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How to Heat Railway Buildings Economically.

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Heating systems in railway buildings often compare unfavorably with those used in buildings owned by private industrial concerns, the reason being that railways usually make their own installations, and the men employed are not always heating tradesmen, but are picked up from other departments and are not primarily interested in heating work. What they know has been learned from actual contact with other railway heating plants so that obsolete practice has a strong tendency to be perpetuated. What is mostly needed is a campaign of education, and any railway contemplating extensive improvement in its heating systems would be well advised to study this problem from the start.

It is sometimes claimed that the use of steam traps and other devices is impracticable, as they need too much care and attention. It will always be found, however, where such has been the case, that the trouble lies in the want of care in choosing the right article or in properly protecting it from dirt and scale, or, more often still, in neglecting to give the very small amount of attention which is needed periodically by all mechanism, no matter how simple. When it is realized that the modern air brake is far more complicated than the most elaborate heating system, it will be conceded that there is no valid reason why the latter should give any trouble in the hands of the mechanics who are available at shops, and locomotive houses, provided they are given the necessary instructions. It is the intention of this paper to recommend a standard practice in designing new heating plants, and in remodeling those that are inefficient or out of date. In so doing it is not sufficient to decide on a system that will be efficient if correctly operated, but to consider what chance it has of being correctly operated, or if it would not be better to make some sacrifices in certain directions rather than take a chance on personal equations that are beyond control. For instance, it is needless to state that it is quite impossible to depend on anyone turning radiators on or off, with a view to economy, unless he is paying for the coal. It simply is not done, and no number of circular letters or printed instructions will ever make any difference. It therefore remains to control the heat at its source, to make one man responsible, to make the system as automatic as may be, or to so arrange it that it is to somebody's personal advantage or comfort that economy be observed. Also to pay the greatest attention to details, particularly in regard to protection from dirt, and external injury, and from being tampered with by unauthorized persons, and to arrange that waste becomes visible. It is with the above ideas in mind that the following recommendations and suggestions are made, being followed out from the beginning and incorporated in the design.

The Choice of a New System.—A heating system in its simplest form consists

of a series of stoves placed in different rooms, and these are fairly economical, the possibilities of waste lying in the overheating of the premises (usually only occasional) and the throwing out of unburnt fuel with the ashes. This latter may be serious, but can only be due to carelessness on the part of the attendant and the remedy is obvious. Almost as simple is the Baker heater, which is often available when released from old cars, and works very well in a small building, where not more than one heater is required. These two methods of heating are, everything considered, most economical for the smallest of passenger stations and small buildings, or sheds at a considerable distance from other buildings, and where they can be attended by baggage men, or other employes, in the course of their ordinary duties.

For stations of from 1,500 to 7,500 sq. ft. total floor area, which embrace the majority of ordinary stations, a hot water heating system should be used, with cast iron radiators, and sectional cast iron boiler, burning hard coal and placed preferably in a basement. In the smaller sizes, a hot water heating system is better than a steam system, in many ways, although its first cost is about 35% more. The large volume of water in circulation acts as an ideal heat storage, giving up heat when fire is low and storing heat when the fire is bright, thus preventing to a large extent the losses due to overheating of the rooms, and calling for less attention to the furnace. Any man with a furnace in his home will know how to run such a system economically and will usually do so, if for no other reason than to save himself trouble.

When we come to a larger station, such as is found at a division point, which is usually of two stories, with offices above, and sometimes a number of buildings arranged in a row, the hot water system may offer increased cost, and construction difficulties which make it advisable to use a steam heating system. In most respects the one pipe gravity steam system with boiler in basement using hard coal or other suitable fuel is the most economical steam heating system that can be adopted, and it is certainly the simplest. There is no possibility of waste of either hot water or steam when the proper air valves are used. Not only the radiators, but the boiler and piping themselves supply heat to the building, and need only be covered when they are likely to give out more heat than is required in the immediate vicinity. Long horizontal mains also need covering to avoid excessive condensation.

The system has the inherent disadvantage that the radiators must be either on or off. However, with the boiler on the premises, and the attendant firing it to suit fluctuating weather conditions, what actually happens is that the radiators are alternately heating and cooling, as not sufficient steam is made to heat them all the time, and this prevents over-

heating the rooms. To take advantage of this feature it is most important to so arrange the piping that the colder rooms and more exposed portions of the building are given the preference by receiving their steam first. Otherwise, it will be found necessary to overheat one portion of the building in order to adequately heat another. With this attended to, it will be found that the system will work well for two or three buildings which are not more than 100 ft. apart and which have good basements, but under certain circumstances, where there is a great difference in exposure, or in distance from boiler to radiators, it will be necessary to use special air valves on each radiator and connect them all to a small air pump, or ejector through a system of piping, which, however, need only be very small. This is known as the air line system and has many recommendations, but is usually an unnecessary refinement for railway buildings. In designing a one pipe heating system, proper size of piping, proper grading, and provision for expansion, and care in placing the radiators, are the points on which the success of the installation depends.

We now come to the first condition in which there is a really serious opportunity for waste. A station, office, or small shop has to be heated, and as a supply of high pressure steam is available a short distance away at, say, the locomotive house, it is proposed to use this. Now it is usually not economical to do so. To begin with, there is the loss of heat in the underground pipe supplying the building. With the very best construction this will be about 1% per 100 ft., but if the pipe is merely buried in sand, or set in a wooden boxing, the loss may be as much as 10% or more. The condensed steam, instead of draining back to the boiler direct, must be separated by means of a steam trap. Certain of these steam traps will then return the condensation direct to the high pressure boiler with very little loss, but these traps need careful attention, as with a none pipe system, should the trap stop working, the system will rapidly fill with water, and it will take some time to get it working again.

The greatest loss, however, is due to the imperfections of human nature. With an unlimited supply of steam from a distant point it will always be found that the building is overheated, and doors and windows left open, even in very cold weather. In fact, radiators are rarely, and in some cases never, shut off. One has only to imagine what his coal bill would be if he were to keep his furnace at home going full blast, from October to May, to realize what this means. It may be argued that the agent or officer in charge should not permit this condition, but a second thought will show that this is one of all duties that can and will be neglected. The only practical way to control the heating of buildings is at the source of heat, and if the baggage man or other employe has to at-

tend the furnace, in addition to his other duties, he will bank the fire to make it last, and this is economy, which will far outweigh the difference in cost of hard and soft coal. It is more than likely that the cost of the underground piping and steam traps will equal or exceed the cost of a sectional cast iron boiler, and at even fairly large stations it will often be found possible to have a certain employe attend the furnace, in fact, where there are offices, a janitor is usually employed in any case.

The conditions that make it advisable to heat a building from an external source of steam are as follows:—(1) When the building is very small, requiring only one or two coils or radiators, and is used by a number of men continually coming in and out. A switch shanty is a good example. There is no one to attend to a stove and the steam will not amount to much. In this case pipe coils may be used, with a small steam trap on each coil, properly protected from sediment by a dirt trap or dirt pocket (a separator off a freight car is a good thing to use, and can often be obtained from stores.) The trap should have no by-pass and should be non-adjustable, except by taking it apart. Run condensation back to the boiler room, if not more than 200 ft. away, otherwise let it drip outside, where it can be seen. A reducing valve is not necessary, no great care need be taken in grading pipes, and as the steam is at high temperature only a small coil is required. (2) When it is intended to heat an existing building, and there is no basement, or convenient place for a boiler, or when the building is quite large, over 15,000 sq. ft. floor area, and two or more stories, such as large stations or freight sheds, or two or more buildings some distance apart. In this case the one piping gravity system is no longer the best to employ.

We come now to the two pipe vacuum system. On the return end of every radiator is placed a small steam trap, the discharge of which is led back through a separate arrangement of piping to a vacuum pump, which maintains a vacuum up to the outlet from every radiator. This means that all condensation is positively removed, and should the steam pressure at a remote part of the system be so low that the steam cannot flow into the radiator by itself, the trap, being cold, will remain open until the vacuum has drawn the steam in. Radiator traps should be thermostatic in principle and absolutely non-adjustable. Such a system is operated on a very low pressure, 1 to 4 lb. being sufficient in any well designed plant. Its advantages are many, for besides the positive circulation, which overcomes all troubles due to long distance and low pressure, it gives a low temperature radiator (an important point in economy, as it will not readily cause overheating), and also by using special inlet valves, with graduated opening, the so-called modulating system is obtained, which allows the heat in individual radiators to be controlled. This is a convenience, but, as pointed out before, little economy can be expected therefrom, and modulating valves are only justified in the better grade of office. The use of traps on every radiator safeguards the system from serious interruption, as the failure of a single trap only affects its own radiator, or at most those nearby, whereas the failure of a trap controlling the whole system may result in water-logging the system for hours. The vacuum system is not quite perfect, as it cannot be controlled from a central point.

It can be made automatic to operate with thermostats, but these are very expensive (\$50 a radiator), and need constant attention, so that its greatest claims to economy are its low temperature and absence of leakage.

It is very necessary in designing the building to make provision for easy access to the heating pipes. If a proper basement is not provided, there should be at least 4 ft. of open space between the floor joists and the ground, or, where mastic or tile flooring is used, ample pipe trenches should be provided, which can be reached without destroying the floor. The writer knows of a new station that has all the steam heating pipes buried in the sand beneath a terazzo floor. The piping will last for many years, but some of it will have to be renewed sooner or later, and at any time a leak may develop, which will necessitate the destruction of a large part of the flooring.

In providing water for wash basins a separate jacket heater, or small boiler, using hard coal, is much to be preferred to a heating coil in the main boiler, and owing to the fact that hot water constantly renewed is extremely corrosive it is desirable to use brass pipe and fittings. Because of the expense, extra heavy galvanized iron pipe is sometimes substituted, but even this will give trouble in time.

Locomotive house heating is a problem in itself and a very difficult one in this climate. It is well recognized that the hot blast system, in which a fan, driven by mechanical power, draws air through a nest of steam pipes, or cast iron sections, and discharges it through ducts to different points, usually the locomotive pits, is the most satisfactory system that can be used. It is not always recognized, however, what an enormous amount of steam is required to run these plants, and they are therefore often made much too large for the boiler capacity provided. Incorporated with a vacuum system to heat the offices, the best way to remove the condensation from the blast coils is by connecting it to the same system, using a large size thermostatic trap on every coil. The fan should be engine driven, as this permits the widest variation in speed, the exhaust steam being used in the coils.

Handling locomotives in winter is such a difficult matter that the most enthusiastic economist cannot justify fuel saving at the expense of cutting down the heat or reducing the ventilation in the locomotive house. The only justifiable saving is that which prevents waste of condensation or steam. In designing the air ducts it should be borne in mind that the speed of the air can be much increased over standard practice and therefore the ducts may be made smaller. As these are usually most unwieldy, at the large end, whether placed overhead or underground, this is a point worth remembering.

Heating Shops.—It is scarcely within the scope of this paper to discuss the heating of very large shops. It may be stated, however, that the writer favors forced circulation hot water, in wall radiators combined in the larger buildings with the hot blast system of hot air heating using live steam in the heating elements. The generation of electricity by steam power and the use of the exhaust steam as a by-product in the heating system, is justified only when the alternative is the purchase of power from steam driven central stations, and is not justified where (as is usually the case in Can-

ada) power can be obtained from hydro electric development.

The suggestion is made that compressed air should be produced by steam driven machines, the exhaust being used for heating in winter and for generating about 25% of the electric requirements in summer, by means of a mixed pressure turbine, the same turbine in winter using live steam, and exhausting into the heating system. Such an arrangement will require no increase in boiler capacity over heating requirements alone, would appear to offer a reasonable saving in power cost, and would provide a very valuable insurance against a complete shut down in the event of trouble with the external supply.

The provision of the correct amount of radiation or heat supply has an important bearing on economy. In this climate it is necessary to somewhat increase the usual allowance taken as correct for the Eastern States, viz., 70° room temperature, with an outside temperature of zero. For Eastern Canada 70°, at 5 below zero, is about right. This will give a temperature of about 60° at 20 below zero. The above is for offices. For stations and shops the following is recommended:

Station waiting rooms, 65° at zero; machine, and erecting shops, 60° at zero; forge and blacksmith shops, 50° at zero (when not working); paint and varnish shops, 65° at zero, with an additional section to maintain this temperature down to 20° below zero; locomotive house, 60° at zero, based on one air change per hour.

Remodelling Existing Systems.—We often find a boiler or boilers supplying steam to a system of pipe coils, the coils having valves at each end. The inlet valve is wide open, the discharge valve is supposed to be just cracked, discharging the condensation and also enough steam to make sure of it. The resulting steam and water are discharged into a so-called hot well, a wood or concrete tank placed underground, and the hot water is pumped back into the boilers. Not so uneconomical on the face of it, but let us see what is really happening. Some of the coils are discharging steam full bore, for someone feels cold and wants all the heat he can get. Cold water is entering the hot well, to make up the waste, and as the float valve is out of order (for who can get in and fix it?) it is overflowing to the sewer, after being heated to boiling point by the steam from the heating system. The feed water is hot, there is no steam to be seen anywhere and no evidence of waste, unless the singing of the steam through the coils means anything.

There are a great many such plants still in use. Now what is the remedy? To place a steam trap on the discharge to the hot well may answer, but usually does not. The pipes do not slope in the direction of flow, as they should, they sag and slope the wrong way, and although they worked when there was a current of steam blowing out the water all the time, they will fill with water, and stop the circulation if the pressure at the outlet is retained by means of a trap. Usually such a system can be made to work economically by putting a steam trap on each radiator. These may be thermostatic or float, but unlike vacuum traps, they will be required to withstand a pressure of as much as 25 lb. and must be chosen accordingly. A reducing valve on the steam line should limit the pressure to this, or less if possible, but it may be necessary to put in

extra radiators to make up for the reduced temperature due to the lower pressure. Unless the hot well is used as a storage for boiler washing, it should be discarded and an open type feed water heater used. The returns from the heating system should return into this and will then be pumped direct to the boilers without loss of heat. Steam traps which return the condensation direct to the boiler use much less steam than a pump, and should be used when all the steam from the boilers is used in the heating system, but where much cold water has to be used as feed, the pump exhaust can be used to heat it, and a pump is then as good as a trap and will usually be favored as being more easily understood. The overflow from the hot well, where such must be used, should run over a weir, where it can be seen and heard and a proper ball valve must regulate the supply of cold water, but should be placed in a little pit beside the hot well where it can be reached.

Another type of obsolete system is a two pipe vacuum system, using exhaust steam from engine or pumps, but with no traps on the radiators, and none of the refinements necessary to a good job. The back pressure on the engine is 10 or 12 lb., the pipes and coils are partly choked with oil from the exhaust steam, and as the steam is short circuiting through the nearer radiators, the more distant ones are difficult to heat.

The installation of radiator traps and some slight alteration to the piping will usually make quite a good vacuum system. The oil troubles can be prevented by means of an oil separator and the surplus steam relieved by a back pressure valve.

It is necessary to make special provision when using live steam that it shall not escape through the back pressure valve. A gate valve should be placed in the line, to isolate this valve and the feed water heater, when live steam is being used, a safety valve protecting the heating main from over pressure. This is a somewhat unusual arrangement, but is considered important.

The trouble with badly graded piping that cannot be readily changed may often be overcome by trapping it at the low points.

After an efficient vacuum system has been installed, there is a great temptation to turn the discharge from high pressure steam traps or even open drains from steam hammers into the vacuum line. This must on no account be done, as the temperature of the water leaving a high pressure line is around 100° hotter than the temperature of the vacuum line and enough water will flash into steam to kill the vacuum.

If it is necessary to install additional radiators and no vacuum traps are on hand, their returns should be kept open until such traps can be obtained.

If a remodelled system, using live steam at 25 lb. pressure exists at the far end of a low pressure vacuum system, which is often the case, and it is too costly to run a separate return back to the boiler, it may connect into the vacuum line, with a spray of cold water supplied by a ¼ in. pipe to condense the steam.

One pipe heating system, supplied with steam from a distance, and discharging their returns to the sewer through a partly open valve are fairly common, and are rather difficult to handle. A continuous discharge trap of the float pattern, or better still, two connected in parallel, well protected by large sedi-

ment pockets, are the best that can be used for this service. If the system fails to heat properly with the traps in service, which is quite possible, the trouble must be looked for in badly graded piping or too small piping. This is particularly liable to happen where the risers drain back into the steam main instead of into a separate return.

The next system is one in which the exhaust steam and perhaps some live steam is discharged to the hot well, and steam driven pumps are used to circulate the hot water through pipe coils or radiators in the various buildings. A splendid system in principle, it has gained a very bad reputation through poor design and inattention to detail.

Badly proportioned piping causes short circuiting of the water and consequent unequal heating of the coils. Insufficient surface and low temperature gives inadequate heat supply.

Oil from the exhaust steam mixed with pipe scale chokes the piping badly, and corrosion, due to air liberated from a continual change of water, eats holes in the pipe in a few months.

Properly proportioned the heating is perfect. With centrifugal pumps forcing water through closed heaters, there is no trouble with oil, scale or corrosion. Piping is much smaller than with steam, the multiplicity of radiator traps is dispensed with, and all the advantages of thermal storage and control of heat at its source, as claimed for the gravity hot water system, are retained. The system is applicable to the most remote buildings, in fact it shows to greatest advantage thus and is particularly adaptable for exhaust steam. For large shops spread over considerable area, its first cost is slightly less than that of a vacuum system. In this system, as in every other, hot water supplied to wash basins and for other purposes (including boiler feeding) must be supplied by a separate system entirely.

Now let us take a typical case and see what can be saved by reconstruction along the above lines. A locomotive house of 30 stalls built many years ago, but in good condition and fairly modern as regards locomotive facilities, may nevertheless have any or all of the following defects with their corresponding preventable waste of fuel, the figures given being tons per year:—

Due to bare blower line	127
Due to obsolete steam driven compressor....	163
Due to leakage of steam and loss of condensation from heating system in offices and stores	50
Due to feed water taken from hot well at a temperature of 130°, instead of heated to 210°	140
Due to badly insulated underground piping..	25
Due to excessive back pressure on exhaust steam mains owing to absence of traps on locomotive house heating system.....	87
	<hr/>
	592

When locomotive type boilers are used—	
Waste due to lower efficiency than return tubular boilers	100
Waste due to use of steam blowers for draft where same are used continually	200
	<hr/>
	300

Where other buildings are heated the following preventable losses occur:—
 Due to loss of condensation, 25% above proper heating requirements, when boiler pressure is used, and 15% when boiler pressure is reduced to 10 lb.
 Due to leakage, owing to absence of traps on radiators, 5 to 50% above proper heating requirements, probable average 10%.
 The preventable loss from underground steam mains, at present buried in a wood box, without any drainings or insulation, amount to from 5 to 10 tons a year per 100 ft. of pipe.

Proposed Devices for Improving Steam Economy at Locomotive House.

Open type feed water heater.—Heat-ing boiler feed to 210° F.

Oil separator on exhaust main.—Keep heating system at full efficiency by preventing it choking with oil and scale.

Back pressure valve on exhaust main. Regulate back pressure to minimum necessary.

Vacuum traps on pipe coils or fan coils.—Ensure even heating, full value from exhaust steam and minimum back pressure.

Magnesia or sponge felt covering on high pressure steam pipes.—Reduce condensation to a minimum and provide a durable covering, reduce corrosion.

Asbestocel covering on low pressure and heating pipes.—Assist steam circulation in heating system and provide durable covering which will prevent corrosion.

Reducing valves (properly protected by dirt traps) on live steam heating system.—Provide maximum efficiency and reduce possible loss due to radiation and leakage.

Steam traps and return pipes on live steam heating system.—Prevent loss of steam and return condensation either direct to boiler or to feed water heater according to circumstances.

Float valves, readily accessible in hot wells, and visible hot well overflow.—Prevent great loss due to hot water passing from hot wells unnoticed.

Underground steam conduit properly drained.—Prevent loss of heat due to heating the ground and melting snow.

Replace shop engine with electric motor wherever possible.—Eliminate this wasteful use of steam.

Replace present obsolete compressor with new machine, either steam or electric driven.—Old single stage compressor is inefficient as a compressor and as steam engine. Can save half of fuel it requires.

The replacement of locomotive type boilers can scarcely be justified at some points. It is doubtful whether these boilers are particularly inefficient, when provided with good chimney draft and not forced above 70 boiler h.p., that is half the power of a standard return tube boiler. When provided with poor draft, and where forced by means of steam jets, they waste enormous quantities of fuel and should be replaced as soon as possible.

Underground piping may be protected in various ways, but any really good method is very expensive and needs the most careful workmanship and supervision while being installed. For long distances with steam pipes of from 2½ in. to 10 in. and return pipes half the size, the split tile steam conduit cannot be beaten, when proper attention is paid to grading and drainage. It cannot be used under tracks, unless protected by concrete walls or cast iron pipe. For distances of less than 200 ft. a concrete trench, with double board top screwed down to cleats set into the concrete, may be used to advantage. The pipe covering should be sponge felt, or diatomaceous material; magnesia is too fragile. For piping above 10 in. or where several pipes are to be run, a tunnel should be considered. For pipes smaller than 2½ in. and distances of not more than 300 ft., it is permissible to use a wooden boxing, if the ground is dry, as the loss in heat will cost less than the interest on the cost of the more expensive construction. If the ground is wet, the pipe had better be carried overhead, or, if this is impossible, it may be cased in an outer pipe which will just fit over the covering the outer pipe being well covered with a mixture of pitch and sand.

All underground piping should be full weight, with extra heavy couplings.

Choice of Material.—A few suggestions on the choice of apparatus have been added to this paper, together with sufficient data to give a rough idea of the capacity and size. Complete information can only be obtained from the manufacturers of individual articles. The recommendations cover type and not any special make. There are at least four different manufacturers of each type suggested.

1. Steam traps, stationary pattern. High pressure, draining steam piping and steam separators. Use open float, bucket type, with valve and seat renewable and accessible by removing a small cap.

For locomotive house blower lines place a $\frac{1}{2}$ in. trap every 12 pits. For underground conduit use a $\frac{1}{2}$ in. trap every 700 ft. Use a $\frac{3}{4}$ in. trap to drain main steam header, on a battery of two or three boilers of 150-200 h.p. each.

Low pressure, draining one pipe heating systems, or heating mains. Use continuous discharge float type, easy accessibility of interior and integral by-pass and sediment traps are an advantage. Specify size and working pressure. One $\frac{3}{4}$ in. trap will serve 800 sq. ft. of radiation; one 1 in. or two $\frac{3}{4}$ in. traps will serve 1,600 sq. ft. of radiation; one $1\frac{1}{4}$ in. or two 1 in. traps will serve 2,800 sq. ft. of radiation; one $1\frac{1}{2}$ in. or two $1\frac{1}{4}$ in. traps will serve 5,500 sq. ft. of radiation.

2. Steam traps, tilting pattern. Direct return trap, placed on top of boiler and discharging into it directly.

Three valve lifting trap, raises low pressure condensate from heating system into direct return trap or storage tank.

Non-return trap may take the place of an ordinary trap when very large capacity is required.

These traps vary greatly in price, the cheaper patterns need greater attention, but may give good satisfaction. The sediment trap and necessary check valves are not included and must be ordered specially. Give size and working pressure and all possible information on proposed arrangement as manufacturers should guarantee the installation.

$\frac{3}{4}$ in. trap will serve 4,000 sq. ft. of radiation.
1 in. trap will serve 7,000 sq. ft. of radiation.
 $1\frac{1}{4}$ in. trap will serve 12,000 sq. ft. of radiation.
 $1\frac{1}{2}$ in. trap will serve 20,000 sq. ft. of radiation.

3. Radiator traps. Vacuum system. Use traps working on the thermostatic principle, which are non-adjustable. They should be guaranteed to operate under a maximum pressure of not less than 10 lb. and a higher pressure is often a great advantage.

Medium pressure. These should be similar to the foregoing, but guaranteed for a maximum working pressure of not less than 25 lb.

High pressure, should be as above, and guaranteed for a maximum pressure of 100 lb. A certain make of float trap, having a plain floating ball, may also be used to advantage in this and the foregoing type. As the smallest radiator traps are about 100 sq. ft. radiation capacity, it is rarely necessary to use any larger.

4. Vacuum pumps, if steam driven, should be fitted with a mechanical force fed lubricator. Very small hydrostatic lubricators are unsatisfactory. Vacuum pumps are often much too large, a 5 x 6 x 6 in. pump will care for 7,000 sq. ft. radiation, a 6 x 9 x 10 in. pump is suffi-

cient for 25,000 sq. ft. of radiation.

5. Pressure gauges, to register pressures up to 5 lb., are often very inaccurate. For such low pressures a compound gauge reading from a perfect vacuum up to 15 lb. pressure should be used. Care must be taken to avoid water pockets in piping which may add hydrostatic pressure to the gauge.

6. Air vents, or air valves, for use on steam radiators, should work on the syphon principle having a floating member. Thermostatic valves are liable to cause flooding.

Trap capacities are given in terms of normal radiation, i.e., cast iron radiators with a room temperature of 70 deg.

Recommended Practice for New Heating Plants.

Wayside station and small buildings: Stoves or Baker heaters.

Station 1,500 to 7,500 sq. ft. floor area: Gravity hot water heating system with cast iron boiler and hard coal.

Other buildings 7,500 to 13,000 sq. ft. floor area: 1 pipe gravity steam heating system with cast iron boiler burning hard coal.

Stations to where high pressure steam must be supplied for heating coaches: 1 pipe boiler return trap system, with boiler in basement or 2 pipe vacuum system with boiler at a distance.

Stations, hotels or large exposed buildings 11,000 to 15,000 sq. ft.: 1 pipe gravity steam system, with vacuum air line and down draft boiler using soft coal.

Stations, hotels or large exposed buildings 11,000 to 15,000, located near power plant: 2 pipe vacuum system, using steam from power plant.

Small and medium sized shops: 2 pipe vacuum system, or forced circulation hot water system, using wall radiators.

Large shops: Forced circulation hot water, and live steam fan coils.

Locomotive houses: Live or exhaust steam, or both, in fan coils and wall radiators, in machine shop and offices.

Recommended Practice for Remodelling Heating Plants.

(1) High pressure two pipe system. Reduce pressure as low as possible, 15 to 25 lb., using a trap on each radiator. Return condensation direct to boiler by means of tilting traps, if steam is used only in heating system. If steam is used for other purposes, use open feed water heater and boiler feed pump.

(2) Two pipe vacuum system using exhaust steam. Use thermostatic trap and sediment pocket on each coil. Install oil separator, back pressure valve and reducing valve, so arranged that live steam through reducing valve does not reach feed water heater or back pressure valve. Place thermostatic traps on low points in heating main and cover heating mains if these are too small.

(3) One pipe heating system low pressure, supplied from a distance. Discharge condensation to return line, through two continuous discharge traps in parallel, well protected by sediment pockets, or use boiler return traps, if these can be arranged in boiler room.

(4) Forced circulation hot water system. Install closed water heaters and operate a "closed" system, using the same water in circulation indefinitely. Install separate system for wash basin and bath supply, using extra heavy galvanized pipe (brass pipe is used in hotels and offices) as a fresh supply of hot water is very corrosive.

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

Lake Superior Corporation's Subsidiary Railways.

The Lake Superior Corporation's report, for the three months ended Sept. 30, has the following references to its two subsidiary railways:—

Algoma Central & Hudson Bay Ry.—The President of the railway company reports that the results for the first three months of the fiscal year show a gratifying improvement. The recent increase in freight rates granted by the Board of Railway Commissioners, although accompanied by a raise in wages, has improved the situation. It is expected that the earnings for the year will show a gratifying improvement.

Algoma Eastern Ry.—Operating results for the three months have been highly satisfactory. Traffic conditions are expected to continue favorable. The increased freight rates, effective Sept. 13, will increase operating revenue materially. The railway goes into the winter with track and equipment in good condition.

The C.P.R. not to be Nationalized.

The Prime Minister, Right Hon. Arthur Meighen, in speaking at Calgary, Alta., Nov. 9, after referring to the nationalization of the Canadian Northern, Grand Trunk Pacific and Grand Trunk Railways, is reported to have said:—"We are asked as to the future. We are asked if we are to embark still further upon the sea of nationalization, whether, in short, it is our policy to bring all the railways of the country under public ownership and control. Let me say that such is not our intention. The C.P.R., an institution which does credit to this country, constitutes a great rival, a necessary rival, as well as a model upon which we can fashion the national lines. And until such time as the Canadian National Rys. can be brought to the splendid efficiency of the C.P.R. and for the present, because of circumstances over which we have no control, that is impossible, the Government has no intention of interfering with the C.P.R."

Sir Alexander Galt and Railways.—In the "Life and Times of Sir Alexander Tilloch Galt, sometime Dominion Finance Minister, by O. D. Skelton, published recently, it is stated that for many years Sir Alexander was actively connected with railway construction, especially during the railway boom of the fifties, being associated as a contractor with Sir David Macpherson and Sir Casimir Gzowski, and in later years he played a conspicuous part in the developing of the northwest along with his son Elliot T. Galt, through the Alberta Ry. & Coal Co., afterwards changed to the Alberta Ry. & Irrigation Co., which built the railway from Dunmore Jet. to Lethbridge, Alta., with some short branches, and also from Lethbridge to Great Falls, Montana.

Italian Railway Rates Increased.—A Rome press dispatch says that a royal decree has been issued increasing passenger rates on steam and electric railways from a maximum of 180% to a minimum of 100% over pre-war charges. On street cars the raise in fare in day time will be from 6c. to 9c. A ride on a street car at night, therefore, now costs 50% more than a ride in a cab prior to the war.

The Upkeep of Freight Car Equipment.

By J. W. Senger, Superintendent of Rolling Stock, New York Central Railroad (Lines West), Cleveland, Ohio.

This subject is one of vital importance and all of its phases cannot be fully covered with a paper of this kind. Therefore only a few of the most important subjects are presented for your consideration. Those who are directly connected with and responsible for upkeep, care and maintenance can best appreciate the difficulties experienced in passing through the period of the war. At present, during the reconstruction period, due to the shortage of labor and material, and the increased traffic that is moving, and the scarcity of freight equipment, we are facing perhaps a bigger problem than the one with which we had to contend during the great conflict for the period mentioned. During the past three or four years a limited amount of freight equipment having been purchased, it is necessary to maintain equipment that in normal times would have been retired. Therefore, in order to bring this subject before you the writer has confined himself to the most important parts and divided the subject as follows: Facilities, material, organization and repairs.

Facilities are the most important in car repairs, next to labor, up to date shops equipped with modern machinery and labor saving devices. Being limited to taking care of the equipment, it must be realized that a 100% output cannot be had at all times; particularly is this true during the winter season. For obvious reasons the facilities for repairs have not kept pace with the increased equipment. This matter should be one of careful consideration with a view of increasing the facilities as quickly as possible.

Shop organization is also a vital point, and, in order to produce the maximum output, should consist of capable men. The most important of these are the shop superintendent, or general foreman, and his assistants. It is generally found that when the work is divided better results are obtained than to have the entire shop or shop yard covered by one man, as this practice makes the head of each division responsible. Junior supervisors should be educated to fill the position immediately ahead of them, so that in the absence of the foreman the work will proceed without loss of efficiency. Men in supervisory capacities should be selected from the ranks when possible to do so. This practice is an incentive to others. They should be men of a good personality, broad minded in their dealings with men and thoroughly conversant with the details of the work.

Valuable results are obtained by holding monthly meetings of the supervisors, bringing them into closer touch with each other and the practices in vogue at their respective points. Meeting places should be changed from time to time, giving all an opportunity to observe the conditions at the different points. Much valuable information can thus be obtained that will result in saving and greater efficiency and due credit given to those who are responsible for same.

Material.—The shortage of material is a handicap in production, often necessitating the substitution of one kind for another. Careful attention should be given to the use of material, that none is wasted, and all is used to the best advantage. Full co-operation should be had between the mechanical and stores departments, in the handling of material,

that no unnecessary delay be had in supplying material at hand. Advantage should be taken of the scrap dock as much good material can be obtained. The necessary machinery and supervision to reclaim material should be furnished.

Repairs.—Under this heading the writer has divided the subjects into three classes, viz.: general repairs, light repairs and running repairs:

General repairs refers to both wooden and steel equipment receiving heavy repairs, or that are rebuilt, at which time due consideration should be given to the strengthening of all weak parts, the application of betterments, such as steel underframes, steel ends, improved doors and fixtures, etc., the thorough overhauling and modernizing of trucks, eliminating unnecessary parts and bolts, and providing safety irons to prevent brake beams falling down. After the completion of general repairs a final inspection should be made to know that all parts are in a serviceable condition before the car is released for service.

Light repairs.—Under this caption the writer refers to cars repaired on the ordinary repair track, and comprises such repairs as replacement of draft timbers, end sills, sill splices, parts of floors, parts of roof, doors and door fixtures, journal boxes, column castings, truck bolsters, side bearings, brake beams and connections, etc. Cars on light repair tracks should be gone over carefully for defects which may send them to the heavy repair track and avoid making light repairs when the condition is such as to warrant general overhauling. In connection with the light repairs enumerated, attention should be given to the brake equipment doing all the necessary work to put the brake in first class operative condition.

This is also an opportune time to inspect the car for worn parts, spreading of cotter keys, adjustment of the piston travel, seeing that proper connections and brake levers are applied, and that the hand brake and uncoupling levers are efficient, and periodical packing of boxes. If this is done it would prevent the cutting of cars when returned to service.

Running Repairs.—This is generally understood as repairs made in the classification or train yard, either by inspectors or what are termed "follow-up men." I wish to impress upon everybody's mind the importance of having the little things taken care of which are at times neglected; that is, renewing short or broken knuckle pins, wornout brake hangers and keys, bolts, the application and proper spreading of cotter keys, removal of worn brake shoe keys application of missing parts and correction of safety appliance defects. At this time the hand brake should also receive a thorough inspection, journal boxes should be examined to see that brasses and keys are in place, that no sign of previous heating exists and that packing is in its proper place and that there is enough lubrication to run the car to its destination. By giving proper attention to cars in the classification yard, which, of course, includes proper inspection, nearly all of our road delay and expense of setting out cars enroute could be avoided.

Quite frequently we hear complaints from other departments on account of too much time being consumed in inspection and repairs in the classification yards, and as explained above, I believe

I have made it clear to you that inspection and light repairs are very necessary to ensure the train going safely to its destination without delay. While the work should be done as quickly as possible, we should insist upon proper time for inspection and repairs being allowed to accomplish this.

The equipment department of the railway is passing through and experiencing one of the most strenuous periods of its history. The demand that has been made upon it by the operating department, due to the necessity for car equipment suitable for transportation purposes, has tended to make it necessary to use all classes of equipment to the maximum. We have been called upon to supply cars which can be placed in service to relieve were originally built, but for other classes of service for which they could be fitted by temporary repairs. As a consequence we now find ourselves with equipment on hand which will require some time to build up to its former usefulness and which cannot be very well accomplished unless all railways provide themselves with newly constructed equipment not for the commodities for which they equipment now running, to enable the cars to be brought into the shop and receive general repairs or overhauling which will fit them for the service for which they were originally built.

The foregoing paper was read before the Central Railway Club, in Buffalo, N.Y., recently.

Suggestions for Relief of Railway Congestion.

Double tracking of main lines from each important terminal to the first passing track, and a more general use of automatic block signals, are among the measures recommended by the American Train Dispatchers Association to relieve the serious congestion of railway traffic. Considerable attention has been given to facilitating operations within freight yards for the relief of this congestion, but a frequent cause of interruption in traffic movements is a delay to trains approaching or getting away from yards on single track lines. On double track lines, with especially heavy traffic, there may be an equal advantage in providing trackage for several miles from a terminal or division point in order to facilitate the movements of freight trains within the congested district. The advantages of automatic block signals for a similar purpose are obvious, since they permit of short blocks at comparatively small expense, while with the manual system the cost of installation and operation makes short blocks prohibitive. In the earlier days of automatic block signalling on American railways there were numerous objections from operating officials, to the effect that the introduction of this system would make it impossible to handle heavy traffic. Experience very soon showed, however, that the heavier the traffic the greater were the advantages of the automatic block system. Near terminal points it is especially desirable to reduce the length of the block sections to a minimum, in order to increase the traffic capacity; the automatic system meets this condition with efficiency and economy.

The Efficient Handling of Freight Trains.

At the Travelling Engineers Association's annual convention in Chicago recently, a committee, of which F. Kerby, Baltimore & Ohio Rd., was chairman, and of which Malon Laquay, G.T.R., was a member, presented a report from which the following are extracts:—In order to handle freight trains efficiently and economically, it will be necessary to take into consideration the locomotive which hauls the train, as well as all other equipment used in doing the work; therefore, the locomotive must be put in the best possible condition before leaving the shop, so that it can handle the train efficiently and economically. The steaming qualities of the locomotive must be good, so that there will always be a sufficient amount of steam at hand to do the work. In order to have a free steaming locomotive, the flues must be kept clean, the grates and grate bars kept in good condition, ash pans should have plenty of opening, the extension front end kept tight, steam pipes, exhaust base, and superheater units kept free from leaks, exhaust tip of the proper size to give the proper draft and not cause back pressure, fire box and flues must be kept tight, and a good grade of fuel furnished, then one should have plenty of steam to haul the train.

It should next be known that the valves are square, so that there will be an equal distribution of the steam. One should also know that the valve and cylinder packing is not blowing, so that steam will not be wasted, and that there will be full power against the piston heads to haul the load assigned to it, within the given time, for time is a great factor at the present day of railroading, with the 8-hour day and time and half time for overtime in vogue.

In order to earn sufficient revenue, both efficiency and economy must be practised, and to do so, the locomotive must haul the allotted tonnage over the division in as short a time as possible. This cannot be done with a 50% locomotive; in addition to what has been said in regard to the condition of the locomotive, the injectors, sanding apparatus and air brake equipment must be kept in good condition.

Cars should be in good condition before being sent out in a train to avoid delays, due to accidents, on line of road. In order to do this, cars should be properly inspected and repairs made, or the cars switched out. With the increased business that some railways are doing, the yards become congested very quickly and it is important that trains be passed through the yards as soon as possible; in order to do this, sufficient power must be kept in readiness to move trains as soon as they are made up, so that other trains can be moved into the yard and inspected promptly and properly.

It is necessary to have the receiving yard laid out so that the work can be done quickly, and facilities should be provided to take care of all the details of inspection at one time, such as testing the air brakes, examining couplers, carrier plates, worn knuckles, broken knuckle pins, hot journal boxes, and all other parts of the equipment. All trains when stopped in receiving yards should have couplers stretched from locomotive to caboose; this can be done by having some hand brakes set on the rear of the train and have the locomotive pull the slack out of the train. By doing this they

could be inspected and if the knuckles are worn badly they could be found and repaired before going out on the road in bad condition and having coupler slip by and cause the brakes to apply in emergency and damage other cars in the train, and probably injure some one, or block the opposite track and have an accident to opposing trains running into derailed cars. It is better to delay a train in the yard for inspection and repairs than it is to have it delayed out on the line of road. While in the yard such a train blocks only one track, and other trains can pass it on some other track, but on the line of road, when stopper by an accident, other following and opposing trains that are in charge of crews making overtime are blocked, which means time and half time at present. When a train is delayed in the yard there is no crew to be considered. The same can be said of hot boxes. When a train has to stop on the line of road to repack a hot box or set out a car with a hot box, it very often runs the crew's time into overtime and likewise crews of following trains.

The trains on level divisions should consist of all through loads as much as possible, and the train should consist of as much tonnage as the locomotive can handle and make an average speed of at least 14 miles an hour. If it is necessary to fill out a train with cars for intermediate points or to give the train local cars, they should be switched on the front part of the train in station order, so that only the cars to be set off will have to be handled. With the long heavy trains that are being handled at present, after a train has started out of the yard it should be kept moving as much as possible, for the stopping and starting of the long and heavy trains is what causes damage to equipment and also delays. The train should not be stopped for coal over the division, and only stopped for water as few times as is necessary. The water stations should be located so that it will be possible for the locomotive man to make as long a run as the amount of water in the tank will permit, but in case of an accident he could stop at a water station between regular points and not run out of water. The locomotive men should be educated to go as far as they can before stopping for water. In making stops for coal and water, the locomotive man should be very careful in doing so and not try to make spot stops with a freight train.

Stopping Trains.—All long and heavy freight trains should be stopped with one application of the air brakes and in making the stop the locomotive man should endeavor to keep the slack bunched from the front end. This can be done by making the initial reduction just sufficiently heavy to run the slack in and follow up with light reductions until the train is stopped. In order to keep the front end from running out, the locomotive man should make a reduction of about eight or ten pounds about sixty feet before coming to a full stop and have brake pipe exhaust blowing at the time of the stop. This is to keep the brakes applying stronger on the front end to hold the slack in and leave the brake applied on the train when the engine is cut off.

There are two kinds of slack, known as loose slack in the drawheads and couplers, and spring slack, which is in the spring in couplers. The spring slack is more dangerous than the loose slack in making a stop, on account of the re-

action of same, after they have been compressed. Therefore, by making the application with light reductions the springs are compressed more gradually throughout the entire train, and by doing so the compression on the spring is less, and not so dangerous as it is with a heavy reduction.

All trains after being stopped in terminal yards should have a few hand brakes set up on the rear part of the train, and then the train stretched out by the incoming locomotive and the air brakes applied with a full service application and held until the angle cock on the rear of tank is closed. Then the locomotive can be cut off the train. This is to give the air brake inspectors a chance to check up the piston travel and brakes that do not apply or leak off. The air brake inspectors should make the inspection for brakes that leak off and for long piston travel, and mark the same as quick as possible, so that cars with defective brakes can be switched out of the train while passing over the hump or being classified, so that when the train has passed from the receiving to the dispatching yard there will be no more switching in train. Before switching a train all air hose should be uncoupled to save damage to gaskets and rupturing hose at the nipples.

Dispatching Trains from Yards.—All trains should be coupled properly and the air hose connected up, and where the yard is equipped with an air brake testing plant the train will be charged up with air and all leaks taken up and the air hose and gaskets renewed when necessary. Where a yard testing plant is not available, the work should be done after the locomotive is coupled to the train; this, of course, will take some time and the length of time depends on the force you have to do the work. The success of the trip greatly depends on the start one gets out of the yard.

After the train leaves the yard in good condition, with the proper tonnage and the locomotive in condition to do the work required of it, the train dispatcher and operators must do their part to get the train over the road in the allotted time. The train dispatcher must know that the force in the telegraph and block signal offices are performing their duties and that orders are ready for the trains, and not stop train unnecessarily, for an extra or avoidable stop made by a heavy freight train means a loss of time in stopping and then getting the flagman in and starting, and very often the train is parted in trying to start, which probably would not happen if the train had not been stopped. On single track railways it is not possible to haul as heavy tonnage as economically as it is on double or three or four track railways, on account of the extra time consumed in meeting and passing trains. The lost time will have to be taken care of by increased speed while running in order to make the run over the division within the eight hours. There is no economy in loading a freight train so that it cannot get over the division without making overtime.

On divisions where the grade are heavy and it is the practice of using one or more helpers on the ascending grades, it is important to know that the equipment is in good condition and that no weakly constructed cars be used in heavy tonnage freight trains, if possible to avoid

it, for as a general rule the heaviest power is used in helping service and with the high tractive effort of the locomotives that are used at present, such as the Mallet and Santa Fe types, with a tractive effort of from 70,000 to 105,000 lb., the cars have to be built and maintained strong, to stand the pulling and pushing of these monster locomotives. The trains are both long and heavy, and cars with weak end and center sills or weak couplers are very dangerous to handle in trains of this kind. There should be instructions given to all yard masters and car inspectors, that cars that appear to be old or of weak construction should be switched out of heavy trains, where helpers are used, and placed in a train to be run without a helper or a train hauling light tonnage.

In handling freight trains with power brakes as well as with hand brakes it is necessary to keep the speed low and not let the train get up to a high rate of speed at the start from top of grade, for

if this is done it will require a great deal more power to get it under control and very often is the primary cause of trains running away on the grades. By holding the speed down at the start and by making the applications often and as light as possible, so as to keep the retaining valves charged up as equal as possible at all times, you will have full control of the train and a lower temperature on wheels and less liability of cracked wheels.

Some roads handle trains on level grades as well as on heavy mountain grades with electric power, and some other roads are figuring very strongly on electrification. While this method of operation applies only to a few roads, we are of the opinion that more roads will take up the matter of electrification in the near future, from the fact that with the electric locomotive the terminal delays can be reduced considerably, also delays in stopping for water and coal, and it has been demonstrated that an

electric locomotive can be run over three divisions of over 100 miles each, by changing crews, without any delays to the locomotive. This would indicate a high point of efficiency and economy, from the fact that it could be a no-stop operation from one end of the division to the other. This would eliminate the pulling of draw bars and damage to equipment due to starting and stopping. It would also reduce the cost of brake shoes and other equipment by not using the same, due to no stops.

On heavy grades the speed of the train is controlled, while descending, by regeneration. This reduces the wear on brake shoes, also reduces expense to a great extent in the maintenance of the entire brake equipment; but it must be understood that by regeneration the speed of the train is only held under control and it will be necessary to use the air brakes to stop the train, just the same as if you have been controlling the speed of the train with the air brakes.

Improving Maintenance of Way Methods.

By A. M. Burt, formerly Assistant Director, Division of Operation, U.S. Railroad Administration.

The expenditure for maintenance of way and structures on class 1 railways of the United States for 1919 was in the neighborhood of \$750,000,000, representing about one-sixth of the total operating expenses of these roads. Reduced to a daily basis, this means that it requires more than \$2,000,000 a day to keep the railways in condition for use. While this is much less than the amount spent for conducting transportation and considerably less than the cost of one of maintenance of equipment, it is nevertheless the major items that go to make up the total cost of operation. The increased cost of maintenance of way purposes has been very large, so that now fully \$1,000,000 a day more is being spent for this purpose than was spent three years ago.

The magnitude of these expenditures and the very large increases should make us all stop and take thought. The question that immediately presents itself in connection with them is whether progress is being made toward increased efficiency—if so, whether the maintenance of way department is keeping in step with the other departments in this essential matter, and whether some changes in methods can be made to secure better results. It is, therefore, of value to consider the differences that now exist in methods designed to increase efficiency as between the maintenance of way and the other departments of a railway. In comparing these methods we find the following conditions standing out very prominently:

In connection with transportation operations, many measures of work done have been devised and are in daily use and the supervisory officer is constantly in touch with the situation through various reports. In maintenance of equipment work some measures of work done have been devised, although their application is much less general than in the transportation department.

In maintenance of way work any measures of work done are, generally speaking, conspicuous by their absence. There is, in this work, no way of striking a balance between cost and output or of showing in any definite way whether the work is being done with greater or less efficiency than heretofore. On many roads a budget system is in use, but no mat-

ter how well such a system is carried out it does not supply the measure of work done. The roadmaster knows that he has been allowed a certain amount and believes that he has spent this amount judiciously, but he has no way of knowing definitely whether he has accomplished more or less than the roadmaster on an adjoining district or of knowing whether he is making an improvement or the reverse as compared with his past record. It seems clear that some measure of work accomplished is very desirable. There is nothing that stimulates thought and initiative to such an extent as a little competition with one's neighbor. It puts an element of sport into the job and not only helps the work but is a most developing condition for the individual.

It is realized that the character of maintenance work makes it especially difficult to establish measures of work accomplished, such as are in common use in connection with transportation matters, but there is apparently a tendency to magnify the difficulties of the subject and to assume the attitude, "What's the use? It can't be done." It surely must and will be done in a much larger measure than it is being done at present, and, if it is to be well done, the practical maintenance men must take an active interest in the subject and do their bit in solving the problem. When we have done anything in one way for years we all are apt to consider that way as being the only right one and to consider the subject as a closed book. This, in a measure, is the present attitude of mind, but we must shake ourselves loose from such an attitude if progress is to be made.

If the practical maintenance men do not take an active part in this matter there is danger of the work being put on a statistical basis to such an extent that no good results will be accomplished. There has been some of this in the past in other departments, where in some instances statistics have been undertaken so involved in detail that the result was nothing more than a work of the imagination. The maintenance men must make a special effort to ensure against such a mistake as this in connection with their work. On the other hand, some progress is possible, and something of this kind must be undertaken.

To illustrate what might be done but is not: Several years ago a certain railway used its maintenance forces for packing ice. The work was completed in December or January, and the following spring, about the time the mosquitoes began to get bad, a statement of the cost of the work was returned to the division from a source generally unknown. This report was turned over to the roadmaster, who was then very much engrossed in his spring work and who usually classified it as "interesting, if true," checked it with a lead pencil and filed it away in its proper box where it could be used by his clerk in the event of his being called upon to make any explanation. No daily records were kept while the work was in progress. Some time later the work of packing the ice was turned over to a contractor, and immediately the job was organized on a business basis. The foremen were required to make a report each night showing the amount of ice packed, the pay roll in total and per ton and the delays in time and labor cost. In this way each foreman was kept in close touch with his work, without being unreasonably burdened with details. If he was delayed for switching, he had something tangible to show the yardmaster; if he had an unreasonable amount of trouble with his hoisting engine, the fact immediately showed up and received attention; or, if his force was out of balance, that fact was immediately called to his attention by the increase in his unit cost. It would have been entirely feasible to have had a similar plan when the railway was doing the work with its own forces, but no such plan was used.

Many similar instances could be cited, going to show that advantage has not been taken of the opportunities that are readily available. Every maintenance man should be giving this problem the most thoughtful and constant attention, and without question the subject deserves more attention from managers than it has had in the past. The following is offered by way of suggestion:

Better facilities should be provided for the exchange of ideas. Local roadmasters' associations should be encouraged. Such associations are most helpful if discussions are kept along general lines and away from matters having only a nar-

row and local interest. The time of the men away from their routine work is well spent. There is less experience with formen's associations, but apparently considerable benefit might be derived from them.

Attendance at national maintenance of way meetings should be actively encouraged and liberal allowances should be made for the expense of men attending such meetings. The men always bring

back ideas and inspirations that result in more efficient work.

The question of getting a more general dissemination of ideas and information through publications should be considered. There should be a more general use of the railway periodicals.

The problem should be worked out from the inside and by the talent already on the individual railways. There is plenty of such talent, and, by encouraging the

local men to work out the problems, morale will be improved. They can do the work much better than it can possibly be done by any so called efficiency expert from the outside. In doing this each man should be given proper credit for his ideas and his part in the work.

The opportunity of the maintenance of way man is here. We look forward, confidently, to his making the most of that opportunity.

Cuban Purchasers of Railway Rolling Stock.

Canadian Trade Commissioner H. A. Chisholm, writes from Havana, Cuba:—There are three classes of purchasers of rolling stock in Cuba. First, there are the steam railways for the public service, which were all built and are con-

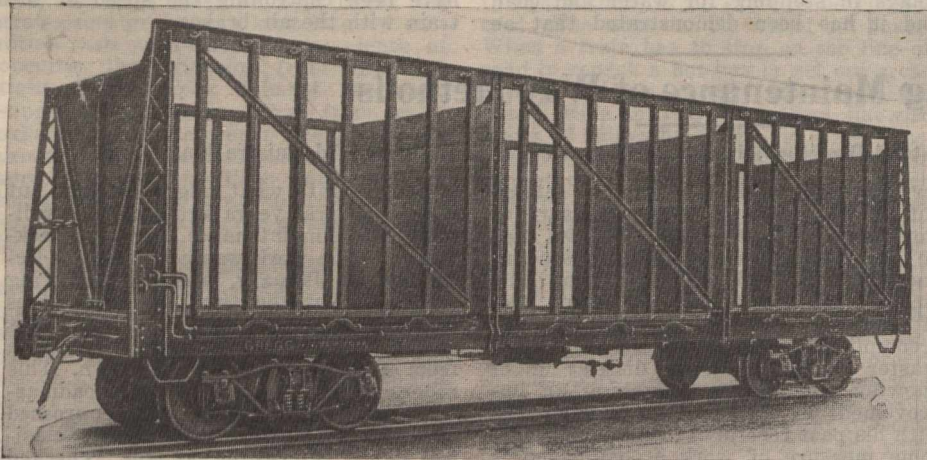
In the third place, quite a considerable railway mileage is owned by ingenios or individual sugar mill corporations. Throughout the island the sugar mill owners have laid their own tracks within the area from which their cane is deriv-

own rolling stock. The track mileage owned by a single mill runs from 60 kilometres to over 300 kilometres. A prominent engineer recently estimated that 100 sugar mills in Cuba each operate an average of 150 cars and 6 locomotives, and laid or used annually 15 kilometres of track. This estimate would mean that Cuban sugar mills themselves own and operate a minimum of 15,000 cane cars and 600 locomotives.

