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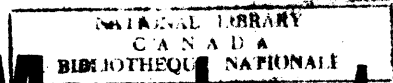
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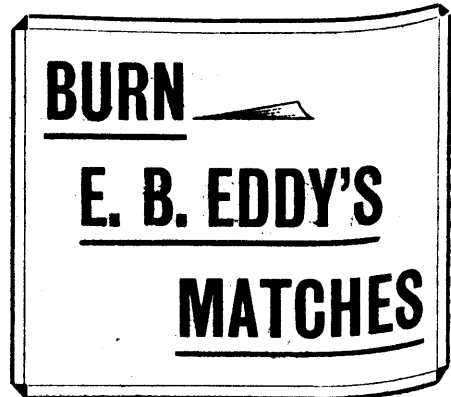
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The Engineer & the Road to the Yukon Gold Fields.

By Harrington Emerson.

[The following article, which was written in March last, deals with matters from a United States standpoint, which makes all the more forcible the remarks about the difference between the policies of the Canadian & U. S. governments in regard to aids to navigation & in attention to frontier matters. The admission that the White Pass & Yukon Ry. will divert the trade of the Yukon from U. S. to Canadian channels is significant. We are inclined to think Mr. Emerson is misinformed as to what he terms the annoyances & extortions of the Canadian customs officials at Log Cabin. If such abuses existed formal complaint would undoubtedly have been made. Since the article was written the W. P. & Y. Ry. has been completed to Lake Bennett, 41 miles from Skagway, & is now in operation, giving connection at Bennett with the river steamer service to Dawson. —EDITOR.]

He who leaves what is generally termed the Pacific Coast for the Klondike & the Alaskan gold fields, enters another world when he boards the north-bound steamer. It is not that the vessel differs from steamers of the same tonnage on the Atlantic Coast, for the engineer's handiwork must be more perfect for voyages to the outlying places of the earth where there are no repair shops. It is the passengers who make a different world, or perhaps it is fairer to say that among them the conventions of civilized life lose their force, & the sordidness & other elemental & unlovely instincts which civilization hides but does not eradicate, crop up unblushingly. A good part of the men northward bound are miners, animated not by patriotism nor hope of homestead, not by dream of glory, nor love of science, not by pride of conquest nor religious enthusiasm, not even by the pleasure of adventure, but impelled northwards solely by lust of gold. Dogging the footsteps of these pioneers is the motley horde of human parasites & beasts of prey, both male & female, & these & their ways emphasize the difference between the lust for gold & the pursuit of immaterial riches. No one tries to rob Dewey of his laurels nor Nansen of the honor due his adventures & discoveries, but if a man has secured an ounce of gold a thousand rise up in his path & try to take it away from him.

Owing to the absence of parasites, industrial, criminal & governmental, it was cheaper & safer to go to the Yukon ten years ago

than it was when the great work was on, & were it not for the works of the engineer, the passage down or up the Yukon would to-day be lined with as many robber roosts, levying blackmail, euphemiously called toll, on all the travel & traffic, as was the Rhine in the Middle Ages. But the engineer, with his ocean steamers, wharves, railroads, aerial cableways, river boats, etc., came & converted what was once an expedition of extreme physical danger & hardship, & what next became a journey of extreme pecuniary danger & expense, into a rapid, safe, convenient & also

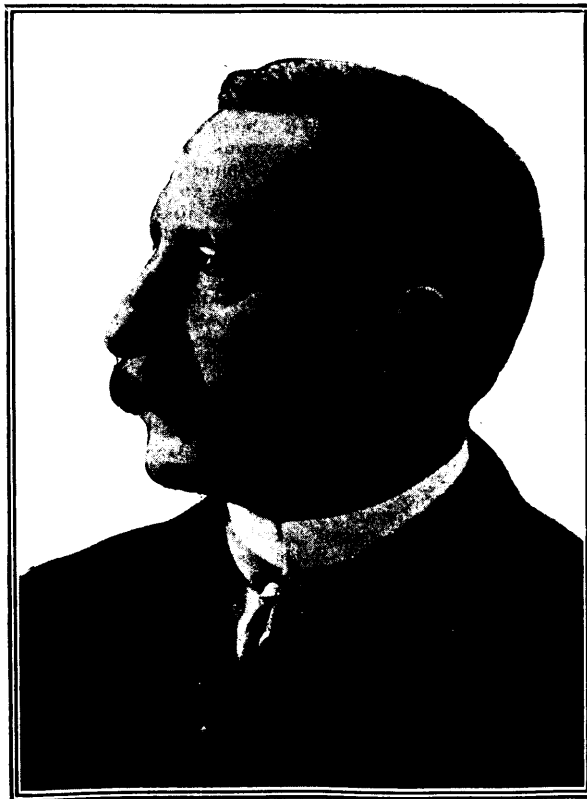
The most remarkable part of the long road to the new gold fields is the short link which crosses the backbone of the continent. Elsewhere, the continental divide lies in Colorado, Wyoming, Idaho, but in southeastern Alaska, it is a rampart rising direct from the sea. At its base lie the blue waters of an arm of the Pacific. Fourteen miles inland is the summit, & immediately beyond are the head waters of the Yukon. A few coast passes are the only feasible highroads to the interior, & this gives them very great political as well as commercial importance. Further north between the

Yukon & the ocean are those stupendous snow giants, Mount Saint Elias & Mount Logan, towering about 18,000 ft. in height.

The profiles here given, showing the two lowest passes from ocean to river, were drawn from his own surveys by Frank Reid, the engineer, who, at Skagway, in 1898, in the cause of decency, order & law, shot & killed "Soapy Smith," the leader of all the crooks & thugs with which the place was infested, & was in turn killed by him. Of all the many dead claimed by the dangers & diseases or the murderous trails, Reid alone rests under an imposing monument, erected in the forlorn little cemetery to show the gratitude of the citizens & as a permanent warning to evil-doers. The man was honored who had saved the town from a reign of terror, but the engineer began a greater work in his surveys, which were the beginning of a development, that in 18 months replaced the Indian hunter's foot-path with aerial cableways & a steam railway.

The profiles are worth studying. Lynn Canal is an inlet or fjord of the Pacific Ocean, & the lakes over the summits are the head lakes of the Yukon River. Although these summits are but 14 miles from the ocean, the distance down the Yukon to Bering Sea is 2,000 miles. Nowhere else in the world are the navigable head waters of a great river so near the same ocean into which it finally empties. It is as if the headwaters of the Ohio River were but 14 miles from New York Bay.

From Panama to the Fuca Straits there are but few harbors, but from Puget Sound northwards a whole coast system of mountains & valleys sank, in a former geologic age, several thousand feet, & thus formed the present sounds, canals, channels, inlets, bays, harbors, a land-locked water-way of marvelous beauty—& danger—stretching a thousand miles north of the sound cities, Tacoma, Seattle, Victoria & Vancouver. So smooth & placid is this water-way that Indians, in their dugouts, undertake trips of 1,000 & more miles along the coast, yet so dangerous is it that scarcely a week passes without some steamer striking or stranding on the dark



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cheap trip to the Arctic Circle. It is this cheapness that above all else will develop the resources of that far off region, making profitable great numbers of mines to-day unworkable. In California gravels containing as little as 5c of gold to the cubic yard are washed at a profit, but in the Klondike region all gravel that yields less than \$15 a cubic yard is mined at a loss. It is too much to expect that far northern gravels can ever be worked as cheaply as in California, but it is not too much to expect that with cheaper labor, cheaper supplies, & above all, better appliances, five dollar gravels will in time have value.

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shores or sunken rocks. At the northern end
of this inside passage & 90 miles from the sea
is the head of Lynn Canal, which is 7 miles
wide & from 135 to 413 fathoms deep, but the
Wrangel Narrows, 100 miles further south,
are only $\frac{1}{4}$ of a mile wide & 18 miles long, &
so shallow that rarely a steamer passes
through them without scraping on the bottom.
At another point in the long inside passage
conflicting tide currents swirl & rush 30 miles
an hour, & this place can only be passed at
slack water, either high or low.

At the head of Lynn Canal is Taiya Inlet,
14 miles long & but 1 mile wide, & into the
head of Taiya Inlet empty the Taiya & Skag-
way Rivers, each making a long mud delta
covered at high water, bare at low tide; &
here the tidal range is very great, 16 or more
feet. The Taiya & Skagway Rivers both
flow rapidly down from the summits of the
coast range of mountains. They are but tor-
rents, only 14 miles long from source to del-
tas, & within a few feet of their head-waters
are the head-waters of the Yukon; thus nat-
ural passes are formed from the coast to the
interior. By no other route is the distance so
short as up the Taiya River. There has al-
ways been an Indian village at Dyea, which
is doubly favored by being at the extreme head
of ocean navigation & nearest to the series
of lakes, Crater, Long & Deep, which empty
directly into Lake Lindeman. This lake in
turn empties into Lake Bennett, which is
but 40 miles from Dyea. From an engineer-
ing point of view the Skagway route is the
better, as the White Pass at the head of Skag-
way River is 600 ft. lower than the Chilkoot
Pass, but neither Indians nor miners used it.
Its series of lakes, Summit, Middle & Shallow,
are separated from Lake Bennett by a high
divide, & flow by long & shallow streams into
other lakes not so immediately available for
reaching the Yukon. Although the distance
to Lake Bennett is the same by survey over
each pass, the most enthusiastic backers
of the White Pass route have always consid-
ered it at least 10 miles longer, owing to its
extreme & lasting difficulty for foot & horse
travel. In former years at two seasons of the
year only was travel possible over the Chil-
koot Pass, in late winter when the snow was
hard & the lakes frozen, & in late summer
when the lakes were open for rafts & canoes.
It is strange that this easy & natural highway
for the Indian up the coast in a canoe, over
the pass with a pack on his back & down the
river on a raft, should have presented almost
insuperable obstacles to civilized travel.
The Indian in his dugout cared not for nar-
rows, shallows & currents, tides & flats. He
did not try to force them, but accommodated
himself to conditions as he found them, & was
governed by the seasons in his trips over the
pass, as was also the early gold seeker, who,
drifting north in 1877, made his way with In-
dian help over the Chilkoot Pass to the Yukon
River.

Between the final triumph of modern en-
gineering, the railroad, & the natural high-
way of the savage, there were many stages
of improvement which were more toilsome,
dangerous & expensive than the conditions
they are supposed to better. There was no
longer easy & sympathetic acquiescence in
nature's whims when the great gold rush
to the Yukon began in Aug. 1897. Just as
the engineer has substituted his work for
all other instruments or vehicles of trans-
portation over the White Pass, so also it is
the engineer who with his ocean steamers has

supplanted the Indian canoe, the sailboat, the
little coast steamers, but with the difference
that whereas the land engineer makes his own
road on which he safely runs his engines, the
naval engineer can only build a good steamer,
which too often is wrecked owing to the
culpable negligence of the U.S. government,
quick enough to install revenue collectors, but
exceedingly slow to chart, buoy and light
dangerous channels.

Nearly 5,000 people a month make the pas-
sage from Seattle & other Puget Sound cities
to south-eastern Alaska, & many thousand tons
of freight are also carried, yet aside from a
few buoys in Wrangel Narrows there is ab-
solutely nothing provided by the government
to aid the mariner in navigating those waters.
The Canadian government, both on land and
sea, is more prompt to act & to provide pro-
tection. It has a light-house on the Sister
Rocks in the Gulf of Georgia, another at
Cape Mudge at the entrance to Discovery
Passage & yet another at Egg Island. The
disastrous wrecks almost without exception
have occurred in U.S. waters. As canoes
gave way to ocean-going vessels in these un-
buoyed & unlighted channels, the government
pilot charts were improved with pasters sug-
gesting that the chart was not more than 5
miles out of the way. Steamer after steamer
was lost, the Mexico sank in Aug., 1897, on
her return trip from carrying the first load of
gold seekers, the Corona stranded in Nov. of
the same year, the Clara Nevada ran on a
rock & burned or blew up with a loss of all
on board in the following Feb., & since then
a dozen other steamers have either grounded
or been totally wrecked. These dangers &
losses continue to date. On Feb. 15, 1899,
the Humboldt, a fine California steamer, went
on the rocks between Juneau & Wrangel, &
was in gravest danger; early in Mar. the
Dirigo stranded but was finally dragged off
with severe damage; later in Mar. the Tees,
a Canadian steamer, was reported fast on the
rocky Alaskan coast & on Mar. 29 the City
of Topeka of the Pacific Coast Steamship Co.
went fast on a ledge in Wrangel Narrows.

As the engineer was not able to take the
survey & improvement of the sea highway
out of the hands of the government he turned
his attention to terminals for the carriers both
by land & water which his skill had evolved,
& here also the transition from the perfectly
safe landing of the Indian canoe on the flat
beach above high water to the equally safe
landing of the ocean steamer at a deep sea
wharf, beyond the fall of the lowest tide, has
been through intermediate steps expensive &
dangerous. The first load of gold seekers in
Aug., 1897, found no wharves at Dyea or
Skagway, & the hastily gathered mining out-
fits were either lightered ashore at great ex-
pense, or at low tide dumped off the steamers
to be submerged by the returning waters un-
less rapidly moved by waggons whose owners
charged extortionate rates. Prices for pack-
ing over the pass had been 12 to 15c. a pound
in the old days of Indian-back, but they rap-
idly rose to 47c. by the Dyea or Chilkoot trail &
to sixty cents by the Skagway trail. Block-
ades occurred, paths turned into bottomless
pits, & pandemonium was everywhere. It is
a curious illustration of the fallibility of intel-
ligent human judgment that nearly all the
capitalists organized transportation com-
panies to reach the Klondike by way of the
mouth of the Yukon, leaving the nearer &
obvious road in the hands of men without
capital but with plenty of energy & ready
quickness.

A comparison of the two routes to Dawson,
down & up the river, should have been suffi-
cient to convince one as to their relative
values. Dawson is 1,600 miles from the Puget
Sound cities. Of this distance 1,000 miles
are by inland sea, 40 are by mountain pass,
the balance down lakes & rivers. This route
is open 8 months in the year. By the other

route it is over 4,000 miles to Dawson, 2,700 miles of North Pacific Ocean to St. Michaels, & about 1,500 miles of treacherous river touching the Arctic circle, with bars at mouth & elsewhere. Boats are limited to a 3 ft. draft, & the river mouth is open but 3 months in the year. The extent of the transportation delusion is evidenced by the increase of steamboats on the lower Yukon from scarce a dozen in 1897 to 110 by the summer of 1898. These boats represented capital. The gold seekers went the other way & the only real rivalry that there has ever been for a permanent Yukon route is between Dyea & Skagway, between the Chilkoot & White passes. When the rush began, one of these was an Indian path, the other nothing, but what it lacked in merit Skagway made up in boisterous advertising. The Indian village at Dyea developed into a town, the U.S. speculation on the Skagway flats was platted & the city of Skagway started. It first succeeded in building a wharf to deep water & this was the beginning of its supremacy, because it became easier & safer to land there. Beyond the landing this trail was utterly unfit for travel, but the first arrivals were too busy pushing on to warn those who might follow, & both town boomers & steamer lines assured ticket buyers that whatever might have been true last week, now the trail was indeed open.

Above its delta, the Skagway River, a mountain torrent, occupies nearly the whole width of the valley. The mountains rise steeply on each side & every spot that is not washed bare of earth is overgrown with heavy timber. If in rare places the river has a shore, it is covered with boulders & loose rock, either terminal or lateral moraines of the former Skagway glacier, or the result of landslides. For 10 miles from the sea, the fall of the Skagway River is not rapid but above the last fork, the stream rushing down from the summit of the White Pass is a rocky torrent, in a deep canyon bed. The rise in the last four miles below the divide is about 2,000 ft. Over 12,000

people landed at Skagway in the first year after the rush, or between Aug., 1897 & July, 1898. Most of these unfortunates crossed the pass dozens of times carrying their goods in relays, a man load at a time, a slow way of transporting a ton or two of supplies a distance of 30 miles over almost impassable trails. Most of the packing was done on man back & extraordinary loads were carried. One of the Indians on Chilkoot carried in one load 247 lbs. over the summit, & on the whole, nothing is so generally efficient as a man. Dogs were fitted with pack saddles & given loads of 10 to 30 lbs., & this was worth while, at 60c. a pound. Goats were used, rafts, canoes, rough boats, any & everything that could be impressed into service. Horses were shipped to Skagway by the hundred, & there, on the worst trail in the world, they died also by hundreds, but during this first summer a horse was not able to carry as much as a man. It was the packers, the owners of the horse trains who made the first trail, for the gold seekers had no time to join in any "good road movement," but the packers organized, instituted compulsory service & by the spring of 1898 had succeeded in opening a very fair bridle path, making this trail from this time on essentially a horse trail, & thus scoring a second triumph over Dyea. The horses between Skagway & Bennett each carried 250 lbs. besides feed for the round trip of 4 days.

Six to seven horses or mules made a string under the care of one man, the driver riding on an extra animal, sometimes in front, often behind. Rates for packing fell to 20¢ & then to 12c. a pound & fortunes were made, & squandered, in the business. Six horses carried 1,500 lbs. of net freight & earned gross \$180 to \$300. Expenses for a round trip were \$40 in wages, \$12 hotel bills, \$25 for horse feed, \$20 wear & tear & \$15 toll, making a total of \$112. Some packers who had 40 to 50 horses on the trail put in their own boarding camps, thus reducing expenses, & the most energetic & successful & reliable earned for several months over \$1,000 a day net on an investment of \$2,000 to \$3,000. One energetic man interviewed the arriving Klondikers at Seattle, contracted to deliver their freight at Bennett, required a part payment in cash, used the cash to buy his horses & pack-saddles & went north on the same steamer with his customers & fulfilled his contract.

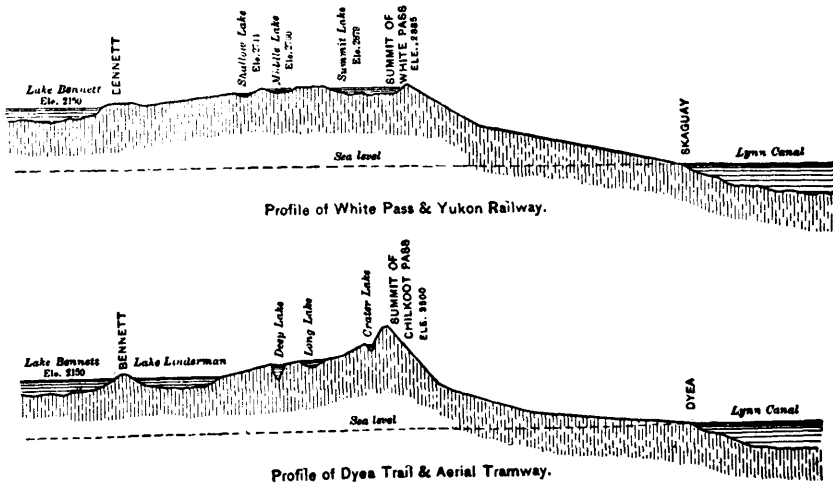
But the enormous amount of freight going to Dawson by way of the passes, nearly 20,000 tons, prompted G. M. Brackett, an experienced & energetic railway contractor, to begin a wagon road from Skagway to the summit. He started early in the fall of 1897 and pushed the work with great energy, hoping to be ready for the great spring rush, but in this he was disappointed. The remoteness of the region, with mails 10 days apart, labor,

Mr. Brackett had built his wagon road without authority & there was indeed no time to wait for it, as the U.S. Government is always several years behind requirements in frontier matters. Very great friction developed between the wagon road company & the packers. The latter drove their pack horses up the frozen bed of the river & thus avoided the new road, but Brackett completed a short piece of road around which it was impossible to go and there he erected his first toll gate. While the struggle was going on in Alaska Brackett was not idle in Washington & secured the passage of a resolution by Congress giving the Secretary of the Interior jurisdiction over Alaskan roads with authority to grant toll privileges. From the Secretary of the Interior Brackett obtained authority to levy a toll of 2c a pound on all freight, \$10 on each wagon, \$1 on each foot passenger, horse, sheep, dog or other animal. These rates were excessive. This wagon road, owing to its heavy grades, was none of the best. In building it Mr. Brackett had in many places simply improved the previously existing trail made by the packers themselves. The road was only built for 11 miles, yet without proper investigation, without any comprehension of the actual conditions or of the equities, the privilege was granted to levy prohibitive tolls on all the enormous traffic using this pass. There was not even any possibility of appeal, as no court

had any jurisdiction over tolls placed by act of Congress at the discretion of the Secretary of the Interior. The wagon road, however, experienced difficulties. The Chilkoot Pass route had not been idle, & from the first as a man pack route it had been preferred to the White Pass because shorter, with better approaches & with more direct waterways to the head of Yukon navigation. The first improvement on this pass was made when a horse whim was anchored at the summit of Chilkoot, & by this means loads of over a ton could be hauled up on sleds, thus putting this route far ahead of the Skagway trail for heavy

freight as well as for single loads. After the first season the horse gave way to a gasoline engine, his last act being to wind his own successor to the top. The gold seekers could drag their own loads on sleds to the foot of the summit, there turn them over to the whim, be hauled up, coast down the other side & go on their way rejoicing over the frozen lakes & smooth trail to Bennett.

In Aug., 1897, work was started on the Chilkoot R.R. & Transportation Co., on the Alaska R.R. & Transportation Co., & on the Dyea Klondike Transportation Co., all three of them aerial cable trams. These three were ultimately consolidated into the Chilkoot Pass route, & but one line finished in April, 1898. A large force of men was kept busy all winter, but very little beyond shoveling snow was accomplished from Dec. 10, 1897, to Mar. 15, 1898. The tram begins 9 miles from Dyea at Canyon City, to which place a wagon road is almost without grade. There are 2 loops, 1 from Canyon City to Sheep Camp, 4 miles, & the other from Sheep Camp over the summit, & ¼ mile down the other side. This loop is 4 ¼ miles long. The trolley automatically switches from one loop to the other, & the load is limited to 400 lbs., generally carried in boxes 40 x 20 x 24 ins. With its level wagon road & these trams in operation, the Dyea trail should & could have beaten its rival Skagway as to rates, but it



climatic & financial difficulties all combined to prevent rapid work. Nevertheless Mr. Brackett succeeded in building an excellent road for about 10 miles, marring it however, and from an engineering point of view ruining it, by the fearful grade over Porcupine Hill, a grade so steep that 2 horses with a single sled loaded with only 400 lbs. could scarcely climb it coming towards Skagway. Going down this same hill sled runners are generally wrapped with heavy chains, in addition to the very effective automatic brakes used on all Skagway sleds. This brake consists of 2 sharp steel prongs bolted underneath the back end of the shafts & pointing downwards. When the horse pulls these are lifted off the ground or snow, but when on a down grade, the sled runs forward on to the shafts & presses the prongs deep into the ice or snow. Another effective form of brake is a dragging hook, bolted loosely through the back end of the runners. Ordinarily it is turned up & rests on top of the runner, but on down grades it is turned down so that the sharp end of the hook sticks into the runners' track. On this hook the driver will stand, and thus hold almost any load. In Jan., 1899, a 4 horse double bob sled, not being equipped with these brakes, rushed the teams down the steep grade of Porcupine Hill & forced the leaders over the precipice, several hundred feet to the river below.

could not handle the freight offered, & there were long delays, charges of favoritism, & enough freight was secured at the Skagway rates of 8c. & up to keep the trams busy, so no reduction was made. It was, nevertheless, this Dyea competition which forced a reduction of tolls on the Brackett road from Skagway, the rate being lowered to 1c. a pound from Skagway to Summit, & $\frac{3}{4}$ c. a pound to those who made their way up the river bed. Some packers also threatened to build a new trail of their own, & one energetic man with over 100 tons of freight to carry, was bribed from so doing by a free pass for his stuff.

