterloo, Dumfries, Puslinch, Beverley, Flamboro West, and Ancaster.

(b) To amend Section One of the Statutes of 1910 by inserting after the words "County of Peel," in the fourth line thereof the words "or from some point on its authorized Hamilton line at or near Cooksville, in the County of Peel."

(c) To increase the capital stock, to authorize the issue of bonds or debenture stock for terminals, bridges, station-houses, electrical generating plants and the appurtenances thereto, and all other electrical equipment necessary for the purposes of the company.

(d) To extend the time for the commencement and completion of the company's railways and for other purposes.

Dated at Toronto, this 27th day of December, 1911.

ROYCE & HENDERSON,
Traders Bank Building, Toronto.
Solicitors for the Toronto Suburban Railway Company.

TRADE AND SUPPLY NOTES.

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

Calendars for 1912 have been received from Dearborn Drug and Chemical Works, Chicago; Mussels, Ltd., F. H. Hopkins and Co., Montreal; Baldwin Locomotive Works, Philadelphia.

Kennedy and MacDonald, Edmundston, N.B., who have a contract on the National Transcontinental Ry., are having three locomotives completely overhauled by the Robb Engineering Co., Amherst, N.S.

The Steel Co. of Canada has let contracts for two new open hearth furnaces of 50 tons capacity each, a blooming mill, a continuous billet mill, and a combination rod and bar mill to be built at Hamilton, Ont.

The Robb Engineering Co., Amherst, N.S., has received an order to install in a factory being built by Moirs, Limited, at Halifax, N.S., a 200 h.p. Robb-Mumford internally fired boiler, to be operated at 150 lbs. working pressure, and a 150 k.w. generator driven by a Robb-Armstrong automatic Corliss engine of the side crank type.

J. J. Gartshore, 58 Front St. West, Toronto, has purchased the material on the Opeongo Logging Railway at Whitney, Ont., in consequence of the line being taken up, as the Ontario Government has purchased some of the timber limits in that district and is adding the territory to Algonquin Park. There were a little over 13 miles of track and the rails are in first-class condition for relaying.

Allis-Chalmers-Bullock, Limited, Montreal, is an entirely separate and distinct corporation and is not in any way affected by the receivership proceedings in connection with the United States company. It has not felt adverse conditions similar to those in the U.S.; but, on the contrary, the shops are full of work and running regular time. The proceedings will not affect the operations of the Canadian company in any way.

The Canadian Locomotive Co.'s shareholders held a special meeting at Kingston, Ont., Jan. 3, when the President, W. Hart, between whom and the other directors some friction had arisen, resigned, and A. W. Wheatley, heretofore General Manager, was elected a director to succeed him. The board as now constituted is as follows:—Æmilijus Jarvis, Toronto, President; A. W. Wheatley, Kingston, Vice President, and General Manager; R. Hobson, Hamilton, Ont., W. Y. Soper, Ottawa, F. G. Wallace, Pittsburgh, Pa., J. L. Whiting, Kingston, Jas. Redmond, Montreal.

The Goldschmidt Thermit Co. in its publication, Reactions, among a number of illustrated descriptions of thermit welding, gives one of the welding of a locomotive frame at the C.P.R. shops, Revelstoke, B.C. The size of the frame at the point of fracture was 19½ by 3½ ins. The frame had to be taken off the locomotive, so that the weld was made after it had been taken down. There were altogether three breaks, two of which were welded with the frame down, and the third after the frame had been replaced in the locomotive. Altogether 300 lbs. of thermit was used, with the usual percentage of punchings and manganese.