The building of cane cars alone for Cuba would offer a splendid market for the car manufacturer. The attached illustrations show the types of cane car generally supplied the Cuban sugar mill by the U.S. manufacturer.

The U.S. car manufacturer considers that he need never fear competition in the Cuban market. The Cuban customs tariff has placed a heavy general ad valorem rate on railway rolling stock of all kinds, amounting to 31.25%. The U.S. manufacturer, then, gets a reduction from this rate of 20%. This means that a Canadian car would pay 31.25% duty as against only 25% charged the U.S. car. The result has been that for many years U.S. rolling stock has had practically a monopoly of the Cuban market, although previous to the war Cuba imported some 10% of her rolling stock from the United Kingdom and Germany.

Editor's Note.—We think Mr. Chisholm is somewhat astray in speaking of



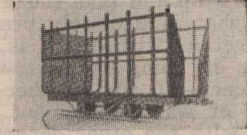
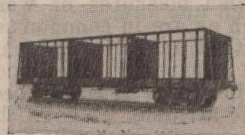
Type of Cane Cars, used in Cuba.

trolled by private capital. The two leading railways operating in Cuba are the United Railways of Havana, serving the western end of the island, and the Cuba Railroad, serving the eastern end of the island. Both these lines were built by British capital, the latter being the original Van Horne railway, but now controlled by New York interests. The United Railways of Havana, which includes several subsidiary roads, is still controlled from London and the majority of its senior officers are British. During the war many of its officers were from the United States, but during recent months several British engineers and railway officials have arrived to take over various departments. G. A. Morson, General Manager for many years, has been superseded by Brigadier-General Jack, formerly director of British railways in France. The United Railways of Havana is buying large quantities of rolling stock, of which it is badly in need, and all of which has come from the U.S. Brigadier-General Jack, however, is very keen to give British manufacturers every opportunity to submit quotations on all his requirements.

There are several smaller railways in Cuba, constructed to serve isolated portions of the island. Most of these are standard 4 ft. 8½ in. gauge, however.

Second, there are the electric tram lines built for passenger traffic in the leading cities. Most of these are naturally comparatively small corporations, as Havana is the only city with a population of over 100,000. The United Railways of Havana control all the Havana electric properties, except the Havana Electric Railway, Light & Power Co.

ed. Such tracks are built primarily for conveying the cane from the colonias or cane plantations to the mills to be ground. In some parts of the island not well served by the railway companies the



Types of Cane Cars, used in Cuba.

mills have built narrow gauge (3 ft.) roads. For the most part, however, the cane roads are standard gauge and laid to connect up with the larger railways, so that rolling stock may move freely over all lines. All the narrow gauge cane roads buy their own rolling stock. Many of the standard gauge cane roads have been using railway rolling stock. Recently the tendency has been for the larger sugar mills to buy their own cane cars and locomotives. The reasons for this have been the difficulty of procuring sufficient cars from the railways for moving the cane to the mills, and the desire of the mill owners to be independent of the railways.

There are 193 operating sugar mills in Cuba, with some 16 or 20 more in course of construction. These mills vary in capacity from 4,000 bags (a bag contains 320 lb.) annually to 700,000, the total production of the island being in the neighborhood of 30,000,000 bags for the last season. It is estimated that at least half of the Cuban sugar mills buy their

the Cuba Co.'s railway as having been built by British capital. Of course its founder, Sir William Van Horne, and a few Canadian associates, invested largely in its, but Sir William also secured the co-operation of a number of U.S. capitalists.

English Channel Tunnel. — Prospects for the realization of the project for a tunnel under the English Channel, to connect England and France have practically disappeared, according to recent reports from English engineering circles. It is thought that military and political reasons played a part in determining an apathetic attitude toward the project, but its great cost, and the uncertainty of earnings sufficient to justify the cost were also of influence. Moreover, because of conditions resulting from the war England's national energies will be devoted largely to maintenance and reconstruction for some years, it is stated, and few new works of magnitude will be undertaken.

Railway Development, Projected Lines, Surveys, Construction Betterments, Etc.

English River Pulpwood & Timber Limit Ry.—The Ontario Government will receive tenders to Dec. 18 for the right to cut forest products on an area in the English River water shed, having a total area of 3,046 square miles. The limit commences at the intersection of the northerly limit of the National Transcontinental Ry. right of way with the boundary between Ontario and Manitoba; thence north along the boundary to the southerly shore of the English River; thence northeasterly following the southerly shore of the river, lake expansions and Lac Seul to the intersection with the west limit of Indian reserve 28; thence southeast and south following the westerly and southerly boundaries of the reserve to its southwesterly angle near Lost Lake; thence south to the northerly limit of the N.T.R. right of way; thence westerly following the right of way to the point of commencement.

The conditions provide that the successful tenderer shall erect a pulp and paper mill and operate sawmills in Kenora, at which the timber cut shall be manufactured. The product of the limit will have to be conveyed to Kenora for manufacturing purposes, and to do this the contractor will, it is said, have to build a railway from some central point of the limit on the National Transcontinental Ry. to Kenora, or to the C.P.R. which at present serves that town. The only other railway connection would be easterly on the National Transcontinental Ry. to Superior Jct.; thence by the G. T. Pacific Ry. line into Fort William, and thence by the C.P.R. to Kenora; or westward by the National Transcontinental Ry. to Winnipeg, and then by the C.P.R. to Kenora. The suggested independent line would, it is stated, be about 100 miles long. Surveys for such a line were made some years ago by the Lac Seul, Rat Portage & Keewatin Ry. Co., incorporated by the Ontario Legislature in 1903 and re-incorporated in 1908, or by another company chartered by the Dominion Parliament to build a line from the Canadian Northern Ry. west of Port Arthur northerly to the English River.

Esquimalt & Nanaimo Ry.—The plans for the highway portion of the Johnson St. bridge, Victoria, have been finally approved by the E. & N.R. management, and tenders for the substructure were received by the City Council to Nov. 22. The work will, it is expected, be completed in about nine months. It is said that contracts for the steel superstructure and for the bascule span will be let in Feb., 1921. (Nov., pg. 606.)

Essex Terminal Ry.—The Dominion Parliament will be asked next session to extend the time within which the company may build the line authorized in 1917, from its existing line near Ojibway to Pelton, Ont., seven miles. (Sept., 1919, pg. 491.)

Flinflon Mining District.—We are officially advised that the Manitoba Government has arranged with the Canadian National Rys. to have a survey made, at the Government's expense, for a line from some point on the Hudson Bay Ry. to the Flonflon mining district. E. M. M. Hills will be the engineer in charge of the survey. The actual date of starting the survey depends upon when sufficient ice has formed to permit of being travelled over. It is expected that the first

party, in charge of J. E. Silcox, will start early in December, and the second party, in charge of A. J. Sill, as soon as possible thereafter. It is stated that the Manitoba Legislature will be asked next session to provide for the construction of the railway. (Nov., pg. 606.)

Grand Trunk Pacific Ry.—A press report states that contracts have been let to Olaf Hansen, J. McNeil and Jennings Bros., for the supply of 900,000 ties at various points between Prince George and Prince Rupert, B.C. (Sept., pg. 489.)

Kettle Valley Ry.—The branch line from Princeton to Copper Mountain, B. C., 14 miles, is reported to be completed, and application has been made to the British Columbia Government for the payment of the subsidy of \$5,000 a mile which was voted by the Legislature towards its construction. (Oct., pg. 550.)

Newfoundland Ry.—The St. John's City Council has been asked by the Newfoundland Railway Commission to reconsider its decision regarding the proposed temporary erection east of the St. John's railway station. The letter was referred to the city solicitor for consideration. The matter came before the Municipal Commission Nov. 11, when the application was refused on the grounds that the proposed building is not in accordance with the law, and that the site on which it was proposed to erect it is reserved for city purposes. (Nov., pg. 607.)

Pacific Great Eastern Ry.—A press report states that the last girder of the bridge over Deep Creek was put in position Oct. 28, and that track was laid over it on Nov. 1. The bridge, which was under construction for about 14 months, was fully described in Canadian Railway and Marine World, Dec. 1919, pg. 654. Canadian Bridge Co. had the contract for the steel work.

A press report states that with favorable weather conditions it is expected that track will be laid into Quesnel, B. C., by Christmas. (Nov., pg. 607.)

Pere Marquette Rd.—A press report states that tenders will be asked shortly for the construction of a station at Sarnia, Ont., the work to be gone on with in the spring. (Oct., pg. 551.)

Quebec & Chibougamau Ry.—See "The Quebec & Chibougamau Ry. Project," on another page of this issue.

Timiskaming & Northern Ontario Ry. A press report states that Timmins, Ont., Board of Trade has asked the Ontario Government to build a line from Timmins, on the T. & N.O.R. to the Canadian National Rys. near Sudbury. Such a line, it is said, would pass through a well timbered and mineralized country, and estimates as to its probable length vary from 44 to 75 miles. The Premier is stated to have advised the deputation that while a wagon road would probably be built through the district in the near future, the question of extending the railway must wait for a time.

Steel Rails Suit.—Arguments were concluded Nov. 9 in the Court of Exchequer in the case of the Dominion Iron & Steel Co. vs. the Dominion Government for compensation under the War Measures Act. The company was ordered by the Government to make certain quantities of steel rails at certain prices at a time when the company could have made greater profits on turning out steel for shells. Judgment was reserved.

Reid Newfoundland Co.'s Annual Meeting, Re-incorporation, Etc.

The Reid Newfoundland Co.'s annual meeting was held at St. John's, Oct. 28, at 3 p.m., President H. D. Reid in the chair. The directors' report contrasted the industrial depression prevailing almost all over the world with the unusual activity in the pulp and paper industry in Newfoundland, which gives hopes of a very large development of the water powers and timber areas of that Dominion. The company's railway and steamship operations showed an increased deficit, owing to the rising costs of coal and labor, but the Newfoundland Government has undertaken to improve the standard of the railway. Shortage of coal supplies retarded operation during the winter of 1919-1920, which was the most severe for 50 years. Extensive ballasting has been continued and the roadbed is in excellent condition. Locomotive power is in first class shape. The earnings from the electric and dock departments maintained steady progress, but extensions and improvements to these are necessary and will be undertaken during 1921. Group insurance on all employes has been effected and is expected to encourage co-operation and efficiency. The retiring directors were re-elected. At a special meeting later on the same day, held under the provisions of the Companies Act, it was decided to register the company under that act so as to get the benefit of the code of procedure which the act provides and which is not available to chartered companies.

On Nov. 4 Reid Newfoundland Co. Ltd. was incorporated under the Newfoundland Companies Act, with authorized capital of \$15,000,000 in 150,000 shares. The objects of the newly incorporated company, as set forth in the memorandum of association, are, briefly, to operate and further develop the present railway system and its branch lines, to operate the present street railway, electrical plants, dry dock, etc., to operate the steamship services now under the company's control, to build, purchase or otherwise acquire ships for the purpose of maintaining or developing these services, to develop the natural resources of the country or that section thereof for which it has grants, such as mining, timber, etc., and in the operation of the railway and steamship services, the company is to have priority over all other railways operated in Newfoundland, whether run by steam, electricity or otherwise.

A protest against the incorporation was filed by Sir William D. Reid and by C. H. Cohen, attorney for Miss Harriet Reid.

The directors of the newly incorporated company are H. D. Reid, President; R. G. Reid, Vice President; C. O'N. Conroy, Treasurer; J. P. Powell, H. B. Thomson and J. M. Forbes.

The Minister of Railways in England. Hon. J. D. Reid is reported to have said at the Canadian Club luncheon in London, Eng., Nov. 15, that the proprietors of the Grand Trunk and the Grand Trunk Pacific Railways, through the Canadian Government taking over these systems, would have their investments absolutely safe for all time and would never have to fear for their dividends or their principal. The Canadian Government had been criticized for building in advance of requirements, but such building had hastened the development of the country.

Railway Rolling Stock Orders and Deliveries.

Imperial Oil Ltd. has received 18 tank cars from Canadian Car & Foundry Co.

The Reid Newfoundland Co. has ordered five locomotives from Baldwin Locomotive Works.

The C.P.R., between Oct. 15 and Nov. 17, received 6 vans from its Winnipeg shops.

The G.T.R. has received 4 six-wheel switching locomotives from its Point St. Charles shops, Montreal, and 7 eight-wheel switching locomotives from Canadian Locomotive Works.

Canada Creosoting Co. has ordered 200 tie cars from Canadian Car & Foundry Co. for delivery by May 21, 1921. Following are the chief details:—

Length over buffer castings..... 5 ft. 4 1/4 in.
 Extreme width 6 ft. 7 1/2 in.
 Distance between backs of wheels.....2 ft. 3 3/4 in.
 Height from top of rail to top of removable bale rod 6 ft. 3 27/32 in.
 Height from top of raol to top of end sill.11 3/4 in.

Canadian Car & Foundry Co., between Oct. 15, and Nov. 15, made the following deliveries:—375 box cars from Montreal, and 165 refrigerator cars from Amherst, N.S., to Canadian National Rys.; 12 dining car frames and 10 baggage car frames from Montreal for C.P.R.; 3 locomotive cabooses and 6 motor trucks

Heating surface, tubes 946 sq. ft.
 Heating surface, firebox 69 sq. ft.
 Heating surface, total 1,015 sq. ft.
 Grate area 20.2 sq. ft.
 Tractive power 22,400 lb.
 Factor of adhesion 4.46
 Reverse gear Hand lever
 Capacity, water 2,000 gall.
 Capacity, coal 2,700 lb.

The Timiskaming & Northern Ontario Ry. has ordered 4 Pacific type (4-6-2) locomotives from Canadian Locomotive Co. They will be the first in Canada to be equipped with the booster engine. Following are the chief details:—

Weight on drivers 155,000 lb.
 Weight, total 252,000 lb.
 Wheel base of engine, rigid 12 ft. 2 in.
 Wheel base of engine, total 32 ft. 6 in.
 Wheel base of engine and tender.....60 ft. 3 1/2 in.
 Heating surface, firebox and arch tubes.217 sq. ft.
 Heating surface, tubes and flues 2,716 sq. ft.
 Heating surface, total 2,933 sq. ft.
 Driving wheels, diar. 69 in.
 Driving wheel centers Cast steel
 Driving journals 10 x 13 in.
 Cylinders, diar. and stroke 23 x 28 in.
 Boiler, type Radial stayed
 Boiler pressure 200 lb.
 Tubes, no. and diar. 170—2 1/4 in.; 32—5 1/2 in.
 Tubes, length 18 ft. 8 in.
 Injectors Ontario
 Safety valves Coale
 Brakes Westinghouse American
 Packing Paxton-Mitchell
 Superheater Superheater Co.'s type A
 Booster engine Franklin Railway Supply Co.
 Speed recorder Boyer

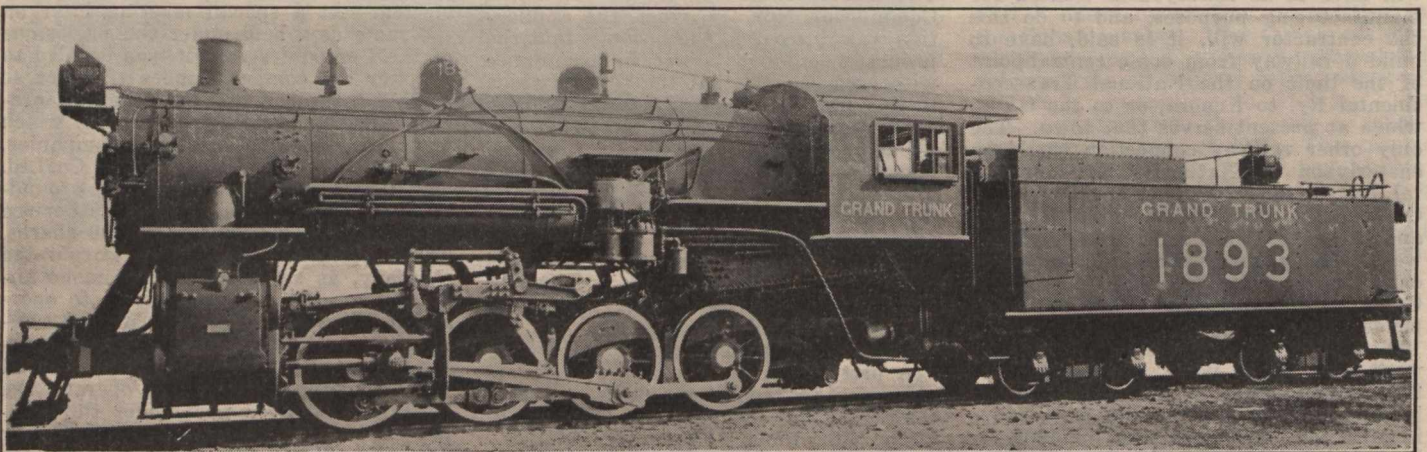
Railway Finance, Meetings, Etc.

Canadian Pacific Ry.—A dividend of 2 1/2% has been declared on the common stock for the quarter ended Sept. 30, being at the rate of 10% a year. Of this, 7% is paid out of revenue, and 3% from special income account. The dividend is payable Dec. 31, to shareholders of record of Dec. 1.

Guelph Junction Ry.—A press report states that at the quarterly meeting of directors at Guelph, Ont., Nov. 17, a statement was submitted from the C.P. R., which operates the line, showing that there had been a slight decrease in the earnings for the three months ended Sept. 30, compared with the corresponding three months of 1919. A substantial dividend is said to have been declared and paid to the Guelph City Council.

New York Central Rd.—There has been deposited with the Secretary of State at Ottawa a copy of a lease dated Sept. 27, Guaranty Trust Co., New York, as trustee, to the New York Central Rd. Co., under the New York Central Rd. Co. Equipment Trust of 1920.

Pacific Great Eastern Ry.—The following statement is reported to have been given out by the British Columbia Prime Minister at Victoria Nov. 12:—"The Comptroller of the railway advises me



Eight-wheel Switching Locomotive, Grand Trunk Railway.

from Montreal for Hydro Electric Power Commission of Ontario and 18 tank cars from Montreal for Imperial Oil Ltd.

The G.T.R. has received 7 eight-wheel switching locomotives from Canadian Locomotive Co., an illustration of which appears on this page. These complete an order for 25 placed in March. Following are the chief dimensions:—

Boiler, type Radial stayed
 Boiler diar., front 69 9/16 in.
 Boiler diar., largest 76 in.
 Firebox 96 7/8 x 75 1/4
 Tubes, no. and diar. 182 2 in.—25 5/8 in.
 Tubes, length 12 ft. 4 in.
 Heating surface, firebox 168 sq. ft.
 Heating surface, tubes 1,168 sq. ft.
 Heating surface, flues 608.5 sq. ft.
 Heating surface, arch tubes 26 sq. ft.
 Heating surface, total 1,970.5 sq. ft.
 Grate area 50.60 sq. ft.
 Staybolts Brown's iron

The Hydro Electric Power Commission of Ontario has ordered 2 four-wheel saddle tank locomotives from Montreal Locomotive Works. Following are the chief details:—

Weight, total 99,800 lb.
 Wheel base 7 ft.
 Cylinders, diar. and stroke..... 16 x 24 in.
 Driving wheels, diar. 42 in.
 Driving journals 8 1/2 x 9 in.
 Boiler, type Straight top
 Boiler pressure 180 lb.
 Boiler diar., inside first ring 51 in.
 Firebox, length and width.....52 3/16 x 55 3/8 in.
 Tubes, no. and diar. 156—2 in.

Cab Vestibule type, all steel
 Weight of tender loaded 156,000 lb.
 Tender capacity, water 6,500 imp. gall.
 Tender capacity, coal 12 tons
 Tender, type.....Water bottom, vestibule attachment
 Truck, type 4 wheel, Commonwealth
 Truck wheel, diar. 36 in.
 Wheel, type Steel tired, cast steel center
 Truck journals 5 1/2 x 10 in.
 Brake beams Simplex high speed

Inverness Railway & Collieries Ltd.—As stated in Canadian Railway and Marine World recently, the Inverness Ry. & Coal Co.'s properties in Cape Breton have been sold to M. E. C. Henderson, of H. D. McKenzie Co., Halifax, N.S., and the name of the company has been changed to Inverness Railway & Collieries Ltd., of which M. E. C. Henderson is President, and J. F. Smith, Halifax, Vice President; F. C. Bigelow is Railway Superintendent, and S. G. Davis, General Sales Agent, both being at Port Hastings, N.S.

Thefts by C.P.R. Employees.—L. C. Smith and J. L. Derrick, C.P.R. employes at Regina, Sask., were sentenced to six months imprisonment each, Nov. 10, for receiving a quantity of whiskey stolen from a shipment to Winnipeg. The judge said he was not at all sure that the men did not actually steal the goods.

that from Jan. 1, 1917, to Feb. 23, 1918, during which time the operation of the railway was under the control of P. Welch, the percentage of loss of operation as compared with the revenue was 117. From Feb. 23, 1918, to July 31, 1920, the percentage of loss in proportion to revenue was 58.7. During August and September, under the present management, the percentage of loss to revenue was 43.5."

Stanstead, Shefford & Chambly Ry. Co.—The following officers and directors have been elected for the current year:—Chairman, Howard G. Kelley, Montreal; President, Hon. G. G. Foster, Montreal; Vice President, Hon. M. Smith, Cowansville, Que.; other directors: W. H. Robinson, Granby, Que.; W. H. Miner, Granby, Que.; J. P. Noyes, Cowansville, Que.; B. R. Corless and J. G. Smith, St. Albans, Vt.; Secretary-Treasurer, J. H. Lefebvre; Assistant Secretary-Treasurer, B. R. Corless.

Port Haney Logging Railway.—A press report states that a contract has been let to Northern Construction Co., Vancouver, to build about five miles of logging railway in the Port Haney section of Maple Ridge municipality, B.C.

Canadian National Railways Construction, Betterments Etc.

Sydney, N.S.—The city council has asked the C.N.R. to repair the portion of Dood St., adjoining the station, which is owned by the Railways Department. The section owned by the city is only 12 ft. wide, the Government owning the rest.

Yarmouth Locomotive House Destroyed.—The Halifax & Southwestern Ry.'s frame locomotive house at Yarmouth, N. S., with its equipment, tools, and a quantity of railway supplies, was destroyed by fire recently.

St. John Yards.—The work in progress during the summer at the St. John, N.B., yards, is reported to be practically completed. In addition to the installation of a number of private sidings, and extra tracks on Water St., accommodation for about 600 more cars has been provided.

National Transcontinental Ry. Yards, Moncton.—A press report of Nov. 12 stated that most of the work of dismantling the N.T.R. yard at Moncton, N.B., had been done. The locomotive house was almost entirely demolished, the machine shop was being taken down, and the coaling plant was entirely demolished. It is reported that the yard will be done away with entirely, except possibly for the storage of old cars.

Quebec Hotel.—A Quebec dispatch of Nov. 9 said that it was unofficially reported there that tentative plans were being entertained by the C.N.R. for the erection of a large hotel there, along the line of the Chateau Laurier, Ottawa. We are officially advised that the report was without foundation.

Chaudiere Jct. Coaling Plant.—Tenders were received recently for the construction of a 350 ton mechanical coaling plant at Chaudiere Jct., Que.

Fresniere-St. Jerome Line.—Tenders were received to Nov. 30 for clearing, fencing, grading, culverts and bridge substructures on a line from mile 25.16, Lachute Subdivision, near Rinfret Jct., Que., to mile 23, Grenville Subdivision, near Fresniere, Two Mountains County, about 12 miles. We are officially advised that this line will extend from near Fresniere, on the Grenville Subdivision, about 23 miles from the Montreal tunnel terminal station, to near Rinfret Jct., which is the point of connection of the Montfort Subdivision with the Lachute Subdivision. There is considerable summer traffic on the Montfort Subdivision, which serves the Laurentian Mountains summer resorts. Access to this country has been greatly handicapped through want of direct train service with Montreal. At present, passengers from the Montfort Subdivision transfer to the C.P.R. at Montfort Jct., and are taken to the Place Viger station, Montreal. This has never been a very satisfactory arrangement for travellers on this line and has held back the development of the summer resorts. To reach Rinfret Jct. at present on the C.N.R. it is necessary, if going from the tunnel terminal station, to travel via Cushing Jct., a distance of 86 miles; from Moreau St. station, Montreal, the distance is 70 miles. The new line will give a route of 35 miles from the tunnel terminal station. The gradients and curvature on the existing lines are not excessive, and there will be no change in these, the whole improvement being in the distance to be travelled, particularly between Rinfret and the tunnel terminal station. The line from Fresniere to St. Jerome is very

straight, with few gradients of any account.

There will be, on the new construction, a steel bridge over the Deschenes River, immediately after leaving the Grenville Subdivision, but, outside of about half a dozen concrete culverts, there will be no other structure of any account. The grading will be very light. It is intended to start work as soon as the frost is out of the ground in the spring, and to have track laid and the line finished by next autumn.

Toronto to Parry Sound Betterments. Construction gangs between Toronto and Parry Sound, which have been engaged during the summer and autumn on betterments, are finishing up for the season. The work covered the putting in of concrete culverts, concrete abutments for permanent bridges, replacing temporary trestle structures; some new steel bridge superstructures; widening embankments and cuts; improving the drainage at the sides of the tracks; ballasting; enlarging existing buildings and putting up additional buildings. The ballasting has been done at a number of points, the track being raised and levelled up, a number of sags being taken out. A considerable mileage in all has been given a big coating of ballast, and at some points the track has been raised from 3 to 5 ft.

One of the larger bridge structures replaced is at the crossing of the Trent Valley Canal, where the old 120 ft. truss span, which was 28 ft. above water level, has been replaced by a 135 ft. through truss span 35 ft. above water level.

Surveys are reported to have been made at various points on the line between Beaverton and Washago, with a view to linking up the C.N.R. with the G.T.R., so as to do away with duplicate tracks, and provide for an interchange of traffic between the two lines. Some improvement along this line is reported to have been made in the vicinity of Orillia, and it is reported that further work is to be done which will have the effect of doing away with the C.N.R. stub line from Udney into Orillia. A connection between the two lines has been completed at Washago.

Trestle Fill near Parry Sound.—There has been completed on the line between Toronto and Capreol, Ont., a large trestle fill at mile 5.2 north of Parry Sound, the work on which was begun in 1918. The trestle, which was built in 1905, was 925 ft. long, with a maximum height of 60 ft. A 15 ft. concrete culvert was built to take care of the water, which required 1,539 yards of concrete, and a 15 ft. flat culvert under the roadway required 298 yards of concrete. The approximate quantity of material required to fill the trestle was 197,000 yards. The work was done by the Dominion Construction Co. under the superintendence of Resident Engineer McIlwain, of Parry Sound.

Westree to Kenogami Lake.—The construction of a railway to branch off from the C.N.R. at Westree, 64 miles west of Capreol, Ont., to Kenogami Lake, four miles west of Swastika, and on the Timiskaming & Northern Ontario Ry., is being advocated. The distance is approximately 80 miles, and the country through which it would pass is said to possess timber and mineral resources.

Hornepayne Terminal Buildings.—A locomotive house, machine shop and other buildings are under construction at Hornepayne, Ont.

Bridge at Beardmore.—A bridge is under construction near Beardmore, Ont., between Jellicoe and Orient Bay, the contractors being Campbell & Latimer.

Saskatchewan Branch Lines.—The following resolution was passed by the Saskatchewan Legislature Nov. 17:—"That, in the opinion of this Assembly, the Dominion authorities should be petitioned to appropriate at the earliest possible date sufficient sums of money to complete the Canadian National Rys. branch lines which are already projected into various sections of the province, and that they should be urged to continue construction work on such branch lines and complete them at the earliest possible date."

Oliver to St. Paul de Metis.—Grading was started in 1915 on a line from Oliver to St. Paul de Metis, about 125 miles, for 100 miles of which the Alberta Legislature guaranteed the bonds. It was reported to the Alberta Legislature in 1916 that 86.5 miles of grading had been completed, and in 1917 that grading on the whole 100 miles to Villette post office was completed. Track laying was started in Jan. 1917, and this, with bridge building, was proceeded with as far as Sucker Creek, 44 miles, where work was suspended. Track laying and other finishing up work was resumed during 1919, when track was laid for 100 miles, and about 20 miles of additional grading was done. A press report states that track was laid into St. Paul de Metis, Oct. 29, 1920. The railway enters the town on the northern side and a station is to be built a short distance north of the present business center on Main St.

An order passed by the Board of Railway Commissioners at the end of 1916, described the line as the Oliver-Battleford branch. This would suggest the continuation of the line easterly from St. Paul de Metis and its ultimate connection with the branch line from Battleford, now terminating at Turtleford, Sask.

Onoway to Whitecourt.—A branch line from Onoway to Sangudo, Alta., has been in operation for several years, and in 1913 grading was completed to Whitecombe, on the Athabasca River. Work was then abandoned and nothing was done until the summer of 1919, when the grades were gone over and track laying was resumed in Dec. 1919, with the result that the line was completed and put in operation as far as Robinson, 34.9 miles from Onoway, two miles beyond Sangudo, early this year. Some track was laid beyond Robinson, but the work was never finished, and owing to spring floods it got into very bad condition. A gang of men is reported to have been engaged during the past summer, lifting the track westward from Robinson's Crossing. Rails are reported to be on hand to lay track to mile 59, and some miles of grading are required to be completed, together with the repair or construction of 25 bridges of various sizes, none of them, however, being large structures, before the line is completed to Whitecourt. At this point access will be had to large gravel pits for ballast.

Vancouver Terminals.—A press report states that a contract has been let to the

Pacific Construction Co. for the completion of certain works in connection with the False Creek terminals, Vancouver, at an estimated cost of \$350,000. The work is said to include the completion of the sea wall, about which there has been so much litigation; the removal of the Main St. bridge; filling in where required; the paving of Main St. to the sea wall; and other incidental work. Work was reported to have been started Nov. 1, and it is said that it will be finished early in 1921.

Vancouver Island Extensions.—A press report states that the Premier of British

Columbia discussed with D. B. Hanna, President, C.N.R., recently, the question of the completion of the extension of the line from Cowichan Lake to Alberni and the Nitinat country. It is stated that United States owners of timber limits on Vancouver Island want to develop their properties and to establish mills at Alberni, and are only awaiting the extension of the railway in order to proceed with the work. The distance from Cowichan Lake to Alberni is about 30 miles. Grading on the section is reported to be practically completed. (Nov., pg. 610.)

Traffic Orders by Board of Railway Commissioners.

Free Transportation Authorized.

General order 317. Oct. 27. — Re application of Railway Association of Canada, on behalf of railway companies subject to the Board's jurisdiction, for authority to issue free transportation under sec. 345 of the Railway Act, 1919. Upon reading the application and considering what has been urged in support thereof, the Board orders that railway companies be permitted, until further order, to issue free transportation in the following instances, viz.: Agents of the Immigration and Colonization Departments, Governments of Ontario, Quebec, New Brunswick, Nova Scotia, and Prince Edward Island, actually accompanying parties of immigrants from the Atlantic seaboard to points within their respective provinces, or when travelling to the seaboard for this purpose.

Railway Y.M.C.A. officers and employees, bona fide engaged in railway work, and dependent members of their families, over railway upon which railway branch of Y.M.C.A. at which employed is located; also such general officers of the Y.M.C.A. as are bona fide engaged in railway work.

Such officers and agents of the Salvation Army as are bona fide engaged in immigration work.

Cumberland Coal & Railway.

30,284. Nov. 1.—Re application of Cumberland Railway & Coal Co., under sec. 334 of the Railway Act, 1919, for approval of its Standard Passenger Tariff, Supplement 1 to C.R.C. 5. Upon the report and recommendation of the Board's Chief Traffic Officer, it is ordered that the said tariff supplement be approved; the said tariff, with a reference to this order, to be published in at least two consecutive weekly issues of The Canada Gazette.

30,285. Nov. 1.—Re application of Cumberland Railway & Coal Co., under sec. 331 of the Railway Act, 1919, for approval of its Standard Freight Tariff, Supplement 1 to C.R.C. 10. Upon the report and recommendation of the Board's Chief Traffic Officer, it is ordered that the said tariff supplement be approved; the said tariff, with a reference to this order, to be published in at least two consecutive weekly issues of The Canada Gazette.

Freight Rate for Fir Piles.

30,310. Nov. 10.—Re application of Great Lakes Dredging Co. for an order requiring that the cubical contents of shipments of quantities of fir piles, shipped by the company from British Columbia to Ojibway, Ont., be ascertained by the formula given for round timber in Canadian Freight Classification, and that the freight charges be based on an estimated weight of 3.2 lb. per foot board measure of the piles. Upon hearing the application at Ottawa, July 6, in the

presence of counsel for the applicant company, and the Canadian Pacific, and Canadian National Railways, and upon reading the written submissions filed, the Board orders that the application be refused.

Interswitching Toll on Lumber at Toronto.

30,312. Nov. 9.—Re complaint of R. Laidlaw Co., Toronto, that the C.P.R. exacts the team track interswitching toll of 2c. per 100 lb. on cars unloaded by it on the Toronto Power Co.'s private siding at North Toronto. Upon hearing the complaint at Toronto, Sept. 3rd, in the presence of representatives of the applicant, the C.P.R. and the Canadian Manufacturers' Associations, the Board declares that the said interswitching toll of 2c. per 100 lb. was wrongfully made; and the C.P.R. is authorized to repay to the applicant the excess amount charged and collected by it on cars consigned to the applicant and placed by the C.P.R. on the Toronto Power Co.'s private siding.

Western Power Co.'s Freight Tariff.

30,303. Nov. 9.—Re application of Western Power Co. of Canada, under sec. 331 of the Railway Act, 1919, for approval of its Standard Freight Mileage Tariff C.R.C. B-11. Upon the report and recommendation of the Board's Chief Traffic Officer, it is ordered that the said tariff be approved; the said tariff, with a reference to this order, to be published in at least two consecutive weekly issues of The Canada Gazette.

Live Stock Unloading and Reloading Charges.

30,339. Nov. 8.—Re complaint of Calgary Live Stock Exchange against charge made by the railway companies for unloading and reloading live stock. Upon hearing the complaint at Calgary, Alta., October 20, the complainant, and the Canadian Pacific, and Canadian National Railways being represented, the Board orders that the complaint be dismissed.

Mount Royal Tunnel & Terminal Co.'s Assessment.—Montreal assessors placed a value on the company's tunnel in the city for taxation purposes, which was upheld in the Recorder's Court, to which the company appealed. This decision was appealed to the Practice Court on two grounds, first that the tunnel was not subject to taxation, and secondly that an exaggerated value had been placed upon the property. Judgment was delivered Nov. 3, both appeals being dismissed with costs.

Newfoundland Railway Commission is reported to have started a motor truck service between the coalfields at South Branch, and the railway, the trucks carrying 5 tons of coal each.

Transportation Interests Contributions to McGill University.

In connection with the centennial endowment campaign to raise \$5,000,000 for McGill University, Montreal, E. W. Beatty, K.C., President, C.P.R., on behalf of the governors, was chairman of an inaugural dinner at Montreal on Nov. 13. Among the contributors to the fund are the following:—\$250,000, C.P.R. Co.; \$100,000, R. B. Angus, director, C.P.R.; Sir Herbert Holt, director, C.P.R.; \$50,000, Senator L. C. Webster, President, Webster Steamship Co., etc.; \$25,000, E. W. Beatty, K.C., President, C.P.R.; C. R. Hosmer, director, C.P.R.; Canadian Consolidated Rubber Co.; Canadian Explosives Ltd.; Lake of Woods Milling Co.; \$15,000, Sir Vincent Meredith, director, C.P.R.; \$10,000, Hon. C. C. Balfantyne, Minister of Marine and Fisheries, Lord Shaughnessy, Chairman, C.P.R.; Hugh Paton, President, Shedden Forwarding Co.; Canadian Fairbanks-Morse Co.; Steel Co. of Canada; Dominion Bridge Co.; Canadian Car & Foundry Co.; P. Lyall & Sons Co.; \$5,000, Farquhar Robertson, member, Quebec Harbor Commission; Sir Montagu Allan; G. H. Duggan, President, Dominion Bridge Co.; Lady Van Horne; Miss Van Horne; Mrs. R. W. Reford; Northern Electric Co.; Sherwin Williams Co. of Canada; W. F. Angus, Vice President, Dominion Bridge Co.; \$2,500, C. A. Barnard, K.C., director, Canada Steamship Lines; R. W. Reford, President, Robert W. Reford Co.; W. I. Gear, Vice President, Robert W. Reford Co.; Dominion Wire Rope Co.; Canada Iron Foundries; Dominion Transport Co.; \$1,000, Hon. W. J. Shaughnessy, director, C.P.R.; Sir Thomas Tait, President, Fredericton & Grand Lake Ry. & Coal Co.; A. D. MacTier, Vice President, Eastern Lines, C.P.R.; W. G. Ross, President, Montreal Harbor Commissioners; N. J. Holden, President, The Holden Co.; Canadian Ingersoll Rand Co.; Williams & Wilson Ltd.; A. Ramsay & Son Co.; George Hall Coal Co. of Canada; Fraser Brace & Co.

Unloading Coal on Team Tracks, etc. The Railway Association of Canada has issued the following circular to railway companies:—Consideration has been given to action that should be taken with respect to practice of unloading coal, through hoppers of cars placed for delivery on team tracks and other delivery sidings. Generally, where this is permitted, switching operations are more or less seriously interfered with, resulting in delay to equipment. It is, therefore, recommended to member lines that they should instruct their agents not to permit coal to be unloaded through hoppers of cars on delivery tracks, unless consignees undertake to have the track cleared of coal, and hoppers closed prior to switching hour to be designated by local agent, and that record be kept of consignees who do not comply with this regulation, in order that further action may be taken, either generally or with individual receivers of coal, if this appears to be desirable.

The Interstate Commerce Commission announces it has approved a loan of \$1,840,700 to the Erie Rd. to aid in reconstructing freight train equipment, in making improvements to existing equipment and in making additions and betterments to roadway and structures at estimated cost of \$6,680,000. The company itself is required to finance about \$4,840,000 to meet the Government loan.

Canadian Railway Board of Adjustment No 1. Report.

The following report has been issued over the signatures of the Chairman, S. N. Berry, Vice President, Order of Railway Conductors, and the Vice Chairman, Geo. Hodge, Assistant to Vice President, Eastern Lines, C.P.R.:—

Two years having elapsed since the creation of Canadian Railway Board of Adjustment No. 1, it is deemed advisable to issue in condensed form an outline of the circumstances leading up to the formation of the Board and of its work during the two-year period.

On July 26, 1918, in response to a request made by the Dominion Government through the then Acting Minister of Labor, Senator G. D. Robertson, officials, representative of the various railways in Canada, and vice presidents and general chairmen from practically all lines in Canada for: the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, the Order of Railway Conductors, the Brotherhood of Railroad Trainmen, the Order of Railroad Telegraphers, and the International Brotherhood of Maintenance of Way Employees, met at Montreal. Senator Robertson, acting as chairman, explained that the purpose for the call of the meeting was to arrive at an understanding as to the methods to be adopted for the application of the provisions of general order 27 of the Director General of the United States Railroad Administration, to Canadian railways, and also to consider and, if possible, arrange for some agreement whereby all differences arising between the railways and the employes concerned could be disposed of in a mutually satisfactory manner. General questions relative to the application of the provisions of general order 27, and other matters of mutual concern to the railway companies, their employes and the Canadian people were discussed, the general consensus of opinion, both from the viewpoint of those in charge of the railways and those representing the employes, being that some tribunal could and should be created to which all differences not otherwise disposed of between the railways and their employes could be referred for decision.

On July 27, 1918, a joint committee, representing the railways and the employes' organizations, met and prepared a tentative draft of a memorandum of agreement for the above purpose, such draft being in line with the terms of general order 13 of the U.S. Railroad Administration, under which Railway Board of Adjustment No. 1 at Washington had been instituted some months previously, the only difference in the draft as proposed being that the language was made applicable as a mutual agreement between the Canadian Railway War Board and the chief executives of the six organizations, parties to the proposed agreement. After the preparation of the memorandum of agreement, and its submission to and adoption by the representatives of the employes in conference, a few days adjournment was taken, in order that the Railway War Board might submit the tentative draft of the proposed memorandum of agreement to its member roads for consideration and endorsement, if approved, and so that the approval of the chief executives of the organizations might also be secured.

On Aug. 7, 1918, a further meeting was held between the Canadian Railway War Board's administrative executive

and the vice presidents, or other representatives, of the organizations specified, and on the same date the following memorandum of agreement was adopted and signed by the Canadian Railway War Board and by the chief executives of the organizations, parties to the agreement.

"Memorandum of Agreement made between the Canadian Railway War Board, acting for the railways of Canada, members thereof, of the one part; and the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, the Order of Railway Conductors, the Brotherhood of Railroad Trainmen, the Order of Railroad Telegraphers, and the International Brotherhood of Maintenance of Way Employees, acting for the said classes of employes on the said railways; of the other part. Whereas the parties hereto, in united desire to avoid disputes or misunderstandings which would tend to lessen the efficiency of transportation service in Canada during the war, have resolved upon the appointment of a board composed of members to be selected as hereinafter prescribed, which shall have full power and authority to determine all differences which may arise between any of the said railways and any of the classes of its employes above mentioned and which shall not be promptly adjusted between the officers and employes of the railway concerned; including the interpretation or application of wage schedules or agreements, and the application to Canadian railways of general order 27 of the Director General of the U.S. Railroad Administration; with authority to make such amendments or additions in line with such amendments or additions as may be made thereto for the railways in the U.S. as may be necessary, having due regard to the rights of the several classes of employes and of the railways respectively. Now therefore it is agreed by and between the parties as follows:

"1. There shall be at once created a board to be known as Canadian Railway Board of Adjustment No. 1, to consist of 12 members, six to be selected by the Canadian Railway War Board, and compensated by the railways, and six by the executive officers of the organizations of employes hereinbefore named, and compensated by such organizations.

"2. The Canadian Railway Board of Adjustment No. 1 shall meet in Montreal within 15 days after the selection of its members and select a chairman and a vice chairman, who shall be members of the board. The chairman or vice chairman will preside at meetings of the board, and both will be required to vote upon the adoption of all decisions by the board.

"3. The board shall meet regularly, at stated times each month, and continue in session until all matters before it are considered.

"4. Unless otherwise mutually agreed, all meetings of the Board shall be held in Montreal; provided, that the board shall have authority to empower two or more of its members to conduct hearings and pass upon controversies when properly submitted at any place designated by the board; provided, further, that such division of the board will not be authorized to make final decision. All decisions shall be made, approved or ratified by the board as herein provided.

"5. Should a vacancy occur in the board for any cause such vacancy shall be immediately filled by the same appointive

authority which made the original selection.

"6. The Canadian Railway Board of Adjustment No. 1 shall render decisions on all matters of controversy arising from interpretations of wage agreements and other matters in dispute as provided in the preamble hereof, and when properly submitted to the board.

"7. Wages and hours established by general order 27 of the Director General of the U.S. Railroad Administration and amendments thereto shall be incorporated into existing agreements on the several railways, and should differences arise between the management and the employes on any of the railways as to such incorporation, such questions of differences shall be decided by the Canadian Railway Board of Adjustment No. 1 when properly presented thereto.

"8. Personal grievances or controversies arising under interpretation of wage agreements, and all other disputes arising or now properly pending between officials of a railway and its employes covered by this understanding will be handled in their usual manner by general committees of the employes up to and including the chief operating officer of the railway (or some one officially designated by him) when if an agreement is not reached, the chairman of the general committee of employes may refer the matter to the executive officer of the organization concerned, and if the contention of the employes' committee is approved by such executive officer, then the chief operating officer of the railway and the executive officer of the organization concerned shall refer the matter, with all supporting papers, to Canadian Railway Board of Adjustment No. 1, which board shall promptly hear and decide the case, giving due notice to the chief operating officer of the railway interested and to the executive officer of the organization concerned of the time set for hearing.

"9. No matter will be considered by the Canadian Railway Board of Adjustment No. 1 unless officially referred to it in the manner herein prescribed, provided, however, that no case having origin in circumstances occurring prior to the date hereof shall be referred to the board except those arising out of the application of the general order 27, or arising out of disputes properly pending at the date of this agreement as mentioned in clause 8.

"10. In hearings before the Canadian Railway Board of Adjustment No. 1 in matters properly submitted for its consideration, the railway shall be represented by such person or persons as may be designated by the chief operating officer, and the employes shall be represented by such person or persons as may be designated by the executive officers of the organizations concerned.

"11. All clerical and office expenses will be borne equally by the Canadian Railway War Board and the organizations above mentioned. The railway directly concerned and the organization involved in a hearing will, respectively, assume any expense incurred in presenting a case.

"12. In each case an effort should be made to present a joint concrete statement of the facts as to any controversies, but the board is fully authorized to require information in addition to the concrete statement of facts, and may call upon the chief operating officer of the

organization concerned for additional evidence, either oral or written.

"13. All decisions of Canadian Railway Board of Adjustment No. 1 shall be approved by a majority vote of all members of the board.

"14. After a matter has been considered by the board, and in the event a majority vote cannot be obtained, then any six members of the board may elect to refer the matter upon which no decision has been reached to a referee to be unanimously agreed upon by the board, and in failure to agree, application shall be made to the Governor-General-in-council for appointment of a referee, whose decision shall be final.

"15. The Canadian Railway Board of Adjustment No. 1 shall keep a complete and accurate record of all matters submitted for its consideration and of all decisions made by the board.

"16. A report of all cases decided, including the decisions, will be filed with the Canadian Railway War Board, and with the chief operating officer of the railway affected and with the executive officer of the organization concerned.

"17. The Canadian Railway War Board further agrees that the Canadian Railway Board of Adjustment No. 1 shall have like authority to determine differences between any of the railways represented herein and any other classes of employes of such railways who may request and consent to submitting differences to the Canadian Railway Board of Adjustment No. 1, and to agree that the decision of the said board shall be final.

"18. This agreement shall remain in full force and effect during the period of the present war, and thereafter, unless the Canadian Railway War Board, on the one hand, as representing the railways, or a majority of the executive officers of the organizations, on the other hand, as representing the employes, shall desire to terminate the same, which can, in these circumstances, be done on 30 days formal notice.

The memorandum of agreement was signed by the following:—The Canadian Railway War Board, U. E. Gillen, Chairman, by S. R. Payne, W. M. Neal, General Secretary. The Brotherhood of Locomotive Engineers, W. S. Stone, Grand Chief Engineer, by Ash Kennedy, Assistant Grand Chief Engineer. The Brotherhood of Locomotive Firemen and Enginemen, Timothy Shea, Acting President, by Geo. K. Wark, Vice President. The Order of Railway Conductors, A. B. Garretson, President, by S. N. Berry, Vice President. The Brotherhood of Railroad Trainmen, W. G. Lee, President, by James Murdock, Vice President. The Brotherhood of Railroad Telegraphers, J. M. Mein, Deputy President. The International Brotherhood of Maintenance of Way Employes, A. E. Barker, President, by W. V. Turnbull, Vice President.

Pursuant to the terms of the agreement the following persons were appointed to the Board:—S. N. Berry, Vice President, Order of Railway Conductors; F. P. Brady, General Manager, Eastern Lines, Canadian National Rys.; Wm. Dorey, General Chairman, International Brotherhood Maintenance of Way Employes; U. E. Gillen, Vice President, G. T.R. System; Geo. Hodge, Assistant to Vice President, Eastern Lines, C.P.R.; A. J. Hills, Assistant to President, Canadian National Rys.; S. J. Hungerford, Assistant Vice President, Canadian National Rys.; Ash Kennedy, Assistant Grand Chief Engineer, Brotherhood of Locomotive Engineers; A. D. MacTier, Vice President Eastern Lines, C.P.R.; J.

M. Mein, Deputy President, Order of Railroad Telegraphers; Jas. Murdock, Vice President, Brotherhood of Railroad Trainmen; G. K. Wark, Vice President, Brotherhood of Locomotive Firemen and Enginemen.

Messrs. Gillen and Hungerford have since resigned from the board and have been replaced by G. C. Jones, Assistant to President, G.T.R., and W. H. Sample, Superintendent Motive Power and Car Department, G.T.R.

During the two years ended Aug. 31, 1920, the board has been in session 86 days to deal with cases submitted to it.

It is apparent that misunderstanding still exists in the minds of some regarding the position of this board, as independent of the Railway Association of Canada (formerly the Canadian Railway War Board), although this matter was dealt with in a circular issued by the board, on Oct. 17th, 1918, reading in part as follows:—"It seems desirable to point out at this time that the body known as Canadian Railway Board of Adjustment No. 1 should not in any way be confused with the Canadian Railway War Board, which is an association of the Canadian railways through which joint action is taken in connection with important transportation matters affecting their operation. It is composed of railway officers who represent and act for practically all lines in Canada. Canadian Railway Board of Adjustment No. 1 is a body of 12, composed of six railway officers and six representatives of the following railway brotherhoods, viz.: Brotherhood of Locomotive Engineers, Brotherhood of Locomotive Firemen and Enginemen, Order of Railway Conductors, Brotherhood of Railroad Trainmen, Order of Railroad Telegraphers, International Brotherhood of Maintenance of Way Employes. As the War Board takes joint action for all railways, the representatives of the railways on Board of Adjustment No. 1 were selected by the War Board from the official staff of the railways. The board having been so constituted, no actual connection remained between the War Board and Canadian Railway Board of Adjustment No. 1. The function of Board of Adjustment No. 1 is to settle all disputes that arise between the railways and their employes who are members of the Brotherhoods named."

Appended to the report is a condensed statement of the 87 cases which have come before the board and of the decisions rendered. The board's receipts from Aug. 7, 1918, to Aug. 31, 1920, were \$17,868.98, half of which was paid by the railways and half by the employes organizations. The expenditures were \$15,700.47, the principal items being salaries to office staff, \$7,992.29; rent and taxes, \$2,651.05; printing, \$1,943.07; furniture, \$1,345.25.

The board's Secretary is R. Chapelle, and its office is at 263 St. James Street, Montreal.

C.P.R. Discontinuing use of Fuel Oil.

On account of the uncertainty of oil supply, the C.P.R. is converting all its oil burning locomotives in British Columbia back to coal, and the same action is being taken in connection with its steamships in the B.C. Coast Service, and also in the hotels, which are now using oil.

The advertising in connection with the train service on the Newfoundland Ry. and the coastal steamship services is being done in the name of the Government Railway Commission, the title of the Reid Newfoundland Co. not being used.

Grand Trunk Railway Construction, Betterments, Etc.

Ottawa Crosstown Tracks.—Hon. A. L. Sifton, acting Minister of Railways, is reported to have promised favorable consideration of a request for the removal of the G.T.R. crosstown tracks in Ottawa. It is expected that an engineer of the Railways Department will be authorized to look into the matter.

Hamilton Street Crossings.—A press report states that the railway crossings of a number of street in Hamilton, Ont., are to be repaired, that at Canon St. to be the first to be taken in hand.

Brantford Subway.—A press report states that it is estimated that the cost of the proposed subway under the G.T.R. at St. Paul's Ave., Brantford, Ont., already approved by the ratepayers, will be about double the original estimate.

East London Interswitching Track.—A press report states that track will be laid on a new piece of line, over 900 ft. long at East London, from the interswitch to the Stratford line.