All these transportation, financial & competitive struggles were around & about the passes, the stretch from salt water to lakes. From the head of Lake Bennett down to Dawson, "over the ice" as it is called, the travel in winter is only by dog team, although this year one mule & one horse made the trip out. The Yukon sleds are 16 ins. wide, 6 ft. long, 8 ins. high, & strongly braced. Some are made with a gee pole on the right side, & the driver straddles the rope or chain by which the dogs pull. The preferred sled this year is the basket pattern with plow handles behind to which the driver clings. Four to eight dogs make a team. On a good smooth trail the native dogs, "insiders," as they are called, one-quarter, half, or even three-quarters wolf, will drag 100 lbs. to the dog. These animals are thickly furred, & seem to enjoy extreme cold. They are fed on boiled rice, corn-meal & bacon, & will not eat dog-biscuit. Outside dogs cannot stand the extreme cold, are not as a rule as good pullers, & are miserably unhappy. At Skagway good insiders are worth from \$50 to \$100; outside dogs can be bought for \$10 to \$20. Up the White Pass & through fresh snow dogs cannot pull 15 lbs. The extreme difficulties of the White Pass make a dog team trip from

Dawson to Skagway much easier than from Skagway to Dawson, as the dogs are not worn out before they are fairly started.

The rapidity of travel with a good dog team is remarkable. T. Crahan left Dawson Jan. 28, 1899, at 9.45, & reached Skagway Feb. 12, at 4.45 p.m. He had 2 in his party, & a 4 dog team to haul the equipments. While on the trail he fed his dogs once in the 24 hours, at night, each dog receiving $2\frac{1}{2}$ lbs. of food, which consisted of $1\frac{1}{2}$ lbs. of thoroughly boiled bacon, $\frac{3}{4}$ lb. of well-cooked rice, & $\frac{1}{4}$ lb. of cooked corn-meal. The distance is full 600 miles, but although the dogs averaged more than 40 miles a day they were in good condition. On Jan. 29 I turned over to M. A. Mahoney at Tagish 2,000 lbs. of U.S. & Canadian mails. He had 4 sleds with 5 fine dogs to each sled, & on each sled he loaded 500 lbs. of mail or 100 lbs. to each dog. He reached Dawson on Feb. 26. Returning he left Dawson Mar. 21 at 9 a.m. with one passenger, the contract being to land him in Skagway in 14 days for \$700, or to forfeit \$100 for every day over that time. He pulled into Skagway on the afternoon of Mar. 31 at 5 o'clock, having made the trip in 10 days & 8 hours, or at the rate of 55 miles a day. The team consisted of 6 huskies (Arctic dogs), & he carried no supplies with him, buying everything for himself & dogs at the bunk houses along the river. If a dog team has to carry its own food & that of the driver, & 30 to 40 lbs. of blankets, robes & other equipments, its radius of travel is very limited. Mahoney's teams could barely have reached Dawson carrying their own supplies & no extra freight whatever. It is because there is no food for horses along the trail that these animals or mules are not used. A good horse can drag about 2,000 lbs. over a fair trail on a food allowance of 40 lbs. a day. He can travel through fresh snow that would stall any

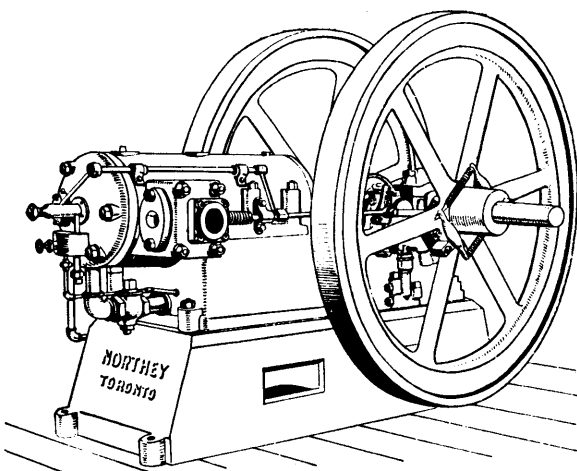
dog team, but the latter can travel over crust-ed snow that would break under horses. Wherever the food supply permits, freighting is done with horses & mule teams, as between Skagway & Tagish 100 miles towards Dawson, but for light & rapid running from place to place dogs are preferred. Each dog is as much trouble to care for, & more trouble to feed than a horse.

During the summer of 1898 pack trains were in full action over the White Pass, & the trams over the Chilkoot, & the healthy rivalry between them prevented too great extortion. About this stage of development civilized modes of transportation may be said to have overtaken in convenience & cheapness the primitive savage methods. It was just about as cheap to send goods over in July, 1898, as in July, 1897, before the rush had begun, but a new competitor now appeared in the field that was for all time to settle the supremacy of Skagway. This new comer was an international railroad, whose survey ran 20 miles through U.S. territory from tide water at Skagway to the summit of the pass & the international boundary, & thence 325 miles to Fort Selkirk, on the Yukon River, below White Horse Rapids & other dangers, & but 174 miles above Dawson. This railroad is now in operation to the summit of White Pass, & much of the grading is done for 20 miles more to Lake Bennett. If it should stop here the aerial tram could still prove a dangerous rival, because the capital charges are so much less, operating expenses less, & its capacity could be easily increased to 100 tons a day. The difficulty has been, not in transporting, but in handling the freight at the two termini, where accumulations caused almost inextricable confusion & long delays.

Freight rates from Dyea to Bennett by way of the tram are, in Mar., 1899, $3\frac{1}{2}$ c. a pound, & the same by the railway. From the summit

The Northey Gas or Gasoline Engine.

In Connection with Pumping Machinery for Tank Duty.



"BUILT FOR HARD WORK."

Railway Officials will find the Northey Engine to be a marked improvement over steam or other forms of power for this duty. It is simple of construction, and easily managed, necessitating only the turn of a fly-wheel to start, while it can be going at full speed in a few seconds and be shut down on the instant. Needs no engineer to look after it, the station hands can do all that is required, while it will run for hours at a time with little or no attention. The Engine is compactly built and of the best materials; it uses either gas or gasoline for fuel, and its safety and economy with either have proved it to be the most satisfactory power in the market.

We will cheerfully send Booklet and every information upon request.

The Northey Mfg. Co., Limited, ¹⁰³²KING ST. SUBWAY, Toronto, Ont.

the railway company has opened one of the best snow roads in the world. It was made by sending team after team through the snow drifts, packing down the snow until the hard bed rose above the level of the snow field & was thus swept clear by the wind. It is staked with saplings on both sides & can be followed in the darkest night or severest storm. Log Cabin, the Canadian custom house & mounted police station, is 12 miles from the summit & boundary, & is also at the end of the White Pass series of lakes, Summit, Middle & Shallow. The former trail from Log Cabin to Bennett was difficult both winter & summer, as it passed over a high & rocky divide, winding steeply up & down along the slopes. The new railway trail was opened by cutting down trees, grubbing out stumps, blasting away boulders, packing down snow drifts, and is a beautiful & model road. Freight carried to the summit by the railway is there transferred to double bob four-horse sleds with wide runners, & each such sled can be loaded with half a ton. Three or four of the freighting firms have formed a through freight line in connection with the railway, & through bills of lading are issued. A big freighters' camp is established near Log Cabin half way between the summit & Bennett, & each morning except Sunday (for the mounted police will not allow freighting on Sunday), teams start in both directions, thus giving the horses 10 miles of load down grade, & 10 miles empty.

The railway hauls to the summit of the pass for 1c. a pound, or one-half of the toll authorized by U.S. Secretary Bliss for the privilege of dragging one's own freight over the toll road. The freighters carry for 2 cents a pound from the summit to Bennett. The expenses of the round trip are about \$20; receipts under best conditions, which are the exception, may amount to \$200. If there were a sufficient quantity of freight there would be a bonanza in the business for a freighter with 10 or more four-horse teams. As it is, the freighters alternate between excessive earnings & inability to pay their teamsters or other bills, none of them being organizations with large capital. The snow trail is not in good condition until Feb., & begins to soften the latter part of April. The lakes are deep & well warmed during the long summer days, but in early winter the first sharp frost covers them with a thin crust of ice. On this a blanket of snow falls, which delays further freezing & presses the thin ice below the water, so that beneath the snow there is oftentimes slush 2 or 3 ft. deep. Horses & men break through the upper snow, & the resulting wetting is dangerous with the thermometer 20° or more below zero & the wind blowing.

The railway is a great example of engineering & constructive skill. It would have been a great feat to grade 40 miles & build twenty over a similar rocky pass under the most favorable conditions, but this work was done in seven months, in a region without laborers, 1,000 miles from supplies, 3,000 to 4,000 miles from rolling mills & car shops, & against fearful climatic conditions. Day after day fresh snow drifted over the road-bed & day after day it had to be shovelled off, sometimes to a depth of 6 to 8 ft. Supplies, bridge timbers, fire-wood even, for the enormous camps had to be carried over almost impassable snow trails. There were days when men could not work on account of the storms or the intense cold, but they had to be fed & warmed.

The road begins on deep water, a mile from Skagway. A shelf is blasted along the face of the cliff, & this beginning is typical of the 20 miles to the summit. High above the valley, on a maximum grade almost the whole distance, the road sweeps around two different forks of the Skagway River, adding 6 miles to its length, but making it possible to reach the summit of 2,885 ft. without switch back. It has, however, been questioned by able engineers whether this was the best loca-

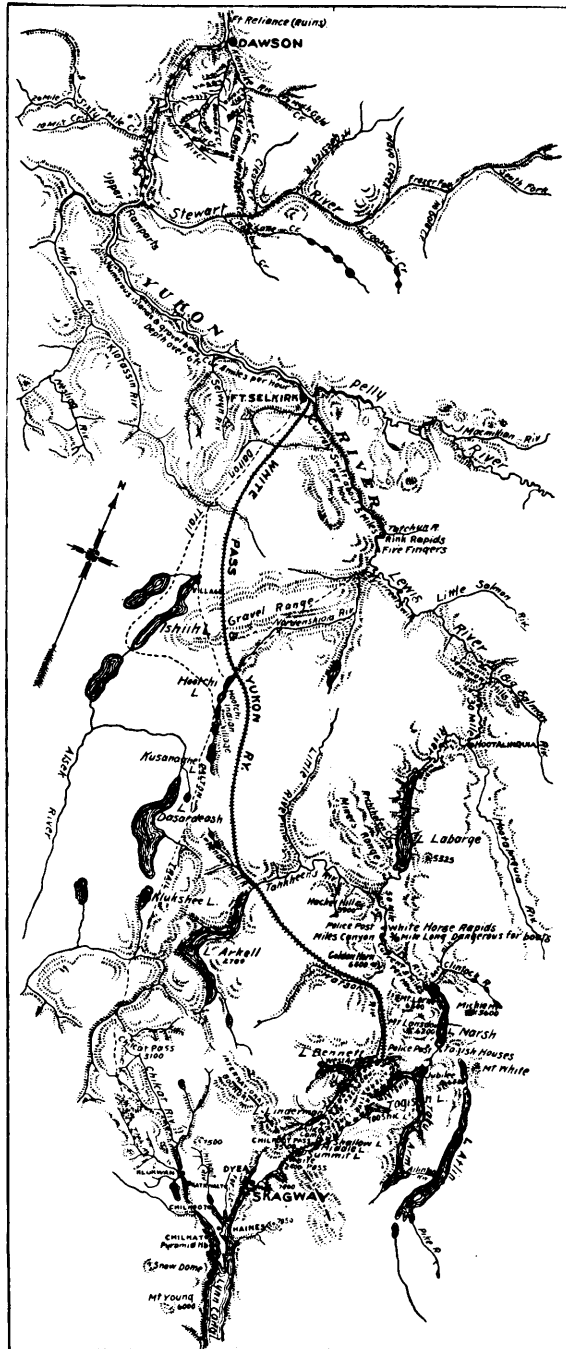
the coming city of Alaska, & thus ended the race between the older Indian Dyea & the younger U.S. city. It will do more. It will change the freight route to Dawson from an up-river to a down-river movement. Even this year barges to carry 20 tons can be bought at Bennett for \$300, or competent men will contract to deliver freight with their own barges for 4c. a pound to Dawson. Contracts are now being made from Seattle & Tacoma, from Victoria & Vancouver to Dawson via the White Pass for \$160 a ton, or 8c. a pound. This through rate may fall to 6c. when the railway reaches Bennett. Even 8c. is lower than the rates hitherto charged by the long mouth-of-the-Yukon route. Passenger travel will all take the shorter road & freight will inevitably follow passengers.

Another & more serious result of the completion of this railway to the summit is the inevitable diversion of a trade thus far almost exclusively in U. S. hands to Canadian points & houses. Last year the high duties imposed by the Canadians were fully off-set by the extortionate charges made for bonding & conveying Canadian goods through the U.S. strip. This year the railway furnishes the bond for a nominal charge, & ships Canadian goods in bonded cars, delivering either at summit of pass, in British territory, or at Log Cabin or Bennett. It is not possible for U.S. merchants to stand 30% duty & also the Canadian custom house delays, annoyances & extortions at Log Cabin. Last year United Statesers made these annoyances an off-set for a 30% duty, but hereafter the Canadians are protected by both duty & annoyances, & even if U.S. meats & hardware are taken to the Yukon they will enter Canada elsewhere & go through in bond. Happily, however, this possible loss of Klondike trade will be more than offset by the very sensational discoveries of gold made near the shores of Bering Sea, at Golovin Bay & Cape Nome. The climate at these points is comparatively mild, they are most easily accessible by boat for five months in the year & the region is described by those who know it as an Arctic paradise.

The Klondike madness is past. In two short years the savage trail with a dozen Indian packers has been replaced with transportation facilities with a capacity exceeding the requirements of the Yukon basin for years to come. This excess will stimulate further developments. The country offers the widest field, for it is inexhaustibly rich. Nowhere else as on this gold trail has the genius of engineers wrought such beneficent and rapid change in so short a time. The evolution from hunter's path to railroad, through the intermediate steps of pilgrim path, mule trail, wagon road, was 2,000 years in making in the St. Gotthard Pass, the great high road between the most civilized portion of the ancient world & of the mediæval world, the road that led from the gloomy north to the rich south, rich in treasures, in food, in spiritual tradition & comfort.

Two short years as against 2,000 have evolved the same succession of improvements on the highway over the White Pass back to a north, hideous in climate, without history, without sentiment, without food, but abounding in gold.—Engineering Magazine.

The wife of Dr. J. A. Hutchinson, Chief Medical Officer of the G.T.R., died in Montreal Sept. 5, suddenly.



ROUTE OF THE WHITE PASS AND YUKON RAILWAY.

tion. The strata dip from east to west, & the other side of the valley would give a stable instead of unstable ledge. The west side is also the sunny and protected side, freer from ice & snow, but on this side a switch back could not have been avoided. The road is narrow gauge, but the road bed & construction are adapted for standard gauge. It is one of the most solid & substantial road beds in America.

This railway has already made Skagway

C.P.R. Earnings & Expenses.

Gross earnings, working expenses, net profits and increases over 1898, from Jan. 1, 1899.

	Earnings.	Expenses.	Net Profits.	Increase.
Jan.	\$1,864,570.36	\$1,247,036.50	\$617,533.86	\$101,906.27
Feb.	1,753,382.82	1,153,681.34	599,701.48	176,034.12
Mar.	2,109,667.58	1,280,772.01	828,895.57	75,662.06
Apr.	2,196,312.40	1,276,008.91	920,303.49	203,212.80
May	2,402,151.29	1,369,302.68	1,032,758.61	106,096.30
June	2,352,278.67	1,339,218.47	1,013,060.20	205,664.83
July	2,385,625.47	1,412,663.84	972,961.63	242,272.84
Aug.	2,474,036.85	1,455,205.13	1,018,831.72	135,804.84

\$17,548,025.44 \$10,533,978.88 \$7,014,046.56 \$1,246,654.06
 Approximate earnings for Sept., \$2,600,000, as against \$2,341,000 in Sept., 1898; increase, \$259,000.

SUBSIDIARY LINES.

DULUTH, SOUTH SHORE & ATLANTIC.—Approximate earnings for Sept., \$221,428; increase over Sept., 1898, \$51,780.

Net earnings for 6 months to June 30: \$359,396, as against \$281,869 for corresponding period.

MINERAL RANGE, HANCOCK & CALUMET.—Approximate earnings for Sept., \$46,450; increase over Sept., 1898, \$11,086.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Approximate earnings for Sept., \$499,466; increase over Sept., 1898, \$10,513.

Net earnings for 12 months to June 30, \$1,885,262, as against \$1,894,188 for corresponding period.

Canadian Pacific Railway Land Sales.

	Acres.		Amount.	
	1899	1898	1899	1898
Jan.	14,718	22,044	\$46,411.35	\$72,924.83
Feb.	13,747	20,650	43,371.00	66,399.00
Mar.	24,045	33,421	74,430.00	109,010.00
April	36,626	43,145	116,835.00	140,276.00
May	39,573	43,148	125,862.00	137,835.00
June	54,225	49,203	169,234.00	160,200.00
July	47,402	39,512	149,546.00	123,010.00
Aug.	35,214	19,448	110,705.00	63,911.00
	265,550	270,571	\$826,474.35	\$873,565.83

Grand Trunk Earnings, Expenses, &c.

The following statement of earnings supplied from the Montreal office, includes the G.T. of Canada, the Chicago & G.T., & the Detroit, Grand Haven & Milwaukee Rys.:

	1899	1898	Increase
Jan.	\$1,956,281	\$1,916,332	\$39,949
Feb.	1,824,434	1,674,453	149,981
Mar.	2,186,359	2,048,970	137,389
April	1,942,543	1,918,477	24,066
May	2,039,239	1,940,980	98,259
June	2,062,137	1,880,402	181,735
July	2,105,493	1,860,884	244,519
Aug.	2,391,559	2,002,802	388,757
Sept.	2,488,829	2,261,148	227,681
	\$18,996,784	\$17,504,448	\$1,492,336

The following figures are issued from the London, Eng., office:

GRAND TRUNK RAILWAY.

Revenue statement for July:

	1899	1898	Increase	Decrease
Gross receipts	£350,147	£308,481	£41,666	
Working expenses	235,115	207,573	27,542	
Net profit	£115,032	£100,908	£14,124	

CHICAGO & GRAND TRUNK RAILWAY.

Revenue statement for July:

	1899	1898	Increase	Decrease
Gross receipts	£58,655	£57,630	£1,025	
Working expenses	51,172	46,605	4,567	
Net profit	£7,483	£11,025		£3,542

DETROIT, GRAND HAVEN & MILWAUKEE RY.

Revenue statement for July:

	1899	1898	Increase	Decrease
Gross receipts	£19,704	£16,261	£3,443	
Working expenses	12,811	12,897		86
Net profit	£6,893	£3,364	£3,529	

DETAILS OF G.T.R. RECEIPTS JULY 1 TO AUG. 31.

	1899.	1898.
Passengers, number	1,476,085	1,440,684
amount	£258,486	£217,674
Immigrants, number	2,412	2,178
amount	£1,851	£1,275
Mails, express, &c.	36,205	34,520
Freight, tons	1,691,169	1,325,221
amount	£433,912	£367,392
Miscellaneous receipts	22,191	21,163
Total receipts	£752,645	£642,024
Increase	£110,621	

TRAFFIC RECEIPTS OF THE SYSTEM.

Traffic receipts, July 1 to Aug. 31.

	1899.	1898.	Increase.	Decrease.
Grand Trunk	£752,645	£642,024	£110,621	
Chicago & G.T.	123,902	113,115	10,787	
D., G. H. & M.	41,372	36,715	4,657	
Total	£917,919	£791,854	£126,065	

On Sept. 19, the London Financial Times commenting on increases in G.T.R. earnings from July to Sept., said: "This is certainly a noteworthy record, for last year was considered an exceedingly successful one, it will be remembered. The market, however, is not satisfied with remarkable traffic returns on the G.T.R. It expects them to be sensational. Yesterday it was expecting an increase of £20,000, and getting only £14,300, prices dropped, the second preference losing two points."

A London cable says the G.T.R. report to June 30 is quite a colorless document, concerned alone with the satisfactory figures for the half-year and the text of the agreement with the Dominion Government concerning the Intercolonial Ry. The half-year's operations show a net improvement of £29,752.

Passenger receipts improved £50,988, the average fare received increasing from 25 1/4 d to 3s 5 1/4 d. The freight carried increased 440,807 tons, but the increase of low rate through traffic caused the average receipt per ton per mile on the entire freight traffic to decrease from .66 of a cent to .58. The annual meeting will be held Oct. 12.

RAILWAY FINANCE, MEETINGS, &c.

The Alberta Ry. & Coal Co.'s annual meeting will be held in London, Eng., Oct. 25.

American Railway Earnings.—The compilation of gross earnings of the railroads for the first half of this calendar year, as made by the Financial Chronicle, has been revised & extended. The earnings of 166,599 miles of road amounted to 600 million dollars. It is estimated that the increase for all the railways of the U.S. would amount to 40 million dollars, or perhaps to two or three million dollars more. This follows an improvement in the first half-year of 1898 of 70 million dollars. In this gain in gross earnings the Pennsylvania (lines east end & west of Pittsburgh) leads with an increase of 3 1/3 millions. The Lehigh Valley comes next with 2 1/2 millions, & the Milwaukee & St. Paul next with 2 1/4 millions. The Reading, the North-Western, the Southern, the Canadian Pacific, & the Central of New Jersey each gained over a million. In fact, the Reading, with its coal & iron companies, would have shown over two millions had its figures been reported for six months, those given being for only five months. All of which is pleasant reading.—Railroad Gazette.

Atlantic & Lake Superior.—The Baie des Chaleurs railway litigation has entered upon a new phase, a petition for a writ of injunction having been filed in Montreal on behalf of the curators to the H. Macfarlane estate. The petitioners allege that they believe the Baie des Chaleurs Ry. is to form part of the system of the A. & L.S. Ry., & they are informed that steps are being taken for the removal of portions of the rolling stock, etc., of the B. d. C. Ry. Under these circumstances, & considering the action now pending before the courts between the Macfarlane estate, the B. d. C. Ry. Co. & C. N. Armstrong, for over \$180,000, they ask the issue of a writ of injunction to prevent the removal of rolling stock, etc., as above mentioned, the right of retention of Macfarlane as builder of the B. d. C. Ry. being affected thereby.

The Bedlington & Nelson Ry. Co.'s annual meeting will be held at Kaslo, B.C., Oct. 18.

MICA BOILER COVERING

For Locomotive, Marine and Stationary Boilers

Tested by Mechanical Experts of the C.P.Ry. Co., G.T.Ry. Co., M.C.Ry. Co., Boiler Inspection Insurance Co., and proved to be the

= = Best of All Non-Conductors = =

All Steam users should see the Mica Boiler and Pipe Covering—Flexible, Durable and Highest non-Conductor of Heat in the Market.

Full particulars, reports of trials, testimonials, prices, etc., from

Mica Boiler Covering Co., Limited, 9 Jordan St., Toronto, Ont.

The B.C. Yukon Ry. Co.'s annual meeting will be held at Victoria, B.C., Oct. 11.

Brockville, Westport & Sault Ste. Marie.—A report comes from Brockville, Ont., that R. G. Hervey, of Halifax, N.S., a former resident of Brockville, who spent some days there recently, is about to enter an action against the Philadelphia Investment Co. to recover possession of the Brockville, Westport & Sault Ste. Marie Ry., of which he was the chief promoter. It is contended that when this Co. took the road it was understood that it was to be put through to Sault Ste. Marie, to be equipped with first-class rolling stock, & to have a good train service. These conditions Mr. Hervey contends have not been fulfilled, & he thinks the Co. is not entitled to hold the road under the circumstances. He also states that if the court should decide the matter in his favor no difficulty would be experienced in procuring the necessary capital to put the road through to the points it was originally intended it should reach. Its present terminus is Westport, 45 miles from Brockville.

Buffalo & Lake Huron Ry. Co.—The English Association of American Bond & Share Holders, notifies that it is prepared to receive for payment coupon 39 of the 1st mortgage bonds, & coupon 52 of the 2nd mortgage bonds of this Co. for the half-yearly interest due Sept. 1, 1899.

Calgary & Edmonton.—Net earnings for July \$6,605.26 as against net loss of \$1,190.06 for July, 1898.

Canada Central 5% 1st mortgage bonds, comprising 16 bonds of £500 each & 54 bonds of £100 each, will be paid at the rate of £105 per £100 bonds on Oct. 2, at Speyer Bros., 7 Lotherbury, London, E.C.

Canadian Railway Securities.—In a recent issue the London Outlook, after warning readers against U.S. railway stocks, said: "As regards Canadians, the case is different. We believe that new capital will be wanted for the C.P.R., but both that line & the G.T.R. are doing splendidly. Why G.T.R. guaranteed is not taken up more as a speculative investment, destined to reach 'par,' it is difficult to see, & Trunk seconds are a good speculative purchase. These & Canadas should certainly go higher in the long run & they have not Mr. Bryan, with his quick remedies for all the ills, to worry them."

Canadian Yukon Ry.—An Ottawa despatch of Sep. 13 to a Conservative paper said: It was generally expected that at the last session of Parliament the Government would suggest an appropriation to compensate Mackenzie, Mann & Co. for their expenditure in connection with the Yukon railway contract. A doubt exists in some quarters as to whether the contractors have in this matter a legal claim against the Government. The contract was subject to the approval of Parliament, & as Mackenzie, Mann & Co., entered into it on this understanding, & as Parliament did not ratify the contract, some authorities contend that the whole thing falls to the ground. There is a disposition, however, in Ministerial circles to recompense Mackenzie, Mann & Co. for their expenditure, but it has not been determined what method to pursue. A Government accountant was recently despatched up the Stikkeen as far as Telegraph Creek, with a view to securing evidence of the actual expenditure incurred by the contractors, & it is expected that it will shortly be determined by the Minister of Railways whether Mackenzie, Mann & Co. shall be offered a certain sum without prejudice to get rid of their claim, or whether they shall be granted a fiat to have the amount of the compensation determined by the Exchequer Court.

Chicago Great Western.—A. B. Stickney, who was the first General Superintendent of the C.P.R., & is now President of the Chicago

Great Western, is making a success of the latter. In the past year it earned enough balance over the 4% payment on the debenture stock (which represents half of the first mortgage bonds of the old Chicago, St. Paul & Kansas City) to pay 4% dividends on the preferred stock A, which represents the other half of the old bonds. The gain in gross earnings in the year was \$481,696, or 9%, & in net earnings, after taxes, was \$284,552, or about 20%. The totals for 929 miles of road were \$5,867,740 for gross & \$1,720,223 for net. The per mile for the first time exceeded \$6,000, being \$6,313, while net per mile was \$4,243. Mr. Stickney says the rebuilding of the line, which has been going on under a systematic plan since 1894, will be completed by the end of the present year, when, he says, "the physical condition of the roadway & the equipment will compare favorably with the excellent condition of competitive lines, while in point of easy grades & curvatures, it will have no superior west of Chicago." He points out that the improvements carried out permitted the operating ratio to be reduced from 77½% of gross receipts in 1895 to 67.21% in 1899, & he thinks the figure will be reduced to 60% or less.

Chignecto Marine Ry.—Mr. Provand, M.P. for Glasgow, recently met the Amherst, N.S., Board of Trade, in regard to the Board acquiring running powers over the Co.'s railway & the use of its wharf, which are lying idle. Mr. Provand promised to recommend to his board the granting of the request. As showing the importance of Amherst as a shipping point, President Curry, of Rhodes Curry & Co., stated that his firm alone brought in over 60 cargoes last year, nearly all of which could have been imported via Fort Lawrence had the proposed arrangement been in force.

Crow's Nest Pass Ry. Suits.—Thirty-four laborers who were engaged in Montreal, in Oct. 1897, to work on this line are suing the C.P.R. Co. for damages. Sixteen of them, whose claims range from \$150 to \$250 each, have been authorized by a judge to proceed in forma pauperis. The other 18 have entered suits in the Circuit Court, the amounts they claim being smaller.

Dominion Atlantic Earnings for 8 months to Aug. 31 were \$440,370, against \$375,892 for corresponding period.

Edmonton, Yukon & Pacific.—It is said that the charter for this line, granted at the last Dominion session to G. McAvity & others of St. John, N.B., has been acquired by Mackenzie, Mann & Co., in the interest of the Canadian Northern, so as to give that line an outlet to the Pacific Coast. A Dominion subsidy for 50 miles of the line, from South Edmonton via North Edmonton towards the Yellow Head Pass, was voted last session.

Esquimalt & Nanaimo.—In the case of the E. & N. Ry. Co. vs. the New Vancouver Coal Co., the suit involving the valuable mining rights in Nanaimo Harbor, B.C., a new & very important phase of the question has been commenced by the commencement of a new suit, the Attorney-General of B.C. & the New Vancouver Coal & Mining Co. vs. the E. & N. Ry. Co. This action has been instituted for the purpose of ascertaining whether the coal in a certain portion of Nanaimo harbor is vested in the Province, subject to the right of the N.V.C. Co., & is in consequence of the action pending between the E. & N. Ry. Co. & the coal company relative to the claim of the railway company to the coal opposite Newcastle Townsite, Nanaimo harbor. By the Settlement Act, the Province agreed to transfer to the Dominion, for the purpose of constructing the E. & N. Ry., the land usually known as the railway belt, together with the coal, etc., thereunder. The Dominion Government added to this part by including the "foreshore rights in respect of such lands as aforesaid,

which are to be granted to the said company (the E. & N. Ry. Co.) as aforesaid, and which border on the sea, together with the privilege of mining under the foreshore & sea opposite any such land, & of mining & keeping for their own use all coal & minerals, under the foreshore or sea opposite any such lands in so far as such coal & foreshore rights are vested in Her Majesty as represented by the Dominion Government." The Federal Government granted to the railway company the said land & mining privileges & the foreshore rights, & in the beginning of 1898, the railway company commenced proceedings against the coal company to establish that the railway company was entitled to the coal opposite Newcastle Townsite reserve, which the railway company claims is included in the letters patent, & if so the railway company wants compensation for the coal abstracted. The coal company distinctly challenges the right of the railway company to Newcastle Townsite reserve, & pleads that the grant by the Federal Government of the coal under the foreshore & under the sea opposite such lands is ultra vires of the Federal Government, as neither by virtue of any grant of the Province nor by the B. N. A. Act was any title conveyed to the Federal Government.

G.T.R. Accident Award.—A. F. Beatty, a mail clerk, who had his spine injured in the disaster at Murray Hill, about a year ago, entered suit against the Co., which has been settled by agreement, he receiving \$3,650.

Great Northern of Canada.—A special general meeting will be held at Quebec, Oct. 24, to authorize the issue of bonds upon the whole mileage of the Co.'s road, constructed & under contract to be constructed, & upon the bridge over the Ottawa River, such bonds to replace pro tanto the bonds already issued or authorized.

Hereford Ry.—At the annual meeting, Sep. 5, Hon. F. Jones, Portsmouth, N.H., was elected President, with the following other directors: C. Page, Portsmouth, N.H.; G. Van Dyke, & Hon. I. W. Drew, Lancaster, N.H.; P. H. Whittemore, Brookline, Mass. As the road is leased for 999 years to the Maine Central there was no business before the meeting except of a routine nature. The line runs from Beecher Falls, Vt., to Lime Ridge, Que.

Intercolonial Ry. Extension to Montreal.—A proclamation of the Governor-General-in-Council has been issued, declaring in effect from Sept. 26, the Act passed in the last Dominion session, to confirm the agreement between Her Majesty & the G.T.R. Co., for the purpose of securing an extension of the I.C.R. to Montreal.

Inverness & Richmond.—Suit has been entered by L. G. McKam, a Nova Scotia contractor, against P. Ryan, of Toronto, over the sale of the charter for this line to Mackenzie, Mann & Co. Mr. McKam claims he was a partner in securing the option & in making the sale last June, & that as owner of one-eighth share in the concern, he obtained from the owners of the other seven-eighths a deed of their interest for the purpose of a sale that he negotiated with Mr. Ryan, who afterwards sold the whole thing.

The Kaslo & Slovan Ry. Co.'s annual meeting will be held at Kaslo, B.C., Oct. 11.

Kingston & Pembroke.—It is stated that the receipts for Aug. increased 26½% over Aug., 1898.

Miles Canyon & Lewes River Tramway Co.—M. St. John is suing this Co. for \$1,000, amount of promissory note unpaid.

Ottawa & Gatineau Ry. & Pontiac Pacific Jct. Ry.—There has been deposited in the Office of the Secretary of State a mortgage deed from these companies to A. J. Ferguson & J. Elliot, of Montreal, as trustees, to secure a bond issue made by the companies.

The Pembroke Southern, which was built last year from Pembroke, Ont., to Golden Lake, on the Canada Atlantic Ry., 21 miles, has been leased to the latter Co. for 5 years, the C.A.R. paying a percentage of the earnings as rent. The C.A.R. thus gets connection with Pembroke, where it will compete with the C.P.R.

Pullman Palace Car Co.—A Boston director is quoted as saying that this Co. will not make any extra distribution to stockholders until another liberal surplus has accumulated.

Qu'Appelle, Long Lake & Saskatchewan.—Net loss in operating for July, \$3,677.77, against \$4,676.59 for July, 1898.

Quebec & Lake St. John earnings for 4 months to July 31, were \$15,646 more than for corresponding period.

Quebec Central.—The directors recently gave notice that a majority of the 5% prior lien bonds had been exchanged for the new 4% debenture stock. Unexchanged bonds are not now received on the terms set forth in the circulars issued in May & June, the cash bonus of £3% mentioned therein having been reduced.

Following is the traffic statement for Aug.: Gross earnings for Aug., \$57,385.85, against \$50,309.60 in Aug., '98; working expenses: \$33,291.28, against \$28,262.82; net earnings: \$24,094.57, against \$22,046.78.

Gross earnings Jan. 1 to Aug. 31, \$333,009.39, against \$299,065.74 for corresponding period; working expenses: \$214,504.14, against \$201,739.85; net earnings: \$118,505.25, against \$97,325.89.

Rutland & Noyan.—At the annual meeting at Noyan Jct., Que., Sept. 6, the following

were elected: President, F. H. Button; Clerk & Treasurer, H. G. Smith; Engineer, J. W. Burke; other directors, P. W. Clement & C. L. Pierce.

St. Lawrence & Adirondack. At the annual meeting at Montreal Sep. 6, the following directors were elected:—W. S. Webb, H. L. Sprague, C. M. Depew, J. J. Astor, E. VanEtten, J. H. Purdy, New York City; M. E. McClary, Malone, N.Y.; G. H. Burnett, Utica, N.Y.

White Pass & Yukon.—The following documents have been deposited in the office of the Registrar-General of Titles at Victoria, B.C.:—A deed of covenant & a deed of agreement dated October 7, 1898, & of June 20, 1899, both made between the British-Yukon Mining, Trading & Transportation Co., The British Columbia-Yukon Ry. Co., The Pacific & Arctic Ry. & Navigation Co., The Pacific Contract Co., The White Pass & Yukon Ry., F. Pavy & C. C. Macrae, & The Railway Share Trust & Agency Co.

Traffic receipts week ended Sep. 7, \$63,800.

RAILWAY APPOINTMENTS, Etc.

Canadian Pacific.—C. R. Hosmer, who has been Manager of the Co.'s telegraphs since their inception, has been elected a director of the Co.

A. C. Henry, Purchasing Agent, has been promoted to the position of General Purchasing Agent. E. N. Bender, who has been his chief clerk for some years, has been appointed Assistant General Purchasing Agent.

H. L. Penny, heretofore Auditor of Disbursements, has been appointed General

Auditor, necessitating the following appointments: J. Leslie, Auditor of Disbursements; A. A. Goodchild, Assistant Auditor of Disbursements; C. J. Black, Auditor of Agencies.

In reference to the change in the superintendency of the C.P.R. between Fort William & Winnipeg, we are officially informed that J. A. Cameron specially requested to be relieved of that division on account of ill health. He recently returned from California & has been appointed Superintendent of the Crow's Nest Branch, including the line from Dunmore Jct. to Kootenay Landing, vice M. H. MacLeod, assigned other important duties. Mr. Cameron's office will be at Cranbrook, B.C.

General Superintendent Marpole, of the Pacific Division, gives notice that the portion of his circular of July 1, relating to the appointment of L. R. Johnson, is amended to read as follows: "L. R. Johnson has been appointed Superintendent Engineer of the Co.'s shops at Vancouver, reporting to and taking instructions thereof from the General Superintendent. He will also, as hitherto, have general supervision of the engine departments of the Co.'s Steamships, in connection with which he will report to & take instructions from the Superintendent of that Department, A. Piers."

R. J. E. Scott, of Montreal, has been appointed Chief Inspector of Time Service.

G. M. Sherlock, of the train despatching staff at Winnipeg, has been appointed Chief Train Despatcher at Rat Portage, Ont.

W. Manson, Local Auditor at Vancouver, has been transferred to other duties in the Co.'s Montreal offices.

W. H. Brodie, Chief Clerk in the Assistant

C. P. R. LANDS.

The Canadian Pacific Railway lands consist of the odd-numbered sections along the Main Line and Branches, and in Northern Alberta and the Lake Dauphin District. The Railway Lands are for sale at the various agencies of the company in Manitoba and the North-West Territories at the following prices:

Lands in the Province of Manitoba average \$3 to \$6 an acre.

Lands in Assiniboia, east of the 3rd meridian, average \$3 to \$4 an acre.

Lands west of the 3rd meridian, including the Calgary District, generally \$3 per acre.

Lands in Northern Alberta and the Lake Dauphin District, \$3 per acre.

TERMS OF PAYMENT.

The aggregate amount of purchase money and interest is divided into ten instalments, as shown in the table below; the first to be paid at the time of purchase, the second two years from the date of purchase, the third in three years, and so on.

Interest on the outstanding purchase money is payable in one year, except in case of an actual settler who breaks up at least one-sixteenth of the land within that time. No rebate of interest is allowed on hay or grazing lands.

The following table shows the amount of the annual instalments on a quarter section of 160 acres at different prices under the new conditions:

160 acres at \$3.00 per acre, 1st instalment \$71.90, and nine equal instalments of \$60.
160 acres at \$3.50 per acre, 1st instalment \$83.90, and nine equal instalments of \$70.
160 acres at \$4.00 per acre, 1st instalment \$95.85, and nine equal instalments of \$80.
160 acres at \$4.50 per acre, 1st instalment \$107.85, and nine equal instalments of \$90.
160 acres at \$5.00 per acre, 1st instalment \$119.85, and nine equal instalments of \$100.
160 acres at \$5.50 per acre, 1st instalment \$131.80, and nine equal instalments of \$110.
160 acres at \$6.00 per acre, 1st instalment \$143.80, and nine equal instalments of \$120.

DISCOUNT FOR CASH. If land is paid for in full at time of purchase, a reduction from price will be allowed equal to ten per cent. of the amount paid in excess of the usual cash instalment.

Purchasers paying any instalment, or more, one full year before the date of maturity, will be allowed a discount on the amount of the instalment or instalments so paid at the rate of six per cent. per annum.

Interest at six per cent. will be charged on overdue instalments.

Write for maps and full particulars.

L. A. HAMILTON, Land Commissioner,
F. T. GRIFFIN, Asst. Land Commissioner,
WINNIPEG.

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For Steam & Electric Railways, Steamship, Express, Telegraph, Telephone and Advertising purposes.

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For doors, etc., 23 x 3½ inches, blue letters and border on white ground, carried in stock with following lettering.

Waiting Room	Ladies' Toilet	Private Office	Dining Room
General Waiting Room	Men's Toilet	Freight Office	Lunch Room
Ladies' Waiting Room	Baggage Room	Ticket Office	Smoking Room
Men's Waiting Room	Agent's Office	Telegraph Office	No Admittance

The following are carried in stock, size 10 x 2½:—

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Railway numbers for bridges, mile posts, signal houses, etc.; single figures on plates 8½ in. high.

These signs last practically for ever, they never fade or tarnish, they are ever bright and attractive, they are absolutely impervious to heat or cold, they are the only signs that will withstand the effects of weather in all climates.

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 Agents for the Imperial Enamel Co. of Birmingham,
 29 Melinda Street, Toronto, Canada.

BRANCH OFFICE—197 Lombard Street, Winnipeg, S. A. Erskine, Resident Agent.

General Passenger Agent's office at Toronto, has been promoted to be Chief Clerk in the General Passenger Agent's office at Winnipeg. J. J. Brignall, heretofore in charge of advertising at the Toronto office, succeeds him as Chief Clerk there.

G. W. Lawson, Report Clerk in the City Ticket Department at Toronto, has gone to Montreal as Assistant Travelling Auditor.

J. S. Lawrence, Train Master & Agent of the Nakusp & Slocan branch, has been appointed Trainmaster on the West Robson-Midway branch. He is succeeded at Nakusp by A. F. McCully, formerly Despatcher at Nelson.

Central Vermont.—W. B. Hatch having resigned, J. B. Laurie has been appointed purchasing Agent & General Storekeeper.

Duluth, South Shore & Atlantic.—The following officers have been elected: President, General S. Thomas, New York; First Vice-President, T. G. Shaughnessy, Montreal; Second Vice-President & General Manager, W. F. Fitch, Marquette, Mich.

Grand Trunk.—W. F. Cookeson, who has been Ticket Clerk in the Dearborn St. station, Chicago, for the past 10 years, has been appointed Chief Clerk to First Assistant General Passenger Agent Bell, at Chicago.

Great Northern (U.S.A.)—C. P. Adams, Superintendent of Telegraph, with headquarters at St. Paul, Minn., has resigned.

Intercolonial.—Several changes have recently been made among the trackmasters. J. McGovern, formerly G.T.R. Roadmaster at Brockville, Ont., has been appointed Trackmaster of the Campbellton & St. Flavie section. J. Henfield succeeds P. J. Comeau, retired, between St. Flavie & Riviere du Loup. J. Yeo, jr., succeeds his father, J. Yeo, sr., on the Riviere du Loup & Levis section, the latter retiring on account of age.

J. H. Brossard, has been appointed Chief Train Despatcher at Riviere du Loup, succeeding C. Belleau, assigned to other duties.

Michigan Central.—W. Macmillan, heretofore Assistant General Freight Agent at Buffalo, N.Y., has been appointed Assistant General Freight Agent, with headquarters at Chicago, Ill., succeeding B. E. Hand. F. Zimmerman has been appointed Assistant General Freight Agent, with headquarters at Buffalo, N.Y., succeeding Mr. Macmillan.

United Counties.—Vice-President L. F. Morison has issued a circular announcing the appointment of A. Ouellette as General Traffic Manager, with headquarters at St. Hyacinthe, Que., vice H. Upton, resigned. He will also have control over all the other departments of the road. P. Evans, heretofore of the G.T.R. Audit Department, has been appointed Accountant & Auditor, vice H. Upton.

White Pass & Yukon.—S. Irwin has been appointed General Traffic Manager, with headquarters at Skagway, Alaska, succeeding L. H. Gray, resigned. W. B. King, formerly Travelling Auditor of the Great Northern (U.S.A.) has been appointed Assistant Auditor of the W.P. & Y., succeeding S. Irwin.

Mainly About People.

General Manager Teall, of the Tilsonburg, Lake Erie & Pacific Ry., is suffering from fever.

T. R. Secord, late Deputy Superintendent of the Welland Canal, died at Port Colborne, Ont., recently, aged 69.

Mrs. T. G. Shaughnessy & family returned to Montreal early in Sep., after spending the summer at St. Patrick, Que.

C. R. Hosmer, Manager C.P.R. Co.'s telegraphs, returned to Montreal Sep. 14, after a two-months' visit to Europe.

W. R. MacInnes, General Freight Agent, C.P.R., Winnipeg, has been elected a member of the Winnipeg Board of Trade.

Mr. Hibbard, until recently of the Ottawa & New York Ry., has purchased the Hancock Iron Mine near Ironsides, Ont.

The residence of W. B. McKenzie, Chief Engineer of the I.C.R. at Moncton, N.B., was considerably damaged by fire, Sep. 7.

Cornelius Vanderbilt, head of the Vanderbilt family, & of the Vanderbilt system of railways, died in New York Sep. 12, of paralysis.

Collingwood Schreiber, Deputy Minister of Railways, has gone to British Columbia to inspect the Crow's Nest Pass and other railways.

At the recent convention of the National Railroad Blacksmiths' Association, in Milwaukee, D. B. Swinton, Montreal, was elected Second Vice-President.

Miss Amy Price, only daughter of the Chief Train Despatcher of the I.C.R. at Campbellton, N.B., was married there Sept. 20, to Dr. A. H. Hall, of Quebec.

G. H. Ham, of the Literary Bureau of the C.P.R. Passenger Traffic Manager's office, is making an extended tour between Lake Superior & the Pacific Coast.

E. A. Donkin, recently appointed Superintendent of the Dakota Division of the Great Northern (U.S.A.), is a Nova Scotian, & was once a despatcher at New Glasgow.

On leaving Stratford, Ont., recently for Hamilton, J. H. Hanna, Division Freight Agent of the G.T.R., was presented with an address, etc., by a member of citizens.

Miss Margaret Whyte, eldest daughter of the Manager of the C.P.R. Western Lines, was married at Winnipeg Sep. 16, to F. Fisher, barrister, son of Jas. Fisher, M.L.A.

Mrs. T. Tait, wife of the Manager of the C.P.R. Eastern Lines, has returned to Montreal after spending the summer with her parents, G. R. R. & Mrs. Cockburn, at Birch Point, Muskoka.

Mrs. Leonard, mother of the General Superintendent of the C.P.R.'s Ontario & Quebec Division, died Sep. 28 at Toronto Jct., where she lived with her daughter, Mrs. Fair. She was 80 years old.

G. F. Evans, formerly Manager of the Westinghouse Mfg. Co., at Hamilton, Ont., who went to Russia last year in the Westinghouse interests, has entirely severed his connection with them.

G. McL. Brown, Executive Agent of the C.P.R. in British Columbia, had a serious illness at Rossland early in Sep., from the effects of blood poisoning caused by the extraction of a tooth.