London Subway and Track Elevation. G. A. Mountain, Chief Engineer, Board of Railway Commissioners, was authorized recently to visit London, Ont., to confer with the city council with regard to the proposed subway under the G.T.R. tracks at Rectory St. This piece of work is part of the plan for the elevation of the G.T.R. tracks in the city, and the elimination of level crossings.

Detroit Coaling Plant.—A press report states that a contract has been let for the installation of an electric elevating equipment in the coaling station at Milwaukee Jct. yards, Detroit, Mich.

Port Huron-Chicago Improvements.—Windsor, Ont., press report of Nov. 14 stated that improvements estimated to cost \$10,000,000 were to be made on the line between Port Huron, Mich., and Chicago, Ill. G. A. Bell, C.M.G., Deputy Minister of Railways, Ottawa, is reported to have said Nov. 15 that no such expenditure was contemplated, adding that some day a lot of money would be needed for betterment and terminals on the line between the points mentioned.

Kalamazoo Locomotive House.—A press report states that it is contemplated to start construction in the spring on a frame locomotive house at Kalamazoo, Mich. (Nov., pg. 607.)

Roumanian Locomotive Orders.—L. D. Wilgress, Canadian Trade Commissioner, writes from Bucharest as follows:—Orders have been placed or are pending for the supply of several hundred new locomotives to Roumania. In view of the great deficiency of railway transport, this is considered the most urgent necessity of the country at present. The economic life of Roumania has been practically paralysed owing to the difficulties of transporting the exportable products. The first contract for new locomotives was placed last April with the Baldwin Locomotive Co., Philadelphia, for 50 consolidation locomotives at \$65,000 each, payment to be effected in either dollars or oil products. The first lot of these locomotives is expected to arrive in the country shortly. Another order was placed lately with Czecho-Slovakia for 80 new locomotives and the repair of 500 old ones. Five hundred are also to be repaired in Austria. The representative of Canadian interests has been in the country for several months negotiating for the supply of locomotives to Roumania.

Canadian Pacific Railway Construction, Betterments, Etc.

St. John River Bridge.—The Board of Railway Commissioners is reported to have recently fixed Nov. 25 as the date for hearing representations from interested parties as to the height of the bridge over the St. John River at St. John, N.B., above high water mark. The C.P.R. proposed to erect the bridge at the same height as the existing bridge, and the city council and marine interests asked that it be provided with the same clearance as the highway bridge alongside.

The construction of the substructure for the bridge is expected to have been completed during December by the Foundation Co., Montreal. The work is reported to have involved the excavation of 11,000 cu. yd. of rock, 4,000 cu. yd. of earth and the setting of 800 cu. yd. of gravel in concrete, as well as removing a heavy rock cut for the purpose of straightening out the line at the east approach of the bridge. The 10 concrete masonry piers on land, and the two granite piers in the river are reported to be well advanced to completion.

St. John Street Crossing.—The question of the elimination of the level crossing at Douglas Ave., St. John, N.B., came before the City Council in committee Nov. 4. The City Engineer is said to have reported that an overhead crossing would cost, including expropriation, from \$100,000 to \$110,000. A suggestion was made that the question of a viaduct should also be considered, and the Mayor stated that the whole matter could be taken up with the Board of Railway Commissioners.

Ottawa West Station.—The Ottawa Board of Control has been advised that the permanent station at Ottawa West will be at Victoria Ave., in conformity with the Board of Railway Commissioners' order.

Timiskaming, Que., District.—We are officially advised that a contract has been signed by the Canadian Pacific Ry., Quebec Government, and the Interprovincial & James Bay Ry. Co. for the construction of a line as authorized by the statutes of 1920, chap. 2, sec. 1, par F, which provided for a grant of \$1,600 a mile, in addition to 4,000 acres of land a mile, authorized in 1919, towards the construction of a line from near Timiskaming or Kipawa to the Quinze River via Ville Marie, 66 miles, and a further subsidy of \$6,400 a mile in case the company does not receive a subsidy of the same amount from the Dominion Government. The contract provides that construction shall be started before Mar. 17, 1921, and completed subject to the terms fixed by the Government, under the statutes of 1912, chap. 5, sec. 9.

Under the Interprovincial & James Bay Ry. Co.'s charter, the C.P.R. graded and laid track on a 10 mile stretch of line from Kipawa to Mercier Y, some years ago, and completed surveys for its extension towards Quinze River. These surveys were resumed early last summer in order to locate the line to the proposed terminus at Quinze River rapids.

The Board of Railway Commissioners has passed the following orders recently: 30,420, Oct. 22.—Approving Interprovincial & James Bay Ry. revised route map of general location from terminus of its line already built, at mile 10, to mile 70, near the Quinze River. 30,292, Nov. 3. Authorizing Chief Commissioner to ap-

prove route map showing general location of Interprovincial & James Bay Ry. branch line from mile 48.2 to Ville Marie, 8 miles.

Acme to Drumheller, Alta.—A press report states that it is intended to complete the grading of the line along the Kneehill between Acme and Drumheller, Alta., next spring. D. C. Coleman, Vice President, Western Lines, who was in Calgary Nov. 15, is reported to have said that on the completion of the line to Drumheller it will be continued down the north side of the Red Deer River to connect with the Bassano-Empress line at either Duchess or Rosemary. (Nov., pg. 594.)

United States Railway Notes.

The Bureau of Railway Economics announces that the net operating income for September of class 1 U.S. railways fell approximately \$29,343,000, or 26.9%, short of amount expected under increased rates. This is based on reports from 207 railways of that class operating 237,899 miles.

The Interstate Commerce Commission announces it has approved a loan of \$9,630,000 to the New York, New Haven & Hartford Rd. to aid the carrier in providing itself with equipment, and additions and betterments to way and structures, at a total estimated cost of \$13,525,000.

The Railroad Information Bureau, New York, has announced that the average cost of running freight trains one mile as indicated by comparison of principal items of expense selected by Interstate Commerce Commission for statistical purposes, was 23.2% greater in July, 1920, than in July, 1919. The total of selected accounts was \$1.89 a mile this year and \$1.54 last year.

The Interstate Commerce Commission on Nov. 18 ordered railways in New York State to establish passenger and baggage rates on intrastate traffic, conforming to advanced interstate schedules, in its first decision on the right of the Federal Government under the Transportation Act to require railway rates within a state to correspond to higher levels of interstate tariffs. Similar proceedings are pending affecting more than half the states in the Union.

As a result of special drives to speed up the release and return of freight equipment, the New York, New Haven & Hartford Rd. to Oct. 17 reports that 15,333 loaded cars were placed, and 19,710 empty cars picked up. The railroad's plan of operation included the running of way freights, supported by extra switching service on Sundays, taking empties from industrial sidings and freight houses, for movement to connecting lines, and placing cars for unloading on Mondays. On many Sundays the number of loaded cars placed exceeded 1,000.

Reports of passenger train operation on the Pennsylvania Rd. for the past six months show that for every 10,000 miles run by locomotives, there were total delays to trains aggregating 1 hr. 7 min., due to locomotive failures, something wrong happening to the machinery of a locomotive. Similarly for every 10,000 passenger car miles, the total delays to trains due to car trouble, such as a hot box amounted to 3.9 min. In every 10,000 miles operated by passenger locomo-

tives there was an average of not quite three delays to passenger trains because of locomotive trouble. The total number of minutes lost by all of the 129,745 passenger trains on the whole railway because of locomotive and car trouble, in September, was 53,183, compared with 60,792 in April, when 106,508 trains were operated.

Reports compiled by the American Railway Association's Car Service Division show that progress is being made in the return of freight cars to the home lines. On Oct. 1, 30% of the freight cars were on the lines of the owning road, a gain of 2% from Sept. 1. On Mar. 1, when the railways were relinquished by the U.S. Government, only 2.19% of all the cars were on their home lines, as compared with 44% at the end of 1917, when the railways were taken over. Progress is noted in all districts and with all types of equipment except refrigerator cars. The return of freight cars to their owning lines as rapidly as it can be done consistently with the demands of commerce is one of the objects set for themselves by the railways since their return to private management. In general the railways have provided themselves with the types of cars best suited for the traffic of their respective territories and car repairs can be more satisfactorily made on the home roads. Therefore, relocation is important in the programme of providing more and better service to the public.

Grand Trunk Railway Stock Arbitration.

The three arbitrators, Sir Walter Cassells, Sir Thomas White and W. H. Taft, who will fix the price to be paid by the Dominion for certain G.T.R. stocks, in connection with the taking over of the line by the Government, met in Montreal Nov. 5. The G.T.R. was represented by its counsel and F. H. Chrysler, K.C., of Ottawa, appeared for the Government, with other counsel. After the meeting Sir Walter Cassells issued a statement in which he said:—"The meeting was held for the purpose of determining definitely the date at which the presentation of the case should begin. Counsel for the G.T.R. applied to the board to fix the date as Feb. 1 next. Counsel for the Government demurred. The G.T.R. counsel then made it clear that they had organized a technical staff of engineers and others when the statute was passed, which had been engaged continuously since that time in preparing the necessary evidence, as to the valuation of the physical assets of the system, and that their leading expert, Mr. Berry, reported that the case could not be ready with their expert evidence until Jan. 1; they said that they had not only been engaged in preparing their own case, but a considerable time had been taken in furnishing matter for the Government upon enquiries directed from time to time. Counsel said as soon as the case was prepared they desired a month in which to analyze the evidence, in order that they might present it in as clear a way as possible and thus save the time of the board. After some further discussion the board granted the application and fixed the time for the beginning of the presentation of the case on Feb. 1, 1921."

It is said that after the arbitrators' sittings there was a meeting of all the counsel engaged on the arbitration to discuss methods of procedure, etc.

Mainly About Railway People Throughout Canada.

Sir James B. Bell, Chief Engineer, London, Brighton & South Coast Ry., died in England recently.

M. Roy Benson, who has been appointed General Foreman, Michigan Central Rd., St. Thomas, Ont., was born there, May 31, 1899, and entered railway service in 1906, since when he has been, to 1910, apprentice, Michigan Central Rd. shops, St. Thomas, Ont.; 1910 to 1912, mechanic in various automobile shops in Detroit, Mich.; 1912 to 1914, machinist and leading hand, C.P.R., at various points in Ontario; 1914 to Oct. 1920, successively, piece work inspector, erecting shop foreman, general piece work inspector, general locomotive house foreman, and assistant general foreman, Michigan Central Rd., St. Thomas, Ont.

Thomas Harrison Best, whose appointment as Assistant to Treasurer, Canadian Northern Ry. System, and Grand Trunk Pacific Ry., Toronto, was announced in our last issue, was born at Toronto, Oct. 6, 1893, and entered transportation service in July 1912, since when he has been, to Nov. 1913, clerk, Treasurer's office, Canadian Northern Ry., Toronto; Nov. 1913 to Oct. 1915, cashier, Canadian Northern Steamships Ltd., Montreal; Oct. 1915 to Jan. 1918, clerk, Treasurer's office, Canadian Northern Ry., Toronto; Jan. 1918 to Sept. 1920, chief clerk, Treasurer's office, Canadian Northern Ry. System, Toronto.

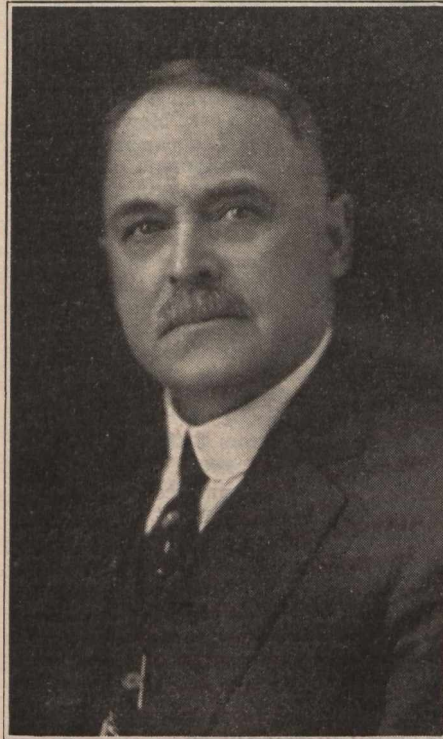
Lt.-Col. Frank Bond, who died at Montreal, Nov. 21, aged 76, was father of Major F. L. C. Bond, Chief Engineer, G. T. R., there.

W. Borbridge, Master Mechanic, Montreal Division, Quebec District, C.P.R., Montreal, was presented with a purse of money, Nov. 10, by a number of friends, on the occasion of his retirement on superannuation. He was born at St. Johns, Que., Apr. 12, 1855, and entered railway service in 1872, since when he has been, to 1874, brakeman, Brockville & Ottawa Ry. and Canada Central Ry.; 1874 to 1879, fireman, and fitter in locomotive house, same roads; 1879 to 1898, locomotive man, same roads, and their successor, the C.P.R.; 1898 to May 1907, Road Foreman of Locomotives, C.P.R.; May 1907 to Mar. 1910, District Master Mechanic, C.P.R., Ottawa, Ont.; Mar. 1910 to his retirement, Master Mechanic, District 3, Quebec Division; Master Mechanic, District 2 and Montreal Terminals, Quebec Division; and Master Mechanic, Montreal Division, Quebec District, C.P.R., Montreal.

F. P. Brady, who has been appointed Assistant to the Executive, Canadian National Rys., Toronto, was born at Haverhill, N.H., June 22, 1853, and entered railway service 1869 as station baggage-master Passumpsic Ry., since when he has been consecutively: 1873 to 1880, train dispatcher Northern Rd., at Concord, N.H.; 1880 to 1888, Chief Train Dispatcher Southeastern Ry., at Richford, Vt.; 1888 to 1889, Trainmaster, C.P.R.; 1889 to 1898, Assistant Superintendent, C.P.R.; 1898 to May, 1901, Superintendent, C.P.R. at Smiths Falls, Ont.; May 1901 to Sept. 1902, Superintendent districts 10 and 11, C.P.R., at Toronto; Sept. 1902 to May, 1903, Superintendent district 19, C.P.R., at Fort William, Ont.; June 1, 1903 to Feb. 1904, Assistant General Superintendent, Central Division, C.P.R., Winnipeg, Man.; Feb. 1904 to Sept. 16, 1908, General Superintendent, Lake Superior Division, C.P.R., North

Bay, Ont.; May 1, 1908 to June 1909, Member of Canadian Government Railways Board of Management; June, 1909, to June 1913, also General Superintendent, Canadian Government Railways, Moncton, N.B.; June 1913, on the abolition of the Canadian Government Railways Managing Board, to May 1915, General Superintendent, Canadian Government Rys., Moncton, N.B.; May, 1915, to June 1, 1917, General Superintendent, Canadian Government Rys., Cochrane, Ont.; June 1, 1917, to Dec. 1, 1918, General Manager, Western Lines, Canadian Government Rys., Winnipeg, Man.; Dec. 1, 1918 to Nov. 1920, General Manager, Eastern Lines, Canadian Northern Ry., and latterly Canadian National Rys., Montreal.

Charles Edward Brooks, who has been appointed Mechanical Assistant, Locomotive Department, to Vice President, Operation and Maintenance, Canadian National Rys., Toronto, was born at Con-



J. R. Cameron, Assistant General Manager, Lines West of Edmonton, Alta., Canadian National Railways.

stantinople, Turkey, July 3, 1886, and entered railway service in 1905, since when he has been, to 1908, apprentice, G.T.R., Montreal, 1908 to 1914, machinist, draftsman, and Locomotive Foreman, Grand Trunk Pacific Ry., successively, Portage la Prairie and Rivers, Man., Watrous and Regina, Sask., Wainwright and Edmonton., Alta.; 1914 to May 1915, General Foreman, G.T.P.R., Transcona, Man.; May 1915 to Oct. 1, 1920, Superintendent of Motive Power, G.T.P.R., Transcona.

C. B. Brown, Engineering Assistant to Vice President, Operation and Maintenance, Canadian National Rys., Toronto, was presented with a silver tea service by the engineering staff at Moncton, N.B., Nov. 18, on leaving there, where he was Chief Engineer, for Toronto.

G. B. Burpee, General Agent, Passenger Department, C.P.R., Cleveland, Ohio, was married at St. John, N.B., Nov. 11,

to Miss E. Kimball.

Lady Bury, wife of Sir Geo. Bury, formerly Vice President, C.P.R., is spending some time in Montreal.

Joseph Robert Cameron, whose appointment as Assistant General Manager, Western Lines, Canadian National Rys., Vancouver, B.C., was announced in our last issue, was born at Truro, N. S., Nov. 5, 1865, and educated there. He entered railway service in 1882, since when he has been, to 1885, in C.P.R. service in Winnipeg; 1886 to 1901, in Northern Pacific Ry. service at Winnipeg, and Grand Forks, N.D.; 1902 to 1906, Superintendent of lines under construction, Canadian Northern Ry., Winnipeg; 1906 to 1908, Superintendent, C.N.R., Port Arthur, Ont.; 1908 to 1911, General Superintendent, Western Lines, C.N.R., Winnipeg; 1911 to Aug. 31, 1920, Assistant General Manager, Western Lines, Canadian National Rys., Winnipeg.

D. R. Campbell, whose appointment in charge of Construction Department, Western Lines, Canadian National Rys., Winnipeg, was announced in our last issue, was presented with a purse of money and an engraved gold match case by the local staff, Nov. 10, on leaving Vancouver, where he was General Superintendent, Pacific Division, C.N.R.

Ronald Chisholm, whose appointment as Inspector of Agencies, Western Lines, Canadian National Rys., and Grand Trunk Pacific Ry., Edmonton, Alta., and east, at Winnipeg, was announced in our last issue, was born at Georgeville, N.S., Feb. 25, 1871, and entered C.P.R. service Dec. 1, 1891, resigning therefrom July 3, 1918, when he entered Canadian National Rys. service and was Inspector of Agencies, Western Lines, Winnipeg.

E. J. Chamberlin, of Ottawa, formerly President, G.T.R., and G.T. Pacific Ry., and Mrs. Chamberlin, will spend the winter in the southern states.

D. C. Coleman, Vice President, C.P.R. Western Lines, returned to Winnipeg recently after a trip of inspection over the company's lines between Winnipeg and the Pacific coast. He was accompanied on the trip by A. Kelley, G. F. Galt, and G. W. Allan, M.P., of Winnipeg, and Mayor Whitmore, of Regina, Sask.

W. G. Connolly, whose appointment as City Passenger Agent, Canadian National Rys. and Grand Trunk Pacific Ry., Vancouver, B.C., was announced in a recent issue, was born at McAdam Jct., N.B., May 28, 1889, and entered railway service July 1, 1906, since when he has been, to Mar. 9, 1909, stenographer and ticket clerk, G.T.R., Ottawa, Ont.; Mar. 9, 1909, to June 1, 1910, ticket clerk, G.T.R., Montreal; June 1, 1910, to Nov. 1, 1914, Assistant City Passenger and Ticket Agent, Grand Trunk Pacific Ry., Vancouver, B.C.; Nov. 1, 1914, to June 1, 1915, acting City Passenger and Ticket Agent, G.T.P.R., Vancouver, B.C.; June 1, 1915, to Sept. 10, 1920, City Passenger and Ticket Agent, G.T.P.R., Vancouver, B.C.

Mrs. John Crerar, who died at Hamilton, Ont., Nov. 22, after a short illness, was the mother of Lady George McLaren Brown, wife of the General European Manager, C.P.R., London, Eng.

David Crombie, whose appointment as Transportation Assistant to Vice President, Operation and Maintenance, Canadian National Rys., Toronto, was an-

nounced in our last issue, was born at Hamilton, Ont., May 13, 1864, and entered railway service in June, 1882, since when he has been, to 1887, telegraph operator, G.T.R.; 1887 to 1889, ticket agent, same road, Chatham, Ont.; 1889 to 1890, dispatcher, same road, London, Ont.; 1890 to 1892, dispatcher, Flint and Pere Marquette Rd., Saginaw, Mich.; 1892 to 1894, car distributor, same road; 1894 to Jan. 1, 1900, Superintendent of Car Service, same road; Jan. 1 to July 1900, Superintendent of Car Service, Pere Marquette Rd., Detroit, Mich.; July 1900 to 1893, Superintendent of Transportation, same road; 1903 to Feb. 1907, in private business; Feb. to Oct. 1907, Master of Transportation, Middle Division, G.T.R., London, Ont.; Oct. 1907 to Nov. 22, 1910, Assistant to General Transportation Manager, same road, Montreal; Nov. 22, 1910, to Jan. 14, 1913, Assistant to Vice President, Transportation, Maintenance and Construction, same road, Montreal; Jan. 14 to Aug. 1, 1913, General Superintendent of Transportation, same road, Montreal; Aug. 1913 to May 1914, Inspector of Transportation, Pere Marquette Rd., Detroit, Mich.; May 1914 to Nov. 1916, Inspector of Transportation, Canadian Northern Ry., Toronto; Nov. 1916 to Nov. 1, 1920, General Superintendent, Ontario District, Canadian National Rys., Toronto.

M. C. Dunn, who has been appointed City Passenger Agent, Canadian National Rys. and City Freight Agent, Canadian National-Grand Trunk Rys., Kingston, Ont., was born at Enterprise, Ont., Dec. 16, 1864, and entered railway service in Oct. 1888, since when he has been, to Mar. 1912, agent and operator, Bay of Quinte Ry., Yarker, Ont.; Mar. 1912 to Oct. 1920, City Freight and Passenger Agent, Canadian Northern Ry., latterly, Canadian National Rys., Kingston, Ont.

W. H. Ellis, formerly Dean, Applied Science Faculty, Toronto University, who died in Muskoka, Aug. 23, left an estate valued at \$43,348, to his widow.

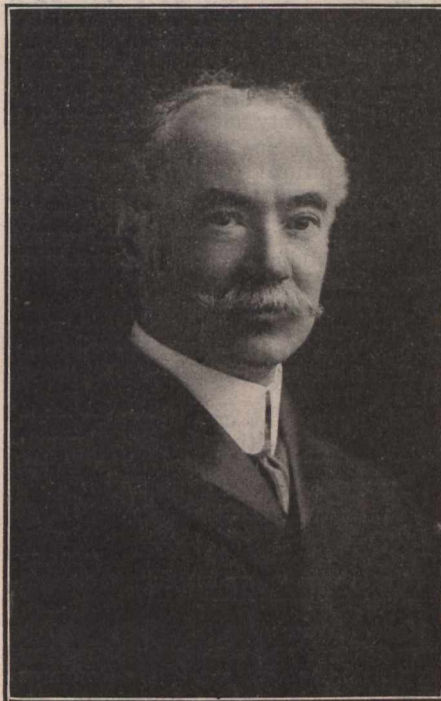
Frank C. Foy, who has been appointed Canadian Passenger Agent, New York Central Rd., Toronto, was born there, July 5, 1881, and entered transportation service in Oct. 1900, since when he has been, to Sept. 1902, stenographer, Niagara Navigation Co., Toronto; Sept. 1902 to Oct. 1903, stenographer, New York Central Rd., Toronto; Oct. 1903 to Oct. 1908, City Ticket Agent, N.Y.C.R., Toronto; Oct. 1908 to June 1918, Canadian Passenger Agent, N.Y.C.R., Toronto; June to Sept. 1918, Passenger Agent, N.Y.C.R., Buffalo, N.Y.; Sept. to Dec. 1918, Passenger Agent, N.Y.C.R., Albany, N.Y.; Dec. 1918 to Sept. 1919, acting General Agent, N.Y.C.R., Utica, N.Y.; Sept. 1919 to Nov. 1, 1920, City Passenger Agent, N.Y.C.R., New York, N.Y.

Major Robt. Douglas Galbraith, M.C., C.E., son of the late John Galbraith, sometime Dean Applied Science Faculty, Toronto University, who died in Toronto, Sept. 12, as a result of war injuries, left an estate valued at \$15,359.

Thomas Ginnelly, whose appointment as Assistant Freight Claims Agent, C.N. R. Western Lines, Grand Trunk Pacific Ry., and Grand Trunk Pacific Coast Steamship Co., Vancouver, B.C., was announced in our last issue, was born in Ireland, Feb. 11, 1880, and entered transportation service Nov. 18, 1898, since when he has been, to Oct. 1900, clerk, Local Freight Department, Midland & Great Western Ry., Sligo, Ireland; Oct. 1900 to Sept. 1901, clerk, Passenger De-

partment, same road, Clanmorris, Ireland; Sept. 1901 to June 1902, clerk, Local Freight Department, same road, Balinasloe, Ireland; June to Dec. 1902, clerk, Local Freight Department, same road, Westport, Ireland; Dec. 1902 to July 1903, assistant local agent, same road, Ballisadare, Ireland; July 1903 to Mar. 1909, Assistant Superintendent, same road, Sligo, Ireland; Mar. 1909 to June 1910, clerk, Freight Claims Department, C.P.R., Winnipeg; June 1910 to 1914, clerk, Freight Claims Department, Canadian Northern Ry., Winnipeg; 1914 to Oct. 1920, chief clerk, Freight Claims Department, Canadian Northern Ry., latterly Canadian National Rys., Winnipeg.

A. S. Goodeve, member of the Board of Railway Commissioners for Canada, died at the Toronto General Hospital, Nov. 22, following an operation which he underwent on Nov. 11. He was born at Guelph, Ont., Dec. 15, 1860, and educated at the public and high schools there. He was a graduate and medallist of the Ontario College of Pharmacy, and was in business as a druggist at Chesley, Bruce County, Ont., from 1884 to



A. S. Goodeve,
Member, Board of Railway Commissioners for
Canada.

1896. He went to Rossland, B.C., in 1896, in the same business, and was for three years a member of the city council, and Mayor in 1899-1900. In 1902 he was Provincial Secretary for British Columbia; 1909-1910, member of the B. C. Forestry Commission; was elected to the Dominion Parliament for Kootenay in 1908, and was appointed Conservative-western whip, and assistant chief whip in 1911. He was appointed a member of the Board of Railway Commissioners for Canada, in Apr. 1912. The funeral took place at Ottawa, Nov. 24.

Frederick Passmore Gutelius, Vice President and General Manager, Delaware Hudson Rd., Albany, N.Y., who has been retained by the Ontario Government Commission enquiring into the proposed hydro radial railway system, arrived in Toronto, Nov. 24, was born at Mifflinburg, Pa., Dec. 21, 1864, and graduated from Lafayette College as civil engineer in 1887. He entered railway service in

1888, since when he has been, to 1892, Assistant Engineer and Assistant Supervisor, Pennsylvania Rd., Pittsburg, Pa.; 1885 to 1898, General Superintendent, Columbia & Western Ry.; 1898 to 1900, Superintendent, C.P.R., Nelson, B.C.; 1900 to 1902, in various positions in Engineering Department, C.P.R.; 1902 to Mar., 1906, Engineer, Maintenance of Way, C.P.R., Montreal; Mar. 1906 to Sept. 15, 1908, Assistant Chief Engineer, Eastern Lines, C.P.R., Montreal; Sept. 15, 1908, to Dec. 30, 1910, General Superintendent, Lake Superior Division, C.P.R., North Bay, Ont.; Dec. 30, 1910, to Jan. 1913, General Superintendent, Eastern Division, C.P.R., Montreal; Jan. 1912 to Apr. 30 1913, one of the commissioners investigating expenditures and other matters in connection with the construction of the National Transcontinental Ry. On the abolition of the Government Railways Managing Board in May, 1913, he was appointed General Manager, Canadian Government Railways, with all powers usually vested in the executive of railway corporations, reporting to the Minister of Railways and Canals. He resigned in May 1917, on his appointment as Vice President, Delaware & Hudson Co., Albany, N.Y., and on the taking over of the management of the U.S. railways by the U.S. Railroad Administration, during the war, he was appointed Federal Manager, Delaware & Hudson Rd., and on the relinquishment of that control, Mar. 1, was appointed Vice President and General Manager of that road and its allied properties.

Miss Madeleine M. Hall, daughter of Grant Hall, Vice President, C.P.R., is announced as being engaged to H. S. Day, of Montreal.

Geo. Ham, of the headquarters staff, C.P.R., Montreal, was entertained to dinner at Toronto, at the end of October, by the Toronto Women's Press Club.

Jas. Higgins, who was a boiler maker in Leaside shops, Canadian National Rys., and gave up his position to become a soldier-labor candidate for the representation of Northeast Toronto in the Ontario Legislature, at the by-election on Nov. 8, polled 1,882 votes, against 8,035 for Major A. C. Lewis, Conservative, and 4,351 for Major W. H. Kippen, Liberal.

Sir Hormidas Laporte, one of the Canadian National Railways' directors, returned to Montreal from Europe on Nov. 13.

Z. A. Lash, K.C., Senior Counsel, Canadian National Rys., and President, Great North Western Telegraph Co., who died at Toronto, Jan. 24, left an estate valued at \$756,586, which will be divided equally between his three sons, Miller Lash, Z. G. Lash, and J. F. Lash, Toronto, and his daughter, Mrs. K. D. Macmillan, Aurora, N.Y.

Louis Lavoie, who has been appointed General Purchasing Agent, Canadian National Rys., Toronto, was born at Rimouski, Que., June 22, 1879, and entered railway service Oct. 1, 1894, since when he has been, to Nov. 1901, clerk, General Manager's office, Intercolonial Ry., Moncton, N.B.; Nov. 1901 to Aug. 1902, stenographer to Manager's Assistant, I.R.C., Moncton, N.B.; Aug. 1902 to Sept. 1904, secretary to General Superintendent, I.R.C., Moncton, N.B.; Sept. 1904 to Nov. 1909, chief clerk to General Superintendent, I.R.C., Moncton, N.B.; Nov. 1, 1909, to Mar. 1910, Purchasing Agent, Canadian Government Rys., Ottawa, Ont.; Mar. 1910 to Nov. 1918, Purchasing Agent, Canadian Government Rys., Rail-

ways and Canals Department, Ottawa, and from 1913 to Nov. 1918, also Purchasing Agent for Hudson Bay Ry. and the Port Nelson terminals; Nov. 1918 to Nov. 1920, Assistant General Purchasing Agent, Canadian National Rys., Toronto.

Frank Lee, Engineer Maintenance of Way, C.P.R., Winnipeg, was married to Miss Ruth Skeel, of Cleveland, Ohio, recently.

Capt. G. L. Lumsden, formerly of the overseas air force, and son of Hugh D. Lumsden, at one time Chief Engineer, National Transcontinental Ry., and now of Orillia, Ont., was married at Brantford, Oct. 30, to Miss E. H. Digby.

M. H. MacLeod, Vice President, Construction, Canadian National Rys., and E. Langham, who has retired from the position of General Purchasing Agent, will sail from Vancouver, B.C., towards the end of December, by Canadian Government Merchant Marine, s.s. Canadian Highlander, for a trip to Australia and New Zealand.

M. J. Maguire has been appointed General Manager, Dublin & Southeastern Ry. in Ireland.

Charles Frederick Martin, whose appointment as Superintendent of Transportation, lines west of Edmonton, Alta., Canadian National Rys., Vancouver, B.C., was announced in a recent issue, was born at Farnham, Que., July 27, 1886, and entered railway service in Oct. 1900, since when he has been, to Oct. 1903, messenger, C.P.R., Farnham, Que.; Oct. 1903 to July 1904, car checker, C.P.R., Farnham, Que.; July 1904 to Apr. 1906, clerk, Mechanical Department, C.P.R., Farnham, Que.; Apr. 1906 to Nov. 1908, stenographer, C.P.R., Farnham, Que.; Nov. 1908 to Apr. 1910, secretary to General Superintendent, Western Division, C.P.R., Calgary, Alta.; Apr. 1910 to May 1911, secretary to General Manager, Western Lines, C.P.R., Winnipeg; May 1911 to June 1912, chief clerk, C.P.R., Kenora, Ont.; June to Nov. 1912, General Yardmaster, C.P.R., Souris, Man.; Nov. 1912 to Aug. 1915, in private business in Winnipeg; Sept. 1915 to Oct. 1917, chief clerk, Car Service Department, Canadian Northern Ry., Winnipeg; Oct. 1917 to Aug. 31, 1920, Inspector of Transportation, Canadian National Rys., Winnipeg.

Herbert Robert Mathewson, who has been appointed Assistant General Agent, Passenger Department, C.P.R., Chicago, Ill., was born in July, 1883, and entered C.P.R. service Feb. 1, 1904, since when he has been, to Aug. 25, 1905, clerk and stenographer, Passenger Department, Montreal; Aug. 25, 1905, to Mar. 15, 1906, not in railway service; Mar. 15, 1906, to Mar. 17, 1911, stenographer and clerk, District Passenger Agent's office, Toronto; Mar. 17, 1911, to Mar. 29, 1912, chief clerk, General Agent's office, Passenger Department, Chicago, Ill.; Mar. 29 to May 20, 1912, acting District Passenger Agent, Toronto; May 20, 1912, to July 29, 1913, chief clerk to Eastern Passenger Agent, New York; July 29, 1913, to June 13, 1916, chief clerk to District Passenger Agent, Toronto; June, 1916, June 1916, Travelling Passenger Agent, Chicago, Ill.; and subsequently to Dec. 1, 1917, excursion clerk, General Passenger Department, Montreal; Dec. 1, 1917, to Nov. 1920, Travelling Passenger Agent, St. John, N.B.

George G. McKay, who has been appointed General Agent, Passenger Department, Canadian Pacific Ocean Services Ltd., Chicago, Ill., was born at Hamilton, Ont., June 13, 1878, and en-

tered transportation service in 1893, since when he has been, to June 1905, operator and ticket agent, G.T.R., at various points in Ontario; June 1905 to June 1906, ticket agent, Pere Marquette Rd. and Cincinnati, Hamilton & Dayton Rd., Detroit, Mich.; June 1906 to Oct. 1911, City Passenger and Ticket Agent, C.P.R., Detroit, Mich.; Oct. 1911 to June 1916, City Passenger and Ticket Agent, C.P.R., Chicago, Ill.; June 1916 to June 1920, Travelling Passenger Agent, C.P.R., Detroit, Mich.; June to Nov., 1920, Assistant General Agent, Passenger Department, C.P.R., Chicago, Ill.

Mrs. McNicoll, widow of David McNicoll, formerly Vice President, C.P.R., returned to Montreal, early in November, after spending several weeks in British Columbia and Alberta.

E. F. Merritt has been appointed Works Manager, Lancashire & Yorkshire Ry. carriage and wagon works, at Newton Heath, Eng.

Donald Miller, a Wabash Ry. locomotive man, was, it is stated in a press dispatch, presented recently at St. Thomas, Ont., with the Brotherhood of Locomotive Engineers long service badge, after 40 years active membership. He is said to have driven a locomotive 44 years, and to be the oldest member, in years of service, of the order in Canada, and among the twenty oldest in America.

Jas. Mills, at one time President, Ontario Agricultural College, Guelph, afterwards a member of the Board of Railway Commissioners, and now the Board's Librarian at Ottawa, has been honored by a new building at the college being named Mills' Hall.

A. J. Mitchell, Vice President, Finance and Accounts, Canadian National Rys., who left Toronto, Sept. 28, for England, on official business, returned to Toronto Nov. 13.

S. N. Parent, at one time Chairman, National Transcontinental Ry. Commission, who died at Montreal, Sept. 7, left an estate valued at \$470,200.

T. P. Phelan, President, Canada Railway News Co., Toronto, bought three horses in the United States recently, which will race under his colors, on Canadian tracks, next year.

Prince Purachatra, brother of the King of Siam, and who is Commissioner General of the Siamese State Railways, visited Canada during November, and spent some time in the C.P.R. Angus shops, Montreal. He was educated in England, and is visiting various countries, to obtain hints for the improvement of the Siamese railways.

Mrs. Rutherford, wife of J. G. Rutherford, C.M.G., one of the Board of Railway Commissioners, and Miss Rutherford, have returned to Ottawa, after spending some time in British Columbia.

Hon. J. D. Reid, Minister of Railways and Canals, who left for England about the middle of September, accompanied by Mrs. and Miss Reid, returned to Ottawa Nov. 29.

Brig. General H. N. Ruttan, C.M.G., who has been elected an honorary member of the Engineering Institute of Canada, was one of the charter members of the Canadian Society of Civil Engineers in 1887, and was President in 1910. He entered G.T.R. service in 1866, on the engineering staff, and three years later transferred to the Intercolonial Ry., and in 1872-73, was in charge of the engineering and construction of 50 miles of that line along the Baie des Chaleurs. He transferred to the Dominion Govern-

ment's service in connection with the C. P.R., in 1874, and made some of the first surveys for that line along the north shore of Lake Superior, and in the following year was in charge of a survey party to select a line for the C.P.R. between Edmonton, Alta., and the Yellowhead Pass. He was engaged on this for nearly two years, and located the line now generally followed by the Canadian Northern and Grand Trunk Pacific Rys. From 1877 to 1880 he was in charge of the engineering work between Winnipeg and Kenora (then Rat Portage), and in the latter year he commenced private practice in Winnipeg. He was appointed City Engineer, Winnipeg, in 1886, and retired in 1914, being appointed Consulting Engineer.

Lord and Lady Shaughnessy spent the first week end in November with the Governor General and Duchess of Devonshire, at Rideau Hall, Ottawa.

Hon. Mrs. A. T. Shaughnessy, the widowed daughter in law of Lord Shaughnessy, Chairman, C.P.R., was married to Hon. Piers Legh, son of Lord Newton, at London, Eng., Nov. 15. The Prince of Wales was present and gave gifts to the bride and bridegroom. Among the other givers of presents were the Duke of Connaught, the Prince of Wales' household, Lord Shaughnessy, and C. R. Hosmer, one of the C.P.R. directors.

Henry J. Small, formerly Superintendent of Motive Power and Machinery, Southern Pacific Co., Sacramento, Cal., died at Berkeley, Cal., at the end of October. He was born at Cobourg, Ont., and educated at the Normal School, Toronto. He entered railway service in 1863, with the Chicago & Northwestern Ry. at Chicago, Ill., the whole of his railway service being in the U.S.

E. Stephenson, town ticket agent, G.T.R., Whitty, Ont., died Nov. 22, as a result of a paralytic stroke.

Sir Thos. Tait, President, Fredericton & Grand Lake Coal & Ry. Co., and heretofore Vice President, Canadian Salt Co., Windsor, Ont., has also been elected President of the latter company, succeeding E. G. Henderson, who died recently.

W. K. Thompson, formerly Superintendent, District 3, Ontario Division, C. P.R., Toronto, and who retired from the service about 6 years ago, died at Toronto Nov. 22, aged 66.

H. H. Vaughan, consulting engineer, Montreal, formerly Assistant to Vice President, C.P.R., is now engaged for the G.T.R., in connection with the valuation of its equipment, for the arbitration to settle the amount to be paid by the Dominion Government for certain of the company's capital stock.

R. C. Vaughan, who has been appointed Vice President in charge of Purchases, Supplies, and Stores, Canadian National Rys., Toronto, was born there, Dec. 1, 1883, and entered railway service Oct. 3, 1898, since when he has been, to Mar. 1902, office boy, clerk and stenographer, General Freight Agent's office, C.P.R., Toronto; July to Dec. 1902, in Freight Department, G.T.R., Toronto; Jan. 1903 to July 1, 1910, clerk, secretary to Third Vice President and General Manager, and chief clerk to Third Vice President, Canadian Northern Ry., Toronto; July 1, 1910, to Oct. 1918, Assistant to Third Vice President, C.N.R., Toronto; Oct. 1918 to Nov. 1920, Assistant to President, Canadian National Rys., Toronto.

N. B. Walton, whose appointment as Assistant General Superintendent, Canadian National Rys., with jurisdiction over Grand Trunk Pacific Ry. lines between

Edmonton, Alta., and Prince Rupert, B. C., with office at Prince Rupert, was announced in a recent issue, was, on Oct. 26, when he returned to Edmonton to remove his family, presented with \$1,000 and a set of Crown Derby china, for Mrs. Walton, by the G.T.P.R. staff there, where he was Superintendent formerly.

Archibald Watt, whose appointment as Assistant Master Mechanic, Canadian National-Grand Trunk Pacific Rys., Smithers, B.C., was announced in our last issue, was born at St. Louis, Que., Mar. 5, 1874, and entered railway service July 26, 1890, since when he has been, to Sept. 1892, wiper, G.T.R., Montreal; Sept. 1892, to Oct. 1897, fireman, G.T.R., Montreal; Oct. 1897 to Oct. 1901, locomotive man, G.T.R., Montreal; Oct. 1902 to Aug. 1906, machinist, G.T.R., Montreal; Aug. 1906 to Mar. 1907, Locomotive Foreman, Central Vermont Ry., St. Albans, Vt.; Mar. to Sept. 1907, Locomotive Foreman, G.T.R., Montreal; Sept. 1907 to Jan. 1908, machinist, G.T.R.; Mar. to Aug. 1908, machinist, Grand Trunk Pacific Ry., Saskatoon, Sask.; Aug. to Dec. 1908, Locomotive Foreman, G.T.P.R., Melville, Sask.; Dec. 1908 to June 1909, Locomotive Foreman, G.T.P.R., Wainwright, Alta.; June to Dec. 1909, machine foreman, G.T.P.R. Edmonton, Alta.; Jan. 1910 to June 1912, Locomotive Foreman, G.T.P.R., Prince Rupert, B.C.; June 1912 to Apr. 1916, General Foreman, G.T.P.R., Prince Rupert, B.C.; Apr. 1916 to Nov. 1920, District Master Mechanic, Mountain Division, G.T.P.R., Smithers, B.C.

James Waugh, who has been appointed Commercial Agent, Canadian National Rys., G.T.R., G.T. Pacific Ry. and G.T. Pacific Coast Steamship Co., San Francisco, Cal., entered G.T.R. service in 1891 as clerk in the Commercial Express Line office at Milwaukee, Wis., since when he has been, from 1894 to 1900, Soliciting Freight Agent, same line, Chicago, Ill.; 1900 to July 1, 1905, Travelling Freight Agent, same line, Detroit, Mich.; July 1, 1905, to July 1908, Michigan State Agent, Reading Dispatch Line, Detroit; July 1908 to Oct. 31, 1911, Travelling Freight Agent, G.T.R., Philadelphia, Pa.; Oct. 31, 1910, Commercial Agent, G.T.R. System, 1911 to July 1915, Commercial Agent, G.T.R., Omaha, Neb.; July 1915 to Oct. 25, San Francisco, Cal.

R. H. Webster, Commercial Agent, Canadian National Rys., Moncton, N.B., was presented with a silver tea service by the local Freight Department staff, Nov. 6, on the occasion of his marriage with Miss A. Crandall, of St. John, N.B., Nov. 9.

H. K. Wicksteed, B.A.Sc., Chief Engineer of Location, Canadian National Rys., Toronto, has gone to Brazil, expecting to be away three months.

Responding to petitions received from carriers throughout the U.S. showing that further time is necessary to make changes in freight and passenger rates under the provisions of section 4 of the Act to Regulate Commerce, the Interstate Commerce Commission on Nov. 2 postponed effective date of its orders heretofore issued until Mar. 1, 1921, as to rates and charges for transportation of freight; and until Mar. 1, June 1, and Oct. 1, 1921, as to various classes of passenger fares and charges.

The Montreal Chamber of Commerce is reported to have passed a resolution asking the Board of Railway Commissioners to re-establish the pre-war custom of issuing excursion tickets at reduced fares for week ends and holidays.

The Quebec and Chibougamau Railway Project.

Canadian Railway and Marine World is officially advised that the Quebec Government has made a contract with the Quebec and Chibougamau Ry. Co. for building the first 50 miles of its railway from Chicoutimi to St. Felicien. Construction is to be started by May 1, 1921, and the 50 miles is to be completed and ready for operation by May 1, 1923. This piece of line will form part of 120 miles of main line and branches for which the Quebec Legislature last session voted a subsidy of 4,000 acres of land a mile, not convertible into cash by the Government. The line to be constructed is described as follows:—From the Quebec & Lake St. John Ry., near Chicoutimi, as far as, or near a point on, the James Bay Ry. in Demeules Tp., to the west of Lake St. John, running through the region east and north of the lake, the length of the main line and branches being 120 miles.

Chicoutimi, on the Saguenay River, is the terminus of a section of the Quebec & Lake St. John Ry., 227 miles from Quebec, and 51 miles from Chambord Jct., whence another section of the line 12.01 miles long extends to Roberval, from where a 17.6 mile section, built under the James Bay Ry.'s charter, carries the line to St. Felicien, on the Chamouchouan River. The proposed new line when completed will therefore extend from St. Felicien, on the west side of Lake St. John, round its northern and eastern shores, to Chicoutimi, on the Saguenay River, which, flowing from the eastern side of the lake, carries its waters to the Gulf of St. Lawrence, and will form, with the sections of the Quebec & Lake St. John Ry. and James Bay Ry., referred to, a belt line round the lake.

The Quebec & Chibougamau Ry. Co. was incorporated at the Quebec Legislature's last session to build a railway from Quebec to Chicoutimi, and thence northerly along the Mistassini River valley to Lake Chibougamau, about 180 miles north of Lake St. John, with branch line. The total length of the line from Quebec to Lake Chibougamau is estimated at 400 miles, irrespective of branch lines. The projected route of the line from Chicoutimi to St. Felicien connected with the route of the line subsidized by the Legislature, hence the contract with the Q. & C. Ry. Co.

The company is reported to have deposited a considerable sum with the Government as a guarantee, and to have agreed to wait until the completion of construction of the whole line before receiving the subsidy. The surveys for the line are reported to have been practically completed, and contracts for ties and other timber to have been let.

The route of the projected line from Quebec to Chicoutimi would follow the valleys of the Montmorency and the Jacques Cartier Rivers, and would give a line approximately 137 miles long, against the present C.N.R. line of 227 miles via Chambord Jct. From Chicoutimi the line would run north of the Saguenay River, to the north of Lake St. John, and along the Mistassini River valley to Lake Chibougamau, approximately 180 miles north of the lake. The country through which the first section of the line would pass through a good deal of timber, and is generally very similar to that through which the Quebec & Lake St. John Ry. runs. The territory between Chicoutimi and St. Felicien is reported to be twice as great in

area as the district already settled on the south shore of Lake St. John. It possesses valuable untouched forests, large areas of level agricultural land, and an excellent climate. There are in operation at Jonquiere, Kinogami, Chicoutimi and Port Alfred large paper, pulp and sulphite mills to which the pulpwood taken will be handled. The Mistassini River valley is reported to be rich in timber, and to have numerous large waterpowers, and at Lake Chibougamau there are reported to be deposits of magnetic iron, copper and asbestos awaiting development.

The Q. & C. Ry. Co. is being financed by New York and London, Eng., capital, the syndicate being represented in Canada by a provisional board of directors consisting of H. C. Thomson, London, President; Captain M. C. Eastman, of the Royal Engineers, Vice President and General Manager; H. L. F. Blake, mining expert; J. G. Scott, formerly General Manager, Quebec & Lake St. John Ry. and General Manager, Great Northern Ry.; and J. F. Grenon, C.E., Chicoutimi.

Scarcity of Cross Ties in the United States.

Owing to the unprecedented levels to which prices of railway cross ties have risen, the Pennsylvania Rd. has decided to investigate the adaptability of the hardwoods of Central and South America for this purpose. Enquiries have been started along several lines, not only to ascertain how much more cheaply ties, or the material for ties, can be purchased in those countries, but also to investigate the question of the longer life of ties made from the southern hardwoods, as compared with those made from the North American native woods heretofore chiefly used. Under normal conditions the Pennsylvania Rd. uses from 5,000,000 to 6,000,000 annually. White oak, the most desirable North American wood for this purpose, is becoming rapidly scarcer. The other available woods in the U.S. have a very short life as ties, unless creosoted, which adds materially to their cost. The average net cost of railroad ties ready for placing in the roadbed has risen fully 100% since the beginning of the war.

Manganese Steel Rails Ordered—The Southern Pacific Co. has ordered 2,000 tons of manganese steel rails, at a reported cost of \$375,000. It is to be used on curves of from 6 to 12 deg. between Kern Jct. and Tehachapi, Cal., 47 miles, and between Truckee and Blue Canyon, Nev., 41 miles. It is said that the decision to use manganese rail for curves on these divisions is primarily a safety measure and is based on the experience of the Delaware, Lackawanna & Western Rd. The Southern Pacific Co. will use the manganese rail both for outer and inner rail. The manganese content will be 10.5-15.0%, carbon running 0.92 to 1.10%. The rail will be quenched in water immediately after passing the hot-saws. The rail webs at the ends will be drilled with high speed drills and copper plugs will be pressed and sweated in, to provide for rail bonding, since track drills are not capable of drilling the steel.

The C.P.R. is reported to have arranged for a heavy movement of grain from Goderich, Ont., during this winter.

Locomotive House Organization.

By E. R. Webb, Master Mechanic, Michigan Central Rd., St. Thomas, Ont.

To have a proper locomotive house organization it would be necessary first to have proper supervision. This means to have enough of the right class of men to handle the work according to the size of the locomotive house and the number of locomotives dispatched per day. The next in connection with the organization is the system of handling the work.

When the locomotive arrives at the coal dock after making its trip, and has a full pressure of air, the air brake inspector should be assigned to inspect all the air, steam heat and scoop operating equipment and report any defects which he may notice. This inspection should take place while the locomotive man is inspecting the locomotive, and be reported to the engine house office as soon as the inspection is finished, so that the work report will be made out at the same time that the work is reported by the locomotive man.

The locomotive is then handled by the hostlers, coaled, sanded, fire dumped, watered, washed off and placed in the locomotive house. As soon as the locomotive arrives in the locomotive house, boiler, machinery and tank inspectors should thoroughly inspect it and the work be reported to the locomotive house office as quickly as possible, so that it may be included with reports by the locomotive man and air inspector. This work should be copied off on forms and distributed to the different departments. When it is finished the heads of these departments should have the men who have done the work sign the slips so that in case of inferior work or other trouble, the work can be traced to those responsible. The foreman should then take the slips into the locomotive house office, where the work is checked off the work book and the slip filed. As soon as the foreman of each department completes the work on a locomotive he should o.k. the locomotive on a board, which should be in every locomotive house, and made so that there is a place for each foreman of a department to o.k. his work. When the locomotive is reported o.k. on the board, final inspectors should then go over the locomotive and see that the work has been done properly and that nothing has been missed. The board or reports to the locomotive house foreman should then be o.k'd. The locomotive is then ready for service.

In case a locomotive comes in that is due for quarterly or monthly inspection, or hydrostatic test, orifice test or wash-out, a man designated to look after the reports, should have a stenciled sign placed on the front of the locomotive showing any or all inspections due.

Proper drop pits, machine shops, and tool rooms are a very essential part of the locomotive house equipment, and should be kept up to a high standard so that the very quickest turns that are always occurring in locomotive houses will not be delayed on account of having inferior machines, tools or drop pits.

It is also very important that the road foreman of locomotives should keep in close touch with the locomotive house organization and report needed work, so that the report of needed work is in the locomotive house office when the locomotive arrives at a terminal.

Many other essential features in connection with the locomotive house equipment add to its efficiency, such as heat, light and ventilation, proper facilities

for handling material, wash rooms and lunch rooms. Every effort should be made by the men in connection with the locomotive house organization to maintain the force in a harmonious and willing spirit, as it is essential that all in such an organization pull together.

The foregoing paper was read before the Central Railway Club in Buffalo, N. Y., recently.

Additional St. Lawrence Bridge for Montreal.

The question of additional bridge accommodation across the St. Lawrence River between Montreal and the south shore has been under consideration for some time, and special attention has been directed to it recently by the fact that the Montreal Harbor Commission has suggested the building of a low level bridge, with a draw span to provide for navigation. The only bridge providing for general traffic across the river is the Victoria Jubilee bridge, owned by the G. T.R., which has a 13½ ft. roadway in addition to railway tracks. A meeting of representatives of Montreal business interests was held Oct. 29, Lord Shaughnessy presiding, when the question was discussed. A deputation headed by Lord Shaughnessy waited on the Quebec Government Nov. 19 and presented the case for the provision of additional accommodation. Hon. L. A. Taschereau, Prime Minister, expressed sympathy with the plan, and pointed out that it was proposed to ask the Legislature, at its next session to provide for the erection of a bridge at Ile Perrot, and that the Dominion Government had already refused to aid such a bridge. He could not say what the Quebec Government might be prepared to do in the way of building a bridge, but the matter would be discussed and taken up again with the deputation at a future meeting.