On leaving Windsor, Ont., recently, to take the General Agency of the C.P.R.'s freight department in Chicago, W. A. Kittermaster was presented with a handsome cut-glass punch bowl & glasses.

On leaving Medicine Hat, Assa., recently for Calgary, Alta., his new headquarters, Superintendent Niblock, of the C.P.R., was entertained at a public dinner & presented with an address & diamond ring.

A. E. Kirkpatrick, Resident Engineer of the C.P.R. at Smith's Falls, Ont., recently resigned to accept a position as engineer on the Egyptian Government Railways, under Major Girouard, with headquarters in Cairo.

S. J. Chase, Commercial Agent of the Michigan Central, having resigned, has been succeeded by J. F. Morris, now Travelling Freight Agent. W. J. Leahy, Travelling Freight Agent for Canada, succeeds Mr. Morris.

On being transferred from the roadmaster-ship of the C.P.R. between Cartier & North Bay to a similar position on the Sault branch, W. Kelly was presented with a silver tea ser-

vice & address by the foremen & men of his old district.

I. Deyell, formerly foreman of the T. H. & B. locomotive department at Hamilton, Ont., is suing Master Mechanic Christopher for damages for slander, claiming that Christopher stated that he had been in the habit of being intoxicated while on duty.

T. D. Sheridan, who was connected with the G.T.R. for 30 years, the greater part of which time was spent in Buffalo, N.Y., where he was Northern Passenger Agent until 3 years ago, when he resigned on account of ill health, died at Buffalo recently.

J. P. Dowling, formerly secretary to D. McNicoll, of the C.P.R. at Montreal, has been appointed Manager for the shipping house of Dodwell & Co., Ltd., at their Tacoma, Wash., office. Mr. Dowling was with them for eight years in Hong Kong, China.

Jas. Baker, of Cape Cove, Que., one of the Government representatives on the directorate of the Atlantic & Lake Superior Ry., & a prominent Gaspesian, was stricken with apoplexy on the str. Admiral, Sept. 30, & was landed at Port Daniel, where he died a few hours later.

The employes of the Southern Division of the G.T.R. & the Buffalo Division of the Wash-bash have presented a cabinet of sterling silver, containing 149 pieces & costing \$500, to G. C. Jones, formerly their superintendent, & now Superintendent of the Middle Division of the G.T.R. at Toronto.

In a private letter received at Ottawa towards the end of Sep., D. D. Mann stated that he would return to Canada from China immediately. After having looked over the ground he has come to the conclusion that there is nothing to be secured there in the way of paying railway contracts.

Mrs. W. R. MacInnes, wife of the General Freight Agent of the C.P.R. at Winnipeg, & her daughter, arrived in Montreal early in Sept. from Cap a L'Aigle, & are the guests of Mrs. MacInnes' mother, Mrs. Cross, Cote des Neiges Road. They will probably spend the winter in Montreal, going to Winnipeg in the spring.

J. N. Hill, eldest son of J. J. Hill, has been elected third vice-president of the Great Northern Ry. Co., (U.S.A.) L. W. Hill, the second son, has been elected vice-president of the Eastern R.R. of Minnesota, the position recently held by J. N. Hill. Both sons are college graduates of only six years' standing, & have spent several months in each department of the road, from construction & grading to the general manager's place.

It is rumored that President Lucius Tuttle, of the Boston & Maine R., will become president also of the Maine Central R.R., on the retirement of President Wilson, of the latter road. Mr. Tuttle will thus be at the head of the two large systems & G. F. Evans will remain as vice-president of the Maine Central. Mr. Tuttle was from 1887 to 1889, Passenger Traffic Manager of the C.P.R., leaving to become Commissioner of the Trunk Line Association, passenger department, afterwards becoming General Manager & Vice-President of the New York, New Haven & Hartford & then President of the Boston & Maine.

The Right Hon. W. J. Pirrie, who designed & constructed the new Atlantic liner, the Oceanic, was born in Quebec in 1847. After completing his education at the Royal Belfast Academical Institution, he devoted himself to engineering & shipbuilding. He is now chairman & principal of Harland & Wolff, Ltd., which has designed & built some of the largest & fastest steamers afloat, including the Majestic, Teutonic, Canada, Cymric & Pennsylvania. The firm's tonnage out-put for 1896 was the highest on record, namely 18,316 tons.

Mr. Pirrie, besides being a J.P. for the city of Belfast & for the counties of Antrim & Down, holds various other titles to distinction. He is a member of the Privy Council in Ireland, & has been Lord Mayor of Belfast. This year he is on the roll for High Sheriff for County Down. Although a busy man, he always finds time to receive & converse with visiting Canadians, & he corresponds regularly with many old friends in Quebec, Montreal & Ottawa.

The C. N. R.'s Superintendent.

The Dauphin, Man., Press has this to say of D. B. Hanna, whose portrait was published in our Aug. issue:—"Though the early frosts have whitened the Superintendent's hair somewhat he is still a young man, and even what is better than youth, he possesses a good constitution. In early life he received a sound commercial training in one of the business centres in England. This has stood him in stead in his after life in Canada. Several years ago he caught the immigration fever & crossed the Atlantic with the intention of becoming a farmer. This purpose he carried out, & for a time devoted his energies to making the prolific soil of Manitoba blossom with wheat. But what was said of Grant may be applied to Supt. Hanna, that 'you can't make a tanner out of a man who is destined to be a general.' His natural bent was businessward, & it was not long before he entered the offices of the M. & N.W.R. at Portage la Prairie. Though it is not on record that he made any phenomenal rise, he occupied the post of Treasurer of the Co. at the time he severed his connection from it. In 1896, at the time the first section of the Dauphin road was completed, the promoters, Mackenzie, Mann & Co., were casting about for a man to take the management of the road. For various reasons the choice fell on D. B. Hanna. At that time the Dauphin road was an unknown quantity. It commenced nowhere & practically ended at the same destination. Three years ago William Mackenzie was not such a well-known man as he is to-day. There were misgivings as to the road's success. Predictions were freely made that it would be thrown back on the hands of the government. But the fertile brain of Mackenzie was at work. The Dauphin road was a link in a chain it would be hard for even an optimist to predict the length or breadth of.

"But to return to Mr. Hanna. From the day he assumed control the road was in cap-

able hands. It was not only able to pay the interest on its bonds, but had a good balance on the right side of the ledger after all liabilities were met. The importance of the Dauphin road as a factor in the province's development may be gleaned from the fact that the road carried nearly a million bushels of wheat last season. Outside of Mr. Hanna's thoroughness as a business & railway man, much of his success is due to his genial disposition. Busy man that he is it is rarely that he hasn't time to receive a caller or listen to the grievance of a shipper. Of course, with the ever increasing volume of business & the vast projects the Co. has in view the personal relations of the patrons of the road with the Superintendent must cease to a great extent. When complaints have got to run the gauntlet of red tape it will then be learned what the true loss is.

"And now for a peep into the future. The writer is no prophet & does not lay claim to be blessed with the vision of a seer. A few things, however, appear within the range of possibility. Firstly, the Canadian Northern Ry. will be one of the great transcontinental lines. Secondly, it will have termini on three continents, America, Europe & Asia. In the development of this picture there will be no more interesting figure to watch than that of D. B. Hanna."

Grand Trunk Subsidiary Companies.

The annual meetings of the following companies have been held recently, & officers elected as mentioned below:

INTERNATIONAL BRIDGE at Buffalo, Sep. 30, President, C. M. Hays; Vice-President, J. Bell; Sec.-Treas., C. Percy; other directors, H. W. Sprague, G. F. Brownell, F. H. McGuigan, E. W. Meddaugh.

ST. CLAIR TUNNEL at Detroit, Mich., Oct. 2, President, C. M. Hays; Vice-President, J. Bell; Superintendent of Tunnel, F. H. McGuigan; other directors, E. W. Meddaugh, W. J. Spicer, A. Vidal, C. Mackenzie; Sec.-Treas., C. Percy.

MICHIGAN AIR LINE at Detroit, Oct. 2, President, C. M. Hays; other directors, W. J. Spicer, J. H. Muir, E. W. Meddaugh, J. Bell; Sec.-Treas., C. Percy.

CHICAGO, DETROIT & CANADA GRAND TRUNK Jct. Ry. at Detroit, Oct. 2, President, C. M. Hays; Vice-President, J. Bell; Sec.-Treas., C. Percy; other directors, W. J. Spicer, E. W. Meddaugh.

DETROIT, GRAND HAVEN & MILWAUKEE Ry. at Detroit, Oct. 2, President & General Manager, C. M. Hays; other directors, J. Pridgeon, Jr., C. Buncher, E. W. Meddaugh, G. B. Reeve, J. Hobson, W. J. Spicer, C. Percy, F. H. McGuigan; Sec.-Treas., J. H. Muir.

TOLEDO, SAGINAW & MUSKOGON Ry. at Detroit, Oct. 2, President & General Manager, C. M. Hays; other directors, C. J. Church, E. W. Meddaugh, G. B. Reeve, F. H. McGuigan, W. Cotter; Sec.-Treas., J. H. Muir.

CINCINNATI, SAGINAW & MACKINAW R.R. at Detroit, Oct. 2, President, A. W. Wright; Vice-President & General Manager, C. M. Hays; other directors, W. R. Burt, G. M. Stark, L. O. Fisher, E. W. Meddaugh, F. H. McGuigan; Sec.-Treas., J. H. Muir.

CHICAGO & GRAND TRUNK Ry. at Chicago, Oct. 3, President, C. M. Hays; other directors, F. A. Howe, E. W. Meddaugh, W. J. Spicer, G. B. Reeve, D. F. Skinner, A. Dixon; Sec., C. Percy; Treas., J. H. Muir.

GRAND TRUNK Jct. Ry. at Chicago, Oct. 3, President, C. M. Hays; other directors, F. A. Howe, E. W. Meddaugh, G. B. Reeve, W. J. Spicer; Sec., C. Percy; Treas., J. H. Muir.

Railway Committee of Privy Council.

Bedlington & Nelson Ry. & C.P.R.—On Sep. 1 two orders were issued by the Committee, the 1st giving the Bedlington & Nelson Ry. Co. power to connect its railway at two points on the Crow's Nest Pass branch of the C.P.R., & the 2nd granting to the Bedlington Co. running powers over the C.P.R. between these two points, a distance of 8½ miles. The application was made to the Committee several months ago by J. A. Gemmill, Counsel for the B. & N. Co., at Ottawa. The charter granted the Co. by the B. C. Legislature authorized it to construct a railway from the foot of Kootenay Lake, southwards to Bedlington, on the international boundary, whence the line continues to Bonner's Ferry, Idaho. Its construction is nearly completed. When the C.P.R. obtained a subsidy from Parliament in 1897 towards the construction of the Crow's Nest Pass branch, provision was made in the Act that the Committee might grant running powers over such road to any other company applying for the same upon such terms as the Committee might fix. The C.P.R. Solicitor opposed the application upon several grounds, but after three differ-

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ent hearings, during which Counsel for the B. & N.R. contended that the portion of the route in question was of such a mountainous character that another track could not be constructed except at enormous expense, the Committee granted the application.

The terms of the second order are that it is made for the purpose of relieving the B. & N. Co. of the expense of building about 8½ miles of track parallel to the C.P.R. The B. & N. Co. obtains the right jointly with the C.P.R. of using & enjoying the road, road-bed, track, side tracks, switches, bridges & cattle guards of the section of 8½ miles & the station at Sirdar & all the fixtures pertaining thereto & to run its trains & locomotives over the section, subject to rules & conditions which are set out. The use of the section is for 10 years & thereafter until the C.P.R. shall require the use of it, & in case of dispute as to whether the C.P.R. does require it, the same shall be settled by the Committee. The expense of maintaining the 8½-mile section is to be borne jointly, & in addition the B. & N. Co. is to pay the C.P.R. a monthly rental of \$336.50, or \$4,038 a year, which represents the interest on half the cost of constructing the 8½ miles, after deducting the Dominion subsidy of \$6,400 a mile. Differences are to be settled by arbitration. The order contains several other provisions, but as these relate more particularly to the operation of the 8½ miles by both companies it is not necessary to give them here.

Northern Pacific & C.P.R.—At a meeting of the committee on Oct. 7 two applications of the N.P.R. to cross C.P.R. lines in Manitoba were taken up. The first was for permission to make a connection, for the purpose of exchanging freight, with the C.P.R. Southwestern Branch at Methven. The obligations which rested upon both companies to make this connection were set forth by J. S. Ewart, Q.C., who represented the N.P.R. G. M. Clarke and C. Drinkwater were present for the C.P.R. Mr. Ewart pointed out that in the order already granted in this case by the committee it was provided that interlocking & derauling switches be used, while there was no necessity for such, as all that was wanted was a siding, so that both companies could use it for dropping off and picking up freight cars. The committee granted an order for a connection by means of an ordinary switch. At the suggestion of the Minister of the Interior the following was incorporated in the order: "And each company shall, with reasonable diligence & expenditure, remove from the said switch and forward by its line the freight cars & freight placed for that purpose upon the said switch by the other company."

An interim order was also granted the N.P.R. to cross the C.P.R. on Pacific avenue, Portage la Prairie, until Nov. 15 before the installation of the interlocking appliances referred to in a previous order.

Canadian Ticket Agents' Association.

A large number of members, many of whom were accompanied by their wives, the party numbering over 160, left Ontario, Oct. 7, in six sleeping cars placed at their disposal by the C.P.R. management, the special train also containing a dining car and a baggage car. The cars were hauled to North Bay by the G.T.R. as a special, & were taken from there by the C.P.R., Winnipeg being reached on the morning of Oct. 9. The party was received at the Winnipeg station by local railway officials, the Mayor & others, a hearty welcome being given. In the afternoon the visitors assembled at the City Hall, where they were formally welcomed by the Mayor. The afternoon was spent in seeing the sights of the city, & in the evening a reception was held at the Clarendon Hotel, where the annual dinner also took place. The business meeting was

held Oct. 10, when the following officers were elected: President, E. W. Churchill, Collingwood; 1st Vice-President, W. Jackson, Clinton; 2nd Vice-President, M. McNamara, Walkerton; 3rd Vice-President, W. H. McKay, St. John, N.B.; Secretary-Treasurer, E. de la Hooke, London; Hon. Counsel, J. H. Flock, Q.C.; Auditor, H. Palmer, St. Thomas; Executive Committee, C. E. Morgan, Hamilton; W. H. Harper, Chatham; T. Long, Port Hope; J. W. Tierney, Arnprior; C. C. Young, London.

It was decided to hold the next annual meeting at Hamilton, Ont., on Oct. 10, 1900. Vancouver, Victoria, & London, Ont., were proposed, but were withdrawn in favor of Hamilton. Vancouver and Victoria seemed to be favored for 1901.

On Oct. 11 the party left Winnipeg by special Northern Pacific train for St. Paul, stopping over at Grand Forks. Milwaukee & Chicago were also visited on the return journey.

Time Service on the C.P.R.

Manager Tait has issued a circular stating that it is proposed to reorganize the time service of the Co. on the lines east of Fort William. R. J. E. Scott is appointed Chief Inspector of Time Service, with office at Montreal. He will have general supervision of the Co.'s clocks & of the standard watches to be carried by employes, & his instructions in connection therewith must be observed.

Train masters, road foremen of locomotives, roadmasters, bridge & building masters, conductors, engineers, train baggagemen, brakemen, firemen, yard masters, & yard foremen must each carry a standard watch when on duty.

The minimum standard of excellence adopted by the Co. is a grade known among American movements as 17 jewelled, Breguet hair spring, patent regulator, adjusted to temperature, isochronism, & at least three positions, & corresponding to Waltham "Appleton, Tracy & Co. nickel," Elgin "B. W. Raymond nickel," Hampden "New Railway," Illinois "Bunn," Hamilton "936," & all grades equal or above, the variation of which must not exceed 30 seconds a week.

Employes required to carry standard watches must submit them for half-yearly inspection within the months of January & July of each year, to the various watch inspectors appointed at local points, a list of whom is given.

Grand Trunk Betterments, Etc.

It is expected that the Victoria Jubilee Bridge, already open for railway traffic, will be completed during Oct., & open for vehicular & pedestrian traffic. Good progress is being made with the approaches & the iron screens & guards.

The Co. has acquired some land at St. Lambert, opposite Montreal, for the purpose of constructing a dyke to protect the piers of the Victoria Jubilee Bridge.

The hanging bridge over the tracks at the Point St. Charles yard, Montreal, which has been used for many years, is to be removed to make room for the additional tracks that the increased traffic requires.

Work has been commenced on improvements to Bonaventure station, Montreal. The wooden sidewalk at the eastern front is to be replaced by asphalt. In front of the station a fountain will be erected, & at either end of the rectangle a grass plot will be laid down & flowers planted, while the entrance & exit for vehicular traffic will be regulated by the placing of stone posts at each end. The canopy that at present runs the length of the building & extends over the sidewalk will be extended out another 15 ft., so as to afford protection against the weather to passengers entering or leaving cabs or buses. Some important

structural changes are also to be made to the station building, which will, it is said, include the removal of the second-class waiting-room & closets. The changes, when carried out, will enable the I.C.R. officials, who are at present inadequately housed in a room belonging to the Customs Department at the station, to take up quarters of a more commodious character. Arrangements will be made for their occupying two large rooms, one of which will be utilized as an office & the other for the stores of the parlor, sleeping & dining cars.

The yards at York, near Toronto, are being remodelled for the purpose of forming a west-bound yard south of the main track. There will be 7 or 8 long tracks, capable of containing 80 cars each, while a new shunting track will be constructed to permit shunting without fouling the west-bound main line.

The daily papers have recently stated that the Co. will discontinue the use of the I.C.R. station at Levis & build one of its own, as the I.C.R. station is much overcrowded & that the G.T.R. will operate its own ferries between Levis & Quebec. This is very misleading. The G.T.R. passenger trains have heretofore made joint use of Levis station with the I.C.R., but owing to its crowded condition the G.T.R. has discontinued running its passenger trains into it & now stop them at its own station at Point Levis, from which station its own ferries have hitherto run & continue to run to the city of Quebec. The only change in the situation is that the G.T.R. interchanges its business with the I.C.R. at Point Levis, & ferries from there to Quebec, instead of from the lower station.

On the Middle Division about 120 miles are being relaid with heavy steel rails this year. More than 500,000 ties have been replaced & some 80 miles have been rebalasted.

A contract has been let for substituting a heavier superstructure for the old bridge over the Magog River, Que. The old piers & abutments will be utilized.

The surveys for the improvement of grades & the laying of double track between Hamilton & Niagara Falls is about completed, & it is said contracts for the work will be let at an early date, though nothing definite has yet been decided on.

Sarnia rate-payers have passed a by-law granting \$2,559 for building a switch from the G.T.R. yards to the Dominion Wire Manufacturing Co.'s works.

Canadian Pacific Betterments, Etc.

Hotel at Ste. Agathe.—An unconfirmed press report says that the Co. is about to erect an hotel at Ste. Agathe, on the Labelle branch, 63 miles from Montreal. The Co. has purchased 350 acres, 15 of which has a frontage on Lake Sable. The hotel, which will be on the shore of the Lake, surrounded by charming mountain scenery, will contain 200 rooms. It will supply a want of first-class hotel accommodation which has long been felt by the numerous visitors to that picturesque resort.

Montreal to Toronto.—Owing to increased traffic & the heavier tonnage of trains, it has become necessary to make improvements in the permanent way. With a view to improving the alignment & grades on the Havelock section between mileage 148, near Bathurst, & mileage 210, near Tweed, surveys were made during 1898 at 17 different points aggregating in length about 31 miles, which includes alternative changes at different points. During July & Aug. of this year a portion of the foregoing, between mileage 154 & 180 (Maberly & Ardendale), was taken up & several desirable deviations re-surveyed with cross-sections, & estimates of cost made. Two of these changes are proposed to be carried out this year, viz:—at mileage 154 & mileage 159-161. The work consists chiefly

of rock cuttings & embankments to be widened, with entirely new road-bed in places, & when it is remembered that the line was first built with a view to economy in construction, & equalization of quantities in cuttings & embankment, it is obvious that in making these changes a large surplus of excavation must be met with, & this material will be utilized towards grading the road-bed for prospective double track. The deviation at mileage 154 involves an expenditure of \$6,000, & will take out a double reverse curve, of which the total curvature is 16° 06', substituting a tangent, without any appreciable change in the existing gradient (47 ft. per mile) & reducing the length of line by 15 ft. The second change is between mileage 159 & 161, involving an expenditure of \$30,000. This has been under construction since Aug., & the following gives an idea of the improvement to be accomplished. This alteration necessitates crossing the present track at 5 different points. The length of track is reduced 50 ft. The number of curves taken out is 6. The total degree of curvature removed is 114°, & there is substituted a tangent of 1¼ miles, with 2 light curves of 11,460 ft. radius, with a total angle of 3° 50', & 1 curve 5,730 ft. radius, with a total angle of 7° 45', while the gradient is uniform for the whole distance (43 ft. per mile) the same as existing with the original alignment. The Co. has at work 150 men & 12 teams, & it is expected that this work will be completed by Nov. 30. Owing to the interference with traffic on the present track it was thought desirable to do the whole work under the Co.'s road-master, instead of letting it by contract.

Fort William.—In order to accommodate the vastly increased traffic, between 3 & 4 miles of additional track have been laid in the yard this year, raising the capacity of the yard tracks to 16 miles. (Sep., pg. 267.)

The round house to replace the one burned last spring will be entirely stone. It will have 18 stalls. For the present the old round house will be used as an auxiliary. (May, pg. 139.)

Fort William to Winnipeg.—The work of extending the sidings to 4,000 ft., thus doubling their length & making them available for part of the second track which will soon have to be built, is about completed. (Aug., pg. 233.)

Rat Portage.—The basement of the station building has been completed, & work is being pushed on the superstructure. The old station is to be moved down the track near to the Central School building & will be devoted to the use of the local operating officers.

Work is also proceeding on the 20-stall round house. (Sep., pg. 267.)

Bonnett Lake Branch.—In Aug. Manager Whyte, of the Western lines, stated that it had been found that the first line run by the surveyors was unsuitable for the railway. It was, therefore, necessary to revise it, a work that can be better done in winter than at the present season; consequently the line would be revised next winter, & everything got in readiness for the construction of the road next spring. Mr. Whyte added that if the production of the Bonnett Lake Co.'s yards came up to the standard of the samples the success of the enterprise was assured, & the brick, if up to the specimen quality, would probably be used in the construction of the C.P.R. hotel at Winnipeg. In the middle of Sep. it was announced in Winnipeg that A. C. Smith had been given a contract for grading the branch. (June, pg. 172.)

Winnipeg Terminals.—It is not likely that much, if any, work will be done on the station & hotel buildings this year, but there is little doubt work will be started early next spring. It is said the building will be 320 by 208 ft., & 6 stories high, with towers, & that it will contain not less than 350 bedrooms. A report that the Co. was buying land near the post office for an hotel site has been contradicted. A combined station & hotel will be erected on & near the site of the present station. (Sep., pg. 267.)

An addition of 10 stalls is being made to the east end round house. Some other improvements to the shops, etc., have received consideration, but will not be proceeded with at present.

The Snowflake Branch, which starts from the first siding on the Pembina Mountain Branch, 118 miles southwest of Winnipeg, is about completed to its terminus at Snowflake, & will be open for traffic this fall. (Sep., pg. 267.)

Deloraine to Waskada.—The grading of this branch has been completed. Track will be laid at once, & it is to be ready for traffic this fall. (Sep., pg. 267.)

North Star Mine Branch.—In reference to the conflicting reports about this British Columbia branch, mentioned in our last issue, we are officially informed that construction is being proceeded with. (Sep., pg. 267.)

Revelstoke Shops.—It is said the capacity of these shops is to be considerably increased. All the work for the main line between Laggan & Kamloops, & for the Kootenay branches, is now handled at Revelstoke.

Vancouver Terminals.—The handsome new station has been completed & is now in use. The various officials have moved into the office portions of the building.

New Westminster.—The exterior of the station is about finished, & work is going on in the interior. (June, pg. 172.)

Columbia & Kootenay Branch.—It is said an appropriation of \$30,000, in addition to the \$50,000 made early in the year, has been provided for the further improvement of this branch, & that Tierney & Co. will receive another contract to go on with the work. Next spring the filling in of the wooden trestles will probably be gone on with. (July, pg. 208.)

Arrowhead & Kootenay Lake Branch.—On Sept. 24 grading was reported as nearly finished between Lardo & Trout Lake, & track-laying was expected to be started very soon. It was also stated that trains would be running to Duncan City by Nov., & that construction would be continued all winter. It is said that in addition to the country traversed being rich in minerals, the agricultural lands are of considerable value. (Sep., pg. 267.)

Columbia & Western Ry.—On Sep. 26 President Shaughnessy said:—"The grading of the road into Midway has been completed, & there remains only some 25 miles of iron to be laid before we shall have our trains running into Midway. The work on the big tunnel 30 miles west of Robson, where we have pierced for 3,000 ft. the side of the mountain, is not quite completed, but the state of the work there will not prevent the running of trains from Robson to Midway this autumn. In addition to the main line, we have constructed some 30 miles of sidings along the line into mining camps, where the development has been sufficient to warrant us in going to that expense. This road is by all means the most expensive the C.P.R. has ever constructed. The country throughout the entire distance is exceedingly difficult, & the engineering difficulties very great. The entire line has cost the Co. in the neighborhood of \$40,000 a mile, or a total expenditure of nearly \$4,000,000 for 100 miles of line." (Sep., pg. 267.)

H. B. Smith, C.E., of Victoria, recently inspected the line from West Robson to Grand Forks for the B.C. Government. He says he found the line in excellent condition. Regular train service has been established between West Robson & Grand Forks.

It is stated that the C.P.R. engineers are running a line south of that previously run between Midway & Rock Creek. Leaving Rock Creek about a mile above its junction

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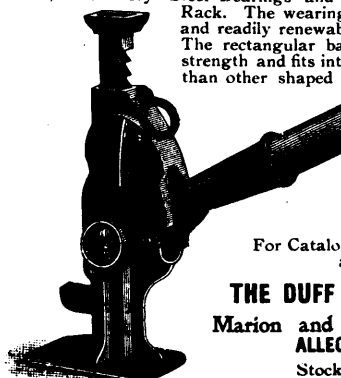
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with Kettle River, a south-easterly course is taken to Meyers Creek, & passing south to the big mountain that rises at the junction of Meyers Creek & Kettle River, the former stream is followed down to Jackson's ranch, thence to Midway, about 4 miles. The original survey line will be pretty closely adhered to.

It is also said that surveys are to be begun soon for a spur from a point on Brown's Creek, the north fork of Kettle River, to run to Pathfinder mountain, on the east side of the river. The Pathfinder mine is a shipping basis for ore & a number of promising mining properties in the vicinity are to be developed.

Spur from Rossland.—A report has appeared in some papers to the effect that a spur is being built from Rossland, B.C., to connect the C.P.R. with the Great Northern Ry. (U.S.A.). This is evidently incorrect, as we are advised from the C.P.R. head offices in Montreal that nothing is known of the matter there.

Duluth, South Shore & Atlantic.—Contractor M. J. Peppard, of Minneapolis, is reported to have commenced grading on the extension from Newtonville, Mich., to Greenland, about 65 miles. (Sep., pg. 267.)

Railway Construction in Manitoba.

The railway mileage in Manitoba will be increased considerably this year, the work under contract for completion before winter sets in exceeding 300 miles. Some of the lines under construction will in the no distant future form sections of important systems, & their progress is being watched with much interest by the people. For instance, there is the Canadian Northern with two objective points, the one Fort Churchill, on Hudson's Bay, & the other Prince Albert, through the fertile Saskatchewan valley, & ultimately, no doubt, the Pacific coast. Then there is the Manitoba & Southeastern, which will form part of the new line to Lake Superior, & furnish additional transport facilities for the annually increasing wheat traffic, besides opening up & materially assisting in developing the mineral & agricultural districts of north-western Ontario. The Northern Pacific, too, is reaching out into the wheatfields of central Manitoba by the extension of its Portage la Prairie branch with an objective terminal yet undetermined. The C.P.R. McGregor-Varcoe branch will connect with the Great Northwest Central, & ultimately extend well into the Territories. The C.P.R. Reston branch, now being extended to the Moose Mountain region, is an important colonization road, & its construction has already attracted hundreds of settlers to the country which it traverses & also stimulated the old settlers to largely increase their agricultural enterprises. The Snowflake & Waskada branches, in southern Manitoba, will fill a long felt want in the respective districts by giving convenient transport facilities to the large number of farmers settled there. The construction of the Gilbert Plains branch of the Canadian Northern will in a like manner benefit the settlers living west of Dauphin. Should the influx of immigration continue to be as great as it has been this year much railroad building will have to be done every year to keep pace with the settlement & development of the country, & railway contractors believe there are equally as good times in store for them as there appear to be for all other classes of people. The lines now under construction in the province, which are expected to be completed & ready for operation this fall, are as follows:

	Miles.
C.P.R., Bonnett Lake branch.....	10
" Snowflake branch.....	17
" Waskada branch.....	20
" McGregor-Varcoe branch.....	30
" Pipestone branch.....	50

Manitoba and Southeastern.....	50
N.P.R., Portage extension.....	25
" Lake Manitoba branch.....	8
Saskatchewan and Western extension.....	3
Great Northwest Central extension.....	20
Canadian Northern extension.....	75
" Gilbert Plains branch.....	25
	333

The above, added to the present mileage, will make 2,200 miles of railway in Manitoba, a remarkable showing when it is remembered that 19 years ago there was not a rail west of the Red River.

Surveys, Construction, Betterment. &c.

Algoma Central.—J. Connee, M.L.A., who has the contract for the Michipicoton branch of this line, says every effort is being made to construct the 12 miles between Michipicoton Harbor & the Lake Superior Power Co.'s iron mine before navigation closes. (Sep., pg. 267.)

The U.S. Commercial Agent at Sault Ste Marie reports as follows:—"The Algoma Central Ry., which is one of the roads granted a subsidy of \$3,200 per mile by the Canadian Government, is to run from Sault Ste Marie, Ont., northerly to Dalton on the C.P.R., about 160 miles, with a branch from Dalton southwesterly, about 40 miles, to Michipicoton, a harbor on Lake Superior. The Lake Superior Power Co. owns the franchise, & I am informed that the branch running from Lake Superior to Dalton, on the main line of the C.P.R., is under construction, & that it will be completed as far as the Helen hematite iron mines, about 12 miles, by Nov. 1, & the balance of the branch will be completed next summer. It is understood that the Ontario government has promised an additional land bonus of 6,400 acres a mile. The country through which this road runs shows outcroppings of minerals, principally iron & copper, with some gold, & it is expected that valuable mines will be developed. The ore of the Helen mines is brown hematite iron, & is claimed to be very high grade. The Co. has done considerable development work, & claims that by the time the road is finished to the mines this fall, it will be able to ship 1,000 tons of ore a day. It is constructing large docks at Michipicoton for loading the ore into vessels. The same Co. also informs me that it has completed arrangements for building large smelting works here, for treating all kinds of ores (said to be by a new electrical process), to be completed within a year. The stock of this Co. is owned principally by citizens of the U.S."

Atlantic & Lake Superior.—A London, Eng., correspondent writes:—"In a previous letter I referred to the re-construction of the Canadian Steamship Co., whose steamer, the Paspebiac, had such an eventful voyage on her first & only trip under the management of that Co. I also referred to the Bagnall Oil Co. as being largely interested in the forming of the new company. It is now announced that the Bagnall Oil Co. have secured from the Dominion & Quebec governments guaranteed subsidies of \$10,000 on every mile of the new railway which is to connect the Canadian oil fields with the A. & L.S.Ry. The Chairman of the Bagnall Co. has been given power to reorganize the A. & L.S.Ry., & the Quebec government will guarantee 4% on the million sterling worth of debentures the new board will be empowered to issue. The guarantee will hold good until 1915. I am also told that the Dominion government is building wharves at Paspebiac to make the harbor suitable for oil vessels. The Bagnall Co. has made a large purchase of property adjacent to its present holding in the Manchester ship canal dockyard. A line of steamers will be put on between Milford Haven & Paspebiac." (Sep., pg. 267.)

Canada Atlantic.—The filling in of the big ravine at the Rideau yards, Ottawa, is about completed. The filling in of this patch of waste land increases the area of the yards by about 40 acres, as before the work was done the land was too low & swampy to be of any value. (Aug., pg. 235.)

The Co. is doing considerable building in Ottawa. A three story wooden building is being erected at the foot of Elgin street for small stores. A large 2½ story building is under way at Ottawa East, to contain the general stores, mechanical office, instruction office & men's dining room. Ten stalls are being added to the round house & the machine shop is being extended 150 ft. (July, pg. 208.)

Canadian Northern.—Some 700 men, among whom are many Galicians & Doukhobors, are at work on the main line extension from Cowan, last year's terminus, which is 154 miles from Gladstone Jct., where the line connects with the M. & N. W. R. Track has been laid to Swan River, grading is being done at Birch River, & right of way is being cleared to the north of Bell River. Stations have been located at Favel, Swan & Woody rivers. If the weather is favorable it is hoped to complete the line this season about 70 miles beyond Cowan. It will not be possible to reach Red Deer Lake as was expected at the commencement of the season. (Aug., pg. 235.)

Work has been started on the 25 miles branch from Dauphin unto the Gilbert Plains. (Aug., pg. 235.)

The reeve of St. Laurent municipality states that assurances have been given that the C.N.R. will build along the east shore of Lake Manitoba & that a start will be made next year. (June, pg. 175.)

Stations are to be built this season at Ogilvie, Valley River & Fork River.

The yards at Dauphin are to be improved at once by the erection of a 6 stall stone & brick round house & shops.

Central of New Brunswick.—It is rumored that work on the extension of this line from Chipman to Gibson is to be started at once, but no definite information is obtainable. (Aug., pg. 235.)

Coast Ry. of Nova Scotia.—It is reported that the extension of this line to Barrington is about completed, & that a contract has been let for a further extension to Clyde. (Aug., pg. 235.)

The Combined Mining Co. is building about two miles of railway to connect its mine with its mill on the shore of the Lake of the Woods. A locomotive has been purchased & will be towed from Rat Portage on a barge.

The Dominion Atlantic will build an improved station at Digby, N.S., to be completed by next summer.

The Dominion Iron & Steel Co. will shortly have under construction a branch line beginning near the Whitney pier at Sydney, N.S., & running along the shore line.

Edmonton Bridge.—The highest water ever seen in the North Saskatchewan was during the third week in Aug. The concrete piers for the railway & traffic bridge between South & North Edmonton, Alta., built by the Dominion Government, are reported not to have been damaged, but the water went 6½ ft. over the bridge seats of the piers, & had the superstructure been in position it would undoubtedly have been carried away. The Minister of Public Works therefore decided to have the piers raised 8ft., which is now being done.

In the discussion of the estimates at the recent session of the Dominion Parliament, when \$13,000 was voted for the completion of this bridge, the Minister of Finance stated that the amount of the contract was \$46,332; freight from Montreal to Edmonton \$11,000; superstructure contingencies \$2,668; total

\$60,000. The estimated expenditure up to June 30 last was \$22,000, & the contribution of the town of Edmonton \$25,000, which, deducted from \$60,000, makes the balance required as per estimate, \$13,000. The contract requires the superstructure to be completed by Dec. 1.

Esquimalt & Nanaimo.—An extension of the line is being built at Oyster Bay, B.C., & coal bunkers are being erected there.

Granville & Victoria Beach, N.S.—A fair measure of interest is, says the Maritime Merchant, being developed in the project of bridging the Annapolis River at Annapolis Royal, so as to connect Granville Ferry on the other side, and thus form a connecting link in a line of railway which it is proposed to run from Victoria Beach through Caledonia to Halifax. The matter of a subsidy for at least a part of the line has been already arranged in the last provincial estimates, & if the enterprise goes through it will be a decided addition to the transportation facilities of the Valley. Eastport, Me., is but 55 miles from Victoria Beach, & as it is the terminus of a number of New England railways it would give a much shorter route to Boston or Montreal than any existing line from such western points as Halifax. The persons interested in the enterprise make the most pronounced claims on behalf of the natural advantages of Victoria Beach as a harbor for ships of all sizes, and assert that this port should be the natural terminus for all western railways in Nova Scotia. The matter was discussed at a recent meeting of the Maritime Board of Trade, when a resolution was adopted favoring the scheme. (June, pg. 175.)

Great Northwest Central.—A 20 mile extension is being built from the terminus of this line at Hamiota, Man., to Parkissimo, to serve the country between the main line of the C. P.R. & the M. & N.W.R. It will run through a well settled & excellent farming district & will be of great value to farmers in the vicinity of the Assiniboine River between Birtle & Virden. The character of the work is very similar to other prairie lines, but it is somewhat heavier in the neighborhood of Arrow River, where the surface of the country is very rough & broken. The gradients & curvature will be very light. Two stations will be built, one 10 miles west of Hamiota & the other at the terminus of the extension. This extension, for some legal reason, is being built under the charter of the Saskatchewan & Western Ry. See also under head of M. & N.W.R. on pg. 295. (Aug., pg. 236.)

Great Northern of Canada.—T. F. Oakes, formerly President of the Northern Pacific

Ry., accompanied by Col. McNaught, of New York, & H. H. Melville, of Boston, two of the directors of the G.N.R., & J. B. Haggin, the American copper operator, have been inspecting the work of construction recently.

One of the contractors, J. W. McRae, recently said:—"The grading over the whole line from Shawenagan to Hawkesbury is about completed, & track is laid from Mont-calm to 10 miles east of St. Elizabeth, while the masonry in the bridges & culverts is likewise all completed. The heavy bridge over the Ottawa River at Hawkesbury is well started & we expect to have the 2 abutments & 8 piers completed in November. We found good solid rock foundations for all the piers, & a large force of men are hurrying on the work. The trestle work at the approaches is well advanced, & from the start the work on the road & bridges has been pushed right along. The Joliette station, which is of pressed brick, on stone foundation, will be the best on the line, & is well under way." (Aug., pg. 235.)

Great Northern U.S.A.—It is very positively asserted that this Co. will build into Republic, Wash., probably going via Wilbur up Hawk Creek & on by the San Poil. It is hardly likely that the line will stop at Republic, & it will probably be extended to the international boundary at least. An unconfirmed rumor says the extension will reach the boundary at Carson & that the C.P.R. will build a 3 mile branch from Grand Forks, B.C., to connect at Carson. This is rather unlikely, to say the least.

Intercolonial.—Work is progressing on the deep water terminus at St. John, N.B. The dredging of the eastern part is about done & the entire dredging is considerably more than half done, but that which is yet to be completed will necessitate considerable blasting. The work has been much hampered by some of the material brought up, which consists in the most part of edgings, stuck together by mud in such a manner as to render dumping an extremely difficult task. The work has also been delayed by the building of a new track. However, it is expected that one berth will be ready for this winter's business. Three cribs have already been sunk. (Aug., pg. 236.)

The General Manager has recently made a thorough inspection of every section of the line, accompanied by the General Superintendent, the Engineer of Track Maintenance & the Bridge Inspector. As a result a number of improvements are to be gone on with.

A large amount of repairs have been done to the stations this year, especially on the main line between Halifax & Campbellton.

The siding accommodation at Sydney, N.S., is being considerably increased.

It is said tenders will be asked for at an early date for the station building at Levis, Que., involving an expenditure of some \$80,000.

A lot of snow fencing is about to be built on the Northern division. Nine rest houses for train men are being built at different points.

Interprovincial Bridge, Ottawa & Hull.—Workmen are now engaged on pier no. 2. Another gang has been placed at work on the approaches on the Ontario side, & the work is progressing at a good rate. It is expected that before the end of the year the greater part of the work will be completed. About 70 men are employed. (June, pg. 175.)

The Ottawa City Engineer, J. Galt, has taken strong exception to the bridge plans. He says the way the ground plan of the bridge has been designed is exceedingly objectionable, particularly as regards the approach on the Ottawa side. It contemplates a steam railway track in the centre, on either side of this, & separated only by a wooden balustrade, there being wedged in between trusses, two 4 ft. spaces for pedestrians. Outside of these footpaths again, & overhanging the river beyond the stone piers, are, on either hand, spaces, 1st, for electric cars, & then for vehicular traffic. Under the proposed arrangement, pedestrians, tram cars & vehicles on the down-river side of the bridge will turn into the street leading up past the Printing Bureau almost on a level with Sussex St., but all three on the up-river side of the bridge will be conveyed on an incline down to a point where they can be carried, by means of a subway beneath the railway track in the centre, coming up again so as to join the remainder of the traffic in the vicinity of the Bureau. The City Engineer claims that there

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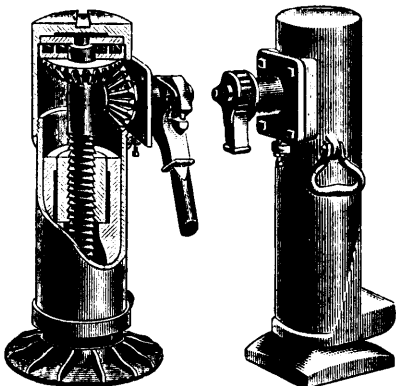
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are two highly-objectionable features to this proposed plan—1st, the wedging in of the footpaths between the railway track in the centre & the trusses on either hand; & 2nd, that half the traffic on the Ottawa side of the Ottawa River must perforce go down grade to a low level in order to pass through the subway & then up again to reach the level of Sussex St. In order to remedy these defects, he suggests that the centre of the bridge, between the trusses, 24 ft., shall be given over to steam cars; that the up-river side shall be devoted to trams going both ways, there being no objection to their going down grade through the subway & up again; & that the down-river side shall contain next to the truss, a 14 ft. space for vehicles, & on the outside, overlooking the river, a 5 ft. walk for pedestrians. The bridge people admit that the original plan is not at all satisfactory, but they maintain it is the best way of disposing of all the traffic. The city contributes a bonus of \$100,000 on the understanding that free accommodation be provided for foot passengers & vehicular traffic.

After the falling of the Ottawa & New York Ry. bridge at Cornwall, the Government, fearing that it was caused by defective concrete in the piers, decided to make a thorough examination of the piers of the Interprovincial Bridge. Diamond drill borings have been made & it is said the result is satisfactory.

Inverness & Richmond.—Work is progressing favorably & it is expected to have 30 miles of this line, from the Strait of Canso to Port Hood, N.S., finished this year, & to reach Broad Cove Mines, a further 28 miles, next year. Several small sailing vessels have been employed carrying ties from points on the Gaspe coast to Port Hastings, N.S., for use on this line. The rate obtained was about 9c. a tie. (July, pg. 209.)

James Bay.—Engineer Hazlewood is making a survey for the 5 miles of this line to be built from the main line of the Canada Atlantic Ry. to the town of Parry Sound. A contract for construction is said to have been let to McCormick & McLeod. (Aug., pg. 236.)

Kingston & Pembroke.—This Co. is building a 5 mile spur to the Martell & Caldwell mines, & expects to finish the work this fall. (Aug., pg. 236.)

An attempt is being made to get this Co. to extend its line into the mineral belt of Quebec in the vicinity of Bryson. This mineral cannot be developed on account of the lack of transportation. Twelve miles of new track from the K. & P. terminus at Renfrew would take the line to Portage du Fort, where there are Gaboury's mine and marble quarry. Eight miles further would take it to Bryson, the county town of Pontiac, at the head of the Grand Calumet Falls, a beauty spot for tourists. There are said to be iron, marble, zinc, galena, silver, gold & mica prospects; the Grand Calumet Mining Co. is at work within two miles of the village. This extension would, it is claimed, tap one of the best water powers in Canada. Between Bryson & Pembroke are a dozen lakes, affording good sport. The extension would also open up a territory of unfloatable timber, maple, birch, elm & oak, which cannot be brought to market without a railway.

Kootenay Valley Ry. & Navigation Co.—Rails are being laid north from Bonner's Ferry, Idaho, towards Kuskanook, B.C., on the Co.'s subsidiary line, the Bedlington & Nelson. N. D. Miller, formerly Chief Engineer of the line, & later Chief Engineer of the Great Northern, U.S.A., has resumed his old position on the K.V.R., vice W. H. Knowlton, resigned. (July, pg. 209.)

Under the order of the Railway Committee of the Privy Council, the Bedlington & Nelson Ry. has running powers over the C.P.R.'s Crow's Nest Pass line for about 8 miles, from a point 4 miles west of Creston to about $\frac{3}{4}$ of

a mile west of Sirdar. From the latter point to Kuskanook, the Kootenay Lake terminus of the B. & N.R., is a distance of 3 miles.

Lake Erie & Detroit River.—It is said this Co. will erect an hotel at Erieau, the summer resort on Rondeau Harbor acquired with the Erie & Huron Ry.

Manitoba & Northwestern.—The Saskatchewan & Western Ry., which runs from Minnedosa to Rapid City, Man., 15.47 miles, & is leased to the M. & N.W.R. Co., is being extended 2½ miles, near Rapid City, to connect with the Great Northwest Central Ry. The work is light, & there are no structures of any importance upon it. See also under head of "Great Northwest Central Ry," on pg. 294.

Manitoba & Southeastern.—Grading from La Broquerie, last year's terminus, has gone ahead with fair progress, & tracklaying has been started. The eastern boundary of the Province will it is expected be reached this year, but it is hardly likely that the line can be got through to Rainy River before winter, as was expected, & it is said application has been made to the Manitoba Government for an extension of time. It is said a contract has been let for clearing the right of way through Minnesota. (Aug., pg. 236.)

Michigan Central.—The work of placing a third truss on the cantilever bridge at Niagara Falls, necessitated by the increased weight of rolling stock, is well under way. On the Canadian side the masonry is being laid, & on the U.S. side the concrete foundation is ready for the masonry. With the view of ascertaining the profile of the river bottom under the bridge soundings were taken. The bridge is situated just over the head of the whirlpool rapids, where the current is very swift, & unusual methods had to be resorted to in getting the depth. The sinkers on the sounding-lines were egg-shaped masses of cast iron, one weighing 600 lbs. & the other 150 lbs., the sounding line being a steel wire about $\frac{1}{8}$ in. in diameter. In order to keep the sinkers from twisting a long fin was attached to the rear of each. The depth at mid-stream was ascertained to be 78 ft., & the depth at 100 ft. from shore 43 ft. In the course of subsequent soundings the weights were lost. By means of these soundings the engineers were able to make accurate maps of the river at the point of crossing, the importance of which can be readily surmised when it is known that the piers supporting the cantilever bridge are located close to the water's edge on either side of the stream (May, pg. 137.)