In this connection the Montreal Central Terminal Co.'s plans were laid before the Montreal Chamber of Commerce, Montreal, on Nov. 3, when C. N. Armstrong explained the project, which was introduced in 1890. The company, he stated, provided plans for a bridge, and obtained financial support in New York, but the project was turned down on three successive occasions by the Dominion Government. The project was revived in 1912, and, after being approved by the then Minister of Public Works, the company acquired lands at a cost of about \$1,000,000 in the Cote St. Michel district. The plans provided for the erection of a bridge from somewhere between Longueuil and St. Lambert, east of St. Helen's Island, and therefrom with a single span of 1,250 ft. reach Montreal near Ontario St., the bridge to be 150 ft. above water level. At a subsequent period the charter was amended so as to provide for the construction of a tunnel. The war intervened and nothing was done. After some discussion a resolution was passed asking the Dominion Government to appoint a commission to investigate the question of the construction of a bridge or tunnel between Montreal and the south shore and of the provision of additional railway accommodation in and about Montreal.

A proposition is reported to have been submitted to the Montreal City Council by H. G. Tyrrell, formerly of Toronto, and now President of the Tyrrell Engineering Co., New York, for a franchise for a toll bridge between Montreal and Longueuil.

Canadian Traffic League's Annual Meeting, Etc.

The Canadian Traffic League, which is composed of traffic directors, managers, commissioners, and other officials in charge of traffic for industrial and commercial organizations, held its annual meeting at Toronto, Nov. 3, the President, A. W. Bell, of General Motor Co., Oshawa, Ont., in the chair. Reports were presented from the following committees:—Classification, export, express, freight claims, organization, railway legislation and bills of lading, rate construction, refrigerator and heated cars, also a special committee on shippers load and count. A number of other matters were dealt with, including the revision of the constitution.

The League's objects, as stated in the revised constitution, are:—To promote a better understanding by the public, provincial and Dominion governments, of the needs of the traffic world. To secure modification of present laws, regulations and rulings, where they are harmful to the free interchange of commerce. To advance fair dealing. To promote, conserve and protect commercial and transportation interests. To co-operate with the Board of Railway Commissioners for Canada, other organizations, and the transportation companies, thus bringing about better conditions generally.

The following officers were elected:—Honorary President, J. E. Walsh, General Manager, Canadian Manufacturers Association; Honorary Vice President, T. Marshall, Manager, Transportation Department, Toronto Board of Trade; President, F. W. Dean, Steel Company of Canada, Hamilton, Ont.; President, G. P. Ruickbie, Pulp and Paper Association, Toronto; Executive Committee, S. Brown, Manager, Transportation Department, Canadian Manufacturers Association, Toronto; N. Boyd, Gutta Percha & Rubber Co., Toronto; W. S. Campbell, Canadian General Electric Co., Toronto; W. R. Caldwell, Dominion Cannery Ltd., Hamilton, Ont.; L. R. Howe, Assistant Traffic Manager, Transportation Department, Toronto Board of Trade.

In the evening, the League held its annual supper in the Toronto Board of Trade rooms, the President, A. W. Bell, in the chair. The principal speaker was D. B. Hanna, President, Canadian National Rys., who received a very hearty welcome, spoke on a number of interesting topics, and was enthusiastically applauded on resuming his seat. Other speakers were:—J. E. Walsh, General Manager, Canadian Manufacturers Association; T. Marshall, Manager, Transportation Department, Toronto Board of Trade; W. J. Grant, District Freight Agent, C.P.R., Hamilton; R. W. Long, District Freight Agent, G.T.R., Toronto; F. W. Dean, the Association's President elect; and Acton Burrows, Proprietor, Canadian Railway and Marine World.

The Pacific Great Eastern Ry. is, according to a press report, about to begin carrying mails from Vancouver to Prince George, and other points in the Caribou District of British Columbia. The mails will be taken from Vancouver to Squamish by steamboat and will be carried thence by rail to Soda Creek, which is as far as the railway is completed, where they will be transferred to a steamboat on the Fraser River for Prince George. Heretofore the Caribou mails have been transferred at Ashcroft by stages to Barkerville and Prince George.

Transportation Appointments Throughout Canada.

The information under this head, which is gathered almost entirely from official sources, is compiled with the greatest care, so as to ensure absolute accuracy. Anyone who may notice any error in our announcements will confer a favor by advising us.

Canadian National Rys.—A. G. BARKER, heretofore Assistant to General Superintendent, Maritime District, also Supervisor of Telegraphs and Time Service, Eastern Lines, Moncton, N.B., has been appointed Superintendent, Moncton Division, Maritime District, vice W. R. Devenish, appointed General Superintendent, Ontario District, Eastern Lines. Office, Moncton, N.B.

F. P. BRADY, heretofore General Manager, Eastern Lines, Montreal, has been appointed Assistant to the Executive. Office, Toronto.

L. S. BROWN, heretofore General Superintendent, Maritime District, Eastern Lines, Moncton, N.B., has been appointed Assistant General Manager, Eastern Lines, vice W. A. Kingsland, appointed General Manager, Eastern Lines. Office, Montreal.

F. F. CAREY, heretofore Assistant Master Mechanic, Campbellton, N.B., is reported to have been appointed Assistant Master Mechanic, St. Maurice Division.

J. W. CONNELL has been appointed Assistant Freight Claims Agent, Western Lines, Winnipeg.

W. R. DEVENISH, heretofore Superintendent, Moncton Division, Maritime District, Moncton, N.B., has been appointed General Superintendent, Ontario District, vice D. Crombie, appointed Transportation Assistant to Vice President, Operation and Maintenance, as announced in Canadian Railway and Marine World for November. Office, Toronto.

A. DEVINE is reported to have been appointed Assistant Master Mechanic, Campbellton, N.B., vice F. F. Carey, transferred.

J. GLAZEBROOK, heretofore Car Foreman, Mirror, Alta., has been appointed Car Foreman, Biggar, Sask.

A. P. GORBELL, heretofore Car Accountant, Maritime District, Eastern Lines, Moncton, N.B., has been appointed Superintendent of Car Service, with jurisdiction over all lines south and east of the St. Lawrence River, vice W. N. Rippey, appointed Superintendent of Transportation, Maritime District, Eastern Lines. Office, Moncton, N.B.

J. W. JOHNSTON, Chief Inspector of Car Lighting, C.N.R., Toronto, has had his jurisdiction extended over the Grand Trunk Pacific Ry.

W. A. KINGSLAND, heretofore Assistant General Manager, Eastern Lines, has been appointed General Manager, Eastern Lines, succeeding F. P. Brady, appointed Assistant to the Executive. Office, Montreal.

E. LANGHAM, heretofore General Purchasing Agent, Toronto has retired from the service.

LOUIS LAVOIE, heretofore Assistant General Purchasing Agent, has been appointed General Purchasing Agent, succeeding E. Langham, who has retired. Office, Toronto.

J. D. McAULAY, heretofore Commercial Agent, Grand Trunk Pacific Ry., Prince Rupert, B.C., is reported to have been transferred to Foreign Freight Department, Canadian National Rys., Montreal.

J. McCLELLAND, heretofore Car Foreman, Calgary, Alta., has been appointed Car Foreman, Mirror, Alta., vice J. Glazebrook, transferred.

L. McCUTCHEON, heretofore Export and Import Freight Agent, Vancouver, B.C., has been appointed Foreign Freight Agent there, and his former position has been abolished.

J. D. MacNUTT, heretofore Inspector of Train Dispatching, Maritime District, Eastern Lines, Moncton, N.B., has been appointed Assistant Superintendent, Halifax Division, Maritime District, Eastern Lines. Office, Truro, N.S.

H. C. MEACHAM has been appointed Import Freight Agent, with supervision of import freight traffic via Atlantic and Pacific coast ports. Office, Montreal.

R. M. MITCHELL, Right of Way and Property Commissioner, C.N.R., has had his jurisdiction extended to include the G.T.P.R.



R. C. Vaughan,
Vice President, Purchases, Supplies and Stores,
Canadian National Railways.

H. M. MORGAN, General Agent, Passenger Department, G.T.R., Buffalo, N. Y., will act in the same capacity there for the C.N.R.

J. C. O'DONNELL, heretofore Superintendent, Manitoba Division, Central District, Western Lines, Winnipeg, has been appointed General Superintendent, Maritime District, Eastern Lines, vice L. S. Brown, appointed Assistant General Manager, Eastern Lines. Office, Moncton, N.B.

W. N. RIPPEY, heretofore Superintendent, Car Service, Maritime District, Eastern Lines, Moncton, N.B., has been appointed Superintendent of Transportation, Maritime District. Office, Moncton, N.B. His duties are to supervise transportation on the district generally; receive from the Superintendent of Car Service all car service orders and transmit them to district officers concerned;

distribute cars between various divisions of the district and generally supervise car supply on district; distribute locomotives between divisions (master mechanic to select the individual locomotives of each class involved); see that freight trains and cars are properly loaded, check up overtime and delays and be responsible for the economical operation of train service generally; prepare and distribute working time tables; arrange for special passenger trains; supervise the examination of train and locomotive men in connection with vision and hearing, also knowledge of train rules, air brakes, car heating and lighting, etc.; and perform such other duties as the General Superintendent may specify from time to time.

W. LE B. ROSS, heretofore Local Treasurer, G.T.P.R., Winnipeg, has been appointed Local Treasurer, C.N.R., Western Lines and G.T.P.R., vice C. H. Hickie, transferred to other duties. Office, Winnipeg.

J. G. SWALWELL, heretofore Auditor of Revenue, Grand Trunk Pacific Ry., Winnipeg, has been assigned to other duties in the C.N.R. offices there, and his former position has been abolished.

R. C. VAUGHAN, heretofore Assistant to President, has been appointed Vice President in charge of Purchases, Supplies and Stores. His jurisdiction extends also over the Canadian National Rys.' affiliated and subsidiary companies. Office, Toronto.

JAMES WAUGH, Commercial Agent, G.T.R., San Francisco, Cal., will act in the same capacity for the C.N.R., G.T.R. and G.T.P. Coast Steamship Co., vice W. F. Barry, transferred to the Passenger Department.

Canadian Pacific Ry.—F. L. HUTCHINSON, Manager in Chief of Hotels, has resigned, to take effect Dec. 31. Up to Nov. 17 no appointment of a successor had been made.

D. JONES, heretofore Locomotive Foreman, Windsor, Ont., has been appointed Locomotive Foreman, London, Ont., vice B. Pendleton, transferred.

D. R. KENNEDY has been appointed Assistant District Passenger Agent, St. John, N.B., during winter, and Quebec, Que., during summer, the supervision over rail traffic, ex Atlantic steamships.

H. R. MATHEWSON, heretofore Travelling Passenger Agent, St. John, N.B., has been appointed Assistant General Agent, Passenger Department, C.P.R., Minneapolis, St. Paul & Sault Ste. Marie Ry., and Duluth, South Shore & Atlantic Ry., vice G. G. McKay, transferred to Canadian Pacific Ocean Services Ltd. Office, Chicago, Ill.

B. PENDLETON, heretofore Locomotive Foreman, London, Ont., has been appointed Locomotive Foreman, Ottawa, Ont.

E. J. SEMMENS, Travelling Industrial Agent, Department of Colonization and Development, Calgary, Alta., has had his headquarters transferred to Vancouver, B.C., reporting to J. F. Sweeting, Industrial Agent, Winnipeg.

A. A. SHEPPARD, heretofore Locomotive Foreman, Ottawa, Ont., has been appointed Locomotive Foreman, Windsor, Ont., vice D. Jones, transferred.

Canadian Pacific Ocean Services Ltd. G. G. MCKAY, heretofore Assistant General Agent, Passenger Department, C.P.R., Minneapolis, St. Paul & Sault Ste. Marie Ry., and Duluth, South Shore &

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**Position of Canadian Northern and
Grand Trunk Pacific Railway
Securities.**

The Canadian Gazette, London, Eng., of Oct. 28, said:—An important statement, which, although unofficial, should be of great interest to holders of Canadian Northern Ry. 5% income charge convertible debenture stock and of Grand Trunk Pacific 4% debenture stock, was made recently at a private gathering of business men in London by A. J. Mitchell, Vice President, Canadian National Rys., who, however, made it perfectly clear that he was not speaking in an official capacity. As regards the Canadian Northern Ry. 5% income debenture stock, it may be recalled that no interest has been paid since Oct. 1914. Apart from the question of interest, stockholders are even more concerned as to the security of the principal, which is repayable at par on May 6, 1930 (or at the option of the company at any time after May 6, 1920, at six months notice). Ever since the Canadian Northern Ry. was taken over by the Canadian Government an official announcement has been awaited as to the Government's intentions in regard to the repayment of this stock, and it may be gratifying to stockholders to learn that Mr. Mitchell, speaking (as we have already intimated) in his personal capacity, expressed his conviction that the Government will pay off this stock at par in 1930. The amount outstanding is £5,144,000. As regards the Grand Trunk Pacific 4% debentures, the interest is guaranteed by the Grand Trunk Ry., subject to the payment of interest on its own loan capital. The debentures are irredeemable, except at the company's option, on one year notice after Mar. 1, 1936. This stock has paid no interest since Mar., 1919. The question in this case is whether the Canadian Government on acquiring the G.T.R., will assume responsibility for the interest on the G.T. Pacific 4% debenture stock. Inasmuch as the Government, under the purchase terms, will in effect be paying interest on G.T.R. guaranteed stock, which clearly ranks after the G.T. Pacific debentures, it is inconceivable that the debentures will be allowed to remain in default. Mr. Mitchell supported this view, giving his opinion that the Government will assume responsibility for all the G.T.R.'s guarantees as soon as it takes possession of the railway. The present quotation of the Canadian Northern 5% income debenture stock is 29.32, and the quotation of Grand Trunk Pacific 4% debentures is 45.50. If Mr. Mitchell's statement ultimately carries official confirmation, the Canadian Northern stock, now standing at about 30, will be worth 100 in 10 years, while as regards the G.T. Pacific 4% debenture, if it becomes an acknowledged liability of the Canadian Government, it will stand at a higher price than 50, at which the yield would be 8%.

The Canadian Gazette of Nov. 4 reported Mr. Mitchell as saying to its representative:—"The article re Canadian Northern Ry. 5% income debentures and Grand Trunk Pacific Ry. 4% debentures in the Canadian Gazette of Oct. 28 stated that I supported the view expressed with reference to the payment of interest on Grand Trunk Pacific 4% debenture stock. This does not correctly report me. The view expressed by me was that the acquisition of the Grand Trunk Ry. stock by the Government did not in any way

change the legal position of the debenture holders, but the fact that the Government was the sole shareholder would tend to strengthen the position of the security holders rather than otherwise."

The Greater Winnipeg Water District Railway's Position.

In connection with procuring a water supply from Shoal Lake, adjoining Lake of the Woods, for Winnipeg and adjacent municipalities, the Greater Winnipeg Water District Commissioners built a railway from St. Boniface to Shoal Lake, 92 miles, principally to facilitate the taking in of construction materials, but as progress was made with the work, a considerable number of settlers, now said to number over 900, went in and considerable freight and passenger traffic was developed. The commissioners decided to maintain the operation of trains on the line after construction of the water pipe line was completed, with the result that the railway did not earn operating expenses, a recent report stating the deficit as \$60,000 a year. The Mayor of Winnipeg is reported to have favored taking up the rails and selling them on the ground that the city went into a water works project, and not a land development and colonization one. One alderman claimed that the line should be subsidized by the Dominion Government, which owns land along its route.

A deputation representing the G. W. W. D. Commissioners is reported to have waited on Premier Meighen when he was in Winnipeg recently, and urged that the line be taken over and operated by the Government, or that it be given a land grant or a cash subsidy. The Premier is said to have stated that the matter would be considered, but he could not hold out any hope that it would be granted. A subsequent press report states that the Premier informed the Commissioners that after consideration it was found impossible for the Government to take over the line, or aid it by a land grant or cash subsidy.

Grand Trunk Railway Bonds Sold.

Wm. A. Read & Co., the National City Company, Blair & Co., Bankers Trust Co., Guaranty Trust Co., Lee, Higginson & Co., and the Continental and Commercial Trust and Savings Bank, all of New York, offered recently for subscription at par there \$25,000,000 Grand Trunk Ry. of Canada (Canadian National Rys. System) 7% 20-year sinking fund gold debenture bonds, and the issue was over subscribed. The bonds are guaranteed as to both principal and interest by endorsement by the Dominion of Canada, the prospectus stating that they are a direct obligation of the G.T.R. of Canada which the Dominion has agreed to purchase and merge with the Canadian National Rys. System, have interest payable April 1 and Oct. 1, and the principal is repayable at par Oct. 1, 1940. The bonds are callable as a whole after Oct. 1, 1935, at 102½, on 30 days notice, on any interest date. A sinking fund of \$500,000 a year, available half yearly, beginning April 1, 1921, is to be provided for the purchase of the bonds in the market if obtainable at or below par, but if bonds are not so obtainable during the succeeding six months, the unexpended balance is to revert to the company. Interest is payable in gold at the Bank of Montreal agency in New York.

The Booster Engine for Locomotives.

The four Pacific type locomotives, which the Timiskaming & Northern Ontario Ry. has ordered from Canadian Locomotive Co., are to be equipped with the locomotive booster, and as far as Canadian Railway and Marine World is aware they will be the first locomotives in Canada to have this appliance.

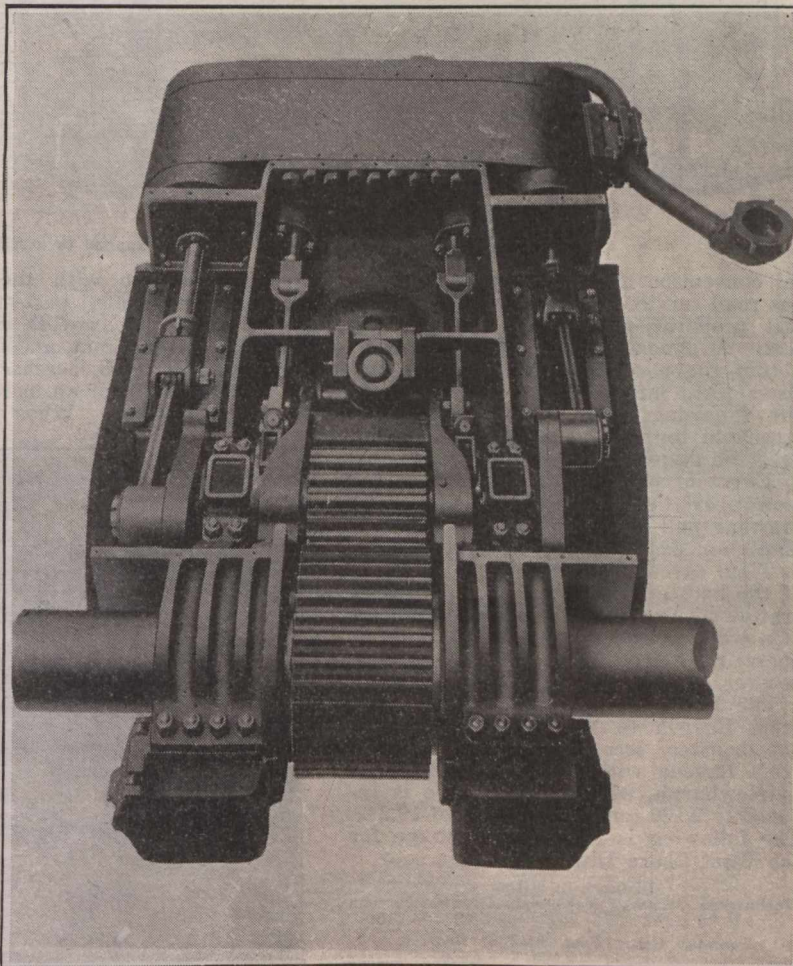
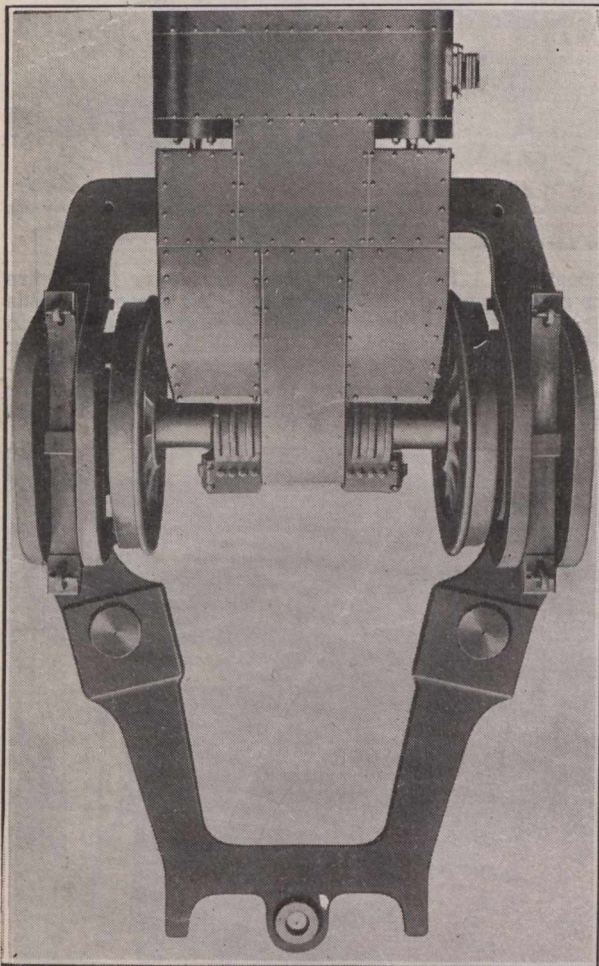
Description.—The following description is taken from a bulletin issued by the manufacturers, Franklin Railway Supply Co. The booster consists of a simple 2-cylinder steam engine, upon a special design cast steel bed plate, which bed plate also forms the axle bearings and truck support.

ricates all bearings, except the main ones on the trailing axle, which are lubricated in the same manner as is employed for car journal boxes, i.e., a waste packed oil box.

The Westinghouse control valves are air operated. The control is simple. The locomotive man decides that he needs the booster, he makes contact, the rest is automatic, viz.: 1. The booster goes into gear. 2. The steam goes from the booster throttle to the booster engine. 3. The booster power is applied to the axle through an idler gear, which is out of contact when the booster is out of gear. 4. At the proper time the steam cuts off

weights bordering on the limit the track structure will bear. Yet their speed pull curves nearly coincide with those of lighter locomotives of the same type. Great starting and accelerating power is the principal advantage. The locomotive booster gives an increase in starting and accelerating power equal to what 50,000 lb. additional locomotive weight would give. And the booster weighs only 3,500 lb. It defers, if not wholly eliminates, large investments for improved roadway to carry bigger locomotives.

The booster puts any locomotive with trailing wheels into the next class above,



Locomotive Booster in Position on Trailer Truck of Locomotive.

Locomotive booster assembled. Cover removed to show construction and operation.

Three-point suspension is provided; two bearings fitting on the trailing axle, and a third, which is a ball joint, fitting on the back member of the trailing truck frame. This suspension gives sufficient flexibility to compensate for any torsional movement between trailing truck frame and axle due to equalizing, and in addition the ball joint is located near the center of gravity of the booster engine, thereby relieving the bearings on trailing axle normally of the weight and minimizing wear of the booster bearings.

The piston rod, connecting rod and crank shaft follow liberal locomotive practice. The crank shaft and driving piston are integral and are of heat treated steel, liberally designed.

Lubrication is taken care of by enclosing the entire engine and connections in an oil tight steel case and using the splash method. This automatically lub-

and the booster goes out of gear.

Advantages Claimed.—The manufacturers of the booster make the following claims for it:—For heavy loads at speed, the steam making capacity of locomotive boilers has been enormously increased. To carry this increased boiler capacity trailing wheels have become universal. A large surplus of steam is available in starting. A lot of weight on the trailing wheel is available for starting. The booster makes use of the surplus steam applying it to the trailing wheels in starting. It capitalizes idle weight and spare steam with negligible addition to the weight of the locomotive, and without increased demands on the engineman. Control is semi-automatic giving the locomotive man maximum resource and a negligible minimum of attention to its operation.

Locomotives built recently employ

in starting effort, because the trailing wheels act as an additional pair of drivers. On freight trains this means more tons annually, because of greater starting effort and acceleration, and avoids damage to machinery and equipment, because of a smooth steady start. On passenger trains it means smooth starting and quick acceleration to road speed. This adds to the comfort of the traveling public, protects the equipment from damage, and renders schedules more easily maintained, by avoiding delays in starting.

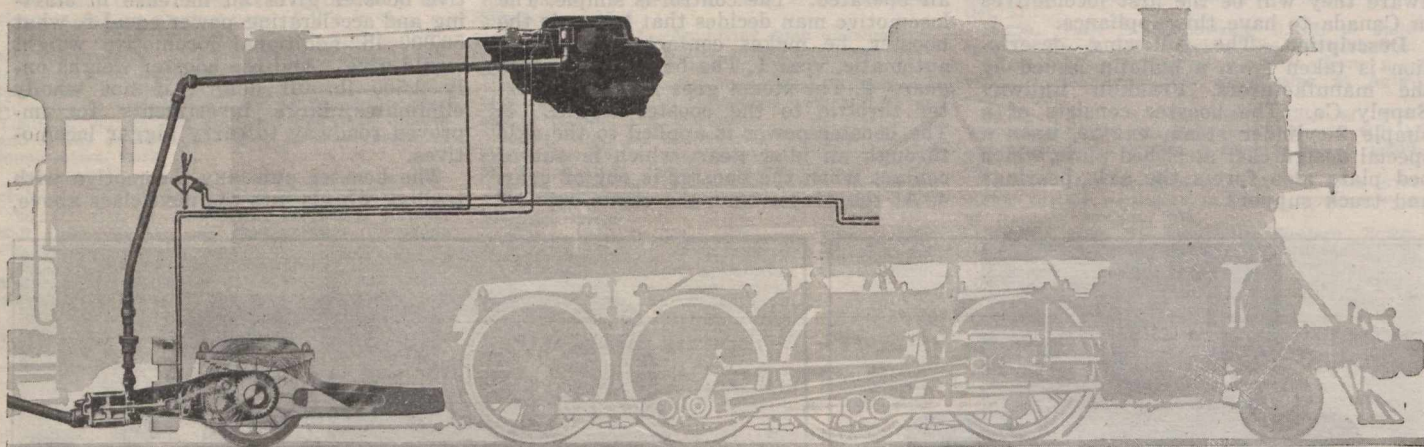
Tests on New York Central Rd.—The manufacturers have supplied the following information:—For approximately two years Pacific type locomotive 3149, equipped with the booster, has been in operation on the New York Central Rd. To determine the booster's operating advantages a series of tests were conduct-

ed on the River Division between Ravena and Weehawken. This division is 130 miles long, with a ruling grade of 0.9157 at Bogota, going west; and 0.46% at Haverstraw, going east. The locomotive has a load on drivers of 184,000 lb., steam pressure 200 lb., and tractive effort of 40,000 lb. It was exhibited at the last Atlantic City railway mechani-

pumping up the train line alone, before it can get started after coupling up, thus more than doubling the time lost. In the test run the practice referred to was not followed. Locomotive 3149 hauled the train to the water plug intact, took water and started up the grade with full train, with the booster in operation. As shown by the dynamometer record, fig.

to speed on the grade; without the booster this performance would have been impossible.

At this point an important time saving operating situation developed. Because of the time saved at Catskill, West Point was reached three minutes before an express was due. The express was followed to Weehawken, whereas usually



Locomotive booster, applied to a Mikado Locomotive.

cal convention and has been in continuous road service since that time; no special preparations being made for the test. A dynamometer car was used to obtain the necessary data. In making these tests information was wanted on the following points:—1. Practical increase in tonnage that could be hauled over the division because of the booster. 2. Effect of the booster on train operation over the division. 3. Maximum drawbar pull with booster in action. 4. Maximum drawbar pull without booster. 5. Time saved over the division because of the booster. 6. Increased train acceleration by use of the booster. 7. Effect of a crew inexperienced with the booster, operating a locomotive equipped with a booster.

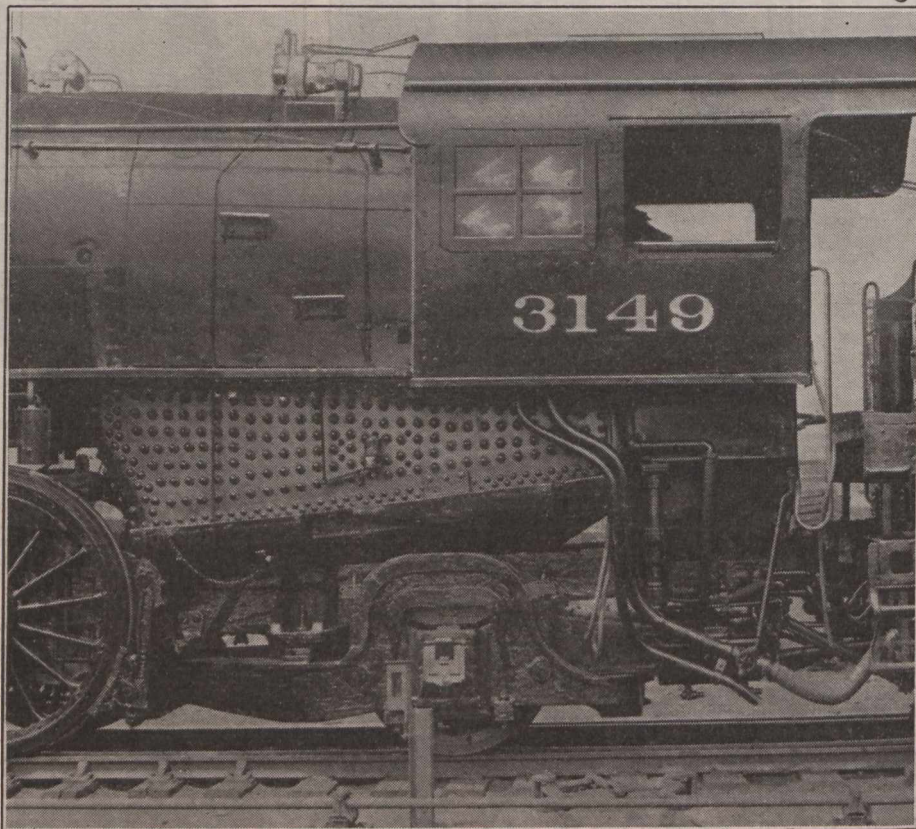
The first test was made going east from Ravena to Weehawken. Without the booster, locomotive 3149 is rated from Ravena with 2,600 tons, and runs to Newburgh, where the tonnage is reduced to 2,100 tons, a reduction of 19.2%. The following is the ruling tonnage for the West Shore Division:—

	Distance in Miles.			
	Weehawken	Cornwall	Newburgh	Ravena
	0	52	57	88 129
Tonnage Going East Without Booster.			2,100	2,600
Tonnage Going East With Booster.	2,582			2,582
Tonnage Going West Without Booster.	1,800	2,100		2,600
Tonnage Going West With Booster.	2,015	2,577		2,745

In making the test it was decided to endeavor to take 2,582 tons through to Weehawken. This not only involved getting over the ruling grade at Haverstraw, but also introduced other interesting and important operating problems. At Catskill, the water plug is located at the bottom of two grades. It is the usual practice to leave the train at the top of the grade west of the water plug, run two miles for water, back up to the train, and make a run down grade to get sufficient momentum to carry over the up grade. The profile of the road at this point, fig. 1, shows a down grade of 0.55% and an up grade overaging 0.375%. Running for water in this way consumes 20 to 30 minutes time in good weather. When the weather is bad, with sleet and snow, 30 minutes more is usually lost in

2, the locomotive, with the booster in operation, accelerated to 5 miles an hour very quickly, the drawbar pull showing 41,067 lb. at this point, and in a distance of 580 ft. the speed increased from 5 to 8½ miles an hour, or an increase of 70% as to acceleration. When the booster

two or three local passenger trains are allowed to go ahead. At times this adds another 30 minutes delay in addition to the time lost at Catskill. After leaving Catskill, the booster was used for starting whenever the train was stopped for signals or other reasons, each start



Trailer truck of locomotive, with booster.

was disengaged, and the locomotive took the load entirely, the drawbar pull showed 33,497 lb., a difference of 7,570 lb. drawbar pull.

Reference to fig. 1, showing the road profile, and fig. 2, showing the dynamometer record, clearly indicate the part the booster played in making possible the starting of the train and getting up

showing rapid acceleration.

The ruling grade on this division is known as the Haverstraw grade, fig. 3. It is over 6 miles long and an average of about 0.46%. This grade was approached at a speed of 33 miles an hour, with the booster idle, and continuing up grade at the end of the first mile the speed was 28½ miles per hour; at the end of second

mile, 19 miles an hour; at the end of the third mile, 12 miles an hour; at the end of the fourth mile, 8 miles an hour; at the end of the fifth mile the speed was

point the booster was cut in, on a grade of 0.52% and in 432 ft. the speed reached 8 miles an hour and the drawbar pull 42,900 lb., an increase of 6,459 lb. draw-

cause of the booster in three quarters of a mile of 33 1/3%, with a train tonnage of 22.9% above normal. In taking this train over the ruling grade, the booster

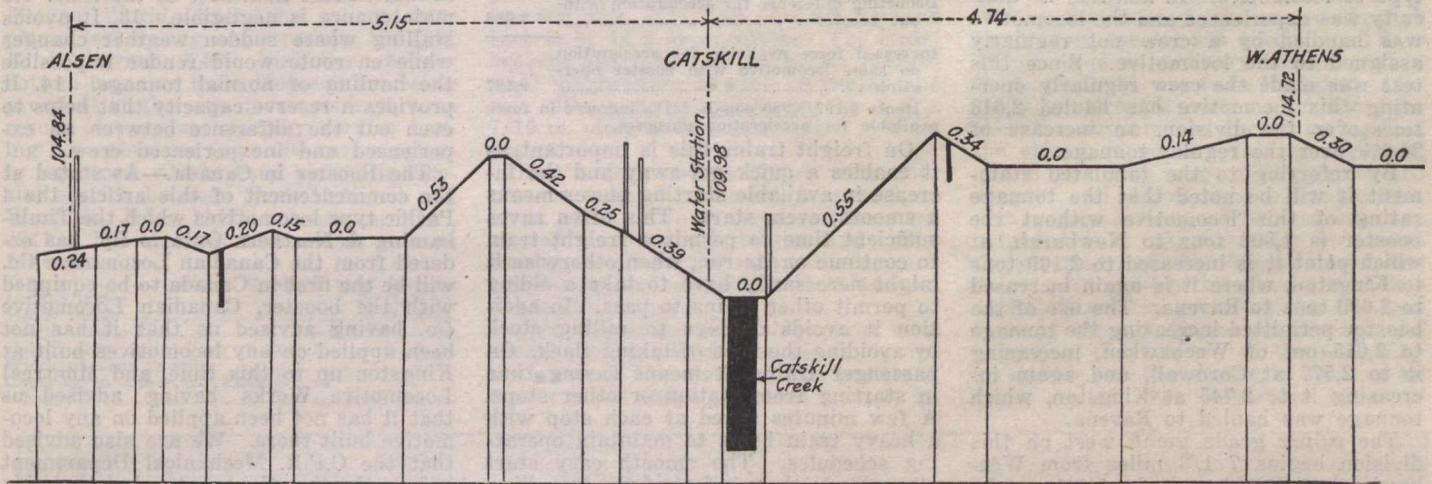


Fig. 1. Profile of New York Central Rd. River Division, Catskill, N.Y.

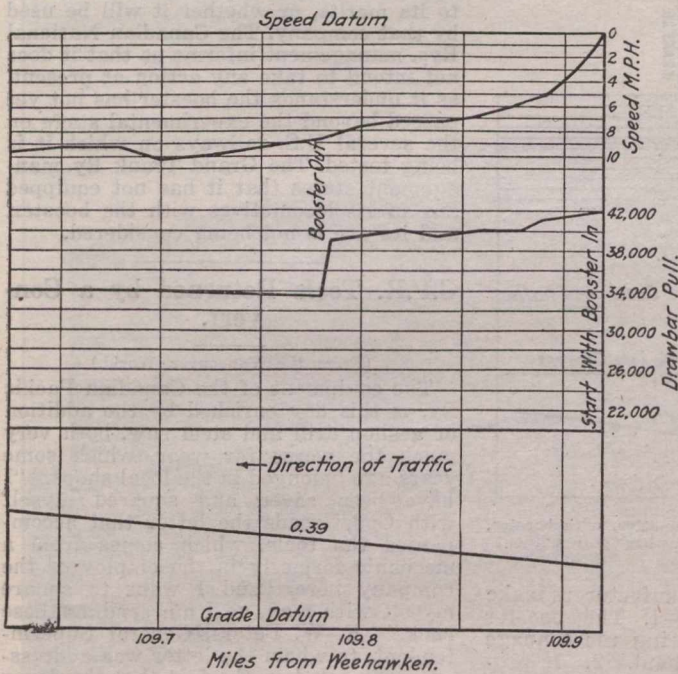


Fig. 2. Locomotive booster assisting in starting train of 2,582 tons, on Catskill grade.

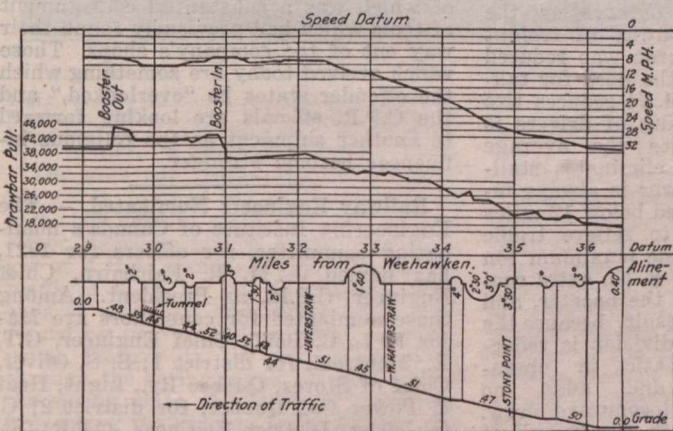


Fig. 3. Performance of locomotive, with booster on Haverstraw grade, with 22.6% excess tonnage.

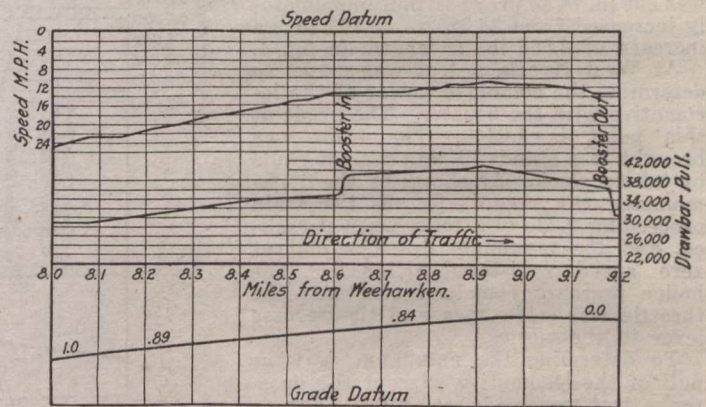


Fig. 4. Locomotive, with booster, surmounting Bogota grade, with 12% excess baggage.

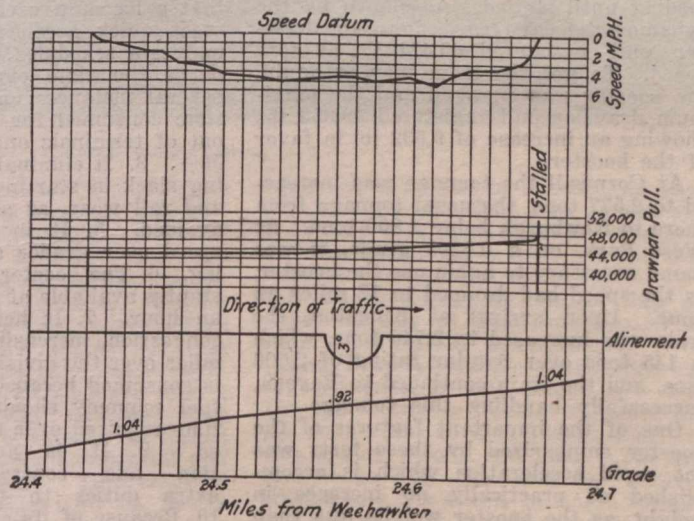


Fig. 5. Stalling test of locomotive, with booster, to determine maximum drawbar pull.

7 1/2 miles an hour, and falling rapidly. The drawbar pull showed 36,441 lb. Without the assistance of the booster the train would have stalled. At this

bar pull, or 17.7% because of the booster. In the first 3/4 mile after the booster was working the speed reached 10 miles an hour. This shows an acceleration, be-

was used for about 1 5/8 miles, and just before being disengaged a drawbar pull of 45,080 lb. was recorded on the dynamometer car. The train arrived at Wee-

hawken with the same tonnage with which it started from Ravena. This was the first time this tonnage had ever been hauled over the entire division by this type of locomotive. In addition no difficulty was experienced and the locomotive was handled by a crew not regularly assigned to the locomotive. Since this test was made the crew regularly operating this locomotive has hauled 2,618 tons over the division, an increase of 24.6% over the regular tonnage.

By referring to the tabulated statement it will be noted that the tonnage rating of this locomotive without the booster is 1,800 tons to Newburgh, at which point it is increased to 2,100 tons to Kingston, where it is again increased to 2,600 tons to Ravena. The use of the booster permitted increasing the tonnage to 2,015 out of Weehawken, increasing it to 2,577 at Cornwall, and again increasing it to 2,745 at Kingston, which tonnage was hauled to Ravena.

The ruling grade going west on this division begins 7 1/3 miles from Weehawken, at Bogota. It is a 1% grade, approximately 1 3/4 miles long. The dynamometer record was started at 8 miles from Hoboken, where the speed was 25 miles an hour, and about two-thirds of the way up the speed had dropped to 13 miles an hour. At this point the booster was cut in. The drawbar pull immediately increased from 34,228 to 38,793 lb., an increase of 4,565 lb., as shown in fig. 4.

At West Nyack, a test was made, to determine the combined power of the locomotive with the booster. The grade at this point is 1.04%. The train was brought to a standstill, and a start made by taking slack. As shown by the dynamometer car record, fig. 5, the train proceeding 0.235 of a mile, when it stalled, and the maximum drawbar pull at zero speed registered 51,138 lb. The boiler pressure remained constant; the throttle was wide open and the reverse lever in the corner.

To determine the maximum drawbar pull of the locomotive without the booster, a test was made on an 0.86% grade into Congers, the tonnage at this point being 1,958 tons, one car having been set off, on account of hot boxes. With the booster working, the train was brought entirely on the grade, the booster then cut out, and the locomotive proceeding until stalled. As shown by the dynamometer car record, fig. 6, the drawbar pull registered 40,421 lb. at zero speed. To get the train moving again, the booster was engaged and the maximum drawbar pull registered 49,953 lb., showing an increase of 9,532 lb. in favor of the booster.

At Cornwall the tonnage was increased to 2,577 tons, the usual tonnage from there to Newburgh being 1,800 tons. At West Park, on a 0.52% grade, it was found necessary to again use the booster, as the speed had dropped to 12 miles an hour. Upon arrival at Kingston, the train was increased to 2,745 tons, which is 145 tons over regular rating of 2,600 tons, and the train continued to Ravena, successfully handling this tonnage.

One of the important features of the booster emphasized by these tests was the rapid acceleration which is accomplished at practically no increase in weight, as the booster weighs less than 4,000 lb. The following tabulation shows clearly the reason for this.

Maximum drawbar pull of locomotive.....	lb.	40,421
Drawbar pull of locomotive necessary for work on given grade		36,441
Difference (force available for acceleration)		3,980

Maximum drawbar pull of locomotive, lb.	
plus booster	49,618
Less drawbar pull necessary for work....	36,441
Reserve for acceleration with booster is increased to	13,177
Deducting difference for acceleration without booster	3,980
Increased force available for acceleration on same locomotive with booster operating	9,197
Hence 9,197/3,980 equals 231% increase in force available for acceleration purposes.	

On freight trains this is important, as it enables a quick get-away and the increase in available starting power means a smooth, even, start. This often saves sufficient time to permit a freight train to continue on its run, when otherwise it might necessarily have to take a siding to permit other trains to pass. In addition it avoids damage to rolling stock by avoiding the need of taking slack. On passenger trains, it means saving time in starting from station or other stops. A few minutes saved at each stop with a heavy train helps to maintain operating schedules. The smooth easy start also adds to the comfort of the travelling public.

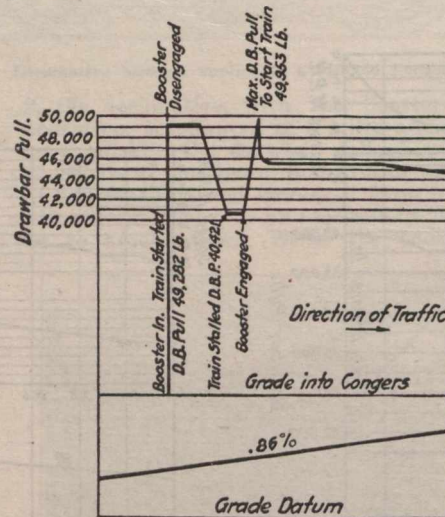


Fig. 6. Stalling test of Locomotive, with booster, to determine maximum drawbar pull without booster.

Conclusions.—The manufacturers make the following claims:—1. The booster renders possible increasing the tonnage that a locomotive can haul. 2. It provides quick acceleration, that helps to maintain schedules more easily, and reduces the time over the division. In several instances under observation, the time consumed for get-away of freight out of terminals and yards was reduced 50%. 3. It eliminates the need for taking slack in starting. 4. It reduces tire and rail wear, as slipping of drivers is avoided. 5. It increases the average speed over grades and eliminates stalling. 6. The booster power is always instantly available at speed below 12 miles an hour. 7. It helps to relieve traffic congestion, increasing the maximum ton miles over the division. 8. No extra coal is consumed because of the booster, and fuel economy should result, because the time required over the division is reduced. 9. It is automatic in operation and control, and adds no extra duties to the locomotive crew. 10. Because of its smooth steady pull at starting, it reduces wear and tear on equipment, and eliminates break-in-twos. 11. It gives the effective increase in drawbar pull in starting, and at slow speeds, that an additional pair of drivers would give, but avoids hauling around 50,000 lb. or more weight that large loco-

motives would involve, weight that is useless a large percentage of the time, and that present track and bridge structure will not carry. 12. The booster is in motion less than 10% of the time. Its maintenance is negligible. 13. It avoids stalling where sudden weather changes while en route would render impossible the hauling of normal tonnage. 14. It provides a reserve capacity that helps to even out the difference between an experienced and inexperienced crew.

The Booster in Canada.—As stated at the commencement of this article, the 4 Pacific type locomotives which the Timiskaming & Northern Ontario Ry. has ordered from the Canadian Locomotive Co. will be the first in Canada to be equipped with the booster, Canadian Locomotive Co. having advised us that it has not been applied on any locomotives built at Kingston up to this time, and Montreal Locomotive Works having advised us that it has not been applied on any locomotive built there. We are also advised that the C.P.R. Mechanical Department is investigating the booster, but that this investigation has not progressed far enough to enable anything to be said as to its merits, or whether it will be used by that company. The Canadian National Rys. management informs us that it does not intend to take any action at present, as it understands the booster has not yet passed beyond the experimental stage on the several U.S. railways on which it is being tested. The Grand Trunk Ry. management states that it has not equipped any of its locomotives with the booster, and its use is not being considered.

C.P.R. Tools Returned by a Convert.

(From the Vancouver World.)

The equipment of the Canadian Pacific Ry. is this day enriched by the addition of a shop drill and steel saw, both very much the worse for wear, which some years ago belonged in the local shops. "I have been saved and squared myself with God," reads the letter that accompanied the tools, which comes from a mechanic formerly in the employ of the company here, "and I want to square myself with man, so I am sending these back." F. W. Peters, General Superintendent, to whom the letter was addressed, commented on the fact that the donor had "got religion" a short time after leaving the company's employ, the result of which was a substantial consignment of tools which had previously found their way out of the company's shops. Those which arrived today are something which the offender states he "overlooked," and the C.P.R. officials are looking forward to another shipment as the religious influences become stronger.

Railway Engineers Nominated.—The Engineering Institute of Canada's nominating committee, for officers for 1921, has named J. M. R. Fairbairn, Chief Engineer, C.P.R., as President. Among those nominated for councillors are Major F. L. C. Bond, Chief Engineer, G.T. R., Montreal, for district 1; S. S. Oliver, Chief of Stores, Quebec Ry., Light, Heat & Power Co., Quebec, for district 2; C. C. Kirby, District Engineer, C.P.R., St. John, N.B., and S. B. Wass, Division Engineer, Canadian National Rys., Moncton, N.B., for district 3.

The C.P.R. Co. has given \$250,000 to the centennial endowment fund of McGill University, Montreal, and \$50,000 to the University of Montreal.

Canadian Pacific Railway 60-ton Hopper Bottom Box Car.

As stated in Canadian Railway and Marine World, when the orders were placed last spring and summer, the C.P. R. is having 3,500 sixty-ton hopper bottom box cars built. Hoppers are being provided at the side door openings, as a result of very satisfactory service having been obtained from 200 cars similarly equipped which were placed in special service between Port McNicoll and West St. John, N.B., commencing Oct., 1911. The general dimensions are as follows:—

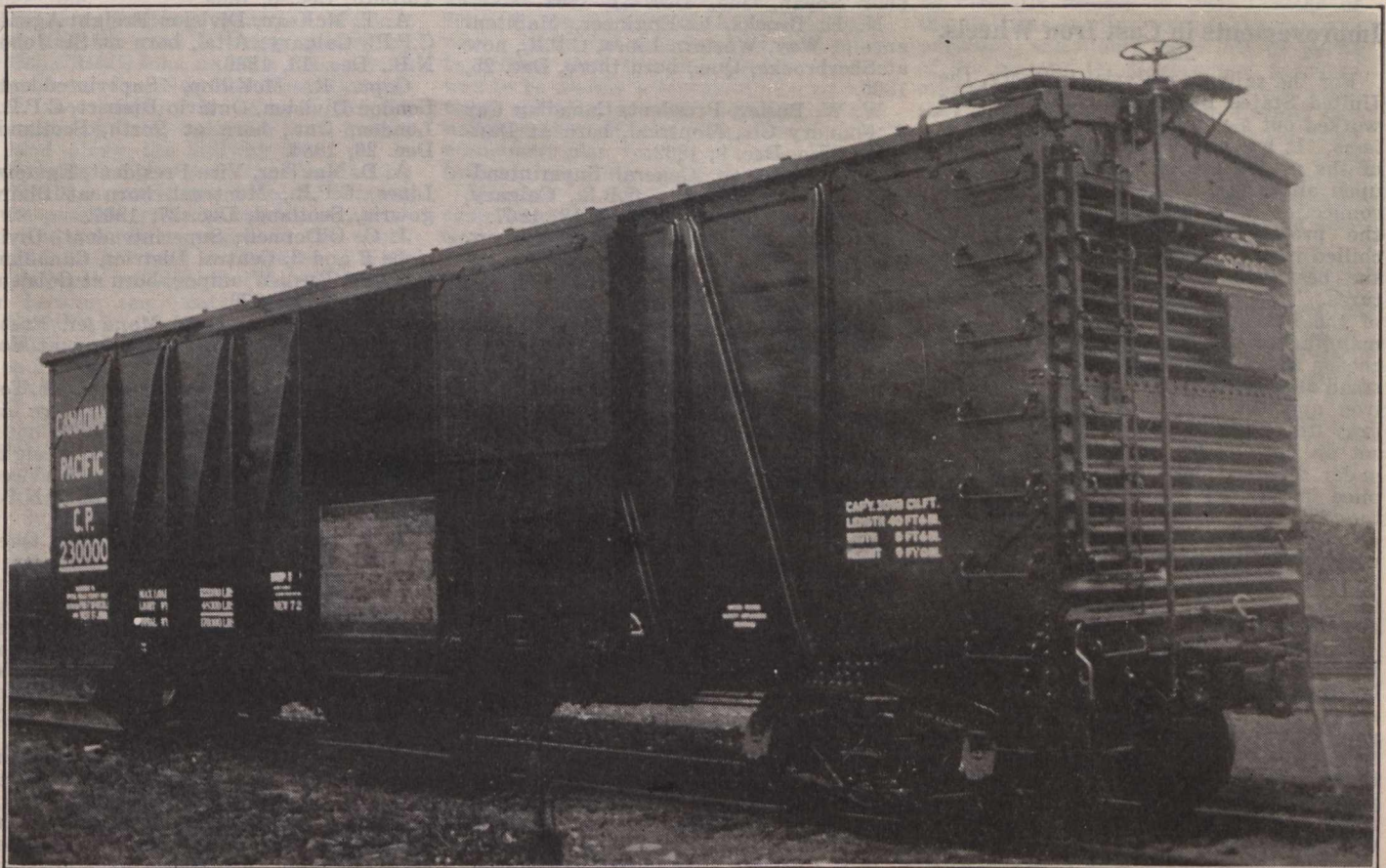
Type	Single sheathed, steel framing
Length inside	40 ft. 6 in.
Width inside	8 ft. 6 in.
Height inside	9 ft.
Height from rail to top of floor.....	3 ft. 7 in.
Width of door opening	6 ft.
Capacity in cubic ft., exclusive of hoppers	3,098 cu. ft.

pressed steel diaphragms, riveted to center and side sills, and covered top and bottom by 14 x 5/8 in. plates. The cross-bearers are made up of 1/4 in. pressed steel diaphragms, riveted to center and side sills, and covered at top by a 6 x 7/16 in. plate and bottom by a 6 x 3/8 in. plate.