Midland of Nova Scotia.—Track has been laid from Windsor to the Shubenacadie River, 45 miles, & the remaining 15 miles between the river & Truro will be laid as soon as the grading is completed, probably during October. It is doubtful whether the bridge over the Shubenacadie will be completed this year. It is proposed to construct a railway dock at Windsor. (Aug., pg. 236.)

Musquodoboit.—There is a division of opinion as regards the route to be taken by this projected line. Dartmouth wishes the line diverted so as to pass through the town, & at a meeting of the promoters recently representatives from there insisted strongly upon this feature being included in the Co.'s plans. The road is intended to begin at Parker's Rock in the Musquodoboit valley in the eastern section of Halifax county & to extend to Windsor Jct. or its vicinity. The charter permits a choice of two routes, & it is over this that differences have arisen. Although the charter provides that the railway shall be operated as a steam road we believe the better plan will be to use electricity, & the cost will be much lighter as power can be obtained from the several water powers that lie along the proposed route, & it will be possible

to use the railway as a nucleus to extend to many other points in Halifax county which are as yet unprovided with these necessary facilities. It is understood that the building of this road will begin in a short time aided by the Provincial & Federal Government subsidies.—Maritime Merchant. (May, pg. 134.)

Northern Pacific.—Good progress is being made with the construction of the 20 miles extension of the Portage la Prairie branch from Portage la Prairie northwesterly, & also with the construction of the spur of 9 miles from Portage la Prairie northerly towards Lake Manitoba. Both are to be completed this season. The recently issued annual report of the Co. states that it is building these lines under separate charters, without use of funds derived from its mortgages. The capital stock & indebtedness of these subsidiary companies is held in the N. P. Ry. Co.'s treasury & it is believed that the control of these companies will secure valuable additional territory to the N.P. lines & contribute to the earning power of the system. (Aug., pg. 236.)

The crossing of the two branches mentioned above over the main lines of the C.P.R. & the M. & N. W. R. at Portage la Prairie has caused some local excitement. The Railway Committee of the Privy Council made an order authorizing the crossings, but in the case of the C.P.R. crossing, the Northern Pacific was required to construct & maintain at its own cost an interlocking, derailing & signal system. The N. P. management, to save time, wanted to put in a diamond crossing temporarily. The C.P.R. objected to this & kept a locomotive patrolling the track at the proposed crossing so as to prevent a diamond being put in without leave. The matter having come before the Railway Committee again an interim order was granted to allow the crossing to be made by a diamond until Nov. 15, when the interlocking appliances are to be installed.

The rebuilding of the Winnipeg offices, destroyed by fire, has been completed & the staffs have moved in. The roof of the train shed, broken by falling bricks at the fire, has been repaired, & the north end has been boarded up. (July, pg. 209.)

North Lanark.—An Ottawa despatch, dated Sept. 5, said: "The directors of this Co. are pushing the preliminary work for building the road as speedily as possible. At a meeting lately held at Ottawa, the president, J. Stewart, of Waba; J. Bell, secretary-treasurer, of Arnprior; A. Bell, C.E., & W. J. Wylie, of Almonte entered into an agreement by which an option was given to Mr. Gade, agent for an English railway construction company, to build & equip the entire road from Mile Lake, on the K. & P. Ry., to Arnprior."

Some time since we were informed that the intention in regard to this line was to build a rough tramway to get out timber, iron ore, etc.

Nova Scotia Southern.—Unconfirmed reports are to the effect that C. B. Wilkins & Co., of Yarmouth, N.S., have the contract for this line, & that they are making fair progress with the work, including the bridge crossing the La Have River, also that they are prepared to sublet contracts for work between the northern end of the road & the Indian Gardens. (July, pg. 209.)

Ontario & Rainy River.—The various contractors on the first 80 miles west of Stanley, on the P.A.D. & W.R., where the line starts, are making as good progress as possible, but have been much hampered by wet weather & scarcity of men, many teams having stood idle for want of drivers. There has also been unavoidable delay in the delivery of rails. Track-laying has been begun with a small force, so as not to overrun the bridge construction and grading. A bridge construction outfit, pile-drivers, framers, etc., began work 4 days ahead of track-laying, & both bridge-builders and track-layers will continue until

the graders are overtaken. There are not more than 1,000 men on the grading, although all preparations are complete for 3,000. Every effort is being made to get men, & the force is being increased daily but slowly. With conditions as they are, & with ordinarily good weather, it is hoped to get 50 miles of track laid before the freeze up. Supplies are being rushed in by water to the depot on Rainy Lake, to be used on the rock work it is intended to have done during the winter. (Aug., pg. 236.)

Commencing at Stanley, up to which point the O. & R. Ry. has running powers over the P. A. D. & W. Ry., the line runs close to Kakabeka Falls, a vast water power, & proceeds through the east end of the Matawin iron range, which is 20 miles long, of which two-thirds is soft hematite, and the remainder, at the western end, magnetic. Skirting the Shebandowan & Kashabowie lakes, the line then passes through a copper region, the most known mine in which is the Tip Top, having a vein of 100 ft. wide; thence it runs close to Moss township, where there are several gold locations, not at present being developed. The line next passes close to Lac des Mille Lacs & Partridge Lake, 12 miles to the south of the Saw Bill mining region, running through the Atik-okan iron ranges for 20 miles. It is stated upon excellent authority that here is the largest iron deposit in the world, there being in one place 2,000,000 tons of iron ore in sight on a plot of 160 acres. The Seine River waters are next reached, which will give ready access to the mines, & here there are many valuable water powers. Running along the Seine River Valley, the line goes north of Bad Vermillion & south of Little Turtle Lakes, where it will cheapen supplies for more than a hundred prospects & mines, the principal of the latter at present being the Golden Star & the Olive. It next runs along Rainy Lake, crossing the western arm of the same on a succession of 6 islands, two miles west of Pither's Point, necessitating the building of 5 bridges. Between Pither's Point & Fort Frances is an excellent site & prospect for a town, the Couchiching falls being estimated to supply a water power of

fully 50,000. From Fort Frances the line runs along the Rainy River, where there is a large area of fine agricultural lands, & reaches a crossing near the river's mouth. Here connection will be made with the Minnesota & Manitoba R. R., under the same ownership, which will run through Minnesota until it reaches a point on the International boundary a few miles west of Buffalo Bay, where connection will be made with the Manitoba & Southeastern, also under the same ownership & which is now about completed from Winnipeg. W. Mackenzie says through communication between Port Arthur & Winnipeg, by this route, will be established early in 1901.

The Co. has bought no. 5 dock at Port Arthur from Marks & Co., & is making considerable improvements to it.

See also under head of Port Arthur, Duluth & Western on this page.

Ottawa & Gatineau.—Work is being pushed on the extension from Gracefield, 60 miles from Ottawa, towards Maniwaki. (Aug., pg. 236.)

See also under head of Pontiac Pacific Jct. on this page.

Ottawa & New York.—It is said that the bridge over the south channel of the St. Lawrence at Cornwall, which collapsed, & is being rebuilt, will not be completed until next year. (Aug., pg. 236.)

Pembroke Southern.—It is said that the leasing of this line to the Canada Atlantic will not hinder the proposed extension from Golden Lake to Bancroft, so as to give close connection with Toronto, but will rather materially assist that scheme, as it will enable the projectors to devote their whole energies to its construction.

Pontiac Pacific Jct.—Work is proceeding on the extension from Hull to Aylmer, but it may not be completed this fall. The city of Hull is bonusing the Co. to the extent of \$30,000, the Co. agreeing to build a station at the terminus to cost at least \$4,000; to have the work shops, shunting yards, etc., in Hull; to employ 40 residents of Hull during the first two years, and 50 afterwards, & to have all the works completed by Sept. 30, 1900. (July, pg. 210.)

Work has commenced to give this Co. & the Ottawa & Gatineau connection between the Ottawa end of the Interprovincial bridge & the Ottawa Central station. A double track will be built, to accommodate which a section of the wall flanking Major's Hill park at the southern end, about 12 ft. in depth, will have to be cut away. For 90 ft. in the direction of the river the roadbed will be made solid by filling in; the line for the rest of the distance to the bridge will run on a trestle. Dufferin bridge has already an open space through which the rails may run, but it will be necessary to construct an arch beneath the Sappers bridge. This will be done of stone & iron.

Port Arthur, Duluth & Western.—The road bed between Port Arthur & Stanley, some 12 miles, which is to be used by the Ontario & Rainy River Ry., is to be ballasted & put in first class shape.

Prince Edward Island.—A considerable amount of ballasting has been done this year, switches have been improved, the wharves at Charlottetown, Summerside, Alberton, Georgetown & Souris have been repaired, a number of bridges have been improved & 10 flag stations have been built. It is said 40 miles of new rails will be laid next season.

Quebec Bridge.—At the annual meeting, Sep. 5, it was reported that 7 tenders for construction had been received & submitted to Theodore Cooper, consulting engineer, New York, who had recommended the acceptance of one of them, that negotiations were going on with the firm in question, but that as nothing definite had been decided the directors were not at liberty to state anything further. Mention was made of the Dominion Parliament's subsidy of \$1,000,000, & other subsidies expected from the Province & City of Quebec, & the hope was expressed that work might be started this year. Full cadastral information has been gathered about property crossed by the projected railway lines to connect the bridge with the city, either by Ste. Foy or by the Coves, & options have been secured on a large portion of the property. The engineer has been instructed to make a trial survey & estimate of cost of an alternative line by the Coves & Champlain St. to Allan's Wharf. (May, pg. 137.)

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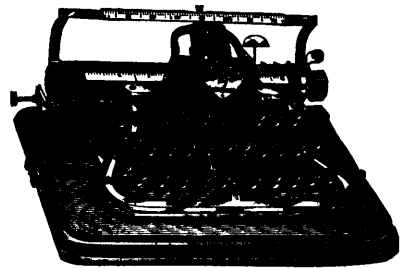
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St. John Valley.—W. Pugsley, Q.C., & A. G. Blair, jr., are reported to have had a satisfactory interview with the New Brunswick Government in reference to the construction of this line from Fredericton to Woodstock, N.B., south of the St. John River. The Government is said to have decided to subsidize it, & the Dominion Parliament has already done so. (Aug., pg. 237.)

Tilsonburg, Lake Erie & Pacific.—The ratepayers of Ingersoll have voted \$20,000 towards the extension of this line from Tilsonburg to Ingersoll. The charter empowers the Co. to build from Port Burwell to Woodstock, Ont. The present line runs from Port Burwell to Tilsonburg, 20 miles. The Dominion Parliament last session voted a subsidy for an extension of 28 miles from Tilsonburg to Ingersoll or Woodstock. T. Mackie, C.E., is now locating the line beyond Tilsonburg. An unconfirmed report says that when the extension is built the line will be operated by the Baltimore & Ohio Ry., which will establish a line of coal ferries between Fairport, Ohio and Port Burwell. (June, pg. 99.)

Toronto, Hamilton & Buffalo.—A Hamilton report says that although this Co. has purchased the right of way, it has abandoned for the present the building of the proposed spur to the northeast part of the city. The Co. recently applied to the city council for an extension of time for completing the spur line to the end of 1900, & to have the exemption in connection therewith commence on Jan. 1, 1900. (May, pg. 137.)

White Pass & Yukon.—About 1½ miles of

tion of the line from Cariboo Crossing, at the northeast end of Lake Bennett, & between Lake Bennett & Lake Nares, by way of the Watson Valley to the Lewes River below the White Horse Rapids, some 40 miles. Grading has been started, rails have been shipped from Vancouver, & as the work is comparatively easy, there not being much rock or heavy cuttings, it is hoped to have this section built by the opening of navigation next spring. It will do away with the necessity of making portages & transferring from steamer to steamer at the rapids. Pending the completion of the line along the east side of Lake Bennett transfer barges are likely to be used to

Last session the Dominion Parliament voted a subsidy for this line, 6 miles, from Cross Creek Station, Canada Eastern Ry., to Stanley village.

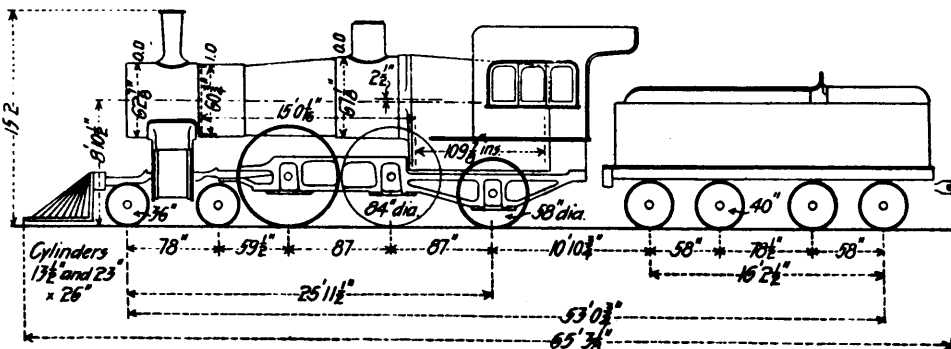
Canadian Pacific Equipment.

From the design of R. Atkinson, Mechanical Superintendent, three heavy fast passenger locomotives of the Atlantic type have recently been built at the Co.'s shops at Montreal, for the purpose of hauling high-speed express trains over the new short line between Montreal & Ottawa. The distance is 111.4 miles, & is at present covered in 2 hours & 25 minutes. On the schedule for which these locomotives are built, it is intended to reduce the time to 2 hours, with 2 or 3 stops & 4 or 5 slow-ups for diamond crossings, etc., & the running speed will be about 80 miles an hour.

The cylinders are of the Vaucain compound 4 cylinder type. The large driving wheels & trailing

wheels are of cast steel. The cab is built of steel about ½ in. thick, with the front rounded off, & has a clean smooth finish without rivet heads or bolts. It is lined with wood, with an air space between the wood & plate of 1½ inches.

The tank is of a new design & exceptionally large, having a capacity of 4,500 imperial gallons or 5,400 American wine gallons, which is sufficient to take the train through from Montreal to Ottawa without stopping for water. The back of the tank is rounded off like a whaleback steamship, so that any water

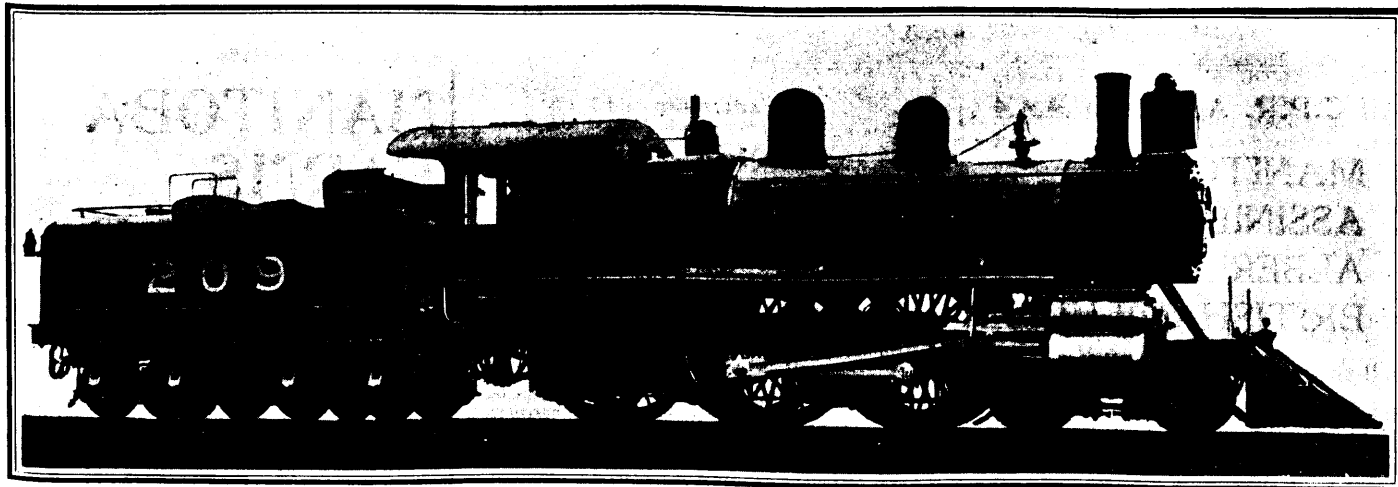


C.P.R. ATLANTIC TYPE LOCOMOTIVE.

convey cars across the lake. (Aug., pg. 237.)

The Chilkoot aerial tramway, owned by the W. P. & Y. R. Co., has been put in good repair recently; 2 towers have been replaced, the wire cable, where worn, has been repaired, & snow sheds have been constructed at several points. The engineers have been retained at the power station, & it is expected the tramway will be used during the winter should the steam railway become blocked by snow. (June, pg. 167.)

York & Carleton County, N.B.—A recent despatch from Stanley, N.B., said:—"The



CANADIAN PACIFIC RAILWAY ATLANTIC TYPE LOCOMOTIVE.

snow sheds are being built on the line between Skagway & Lake Bennett. A rotary snow plough has been purchased, & the management expresses the hope that it will be possible to operate the line throughout the winter. This Co.'s present line extends from Skagway to Lake Bennett, 41 miles. In the extension of the line towards Fort Selkirk, the water stretches are evidently to be used, at first at least, as much as possible. The route along the east side of Lake Bennett, some 27 miles, is very heavy, & is not likely to be gone on with for a time, until Dominion or Provincial aid is secured. A contract has been let to Mr. Heney, of Ottawa, Ont., for the construc-

plans & profiles of the York & Carleton County Ry. have been prepared by Mr. Ruel, C.E. The President of the Co., Dr. Moore, had an interview with the Minister of Railways recently regarding the contract for the construction of the road. It is understood the interview was highly satisfactory, & that the contract will be signed in a few days. The N.B. Government's subsidy will also be given when the contract is made with the Dominion. The President is in correspondence with parties regarding the grading & the supplying of sleepers. The outlook is very hopeful for the immediate construction & completion of the road."

which overflows will run off. The coal space is made hopper shape, & the coal capacity is about 8 tons, being sufficient for the round trip. The tank is mounted on a heavy steel frame made of 10 in. channels, & is provided with heavy metal trucks & axles with 5 x 9 in. journals.

The engine & tender truck wheels are of wrought iron, steel tired, & all wheels of engine & tender have clip rings. The whole engine & tender, including the truck, is equipped with the Westinghouse high speed brake.

The fast trains have not yet been inaugurated, as a portion of the line is being double

tracked & laid with 100 lbs. rails. The engines are remarkably smooth riding which is especially noticeable on curves.

The Mechanical Department of the C.P.R. made a record in the time of getting out the first engine. The design was commenced by Mr. Atkinson on the morning of May 1, all materials were procured & the first engine was in steam on July 3, nine weeks from the date of commencing the design, & after going on trial trip & being cleaned & touched up, was sent for inspection to the Windsor St. Station on July 6. This time could have been beaten by some days, if the heavy freight traffic in the country had not delayed transportation of materials.

The two engravings on page 297 show the principal features of the engines. Following are the general dimensions, etc.:

Fuel.....	soft coal.
Gauge of track.....	4 ft. 8½ in.
Total weight in working order.....	159,000 lbs. estimated.
Weight on drivers.....	79,000 "
Total weight of engine & tender.....	274,000 "
Driving wheel base.....	7 ft. 3 in.
Total wheel base of engine.....	25 ft. 11½ in.
Total wheel base of engine & tender.....	53 ft. ¾ in.
Cylinders.....	13½ in. & 23 in. x 26 in.
Type of boiler.....	Belpaire with extended waggon top.
Diameter at smallest ring.....	60¾ in. inside.
Number of tubes.....	284
Diameter of tubes.....	2 in. outside diameter.
Length between sheets.....	15 ft. 1-16 in.
Firebox.....	9 ft. 1½ in. long x 3 ft. 6½ in. wide inside.
Working pressure.....	210 lbs.
Diameter of driving wheels on tread.....	84 in.
Diameter & length of journals.....	8½ in. x 12 in.
Diameter of engine truck wheels.....	36 in.
Diameter of journals.....	6 in. x 10 in.
Tender frame.....	steel
Tank capacity water.....	4,500 imperial gallons
Tank capacity coal.....	8 tons
Brakes.....	High speed Westinghouse American
Tender axles, steel.....	Steel, Peech & Tozer

The cars recently turned out of the Co.'s Montreal shops for the Montreal-Ottawa fast run are without doubt the triumph of car building up to date & reflect high credit on Master Car Builder Apps. The two trains each consist of baggage car, combination 2nd class & smoker, a 1st class car & a parlor car. The interior of the parlor car is finished in mahogany & satin wood, the bevelled glass windows are large, the seats are of dark green plush & the ceiling is decorated in dark

green & gold. The interior wood work is very handsomely carved. The car contains a ladies' drawing room & a smoking room. Special attention has been paid to the lavatories. The 1st class car is finished inside with the same woods as the parlor car. The combination 2nd class car & smoker is fitted with revolving wicker chairs. The whole train is lighted by electricity, generated from the axles.

A recent press despatch from Montreal stated that the Co. had placed orders for some 30 or 40 locomotives with U.S. manufacturers, that this had been done owing to the machinists' strike & that the Co. would close its locomotive shops & place its orders in the U.S. in future. We have been unable to secure either a confirmation or denial of this from official sources. Another report states that an order for 12 compound consolidation locomotives has been placed in the U.S., delivery to be made in May next. It is said they will weigh 150,000 lbs. with 133,000 lbs. on the driving wheels, & have 21 in. & 33 in. x 26 in. cylinders; 57 in. driving wheels; Belpaire boilers with 255 tubes 2 in. in diam. & 12 ft. 11-16 in. long & a working steam pressure of 200 lbs.; fireboxes, 9 ft. 1½ in. long & 3 ft. 6½ in. wide, of steel, & a tank capacity for 4,000 gals. of water.

The Co. is building at its own shops 400 box & 60 furniture cars. The box cars are 35 ft. long, 8 ft. 5 in. wide inside, 7 ft. 3 in. high inside & weigh 31,000 lbs. The furniture cars are 45 ft. long, 8 ft. 6 in. wide & 9 ft. high inside. All are being equipped with Westinghouse air brakes.

A report that the Duluth, South Shore & Atlantic was about to buy some steel cars is officially denied.

The Minneapolis, St. Paul & Sault Ste. Marie has ordered 40 refrigerator cars & is asking bids on 1,000 box cars.

Improving North-West Live Stock.—Mention was made in our last issue of the intention of the C.P.R. Co. to expend a considerable sum for the purpose of improving the breeds of live stock in Manitoba & the Terri-

tories. A few animals are being sent in this fall.

Ball Bearing Jacks for Export.—A. O. Norton, manufacturer of ball bearing jacks, Coaticook, Que., advises us he has just shipped a large order to Denmark, & that several other important orders for export to India, Australia & South Africa, have recently been received.

Rutland R.R.—It was recently reported in the daily press that arrangements were about completed by which this Co. would secure an entrance into Montreal, independently of the Central Vermont & its connections, & that the new route would be established by the acquisition of the United Counties Ry., from Lacolle Jct., by St. Johns & Iberville, thence by the Montreal & Province line. We are informed that the whole story is a fake, entirely without foundation in fact.