The underframe is fitted with four cross-tie webs or stiffeners, pressed from 1/4 in. plate. Two of these stiffeners are located between each bolster and cross-bearer. Between the center sills at each cross-bearer and stiffener a 1/4 in. pressed diaphragm is used.

Side Framing.—The side plate is a special rolled angle 6 x 3 1/2 x 3/8 in., having an 87° root angle. The posts and braces are U shaped, pressed from 1/4 in.

are the Burnett type. When used for freight that cannot be dumped through the hopper, the car has a solid level floor the same as an ordinary box car; when grain, coal, etc., are to be loaded the specially constructed sections of the floor over the hoppers are turned up against the side door posts. This arrangement allows the load to go directly into the hoppers, and also saves considerable temporary door lumber. When the cars are unloaded, it is only necessary to remove the pin that locks the hopper doors; the doors open quickly by gravity and immediately a large percentage of the contents of the car discharges through the hoppers. The balance of the load may be shoveled to the middle of the car by hand, or if the unloading plant is



Sixty Ton Hopper Bottom Box Car, Canadian Pacific Railway.

Light weight	about 48,300 lb.
Maximum lading	about 120,700 lb.
Limit load 5 1/2 x 10 in. journals.....	169,000 lb.
Ratio of lading to weight of car at rail....	71.4%

The arch bar trucks are composed of 1 1/4 x 6 in. top and bottom members, with cast steel column posts, designed to take either Harrigan pinless brake beam hanger or A.R.A. standard type. The spring plank is a 13 in. no. 32 channel, with ends at arch bar, and spring seat, reinforced by heavy steel castings. An unusual feature is the use of a rivet through the spring plank on each side of the spring plate, the heads of the rivets preventing the springs from slipping out of position.

Underframe.—The center sills are composed of two 12 in. 35 lb. ship channels, tied together by 1/4 x 20 in top cover plate. Steel striking casting, coupler carrier, draft lugs and center brace are used.

The bolsters are made up of 5/16 in.

plate, flattened at side sill and plate, to provide large riveting surface. The side sill is 9 in., 17.5 lb. per foot. The door posts are made of 4 in. 8.2 Z bars.

The side doors represent what is believed to be the best obtainable. The interlocking front and back edges afford exceptional protection against weather and pilfering. The top edge is thoroughly weatherproof, yet so arranged that it cannot become blocked with ice. The bottom of the door is fitted with turned rollers, that fit on very substantial and rigidly supported track. This track is not likely to be blocked with ice, but in case it should be, the interference is plainly visible and easily removed. The location of rollers at the bottom of the door does away with the binding, or cramping, so frequently noticed on doors suspended from the top.

The grain hoppers, located at the side door opening, on each side of the car,

equipped with power shovels, as most elevators are, the floor door on one side of the car is released from the door post, and the cables taken through the door opening as usual. The hopper doors have no operating mechanism; they are closed directly by hand and secured by simple locking bar arrangement.

End Frame.—Murphy horizontal corrugated ends, in two pieces, are used. The top section is formed to secure ample connection to side plates, and provide a very strong end plate. The bottom edge of the end is securely riveted to a 6 x 4 x 1/2 in. angle forming end sill, which is in turn securely fastened to side sills and diagonal braces as well as center sills.

Roof.—Murphy outside metal roofs, with 13/16 in. t. and g. boards, laid longitudinally, are used in connection with strong Z bar carlines, providing ample supports at side plates. Part of the cars

are equipped with angle type carlines.

Lining and Decking.—The side and end lining is 1½ x 5 in. t. and g. and must show more than 6% decrease in weight, after being placed for 96 hours in a hot cupboard, the temperature of which is maintained at from 160° to 180° F. The lining, after being milled, is dipped in paint and dried before application. The decking is 2¼ in. thick, and securely bolted to ½ in. plate at side sills, and fastened to center sills by floor clips.

The specialties used are:—

Dust guards	Thornburg
Journal boxes	McCord 5½ x 10 in. round bottom
Brake beams	M.C.B. no. 2
Four point suspension	Creco.
Truck bolsters	Simplex
Side bearings	Stucki
Draft gear	Murray Type H, Class 25
Doors	Camel, bottom hung
Roof	Murphy, outside metal
Uncoupling device	Imperial Type B
Brakes	Westinghouse schedule KC 1012
Packing cups and expander rings	Johns-Manville
Coupler yokes	Cast steel

Improvements in Cast Iron Wheels.

For the railway material industry, the United States Bureau of Standards has worked out a number of important problems. It has completed an investigation of the graphitization of white cast iron upon annealing. This problem arose in connection with other investigations of the properties and characteristics of chilled iron car wheels and in particular the best range of annealing temperatures. This was brought to the attention of the Bureau by one of the car wheel manufacturers. The composition is so chosen and the wheel is so cast that the tread and inside of the flange show white iron and the remainder graphitized or gray iron. In order to relieve the stresses set up during the cooling of the wheel under drastic conditions, the wheels are piled in pits, while red hot, and allowed to cool very slowly. Investigation developed that the highest temperature at which no graphitization of the tread and flanges takes place is about 700 degrees Centigrade, which is also the maximum annealing temperature for car wheels.

The investigation of stresses in chilled iron car wheels caused by heat from brake action has been nearly completed, says the Bureau report. A very large percentage of car wheel failures are attributed to stresses caused by heating of the tread by brake action, the central part of hub of the wheel remaining relatively cool. It is the purpose of the investigation to determine and record for adoption the most suitable material and design of wheels to resist stresses of this kind. In this investigation the tread of the wheel is heated by passing an electric current through a curculator resistor insulated from the tread. The wheel remains stationary, thus readily permitting the taking of the temperature and strain gauge readings. Considerable differences have been found in the behavior of wheels differing in design and weight.

Freight and Passenger Train Costs.—A United States National Coal Association bulletin states that the average cost of running a freight train one mile (on the basis of July returns) was \$1.897, and the cost of running a passenger train was \$1.03. By sections the cost per freight train per mile was: New England, \$2.39; Great Lakes, \$2.095; Ohio-Indiana-Alleghany, \$2.215; Pocohontas, \$2.155; Southern, \$1.545; Northwestern, \$1.633; Central Western, \$1.832, and Southwestern \$1.724.

Birthdays of Transportation Men in December.

Many happy returns of the day to:—
E. T. Agate, ex-Assistant Superintendent, Lake Superior Division, Canadian Northern Ry., Capreol, Ont., now of Toronto, born at Pittsford, N.Y., Dec. 7, 1874.

A. G. Albertsen, General Agent, Passenger Department, C.P.R., Minneapolis, Minn., born at Copenhagen, Denmark, Dec. 31, 1887.

J. H. Barber, Engineer, Toronto Terminals Division, Ontario District, C.P.R., Toronto, born at Cobourg, Ont., Dec. 20, 1856.

W. E. G. Bishop, District Freight and Passenger Agent, Canadian National Rys., Cochrane, Ont., born at Central Clarence, N.S., Dec. 4, 1888.

H. E. Bissell, Land and Tax Agent, Grand Trunk Pacific Ry., Winnipeg, born near Noyan, Que., Dec. 31, 1867.

N. E. Brooks, ex-Engineer, Maintenance of Way, Western Lines, C.P.R., now at Sherbrooke, Que., born there, Dec. 25, 1866.

W. W. Butler, President, Canadian Car & Foundry Co., Montreal, born at Danville, Ohio, Dec. 9, 1862.

J. M. Cameron, General Superintendent, Alberta District, C.P.R., Calgary, born at Lochaber, N.S., Dec. 18, 1867.

W. C. Casey, General Agent, Passenger Department, Canadian Pacific Ocean Services Ltd., Winnipeg, born at Moncton, N.B., Dec. 12, 1882.

G. W. Caye, General Purchasing Agent, G.T.R., Montreal, born at Malone, N.Y., Dec. 1, 1865.

R. J. Foreman, Foreign Freight Agent, Canadian National-Grand Trunk Rys., Montreal, born at Toronto, Dec. 31, 1878.

A. H. Foster, Manager, Brantford Municipal Ry., Brantford, Ont., born at Guelph, Ont., Dec. 24, 1888.

W. H. Gardiner, City Freight Agent, C.P.R., and District Freight Agent, Esquimalt & Nanaimo Ry., Victoria, B.C., born there, Dec. 6, 1859.

A. S. Goodeve, member Board of Railway Commissioners for Canada, born at Guelph, Ont., Dec. 15, 1860.

A. J. Gorrie, ex-Superintendent District 1, Transcontinental Division, Canadian Government Rys., Quebec, now of Toronto, born at Raith, Kirkcaldy, Scotland, Dec. 10, 1868.

W. H. Grant, General Tie Agent, Canadian National-Grand Trunk Pacific Rys., Toronto, born at Acton, Ont., Dec. 8, 1858.

F. P. Gutelius, Vice President and General Manager, Delaware & Hudson Rd., Albany, N.Y., born at Mifflinburg, Pa., Dec. 21, 1864.

J. T. Hallisey, Superintendent, Halifax Division, Maritime District, Canadian National Rys., Truro, N.S., born at Beaver Bank, N.S., Dec. 29, 1862.

D. B. Hanna, President, Canadian National Rys., Canadian Government Merchant Marine Ltd., etc., Toronto, born at Thornliebank, Scotland, Dec. 20, 1858.

R. W. D. Harris, ex-Trainmaster, Moose Jaw Division, Saskatchewan District, C.P.R., Moose Jaw, now of Tappen, B.C., born at Victoria, B.C., Dec. 12, 1879.

J. J. Hennigar, District Freight Agent, Great Lakes Transportation Co., Windsor, Ont., born at Topeka, Kan., Dec. 21, 1884.

W. J. Kelly, Superintendent of Telegraphs and Telephones, Timiskaming & Northern Ontario Ry., North Bay, Ont., born at Renfrew, Ont., Dec. 17, 1875.

L. S. Landers, Division Engineer, Canadian National Rys., Edmundston, N.B.,

born at Farnham, Que., Dec. 15, 1888.

J. G. Legrand, Bridge Engineer, Canadian National Rys. Western Lines and Grand Trunk Pacific Ry., Winnipeg, born at Sompuis, France, Dec. 24, 1861.

J. M. MacArthur, Superintendent, Medicine Hat Division, Alberta District, Medicine Hat, Alta., born at Toronto, Dec. 8, 1885.

H. M. MacCallum, General Freight Agent, Canadian Pacific Ocean Services, Ltd., Toronto, born at Huntingdon, Que., Dec. 3, 1882.

A. McCowan, Master Car Builder, Canadian National Rys. Western Lines and Grand Trunk Pacific Ry., Winnipeg, born at Perth, Scotland, Dec. 5, 1868.

J. T. McGrath, ex-Superintendent of Motive Power and Equipment, Chicago & Alton Rd., Bloomington, Ill., born at Toronto, Dec. 6, 1869.

A. T. McKean, Division Freight Agent, C.P.R., Calgary, Alta., born at St. John, N.B., Dec. 18, 1886.

Capt. R. McKillop, Superintendent, London Division, Ontario District, C.P.R., London, Ont., born at Perth, Scotland, Dec. 26, 1884.

A. D. MacTier, Vice President, Eastern Lines, C.P.R., Montreal, born at Blairgowrie, Scotland, Dec. 27, 1867.

J. C. O'Donnell, Superintendent, Divisions 2 and 3, Central District, Canadian National Rys., Winnipeg, born at Cobden, Ont., Dec. 17, 1879.

Alfred Price, General Manager, Eastern Lines, C.P.R., Montreal, born at Toronto, Dec. 6, 1861.

W. J. Radford, Assistant Manager, Toronto Suburban Ry., Toronto, born at Boldre, Hants, Eng., Dec. 23, 1870.

G. D. Robinson, ex-European Freight Agent, Canadian Pacific Ocean Services Ltd., Montreal, born at St. John, N.B., Dec. 7, 1877.

H. W. Sharpe, Master Mechanic, Quebec District, Canadian National Rys., Quebec, Que., born at Campbellton, N.B., Dec. 6, 1869.

G. E. Smart, Mechanical Assistant (Car Department) to Vice President, Operation and Maintenance, Ontario District, Canadian National Rys., Toronto, born at Edinburgh, Scotland, Dec. 23, 1873.

W. Tansley, Car Service Agent, Ontario District, C.P.R., Toronto, born at Shelburne, Ont., Dec. 27, 1872.

M. F. Tompkins, General Freight Agent, Eastern Lines, Canadian National Rys., Moncton, N.B., born at Margaree, N.S., Dec. 6, 1878.

H. H. Vaughan, ex-Assistant to Vice President, C.P.R., now Consulting Engineer, Montreal, born at Forest Hill, Essex, Eng., Dec. 26, 1868.

R. C. Vaughan, Vice President, Purchases, Supplies and Stores, Canadian National Rys., Toronto, born there, Dec. 1, 1883.

A. P. Walker, Assistant Engineer, Ontario District, C.P.R., Toronto, born at West Hartlepool, Eng., Dec. 9, 1860.

E. B. Walker, Electrical Engineer, Canadian National Rys., Toronto, born there, Dec. 15, 1879.

J. B. Way, Freight and Ticket Agent, C.P.R., Saulte Ste. Marie, Ont., born at Port Hope, Ont., Dec. 10, 1865.

R. W. Burnett, Engineer and Works Manager, Joliet Railway Supply Co., Chicago, Ill., formerly General Master Car Builder, C.P.R., writes:—"I read Canadian Railway and Marine World each month with great interest."

The Railway Situation in Newfoundland.

By P. T. Magrath, St. John's, Newfoundland.

Like the rest of the world, Newfoundland has its railway problem, not the less, but perhaps the more difficult to solve, because it is a country of but some 250,000 people, and it is, in the opinion of many authorities, largely over supplied with this expensive method of transportation. Even before the war, the Newfoundland Railway was not a paying concern, losing on an average about \$100,000 a year for about 10 years, on an average annual income of about \$650,000, according to figures supplied the Government. The railway, originally built for the colony by the late Sir Robert Reid, of Montreal, a contractor who had previously undertaken many large railway ventures in Canada, is a narrow gauge line.

The actual mileage operated is about 1,000, and the road is being worked by Sir Robt. Reid's sons, under a lease for 50 years from the Newfoundland Government, the company being paid for the operation by mail subsidies and grants of land along the railway line, or, in other parts of the country, accepted by the Reids in preference to cash, because of the possible value of the timber, mineral and farmland wealth in the country and its eventual development. With the outbreak of war, the railway situation became complicated in Newfoundland, and while traffic fell off, the cost of coal, labor and other supplies increased enormously, the reconditioning of the line proved difficult, locomotives and cars could not be procured, and all the other phenomena of the situation in Canada and the United States were reproduced here. The annual loss steadily increased, reaching \$350,000 for the year ended June 30, 1918, and amounting to \$310,000 for the seven months ended Jan. 31, 1919, the latest figures available, with little reason to suppose there has been any drop in the rate of losses since these deficits have been incurred on an income of about \$1,250,000 a year.

At the same time, rolling stock and roadbed have been allowed, according to critics, to run down, accidents increased, and public confidence in the road as a safe means of travel became shaken. A great deal of criticism was engendered by politics, because the railway has played a large part for 30 years in the politics of the country, each succeeding government finding it more or less necessary to become closely associated with the railway management, and the party in opposition using this as a ground for criticism and hostility. In the general election of just a year ago, for instance, the then opposition bitterly attacked the then Government for having been under the domination of the Reids and pledged themselves, as others had done before them, to make the Reids toe the mark and carry out their contract. A political change took place, the opposition was elected, and now the tables are turned and the new administration is charged with being more closely allied with the Reids than any of its predecessors. The reason for this is that at the legislative session last spring an act was passed creating a commission to study and act upon acute problems of the railway. The Reids had claimed in effect that it was impossible for them to continue the operating of the system much longer, without Government help, the Government agreed to furnish \$1,000,000 for recon-

ditioning purposes, provided the Reids agreed to supervision by a commission on which the Government would have four members, one being the chairman, and the Reids three. The Government planned to have one of its four an English railway manager, and another an accounting expert, but these have not yet been selected. The other two were to be a Government representative, who would be chairman, and the Colonial Engineer, himself a competent railway authority, and adviser to the Government on these matters. The \$1,000,000 was ear-marked for the purchase of locomotives, freight cars, and new fish-plates for fastening the rails, those at present in use being condemned as too small for effective service, and provision was made for a thorough study of the general business. It was also understood, according to critics, that this commission scheme was to be merely a tentative one, to continue only for a year, and that at the next session of the Legislature some permanent plan for the operation of the railway hereafter would be submitted.

Whether or not it be correct that the commission appointed recently by the Government has exceeded its powers, the programme upon which it has resolved is as follows:—

The mid-interior section of the railway, where the line ascends the range of hills, known as the Topsails, and which form the backbone of the country, at a height far above sea level, is to be abandoned for the winter in future, at any rate for passenger traffic, and a new route is to be operated in winter via Argentia, in Placentia Bay, and Sydney, N.S., giving passenger, mail and express freight transit probably once a week by the steamship Kyle, with an alternative service between Halifax and Argentia by the steamship Meigle. By this means it is hoped that delays of past years will be avoided, because virtually every winter since the trans-insular railway began trains have been at times two or three weeks making the trip of 546 miles between St. John's and Port aux Basques, and last winter this section of the road had to be abandoned at the end of January and was not reopened until well into May.

A local passenger, mail and freight service is to be maintained each winter, while the through line is closed, semi-weekly between St. John's and Grand Falls (the seat of the great Northcliffe paper mills) on the east coast, a distance of about 500 miles, while a similar service will be conducted on the west coast, between Port aux Basques and beyond Bay of Islands, the seat of the main herring industry, a distance of about 150 miles, the interior section of the Topsails already described, and totalling about another 100 miles, with practically no settlers, being abandoned.

To make this Argentia-Sydney service effective, Argentia, heretofore without railway connection and three miles from the nearest point on the track, is to be connected by a spur line covering that distance, and now under construction, and at Argentia it is proposed to build piers extensive enough to take large ocean freight steamships and to use it as a winter shipping port for the Harmsworth paper mills operating in the interior of the country, and at present suffering difficulty from this cause, if the company

will agree to make it a terminal for such purposes.

The whole system of the in-bay and coastwise steamship connection, heretofore partly owned and operated by the Reids, and partly by the Government, has been taken over by the commission and is being operated in conjunction with the railway line. The Reids formerly had 10 ships connecting with the trains at convenient points for the great bays and at other sections of the coast into which the country naturally divides itself, because nearly the whole of the population are settled around the seaboard in countless harbors whence they ply their fishery pursuits and the railway without such auxiliaries would be virtually useless to them. Some of the Reid steamships were taken for war purposes, and others were lost by perils of the sea and the Government procured others in England, and in America, while the previous administration bought two locally which did the main services from St. John's, north and west, and it is claimed that better results can be obtained by combining all these—Reid and Government—as a single agency in connection with the railway.

The Government also made provision whereby the commission could undertake the development of certain coal areas on the west coast of the island, adjacent to the railway line, for the purpose primarily of affording a supply for the operating of the line, and, secondarily, for the utilization of any surplus for general economic purposes, if a report by a Canadian Government geologist whose services were requested was favorable. He came to the island, examined the area, and reported in sufficiently encouraging terms as to its possibilities to warrant the authorities in undertaking work upon it, and this in a preliminary stage has been started, and five large motor trucks, each weighing two tons and to carry five tons of coal, have been bought and taken to the scene, to be used in getting the coal to the main line of the railway, four miles distant. It is hoped to accomplish this the present autumn before snow falls, but otherwise next spring, as the road to the mine is but newly built and rough in construction and could hardly be utilized during the severe winters of this region.

The commission has cut off all passes to legislators and others, and is working on the basis that everybody who travels on the railway, no matter what his state or condition, must pay his fare. It also proposes to begin next spring the running of a daily trans-insular service, which was in effect for two years before the war, but was then abandoned until last year, when it was resumed; but it was dropped again this year on the ground that there was a shortage of rolling stock.

The commission has also re-arranged the terminals and ports of call for the various coasting steamships, and expects to effect substantial improvements in this way.

What the net result will be it is difficult to say. The saving which the cancelling of passes would represent is but small and can only be a drop in the bucket as compared with general expense of the service, though the step meets no criticism. As against it, however, the employes of all branches of the railway

have put before the commission a demand for an increase of 30% for all salaries under \$1,000 and 20% for all salaries over that, and the conceding of these will increase to a goodly extent the cost of working the railway. Not probably it may be followed by a similar demand from the crews of the coastal steamships. There will be a substantial saving made by abandoning the cross country express service during the winter, but the benefit to follow from the use of Argentina by the Northcliffe Co. is not easily seen, because at present a lot of the paper is shipped by this firm through Heart's Content, in Trinity Bay, or through St. John's, and while the company might ship more through Argentina, it would not likely exceed an extra cargo of 4,000 tons annually, and the extra freight on this would not pay in years, for the sheds that would have to be erected to protect the paper, while waiting for shipment, if the Government had to put them up, and as the Northcliffe people have such an equipment at Heart's Content already, they are not likely to repeat the experiment at Argentina.

The view is expressed in non-political quarters that the Government is taking a big risk in associating itself too closely with the operation of the railway in the light of the experience of Canada and the United States in this very same proposition. The U.S., it is argued, had to abandon the experiment within two years after having sunk a billion dollars therein. Canada began exactly as Newfoundland, by appointing government members on a board of directors to operate the Canadian Northern Ry., and had as a result to advance such large sums of money to finance the project that it had to take the line over altogether, doing somewhat the same thing with the Grand Trunk Ry., and now finding itself with an annual liability that may be this year \$1,000,000,000.

As shown already, the cost of operating the Newfoundland Ry. alone was to the Reids for the fiscal year 1918-1919 about \$500,000. That, it is understood, did not include the operating of the steamships, and it is not believed here that these could have been operated at a profit. The steamships the Government is operating in addition to these, are likewise believed to be unprofitable, and many people expect that a year from now, when the figures of the working of the combined system are available, they will show a shortage staggering in its proportions.—Montreal Star.

Automatic Train Control Committee.

At a recent meeting, in New York, of the joint committee on automatic train control, which was appointed by President R. H. Aishton, of the American Railway Association, the following appointments were made:—Chairman of committee, C. E. Denney, Vice President and General Manager, New York, Chicago & St. Louis Rd.; vice chairman for operating division, T. H. Beacom, Vice President and General Manager, Chicago, Rock Island & Pacific Ry.; vice chairman for engineering division, A. M. Burt, Assistant to Operating Vice President, Northern Pacific Ry.; vice chairman for signal division, W. J. Eck, Signal and Electrical Superintendent, Southern Ry.; vice chairman for mechanical division, J. T. Wallis, Chief of Motive Power, Pennsylvania System.

The duties of the joint committee are

to confer with the Interstate Commerce Commission, to prescribe rules for tests, and to arrange for actual tests. Under the Transportation Act, the Interstate Commerce Commission has authority to order any carrier, upon two years notice, to install automatic stops and train control of a design approved by the Commission.

Co-ordination of Station Services, C.N.R. and G.T.P.R.

Under the general plan of co-ordination of Canadian National and Grand Trunk Pacific Railways at points where both lines have had stations heretofore, and where rail facilities will permit, but one station will be used for passenger business, and all passenger trains will operate in and out of such stations. The stations to be used are: at Yorkton, Sask., G.T.P.R.; Canora, Sask., C.N.R.; Saskatoon, Sask., C.N.R.; Moose Jaw, Sask., C.N.R.; Battleford, Sask., C.N.R.; Prince Albert, Sask., C.N.R.; Portage la Prairie, Man., G.T.P.R.

At Regina, Sask., separate stations are still maintained. All G.T.P.R. trains and C.N.R. Regina-Gravelbourg trains 53 and 54 operate to and from the G.T.P.R. station. All other trains operate to and from the union station.

Port Arthur-Fort William-Sioux Lookout, Ont., trains 181 and 182 now oper-

ate between Port Arthur and Sioux Lookout, running to and from the C.N.R. passenger stations at Port Arthur and Fort William, and the use of the C.P.R. Fort William station by them has been discontinued.

Irish Railway Operation Discontinuances.

The following, reproduced from the Railway Magazine, London, Eng., is a sample of advertisements which have been appearing in Irish newspapers recently.

Great Northern Railway of Ireland.

Owing to the refusal of certain members of the company's staff to carry out their duties, a state of affairs has arisen which necessitates the closing of portions of the line for public traffic.

In addition to the Bundoran Branch the following sections of the line will be closed for passenger, goods, and live stock traffic ON AND FROM MONDAY, SEPT. 20, 1920:—

- Dundalk to Enniskillen;
- Carrickmacross Branch;
- Cootehill Branch.

(Then follows a list of trains discontinued.)

For full particulars see posters at stations.

JOHN BAGWELL, General Manger. Dublin, Sept. 15, 1920.

Numbering of Canadian National Railways Locomotives.

A subscriber wrote Canadian Railway and Marine World recently as follows: "I would appreciate it very much if you could advise me what system the Canadian National Rys. have adopted in re-numbering locomotives of the Canadian Government, Canadian Northern and other lines absorbed by the Canadian National. I know the Pacific type is 5000 to 5999, ten-wheel type 1000-1999, etc., but would like information to cover all classes, consolidation, Sante Fe, switch, road, etc."

The Canadian National Rys. Mechanical Department has furnished us with a copy of its general scheme of locomotive classification, in tabular form, as follows:—

Class letter.	Type.	Wheel arrgt.	Driving wheel diameters.	Road nos. assigned.
X	Miscellaneous		All diameters	1 to 99
A	American or	4-4-0	63 in. or less	100 to 199
B	8-wheel		Over 63 in.	200 to 399
C	Mogul	2-6-0	52 in. or less	400 to 469
D	. . . . .		58 in. or less, but over 52 in.	470 to 529
E	. . . . .		Over 58 in.	530 to 999
F	10-Wheel	4-6-0	52 in. or less	1000 to 1015
G	. . . . .		58 in. or less, but over 52 in.	1016 to 1199
H	. . . . .		63 in. or less, but over 58 in.	1200 to 1499
I	. . . . .		Over 63 in.	1500 to 1799
L	Consolidation	2-8-0	52 in. or less	1800 to 1804
M	. . . . .		58 in. or less, but over 52 in.	1805 to 2200
N	. . . . .		Over 58 in.	2201 to 2999
R	Mikado	2-8-2	58 in. or less	3000 to 3199
S	. . . . .		63 in. or less, but over 58 in.	3200 to 3999
T	Santa Fe	2-10-2	58 in. or less	4000 to 4999
J	Pacific	4-6-2	70 in. or less	5000 to 5499
K	. . . . .		Over 70 in.	5500 to 5999
	Mountain	4-8-2	. . . . .	6000 to 6999
O	6-wheel switch	0-6-0	All diameters	7000 to 7999
P	8-wheel switch	0-8-0	All diameters	8000 to 8499
Q	10-wheel switch	0-10-0	All diameters	8500 to 8999
Z	Electric . . . . .		. . . . .	9000 to 9999

It will be noted that the various types of locomotives, such as consolidation, Pacific, 10-wheel, etc., are sub-divided, and these sub-divisions are governed by the diameters of the drivers. For instance, in classifying Pacific type locomotives, all with drivers 70 in. or less are in class J, and all with drivers over 70 in. in diameter are in class K.

Each of these classes is sub-divided J-1, J-2, K-1, K-2, etc. Locomotives that are of radically different design and size are put in different sub-classes, but when there are two or more classes which are all of the same general design, but merely differ in details, a further sub-division is made, as for instance, J-1-a, J-1-b, K-1-a, K-1-b, etc., so that the classification symbol on the cabs of locomotives shows not only the type but the class and sub-class of each, and this classification symbol is used instead of the locomotive numbers in referring to any particular class of locomotive.

Miscellaneous types are classified under the class letter X, which includes any narrow gauge locomotives, no matter

what their particular type may be, also saddle tank locomotives, type 0-4-0, and any other odd types which do not come under any of which may be called the standard types.

The C.N.R. has no mountain type locomotives, so no class letter has been assigned to them, but nos. 6000 to 6999 have been reserved for them.

Electric Railway Department

The Ontario Hydro Electric Railways Enquiry.

Mr. Justice Sutherland, chairman of the Commission appointed by the Ontario Government, to enquire into the Hydro Electric Power Commission of Ontario's radial railway projects, issued the following statement Nov. 13:—"The members of the Radial Railway Commission, a day or two after their last public meeting on Oct. 26, visited the New England and middle west states to see the lines of radial railways, suggested in the evidence already taken as to some extent analogous to, or comparable with, the lines of radial railways in Ontario in question, and other lines, and to make enquiries as to cost of construction, stock and bond issues, upkeep, maintenance and passenger and freight revenue. In the course of their investigations they met and conferred with the managers and operating officials of the railways. It is the intention of the commission, if possible, to call several of these men and obtain their experiences and expert testimony. They have also retained F. P. Gutelius, an experienced railway engineer and operating expert, to investigate and report on the questions involved in the enquiry, and to give evidence, if deemed advisable, before it. They have also secured the services of the firm of auditors, Price, Waterhouse & Co.

"When the Commission adjourned, it was expected that a public meeting, for the purpose of continuing taking evidence would be held at the end of this week, or the beginning of next, at which W. S. Murray, the engineer who made a report to the Hydro Electric Power Commission in May last with reference to the proposed construction of the Toronto and Bowmanville, the Toronto, Hamilton and Niagara Falls and the Hamilton, Guelph and Elmira radials, would be called, and certain other witnesses. It has been found impossible to secure their attendance before Nov. 22, when the next meeting will be held."

The commission appointed by the Ontario Government resumed its sittings in Toronto Nov. 22, the first witness called being W. S. Murray, Consulting Engineer, New York, who made a report on the Hydro Electric Power Commission of Ontario's Railway Projects in May at Sir Adam Beck's request. His evidence was largely a defence of his report. On subsequent days, up to Nov. 24, when this matter was written, other witnesses examined were C. E. Friend, Comptroller, Canadian National Rys., who testified in regard to Niagara, St. Catharines & Toronto Ry. and Toronto Suburban Ry. earnings, etc.; Lt. Col. G. C. Royce, General Manager, Toronto Suburban Ry., and E. P. Coleman, General Manager, Dominion Power & Transmission Co., who gave information in regard to their respective lines. The principal examination of witnesses was conducted by I. F. Hellmuth, K.C., counsel for the Government commission, the cross examinations being made by R. A. Mackay, K.C., representing the Ontario Hydro Electric Railway Association, and R. S. Robertson, representing municipalities either opposed or not interested in the hydro electric railway projects.

Regina Public Utilities' Deficits.

The Regina, Sask., city aldermen met as a special committee recently, to discuss the deficit in the operation of the city's public utilities for the current financial year. It was reported that the civic utilities, which include the municipal railway, the electric lighting and power plant, and the waterworks, showed a deficit for the nine months ended Sept. 30 of \$115,000, and that it was expected that with the installation of the new unit at the power house the deficit would be redeemed by the end of the year. Commissioner Thornton expressed the opinion that the deficit on the light and power plant might be reduced from about \$66,000 to about \$20,000 by the end of the year.

The deficit of the municipal railway for the 9 months ended Sept. 30 was reported to be \$46,000, and Commissioner Thornton is reported to have expressed

Canadian Electric Railway Association.

Honorary President, Lieut.-Col. J. E. Hutcheson, General Manager, Montreal Tramways Co.

Honorary Vice President, Acton Burrows, Proprietor and Editor, Canadian Railway and Marine World.

President, A. Gaboury, Superintendent, Montreal Tramways Co.

Vice President, G. Gordon Gale, Vice President and General Manager, Hull Electric Co.

Honorary Secretary-Treasurer, pro tem, A. Eastman, Vice President and General Manager, Windsor, Essex & Lake Shore Rapid Railway Co.

Executive Committee, The President, Vice President, and F. D. Burpee, Manager, Ottawa Electric Railway Co.; C. C. Curtis, Manager, Cape Breton Electric Co.; A. Eastman, Vice President and General Manager, Windsor, Essex & Lake Shore Rapid Railway Co.; Geo. Kidd, General Manager, British Columbia Electric Railway Co.; M. W. Kirkwood, General Manager, Grand River Railway Co. and Lake Erie & Northern Railway Co.; A. W. McLimont, Vice President and General Manager, Winnipeg Electric Railway Co.; R. M. Reade, Superintendent, Quebec Railway Light & Power Co.; Lt.-Col. G. C. Royce, General Manager, Toronto Suburban Railway Co.; C. L. Wilson, Assistant Manager, Toronto & York Radial Railway Co.

Official Organ—Canadian Railway and Marine World, Toronto.

the opinion that, given favorable conditions, the deficit might be reduced to \$36,000 by Dec. 31.

A report from D. W. Houston, Superintendent of the municipal railway, which was considered, is reported to have stated that the weekly average receipts for three months ended April 30 were \$20,000, compared with \$16,500 for the three months ended July 31 and \$13,694 for the three months ended Oct. 31. These figures were for the second week only in each of the months and excluded returns for Saturdays and Mondays, which are very variable. The people generally, the report added, were not patronizing the street railway as they should. Mr. Houston suggested that better results would be secured if citizens, instead of paying the deficit in taxes, were to use the money for riding on the cars when they would reap the additional advantage conferred by the service given.

British Columbia Electric Railway Fares and Expenditures.

Geo. Kidd, General Manager, British Columbia Electric Ry., is reported to have said in a recent interview that until the question of whether the company's lines are to remain under the Board of Railway Commissioners' jurisdiction or not is settled, no capital expenditures will be made. He is also reported to have said:—"Since the 6c. fare went into effect about \$1,225,000 has been granted in wage increases. Last year wages and salaries totalled \$3,452,565, and the increase which went into effect on Oct. 1 amounted to \$250,000. There are 2,600 employes. To think of a 5c. fare would be impossible. Few street railways are operating on a 5c. fare today. The recent increases in wages make it impossible to return to the 5c. fare. Some effort should be made to stabilize the company's revenue, either by agreement or by other methods. The further raising of fares is not under consideration by the company.

Winnipeg Electric Railway Preferred Stock Issue.

The Winnipeg Electric Ry. is issuing \$3,000,000 cumulative 7% stock preferred as to dividends and assets, which will make its capitalization as follows:—

	Authorized.	Out-standing.
Common stock	\$11,000,000	\$11,000,000
7% Preferred stock (this issue)	3,000,000	3,000,000
Bonds and debenture stock (including subsidiaries)		10,245,000

The stock is being offered at 90, yielding 7½%, with a bonus of 30% common stock. Following are extracts from the prospectus issued by Nesbitt, Thompson & Co., Montreal.

The company does a power, lighting and gas business, and operates the entire street railway system of the City of Winnipeg, consisting of 120 miles. It has a hydro electric development of 33,000 h.p. capacity and an auxiliary steam plant of 13,000 h.p. In addition the company controls a large undeveloped water power capable of 170,000 h.p. development capacity. The franchises, we consider, are very satisfactory.

The properties (exclusive of the large undeveloped water power), were valued by the Manitoba Public Utilities Commission at \$24,369,431. This replacement value is equivalent to over \$450 a share for the preferred stock, or about \$100 a share for the common stock.

Average annual net earnings for the three pre-war years ended Dec. 31, 1914 (which would have been available for dividends on the present issue of preferred stock), were \$1,148,193. Average annual net earnings for the three years ended Dec. 31, 1919, under very adverse and war conditions, which would have been available for dividends on present issue of preferred stock, were \$496,637.

Preferred stock dividend, \$210,000 (equal to almost two and one half times preferred dividend).

Estimated net earnings for current fiscal year, based on actual figures for first eight months, are \$630,000 (equal to three times preferred dividend).

The Public Utilities Commissioner au-

thorized the company to increase its street railway fares to 7c. cash or 4 tickets for 25c., and to increase the price of gas to \$1.75 per 1,000 ft. as from Sept. 1, 1920, and made the following statement in connection therewith: "To ensure continuance of a satisfactory service the rate must be such as will be attractive to investors. In my judgment 8% is the proper rate to fix."

The management of the company was taken over in Oct., 1917, by A. W. McLimont, who possesses a broad experi-

The Question of Jurisdiction Over British Columbia Electric Railway.

The British Columbia Electric Ry. applied, last summer, to the Board of Railway Commissioners, for approval of a tariff of commutation fares. The Chief Commissioner expressed himself as not being altogether satisfied that the Railway Act, as amended and consolidated in 1919, placed the company under the Board's jurisdiction, inasmuch as the company's undertaking had not been declared a work for the general advantage of Canada, and in order to satisfy himself as to the Board's jurisdiction, he submitted a stated case to the Supreme Court, a draft copy of which has been furnished Canadian Railway and Marine World as follows:—

"In the matter of the application of the British Columbia Electric Ry. Co., Ltd., for approval of tariff of commutation fares, B.C.E.R. 30, C.R.C. 21, between points on its Central Park line, District 1, between Vancouver and New Westminster. The following case is stated by the Board of Railway Commissioners for Canada for the opinion of the Supreme Court of Canada:

"1. The company was incorporated in England, under the Imperial Companies Act, 1862 and 1893, with head office in London, and was licensed under the B.C. Companies Act to carry on business in B.C., with its head office at Vancouver, for the purpose (among other things) of taking over and acquiring all the business, franchises, rights, powers, and all the other assets of the Consolidated Ry. Co., a company incorporated by special act of the B.C. Legislature by 57 Victoria, chap 56, being The Consolidated Railway and Light Company's Act, 1894, which act was amended and consolidated with certain other acts by special act of the B.C. Legislature by 59 Victoria, chap. 55, being The Consolidated Railway Company's Act, 1896.

"2. The B.C. Electric Ry. Co. has leased and operates, as part of its system, the railway lines Vancouver & Lulu Island Ry. Co. and the Vancouver, Fraser Valley & Southern Ry. Co., the undertakings of which companies have been declared by Parliament to be works for the general advantage of Canada.

"3. That, so far as the operation by the B.C.E.R. Co. of the Vancouver & Lulu Island and the Vancouver, Fraser Valley & Southern Ry. is concerned, it is admitted that such operation is under the Board's jurisdiction.

"4. Sec. 6, par. (c), of the Railway Act, 1919, provides as follows:—

"Every railway or portion thereof, whether constructed under the authority of the Parliament of Canada or not, now or hereafter owned, controlled, leased, or operated by a company wholly or partly within the legislative authority of the Parliament of Canada, whether such ownership, control, or first mentioned operation is acquired or exercised by purchase, lease, agreement, or other means whatsoever, and whether acquired or

exercised under authority of the Parliament of Canada, or of the legislature of any province, or otherwise howsoever; and every railway or portion thereof, now or hereafter so owned, controlled, leased, or operated shall be deemed and is hereby declared to be a work for the general advantage of Canada.

"5. By act of the Parliament of Canada, passed in 1920, chap. 65, it was provided as follows:—

"Sec. 6 of The Railway Act, 1919, chap. 68 of the statutes of 1919, is amended by adding thereto the following subsection:

"2. The provisions of paragraph (c) of this section shall be deemed not to include or apply to any street railway, electric suburban railway or tramway constructed under the authority of a provincial legislature, and which has not been declared to be a work for the general advantage of Canada otherwise than by the provisions of the said paragraph. Provided that this subsection shall not affect or come into force with respect to any street railway, electric suburban railway, or tramway in the Province of British Columbia until the expiration of one year from the passing of this act."

"6. Objection has been taken to the jurisdiction of the Board to deal with this application, on the ground, shortly stated, that a general provision, declaring the undertaking of unnamed companies' works for the general advantage of Canada, is not effective to bring such companies within the legislative authority of the Parliament of Canada, and therefore under the jurisdiction of the Board; that such declaration to be effective must be made in express words, specifying particularly the company or companies sought to be affected.

"7. The question which the Board, in pursuance of the powers conferred upon it by the Railway Act, 1919, submits for the opinion of the Supreme Court of Canada is: 'Whether, under the above facts and legislation, those portions of the system of the B.C.E. Ry. Co., other than the Vancouver & Lulu Island and the Vancouver, Fraser Valley & Southern Ry. Companies, wholly situate in the Province of British Columbia, have been declared by Parliament to be a work or works for the general advantage of Canada, or whether specific reference to the company in the foregoing legislation will be necessary for that purpose?'

The matter came before Mr. Justice Anglin, of the Supreme Court, at Ottawa, Sept. 29, who ordered that it be provisionally set down for hearing at the end of the western list of cases inscribed for the Court's autumn session, notice of the hearing to be given to all parties who appeared on the application to the Board of Railway Commissioners and that any parties desiring to file factums do so before Oct. 20.

We were officially advised Nov. 18 that there was not time for the parties to prepare and file their factums for the Supreme Court's October session, and, by consent, the case was enlarged and will probably be heard at the February sittings.

Winnipeg Street Railway Situation.

From Winnipeg Electric Railway Public Service News.

The story is told of the fly that, riding on the wheel of a racing chariot, exclaimed "My! what a dust I am raising." The professional trouble makers and others who seek to ride into public favor at the expense of the public utilities are very much like the fly.

The efforts to create an unreasonable opposition to what is, perhaps, Winnipeg's most important utility—the street railway—is contrary to the spirit of united effort which is so generally urged at this time. During this period of reconstruction there should be no divided interests in matters that are so close to the public welfare and to the progress of any community as its street railway system.

The trend of events in every section of the country shows that municipalities are awakening to the fact that street railways should be treated as friends and not as enemies. Where this spirit is dominant it is significant that the service is the best, that extensions are proceeding and the needs of the community served to the best advantage. If, in Winnipeg, the street railway service is not to be lessened, if general business development is not to be stunted, the street railway problems, which are of necessity the problems of the city, must be approached in a spirit of honest co-operation and in a desire to give careful and fair minded consideration to all the facts. There must be sane discussion and common sense. It is easy to criticize, it is easy to cripple, but it is a difficult thing to build for the future.

The street railway must have the co-operation of the public if it is to grow, and likewise nothing can deaden the progressive movement of Winnipeg so much as the stagnation of its street railway.

Rows make good newspaper copy, and co-operation does not, but in the long run the public, through its representatives, and the street railway will have to pool their interests and pull together if either is to prosper—and they will not prosper separately.

Canadian Street Car Fares.

A very small percentage of car riders in Winnipeg pay the cash fare of 7c. Most of them buy tickets which give them their ride for 6¼c. Compared with many other cities in Canada and the United States, Winnipeg's street car fare is low. In the United States 170 cities have 7c. fares, 55 cities have 8c. fares, and in 26 cities the rate is 7c. with 1c. extra for transfer. The number of cities in which the fare is 10c. is now approaching the one hundred mark.

We have just had compiled a list of street car fares in cities in Canada. This compilation shows that in Sydney, N.S., Levis, Que., and on the Regina, Calgary and Saskatoon municipally owned lines, the rate of fare is 10c., with no reduced tickets except for children.

Sherbrooke, Que., has an 8c. fare, while the following cities have a 7c. fare:—Quebec, Fort William (municipally owned), Halifax, Montreal and Edmonton. In the last city, the street railway is municipally owned and the city commissioners have applied for a 10c. fare because the 7c. fare did not meet the cost of giving service.—Winnipeg Electric Railway Public Service News.

Electric Railway Projects, Construction, Betterments, Etc.

British Columbia Electric Ry.—The company was asked recently by Vancouver City Council for an extension of Broadway East line; for the connecting up of the Georgia St. viaduct, and the running of through cars on it and for increased service in other parts of the city. The management replied that the extensions and increases in service were not justified. In addition, it pointed out that as long as the fares charged are in jeopardy, owing to the possibility that the company might be thrust back upon the terms of the original franchise, no further capital expenditures could be made on the railway. The company is prevented from obtaining more rolling stock, owing to the proposed change in the rule of the road.

Burnaby municipality applied to the Board of Railway Commissioners recently for an order for a crossing over the company's interurban railway at Salisbury road, but the matter was deferred pending the Supreme Court's decision as to the Board's jurisdiction over the company.

Hamilton Radial Ry.—A press report states that a contract has been let by the Dominion Government for the erection of a new bridge across the canal at Burlington Beach, Ont. The work is not expected to be completed for about a year. Pending the erection of the bridge the Hamilton Radial Ry. will operate its cars from Hamilton to the canal bank, and from the opposite bank of the canal to Oakville, passengers walking from one car to the other along a temporary foot bridge. It was expected that an arrangement could have been made for the operation of the cars across the G.T.R. bridge, but the matter of terms could not be agreed upon. (May, pg. 257.)

London & Port Stanley Ry.—The London, Ont., City Council has approved of the submission of a bylaw to a vote of the ratepayers on Jan. 1, 1921, to issue debentures for \$257,500 for the L. & P. S. Ry. It is said that the whole of the line will have to be rebalasted next year, and that other expenditures will have to be incurred to maintain the roadbed in good condition.

Hamilton St. Ry.—A press report of Nov. 6, stated that no further work would be done on the lines in Hamilton, Ont., during this year, and that there was no prospect of the tracks on Wentworth St. being relaid, as the city council was not prepared to go on with the necessary paving. (Oct., pg. 561.)

Montreal Tramways Co.—A press report states that the company has been instructed by the Montreal Tramways Commission to replace two sections of track on St. Catherine St., which had been removed from the usual location and laid close to the sidewalk as a temporary measure, during sewer reconstruction by the city council. (Sept., pg. 503.)

We are officially advised that the company has under construction the following sections of new single track: Kelly St. extension, Alimistic St. to Bordeaux St., 2.30 miles; Park Ave. extension, Atlantic Ave. to Ball St., 0.95 of a mile. The following betterments are also being carried out:—Cote St. Catherines Rd., 1.69 miles single track; St. Catherines line, Marboro to Prefontaine, 0.22 of a mile, single track; Notre Dame line, Montcalm to Craig, 1.25 miles, single track; St. Catherine line, Victoria to Glen, 0.15 of

a mile, single track, and Greene to Atwater, 0.48 of a mile, single track. There is also under construction a substation at Cote St. (Sept., pg. 503.)

Three Rivers Traction Co. has, we are officially advised, completed the erection of a small brick car barn of 9 cars capacity at Three Rivers, Que., and it has also made some extensions to its old car barn.

Niagara, St. Catharines & Toronto Ry. A press report states that the company is building an addition to its car barns and shops on Welland Ave., St. Catharines, Ont., that the addition is 100 x 200 ft., is of brick and steel with concrete floor, that the machine shop will be in the center of the building, and that when completed the entire building will be 200 x 400 ft. (Sept., pg. 503.)

Ottawa Electric Ry.—A press report of Nov. 16 stated that automatic switches had been installed at the corner of Bank and Sparks Sts.; at the corner of Bank and Queen Sts.; two at the junction of Elgin and Sparks Sts.; at the corner of Sussex and Rideau Sts., and that it is expected that automatic switches will be installed at other junction points next summer. (May, pg. 257.)

Sherbrooke Ry. & Power Co. is, we are officially advised, contemplating making a small extension to its car barns. (Dec., 1919, pg. 670.)

Mainly About Electric Railway People.

R. A. Brown, who is Superintendent, Calgary Municipal Ry., as well as having charge of the Calgary city electric light and power plant, has been elected a councillor of the recently formed Alberta Association of Professional Engineers.

Ernest P. Fredericks, who came to Canada from Massachusetts, some two or three years ago, and organized the Association of Holders of Public Utilities Securities, in Toronto, who subsequently located in Ottawa, and later became Secretary-Manager of the Belleville, Ont., Chamber of Commerce, has resigned that position.

T. H. McCauley, General Manager, New Brunswick Power Co., is reported in St. John, N.B., papers as having resigned. He was appointed last spring, having previously been Manager of Calgary Municipal Ry.

H. A. McLean, of Sarnia, Ont., has been appointed Manager, Moose Jaw Electric Ry., Moose Jaw, Sask., succeeding A. H. Dion, whose resignation was announced in our last issue. He is a brother of J. A. McLean, President, Manitoba University, and is a graduate in mechanical and electrical engineering of Ann Arbor University, Mich. He was engaged, during the war, on munitions work, at Trenton, Ont.

W. G. Murrin, Assistant General Manager, British Columbia Electric Ry., has been elected President, Vancouver Canadian Club, of which he was Vice President during the past term.

E. F. Seixas, General Manager, Monterey Ry., Light & Power Co., Monterey, Mexico, spent a short time in Toronto recently and returned to Monterey, with his wife and family, who had been in Toronto during the summer.

Answers to Electric Railway Questions.

The following are among answers to questions sent to the American Electric Railway Association's question box:—

Equipment.—What are the relative advantages at the present time of chilled cast iron wheels vs. steel wheels?

D. E. Blair, Superintendent of Rolling Stock, Montreal Tramways Co.:—For city service we find a good cast iron wheel just as satisfactory as any steel wheel and very much more economical. The chief objection to cast iron wheels is liability to chipped and broken flanges. These troubles have been practically eliminated, by careful attention to moulding practice. Our flange dimensions are 1 3/16 x 5/8 in., and we insist on the elimination of any sign of the parting line between sand mould and chill. This is ground off by the manufacturer.

W. G. Murrin, Assistant General Manager, British Columbia Electric Ry.:—None from our experience. We are replacing cast iron and rolled steel wheels, which when worn and turned to limit are made into centers upon which tires are shrunk, restoring the wheel to original diameter. In operation cast wheels are rougher and make more noise, tending to reduce life of axles and bearings, unless ground smooth when put on, which would materially shorten their life. They also show a greater tendency to skid, and when flat spots develop have to be scrapped. Other troubles are clipped flanges and broken treads, neither of which occur to steel wheels, which are almost invariably sent to shop for worm flanges, and since this condition comes gradually, steel wheels can be shopped at the convenience of the shops and all the wheels of a car attended to at once. On the other hand cast wheels fail one at a time, and must be shopped at once, and for this reason cast iron equipments are sent to shop five times for every twice the steel equipments are shopped. Unless they are severe, flat spots on steel wheels disappear in a few days without requiring attention in the shop. As to the comparative cost, I give below figures based on last market quotations received, the ultimate cost in ten years being for seven renewals of cast wheels, compared with one renewal of steel wheels, and two sets of tires on an original set of wheels:

	Cast iron	Rolled steel	Tires
City service wheels.	33"	34"	34"
Diameter of wheel, new.	510	600	340
Weight, new, in lbs.	46,000	195,000	176,000
Average life, in months..	14	58	53
Weight after removal,			
in lbs.	420,460	(300)	100
Cost when new (1920)....	\$27.00	\$54.00	\$30.00
Machinery, mounting and			
renewal	1.00	1.00	1.30
Cost of three turnings....		1.65	1.65
Credit for scrap (1920)....	7.00	(nil)	.95

Total net cost per wheel..\$21.00 \$56.65 \$32.00
Total cost at end of 10 years \$175.00 \$168.30 \$120.00
Average per 1,000 miles.... 0.438 0.421 0.300

Motor Commutators.—Do you practice undercutting of mica of the commutators of railway motors, with the use of soft brushes, and if so, with what results?

D. E. Blair, Superintendent of Rolling Stock, Montreal Tramways Co.:—We have practiced undercutting of mica in commutators for several years. The results have been such that the life of commutators will likely full equal that of the armature cores themselves.

Equipment Standardization.—Please furnish a list of simple equipment parts which in your opinion should be standardized.

W. G. Murrin, Assistant General Manager, British Columbia Electric Ry.:— Brake heads and hangers (to conform with A.E.R.A. standard shoes). Journal boxes, wedges and check-plates. Motor bearing liners (for standard sizes of axles and motors) and system of lubrication.

Trolley wheels—depth and contour of grooves and dimensions of hub and pin. Standard flexible cables for car wiring and motor connections—for each standard rating of motor, including insulation for 600, 1200 and 1500 volts.

Schedule Speeds.— Please furnish a statement of the schedule speed on three of your typical routes in city operation, representing respectively a high, medium and slow speed line. Please furnish speed both with and without layover and for both base and rush-hour schedule.

W. G. Murrin, Assistant General Manager, British Columbia Electric Ry.:— During morning hours, 6 to 10.30 a.m., speed without layover, 10.2 miles an hour. With layover, 9.3 miles an hour.

Normal time throughout day, 9.3 miles an hour without layover and 8.8 with layover.

Evening rush, 8.4 without layover and 7.8 miles an hour with layover.

Owl cars (after midnight), 11.2 miles an hour without layover. (No layover provided for after midnight.)

Street Railway Fare Advances.

The Cleveland, Ohio, Ry. has increased its fares from 5c. to 6c. cash, or 9 tickets for 50c., with a charge of 1c. for transfers.

The residents in 345 United States cities with a population of over 22,000,000 people are now paying street car fares of 7c. or more. Six and a half million people pay 10c. cash.

Illinois Public Utilities Commission has sustained the 8c. street car fare in Chicago and made it permanent. The city opposed the application and asked that the franchise rate of 5c. be restored.

Italian street car fares have been raised in the day time from 6c. to 9c., and at night from 8c. to 15c. It is said that a ride on a night street car now costs 50% more than a ride in a cab prior to the war.

Manchester, Eng., has a municipal tramway system. According to official figures it has, for the past two years, been losing at the rate of \$20,000 weekly. To increase revenues, the length of zones has been reduced.

A short time ago it was found that the 6c. fare in Kansas City, Mo., was not sufficient to permit the company to meet operating expenses, and so it was advanced to 8c. But even this fare failed to produce the revenue required and the company went into bankruptcy. The press and public bodies of Kansas City are criticising those who permitted the city to receive such a black eye, and are loud in deploring the situation.

Two weeks ago street car fares in Philadelphia were raised from 5c. to 7c. One week ago car fares in Cleveland were boosted to 6c. Both these cities have been freely referred to by press and public as "low fare cities of the continent." Speaking about Cleveland, reminds us that Cleveland riders do not have to include any such enormous franchise taxes and paving obligations in their car fares as Winnipeg car riders do. This Cleveland Street Ry. operates under an ideal franchise. In Cleveland the rider pays for a ride. In Winnipeg

he not only pays for a ride, but helps to pay for a paving block and a tax bill every time he boards a car. It's not the company's fault. It's the law.—Winnipeg Railway Public Service News.

London Street Railway Situation.

The Ontario Railway and Municipal Board is reported to have advised the London, Ont., city council that the results of the operation of the line during October were that after paying the conductors and motormen the guaranteed maximum wages of 48c. an hour, and after making provision for bond redemption and other charges, there was a surplus of \$17.36.

It is only out of any surplus so remaining that any increase of wages can be given the men. The men agreed to operate the cars for a certain time at maximum rate of 48c. an hour, with a hope of getting an increase to 52c. The Ontario Railway and Municipal Board, which continues to operate the line, has never had anything in the way of a surplus which would justify the granting of any proportion of the increased wages asked, with the result that the whole question of wages is still unsettled. The men continue to threaten to strike, but have not done more than threaten up to date. It is claimed that the Ontario Railway and Municipal Board may abandon the accumulation of the necessary amount for the redemption of bonds and so release a considerable sum for an increase of wages. However, nothing has been done; the line is still being operated, and developments are being awaited by all parties.

Hydro Electric Power Commission of Ontario's Railway Projects.

Several matters in connection with the proposed electric railway lines into Hamilton came up for discussion between F. A. Gaby, Chief Engineer, Hydro Electric Power Commission of Ontario, and the city council's railway committee Nov. 13. The particular matter considered was the entrance of the provincial highway into the city, and its relation to projected electric railway construction. It was decided to ask the Ontario Highway's Department to reconsider its plans for taking for a highway entrance the route planned for the electric railway entrance. Some other matters in connection with bridges were discussed, but it was stated that nothing definite could be settled until after the Royal Commission on the hydro electric radial railway's projects reports.

Representatives of municipalities within which the Niagara, St. Catharines & Toronto Ry. operates, met at Thorold, Nov. 12, to decide what steps should be taken to have the N., St. C. & T. Ry. made part of the projected hydro electric radial railway system in the Niagara peninsula.

A press report states that arrangements between the Hydro Electric Power Commission of Ontario and representatives of municipalities between Port Burwell and London, as to plans for building of an electric railway.

A plan showing the proposed route of the Toronto Eastern Ry. through the City of Toronto and York and Scarborough townships is reported to have been filed in the country registry office. The line will, it is said, start at the foot of Bay St. and will run east on private

right of way on land to be made by the Harbor Commission. After crossing the Don the road will run along Keating St. nearly to Leslie St., where it turns slightly north and runs through a block between Leslie St. and Morley Ave. south of Eastern Ave., which has already been acquired by the Hydro Electric Power Commission. The route laid out continues northerly and easterly to Danforth Ave., and then easterly across blocks of unbuilt-on property, a good deal of which, however, is laid out for building lots—leaving York Tp. at Dawes Road, and then across Scarborough Tp. to Scarborough Jct.

Guelph Radial Railway Matters.

We are officially advised that the Guelph, Ont., City Council has decided to terminate the agreement between the city and the Hydro Electric Power Commission of Ontario, under which the Commission was to acquire the railway. This course, we are advised, is rendered necessary because of the Ontario Government's decision that until all the municipalities interested in the Hamilton-Guelph-Elmira hydro electric railway line project have voted to include the Guelph Radial Ry., it cannot approve of the proposed purchase.

The city council has decided to apply at the next session of the Ontario Legislature for permission to increase the Guelph Radial Ry.'s capital stock by \$250,000, and to increase the fares from 5c. cash or 6 tickets for 25c., to 7c. cash or 4 tickets for 25c., and double fares after 11 p.m. The fares on the line are fixed by statute, and can therefore only be changed by statute.

The city council intends, provided assent is given by the Ontario Government, to submit to the ratepayers a question asking them whether they wish the municipality to operate its own electric railway, or whether they wish the Hydro Electric Power Commission of Ontario to operate it under existing arrangements; and, in addition, whether they would care to have the city enter into an agreement with the C.P.R., satisfactory to both parties, for the operation of the municipal railway.

In connection with the suggestion as to the C.P.R. operating the line, F. L. Wanklyn, General Executive Assistant, C.P.R., has written a city official that as citizens had voted against entering into a contract with the C.P.R. in Aug. 1919, the company has no wish to reopen negotiations in any way.

The Hydro Electric Power Commission of Ontario is reported to be ready to enter into a contract for the operation of the line.

Negotiations for sale of Toronto Railway, etc.—The Toronto City Council will meet specially, Dec. 1, to receive a report on negotiations for the purchase of the electric railway, power and light interests of the Toronto Ry., and its subsidiary and allied companies, by the City of Toronto and the Hydro Electric Power Commission of Ontario.

Lambeth Motor Transport Co. was inaugurated about two years ago to carry freight and passengers between Lambeth and London, Ont., following the abandonment of the London & Lake Erie Ry. and Transportation Co.'s electric line. A meeting of shareholders was called to be held in Lambeth, Nov. 12, to consider the company's financial position and to decide relative to its being wound up.

Calgary Municipal Railway's Finances.

The Calgary, Alta., City Council passed a resolution, Oct. 25, authorizing the submission to the ratepayers at the December elections of a bylaw to raise \$265,000 by debentures to adjust the Calgary Municipal Ry. finances. The city commissioners, in recommending the taking of this action, said:—"We recommend that a bylaw for \$265,000 to adjust the finances of the street railway department be prepared and submitted to a vote of the ratepayers at the forthcoming municipal elections. With the approval of the council there will have been expended by Dec. 31, 1920, on capital account \$256,308.83. It is estimated there will be a loss on sale of the debentures of \$8,691.11 (approximately 3%), making a total of \$256,000. The sum of \$23,308.83 has been expended on capital account for the creation of various assets and should now be included in a bylaw, thereby converting the temporary debt into a long term one. This expenditure extends over a period from 1914 to 1920. During that period the department has contributed to its sinking fund reserve \$311,555.09. At the time authorizations were made by council, this expenditure was ordered charged to revenue surplus, and depreciation reserve, temporarily, to be later included in a bylaw. These accounts will now be relieved of these temporary charges and a sufficient amount can be transferred from surplus revenue to bring the depreciation reserve to what it would have been had no reduction taken place on account of the war." It was also explained that the capital account of the railway included \$15,000, cost of installing a new intersection on Center St.; \$1,391.39 for handling and store charges on rails for the Center St. extension, and \$1,098.45 for similar charges on other street railway material and switches. The total cost of the intersection at Center St. was reported to have been about \$51,000.

The city's request to the Alberta Public Utilities Commission for authority to issue bonds for the amount mentioned in the bylaw has been considered, and the Commission's Secretary wrote the Mayor, Nov. 4, as follows:—"In reference to the application made by you on behalf of the city for permission to issue debentures to the amount of \$265,000 to cover over-expenditure on capital account of the street railway company, I am directed by the Board to indicate the Board's position in regard to it. It is desired in the first place to point out that the city's application is made after the expenditure has actually been incurred, and that the time for any application for permission to borrow on debentures should be made before the expenditure of the money, and not afterwards. It will be readily seen that the course adopted by the different councils of the City of Calgary within the last few years is entirely contrary to the spirit, not only of the Public Utilities Act, but also of the Calgary city charter.

"The city charter provides that all money bylaws will be first submitted to the burgesses, while the Public Utilities Act provides that all applications for approval of debenture issues shall be made to the Board of Public Utility Commissioners prior to, or immediately before, the first reading of the bylaw. Both these provisions provide a check upon the expenditure of monies by the city council, and it will be seen that if the money is first expended, and the appro-

val of the board and the assent of the ratepayers is afterwards sought, the power to prevent the expenditure is rendered practically ineffective. While the Board desires, therefore, to express its disapproval of the course followed in this instance, as well as to indicate that consideration of applications of this nature is liable to be refused in the future, it is willing to consider the present application apart from the objection just mentioned.

"The proposed debenture issue is to cover capital expenditure made on the street railway system during the last seven years or so. From the statement submitted to the Board and from the information derived at the Board's interview with you and Mr. Brown, it appears that out of the amounts covered by proposed debentures \$158,216.61 was taken from the depreciation fund of the street railway, and a further \$98,092 was taken from what was termed the surplus revenue account of the railway. It appears, however, that in 1914 or thereabouts the amount to be set aside annually on account of depreciation was so reduced as to fail to meet the requirements of the depreciation account. In other words, what was placed in this surplus revenue account during this period was placed there at the expense of the depreciation fund. The whole amount, therefore, covered by the proposed debenture issue represents the impairment of the railway company's depreciation account.

"If, therefore, the Board approves of the whole issue, it must be on the understanding that the whole proceeds will be placed in this depreciation account. If the council does not desire to do this the Board is willing to approve of a portion of this amount to the extent of \$158,216.61, which is the amount by which the actual depreciation account is shown to be now impaired, without taking into account any insufficiency in the amount hitherto set aside for this purpose. It will be understood, of course, that the proceeds of any such issue are to be placed in the depreciation account."

The letter from the Public Utilities Commission was discussed at a meeting of the city council, Nov. 8. A letter from City Comptroller W. C. Wood is reported to have been laid before the council stating in effect that the money had not been "taken" from the depreciation account, but had simply been temporarily borrowed. The mayor and several aldermen are said to have expressed the opinion that the Public Utilities Commission's criticism was justified. A resolution was passed for the submission of a bylaw to raise \$265,000 for street railway purposes, and agreeing to the terms outlined in the Public Utilities Commission's letter, viz., that the total capitalization of the expended borrowings shall be placed to the credit of the street railway depreciation account.

Motor Bus Limitations.—English transportation authorities consider motor busses all right up to a certain point, beyond which street cars are imperative. J. B. Hamilton, General Manager of the Leeds Corporation Tramways, said recently: "To serve industrial centers with busses is like taking soup with a teaspoon, or eating haggis with a toothpick." He added that it was economical to use the bus only as a feeder to the city service.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry. Co.—Western Canada Power Co.—At a meeting the bondholders of the Western Canada Power Co., in Montreal, Nov. 1, a resolution was passed waiving the right to issue any further bonds of the authorized issue of \$20,000,000 authorizing the cancellation of \$1,000,000 of the authorized issue held by the company, and making certain alterations in the trust deed; the resolution to become effective upon the British Columbia Electric Ry. Co. giving an unconditional guarantee of the principal and interest of the \$5,000,000 of the authorized issue of bonds which were sold to the public. The effect of the resolution, when it becomes operative, will be that the company's bond issue will be restricted to the \$5,000,000 now in the hands of the public.

British Columbia Electric Ry. and allied companies:—

	Sept. 1920	Sept. 1919	2 mos. to Sept. 30, 1920	2 mos. to Sept. 30, 1919
Gross	\$756,950	\$684,946	\$2,253,993	\$1,994,206
Expenses	573,623	503,135	1,707,697	1,496,478
Net	173,327	181,811	545,996	497,728

Cape Breton Electric Co:—

	Sept. 1920	Sept. 1919	9 mos. to Sept. 30, 1920	9 mos. to Sept. 30, 1919
Gross	\$59,478	\$49,404	\$456,969	\$426,514
Expenses	49,691	39,809	402,846	330,152
Net	9,787	9,595	54,123	96,362

Montreal & Southern Counties Ry. — Following are the officers and directors as elected recently:—President, Howard G. Kelley; Vice President and Treasurer, F. Scott; Vice President in charge of Operation, W. D. Robb; Vice President in charge of Traffic, J. E. Dalrymple; General Counsel, W. H. Biggar; Secretary, J. A. Yates; General Auditor, J. M. Rosevear; General Manager, W. B. Powell.

Toronto Railway.—

	1920		1919	
	Receipts	percentage	Receipts	percentage
Jan.	\$ 652,350	\$110,950	\$ 588,923	\$ 88,339
Feb.	595,861	119,172	545,771	96,563
Mar.	745,706	149,141	615,526	123,105
Apr.	653,340	130,668	600,231	120,046
May	644,458	132,392	620,068	124,014
June	544,833	108,966	431,082	86,217
July	641,793	128,539	584,412	128,359
Aug.	631,521	126,304	629,540	125,908
Sept.	690,546	55,243	641,422	51,313
Oct.	671,294	60,940	650,913	57,919
	\$6,491,702	\$1,122,635	\$5,857,888	\$1,001,783

Toronto Ry., Toronto & York Radial Ry. and allied companies:—

	Sept. 1920	Sept. 1919	9 mos. to Sept. 30, 1920	9 mos. to Sept. 30, 1919
Gross	\$1,270,651	\$1,124,159	\$10,731,396	\$9,318,458
Expenses	904,652	726,221	7,409,410	5,786,231
Net	365,999	397,938	3,321,986	3,532,227

Winnipeg Electric Ry. Co.—A special meeting of shareholders has been called to be held in Winnipeg, Dec. 4, to ratify a bylaw passed by the directors amending a bylaw to issue \$3,000,000 of 7% cumulative preference stock approved by the shareholders May 3, 1920, by making provision for giving voting powers to the holders of such preference stock, and by providing that no further issue of preference stock in excess of \$3,000,000 shall be authorized unless the authority is obtained of the holders of two-thirds in amount of the preferred stock issued and outstanding, and to ratify a bylaw of the directors increasing the common capital stock to \$11,000,000.

Winnipeg Electric Ry. and allied companies:—

	Sept. 1920	Sept. 1919	9 mos. to Sept. 30, 1920	9 mos. to Sept. 30, 1919
Gross	\$426,647	\$381,248	\$3,831,649	\$2,947,060
Expenses	325,183	316,037	2,863,054	2,346,188
Net	101,464	65,211	968,575	600,872

Electric Railway Notes.

Winnipeg Electric Ry. is adding 20 cars to its equipment.

The Toronto Ry. is reported as now owing the city \$480,000 for percentages.

The Sherbrooke Ry. & Power Co. has ordered two safety cars from J. G. Brill Co., and will probably order another two in the near future.

Winnipeg Electric Ry. has added 6 snow sweepers to its snow fighting equipment and put them in use during a storm on Nov. 8.

A. B. Lambe addressed members of Ottawa branch, Engineering Institute of Canada at the Hull Electric Co.'s Deschenes car sheds, Nov. 6, on "The common street car."

Winnipeg Electric Ry. was given permission, Nov. 9, by the City Council to operate a limited motor bus service on Notre Dame Ave. West. The permission is said to be merely a temporary one.

Montreal Tramways Co.'s employes who are members of the Union of Tramways Employes are reported to have been discussing the pension system, and to have appointed a special committee to study it.

Winnipeg Electric Ry. winter schedules went into effect Nov. 16, providing for 33 additional runs a day, to take care of the increasing traffic during winter when many motorists and cyclists turn to the street cars.

The London, Ont., City Council has decided to submit to the ratepayers at the annual elections on Jan. 1, 1921, a bylaw to raise \$100,000 to buy motor busses in order to assist in solving the transportation problems there.

T. J. Hannigan, Secretary, Ontario Hydro Electric Railway Association, is reported to have stated, at a meeting in Toronto recently, that the shortage of power in Guelph had been so acute that it had been necessary to cease operating the municipal railway in the mornings, and for two hours in the afternoons.

Calgary Municipal Ry., according to a local press report, is better off, as regards rolling stock, than it has been for a long time. During the past six months, 12 cars have been added to the equipment, six having been bought from Saskatoon Municipal Ry., and six in the U.S. It is now operating 84 passenger motor cars and 6 trailers.

The Amalgamated Association of Electric Railway Employes of America is reported to have announced that a satisfactory re-establishment of the International Union has been effected in Winnipeg. The report adds that the Street Railway Employes Unit, One Big Union, claims to have more than 900 of the 1,000 Winnipeg street car men on its roll.

The Montreal Administrative Commission has declined to act on a suggestion that it arrange with the Montreal Tramways Co. that the hours during which school children's tickets are available should be extended so as to run from 7.30 a.m. to 6.30 p.m. The Commission took the ground that this would be a revision of the contract, which might lead to agitation for other changes in it.

The Port Arthur, Ont., Public Utilities Commission is reported to have decided to remove the telephone pole line from the right of way of the electric railway between Port Arthur and Fort William

to another route to remedy "noisy lines," which are believed to be caused by induction. It is expected that the work will be done next spring.

The new agreement made between the British Columbia Electric Ry. Co. and the Victoria City Council is expected to come into operation Dec. 1. The terms of the agreement as to fares were given in Canadian Railway and Marine World for November, the other matters included, outside the terms for sale of electric light and power, have not been made public.

The assessment of the London & Port Stanley Ry.'s property at Port Stanley, Ont., came before the Ontario Railway and Municipal Board at St. Thomas, Nov. 3. The local assessor increased the assessment of the property in the village from \$31,000 to \$113,000. An appeal was taken to the county court judge, who reduced the assessment to \$89,000, against which the London Railway Commission appealed to the Ontario Railway and Municipal Board, which now has the matter under consideration.

The St. Thomas, Ont., City Council has been considering a bylaw to permit the municipal railway to operate its cars within the city on Sundays, which will be submitted to the ratepayers at the municipal elections on Jan. 1, 1921. The Ontario Legislature passed an act at its last session amending sec. 235 of the Ontario Railway Act, by substituting "15,000" for "50,000," wherever necessary, so as to permit cities of under 50,000 to vote on bylaw to authorize the operation of street cars on Sundays.

Regina, Sask., City Council was asked recently to operate the municipal railway's Eastview extension, and to put on some other services on the lines. Commissioner Thornton is reported to have advised the council that no expenditures should be made, on extensions or additional services, until the lines have been brought to a paying basis. The city commissioners recommended that the additional service be not given, and this has been adopted by the aldermen in committee.

The Quebec Court of Appeal recently dismissed the Montreal & Southern Counties Ry.'s appeal against a judgment of the Supreme Court giving Mrs. J. Duluide \$10,000 damages for the death of her husband, who was killed when knocked from the seat of the vehicle he was driving on Mill St., Montreal. The Superior Court held that under the terms of its contract the company was responsible for the keeping of the street in good order, and that at the time of the accident which resulted in Duluide's death, the road was in very bad order.

Montreal Tramways Co.'s employes have been raising some questions respecting the new form of transfer used, and it is reported that their representatives discussed the matter with some of the company's officials on Nov. 11. The employes state that the new system causes much loss of time and inconvenience to conductors. They say they cannot perform their work efficiently under the present system. The officials called their attention to an official publication issued on Aug. 25, stating that conductors must punch transfers only when they are able to do so without interfering with the collection of all fares.

Toronto Transportation Matters.

The Toronto Transportation Commission is reported to be making extensive investigations into matters connected with electric railway and other methods of transportation, and P. W. Ellis, the Chairman, is said to have stated that in making plans the commission ought to have in view the needs of a city of 2,000,000.

The Transportation Commission, after giving some general consideration to matters submitted to it, applied to the City Council recently for the passing of a bylaw to provide funds for buying motor busses. It is reported that the commission has decided on spending \$1,000,000 upon busses. Several types have been submitted to the commission, one of which, it is stated, would have a speed of 35 miles an hour, and a seating capacity of 82 persons.

Increases in Electric Railway Freight and Passenger Rates

British Columbia Electric Ry. — The proposed fare increases on the Central Park line must await a decision of the Supreme Court of Canada upon the jurisdiction of the Board of Railway Commissioners over the company. An appeal for higher fares on this line between Vancouver and New Westminster was made recently to the Board, but objected to by Burnaby municipality on the ground that the Board had no jurisdiction. The Board has accordingly requested a stated case and the Supreme Court has set it down for February.

The Grand River Ry., and the Lake Erie & Northern Ry., are applying to the Board of Railway Commissioners for authority to increase freight rates 40%, and passenger rates 20%.

Guelph Radial Ry. — The City of Guelph, which owns and operates this line, has decided to apply to the Ontario Legislature, for authority to increase fares from 5c. to 7c. cash, and from 6 tickets for 25c. to 4 tickets for 25c., the present rates being fixed by statute.

Pictou County Electric Co.—Halifax press report:—Some time ago the Pictou County Electric Co., operating in New Glasgow, and with lines connecting the towns of Stellarton, Westville and Trenton, obtained permission from the Nova Scotia Public Utilities Board to raise the fare 5c. to 7c. Recently it applied for permission to charge 10c. Higher costs for equipment and heavy charges for labor are the reasons adduced. The Board reserved its decision.

Winnipeg Electric Ry.—In connection with the Manitoba Public Utilities Commissioners recent decision authorizing the company to increase passenger fares, a deputation from Winnipeg City Council and the councils of the adjacent municipalities in which the company operates, either on its own account or by its subsidiary companies, waited on the Manitoba Attorney General recently and requested that the Government submit a stated case on the constitutionality of the Public Utilities Act to the Manitoba Court of Appeal. A press report states that the Attorney General, in assenting to the request, said that he did not wish that the Government's action should have any effect on the present litigation between the Winnipeg City Council and the company. Another press report states

that the cases will probably be dealt with concurrently by the Court of Appeal, and that whatever decision may be given, it will be appealed to the Imperial Privy Council.

Dominion Power & Transmission Co.'s Bond Issue.

Harris, Forbes & Co., New York and Toronto, are offering, at prices to yield from 8 to 8 1/4%, \$600,000 Dominion Power & Transmission Co.'s 5% gold bonds, dated April 1, 1907, due serially from April 1, 1921, to April 1, 1932, interest payable half yearly in New York and Chicago. Following are extracts from the prospectus:—The Dominion Power & Transmission Co., through its subsidiary companies does an electric light and power business and controls the entire street and interurban railway business in Hamilton, Ont., and vicinity, serving a growing population of about 200,000. The 50,400 h.p. water power plant is one of the most economical and valuable hydraulic plants in America, having Lake Erie as a storage basin, and a large and constant flow of water under a static head of 256 ft. (or over 50 ft. greater than at Niagara Falls). A new steam station has been built recently near Hamilton, having an initial 26,600 h.p. and an ultimate 80,000 h.p. capacity. With the addition of this new station the company now has a total installed generating capacity of 77,000 h.p. The street and interurban railway system comprises over 119 miles (single track equivalent), and the right of way for nearly the entire interurban mileage is owned in fee. The franchises, where same are necessary, are satisfactory. There is a large equity in the property of the company over and above its bonded debt. The earnings of properties controlled by the company for the year ended Sept. 30, 1920, were as follows:—

Gross earnings	\$3,714,384
Operating expenses, taxes, etc.	2,665,066
Net earnings	\$1,049,318
Annual interest on bonds outstanding with public	436,700
Balance	\$612,618
Net earnings over 2.4 times above interest charges.	

Change of Opinion Towards Public Utilities.—A. W. McLimont, Vice President, Winnipeg Electric Ry., on returning recently from the United States, is reported to have said:—"The public generally is beginning to appreciate the importance of the service which the public utility performs for them. The entire status of the public utility is undergoing a change for the better in the United States and the change in sentiment there is going to be followed by a change in sentiment in this country regarding the utilities."

Origin of Tramways.—In Aug., 1800, the Surrey Iron Ry. Co. was incorporated in England to build a line to carry mineral traffic on cars on iron rails laid on the highway between Wandsworth and Croydon, just south of London. In 1802 it was proposed to carry passengers in vehicles running on rails on highways, and the plans were perfected by Benjamin Outram, the first passenger lines of this kind being called Outramways. Sometime later they were called tramways, which word was always used to designate horse drawn street cars in England.

Instructions to Winnipeg Conductors and Motormen.

W. F. Edwards, Traffic Superintendent, Winnipeg Electric Ry., has issued the following bulletin to conductors and motormen:—"Your attention is particularly called to the necessity of properly caring for our patrons, to see that none are passed up on the street, particularly at points where passengers are required to transfer from one line to another. Before proceeding, both conductor and motorman should observe whether or not there is a car approaching from the other line, or whether or not passengers are unloading from a car at the intersection, and all transferring passengers should be given sufficient time to board your car.

"At a point where lines diverge the conductor and the motorman on the loading car should be particular to see that all passengers on the car immediately following have an opportunity to board their car before proceeding.

"The climatic conditions of Winnipeg during the winter are extremely severe, and your first consideration should be the comfort of our patrons. If men, women and children are required to wait for a car at transfer points, or if intending passengers are passed up, they are exposed to an extreme hardship.

"We earnestly ask your co-operation and insist that you use your best judgment in this and all matters appertaining to the handling of patrons of this company."

Poor Old Utility.

A lady observing a mule owned by a colored boy asked: "What do you call your mule?"

"I calls him 'Utility.'"

"How did you come to give him such a name?"

"I'se been studyin' de animal and readin' de papers. Dat mule gets mo' blame an' abuse dan anything else in de city, an' goes ahead doin' his level best just de same."—Wall Street Journal.

Telegraph, Telephone and Cable Matters.

K. J. Dunstan, Manager, Western Division, Bell Telephone Co. of Canada, Toronto, has been appointed Vice President, and A. T. Smith, Division Superintendent, has succeeded him as Manager, Western Division.

G. D. Perry, General Manager, Great Northwestern Telegraph Co., Toronto, was one of the British delegates to the preliminary allied conference on electrical communications which met in Washington, D.C., recently, the countries represented being Great Britain, France, Italy, Japan and the United States.

Sir Charles Bright, the British cable pioneer, speaking in connection with the U.S. complaint of the virtual control of U.S. telegraphs by the British, is reported to have said that such complaints are strange, having regard to the fact that in 1912, all British trans-Atlantic cables of that time went under the control of the Western Union Telegraph Co., and have since remained under that control.

The Great North Western Telegraph Co. has opened offices at Casey, Fisher and Gouin station, Que., Elmira, Endat, Madoc, Mowat and Pass Lake, Ont., Deep-

dale, Libau and Notre Dame de Lourdes, Man., Ardill and Lucky Lake, Sask., and Port Kells, B.C., and has closed its offices at Inch Arran House, Dalhousie, N.B., Abenakis Springs and Grand Metis, Que., and Chaffeys Locks, Harriston, Missonga and Rosseau, Ont.

Under legislation passed at the Newfoundland Parliament's last session a Department of Posts and Telegraphs has been established, under the Minister of Posts and Telegraphs, with the supervision and control of all matters relating to Newfoundland's postal and telegraph services. The act abolishes the position of Postmaster General, and all the duties hitherto undertaken by him are transferred to the new department.

It is reported that the U.S. Navy is making use of radio telephone sets for seaplanes, with which a transmission radius of over 150 miles has been obtained. The transmitter radiates at two wave lengths, 1,600 and 600 meters. For the former wave length a trailing wire antenna of 0.0004 mfd. is employed, for the latter an emergency aerial of 0.00026 mfd. The transmitter is supplied with two 3-electrode tubes of the pliotron type. One tube is employed as an oscillator for the production of radio-frequency currents and the other tube is employed as a modulator and as an amplifier of the voice currents that are communicated to it by the microphone.

A report that the Western Union Telegraph Co. intended to land a submarine cable at Miami, Fla., connecting with the British cable to South America, without obtaining U.S. permission, was denied by G. W. E. Atkins, Vice President of the company, Nov. 12. The British cable ship engaged in the work intended landing the cable at Miami, in July, and the U.S. Government sent a destroyer to prevent the ship from entering the three mile limit, the British Ambassador at Washington sending a message to those in charge of the cable ship that the operation was not to be carried out without a legal permit. The company's intention is to connect with the British cable to Brazil, with which country the British have exclusive cable rights.

A review of telegraph line construction during 1920, by a Montreal press correspondent states that the C.P.R. has strung 1,659 miles of new wire and rebuilt 535 miles; and that the Great North Western Telegraph Co. has strung two wires between Quebec, Que., and Winnipeg, a wire between Edmonton and Vancouver, and another between Saskatoon and Calgary. In Manitoba District, the C.P.R. strung 846 miles of wire and rebuilt 91 miles. New wires were erected between Fort William, Ont., and Moose Jaw, Sask., and lines rebuilt between Macgregor and Varco, and Winnipeg and Portage la Prairie. In the Saskatchewan District 387 miles of new wires were erected and 97 miles rebuilt, two new wires were strung between Saskatoon and Lanigan, a single wire between Saskatoon and Colonsay, two between Moose Jaw and Regina, and one between Moose Jaw and Saskatoon. In the Alberta District 272 miles of new wire were erected and 167 miles rebuilt. A new wire was erected between Wetaskiwin and Lacombe and two wires between Calgary and Lake Louise, while portions of the Edmonton line were rebuilt. In the British Columbia District 154 miles of new wire were erected and 180 of pole line rebuilt, chiefly on the main line. New wires were erected between Nanaimo and Victoria, and between Hope and Lytton.

Marine Department

General Shipbuilding Matters Throughout Canada.

T. K. Bentley, West Advocate, N.S., launched the schooner *T. K. Bentley*, 472 tons net, Oct. 30. She is owned by Bentley & Pugsley, and immediately on completion loaded cargo for Cuba. This is the last ship to be built here for the present, and the yard has been closed.

B.C. Marine Engineers & Shipbuilders Ltd., Vancouver, B.C., which was incorporated recently, as stated in Canadian Railway and Marine World for October, took over the business of B.C. Marine Ltd. on Nov. 1. The officers are Innes Hopkins, Chairman and Managing Director; J. K. McKenzie, General Superintendent; and C. J. Isted, Secretary-Treasurer.

Canadian Allis-Chalmers Ltd., Bridgeburg, Ont.—The steel cargo steamship *North American*, built by this company, which is illustrated on page 678, is a sister ship of the s.s. *South American*. These ships were built respectively for the North American Steamship Co. and the South American Steamship Co., which are subsidiary companies of the American Metal Transport Co., New York. The ships are registered in Canada, and the office of the subsidiary companies is at Toronto, the officers being the same in each case, viz.: President, W. E. Brady; Vice President, F. W. Miller; Treasurer, J. Beatty. The ships are of the same type as those ordered by the Imperial Munitions Board for the British Government during the war, and have approximately 3,500 d.w. tons capacity. The s.s. *South America*, which was completed some little time ago and left the yards early in November for Dalhousie, N.B., was driven ashore during a heavy snow storm on the ledges at Little Cape, about 12 miles east of the Fame Point in the St. Lawrence River.

A Bridgeburg press report of Nov. 23 states that the yard has been closed, and that no intimation has been made as to what use may be made of the plant on the reopening of navigation. Since the reopening of the plant during the later stages of the war, four steel cargo steamships have been built, two for the British Government, under orders from the Imperial Munitions Board, and the two mentioned above, viz., *North American* and *South American*.

Canadian Concrete Shipbuilding Co., North Sydney, N.S.—The concrete ship *Permanencia*, built for W. N. McDonald, Sydney, N.S., is reported to be completed and to have been taken to Sydney, N.S., preparatory to proceeding to Newfoundland on her maiden trip. She is to be operated from Sydney, N.S., to Newfoundland and Prince Edward Island ports. She was built under Lloyd's special survey for the highest rating, and has a deadweight capacity of from 450 to 500 tons, and there is sleeping accommodation for 10 passengers in addition to the crew. The propelling machinery consists of a Bolinder crude oil engine of 240 h.p., for a speed of from 9 to 10 knots an hour. Her dimensions are,—length 120 ft., breadth 27 ft., depth 12.7 ft., tonnage 338 gross, 292 net.

Harbour Marine Co., Victoria, B.C., advised Canadian Railway and Marine World recently that the car ferry being built for the C.P.R. will probably be

ready for launching during the first week in December.

L. P. McLean, St. John, N.B., on Nov. 10, launched the three masted schooner, *Peter McIntyre*, 500 tons net, for Capt. P. McIntyre, St. John.

New Burrell Johnson Iron Co., Yarmouth, N.S.—The Dominion Government s.s. *Laurentian*, which has been undergoing repairs by this company for some time, has been completed and she has left the yard for St. John, N.B. The engine and boilers have been thoroughly overhauled, new deck winches of increased capacity, new windlass, steering gear and other deck machinery have been installed. There have also been supplied a new dynamo and lighting system and

5¼ x 3 x 6 in. The lighting plant is a Sisson 4 k.w. 55 volt machine. The boat is electrically lighted throughout, and a searchlight is mounted on top of the pilot house.

Prince Rupert Drydock & Engineering Co.—See under "Prince Rupert Drydock & Engineering Co.," on another page of this issue.

Reid Newfoundland Co., St. John's, Nfld.—The Hudson's Bay Co.'s s.s. *Pelican* is being docked here for the winter, and several repairs and a general overhauling will be undertaken. While the ship was in Hudson Strait recently, she encountered heavy ice, and had her bow stove in and her rudder badly damaged.

Three Rivers Shipyards Ltd., Three Rivers, Que.—This company, which is now in liquidation, and which is a subsidiary of the National Shipbuilding Corporation, Wilmington, Del., and also said to be in liquidation, has several claims against it which are being dealt with by the Superior Court. One of the claims heard at the end of October was by La Societe Naphthes Transports, France, for the possession of a steel tank steamship of 6,000 tons. The company placed a contract for the building of this ship with the National Shipbuilding Corporation, and the contract was transferred to Three Rivers Shipyards, Ltd. It is claimed that the ship was to cost a little over \$1,000,000, which was to be paid in four instalments and that \$600,000 has already been paid. Considerable work has been done on the ship, and it is stated that a few weeks work will make her ready for launching. The application for possession of the ship was contested by Molson's Bank, and the liquidator, the former claiming to have a mortgage on all the assets of Three Rivers Shipyards Ltd. The judgment, rendered Nov. 6, is given in full on another page of this issue. Another claim which has yet to come before the court is in behalf of the French government, which seeks to obtain possession of five steam barges, reported to be near completion. The contracts for these are stated to have been given to National Shipbuilding Corporation and transferred to Three Rivers Shipyards Ltd. Other claims which will also be dealt with by the court are as follows:—Crown Trust Co., for possession of company's assets, under a deed of trust for the security of the bondholders; liquidators of National Shipbuilding Corporation, claiming all the company's assets, and General Supply Co. of Canada for possession of certain machinery.

The wooden steamships *Bouxwiller*, *Bouzonville*, *Brumath*, *Cattenon* and *Cernay* have been completed and placed on the Canadian register by the liquidator. These ships were ordered by the French Government, but are in litigation. They are each equipped with wireless, and are screw driven by engines of 48 h.p., and have the following dimensions,—*Bouxwiller*, length 195.3 ft., breadth 40.3 ft., depth 15.2 ft., tonnage 1,138 gross, 660 net; *Bouzonville*,—length 195.1 ft., breadth 40.4 ft., depth 15.4 ft., tonnage 1,135 gross, 658 net; *Brumath*,—length 195.5 ft., breadth 40.1 ft., depth 15.3 ft., tonnage 1,141 gross, 662 net; *Cattenon*,—

Dominion Marine Association.

President, A. E. Mathews, Managing Director, Mathews Steamship Co., Toronto.

First Vice President, H. W. Cowan, Director of Operation, Canada Steamship Lines, Montreal.

Second Vice President, A. A. Larocque, President, Sincennes-McNaughton Line, Montreal.

Executive Committee, W. E. Burke, Canada Steamship Lines, Montreal; T. R. Enderby, Montreal Transportation Co., Montreal; L. Henderson, Montreal Transportation Co., Montreal; W. J. McCormack, Algoma Central Steamship Line, Sault Ste. Marie, Ont.; G. J. Madden, George Hall Coal Co. of Canada, Montreal; Lt. Col. G. P. Murphy, C.M.G., President, Ottawa Transportation Co., Ottawa, Ont.; E. W. Oliver, Niagara, St. Catharines & Toronto Navigation Co., Toronto; W. H. Smith, Ontario Car Ferry Co., Montreal; J. F. Sowards, Sowards Coal Co., Kingston, Ont.; J. F. M. Stewart, Point Anne Quarries Ltd., Toronto; Jno. Waller, Keystone Transportation Co., Montreal; Lorne C. Webster, Webster Steamship Co., Montreal; J. Wilkie, Imperial Oil Ltd., Toronto; A. A. Wright, honorary member, Toronto.

General Counsel, Francis King, M.A., Kingston, Ont.

Official Organ, Canadian Railway and Marine World, Toronto.

all sanitary and heating equipment has been remodelled and brought up to date. While she was on the marine slip a number of new plates and frames were placed in the hull.

Nixon Construction Co., Vancouver, B. C.—The steam tug, which the C.P.R. ordered, together with a tow barge, for service on Okanagan Lake, as mentioned in a previous issue, was launched at Okanagan Landing, Oct. 20. The hull is of coast fir throughout, except the heads, and it is sheathed with cedar, planked with 2½ in. and ceiled with 2 in. coast fir. The hull is salted, and protected with galvanized sheets, 16 gauge, to enable the tug to operate in 10 in. of ice, should it be necessary. The propelling machinery consists of a single set of compound vertical condensing type of engines of 27.3 n.h.p., with cylinders 12 x 3 x 6 in. driving a single screw about 80 in. diam. Steam is supplied by a marine cylindrical type boiler, with two furnaces, at a working pressure of 160 lbs. The condenser is of the jet type 10 x 18 x 12 ins., and there are two duplex pumps, one 6 x 3¾ x 7 in. and one

length 196 ft., breadth 40.3 ft., depth 15.4 ft., tonnage 1,131 gross, 659 net; Cernay,—length 196.1 ft., breadth 40.1 ft., depth 15.3 ft., tonnage 1,123 gross, 654 net.

See also "Owners' rights in partially built ships under builder's liquidation proceedings" on another page of this issue.

Victoria (B.C.) Shipowners Ltd., Victoria, B.C.—The first of the four wooden barquentines, which are being built at the Cholberg shipyard, under special aid from the Dominion Government, is expected to be ready for launching about the middle of December. It is said that she will be christened S. F. Tolmie. Her dimensions will be,—length over all 250 ft., breadth 45 ft. 8 in., depth moulded 27½ ft., with a loaded draft of 21 ft. 10 in. It is reported that the second ship, to be named Sir Henry Drayton, will be launched about the middle of Jan., 1921. Work on the third ship is proceeding, and the keel of the fourth will be laid immediately after the launching of the first. The ships will be rigged as barquentines, with a sail area of 33,000 sq. ft., which is considerably in excess of

ranged for about 200 first class passengers, with carrying capacity for about 600 tons of cargo. She will be equipped to burn oil fuel, and will be easily convertible into a coal burning ship. She will be amply lighted, and provided with hot and cold running water in every stateroom, with every modern convenience. The cost of the ship completed and fully furnished will be about \$1,500,000.

Yarrows Ltd., Victoria, B.C.—W. W. Marriner, Works Manager, Yarrow & Co. Ltd., Glasgow, Scotland, was in Victoria recently to look over the plant, and to formulate a plan of expansion. It is stated that the company intends some further development in connection with the building of shallow draft steamships, of which a number were built at Victoria during the war, for use in India and Mesopotamia.

Steamship Inspection Fees Fixed by Order in Council.

The following Dominion Order in Council 2,711 was passed Nov. 6:—Whereas the Minister of Marine and Fisheries re-

spection, owing to the fact that they are operated out of Canadian ports are subject to an inspection fee of 8c. per ton, but as regards non-passenger ships not registered in Canada there appears to be some doubt in the matter of inspection fees;

And whereas the Chairman of the Board of Steamship Inspection recommends that authority be obtained for the collection of fees for the inspection of steamships registered other than in Canada, at the same rate as is now required to be paid for the inspection of steamships registered in Canada, applicable to both passenger and non-passenger steamships, dating from June 1, 1920, in which the Deputy Minister of the Department of Marine and Fisheries concurs,—

Therefore, the Governor General in council, on the recommendation of the Minister of Marine and Fisheries and under the provisions of sec. 569 of The Canada Shipping Act, is pleased to order that the fees for the inspection of passenger and non-passenger steamships, registered in Canada, as approved by order in council 1236 of May 31, 1920, shall be and the same are hereby made applicable to similar steamships registered elsewhere than in Canada, dating from June 1, 1920.

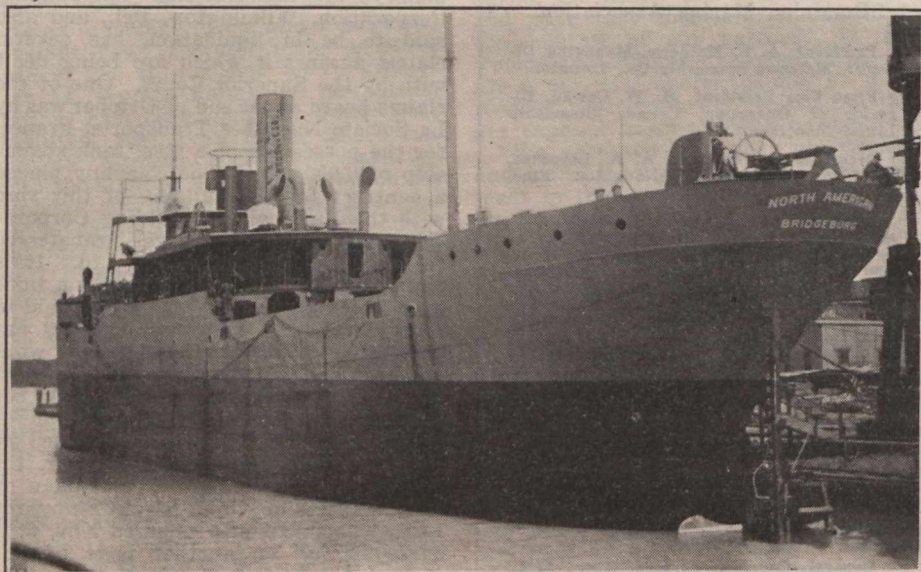
Canada Steamship Lines Operating Results.

With the season of navigation on the Great Lakes drawing to a close, a survey of operations of the Canada Steamship Lines, Ltd., for the period, it was stated officially Nov. 16, discloses earnings of a very satisfactory character and well up to the 1919 level, which constituted a record in the transportation consolidation's history. Net earnings in 1919 were \$4,580,272, the company's fiscal year ending Dec. 31; those for 1920, basing the estimate for November and December on booked contracts and present prospects, will reach approximately \$4,400,000, or well up to the level of a year ago.

The net profit for 1919 was \$2,236,679, after all deductions for fixed charges, depreciation, taxes, etc.; that for this year, barring unforeseen developments, will closely approximate the 1919 result, according to the statements of officials of the company. After allowing for dividends on the \$12,500,000 preferred stock outstanding, necessitating the payment of \$875,000 annually, the 1920 net profit, therefore, represents earnings of approximately 12.5% on the junior securities.

October, officials stated, produced the best results in the way of earnings for any corresponding period in the company's history; the weather conditions prevailing on the Great Lakes were such as to allow the steamships operated there to make quick returns for cargoes, thus greatly facilitating the handling of business offering. The volume of freight available at lake ports, it was stated, is the most substantial for several seasons past and earnings prospects between now and the close of navigation were stated to be of the most satisfactory nature.

Ocean business, on the other hand, showed a shrinkage from the level of last year, but inland traffic neutralized the decline in this respect, it was said. The tourist and other passenger receipts for the 1920 season, which is now practically closed, was the heaviest on record.—Montreal Gazette, Nov. 17.



The .ss. North American, built by Canadian Allis-Chalmers Ltd., Bridgeburg, Ont.

the sail area usually carried by ships of this class.

Wallace Shipbuilding & Dry Dock Co., North Vancouver, B.C.—We are officially advised that the C.P.R. has definitely placed a contract for the building of a steel passenger ship for its British Columbia Coast Service, with this company. The general plans and specifications were prepared under the immediate direction of J. W. Troup, Manager, B.C. Coast Service, C.P.R., the working out of the structural design of the ship being left to the builders. The ship is to conform to the requirements of the British Corporation Registry, under special survey, to class B2X with freeboard. The machinery is to be built by the shipbuilding company, under the supervision of James McGown, Superintendent Engineer, Canadian Pacific Steamship Lines. Her dimensions will be,—length b.p. 317 ft., beam 48 ft., depth of hold 18½ ft. She will have cellular double bottom, and the hull will be divided by 8 transverse bulkheads. She will be single screw, driven by reciprocating engines, balanced on the Yarrow, Schlick and Tweedie system, for a speed of 16 knots an hour. She is designed for an all around service on the coast. The accommodation will be ar-

ports that he has had under consideration a report of the Chairman of the Board of Steamship Inspection, stating—

That under the provisions of secs. 643 and 644 of The Canada Shipping Act, as amended, a scale of fees was approved by order in council of May 31, 1920, P.C. 1236, for the inspection of steamships registered in Canada;

That under the provisions of an order in council of April 11, 1904, a fee of 8c. per ton, gross registered tonnage, is charged for the inspection of passenger steamships inspected in Canada, when such ships are not registered in Canada;

That under the provisions of sec. 569 of The Canada Shipping Act, the Governor in Council is authorized to direct that part 7 of the act or certain provisions thereof shall apply or shall not apply to steamboats registered elsewhere than in Canada and further authorizes the Governor in council to fix a rate or duty for the inspection of such steamboats;

That as the matter now stands Canadian registered steamships, passenger and non-passenger, are subject to a fee for annual inspection and passenger steamships registered elsewhere than in Canada but coming under Canadian in-

Canadian Government Merchant Marine Ltd., Shipbuilding, Operation, Etc.

Contracts Signed.—We are officially advised that contract 59, between the Marine Department and the Nova Scotia Steel & Coal Co., for the construction of the s.s. Canadian Sapper; builder's yard no. 8; approximately 2,800 d.w. tons, was signed Oct. 26. Although there was considerable delay in the signing of this contract, the keel was laid May 4, 1920, and the hull launched Nov. 9.

Passenger Accommodation.—The steel cargo steamships, Canadian Fisher and Canadian Forester; Marine Department contracts 15 and 16; builder's yard nos. 7 and 8; each approximately 5,100 d.w. tons; which are being built for Canadian Government Merchant Marine, by Tidewater Shipbuilders Ltd., are being fitted with accommodation for 28 passengers each, to supply the service between Canada, the Bahamas, Jamaica and British

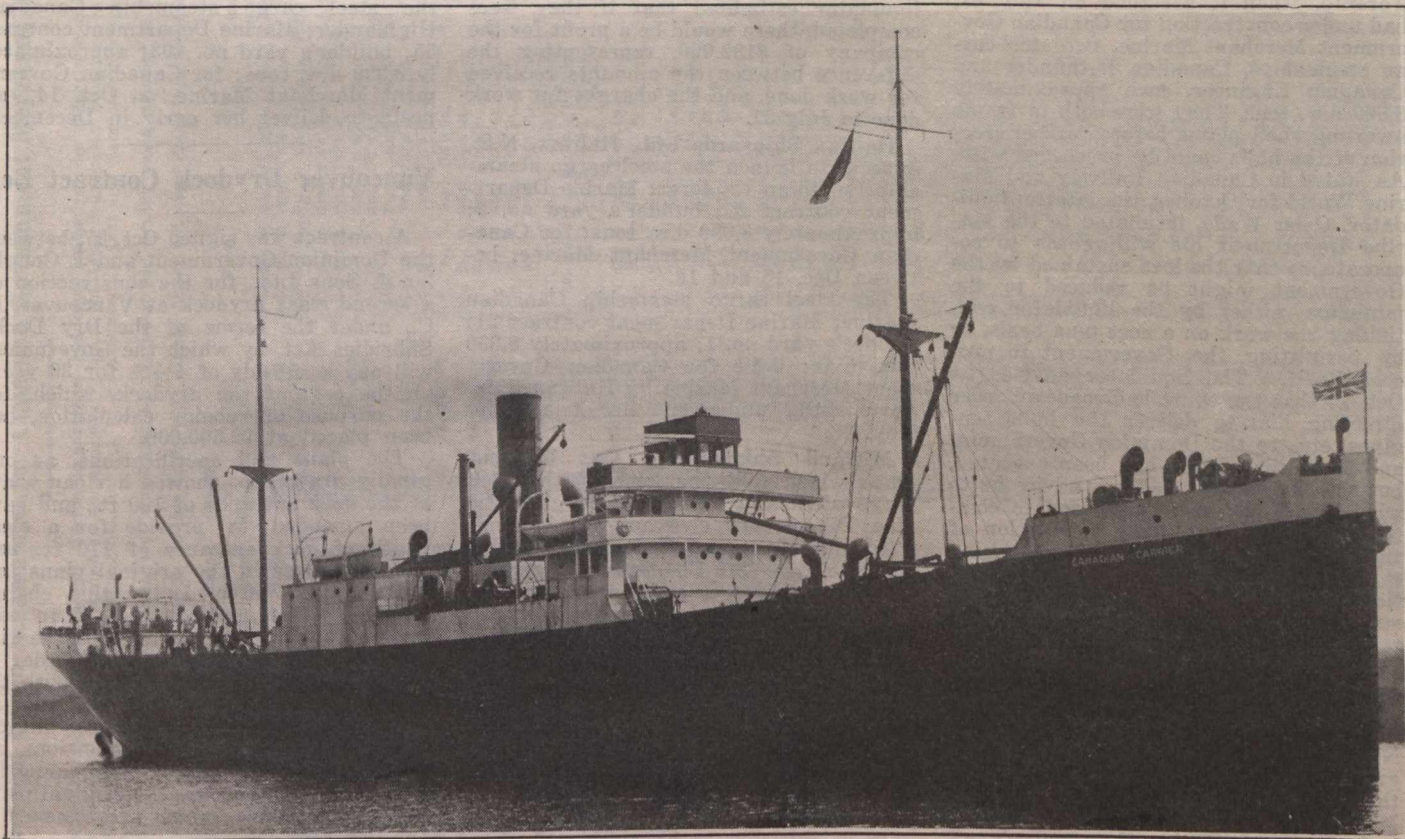
passengers.