Elevator Commission.—At the last session of the Dominion Parliament an appropriation was voted for the expenses of a commission to investigate the grain elevator question in Manitoba and the Territories. The commission has been appointed as follows: Judge Senkler, of St. Catharines, Ont.; W. F. Sirett, M.P.P., Glendale; C. Castle, Foxton, & W. Lothian, Pipestone, the three last named being Manitoba farmers. C. N. Bell, Secretary of the Winnipeg Board of Trade, has been appointed Secretary of the Commission.

The Fairbanks Co. has this year made the following sales of railway track scales through its Montreal office:—To the C.P.R. 3; for Vancouver, Winnipeg & Sharbot Lake; G. T. R. 5, for various points on its line; Canadian Northern Ry. 1, for Winnipeg; Algoma Central Ry. 2; Dominion Coal Co. 2; Dominion Iron & Steel Co. 1; Cumberland Ry. & Coal Co. 1; Granby Consolidated Mining & Smelting Co., Grand Forks, B.C., 1; Dominion Cotton Mills Co., Magog, Que., 1; Laurentide Pulp Co. 1; Nova Scotia Steel Co. 1. The total length of these scales is 742 ft., & the total capacity over 3,000,000 lbs.

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THE CANADIAN ROADMASTERS' ASSOCIATION.

The third annual convention opened in the Temple Building, Toronto, Sep. 20. President W. Shanks, in taking the chair, said: In opening this our third annual convention I may say, before commencing the business, that I am very much disappointed that there are not more of our members with us. I fully expected that at this meeting we would have a goodly number, but there may be more in later on. I think it must be that a great many of our roadmasters really do not appreciate the benefit derived from a meeting of this kind. Perhaps when the good to be obtained from these gatherings becomes better known there will be a larger turnout. I will not attempt to take up any more of your time just now, but will proceed to the business in hand. The first in order would be the reading of the minutes of the last annual meeting, but as they are rather long, perhaps we had better pass that over, & take up the Secretary-Treasurer's report.

The Secretary-Treasurer, J. Drinkwater, reported a membership of 41 in good standing; an expenditure of \$6.42 had been made since Jan. 31st, with receipts amounting to \$8, leaving a balance on hand of \$63.58. The report was adopted.

The Secretary then called the roll as follows. Those before whose name an asterisk is placed were present: A. Black, C.P.R., Pogomasing; * J. R. Brennan, O. & G.R., Ottawa; W. Cooper, C.P.R., Three Rivers; J. Coughlin, C.P.R., White River; * J. Drinkwater, C.P.R., Winchester; A. Gordon, C.P.R., Parkdale; * J. Graham, C.A.R., Ottawa; * Thos. Graham, C.A.R., Parry Sound; F. W. Green, C.P.R., Fort William; J. Henessy, C.P.R., Montreal; * T. Hickey, M.C.R., St. Thomas; * F. J. Holloway, C.P.R., Parkdale; D. Jelly, C.P.R., Nepigon; * J. Jelly, C.P.R., Carleton Junction; H. L. Johnston, C.P.R., Nakusp; M. Keefe, N.Y. & O.R., Ottawa; W. Kelly, C.P.R., Sudbury; Thos. Landers, C.P.R., Farnham; J. Leslie, C.A.R., Ottawa; R. H. Lowe, C.P.R., Regina, N.W.T.; * A. McAuley, C. P. R., Toronto; * A. N. McLennan, S. & L. R., Glace Bay, N.S.; J. Malloy, C.P.R., Smith's Falls; Wm. Moe, C.P.R., Sherbrooke; M. Morin, C.P.R., St. Therese; G. Munro, C.P.R., Kamloops; * E. Murphy, C.P.R., Woodstock; E. Myers, C.P.R., Smith's Falls; W. O'Donnell, C.P.R., Chapleau; W. Rose, C.P.R., London; Geo. Seamen, I.C.R., Moncton; J. Shanks, C.P.R., Montreal; * R. Shanks, C.P.R., Mattawa; * W. Shanks, C.P.R., Carleton Jct.; J. Telfer, C.P.R., Calgary; W. Wallace, C.P.R., Ottawa; R. Watters, M. & N.W.R., Portage la Prairie; J. Yeo, I.C.R., Riviere du Loup.

The Secretary reported correspondence with a number of railway managers, etc., about the convention, most of whom had replied they would arrange leave of absence & transportation for their roadmasters who wished to attend.

The reports of committees were then taken up.

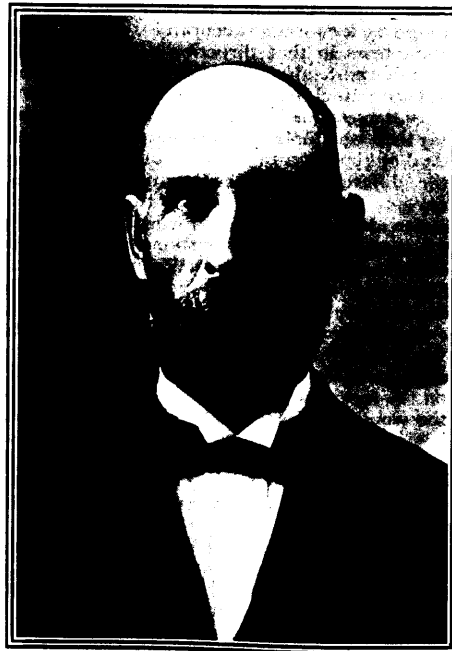
TRACK TOOLS.

The Committee, J. Drinkwater, A. McAuley & W. Shanks, reported as follows:—In our opinion it is economy for any railway company to furnish its trackmen with the best & most suitable tools. They should be so designed as to enable the men using them to accomplish the greatest amount of labor without expending a superfluous amount of energy in so doing, by reason of clumsy or improperly designed tools; & they should be so constructed that the parts which require great strength & are subjected to great strain or wear, should be of a quality of steel best adapted to withstand the same, thereby reducing to a minimum the weight of certain tools where strength & not weight are desired, also decreasing the load trackmen have to carry

about on their work, as well as decreasing expense to the railway companies, as most tools are purchased & sold by the pound. The committee believe that these tools can be best & most cheaply obtained off concerns which make a study of these points in track tools, & which are supplied with the proper facilities to incorporate them in the same.

The adoption of the report having been moved it was discussed as follows:—

T. HICKEY.—I notice that this report states that these tools "can be best & most cheaply obtained off concerns which make a study of these points in track tools, & which are supplied with proper facilities to incorporate them in the same." I agree with the Committee that these concerns can make tools cheaper than we can in our railroad shops. The Roadmasters' Association of America had up the question of tools some seven or eight years ago. I was one of the Committee, which met during the year at Toledo. Every member of the Committee was present & brought some tools with him—each member brought a tool & some more than one—and we got quite an assortment. From those we worked there & designed what we thought



W. SHANKS,
President Canadian Roadmasters' Association, 1897-'99.

was most suitably adapted for the purpose. We got the privilege from one of the companies to use their shop for making & changing the tools, & I think we got up a number of tools that were very good. Clay picks, it was not a very hard matter to decide on that tool, but on the question of a tamping bar, we went into that quite extensively & changed & planned one that we thought was good. Then there were spike mauls & other tools. The most important were the claw bars. It took us some time to design one that we thought was right that is, one that would readily take hold of a spike in a tie & would pull it out without bending. We accomplished the making of a claw bar, & it was adopted as a standard. The M.C.R. is using that particular claw bar to-day, & our foremen are very very well satisfied with it, & it would be a hard matter, I believe, to change it for any other, so far as the foremen are concerned.

The report was adopted.

EXPANSION OF DIFFERENT WEIGHTS OF RAILS.

The committee, J. Shanks, J. Leslie & J. Graham, reported as follows: The expansion

required in 30-ft. rails at different temperatures is as follows:

30° below zero,	5-16 of an inch.
0°	1-4 " "
30° above zero,	3-16 " "
60°	1-8 " "
90°	1-16 " "

The above expansion applies to rails from 56 to 73 lbs. per yard.

T. HICKEY.—This is an important question & one we should not lose sight of. You have all noticed the expansion on different roads, & I have no doubt we have all heard the lamentable sound of the wheels passing over the joint where there is too much expansion. While too much expansion can be given, too little can be given as well. The expansion used by the Michigan Central is as follows:

From 7° degrees above to 30,	5-16 of an inch.
" 30	53, ¼ "
" 53	76, 3-16 "
" 76	97, ⅛ "
" 97	120, no expansion used

We use iron shims so made that they cannot drop down below the head of the rail—that is, the whole shim cannot drop down—the shim can go down 1¼ in. but not entirely. These shims of course would be taken out before the train passes over the rail.

THE CHAIRMAN.—I would like to hear from all the roadmasters on this question; it is a very important one & there is a great deal of difference of opinion in connection with it. Perhaps Mr. Drinkwater has something to say about this.

J. DRINKWATER.—Mr. Hickey said this was a very important question & one that should not be lost sight of. It is something I have given a good deal of thought to & I have been reminded very often of the subject in riding over my own division, & almost every division that I have been over. I forget whether Mr. Hickey said it was a melancholy sound, or what, he heard at the joints—something like that anyway. It is a thing I have never been able to come to any definite conclusion about, as to how much expansion would be right. Mr. Hickey has truly said that we can give too much & we can give too little. The object of allowing for expansion at the rail joints, to my mind, is to provide against the rail kicking out of the road—that is the only reason why there is an opening left at a joint. I have never had charge of any track that I did not think the joints were too open, that there had not been too much allowance for expansion. I have been furnished with a set of shims, yet I find it very difficult to use them & get the expansion just as the blue print lays it down. We start out in the morning at 7 o'clock to go to work, & probably it is 20 above zero, or down to zero. We set up a leg of rail, or put it in the track—generally, changing rails, we set up a leg of rail & use our shims & put on our fish plates, or whatever joint fastening we may use, tighten the bolts fairly well & remove the shims as we go along 7, 8 or 10-rail lengths. The atmosphere goes up, & at 12 o'clock probably it is 90 in the sun, & you walk over that same leg of rail & find about the same opening in those joints as there was at 7 o'clock—the fish plates grip the rail & carry it ahead & you have the same openings. After you have laid 10, 15 or 20 miles of track, & in Nov. or Dec. you find the joints are all too open. That has been my experience. I think it is the most difficult thing trackmen have to contend with. In laying new track the same conditions exist—the ties have nothing to hold them, the resistance of the ties is less than on ballasted track & the whole thing walks bodily ahead as the track is laid. I re-laid a piece 6 years ago in June & I put 4 ft. more rail in ¾ of a mile than I took out. The foreman said, "That will go over the fence in a week." It has not, those rails are about as good on the ends as when they were put in. I have seen lots of rails used up on the ends—one of the

causes was that the joints were too open; the more opening you have at the joint no doubt the harder stroke you get. Rails flatten down worse at the ends in winter than in summer, & I know no reason except that the joints are more open in the winter than in the warm weather. The rail is certainly not any softer. I think you will all agree with me that that is about the way it is. I am not in a position to tell you any methodical way of bringing about an improvement so that it will be perfect at all. It is a class of work that is pretty hard to get just right, & it is not hard to make a table to go by, almost anybody could do that; I think I could make a table myself, giving the figures, temperature, etc., but it is a great deal more difficult to get your rails down in accordance with that table, whatever it may be.

T. HICKEY.—I would like to ask Mr. Drinkwater if he couples them together before he puts them in.

J. DRINKWATER.—I generally do.

T. HICKEY.—How long a stretch?

J. DRINKWATER.—It depends a good deal on where we are working & how the train service is, etc. I generally try to put in a quarter of a mile, very often put in half a mile without a break.

T. HICKEY.—In using the expansion shims I have just spoken of, I think if the rail is properly laid there cannot be any mistake made as to the amount of expansion. Our practice is that we lay one rail at a time, & the foreman who does the work carries with him a thermometer, he does not carry it in his pocket, either. He changes his shims according to the temperature, laying on a rail at a time; so that the cold snaps do not affect your rail where it is laid in that way as though you put up a string of half a mile or three-quarters of a mile in the morning & put it in at noon.

J. DRINKWATER.—I may say that we have been using thermometers, but in any rails I have laid we have always coupled them together in strings varying from 10 rods to a mile. I have put in a mile of branch rail where there was not much traffic. We have never laid any with one rail at a time as Mr. Hickey speaks of.

THE CHAIRMAN.—I think the proper way to lay new rails is to lay one rail at a time. That is the way I have adopted of late years.

J. DRINKWATER.—I don't see how that overcomes the difficulty. You must have an opening at one end of the rail, & you have a new rail at one end of it & either a gap or an old one at the other end. The temperature does not stop while you place that rail in position & fix it there, it keeps going up all the time or going down. If you tighten up your bolts, any joint fastening I have ever seen grasps it tight enough to carry the rail along. A joint fastening that won't do that is not very much good, to my mind. I cannot see where laying one rail at a time will get over the

difficulty, unless you leave your fish plates off or not tighten your bolts.

J. GRAHAM.—In the last three years we have re-laid about 60 miles of 72 & 73 lbs.—about 20 miles 73 & the balance 72. The way we do, we link up half a mile or a mile, just according to what time we have between trains. I use oak shims for expansion, & leave them in, don't take them out; 3-16 is the size I use. Last year in Nov. I relaid about 8 miles. This spring when it got warm we had to cut 30 inches out of 4 miles. When the bolts were in it would only allow 3-16 of an inch expansion. I am certain if we had not cut the rails in May or June that they would have kicked in that 8 miles laid in Nov. This summer I laid about 13 or 14 miles in Aug. of 73 lb. steel. I think one has to be very careful about the expansion. I find that the rails are liable to buckle, which I think is just about as bad as having them pound a little on the ends.

THE CHAIRMAN.—I would like to ask Mr. Hickey if he considers there is any difference in expansion between the different weights of rails.

T. HICKEY.—No, I don't think there is enough to make a difference. There may be a very slight difference, but it is a hard matter to get at & to get at accurately. I have made some tests in that direction with a light section of rail & also a heavier one, & I was unable to detect any difference. I might, however, have gone into it more thoroughly, but my time was limited. It would require a great deal of time & a great deal of care to get at the difference, if there is any. The difference is so slight that I don't think we should make any mention of it. I would like to say a word as to using wooden shims. I used them some 16 or 20 years ago. Where you use oak shims they turn the rail ends & bunt up the rail you set them in, leaving very little expansion. I found I had some trouble with the wooden shims & discontinued using them.

J. GRAHAM.—I think it depends a good deal on the foreman who is laying the steel, how the wooden shims act—if he makes his men be careful when they are fitting the rails together, all right. I suppose if he is careless & lets them come back with the other rails as hard as they wish the wooden shims will not amount to much.

T. HICKEY.—In regard to that, as I understand it, the wooden shims are used for a given expansion, which has to be allowed between one rail & another, & that opening is filled with hardwood. I don't understand just how that opening is allowed for expansion if there is a hard piece of wood in there.

It was decided to postpone the further discussion of the report.

PLACING OF TIES AND TRIMMING BALLAST.

E. Murphy, Roadmaster C.P.R., Woodstock, Ont., Chairman of the Committee, re-

ported as follows. Thirty-foot rails should have ties uniformly spaced as follows:

70 lbs. a yard or lighter, 18 ties
70 to 80 " " 16 "
80 to 100 " " 14 "

Ties in main side tracks should be 24 in. centres, & in other than main side tracks 30 in. centres. In reference to trimming ballast I cannot give a better idea than to consult the C.P.R. standard. I have had my ballast for the past 16 years trimmed according to our present standard, & have found a great benefit from it. We all agree that the quicker we can get the water from the roadbed the better it is for the road.

The adoption of the report having been moved it was discussed:—

J. DRINKWATER.—I have an idea that probably Mr. Hickey would like to have something to say regarding this report. Although he has moved the adoption of it, I don't know whether he had anything to do with getting it up or not. Mr. Murphy sent it to me, & there may be things in the report that Mr. Hickey is not just in sympathy with. I got up with the intention of trying to make it clear for him to have something to say if he wished. There are things in it that I am not altogether in sympathy with. I have never had a track where the ties were too close together, not if we could equalize the spaces or distances. I have seen one rail with 18 or 19 ties under it & the next one to it with 11. I don't like them that way, no matter what the weight of the rail is. This report gives a 70 lb. rail & lighter, 18 ties. I think if the different weights of rail for the main line had been left out & 18 ties mentioned it would have been something near it, with the class of ties we use on our road. We get them all the way from 7 in. face to 14, or somewhere near there, & it is rather a difficult matter to get them spaced & have an equal bearing & an equalized support under the rail. I find in looking round that a great many roads have fallen into the idea, & adopted it, of having ties cut to a certain dimension. This way they can be equally spaced & the bearing & support of the rail thoroughly equalized. The same number of ties then would be under each rail of a corresponding length, & the space, whether spaced from centre to centre, or spaced between bearings, would be all the same. This summer we started spacing our ties—hewn ties & sawn—varying



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Name	Capacity	Units
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Grand Trunk Elevator, Portland, Me.	1,000,000	"
Export Elevator, Buffalo, N.Y.	1,000,000	"
J. R. Booth Elevator, Depot Harbor, Ontario	1,000,000	"
Cleveland Elevator Company's Elevator, Cleveland, O.	500,000	"
Erie R. R. Transfer & Clipping House, Chicago, Ill.	100 cars in 10 hrs.	"
Manchester Ship Canal Co.'s Elevator, Manchester, Eng.	1,500,000	"
Burlington Elevator Co., Peoria, Ill.	500,000	"
Canada Atlantic Railway Elevator, Coteau Landing, Que.	500,000	"
Northern Grain Co., Manitowoc, Wis.	1,350,000	"
Union Elevator, East St. Louis, Ill.	1,100,000	"
Montreal Warehousing Co.'s Belt Conveyer System		

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very much in size on the face, & we have been making a space between bearings of 14 ins. The tie is supposed to be at least 8 ins. I think that system is better than a given distance between centres, where ties vary in size. I think you get a more equalized bearing for your rail that way. Of course you have no idea then how many ties you are going to have under your rail it depends altogether on the size of the face—some rails have 16, 17 & down as low as 15. When you put in 7 in. ties together & 24 in. centre it leaves your spaces pretty wide. Probably the next 3 or 4 ties may run 11, 12 or 13 ins. with a 2 ft. centre & your spaces are very narrow. Get on an engine & ride over a piece of track like that & you will find a hard spot wherever these large ties are. I am very strongly inclined to think lately that ties should be cut to a dimension, & should have a given size for the face; then there would be no difficulty & we could decide on the number of ties to put under a rail. I don't think, if ties were dimensioned say 6 by 8, that 18 ties would be any too many under a 100 lb. rail. The trimming of ballast is a thing that people differ about. I don't know that it would be policy on my part to criticize very much the standard laid down for the C.P.R., as I have charge of a division on that system; yet I have been able to find fault with & reason out a pretty strong case against this style of trimming of ballast. I contend it is detrimental to your ties in the first place, & next that if you have a good quality of gravel, with the exception of when the ground is frozen that it provides no drainage whatever. If you have a fair supply of good gravel under your track, almost every drop of rain that falls on it goes down through the gravel, it does not run over the top of it. If I saw water running over the side of the slope, as shown on this blue print, to any great extent, & no frost in the ground, I would come to the conclusion that you had not really good ballast, it was not gravel altogether, something mixed with it that the water could not get through. I have seen some other cuts of trimming of ballast on the C.P.R. & they show cinders trimmed up square with the surface of the ties, also rock ballast & coarse ballast. Of course I think it is necessary to trim dirt ballast in this way, as water will not go down through it, & if it does it will not do the road any good. I believe the ordinary tamarack or hemlock tie will last at least a year longer with the ballast up flush with the surface of the tie. I have taken hemlock ties out of farm & other crossings that had been in there 11 years & perfectly sound, only cut down with the rail. The reason was that they were protected with a covering. We don't pretend to be able to bury them all up like that, but if you leave 2½ ins. or so of the end bare you expose it & before it is rotten it begins to shake to pieces. I believe in trimming up ballast flush with the ties if you have good ballast.

T. HICKEY.—I would like to say a word with regard to the placing of ties. If we allow a given number of ties to a certain length of rail I don't see how you are going to get that number of ties if you are going to space between the ties, that is, if you get some hewn ties & some sawn ties & go to work & space them uniformly between the ties, then I cannot understand how you are going to get a certain number of ties under the rail. Our practice in placing ties is this: We allow a certain number of ties to the rail for certain sections, & we have a 15 foot pole marked for the different sections of rail. The pole is marked at intervals for the centre of each tie, & when a man wants to put in a tie or more the pole is laid on the rail with the end of it up to the end of the rail & he marks where the tie is to go in according to the mark on the pole. The old tie comes out. It is possible that you would have to shift another tie to get this one in, but he will get that tie in where it belongs. And when the other ties

are renewed they are all spaced uniformly. Where there are a number of large ties & some small ones the large ones are not all put in together, neither are the small ones put in together. If a man puts in a large tie he usually puts in a small one next to it & that divides up the space more uniformly. If they are all sawn ties it is not necessary to do that. The question of handling ties is really very important. The ties perhaps cost more than the rail does, & for that reason I don't think that too much care or attention can be given to the handling of them & the best method in which to space them, as a result of which they would give better service.

THE EDITOR OF THE RAILWAY AND SHIPPING WORLD.—This report gives the C.P.R. standard ballast section on tangent, as used on the Ontario & Quebec, Atlantic & Eastern division, & I thought it might interest the members to see the standards of some of the other roads. I have here the Michigan Central double track, the Intercolonial & the western division of the C.P.R., & place them at the disposal of the members.

J. DRINKWATER.—I did not intend to say that we always put 3 or 4 small ties together & 3 or 4 large ones. It is something I never do when we can avoid it. But I have seen where they were taking out & renewing ties that there was a tie probably with 12 or 13 ins. face that had to come out, & the largest tie within a mile of it did not have more than 9 ins. & you had to put it in. I have spaced ties from the centres ever since I have been in the railway service. I never spaced them any other way until this year. I said, I think, in my former remarks that in spacing between the ties, the surface bearing of the ties, that we got for some rails 17, 16 & down as low as 15, according to the size of the ties. I did not say we could put

any specified number of ties under a rail & have them equally spaced unless the ties were cut to a dimension. That is what I intend to convey to you as being my opinion of the matter. I have always spaced ties & put

them in just as Mr. Hickey spoke of. I did not always use a pole, but I have used a pole & we have a pole on every section. Even then you don't get your bearing equalized. It is utterly impossible to equalize your bearing by putting ties under the rail either by a given number or spacing them from the centre or even between the ties. It cannot be done unless your ties are all the same size.

The report was adopted.

ELECTION OF OFFICERS.

At the afternoon session officers were elected as follows:—President, J. Graham, C.A.R., Ottawa; Vice-President, R. Shanks, C.P.R., Mattawa, Ont.; Secretary-Treasurer, J. Drinkwater, C.P.R., Winchester, Ont.; Executive Committee, J. Yeo, I.C.R., Riviere du Loup, Que.; J. R. Brennan, O. & G.R., Ottawa; A. N. McLennan, S. & L.R., Glace Bay, N.S.; F. J. Holloway, C.P.R., Toronto. The minutes of last year's meeting were adopted.

RAIL JOINTS.