Refrigeration Accommodation.—The no. 4 'tween decks in 13 of the steel cargo steamships to form part of the Canadian Government Merchant Marine fleet are being fitted up as cold chambers with refrigerating machinery of 20,000 cu. ft. capacity. The ships, some of which have been finished, the others being under construction and the names of the builders are as follows:—Canadian Exporter, Canadian Inventor, Canadian Prospector, J. Coughlan & Sons; Canadian Victor, Canadian Conqueror, Canadian Commander, Canadian Leader, Canadian Vickers Ltd.; Canadian Highlander, Canadian Skirmisher, Wallace Shipyards Ltd.; Canadian Traveller, Canadian Winner, Harbour Marine Co.; Canadian Cruiser, Canadian Constructor, Halifax Shipyards Ltd.

rine Department contract 45; builder's yard no. 5; approximately 4,575 d.w. tons. This ship was built by the British American Shipbuilding Co., Welland, Ont., and cut in two for taking through the canals to Montreal, where the sections were joined together at Canadian Vickers Ltd. plant. She sailed Nov. 13, for Chicoutimi, Que., to load a full cargo of pulp wood for Rouen, France.

Nov. 17, s.s. Canadian Rover; Marine Department contract 57; builder's yard no. 67; approximately 3,890 d.w. tons; Collingwood Shipbuilding Co., Collingwood, Ont. She sailed from Collingwood Nov. 18, for Erie, Pa., to load coal for Montreal, and will sail from Montreal for Glasgow, Scotland.

The s.s. Canadian Recruit, which went ashore at Vache Point, in the St. Lawrence River, in Dec. 1919, and which was



Steel Cargo Steamship, Canadian Carrier, approximately 4,350 d.w. tons, built for Canadian Government Merchant Marine Ltd., by Port Arthur Shipbuilding Co., Port Arthur, Ont.

Honduras, provided for in the Canada-West Indies trade agreement, entered into at Ottawa in July between the Dominion Government and the colonies mentioned, which calls for a fortnightly service. The accommodation will consist on the upper deck of a dining room 44½ x 20 ft.; and on the bridge deck of a lounge 36½ x 14 ft.; smoking room, 17½ x 8½ ft.; two suite rooms, each 10 x 8 ft.; and 11 staterooms, each 6½ x 8 ft. The suite rooms will each accommodate two persons if necessary, being designed to be either intercommunicating or separate. When intercommunicating the bathroom will open directly to the suite room, or when the rooms are used separately the bath room will open to each suite room from the corridor, or the forward suite room could be used separately and the after suite room in conjunction with the bathroom. Each of the staterooms will accommodate two

Launchings of Steamships.—Since Canadian Railway and Marine World for November was issued, we have been advised of the following launchings of steel cargo steamships for Canadian Government Merchant Marine:—

Nov. 9, s.s. Canadian Sapper; Marine Department contract 59; builder's yard no. 8; approximately 2,800 d.w. tons; Nova Scotia Steel & Coal Co., New Glasgow, N.S.

Nov. 20, s.s. Canadian Harvester; Marine Department contract 61; builder's yard no. 45; approximately 3,890 d.w. tons; Port Arthur Shipbuilding Co., Port Arthur, Ont.

Deliveries of Steamships.—In addition to the steamships mentioned in Canadian Railway and Marine World previously, the following have been delivered to Canadian Government Merchant Marine for operation:—

Nov. 12, s.s. Canadian Squatter; Ma-

released in the spring of 1920, having suffered considerable damage, has been thoroughly overhauled and repaired by Fraser Brace Shipyards Ltd., Montreal, was handed over to Canadian Government Merchant Marine Ltd. Nov. 20, for operation, and will take a general cargo to St. John's, Nfld. The work done includes complete overhaul, and renewal where necessary. Practically the whole of the bottom plating, floors, etc., and a considerable portion of the side plating was replaced, and new deck winches, derricks and gear were supplied. The accommodation for passengers, officers and crew was all practically renewed. A complete new cast steel stern post and rudder were fitted, and the main engines, boilers, propellers, shafting and auxiliaries were thoroughly overhauled. The approximate cost of the repairs is \$300,000.

British American Shipbuilding Co.,

Welland, Ont.—The s.s. Canadian Squatter; Marine Department contract 45; builder's yard no. 5; approximately 4,575 d.w. tons; which was built by this company, and which was cut in two to go through the canals to Montreal, was joined together at Canadian Vickers Ltd. plant, delivered to Canadian Government Merchant Marine, Nov. 12, and sailed Nov. 13 for Chicoutimi, Que., to load a full cargo of pulp wood for Rouen, France.

Collingwood Shipbuilding Co., Collingwood, Ont.—The steel cargo steamship Canadian Rover; Marine Department contract 57; builder's yard no. 67; approximately 3,890 d.w. tons; for Canadian Government Merchant Marine, was delivered to Canadian Government Merchant Marine Ltd., Nov. 17, and sailed Nov. 18 for Erie, Pa., to load coal for Montreal. She will sail from Montreal for Glasgow, Scotland.

Dominion Shipbuilding & Repair Co., Toronto, when it assigned on July 31, had under construction for Canadian Government Merchant Marine, two steel cargo steamships, Canadian Pathfinder and Canadian Engineer, each approximately 3,500 d.w. tons. They were both in frame awaiting shell plates before further erection of the hulls could be proceeded with. As stated in Canadian Railway and Marine World for October, the interim liquidator, Osler Wade, intimated to the Marine Department his willingness to cooperate, so that the loss sustained by the Government might be reduced to the minimum, either by the liquidator continuing the work on a cost plus basis, or by permitting the Government to proceed itself. The liquidator advised us Oct. 13 that the court had made an order directing him to deliver the hulls, engines, etc., to the Dominion Government, and that bills of sale had been executed, but that he had not had any advice as to when the Government proposed to commence operations for the completion of the ships, and at the time of writing there has been no change in the situation. On Nov. 10 a Toronto daily paper stated that the Marine Department had requested Henry Hope & Sons, Canada, Ltd., manufacturers of steel casements, etc., Peterborough, Ont., to complete them, but we were officially informed a few days later that this was incorrect. On Nov. 16, the Mayor of Toronto telegraphed the Minister of Marine, urging the completion of the ships, and the Minister replied that the matter was actively engaging his department's attention and that he expected to complete arrangements shortly to carry on the work.

The Toronto Board of Control received a deputation representing the discuss the probable completion of two steel cargo steamships, under construction for Canadian Government Merchant Marine Ltd., and which, it was claimed, were only about 35% completed. The deputation stated that during 1918 the company sold six ships at a profit of \$2,289,000. It was also stated that during 1919 the Dominion Government paid \$185 a ton to the company for a ship, the cost being \$165 a ton, while shipbuilding costs in 1920 decreased to \$156 a ton, the Dominion Government price remaining as in 1919. These statements drew the remark from a member of the Board of Control, that it "looks like profiteering even on ships."

As far as the profiteering charge is concerned, the statement issued by Osler Wade, F.C.A., interim liquidator of the company, as published in Canadian Rail-

way and Marine World for October, shows that the net loss on the last hull laid down in the yard was \$300, to which had to be added penalties of \$72,000, making a total loss of \$72,300. In 1918, labor cost \$49 and materials \$76 a ton; in 1919, labor cost \$49 and materials \$116 a ton; and in 1920, labor cost \$61 and materials \$95 a ton. Although the company may have sold six steamships in 1918, these ships were not all built in that year, and it is understood that they were built on shop account, with the prospect of selling them on completion. The statement that there was a profit of \$2,289,000 on the six ships, must be taken with reserve. The deputation is also reported to have stated that the Dominion Government in 1919 paid \$185 a ton for a ship, the cost being \$165 a ton. The only ships which the Dominion Government ordered from the company are the two at present there, uncompleted, and for which the contract price is \$180 a d.w. ton, and on these, the interim liquidator estimated that if they were completed, there would be a profit for the company of \$182,000, representing the difference between the amounts received for work done, and the charges for work done to July 31.

Halifax Shipyards Ltd., Halifax, N.S., expects to launch the steel cargo steamship Canadian Explorer; Marine Department contract 22; builder's yard no. 2; approximately 8,390 d.w. tons; for Canadian Government Merchant Marine, between Dec. 15 and 18.

The steel cargo steamship Canadian Marine; Marine Department contract 21; builder's yard no. 1; approximately 8,390 d.w. tons; built for Canadian Government Merchant Marine by Halifax Shipyards Ltd., underwent her trial trips Nov. 22.

Midland Shipbuilding Co., Midland, Ont., which laid the keel of the steel cargo steamship Canadian Logger; Marine Department contract 54; builder's yard no. 10; approximately 3,890 d.w. tons, for Canadian Government Merchant Marine on June 9, advises us that she will not be launched until next spring.

Nova Scotia Steel & Coal Co., New Glasgow, N.S., launched the steel cargo steamship Canadian Sapper; Marine Department contract 59; builder's yard no. 8; approximately 2,800 d.w. tons; for Canadian Government Merchant Marine, Nov. 9, the christening being performed by Mrs. G. D. MacDougall, wife of the company's General Superintendent. The ship is expected to be completed about Dec. 12. She is the same in every particular as the Canadian Miner and Canadian Sealer, built previously by the company for Canadian Government Merchant Marine, except that she has twin decks on forward hold.

Port Arthur Shipbuilding Co., Port Arthur, Ont., launched the steel cargo steamship Canadian Harvester; Marine Department contract 61; builder's yard no. 45; approximately 3,890 d.w. tons; for Canadian Government Merchant Marine, Nov. 20, the christening being performed by Mrs. Keefer, wife of F. H. Keefer, M.P. for Port Arthur and Kenora.

Prince Rupert Drydock & Engineering Co.—See under "Prince Rupert Drydock & Engineering Co. Suspends Operations," on another page of this issue.

Tidewater Shipbuilders Ltd., Three Rivers, Que.—The steel cargo steamships Canadian Fisher and Canadian Forester; Marine Department contracts 15 and 16; builder's yard nos. 7 and 8; approximately 5,100 d.w. tons each, which were

launched Aug. 14 and Sept. 20, respectively, have been completed, with the exception of the interior fittings for the passenger accommodation, and the furnishings, which, we are advised, are to be put in at Halifax, N.S. The Canadian Fisher left Three Rivers Nov. 13 under her own steam, for Halifax, and we were advised on that date that it was expected to similarly dispatch the Canadian Forester about a fortnight later. It was considered advisable to have the interior fittings of the passenger accommodation installed at Halifax, rather than take chances of the ships freezing in, as there are so many delays in getting the necessary materials, both as regards the various manufacturers and transportation in general. The plans of both these ships were changed while they were being built, so as to provide accommodation for 28 passengers. On completion, they will be placed on the West Indian route.

Wallace Shipbuilding & Drydock Co., North Vancouver, B.C., which launched the steel cargo steamship Canadian Highlander; Marine Department contract 55; builder's yard no. 103; approximately 8,390 d.w. tons; for Canadian Government Merchant Marine, on Oct. 14, expects to deliver her early in December.

Vancouver Drydock Contract Let.

A contract was signed Oct. 27, between the Dominion Government and J. Coughlan & Sons Ltd., for the construction of a second class drydock at Vancouver, B. C., under the terms of the Dry Docks Subsidies Act, by which the Government will pay a subsidy of 4½% for 35 years on the cost of the drydock, which, for the purpose of subsidy calculation, has been placed at \$2,500,000.

The plans and specifications, as originally drawn up, showed a clear width of the dock entrance of 100 ft., and have been amended to provide for a clear width of dock entrance of 110 ft., and all the figures in the original plans and specifications affected by this change have been increased by 10 ft. The caisson gate is to be redesigned to agree with the amended entrance width. Order in council 413, of Feb. 21, dealing with the matter was given in full in Canadian Railway and Marine World for March, page 156, the increased dimensions being provided for therein, the amended figures concerning only the original plans and specifications, which are annexed to the contract.

The dimensions of the drydock are to be as follows:—

Length from caisson stop to head wall.....	725 ft.
Length from back of sill to head wall.....	700 ft.
Clear width of entrance at bottom.....	110 ft.
Width of entrance at top.....	116 ft. 2½ in.
Depth over sill at extreme high water.....	32.23 ft.
Depth over sill at higher water (equivalent to high water ordinary spring tide).....	30 ft.

Assistant Pilots for Winter Navigation.—The Montreal United Pilots Association has requested the Marine Department to order that from Nov. 20 to the close of St. Lawrence navigation, all ships navigating between Quebec and Montreal, shall carry an assistant pilot. The request states that at that time the weather is such as to bear very hardly on a pilot who is on duty for the whole distance between the ports named. It also states that, in former years, the season closed somewhat earlier, but it has been lengthened by the use of additional aids to navigation. It was announced Nov. 24 that the Marine Department had refused the request.

Wreck of Grand Trunk Pacific Coast Steamship Co.'s s.s. Prince Rupert.

The illustrations on this page show the wreck of the s.s. Prince Rupert from various points of view. She left Swanson Bay, B.C., which is about 426 miles north of Vancouver, early in the morning of Sept. 29, and struck on the east side of the ship channel, about 4 miles north of Swanson Bay, sustaining such damage that holds 1 and 2 were both flooded. On account of not being able to find a suitable place for beaching the

built round the ship. During the earlier part of November, the ship was reported to be in an upright position, and six divers were drilling holes in the hull preparatory to fixing bolts to be utilized in the lifting operations.

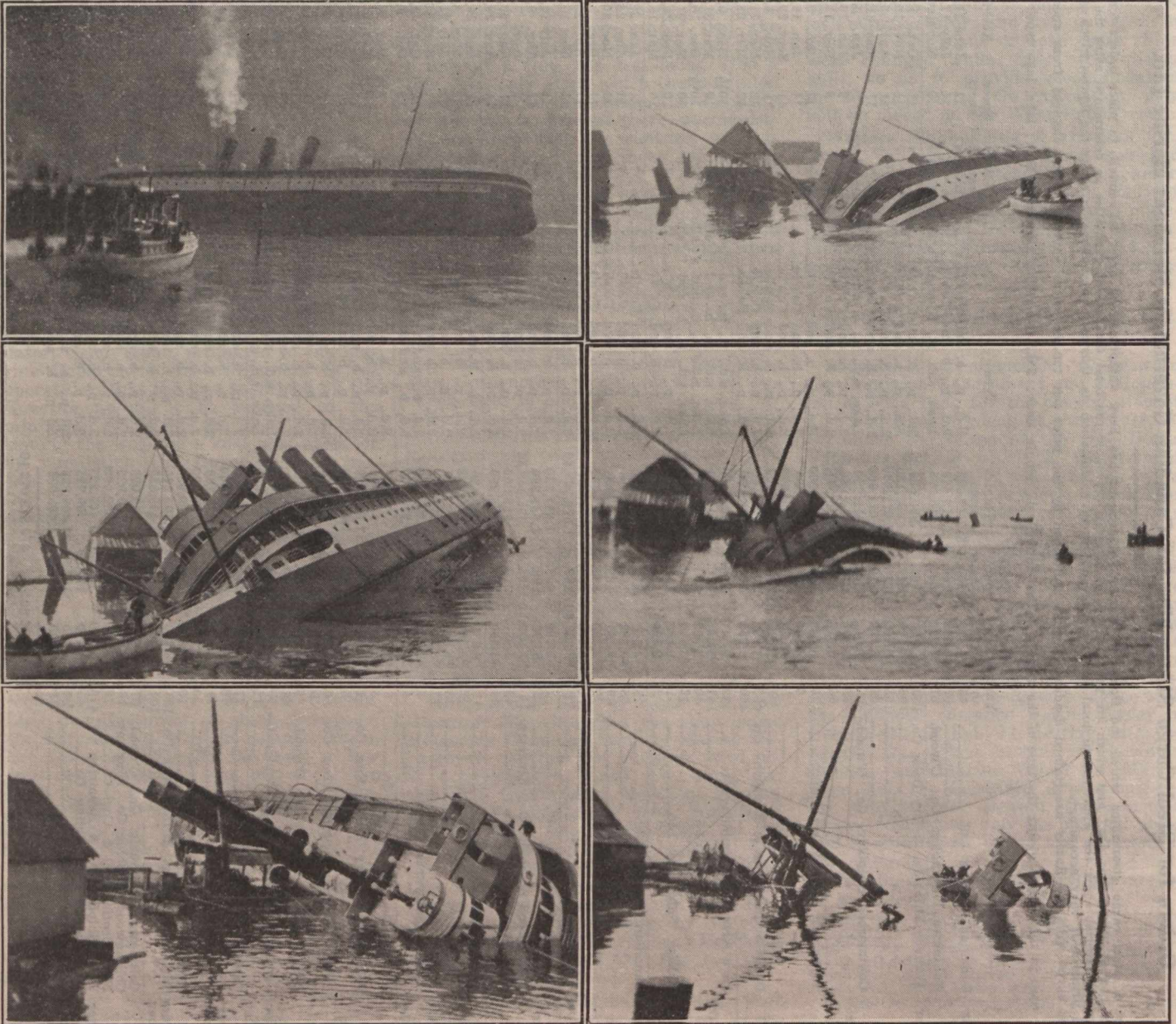
The enquiry into the casualty opened at Vancouver, Nov. 15, before Capt. J. D. Macpherson, Wreck Commissioner for British Columbia, assisted by Capt. G. Bridge, Esquimalt, and Capt. John Park,

Great Lakes Levels.

The U.S. Lake Survey reports the monthly mean stages of the Great Lakes, for October, in feet above mean sea level, as follows:—Superior, 602.68; Michigan and Huron, 580.55; St. Clair, 575.14; Erie, 572.05; Ontario, 245.29.

Lake Superior was 0.13 ft. lower than September, 0.27 ft. higher than a year ago, 0.05 ft. above average stage of October of the last 10 years, 0.88 ft. below the high stage of Oct. 1869, and 1.10 ft. above the low stage of Oct. 1879.

Lakes Michigan and Huron are 0.32



Wreck of Grand Trunk Pacific Coast Steamship Co.'s s.s. Prince Rupert, at Swanson Bay, B.C.
From photographs loaned by C. J. Hastings, M.D., Medical Officer of Health, Toronto, who was one of the passengers.

ship, the captain decided to return to Swanson Bay, and was able to beach the ship at the mouth of a creek at the entrance to the bay. As the tide continued to rise, after portions of the ship, including the boiler and engine spaces, became flooded, and she sank rapidly, with a list of about 60 deg. to starboard, her stern being in about 70 ft. of water.

Salvage operations were undertaken immediately by the Pacific Salvage Co., under the direction of Capt. W. H. Logan of the London Salvage Association. To aid in the work, a cofferdam has been

master of the s.s. City of Victoria. At the time of writing (Nov. 23) the judgment had not been received, but a Vancouver press dispatch states that the enquiry was concluded Nov. 18, it being held that the primary cause of the casualty was that the helm was put to port instead of to starboard, and that the ship was considerably out of her course at the time. It is also stated that the certificate of the master, Capt. Duncan Mackenzie, was suspended for four months, and that of the first officer, Capt. R. Mackenzie, for three months.

ft. lower than September, 0.10 ft. lower than a year ago, 0.08 ft. above average stage of October of the last 10 years, 2.39 ft. below the high stage of Oct. 1876, and 0.95 ft. above the low stage of Oct. 1911. During the last 10 years the October level has averaged 0.2 ft. lower than the September level, and 0.02 ft. higher than the November level.

Lake Erie is 0.34 ft. lower than September, 0.42 ft. lower than a year ago, 0.10 ft. below average stage of October of the last 10 years, 1.65 ft. below the high stage of Oct. 1885, and 1.25 ft.

above the low stage of Oct. 1895. During the last 10 years the October level has averaged 0.3 ft. lower than the September level, and 0.3 ft. higher than the November level.

Lake Ontario is 0.18 ft. lower than September, 1.06 ft. lower than a year ago, 0.52 ft. below average stage of October of the last 10 years, 2.52 ft. below the high stage of Oct. 1861, and 1.62 ft. above the low stage of Oct. 1895. During the last 10 years the October level have averaged 0.4 ft. lower than the September level, and 0.2 ft. higher than the November level.

Canal Traffic Statistics.

Following is a summary of the canal statistics for September, compiled by the Dominion Bureau of Statistics' Transportation Division:—

Sault Ste. Marie Canal.—There was considerable increase in the traffic through the Canadian and U.S. locks, despite the strike of the seamen on the Canadian lines on Sept. 16. There was an increase over Sept. 1919 of 1,545,674 tons, but a decrease from Aug. 1920 of 677,031 tons, the big increases being in wheat, iron ore, and soft coal. Soft coal fell behind August by 492,840 tons, and this season is behind 1919 by 889,072 tons. Hard coal is also behind by 77,223 tons, and wheat by 15,563,017 bushels, while the iron ore is ahead of last year by 4,909,504 tons. The total traffic for the season is 55,194,179 tons, against 52,887,710 in 1919.

Welland Canal.—There was an increase in traffic over Sept. 1919 of 53,849 tons, but a decrease from Aug. 1920 of 34,396 tons, and the total for the season is 42,077 tons behind 1919, being 1,693,717 tons, against 1,735,794 last year. The big increases for the season are barley 88,442 tons, wheat 83,066 tons, oils 53,331 tons, while soft coal is 208,088 tons over last season.

St. Lawrence Canal.—Traffic for September was 10,936 tons over Sept. 1919, but 108,977 tons under Aug. 1920, and for the season 42,113 tons under 1919. There was a decrease of 1,273,630 bush. of wheat from Sept. 1919, and an increase of 86,178 tons of soft coal. The total cargoes were 422,486, against 411,550 for Sept. 1919. The totals for the season are 2,237,426, against 2,279,539 for 1919. The soft coal shipments are 199,203, against 237,956 in 1919.

The Trent, Rideau and St. Peters Canals show decreases, while the Ottawa, Chambly, Murray and St. Andrews Canals show increases. All these canals show increase for the season, with the exception of St. Peters.

The North American Steamship Co. Ltd., which was incorporated under the Dominion Companies Act, with \$750,000 authorized capital, and office at Toronto, was formed to acquire and operate the s.s. North American out of New York. This ship was built by Canadian Allis-Chalmers, Bridgeburg, Ont., and is screw driven by engine of 146½ h.p. Her dimensions are,—length 251 ft., breadth 43.6 ft., depth 20.5 ft., tonnage 2,280 gross, 1,315 net. She is of the same type of steel steamship as was adopted by the Imperial Munitions Board for 3,500 d.w. tons, and of which Canadian Allis-Chalmers built two for the British Government. The s.s. South American was built by the same builders for the South American Steamship Co., controlled by the American Metal Transport Co.

**Royal Mail Steam Packet Co.'s
Canada-West Indies Service.**

As stated in Canadian Railway and Marine World for November, the Royal Mail Steam Packet Co. applied to the Trade and Commerce Department for authority to increase its rates between Canadian and West Indian ports by 25%, on account of the high prices of coal, wages, etc., and the Minister of Trade and Commerce has advised us that, after consulting the Halifax, N.S., and St. John, N.B., boards of trade, he has authorized the increase. The clause in the company's contract with the Dominion Government, under which the rates are controlled, is as follows:—

"The contractors shall, at least three weeks prior to the first sailing under this contract, furnish the Minister with a schedule of the freight rates proposed to be charged between the different ports on both north and south bound trips, which schedule shall at all times be subject to the approval of the Minister, and after being approved by him shall not be changed except with his consent; and the Minister may at any time, if he deem it advisable, fix the maximum rates to be charged on any article or class of goods; and the contractors shall carry between the ports hereinbefore named on all voyages of the said steamships employed under the terms of the contract, all passengers or freight that may be offered, or that can reasonably be procured, at rates which shall not be in excess of such maximum rates as fixed by the Minister, should he deem it advisable to so fix such maximum rates, and in no case shall any discrimination be made as regards rates, or otherwise, directly or indirectly against Canadian merchants or shippers, who shall always have precedence for their freight and goods over all other merchants and shippers; and it is agreed and understood that the freight rates on south bound trips, sailing from Halifax or St. John, as hereinbefore provided, on through bills of lading from any places in Ontario and Quebec, or from any Canadian points farther west, shall in no case be greater than from the same place via any United States routes or ports; and on north bound trips the rates from any port in the British West Indies to any place in Ontario or Quebec or other Canadian points farther west, shall be as favorable as via any United States route or port, to the same place; and it is further understood and agreed that the said

steamers shall not carry between the ports hereinbefore stipulated, on any voyage run under the terms of this contract, either deals or lumber or timber to a greater extent than 50% of the total quantity of the cargo carried on such voyage, and such quantity only in case other Canadian products are not offering or cannot be obtained. Provided, however, that in the event of other cargo not being obtainable, satisfactory evidence of that fact being furnished to the Minister, then the contractors shall be allowed to make up the balance of the cargo with deals, boards or timber."

The four steamships which the R.M. S.P. Co. has in the Canada-West Indies service are as follows, the figures showing gross tonnage:—Caraquet, 4,889; Chaleur, 4,746; Chignecto, 4,744; Chaudiere, 4,019. They sail fortnightly from St. John and Halifax to Bermuda, St. Kitts, Antigua, Montserrat, Dominca, St. Lucia, Barbados, St. Vincent, Grenada, Trinidad and Demerara.

Magdalen Islands Shipping.—The Magdalen Islands are situated in the center of the Gulf of St. Lawrence, about 50 miles from East Point, Prince Edward Island, and the same distance from Cape Breton. The Trade and Commerce Department's Weekly Bulletin states that the small fleet of 10 schooners, with an average tonnage of about 65 tons each, which belong to the islands, have all they can do to carry from the islands the bulk herring and cod fish, and bring back the fuel and building materials needed; in fact, during the last few years, owing to irregular service by the mail steamship, these schooners have been obliged to carry a part of the goods which the steamship might have brought, and in consequence there has been a scarcity of fuel during the winter, especially in 1919-20, as, although the people of the islands chartered what outside schooners they could get, very few are willing to make trips to the island owing to the shoal water and the absence of harbors around the islands.

Ormes Steamship Co. Ltd. has been incorporated under the Dominion Companies Act, with \$1,000,000 authorized capital, and office at Montreal, to carry on business as ship owners, shippers, steamship agents, etc., and to own and operate ships of every description for passenger and freight service, salvage and towing, etc., and to undertake the laying of submarine telegraphs in any part of the world.

Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during October, 1920:

Articles	Canadian		U.S. Canal	Total
	Canal	M. ft. M. B.		
Lumber	1,114		24,060	25,174
Flour	447,940		695,051	1,142,991
Wheat	3,269,479		25,201,217	28,470,696
Grain, other than wheat.....	2,033,481		5,164,830	7,198,311
Copper	66		6,633	6,699
Iron Ore	40,768		8,616,055	8,656,823
Pig Iron	250			250
Stone	5,250		14,932	20,182
General Merchandise	352		3,256	3,608
Passengers	431		18	449
Coal, soft	27,969		2,465,938	2,493,907
Coal, hard			376,388	376,388
Iron Ore			27,664	27,664
Manufactured Iron and Steel.....			1,447	7,105
Salt			1,812	16,243
Oil			45,849	45,849
Stone			95,876	95,876
General Merchandise			30,630	28,184
Passengers			373	2
Summary				
Vessel Passages	Number	452	2,293	2,745
Registered Tonnage	Net	658,407	8,372,397	9,030,804
Freight—Eastbound	Short tons	237,702	9,638,939	9,876,641
Westbound	Short tons	61,858	3,061,800	3,123,658
Total Freight	Short tons	299,560	12,700,739	13,000,299

Owners' Rights in Partially Built Ships, Under Builders' Liquidation Proceedings.

In connection with the liquidation of the Three Rivers Shipyards, Ltd., Three Rivers, Que., mentioned elsewhere in this issue, Mr. Justice Maclellan gave judgment in the Superior Court at Montreal, Nov. 6, in favor of La Societe Naphthes Transports, Marseilles, France, on a claim for possession of a partially built oil tank steamship of 6,500 gross tons, in possession of the liquidator of the building company, and ordered that the liquidator hand over to the owning company the ship as it stands, together with all material on hand and intended for the ship, and the ship's machinery under construction, but this latter material is only to be handed over on payment of any amount due thereon, and reserved the liquidator's rights with regard to any additional amounts that may become due under the contract, less such amounts as the owners have to expend for completing the ship.

The contract for the construction of this ship was entered into Mar. 12, 1919, with National Shipbuilding Corporation, Wilmington, Del., and the carrying out of the contract was entrusted to Three Rivers Shipyards, Ltd., which the judgment described as being "treated, regarded, known and publicly designated as an operating division, or branch of National Shipbuilding Corporation." After the payment of two installments of the contract price to the builders, a mortgage was executed by the builders, Oct. 30, 1919, under the provision of the Canada Shipping Act, in favor of the owners, as security for the ship's completion. Building operations proceeded until the winding up order was made July 23, 1920, when four installments of the contract price had been paid, and nothing further was due until the ship had been launched, and as the liquidator declined to complete and deliver the ship, these proceedings were commenced.

The liquidator contested the claim on the ground that Three Rivers Shipyards, Ltd. was not a party to the contract, that it never received any installments of the contract price, the four installments paid going to National Shipbuilding Corporation, that it did a large amount of work for which it had not been paid, that the mortgage mentioned was invalid for want of necessary formalities, in not having been approved or authorized by the Minister of Marine, and was of no effect as far as it purported to mortgage any materials intended for the ship, and he claimed that to hand the ship over to the owners would prejudice creditors' claims in liquidation. Molson's Bank also opposed the claim, on the ground that the materials intended for the ship, and not already incorporated in the hull, had been assigned to the bank as security for advances.

The judgment declared that there were two main questions to be determined, (1) did the mortgage executed by Three Rivers Shipyards, Ltd., in favor of the owners, entitle the latter to the possession of the ship as it stood, or to the ship and all materials intended therefor, and which had been ordered or were on hand in the shipyard; and (2) had Molson's Bank a valid secured claim on the materials on hand in the shipyards which had been ordered for, or were suitable for, the completion of the ship.

The owners based their claim on the mortgage and not on the contract. The contract contained no provision for the

passing of the property until final delivery and acceptance of the ship, and the mortgage was executed, not by National Shipbuilding Corporation, but by Three Rivers Shipyards, Ltd. It was abundantly clear that, for all practical purposes, the company at Three Rivers was an operating division or branch of the National Shipbuilding Corporation, which was apparently the mainspring of the industry carried on at Three Rivers, and it existed and was operated on the credit borrowings and contracts obtained by National Shipbuilding Corporation. The Three Rivers Shipyards, Ltd., however, had a separate corporate existence, and as a subsidiary company assumed the contract in question. The mortgage was in terms an assumption for a consideration of National Shipbuilding Corporation's obligations under the contract, and the execution of the mortgage was itself a fulfilment and one of the obligations entered into by the corporation in this contract. The mortgage, being on a ship in process of construction, was authorized under the Canada Shipping Act. The ship had not been registered in Canada as a British ship, in fact it was not a British ship, but was being built for foreign owners, and in the court's opinion the mortgage did not require the Minister of Marine's approval under George V, secs. 9 and 10, chap. 42. The court was also of opinion that the mortgage, being mainly to secure the completion of the ship, was not executed in violation of the Dominion Companies Act, and it therefore ruled that Three Rivers Shipyards, Ltd., had power and authority to execute it. While the Canada Shipping Act authorizes a mortgage on a ship about to be built, it does not authorize a mortgage on materials provided and intended for a ship. This contract was for a complete ship, not for a ship, and the materials intended for it, and the court's opinion was that the principles laid down by the House of Lords in *Seath vs. Moore* (11 Appeal Cases 350) and *Reid vs. MacBeth* (1904) A. C. 223, 73 L.J.P.C. 57, were applicable to the present case, hence its conclusion was that the mortgage was effective, only in so far as the ship had been actually built, and did not cover any of the materials or machinery intended for the ship, but not yet incorporated into it.

The Canada Shipping Act provides in sec. 45 that the mortgagee shall be deemed owner, for all purposes necessary for making the ship available as security for the mortgage, which in this case was not only the four installments paid, but also the completion and delivery of the ship. Unless put into possession, the owner would be unable to exercise the rights given to it by the mortgage, to have the ship completed and delivered in accordance with the contract. The corporation, by its contract, undertook to give such a mortgage on both the ship and the materials intended for it, but, for the reasons stated, the mortgage could not be held to apply to the materials. The owners having paid all installments due to date, the court ruled that the mortgage entitled them to take possession of the ship as it stands. However, they could not proceed to complete the ship without the materials, and as these were already assembled, it was ordered that the liquidator should transfer them as required, on payments that would be adjusted afterwards, the shipyard plant at the same time to be leased on a

rental of \$250 a week. In regard to the claim of Molson's Bank regarding steel plates, angles, and other materials at the yard, under five assignments by National Shipbuilding Corporation and Three Rivers Shipyards, Ltd. to the bank, under the Bank Act, sec. 88, the court held that when these assignments were taken by the bank, both National Shipbuilding Corporation and Three Rivers Shipyards, Ltd. were insolvent, and to the bank's knowledge. Its claim was therefor dismissed with costs.

Molson's Bank has entered an appeal against the judgment dismissing its claim.

An application by La Societe Naphthes Transports, to be allowed to proceed with the completion of the ship, was granted by the Court of Appeals, Nov. 16, on the company furnishing a bond to guarantee Molson's Bank payment for a quantity of steel plates, bars, etc., required for the ship, and on which the bank claims to have a privilege, which is the subject of appeal.

Furness, Withy & Co.'s Annual Report.

Following are extracts from Furness, Withy & Co., Ltd., report for the year ended April 30, 1920:—

The profits, including the balance brought forward, and after providing for taxation, were £1,125,404 1s. 8d. The usual half yearly dividend on preference shares and an interim dividend on ordinary shares, at the rate of 5% per annum, free of income tax, for the six months to October 31, 1919, were paid Nov. 1, 1919, leaving an available balance of £999,154 1s. 8d. Out of this balance the directors transferred £500,000 to depreciation account, and they recommend the payment of a bonus of 5% free of income tax, on ordinary shares for the past twelve months, representing a total distribution for the year of 10%, free of income tax. The appropriation of the available balance of £999,154 1s. 8d. will therefore be:—

Transferred to depreciation account	£500,000 0 0
6 months' dividend on preference shares at 5% per annum, less income tax, May 1, 1920	26,250 0 0
6 months' dividend on ordinary shares, at 5% per annum, free of income tax, paid May 1, 1920	100,000 0 0
Bonus of 5% free of income tax, on ordinary shares, payable Sept. 15, 1920	200,000 0 0
Balance carried forward to next year's account	172,904 1 8
	£999,154 1 8

Since the previous annual meeting, J. E. Furness, of Halifax, N.S., retired from the board to the regret of his colleagues, and the vacancy was filled by the appointment of Sir Osborn G. Holmden.

Canadian Lake Protective Association has discontinued the issue of bulletins reporting action taken upon each casualty report filed by masters of ships. Masters are now notified individually with respect to their particular cases, and it is believed that the change will lead to a more complete disclosure of the circumstances connected with each casualty, and each master will have confidence of careful consideration, and, if necessary, re-consideration of his case, before final action is taken.

Prince Rupert Drydock & Engineering Co. Suspends Operations.

Prince Rupert and Ottawa press dispatches stated early in November that the Prince Rupert Drydock & Engineering Co. had suspended operations, being in arrears for wages, and that some 800 men had been thrown out of employment. Writs were issued against the company, among others by Canada Metal Co. for \$2,714.15, and by Prince Rupert Coal Co. for \$5,250, and it was reported that the company owed a considerable amount to the Grand Trunk Pacific Ry. for freight, etc. It was also stated that the Marine Department had telegraphed that efforts were being made to secure the guarantee company's permission to settle the wages due and that the shipbuilding company had been asked to state their amount. It is said that the total liabilities will be between \$350,000 and \$400,000.

The shipbuilding plant and floating drydock operated by the company, which were fully described and illustrated in Canadian Railway and Marine World for Feb., 1912, were built by the Grand Trunk Pacific Development Co., a subsidiary of the Grand Trunk Pacific Ry. Co., of which the Minister of Railways is now Receiver, on behalf of the Dominion Government, and which is now under Canadian National Rys. management. They were leased to the John L. Mullen Construction Co., Pittsburg, Pa., in Aug., 1918, and the Prince Rupert Dry Dock & Engineering Co. was incorporated Dec. 23, 1918, with authorized capital of \$500,000, and office at Prince Rupert, to take over the lease and operate the property, by building steel and wooden ships. The provisional directors were: Newman Erb, W. M. Wadden and H. Blanchard, New York; John L. Mullen, Pittsburg, Pa., and A. M. Manson, Prince Rupert. In Jan., 1919, an order in council was passed authorizing the placing of contracts with the company for the building of two steel cargo steamships of approximately 8,100 d.w. tons each, for Canadian Government Merchant Marine Ltd., and Marine Department contracts 42 and 43 were signed Feb. 21, 1919, for building the ships, which were stated later to be approximately 8,390 d.w. tons each, at \$198 a d.w. ton. These were given builder's yard nos. 1 and 2, were designated Canadian Reaper and Canadian Thrasher respectively, and the keels were laid Sept. 27 and Oct. 20, 1919. In September 1920, the company's acting General Manager advised Canadian Railway and Marine World that the s.s. Canadian Reaper would probably be launched early in November and s.s. Canadian Thrasher about a month later, but they had not yet been launched.

On the organization of the company, the following officers were elected:—Chairman of the Board, Newman Erb, New York; President, John L. Mullen, Pittsburg, Pa.; Vice President, F. F. Schellenberg, Prince Rupert, B.C.; Treasurer, W. M. Wadden, New York; Secretary, H. Blanchard, New York; Superintendent of Plant, J. H. Pillsbury, Prince Rupert, B.C.; and the Vice President and the Superintendent of Plant were placed in active charge of shipbuilding. Towards the end of 1919 there were differences among the directors, and litigation followed to determine their rights, the Erb interests claiming damages from the Mullen interests, alleging fraudulent conspiracy to obtain control of the company. The result was that the Mullen interests were acquired by Newman Erb for \$75,000. In the early part of this

year, Newman Erb was reported to have stated that he and his associates had control of the company's stock, through the Empire Ship & Dry Dock Corporation, having bought the Mullen interests. He claimed that the company had spent \$550,000 in fixed assets, that it had no floating debt, but had on deposit in banks \$180,000, of which \$160,000 was a trust fund for emergency use to ensure the completion of work in hand. At that time he reported the steamships Canadian Reaper and Canadian Thrasher to be about 60% completed, and about 45% paid for. A balance sheet, dated Mar. 31, 1920, showed assets of \$2,835,596.77 and liabilities of \$2,092,957.38, and a balance at credit of profit and loss of \$742,639.39. The officers of the company are: Chairman and Managing Director, Newman Erb; Treasurer, W. M. Wadden; Secretary, H. Blanchard; acting General Manager, J. H. Pillsbury. At a meeting of local creditors early in November, it was stated that Mr. Erb was in New York with the intention of raising further capital, or obtaining some assistance from the Dominion Government, in both of which he was unsuccessful. It is estimated that the liabilities are between \$350,000 and \$400,000. Arrangements are reported to be in progress for the completion of the two ships now on the ways, it being estimated that it will require about \$1,200,000 to finish both, and that the amount due from the Government for the completed contracts will be about \$1,000,000. In the early part of this year, negotiations were reported to have been undertaken with several oil companies in New York and Holland for the building of about 20 oil tank steamships for approximately \$36,000,000, and we were advised that the settlement of the order was merely a question of adjustment as far as rate of exchange, etc., was concerned, between Canada and the U.S. The lack of construction facilities at Prince Rupert also tended to hold back the order, but the company announced that in the event of securing it, it would immediately commence building two additional ways on about 75 ft. centers, and also build at least 200 houses, with accommodation each, for a man, wife and two children, so that it might employ approximately 500 men in carrying out the shipbuilding programme. The orders for the oil tank steamships did not materialize at the time anticipated, and we were advised later that the placing of them depended on legislation being enacted, authorizing the Dominion Government to assist in shipbuilding by extending credit to buyers. The act which the Dominion Parliament passed authorizing a certain credit, details of which have already been given in Canadian Railway and Marine World, was not considered to be sufficiently attractive to the parties concerned, in view, it was stated, of the U.S. Shipping Board's policy of extending a ten year credit and otherwise more favorable terms to purchasers of cargo ships built by the Board. A suggestion was made that a 66 2/3% credit by the Dominion Government would be sufficiently attractive to give Canadian shipyards sufficient orders to keep them occupied for 18 months at least.

Newman Erb, who has been associated with the company from its inception, was born in Germany, and educated at St. Louis, Mo., where he was engaged in law practice from 1872 to 1892. In

1885 and 1886, he was General Attorney for Arkansas, Tennessee & Missouri, of the Fort Scott & Memphis Rd., and from 1886 to 1898, President, Western Telegraph Co., now owned by Western Union Telegraph Co. He is President, Ann Arbor Rd., and is also said to be President, British Columbia Copper Co., Vice President, New Dominion Copper Co., and an officer of Canadian Copper Co., and has an office at 42 Broadway, New York, N.Y. W. M. Wadden, Treasurer and a director, is Erb's Secretary, and I. M. Dittenhoefer, another director, is a New York attorney.

An Ottawa press dispatch of Nov. 19, stated that the London Guarantee & Accident Co., which gave a bond for 10% of the contract price, which is \$1,661,220, for each ship, had failed to reply to telegrams and letters from the Marine Department asking it to agree to the Department advancing sufficient funds to pay wages, and that without this consent no advance could be made. The dispatch also stated that the guarantee bond provided that in the event of failure by the contractors to complete the work the guarantee company had the option of doing so.

A Vancouver press dispatch of Nov. 15 states that Newman Erb has made an offer to creditors to pay all claims of \$100 and under, and one third of all remaining claims, at once, another third on receipt of the ninth instalment to be paid by the Government on account of the construction of the two ships for Canadian Government Merchant Marine Ltd., and the remaining one third on receipt of the tenth instalment.

Disposal of Steel Plates by Marine Department.

Ottawa press dispatch, Nov. 19.—Cable advices from G. H. Flood, Purchasing and Contract Agent, Marine Department, who is in England looking into the market for Canadian steel plates, indicated that Canada will be able to dispose of but few of the plates in Great Britain. The Dominion Government entered into a contract with the Dominion Iron & Steel Co. to take a portion of the product of the Sydney plant and dispose of it. Consequently, the Government is now trying to dispose of a portion of the 1921 output of the plant, but Mr. Flood states that German and Belgian competition in Great Britain is now an appreciable factor, and that Canada will meet with strong competition.

While the Dominion Government is trying to dispose of steel plates, it is stated at the Marine Department that a contract for 2,500 tons of plates for use on Hydro electric power construction at Niagara Falls will be filled in the United States. The situation, therefore, appears to be that, while the Dominion Government is seeking a market, plates for provincial work are being purchased in the U.S.

Sale of Canadian Naval Service Ships. We are officially advised that the two submarines which were purchased by the Government in the early stages of the war for service on the Pacific coast, and H.M.C.S. Niobe have been sold to the New Brunswick Rolling Mills, St. John, N.B. The understanding is that the Niobe is to be dismantled for scrap purposes. The ships Canada and Grilse have not yet been disposed of.

Mainly About Marine People.

Sir Montagu Allan, formerly of the Allan Line Steamship Co., has been elected a director of the Guarantee Co. of North America.

G. M. Bosworth, Chairman, Canadian Pacific Ocean Services Ltd., and Mrs. Bosworth, have returned to Montreal, after a visit to Virginia Hot Springs.

Major P. J. A. Duff, son of Thomas A. Duff, General Counsel and Assistant to General Manager, Great Lakes Transportation Co., etc., was married at Toronto, Nov. 3, to Miss L. E. Emmett.

G. H. Flood, Purchasing and Contract Agent, Marine and Fisheries Department, left Ottawa, early in November, for England, on official business, accompanied by Mrs. Flood. During his absence his duties are being attended to by J. J. Skelly, Assistant to Purchasing and Contract Agent.

R. S. Gourlay has been reappointed one of the Toronto Harbor Commissioners, by the Dominion Government, for three years from Oct. 22.

James H. Hall, formerly President, Western Transportation Co., Ottawa, who died at L'Original, Ont., Sept. 23, left an estate valued at \$73,271, his wife being appointed sole executor. The estate included 78 shares in Ottawa Transportation Co., valued at \$3,900, 109 shares in Forwarders Ltd., Kingston, Ont., mentioned as of no value, and shares in the Montreal Transportation Co., valued at \$7,933, due on agreement with Canada Steamship Lines Ltd.

H. E. A. Hawken, who has been appointed acting Deputy Minister of Marine and Fisheries, as stated in Canadian Railway and Marine World for November, was born at Ottawa, Sept. 28, 1879, was educated in public and high schools in Ottawa, and was for some time employed in the lumber business there by the W. C. Edwards Co. He entered the Dominion Government's service, as a junior clerk, Jan. 7, 1902, receiving his first permanent appointment Feb. 3, 1905, and working up through the different grades of the service until he was appointed Chief Registrar of Shipping, April 1, 1917. On April 1, 1920, he was appointed Assistant Deputy Minister of Marine, and on Nov. 1, 1920, acting Deputy Minister.

C. Gardner Johnson, of C. Gardner Johnson & Co., ship brokers and general agents, also Lloyd's agent for British Columbia, and C.P.R. Co.'s Marine Notary, Vancouver, has left, accompanied by Mrs. Johnson, for an extended trip. They will sail from New York for Tangier, and expect to visit Italy and France en route to England, where Mr. Johnson will visit Lloyd's and attend to other business. From London he will probably go to Stockholm, and sail back, via San Francisco, by one of the Johnson Line of Stockholm steamships, for which he is agent.

Alex. Johnston, who resigned his position of Deputy Minister of Marine and Fisheries recently, to enter the British Empire Steel Corporation's service, appeared before the Dominion Government's Tariff Commission at Halifax, Nov. 8, and asked that the Corporation's President, R. M. Wolvin, be allowed to submit the corporation's case to the Commission at Montreal.

Walter Lambert, M.I.N.A., naval architect, and marine surveyor, Montreal, has been commissioned by pulp and paper interests on the Gulf of St. Lawrence, to

make an investigation of their facilities, to determine the best means of transportation for moving pulpwood from their lands to their mills.

Major A. C. Lewis, formerly Secretary, Toronto Harbor Commission, and now Secretary, Canadian Deep Waterways and Power Association, who was the Conservative candidate at the by-election for the representation of North-east Toronto in the Ontario Legislature, on Nov. 8, was elected, polling 8,035 votes, against 4,351 for Major W. H. Kippen, Liberal, and 1,882 for Jas. Higgins, soldier-labor.

Thos. Long, President, Thos. Long & Co., general merchants, Collingwood, at one time a director of the Northern Navigation Co. of Ontario, and a former President of Collingwood Shipbuilding Co., who died at his house in Toronto, Nov. 7, left an estate valued at \$1,321,900.43, apart from insurance and personal trusts made by him in his lifetime, and which do not form part of the estate.

Capt. C. Lorway, who died at Sydney, N.S., Oct. 31, aged 56, was at different times in command of several ships sailing out of that port, but retired from seafaring life about 20 years ago, and had since held a position in the Supreme Court of Nova Scotia. John Lorway, in Canadian National Rys. service in British Columbia, is a brother.

Capt. E. P. McGannon, mate of the Prescott and Ogdensburg Ferry Co.'s s.s. Miss Vandenberg, died at Prescott, Ont., Oct. 28.

Lieut.-Col. Geo. P. Murphy, C.M.G., President, Ottawa Transportation Co., Ottawa, has been elected a member of the Dominion Marine Association's executive committee, in place of E. H. Beazley, General Manager, Union Steamship Co. of British Columbia, Ltd., Vancouver, who was killed in a aeroplane accident at Lulu Island, B.C., May 24.

James J. Nelligan, who was appointed Managing Director, Walford Shipping Co., Montreal, recently, was born at Hamilton, Ont., Jan. 20, 1876, and entered transportation service in 1892, since when he has been, to 1904, in various positions, G.T.R., at Hamilton, St. Catharines, Ingersoll, Ont., and Montreal; 1904 to 1907, Travelling Freight Agent, Northern Navigation Co. of Ontario, Montreal; 1907 to Mar. 1904, General Agent, Canadian Lake Line, Montreal; Mar. 1914 to the date of his present appointments, Division Freight Agent, Canada Steamship Lines, Montreal.

J. W. Norcross, President and Managing Director, Canada Steamship Lines, returned to Canada at the end of November, after a business trip to Great Britain. He is reported to have stated that he has obtained numerous contracts, which will have a far reaching effect, not only for his company, but for Canada.

Sir Frederick Orr-Lewis, President, Canadian Vickers Ltd., and Lady Orr-Lewis and family, left Montreal, Nov. 4, after spending some months in Canada, to sail from New York, for England.

Sir Ernest Manifold Raeburn, K.B.E., who retired recently from the position of representative of the British Ministry of Shipping in New York, has been appointed General Manager for Scotland for Canadian Pacific Ocean Services, Ltd., with office in Glasgow. He is a son of Sir William H. Raeburn, M.P., and is at

present a member of the firm of Raeburn & Verel, shipowners, Glasgow. He served the Government in various capacities during the war, and was created a K.B.E. for his services in America. He will assume his new duties Jan. 1.

Thomas Robb, Manager, Shipping Federation of Canada, sailed from New York on the s.s. Mauretania, for Great Britain, Oct. 28, on his way to Geneva, Switzerland, to represent Canadian shipping interests in connection with the League of Nations.

Henry B. Smith, President, Collingwood Shipbuilding Co., Davie Shipbuilding & Repairing Co., and Halifax Shipyards Ltd., who removed from Owen Sound to Toronto, a few months ago, was entertained at dinner by the Owen Sound Board of Trade and City Council, Nov. 7, and presented with an illuminated address.

A. R. Tibbits, Inspector of Harbor Commissions, is acting as Assistant Deputy Minister of Marine and Fisheries, at Ottawa, consequent on the appointment of H. E. A. Hawken, Assistant Deputy Minister, as acting Deputy Minister.

J. A. Warner, General Manager, Mersey Dock & Harbor Board, Liverpool, Eng., who is making a tour of Atlantic ports in Canada and the U.S., inspected the Quebec harbor and the Davie Shipbuilding & Repair Co.'s plant at Lauzon, Que., Nov. 10. He visited Montreal Nov. 11 and subsequently left for New York, whence he sailed for Liverpool.

Senator Lorne C. Webster, President, Webster Steamship Co., etc., and Mrs. Webster, have returned to Montreal, after a visit to Japan.

R. M. Wolvin, President, Dominion Steel Corporation, etc., and Mrs. Wolvin, will leave Montreal, in December, for Europe.

Navigation on Welland Canal. — The Superintending Engineer of the Welland canal, L. D. Hara, has issued the following notices to mariners:—Attention is drawn to the fact that Joseph Battle, in connection with his contract for riprapping the banks of the Lake Erie level, is loading scows with stone, on the westerly side of the canal, in the rock cut between Ramey's Bend and Humberstone, and unloading them chiefly between Welland and Port Robinson. All vessels passing this plant must do so at low speed, and with great caution, otherwise the penalty provided in par. 19 of the Canal Rules and Regulations will be imposed. Ships should not attempt to pass each other adjacent to the plant in the rock cut. Considerable damage and inconvenience has already occurred to the plant on account of the excessive speed at which ships pass.

Shoaling in Lake St. Clair.—The U.S. Engineer Office has issued a notice to ship masters advising that recent survey develops shoaling in Lake St. Clair, in prolongation of the center dike, St. Clair Flats Canal. A gas buoy has been placed to mark the outer end of this shoal about 1,800 ft. from the lower end of the canals. Ships leaving or entering said canals will find greatest depth by proceeding on courses along the center lines of upbound and downbound channels, departing from or entering, the main lake channel, below said gas buoy.

Atlantic and Pacific Ocean.

The Canadian-Australian Royal Mail Line's s.s. Makura, which is under overhaul at San Francisco, Cal., is also being converted into an oil burner. It is expected that she will return to service between Victoria, B.C., and Sydney, N.S.W., about Dec. 15.

An agreement is reported to have been concluded by the Dominion Government with Canadian Pacific Ocean Services Ltd. for the carriage of all Canadian mail to the Orient, from Vancouver and Victoria, at a fixed price per pound. It is stated that the terms are similar to those in force for the carriage of United States mails to the Orient.

In one week recently the Canadian Pacific Ocean Services made a record for the St. Lawrence with six big ocean liners, with approximately 5,000 passengers, en route to Canada simultaneously. It is stated that no other company has ever had this number of liners making the westbound trip to Canada at the one time.

The White Star Line's s.s. Olympic, which was reconditioned recently, after her war service, and equipped with oil burning apparatus, has made a record trip between New York and Cherbourg, France. She sailed from New York, Nov. 6, and arrived at Cherbourg, Nov. 12, completing the voyage in 5 days 13 hr. and 12 min. at an average speed of 22.53 knots an hour.

Elder Dempster & Co.'s s.s. Chama, which grounded on Bellechasse Island, during October, while outbound for West and South African ports, was released at the end of the month and taken to Quebec, where she discharged cargo, and subsequently was taken to Montreal, where she was drydocked for repairs by Canadian Vickers Ltd. The repairs were expected to be completed by the end of November.

The s.s. Koenig Friedrich August, which Canadian Pacific Ocean Services Ltd. has purchased from the British Government, is one of the German steamships which came into the hands of the allies on the conclusion of the war. She was operated formerly by the Hamburg-American Line, to New York. She was built by Blohm & Voss, Hamburg, Germany, in 1906, and is of 9,462 tons net. Her dimensions are,—length 475.7 ft., breadth 55.3 ft., depth 30.9 ft. We are officially advised that she will probably be renamed Montreal, but that it had not then been decided on what route she was to be run.

Maritime Provinces and Newfoundland.

The French s.s. Poinot, bound from Florida to France, put in at Halifax, N.S., Nov. 15, for minor repairs to machinery.

Eastern Steamship Lines withdrew its s.s. Governor Dingley from the St. John, N.B.-Boston service, Oct. 29, for the winter, and stated that it expected to resume service about April, 1921.

The British s.s. Anglesea, which had been in the Reid Newfoundland Co.'s dock undergoing repairs to her bilge pumps, etc., left St. John's, Nfld., Nov. 1, on her return voyage to Rotterdam.

The French s.s. Pro Patria, which ran aground at the entrance to False Bay, Sydney, N.S., Nov. 16, was released on the following day by the tug Roebling.

She sustained no damage and proceeded on her voyage to St. Pierre, Miquelon.

The s.s. Lady Evelyn, owned by the Gulf of St. Lawrence Shipping & Trading Co., Quebec, and operating between Nova Scotia and Magdalen Island ports, was attached at Pictou, N.S., Nov. 5, on a claim for \$12,000, for repairs made to the ship last winter, by Pictou Foundry Co.

Samuel Harris Ltd. and others, owners of the s.s. General Currie, her cargo and freight, have entered action in the Newfoundland Admiralty Court at St. John's, Nfld., against the s.s. Portia, for \$15,000 damage sustained in a collision in Mortier Bay, Nfld., June 29. The s.s. General Currie was built during this year by the Dominion Shipbuilding Co., Toronto.

The St. John Dry Dock & Shipbuilding Co., which has the contract for the Courtenay Bay improvement works and a dry dock at St. John N.B., has bought the tug Katherine K. from the Dominion Public Works Department. She was built at Montreal in 1915, and is screw driven, by engine of 6 h.p. Her dimensions are, length 58.4 ft., breadth 18.4 ft., depth 5.9 ft.; tonnage, 58 gross, 23 registered.

The Hudson's Bay Co.'s s.s. Nascopie arrived at St. John's, Nfld., towards the end of October, about a month overdue, after her usual trip to Fort Churchill, and various trading stations in Hudson Bay and Labrador. After taking on supplies at St. John's she proceeded to London, Eng., with a large cargo of furs. It is stated that she was delayed on her voyage, through making calls at certain ports which should have been made by the company's s.s. Pelican, but which she was prevented from making owing to being damaged by ice in Hudson Strait.

A. R. Dufresne, Manager and Chief Engineer, St. John Drydock & Shipbuilding Co., is reported to have stated at St. John, N.B., Nov. 1, that the excavation in connection with the drydock will be completed during January and it is anticipated to have the drydock ready within the contract time, also that he anticipated that the breakwater in Courtenay Bay would be completed during January and that good progress was being made with the dredging. The soil taken out by dredging is being used to reclaim about 25 acres of land on which will be built shops for the drydock.

Province of Quebec Marine.

The Keystone Transportation Co.'s s.s. Keywest grounded on the Chateauguay shoals in Lachine Lake, Oct. 31.

The Sincennes-McNaughton Line's barge Augustus, which sank in the Soulanges canal, Nov. 11, was raised Nov. 13. There was little delay to navigation, only the larger ships being affected, as the channel was not completely blocked.

The Imperial Oil Co.'s s.s. Chinampa, which ran aground, about 300 ft. from the company's wharf at Montreal, towards the end of October, was released by six of the Sincennes-McNaughton Line's tugs, Oct. 28, without apparent damage, owing to having stuck in the soft bottom.

R. A. Wiallard, agent, Marine Department, Montreal, announced Nov. 11, that the removal of gas buoys from the St. Lawrence River would be commenced between Nov. 20 and 25, as weather permitted, and the gas buoys removed would be replaced by steel buoys until the ac-

tual close of navigation.

A report concerning shipping at the port of Montreal, to the end of October, shows 582 ship arrivals this year, having a tonnage of 1,767,879, against 641 arrivals with a tonnage of 1,825,128, for the same period of 1919. The decrease is said to be chiefly in the export of grain, the passenger trade having been heavier than in 1919.

The Kirkwood Steamship Co., Montreal, which, through T. M. Kirkwood, Montreal, bought the yacht Speedy II, from the Government, and which has also bought a number of steam trawlers built in Canada during the war for the British Government, is reported as likely to inaugurate a river steamboat service on the reopening of navigation in the spring.

The schooner Mina Nadeau, which was launched at Port Daniel, Que., Oct. 1, and which, owing to the failure of the tide to rise to the anticipated height, stuck in the sand, has been floated successfully, and towed to the breakwater. She has been chartered to load at Port Daniel for Cuba. She is of 327 tons, and is owned by Nadeau & Tyer, of Port Daniel and Halifax.

The s.s. Zephyr P., owned by Caughnawaga Transport Co., Lachine, Que., has been re-registered as Sault St. Louis, owing to material alterations, having been lengthened 5 ft. She was built at Sorel, Que., in 1910, and rebuilt there in 1920, and is screw driven by engine of 16½ h.p. Her dimensions are,—length 98.3 ft., breadth 22.3 ft., depth 7 ft., tonnage 202 gross, 124 net.

Ontario and the Great Lakes.

The Montreal Transportation Co.'s s.s. Atikokan, engaged in the coal trade, arrived at Halifax, N.S., from St. John, N.B., Nov. 14, for repairs to one of her boilers.

The s.s. Samuel Marshall, owned in Montreal, was tied up at lock 2 on the Welland Canal, Nov. 8, on a writ of the Admiralty Court's Ontario Division on a claim against the owners.

Low water in the Detroit River in the early part of November contributed considerably to delays in navigation. The chief sufferers were ore carriers taking ore to U.S. ports.

Canadian Steamship Line's s.s. Stormount, while en route from Port Arthur to Montreal, with a cargo of wheat, ran aground in the Rapide du Plat, near the upper entrance of Morrisburg Canal, Nov. 4.

The s.s. John B. Ketchum 2nd, owned by the George Hall Coal Co. of Canada, Montreal, which grounded on a shoal near Morrisburg, Ont., during a heavy fog, towards the end of October, was released after a few days.

Two steamships, Juvigny and Chipewa, each 2,305 gross tons, built by the Detroit Shipbuilding Co. at Wyandotte, Mich., left the yards for the coast, via the Welland Canal and the St. Lawrence River, during November. They are owned by Independent Steamship Co., Wyandotte, Mich.

It is announced that the assets of the Rideau Steamboat Co. Ltd., Ottawa, are to be sold. The company owns the s.s. Wanakewan, which was built at Kingston in 1910. She is screw driven by engine of 8 h.p., and her dimensions are, length 70.2 ft., breadth 15.4 ft., depth 5.2 ft.; tonnage, 68 gross, 44 net.

The s.s. Maplegrove, formerly Chero-

kee, and owned by Canada Steamship Lines, Ltd., which rammed the lower gates of lock 2 in the Welland Canal, July 11, and was otherwise abandoned as a total loss, has been removed from the Canadian register. The wreck is reported to have been sold at J. F. Sowards, Kingston, Ont.

The s.s. Landbo, owned by Landbo Transportation Co., Sarnia, Ont., and which foundered in Lake Huron, Aug. 1, 1919, has been removed from the Canadian register. She was built at West Bay City, Mich., in 1890, rebuilt in 1904, and underwent large repairs in 1914, and was formerly named Nyanza and owned by Bolan and Cornelius, Erie, Pa.

The Dominion Public Works Department received tenders to Nov. 23 for the purchase of the steam tug, Sir John and dredge 120 (Sir Robert), as they are no longer required by the department. The tug Sir John was built at Sorel, Que., in 1902, and is screw driven by engine of 8 h.p. Her dimensions are,—length 81.2 ft., breadth 17.3 ft., depth 8 ft., tonnage 94 gross, 41 net.

The s.s. Compton, owned by the George Hall Coal Co. of Canada Ltd., Montreal, was libelled at Ogdensburg, N.Y., for \$25,000, at the instance of the U.S. owners of the s.s. Lakewood, for damages sustained when the s.s. Compton carried away the gates when emerging from the Cornwall canal recently. It is claimed that the s.s. Lakewood was struck by one of the gates, causing her to sink.

The steam tug Eleanor, owned in Port Dalhousie, was considerably damaged by fire at St. Catharines, Nov. 7. She was engaged on the repair of the pier there, and it was said that fires were left burning on board when she was tied up at night. The upper works were completely destroyed. She was built at Port Maitland, Ont., in 1895, and was screw driven by engine of 12 h.p. Her dimensions are,—length 56 ft., breadth 12 ft., depth 5.8 ft., tonnage 26 gross, 18 net.

J. E. Russel, harbor contractor, Toronto, has bought the wreck of the s.s. T. P. Phelan from the underwriters, and has commenced salvaging the ship. The s.s.

T. P. Phelan was owned formerly by Canada Steamship Lines, was wrecked on the Iroquois shoal, in the River St. Lawrence, near Brockville, Aug. 19, and was later abandoned to the underwriters. She was built at Three Rivers, Que., in 1918, and was screw driven by engine of 65 h.p. Her dimensions are,—length 241 ft., breadth 41 ft., depth 14.4 ft., tonnage 1,320 gross, 769 net.

The Circuit Court, at Port Huron, Mich., has decided that the Reid Wrecking Co., Sarnia, Ont., is entitled to retain \$5,000 paid to it by C. Kurz, Philadelphia, Pa., for a 90 day option on the s.s. John Sharples. The prospective purchaser claimed that the requirements of an ocean going steamship were not fulfilled in the John Sharples, and he did not become aware of this until after the payment had been made. The contract price was \$90,000, and the judge held that the financial loss sustained by the owners in not having the sale go through, warranted them in retaining the amount paid.

The s.s. Keystorm, owned formerly by Keystone Transportation Co., Montreal, and which was wrecked in Chippewa Bay, St. Lawrence River, in 1912, will, it is reported, be raised shortly. The ship was abandoned to the underwriters, and the wreck is reported to have passed to the Great Lakes Transportation Co., Midland. It is stated that a contract is being arranged with J. E. Russell, harbor contractor, Toronto, for salvaging the ship, which will be undertaken chiefly by the use of steel pontoons. For several years, continuous attempts have been made to raise this ship, which is lying on her side in 130 ft. of water, and it is said to be the deepest salvage job ever attempted in Canada.

The s.s. Huron, which was bought recently by A. E. Mathews, Toronto, from Mutual Transit Co., Buffalo, N.Y., has been transferred to the Canadian register and renamed Huronton. She was built at Lorain, Ohio, in 1898, and is of the awning deck type, with steel hull built on the channel system, with double bottom for water tight ballast, 3 water-

tight and 2 non watertight bulkheads, steel boiler house, electric lighting, hatches spaced 24 ft. centers. Her dimensions are,—length b.p. 238 ft., breadth moulded 42 ft., depth moulded 26½ ft., tonnage 1,945 gross, 1,309 net. She is equipped with triple expansion engines, with cylinders 18½, 31 and 51 in. diam., by 36 in. stroke, 900 i.h.p., at 90 r.p.m., supplied with steam under forced draft by a Scotch boiler 14½ ft. diam. by 11½ ft. long at 170 lbs.

The Columbia Steamship Co.'s s.s. Francis Widlar ran aground on Pancake shoals, near Whitefish Bay, Lake Superior, Nov. 13, during a heavy storm, and is believed to be a total loss, the crew being rescued with considerable difficulty. The ship was built at Cleveland, Ohio, in 1904, and has a steel hull on the channel system, with steel tank top where no wood ceilings are fitted, 3 watertight and 2 non watertight compartments, steam pump wells, etc. Her dimensions are,—length b.p. 416 ft., breadth moulded 50 ft., depth moulded 28 ft., tonnage 4,682 gross, 3,368 net. She is equipped with triple expansion engines, having cylinders 22, 35 and 58 in. diam. by 40 in. stroke, 1,460 i.h.p., at 85 r.p.m., supplied with steam under induced draft by two Scotch boilers, each 13 ft. 2 in. diam. by 11½ ft. long at 170 lb.

Quebec Admiralty Court, on Nov. 11, dismissed the claim of C. A. Finnegan, Buffalo, N.Y., for \$76,997.62, as balance due on a mortgage executed in Buffalo, Nov. 19, 1918, and payable in U.S. funds at Buffalo, July 1, 1919, with interest at 6%, on the s.s. North West (now Maplecourt, registered in Canada under the name of the Davie Shipbuilding & Repair Co., Lauzon, Que.). In dismissing the claim, it was pointed out that the mortgage was registered according to New York State law and regulations, and at the time of instituting the proceedings, the ship was not under arrest or seizure, and the Canadian court had no jurisdiction. Leave was given to amend the claim, and it was then alleged that C. A. Barnard, K.C., Montreal, had agreed to place the ship on the Canadian regis-

Ships Registered in Canada During August, 1920.

In compiling the following lists of vessels registered, steamboats and motor boats, operated by engines of less than 10 n.h.p., are eliminated, as also are sailing ships of less than 100 tons register.

STEAM.

No.	Name	Port of Registry	Where and when built	Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines, Etc. N.h.p.	Owners or managing owners
150241	Alice L. Smith	Halifax, N.S.	Montreal, Que. 1917	84.0	19.2	10.0	98	50	24 Sc.	A. Smith, Dartmouth, N.S.
141760	Canadian Otter*	Montreal	Welland, Ont. 1920	319.9	43.9	22.7	3097	1887	188 Sc.	Minister of Marine, Ottawa.
141834	Canadian Runner*	"	Port Arthur, Ont. 1920	320.0	43.8	22.5	3091	1812	198 Sc.	Minister of Marine, Ottawa.
141765	Canadian Victor*	"	Montreal 1920	400.0	52.4	28.5	5454	3340	266 Sc.	Minister of Marine, Ottawa.
98982	Guide	"	Dumbarton, Scotland . . . 1891	114.3	21.0	11.4	156	82	24 Sc.	J. E. Bernier, Lauzon, Que.
141743	Labrador	Quebec, Que.	Lauzon, Que. 1918	125.0	23.4	13.6	317	174	61 Sc.	Gulf of St. Lawrence Shipping & Trading Co., Montreal.
141839	Lehigh	Montreal	Wyandotte, Mich. 1880	247.9	35.6	15.3	1506	888	183 Sc.	George Hall Coal Co. of Canada, Ltd., Montreal.
141460	Mary Smith	Halifax, N.S.	Sorel, Que. 1917	84.0	19.2	10.0	98	50	24 Sc.	A. Smith, Dartmouth, N.S.
141841	North American	Montreal	Bridgeburg, Ont. 1920	251.0	43.6	20.5	2280	1315	146½ Sc.	North American Steamship Co., Toronto.

*Equipped with wireless.

SAILING.

No.	Name	Port of Registry	Rig	Where and when built	Length	Breadth	Depth	Gross Tons	Tons Reg.	Owner or Managing Owner.
141828	G. and M. No. 1	Vancouver, B.C.	Scow	New Westminster, B.C. 1917	80.0	30.0	7.2	164	164	Grant & MacDonald, Ltd., Vancouver, B.C.
141464	Roy Bruce	Shelburne, N.S.	Schr.	Shelburne, N.S. 1920	108.9	27.3	10.8	196	150	R. F. Hollett, et al, Burin, Nfld.
141627	Rupert K.	Parrsboro, N.S.	"	Spencers Island, N.S. 1920	147.6	33.9	12.1	414	378	A. O. Seaman, et al, Parrsboro, N.S.
185239	Sir J. J. Ld. No. 7	New Westminster	Barge	Vancouver, B.C. 1913	90.0	32.7	9.9	245	245	Grant & MacDonald, Ltd., Vancouver, B.C.
185290	Sir J. J. Ld. No. 8	"	"	" 1913	90.0	32.7	9.9	245	245	" " " "
185291	Sir J. J. Ld. No. 9	"	"	" 1913	90.0	32.7	9.9	245	245	" " " "
186650	Sir J. J. Ld. No. 28	"	"	" 1913	90.0	31.5	9.6	231	231	" " " "

ter, and to mortgage it in plaintiff's favor, but had failed to do so. This claim was also dismissed, as the judgment declared that neither the Admiralty Court Act of 1840, nor that of 1861, gave it the right to adjudicate on a claim arising out of a breach of contract. The court pointed out that the motion to dismiss could have been made at an earlier stage, and would thus have saved useless proceedings and expense to the parties concerned.

Manitoba, Saskatchewan and Alberta.

The freight carried on the Red River during this year was considerably in excess of that carried in any year since the outbreak of war, and included wood and slabs, 1,000 cords; lumber 2,000,000 ft. b.m., and ice, 45,000 tons. A large quantity of cordwood is reported to have been held up on Lake Winnipeg owing to lack of central storage facilities in Winnipeg and St. Boniface. It is anticipated that facilities at the Winnipeg end will be greatly increased in the near future and that large quantities of lumber and building material will be taken in by the river route next year.

British Columbia and Pacific Coast.

The Canadian Fish & Cold Storage Co.'s s.s. James Carruthers, which was expected to be a total loss, after her collision with the s.s. Surveyor, as mentioned in our last issue, is to be salvaged.

The Coast Steamship Co.'s s.s. Clansman, sank at her dock at Vancouver, Nov. 8. She was raised by the Vancouver Dredging & Salvage Co., the chief damage sustained being to her cargo of salt.

The C.P.R. British Columbia Coast Service s.s. Princess Royal had her starboard rail damaged, in a collision with the barge Louisiana, in tow of the s.s. Marmion, in the Granville channel, Nov. 10, during a dense fog.

The C.P.R. s.s. Princess Beatrice was hauled out at Yarrows Ltd. yards, Victoria, Nov. 10, for general cleaning and painting, and afterwards replaced the s.s. Princess Royal on the Prince Rupert run, the latter returning to Victoria for cleaning and painting.

The British Columbia Express Co.'s s.s. B.X., which was wrecked near Fort George Canyon, on the Upper Fraser River, Aug. 34, 1919, has been salvaged and taken to South Fort George by the same company's s.s. B.C. Express. On

account of her condition, the salvaged ship was lashed to the other's side.

The wooden steamships which were built at Victoria, by the Foundation Co., during the war, for the French Government, are, according to reports, being dismantled in France, and converted into motor ships. It is stated that the boilers and engines have been removed, also the masts, and that they are being equipped with twin Diesel engines and two baldheaded masts.

The Vancouver Island Whaling Co., which has been organized at Victoria, recently, is reported to have acquired four steamships in Great Britain from the Admiralty for whaling purposes. S. C. Ruck, General Manager, and W. M. Kelly, engineer, with Capt. B. Johnson, have been in Great Britain for some time in connection with the acquiring and preparing of the ships.

The Vancouver Harbor Commissioners have prepared a statement of the shipping handled in the harbor for the year ended Aug. 31, 1920, showing a total of 430 deep sea ships, with a tonnage of 2,545,000, dealing with cargo, 725,000 cubic tons inward, and 425,000 cubic tons outward; 8,220 coastwise ships with tonnage of 7,810,000, and cargo 735,000 cubic tons inward, and 298,000 cubic tons outward.

The Terminal Steam Navigation Co.'s s.s. Ballena was badly damaged by fire at Union Steamship Co.'s wharf, Vancouver, Nov. 13, one of the fireman losing his life, being cut off from escape by the flames. The fire is believed to have been caused by the ignition of oil fuel. The s.s. Ballena was formerly named Joan, and was owned by the C.P.R. and operated in its B.C. Coast Service. She was built at Victoria, B.C., in 1892, and is screw driven by engine of 85 h.p. Her dimensions are,—length 176.8 ft., breadth 30 ft., depth 11 ft.; tonnage, 869 gross, 577 register.

A Vancouver press report states that the wreck of the freight steamship San Pedro, which went ashore on Brotchie Ledge, off the entrance to Victoria harbor, about 30 years ago, has been sold to Capt. Gardner of Victoria, B.C. The San Pedro sailed from Comox, B.C., for San Francisco, Cal., with a cargo of 4,500 tons of coal and struck on Brotchie Ledge, Nov. 22, 1891. At that time the cargo was valued at \$2.50 a ton, but is now stated, if it still exists, to be worth \$11 a ton landed on the wharf and it is stated that the purchaser hopes to salvage it. The ship is lying in 8½ fathoms of water, and it is not believed possible that the hull can be raised.

Advice to Lake Sailors.

The U.S. Lake Carriers Association has issued a statement reviewing the past season's work by the Great Lakes fleets which says in part:—"In so far as the near future is concerned signs do not indicate any material falling off in the movement of commerce on the Great Lakes. Therefore, it looks as if all of those men now aboard the bulk freighters will have jobs at the beginning of 1921, and by sticking to the boats will have employment during the entire season. Bu there are conditions already well developed against which the lake sailor cannot afford to close his eyes or refuse to accept when making plans for the future.

"Along many lines the state of after war readjustment is completed, and with the general tightening up which is prevalent during winters in normal periods the extent will be more widespread. A general reduction of prices has occurred, and this means increased efficiency of production. History has ever shown that rate of production is low when there is one man for two jobs, and that it is high when there are two men for one job. When sailors leave their boats for the winter they will not find, as a whole, the shore jobs with the consummate ease that prevailed for three or four winters back. In all parts of the country there is an abundance of shop help looking for work. With the readjustment, the purchasing power of the dollar will increase, but money should at the same time become scarcer, so be thrifty and save your dollars now.

"While next year's prospects are good, the indications are, there will be many more men available, so that men with a job will have something worth while. This condition is being brought about by the situation on the sea. The shipping trade in British, French, Scandinavia, Japanese and American waters all has slumped, with no immediate sign of recuperation. While coastwise shipping on seaboard was in bloom many lake sailors went down, for the novelty as well as experience. The U.S. Shipping Board is laying up boats, so they will have to come back."

The lake sailors have exhibited thrift in banking their earnings, it is observed in reports of leading banks in Great Lakes ports. The deposits with the U.S. Postal Savings Banks, maintained on the mail boat C. F. Bielman, Jun., operating on the Detroit River, were higher than in previous seasons.

Grain Handling Charges Against Ships.

The Dominion Marine Association has recommended that it is desirable that ships carrying grain should discontinue payment of any charges for shovelling, elevating, trimming or handling grain in any way, in fact that it should be loaded and unloaded free. The U.S. Lake Carriers Association has informed the grain trade that its member companies' ships will not pay shovelling charges after the reopening of navigation in 1921, and a special committee has been appointed to work in conjunction with the Dominion Marine Association with regard to the larger proposal.

John Allsop, General Agent for Canada Royal Mail Steam Packet Company, Halifax, N.S., writes: "As a regular subscriber to Canadian Railway and Marine World, I always peruse its contents with much interest."

Ships Added to and Deducted From the Canadian Register During August, 1920

	Steam.		Sailing.	
	No.	Tonnage—Gross. Registered.	No.	Tonnage—Gross. Reg'ed
Added.				
Built in Canada	23	14,743 8,833	6	843 761
Purchased from foreigners.....	1	1,506 888	.....	.....
Transferred from United Kingdom	1	156 82	4	966 966
Registered anew	4	222 165	.....	.....
Added on remeasurements .....	.....	1 .....	.....	.....
Totals	29	16,628 9,968	10	1,809 1,727
Deducted.				
Wrecked or otherwise lost.....	11	1,470 825	9	1,049 1,001
Broken up or unfit for use.....	36	848 565	20	1,255 1,233
Sold to foreigners.....	5	3,510 1,926	.....	.....
Transferred to British Possessions .....	.....	.....	2	246 176
Registered anew	3	77 49	3	494 494
Other vessels	1	52 23	.....	.....
Deducted on remeasurements .....	.....	353 242	.....	.....
Totals	56	6,310 3,680	34	3,044 2,904

Wreck Commissioners' Enquiries and Judgments.

Enquiries have been hold and judgments delivered in connection with marine casualties, as follows:—

Stranding of s.s. Clare-Hugo Stinnes I.

Held at Pictou, N.S., Oct. 14, before Commander H. St. G. Lindsay, Commissioner, assisted by Capt. W. A. Beattie and D. C. Fraser, as nautical assessors, into the stranding of the British s.s. Clare-Hugo Stinnes I on Azet shoal, Pictou County, N.S., Sept. 30. The court, after hearing the evidence, which it stated was given in a perfectly straightforward manner, found that the stranding was caused by the ship having been set to the southward of her course, by the flood tide, which is very strong in the vicinity of Cape Tormentine, and was not taken into consideration when shaping the course after passing Cape Jouris-sin, and also, probably, by the difference in the deviation allowed on that course, and that which was found ultimately by observations taken later. The master, Capt. R. H. Nesbitt, showed a lack of judgment in not stopping his ship and making certain of his position, either by soundings or bearings, after sighting land, and for this he was severely censured. The court suggested that when masters of ships choose to navigate the Northumberland Strait in preference to taking the outside route, they should avail themselves of the latest official publications regarding tides, etc.

Stranding of s.s. Georgie.

Held at Montreal, Oct. 28, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Capt. J. B. Henry and C. A. Lapierre, as nautical assessors, into the stranding of the Fracanda Line's s.s. Georgie, near Sillery, Que., in the River St. Lawrence, Oct. 21. In summarizing the evidence, the court stated that the master and his officers were all strangers to these waters. The master saw plainly that his ship was nearing piles, remnants of old wharves, but did not think it necessary to interfere, being under the impression that it was usual to pass close, as is done in many localities. The weather conditions were not such as to prevent a course being followed, or seeing objects. The evidence from all witnesses, including the pilot, was straightforward and intelligent, without attempts at subterfuge or excuse; the master and his officers were at their posts, and the wheelsman performed his task without reproach. The pilot's only excuse was that he thought himself farther away. The court declared itself nonplussed in establishing a reason for altering a course 11 deg. from the first course, which would have led the ship clear of all danger. The only conclusion it could draw was that, after passing the buoy at La Mouche, the pilot's mental powers and judgment became temporarily defective, for some reason which scientists, who have established the existence of such temporary conditions, have failed to find a cause. Whatever may be the reason, or his condition, the court exonerated the master and officers of the ship, and found that the pilot, J. B. Angers, who has had several accidents, was solely to blame, in that he erred in altering his course as much as 11 deg., and that he was in default for hazardous navigation. His certificate was therefore suspended for the remainder of 1920, and he was ordered to pay the costs of the investigation.

Montreal-Henry B. Hall Collision.

Held at Montreal, Oct. 15, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Capt. C. Lapierre and J. B. Henry, as nautical assessors, into the collision between Canada Steamship Lines' s.s. Montreal and the Wilson Patterson Clifford Co.'s s.s. Henry B. Hall, near Sorel in the St. Lawrence River, Sept. 20. The evidence showed that the Montreal left her wharf at Sorel downbound, and when leaving she backed as far as the long wharf, and then began to turn to head down the river. In doing so she showed the Henry B. Hall, a down coming vessel, first her green light and then her red light. The Henry B. Hall's green light was also seen. When the Montreal had partly turned, a one blast signal was given which was unanswered by the Henry B. Hall. The Montreal heard the Henry B. Hall's signal of three blasts, but that signal was intended for the Henry B. Hall's engine room and not for the Montreal. While turning, the after port part of the Montreal came in contact with the Henry B. Hall, with slight damage to both ships. The weather was clear, and the wind was not strong enough to influence either ship. The pilot on the Henry B. Hall stated that he did not know where the Montreal was going, and that the one blast signal given by the Montreal may have been for the information of another ship also going down astern and to the south of the Henry B. Hall. The court expressed the opinion that under the circumstances existing, the Henry B. Hall was justified in not maintaining her course, and the fact that the Montreal could not be turned quickly did not afford any excuse for the collision. The crossing rule does not apply in this instance, as the one blast signal had been given some time before the collision, when the Montreal was south of the Henry B. Hall. The Henry B. Hall's procedure when the collision was imminent, to check and starboard, was proper. Had she gone astern, she would have neutralized the effect of her helm, as the speed at which she was going would not have been given in time, and the result of a full speed astern, or a port helm, would have been disastrous to both ships. Therefore the court found that Capt. F. X. Lafrance, master of the s.s. Montreal, was in default for contravention of article 32, and he was severely reprimanded. The pilot, O. Peron, of the s.s. Henry B. Hall, was exonerated from blame.

Stranding of s.s. Chama.

Held at Montreal, Nov. 3, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Capt. J. B. Henry and C. J. Stuart, as nautical assessors, into the stranding of Elder Dempster & Co.'s s.s. Chama, near Bellechasse Reefs, in the St. Lawrence River, Oct. 21, while outward bound from Montreal to African ports. The court exonerated the master, Capt. A. D. Burroughs, from all blame, and although he was absent from the deck at the time, such absence was excusable and permissible. The second officer, W. T. Lane, failed to realize the importance of his duties, in not assuring himself of the lights that were passed, and were in sight, and when he called the pilot's attention to the fact that the ship was dangerously near the Bellechasse light, he should have called the

master immediately. Had he followed the progress of the ship, the error of porting could have been remedied. He was therefore severely reprimanded for not realizing his responsibilities. The pilot, A. Baquet, if his own admission be accepted that he did not mistake the Crane Island light for the Bellechasse light, and that his order was a mistaken one, ought to have discovered the error sooner than he did, as the ship described the angle between her and the light to the extent of four points or 45°, and a complete minute elapsed. It was only after the lookout man had called a warning that a rectification was attempted. For this unaccountable mistake the pilot's license was suspended for 6 months to May 3, 1921, and he was, in addition, ordered to pay the costs of the enquiry.

United States Shipping and Shipbuilding Notes.

The U.S. Shipping Board's new personnel is as follows:—Admiral W. S. Benson, reappointed as Chairman for six years; F. I. Thompson, of Alabama; J. N. Teal, of Oregon; J. A. Donald, of New York; C. H. Rowell, of California; G. D. Goff, of Wisconsin; and Charles Sutter, of Missouri.

The U.S. Bureau of Navigation has issued a summary of reports from shipyards showing number and gross tonnage of steel ships under construction or contract for private owners Oct. 1. On that date private U.S. shipyards were building, or under contract to build for private shipowners, 331 steel ships of 1,236,227 gross tons, compared with 345 ships of 1,236,547 gross tons on Sept. 1. These figures do not include government shipbuilding, or ships contracted for by U.S. Shipping Board.

Admiral Benson, Chairman, U.S. Shipping Board, has made a statement regarding the new agency agreement which has been adopted by the Board for management of its ships. The agreement for operation of the Board's fleet is the result of seven months study by its standing committee on agent's agreement, composed of representatives of the Board and of all steamship associations of the country. Under this agreement the agent will get nothing at all if he lets a ship lie idle. His commissions are based on freight collected; he must, in order to make anything, not only secure cargo for the ship, but secure it at best possible freight rates, and dispatch his ship quickly.

Admiral Benson, Chairman, U.S. Shipping Board, is reported to have said in addressing the American Petroleum Institute at Washington recently:—"Comparatively little is known of our enormous requirements of fuel oil and I believe that a brief resume of the efforts of the Shipping Board to purchase its fuel oil requirements and of problems which have confronted us in this respect during recent years, is essential to full appreciation of the extent to which the interests of the Shipping Board and of the American petroleum industry are interwoven. For 1919 our requirements of fuel oil were approximately 18,000,000 barrels; for 1920, 30,000,000 barrels; and for 1921, we estimate our requirements will amount to approximately 40,000,000 barrels."

Canadian Notices to Mariners.

The Marine Department has issued the following:—

British Columbia, Vancouver Island.—The channel south of Limestone Island, Quatsino Sound, has been examined by a Hydrographic Survey officer, and it appears to be clear of danger for a ship passing north of the Foul Islets and Single Island. The track recommended is from one cable north of the large western island of the Foul Islets to two cables north of Single Island, and thence in midchannel, passing two cables north of Pender Point and 900 ft. off shore. The set of the current across the western end of the channel is to the southward toward Foul Islets, and in the vicinity of the latter the depths are very irregular and some caution should be exercised. A rock lying 950 ft. from the south point of the largest western Foul Islet has been found, with 11 ft. of water on it at low water. The drying bank off the south shore extends to within 900 ft. of this rock and the channel is therefore practically useless for navigation.

The Public Works Department has completed the dredging of a basin 465 ft. long and 200 ft. wide with a least depth of 35 ft. alongside the main wharf at the William Head quarantine station.

Strait of Georgia.—The Government wharf at Powell River has been completed. It adjoins the north side of the breakwater at its outer end, and is 340 ft. long by 60 ft. wide. On the north face of the wharf the Public Works Department has dredged a basin 70 ft. wide, the full length of the wharf, with a least depth of 19 ft. alongside the wharf.

Cousins Inlet.—The depth of water over the uncharted rock, situated 4.6 cables 128 deg. from the light at Wearing Point, Wallace Bay, is 3 ft.

The Public Works Department has removed the rocky patch 150 ft. from the middle of the Western Fuel Co.'s loading wharf, Nanaimo harbor, to a least depth of 29 ft.

Malaspina Strait, Texada Island.—An occulting white acetylene gas light, shown from a lens lantern on a concrete base, surmounted by a staff carrying a wooden slatwork drum, has been established on the top of the existing day beacon on Cyril rock, off Grilse Point. The light is unwatched.

Broughton Strait.—An occulting white acetylene gas light, shown from a lens lantern, has been established on Lewis Point, on the west side of the entrance to Beaver Cove. The light is unwatched.

New Brunswick, Northumberland Strait.—The back range light on the Kouchibouguac Bar has been discontinued temporarily, owing to the shifting of the channel. The front range light is on the east side of the south beach, in Kouchibouguac Bay.

Nova Scotia, North Coast.—Range lights have been established on the Picou River as follows:—Albion Range, front light, on west shore of East River, near abandoned coal loading piers, occulting white acetylene gas, shown from a lens lantern, at an elevation of 13 ft.; back light, on shore of bay, 1,550 ft. from front light, similar light at an elevation of 23 ft. Trenton Range, front light near outer end of east pier at entrance to Stonehouse Point, occulting white acetylene light, shown from a lens lantern at an elevation of 14 ft.; back light on point 1,300 ft. from front light, similar light at an elevation of 30 ft.

The lights are unwatched. Ships going up the river will keep the Albion range lights in one, 144 deg. 30 min., until the Trenton range lights come in one, 119 deg. 30 min. This alignment leads to the piers at the entrance to Stonehouse Point lock.

Ontario, Lake Ontario.—The governing depths in the entrances to Toronto harbor are,—western entrance channel 14 ft. and eastern entrance channel 16 ft. below zero of the harbor master's gauge, which is 245 ft. above mean sea level at New York. While improvements are in progress in the harbor, mariners can secure additional information regarding depths in the different parts of the harbor, from the harbor master.

St. Clair River.—Two lights have been established on Walpole Island, lower St. Clair River. Both lights are occulting red acetylene gas, and are shown from a lens lantern at an elevation of 18 ft., from a pole, with a shed at base, on platform supported on piles. The lower light is in 5 ft. of water on east side of channel, midway between Russell Island light 12, and Russell Island shoal gas buoy, and the upper light is on east side of channel nearly opposite Russell Island shoal gas buoy, and about 1,800 ft. north of the lower light.

Of the world's shipping, 16.3% are reported to be oil burners, 76% coal burners, 1.7% internal combustion engines, and 6% sailing.

Hard times are predicted in ship-building yards in the north of England, according to a London press dispatch, which says that shipowners are refusing orders to build owing to fluctuating prices and conditions due to high wages.

Toronto Harbor Bridge.—The Dominion Marine Association has recommended that the opening in the bridge proposed to be built over the western gap, at Toronto Harbor, should be 250 ft. clear space.

Overhead Wires Across Welland Canal. The Dominion Marine Association has recommended to the Dominion Government that wires across the Welland Canal should not be placed at a less height than that adopted as a minimum in the construction of the Quebec bridge, and in the erection of overhead wires at Three Rivers, Que.

Ships on Canadian Register.—An Ottawa dispatch states that the number of steamships on the Canadian register has decreased from 4,457 last year, to 4,435, but that the gross tonnage has increased from 930,367 last year to 1,060,477; also that sailing ships decreased from 4,220 to 3,887, the tonnage increasing from 512,992 to 513,492.

Dues on Quebec Ships at U.S. Ports.—Negotiations are proceeding with the U. S. Government to relieve ships from Quebec Province from payment of tonnage dues now imposed on them in U.S. ports, and to offset this, the Dominion Marine Association has taken action to secure an amendment to the Dominion law next session, recommending an amendment to the Canada Shipping Act to relieve U.S. ships entering Quebec ports from payment of hospital dues. Ships from Ontario ports do not pay tonnage dues on entering the U.S. ports, as no tax is imposed on U.S. ships in Ontario ports.

Hudson Straits Customs Station.—An Ottawa press dispatch says that a Can-

adian customs station is to be established at Port Burwell, in Hudson Straits. Heretofore there has been practically no check on ships going into Hudson Bay and northern coast territories to trade, but now all ships will be required to pass customs at Port Burwell. The customs officials will be materially assisted by the Royal Canadian Mounted Police patrol.

Oil Burning Ships to be Reconverted to Coal Burners.—We are advised that owing to the seriousness of the fuel oil situation on the Pacific Coast, the C.P.R. has decided to reconvert its coast steamships, so that coal may be used as fuel, and that this work will be undertaken early next year. At present, the company has three of its coast steamships using coal as fuel, viz., Princess Beatrice, Princess Royal and Otter, together with three tug boats.

Overloading Ships for Lachine Canal Transport.—The Superintendent of the Lachine Canal is reported to have announced that, owing to the phenomenally low river levels, particularly in Lake St. Louis, it is dangerous for ships to be loaded beyond a depth of 13 ft. 10 in. It is difficult to maintain the canal lock levels, and ships are running into danger through loading beyond that depth, apart from the damage being done to the lock sills. At normal times, the canal depth is 14 ft. 4 in.

The Canadian Robert Dollar Steamship Co.'s annual meeting was held at Vancouver, B.C., Nov. 11. It was stated that the facilities at Vancouver are good, and that the company has decided to maintain its headquarters there. During the year, the company established a service between New York and Vancouver, with calls at Cuban ports, and refrigerating systems were installed on the ships running to Oriental ports. The officers for this year are:—Melville Dollar, President; J. Harold Dollar, Vice President; K. J. Burns, Secretary; other directors, Robert Dollar and Stanley Dollar.

Walford Shipping Co. Ltd., the incorporation of which, with office at Montreal, was announced recently, is acting as general shipping agents, and local agents for Walford Shipping Co., New York, and Walford Ltd., shipping agents and ship owners, London, Eng. The officers are:—President, Jas. Donald, New York; Vice President, A. S. Roberts, New York; Managing Director, J. J. Nelligan, formerly Division Freight Agent, Canada Steamship Lines Ltd., Montreal. C. A. Barnard, K.C., Montreal, is a director.

Freeboard Regulations on Great Lakes. The U.S. Government is considering the question of the establishment of load-line or freeboard regulations for ships on the Great Lakes, and the Dominion Marine Association has been active in making enquiries as to progress. The U.S. Department of Commerce appointed a committee to study the subject, and this was subdivided. A special committee known as the Lake Committee, consisting of Prof. H. C. Sadler, of Michigan University, and H. N. Harriman, of the Great Lakes Register, Cleveland, Ohio, is investigating conditions on the lakes. The U.S. Lake Carriers Association is in close touch with this committee, and the Dominion Marine Association is in correspondence with the lake carriers. An Atlantic Coast committee made its report, omitting the coasting ships from the recommendations. The recommendation for load line regulations for deep sea ships will probably go through at the coming session of the U.S. Congress.

Naval Service Department's Hydrographic Surveys During 1920.

Canadian Railway and Marine World has been favored with the following of official information as to work done by the Naval Service Department's Hydrographic Survey:—

During the past navigation season, R. J. Fraser and his assistants were engaged on board the s.s. Bayfield in surveying the north shore of Lake Superior between Cape Gargantua and Otter Head, including some sounding around Michipicoten and Caribou Islands. This district was carefully gone over but no new shoals or dangers were picked up. With the completion of this season's work the Canadian Hydrographic Survey of the Great Lakes may be said to be completed, but there will always be necessary re-surveys of new districts, and a few bays, that have been unfrequented, have been left unsurveyed. It has not yet been determined where Mr. Fraser and his party will be stationed next year.

The party under Chas. Savary, using the s.s. Cartier, have returned to headquarters after a successful season surveying off the north shore of Gaspé peninsula. Quite a considerable work has been done in the neighborhood of Martin River light to Cape Madeleine lighthouse, including the entrances to St. Anne River, Marsonis harbor and Mont Louis Bay and River. In addition to the work carried out from the ship a party under Edouard Ghysens was detached to make a survey of the harbor of Seven Islands and Clarke City. This has been completed and a new plan of this important port will be issued shortly after the opening of navigation.

On the British Columbia coast the survey parties have returned to headquarters at Victoria. The first party, under command of H. D. Parizeau, who used the s.s. Lillooet, was engaged in the early part of the season in making a re-survey of First Narrows, Vancouver harbor, not only sounding it, but giving it a thorough sweeping to pick up any lumps that might have been left by dredging. The new survey did not develop any spots with less than 26 ft. on them, and it showed that nearly all of the old Parthia shoal had been removed to a depth of 30 ft., with the exception of one spot with only 27 ft. over it, and that none of the dredging has filled in with debris from Capilano Creek.

The second party under Commander J. H. Knight, R.N., had the tug Restless, and was engaged in a re-survey of Quatsino Sound, where the Whalen Pulp & Paper Co. has established a large industry at Port Alice. This work will enable the Naval Service Department to issue a new and accurate chart of that sound.

The Australian Government's Merchant Marine.

D. H. Ross, Canadian Trade Commissioner, writes from Melbourne as follows:—In a statement tabled in the Australian Parliament recently by the Commonwealth Government, it was explained that the object in establishing the Commonwealth line of steamships was to provide for the transportation of Australian produce to the world's markets. The primary object was not profits, but rather to prevent Australia being isolated through the world's shipping dis-

The Commonwealth Shipping Line now

operates 18 ships (aggregate tonnage 65,951 tons), 16 requisitioned ex-German steamships (aggregate tonnage 77,746 tons), and five wooden steamships (aggregate tonnage 14,901 tons). The fleet comprises 39 steamships, aggregating 158,498 tons.

In all six steamships of about 5,000 d. w. tons capacity have been built in Australia and are being operated as part of the Government Merchant Marine. An extensive shipbuilding scheme is also being carried out, which will result in considerable additions to the fleet. Five large steel ships, each of 12,800 tons, are on order in England, and six similar ships will be built in Australia, provided a satisfactory agreement is completed with the unions connected with shipbuilding. There are now some 10 steamships of the shelter deck type under construction in various parts of the Commonwealth, as well as six steamships of another type.

The gross earnings of the line during the financial year ended June 30, 1919, were £2,487,627, and the gross expenditure was £1,327,592, the net profit being £1,160,035. The profit earned from the inception of the line up to June 30, 1919, was £2,063,534. Allowing for depreciation, the capital value of the fleet at the close of the financial year, 1918-19, was £1,338,759.

The net profits for the year 1919-20 are estimated at £220,000, the marked decrease being due to the extended maritime strike on the Australian coast in that period, which practically rendered the whole fleet idle from two to four months.

It is claimed by the Commonwealth Government that the line has had to face the strongest competition of the British shipping combine, but has, notwithstanding, received a fair share of support. It is not the Commonwealth Government's intention at present to undertake the carriage of mails between Australia and Great Britain, for the reason, it is officially stated, that the steamships which are at present owned and being built by the Commonwealth Government are essentially cargo ships, and are unsuitable, both as regards speed and accommodation, for mail ships.

Trade and Supply Notes.

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

Davis-Bournonville Co., Jersey City, N.J., has issued Bulletin 1A and 2, describing and illustrating the oxygraph, for cutting steel up to 20 in. thick with oxy-acetylene or oxy-hydrogen, the illustrations showing a variety of shapes cut in shipyards, tool shops, electric works and manufacturing plants.

Galena-Signal Oil Co. of Canada Ltd. has been granted supplementary letters patent authorizing the increase of its capital stock from \$500,000 to \$1,000,000, the increase to consist of 5,000 shares of \$100 each.

Independent Pneumatic Tool Co., Chicago, Montreal and Toronto, has issued circular 34 "Thor Pneumatic Tools—Aids to Industry."

Whiting Foundry Equipment Co., Harvey, Ill., has issued a booklet of 50 pages, 11 x 8½ in., "Foundries, their complete equipment. Correct layout and equipment, for complete grey iron, steel, brass, car wheel and malleable iron foundries."

Transportation Associations, Clubs, Etc.

The names of persons given below are those of the secretaries unless otherwise stated:

- American Association of Port Authorities. M. P. Fennell, Jr., 57 Common St., Montreal.
- Belleville Railway Men's Educational Club. Meets each Tuesday, 7.30 p.m. F. A. Pinkston, Belleville, Ont.
- Canadian Car Demurrage Bureau—W. J. Collins, Manager, 401 St. Nicholas Building, Montreal.
- Canadian Electric Railway Association—A. Eastman, 70 Bond Street, Toronto.
- Canada Freight Association (Eastern lines)—G. C. Ransom, 909 Shaughnessy Bldg., Montreal.
- Canadian Freight Association (Western Lines)—W. E. Campbell, 805 Boyd Block, Winnipeg.
- Canadian Railway Board of Adjustment No. 1—R. Chapple, 263 St. James Street, Montreal.
- Canadian Railway Club—W. A. Booth, 131 Charron St., Montreal. Meetings at Montreal 2nd Tuesday, each month, 8.30 p.m., except June, July and August.
- Canadian Traffic League, A. H. Thorpe, 25 Balsam Ave., Toronto.
- Dominion Marine Association—F. King, Counsel, Kingston, Ont.
- Canadian Ticket Agents' Association—E. de la Hooke, London, Ont.
- Eastern Canadian Passenger Association—G. H. Webster, 54 Beaver Hall Hill, Montreal.
- Engineers' Club of Montreal—C. M. Strange, 9 Beaver Hall Square, Montreal.
- Engineers' Club of Toronto—R. B. Wolsey, 94 King Street West, Toronto.
- Engineering Institute of Canada—F. S. Keith, 176 Mansfield St., Montreal.
- Express Traffic Association of Canada—C. N. Ham, Montreal.
- Great Lakes and St. Lawrence River Rate Committee—A. E. Storey, 310 G.T.R. General Offices, Montreal.
- Hydro-Electric Railway Association of Ontario—T. J. Hannigan, Guelph, Ont.
- International Water Lines Passenger Association—M. R. Nelson, 89 Chatham Ave., Buffalo, N.Y.
- Niagara Frontier Summer Rate Committee—James Morrison, Montreal.
- Quebec Transportation Club—A. F. Dion, Harbor Commissioner's Office, Quebec, Que.
- Railway Association of Canada—C. P. Riddell, Montreal.
- Shipping Federation of Canada—Thos. Robb, Manager, 42 St. Sacrament Street, Montreal.
- Transportation Club of Toronto—W. A. Gray, 257 Roxton Road, Toronto.
- Transportation Club of Vancouver—C. E. Blaney, Travelling Passenger Agent, Canadian Pacific Ocean Services Ltd., Vancouver, B.C.

Transportation Conventions in 1921.

The names of persons given below are those of the secretaries, unless otherwise mentioned:—

- Jan. 25 to 27.—American Wood Preservers' Association, San Francisco, Cal.; F. J. Angier, Baltimore & Ohio Rd., Baltimore, Md.
- Jan. 27, 28.—National Association of Railroad Tie Producers, San Francisco, Cal.; E. E. Pershall, 720 Security Bldg., St. Louis, Mo.
- Mar. 15 to 17.—American Railway Association, Division 4, Engineering, Chicago, Ill.; E. H. Fritch, 431 South Dearborn St., Chicago, Ill.
- May 11.—Railway Accounting Officers' Association, Atlantic City, N.J.; E. R. Woodson, 1,116 Woodward Bldg., Washington, D.C.
- May.—International Railway Fuel Association, Chicago, Ill.; J. G. Crawford, 702 East 51st St., Chicago, Ill.
- June 15 to 22.—American Railway Association, Division 5, Mechanical, Atlantic City, N.J.; V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.
- June 20.—American Association of Freight Agents; R. O. Wells, Illinois Central Rd., Chicago, Ill.
- June 20.—American Train Dispatchers' Association, Kansas City, Mo.; C. L. Darling, Northern Pacific Ry., Spokane, Wash.
- Aug. 24 to 26.—American Association of Railroad Superintendents, Kansas City, Mo.; J. Rothschild, Union Station, Kansas City, Mo.
- Sept. 20 to 22.—Roadmasters' and Maintenance of Way Association, Chicago, Ill.; P. J. McAndrews, Chicago & North Western Ry., Sterling, Ill.
- Oct. 4 to 6.—Maintenance of Way Master Painters' Association, Buffalo, N.Y.; E. E. Martin, Union Pacific Rd., Kansas City, Mo.