The committee, J. Drinkwater & W. Shanks, reported last year as follows, the discussion on the report being adjourned until this year: In connection with our work there is no one thing of so much importance or that affects tracks so much as the joints. Considering from this fact the importance of the subject & the amount of money, time & study that has been expended on attempting to perfect rail joints, & yet your committee are strongly of the opinion that the best that has been produced that they have had practical experience with is still lacking, or has failed to fully meet the requirements. Our experience is from the old wrought iron chair to the plain fish plate with the tie directly under the joint. Then came the 2-tie angle bar, & later the 6 hole 40 ins. angle bar supported with 3 ties, & later still the 44 ins. angle bar supported the same as the 40 ins. with 3 ties, & at present we have a 4 hole angle bar supported on 2 ties.

Our experience has been that wherever joints have been supported with a tie directly under them, whether with the plain fish plate or the 3 tie 6 hole angle bar, the results have been better than with the 4 hole angle bar with the joint suspended between ties. The new angle bar with 4 bolts & 2 ties suspended joint is, we consider, a decided improvement over the old one in its general make up. Instead of slats in the edges for spikes the holes are through the web or flange. This gives the full benefit of the 4 spikes against spreading, but with the improvements in this joint over the old 2 tie suspended joints we have been unable to see where the defect has been remedied, or the cause removed, or the necessity provided for that we have found to exist with a suspended joint.

The 40 & 44 ins. angle bars have the appearance of a waste of material & this, of course, means expense for which no benefit is derived.

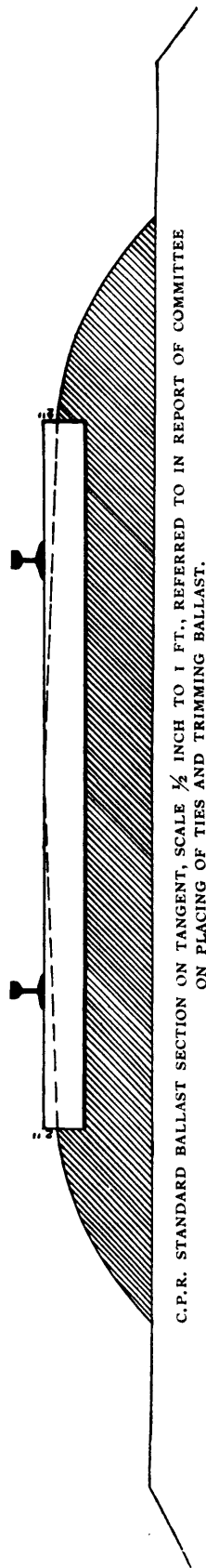
Up to the present our experience is, & we beg to report based on experience, that the suspended joint has been a failure & even with the improvements on the present suspended joint we do not feel free to recommend it as being all that it should be, but, to the contrary, believe that they must get their support from underneath & we consider that the energy spent & the efforts put forth to produce a satisfactory joint have not been productive of the result desired.

The report having been read, it was decided to postpone its further discussion.

SUBJECTS FOR NEXT YEAR.

THE CHAIRMAN.—The meeting is now open for discussion as to the subjects for our next annual meeting. It will be necessary to couple with the suggestion of each subject the names for the committee.

The following subjects were selected:—The



Creeping of Rails. Committee, J. Jelly, J. Brennan & T. Hickey.

The Best Mode of handling steam shovels, distributing & unloading ballast & all work to be done in connection with ballasting, etc., filling trestles, & all such work as that; taking up fully all the best devices & what it is really necessary to have to do work of that kind with. Committee, E. Murphy, A. McAuley & T. Graham.

The Renewal of ties, taking the best method of handling the ties from the time they are received on the section until the old ties are piled up, giving the cost of changing the ties or putting them on the track, & of each kind of ballast. Committee, J. Drinkwater, J. Leslie & J. R. Brennan.

MONTREAL CHOSEN FOR 1900.

THE CHAIRMAN.—The next thing is as to where our next meeting will be held & when.

R. SHANKS.—I will move that our next meeting be held in Montreal in the second week in Nov., 1900. My object in naming Nov. as the month is that there are quite a number of the members who live at such a distance that they were unable to get in in Sep. I think if we put it in Nov. that there cannot be much excuse.

J. DRINKWATER.—I have been at Detroit attending the American Roadmasters' Association convention which was held there last week, & found there seems to be a general feeling with the different associations that they have been holding their meetings too early in the season. The American Association had their meeting this year earlier than we have, & had the first choice. They have chosen the second Tuesday in Nov. as the date of their next meeting. I have the pleasure & satisfaction of being a member of that association & would like very much to attend their next meeting, & of course it would be impossible for me to be in Montreal & Los Angeles on the same day. On that account I think it will be worth our while to fix our meeting early enough so that the two will not conflict. It will take probably four or five days to get to California, & I am pretty strongly inclined to think that after the American meeting is over it would be too late for ours. I don't think Mr. Shanks was aware that the American Association had changed its date. I know down round Montreal I have been running a snow plow pretty early in Nov., & that is considered the most important work that we have. I find the last half of the fall is always the busier. I also find that if a man does not want to attend a convention of this kind he does not go to it, & if he wants to go & tries really hard he gets there. I would be in favor of holding the meeting later than we have been doing; at the same time I don't think it would be advisable to fix the same date that the American Association will have

its meeting. I am sure we would not have Mr. Hickey with us if we took anywhere near the same date.

T. HICKEY.—The reason for putting the date of the American Roadmasters' Association meeting in Nov. was on account of going to a warm climate. It was put ahead for next year only.

J. DRINKWATER.—I meant to mention that the date of the meeting was only named after the place had been decided on. I suppose, probably, if a place of meeting had been selected down east, or anywhere near this section, that the date would not have been so late.

R. SHANKS.—In view of what Mr. Drinkwater has just acquainted us with I will move that the date be Oct. 17 & 18, 1900, instead of the second week in Nov. It is not very convenient for roadmasters to be away at the very end of the month nor at the very first. F. J. Holloway seconded the motion, & it was carried.

THE EDITOR OF THE RAILWAY & SHIPPING WORLD.—Will you allow me to say, on behalf of the Track Supply Association, that in connection with the Montreal meeting I think it will be well for the Executive, if possible, to try & arrange so that the meeting, the headquarters & the place for the exhibits may be all together, as it was in Detroit, where everything centred at the hotel. It is much more convenient to have an hotel for headquarters, where you can have the meetings as well as the exhibits; have the whole thing together. I think this will meet the views of the supply men as well as the members of the Roadmasters' Association.

J. DRINKWATER.—The suggestion is a very good one, but it has come a little late to help us out any this year. Our finances are looking up well & everything is prosperous. Our members are all good payers; if they don't come near us, they send us the money, & I don't know of any reason why we should not go to the Windsor Hotel in Montreal, unless a better one is built. There are two or three hotels there with halls in connection with them. I don't think there is an hotel in Montreal that compares with the one in Detroit where the American Association met. But I fancy we can be fairly well fixed at the Windsor. I think I can promise you that arrangements will be made so that we can meet at the Windsor.

The following were appointed a committee to arrange for a place of meeting, etc., in Montreal: J. Hennesy, J. Shanks, W. Cooper, J. Drinkwater & F. E. Came.

VOTES OF THANKS.

R. SHANKS.—I move that a vote of thanks be tendered the members of the Track Supply Association for the very kind manner in which they have entertained the roadmasters on this

occasion. This was seconded by J. Graham & carried.

THE CHAIRMAN.—I may say to the supply men who are still with us, that I have much pleasure indeed in tendering them this vote of thanks from the members of this Association for the kind way in which they have treated us, & I hope that in time to come we will have larger gatherings, & that there will be more members at our meetings to appreciate your kindness and look over the supplies.

R. L. THOMAS.—On behalf of the supply men I may say that we will do all that we can to please you in the future, & we will try to help your Association to grow.

MR. CLARK.—I would like to mention that in 1879 I attended the beginning of the American Roadmasters' Association, & it only had seven members; that ought to be encouraging.

J. JELLY.—I beg to move that a hearty vote of thanks be tendered the management of the G.T.R., through General Roadmaster Ferguson, for their kindness in extending the courtesies of the road to us, & in providing us with a special car in which to visit Niagara Falls. This was carried unanimously.

J. JELLY.—Before we close I would move a vote of thanks to our President for the able manner in which he has filled his office since being elected.

F. J. HOLLOWAY.—I have much pleasure in seconding the motion.

J. DRINKWATER.—What Mr. Clark said about there being seven members in 1879 of the American Association, reminded me of the day that our President & I & three or four others met to organize this Association. I am very sorry that we have not grown faster, although we have not got anything to complain of so far as membership is concerned—we have something like half the entire roadmasters in Canada members in good standing to-day, & although there are not many here to-day, we have got them on the roll. There were 21 present, I think, the first day of last year's meeting, & we had a fairly good meeting. I think if we do not get completely discouraged, but endeavor to go on, when the features of this meeting become known, some of those who were too busy or too indifferent to be with us to-day, will kick themselves for the next three months. I am going to let them know pretty soon. THE RAILWAY & SHIPPING WORLD will give a detailed account of the whole thing; & each member will get a copy of the proceedings. I hope when we meet next year in Montreal that every member of the Association will be with us, & that by then we shall have enrolled

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as members every roadmaster in the Dominion. I am going to make a desperate effort. Every time I write to a roadmaster, if there is anything of any importance, anything I think would interest him, I write him about it, & send him all our printed matter just the same as if he was a member. It is pretty hard work when you have to get down to coaxing, but I am going to start coaxing next year & see if that will do something. If every member will make a personal effort to induce his neighbor on each side of him to attend these meetings, I think it will be beneficial. I am sure I am in sympathy with Mr. Jelly's motion thanking the President. I presume the President does not feel like putting this motion, & if no one else wishes to say anything, I will put it. The motion was unanimously adopted.

THE CHAIRMAN.—Gentlemen, I certainly appreciate your kindness in this respect. While I accepted the position of President of this Association at the time it was organized, it was simply because I was, I may say, forced to do so; nobody else would do it, & we had either to drop the matter or I had to take the position. At our next meeting it was the same thing. I fully intended to drop out of it last year, & would much rather have had someone else at the head of the Association. While we have not made much progress, I can only say that I have done what little I could, & that has not been very much, but I hope that in the future the Association will grow. I have great faith in this Association as being something that will be a great benefit to roadmasters, & I look upon it that anything that is a benefit to roadmasters in this respect is a benefit to the railways they are on. I fully believe that if our roadmasters realized the benefit that they would derive from attending these meetings, that more of them would turn out. I hope more will be present next time. I thank you sincerely for your kindness.

F. E. CAME.—I would like to say a few words in behalf of the Track Supply Association, if you do not object. The railway supply men of Canada & the United States are very anxious for the success of your Association, believing as they do that the more knowledge you have about the different devices the better able they will be to sell their goods. It means dollars & cents to the supply people to have you look at their wares & know what they are, so that you can decide intelligently. For this reason we have organized an Association, to be practically in connection with yours, to be known as the Track Supply Association. The object is to further your interests, & to try to make the conventions a success, financially & otherwise, by helping you to arrange your hotel accommodations, to have the devices so that you can see them, & give more or less of a systematic entertainment, which will not detract from the papers & the technical proceedings, but will help you to pass some of the rest of the time, & make the meetings as a whole pleasant & productive. We have done some few simple things this time, & next year we hope to be well organized, & to do better in Montreal. I think this method will help to increase your membership as well, if we have a concerted action.

The Convention then adjourned.

EXHIBITS OF TRACK SUPPLIES, ETC.

The following exhibits were displayed in the hall in the Temple Building, in which the Association met:

THE PAGE WIRE FENCE CO. OF ONTARIO, Walkerville, Ont., represented by R. Z. Rogers, Special Railway Salesman. Exhibits: Wire fencing, including the Page Coiled Spring Wire.

A. O. NORTON, Coaticook, P.Q. Exhibits: 2 Norton sure drop track jack, 1 Norton Automatic raising & lowering jack, & 1 Norton ball-bearing bridge jack.

F. E. CAME, Montreal. Exhibits: Samples

of the Servis tie plate, the Q. & W. tie plate & the Pearson jack; also model of the Macpherson patent safety switch block.

THE NATIONAL LOCK WASHER CO., Newark, N.J., represented by R. L. Thomas. Exhibit: Nut locks.

ROBERTS, THROP & CO., Three Rivers, Michigan, represented by W. H. Frisby. Exhibit: Sample of the Donovan improved pressed steel wheel.

THE RAMAPO IRON WORKS, Hillburn, N.Y., represented by R. J. Davidson. Exhibit: Automatic safety switch & stand.

THE BUDA FOUNDRY & MFG. CO., Harvey, Ill., represented by J. McKinnon. Exhibit: Steel wheel.

DILWORTH, PORTER & CO., Pittsburgh, Penn., represented by C. Stein. Exhibit: Samples of the Glendon longitudinal flange tie plates.

THE CONTINUOUS RAIL JOINT CO. OF AMERICA, Newark, N.J., represented by W. E. Clark. Exhibit: Sample joints.

THE WEBER RAILWAY JOINT MFG. CO., New York, represented by J. C. Barr & G. E. Daggett. Exhibits: Sample tee rail joint, step joint & insulated joint.

W. GOLDIE, JR., & CO., Pittsburgh, Pa., represented by W. Goldie, senr. Exhibits: Sample tie blocks, tie plates & spikes.

THE DIAMOND STEEL CO., Wilmington, Del., represented by B. Reece. Exhibits:



THE TEMPLE BUILDING, TORONTO,
in which the Convention was held.

Spikes, rail joints, rail-joint springs, tie plates & track bolts.

TRACK SUPPLY ASSOCIATION.

The supply men in attendance at the convention held a meeting Sep. 19 & decided to form an organization to be known as the Track Supply Association.

The following officers were unanimously elected: President, F. E. Came, Montreal; First Vice-President, R. J. Davidson, Hillburn, N.Y.; Second Vice-President, W. H. Frisby, Three Rivers, Mich.; Secretary-Treasurer, Acton Burrows, 33 Melinda Street, Toronto.

SOCIAL FEATURES OF THE CONVENTION.

On the afternoon of Sep. 20, the members of the Association, many of whom were accompanied by their wives, were the guests of the Track Supply Association, & enjoyed a charming drive in four-in-hand coaches through the principal business & residential streets of Toronto. In the evening they were entertained at one of the theatres, where an excellent vaudeville performance was witnessed.

At 11 a.m. on Sep. 21, a number of the members of the Roadmasters' Association & of the Track Supply Association were conveyed to the Niagara Falls in a special car attached to the G.T.R. express no. 9, the invitation

having been extended by General Roadmaster Ferguson, by kind permission of General Superintendent McGuigan. On their arrival at Niagara Falls station a special electric motor car of the Niagara Falls Park & River Railway took them to the Dufferin restaurant, where lunch was partaken of. The electric car was then taken to the Dufferin Islands, where a short time was spent, after which a rapid trip was made north to Queenston Heights, where Brock's monument was visited, Niagara Falls being again reached about 6 p.m.

The party having dined at the G.T.R. restaurant, the special G.T.R. car was again boarded, Toronto being reached about 9 p.m. after a most enjoyable day's outing, which was a great treat to those who were privileged to be present, & many of whom had not visited Niagara Falls before. While on the way from Niagara Falls to Toronto, a hearty vote of thanks was passed to the G.T.R. management for the courtesy shown, & several of the roadmasters expressed themselves in very warm terms as to the excellence of the track.

Railway Equipment Notes.

The Bay of Quinte Ry. is having 10 flat cars built.

The Caraqueet Ry., N.B., has added another locomotive to its equipment.

Two locomotives have recently been added to the rolling stock of the Canadian Northern.

The Dominion Atlantic has placed an order with Rhodes Curry & Co., Amherst, N.S., for 10 flat cars.

The Moncton & Buctouche Ry. has ordered a passenger car from Rhodes Curry & Co., Amherst, N.S.

Ross, Barry & McRae, contractors for the Great Northern of Canada, recently purchased 5 flat cars from Rhodes Curry & Co., Amherst, N.S.

The Dominion Iron & Steel Co., Sydney, N.S., recently secured 8 freight cars from Rhodes Curry & Co., Amherst, N.S. The Co. has placed an order for a locomotive in the U.S.

The Canada Atlantic has built 500 freight cars at its Ottawa shops this year, & is about to build 500 more to be completed by next spring. These cars have a capacity of between 70,000 & 80,000 lbs. each.

The Sydney & Louisburg Ry. has added a 121-ton locomotive to its equipment. Orders have been placed for 50 steel cars of a capacity of 100,000 lbs. each & for a 2nd-class combination passenger car, the latter with Rhodes Curry & Co., Amherst, N.S.

The Great Northern of Canada's new equipment, for part of which orders have already been placed, will comprise 12 four-cylinder compound locomotives; 8 1st-class & 11 2nd-class passenger cars, 4 sleeping, parlor & dining cars, 8 baggage, express & mail cars, 300 box & cattle cars, 100 flat cars, 4 cabooses, 4 refrigerator cars, 4 snow plows, 25 hand cars & 25 push cars.

The London Times, in a recent article dealing with Russia's activity & enterprise in railway matters, announces that the Russian Government has issued a Ministerial order directing that by January, 1903, all freight rolling stock on all the Russian lines, both State & private, be fitted with the Westinghouse quick-acting brake. It is estimated that 1,200 locomotives & 30,000 freight cars will be thus fitted.

For the Intercolonial orders have recently been placed with Rhodes Curry & Co., Amherst, N.S., for 20 Wicks patent refrigerator

cars & 200 box cars, the latter to be 35 ft. long & of 60,000 lbs. capacity. Four locomotives & 100 cars are being built at the shops of the line at Moncton. An order has recently been placed outside for 5 locomotives. A considerable amount of new machinery will be placed in the Moncton shops this year. About \$20,000 is to be expended in equipping freight cars with air brakes.

Grand Trunk Equipment.

Two new dining cars which have recently been put on between Suspension Bridge & Chicago are thoroughly up to date in every particular. They are 74 ft. over all & are equipped with standard wide vestibules, steel platforms & 6-wheel trucks with 33-in. steel tired wheels. Air signals are attached, an anti-telescoping device affixed, & all modern appliances added. The general exterior appearance is similar to the new standard day coaches which are run on the system. The windows are glazed with heavy plate glass, all double. The dining-room is large, being 31 ft. 8 in. long, & will seat 30 persons comfortably. The general style of the interior design is colonial, the wood work being of quartered oak. The chairs are of oak upholstered in leather. The windows are decorated with draperies & the openings into the dining-room are provided with ornamental portieres. The floors are carpeted with Wilton throughout the whole length of the car & the vestibuled floors are covered with rubber tiling. The kitchen & pantry are equipped with all modern conveniences, the tables, etc., being covered with polished brass. A handsome sideboard is placed at one end of the dining-room just in front of the pantry, & opposite to the sideboard a wine locker is provided. China & linen closets, wardrobes & white metal washstands are in evidence in accordance with modern practice. The cars are heated with hot water coils from the engine.

The building of 12 standard freight engines has been completed at the Co.'s Point St. Charles shops, & out of the order for 10 standard passenger engines 3 have been finished.

Ten Vauclain compound consolidation locomotives are being built for the Co., at the Baldwin Locomotive Works. They will be used on freight trains in international service in hilly or mountainous districts where the grades are unusually heavy, such as the White Mountain district in New Hampshire, & westward along the line to within a short distance of Montreal.

The Co. is building at its Point St. Charles shops, Montreal, 20 1st-class passenger coaches of the 800 series, which will be of the most modern & approved construction.

High Speed Brakes.

The Westinghouse high speed brake has recently been placed on 3 C.P.R. trains, also on 3 Canada Atlantic trains, all of which are employed in the Montreal-Ottawa fast service. This brake has been designed to meet the exceptional requirements of regular trains which are scheduled to run at much higher average rates of speed than have heretofore prevailed in passenger train service. It will stop passenger trains in emergencies in about 30% less distance than is required with the best brakes heretofore used. The brake apparatus is the standard Westinghouse quick action with a pressure regulating attachment. The addition of pressure regulating devices to the existing quick action brake fixtures for both locomotives & cars is all that is required to convert them into high speed brakes. The superior stopping capacity is obtained by increasing the standard air pressure of 70 lbs. to about 110 lbs.

The apparatus of the high speed brake is very simple. It consists of the quick action air brake apparatus, as ordinarily applied to a passenger car, to which is added an automatic reducing valve, that is adapted to be secured quite readily to the car sills or to any point in the vicinity of the brake cylinder, to which it is connected by means of suitable piping. It is therefore only necessary to add this pressure reducing valve to the quick action brake apparatus, already in use upon any passenger car provided with standard brake gear, to convert the apparatus into the high speed brake. This automatic pressure reducing valve is so constructed that it remains inert in all service applications of the brake, unless, at any time, the brake cylinder pressure becomes greater than 60 lbs. per square inch (for which the pressure reducing valve is ordinarily adjusted), in which case the reducing valve operates to promptly discharge from the brake cylinder so much air as is necessary to restrict the cylinder pressure to 60 lbs. It will thus at once be apparent that the maximum brake cylinder pressure, in all service applications of the brakes, is restricted to 60 lbs., regardless of the air pressure normally carried in the train pipe & auxiliary reservoirs. In an emergency application of the brakes, the violent admission of a large volume of air to the brake cylinder (only made possible by the quick action feature of locally venting the train pipe) raises the pressure more rapidly than it can be discharged through the capacious service port of the reducing valve, & the port thereby becomes partially closed, restricting the discharge of air from the brake cylinder in such a manner that the pressure in the brake cylinder does not become reduced to 60 lbs. until the speed

of the train has been very materially decreased.

In order to cause this high speed brake apparatus to become practically effective for producing the increased stopping efficiency, the pressure of the air carried in the train pipe & auxiliary reservoirs is increased from 70 lbs. (the customary standard) to about 110 lbs. per square inch. With this pressure in the train pipe & auxiliary reservoirs, an emergency application of the brakes almost instantly fills the brake cylinders with air at nearly 85 lbs. pressure, thereby increasing the braking force from about 90% (the customary standard) to about 125% of the weight of the car. Or, in other words, the pressure of the brake shoes upon the wheels is about 40% greater, at this instant, than is realized by the mere use of the quick action brake. The air pressure immediately begins to escape from each brake cylinder, through the automatic reducing valve, & continues to do so until the brake cylinder pressure becomes 60 lbs., which is thereafter retained until the brakes are released by the engineer.

On account of the high pressure normally carried in the auxiliary reservoirs (110 lbs.), a full service application of the brakes (charging the brake cylinders with air at 60 lbs.) may be made, & still leave the pressure in the auxiliary reservoirs at nearly 100 lbs. If, after releasing the brakes, a second application of the brakes should be called for before there has been time to recharge the reservoirs, there is abundant air yet stored in the reservoirs to make a second, & even a third, full service application, & still leave sufficient air pressure to make an emergency stop equal to that of the ordinary quick action brake. These advantages, coupled with such a restricted brake cylinder pressure for all service applications of the brake, that wheel sliding is entirely avoided, require no comment to insure recognition of their importance upon trains of unusually high speed. By simple additions to the brake apparatus on the locomotive, the train pipe pressure is easily & quickly changed to 70 lbs., when the locomotive is used in other kinds of service, & vice versa.

One on C. R. Hosmer.

This is how the Daily Transcript, Moncton, N.B., announced Mr. Hosmer's recent election to the C.P.R. directorate:

"C.P.R. DISASTER.

"MONTREAL, Oct. 10.—Mr. C. R. Hosmer has been elected a director of the Canadian Pacific Railway."

Moncton is a "dry" town, so the Transcript proof reader will have to find some other excuse.

TO CALIFORNIA.

Via The Midland Route.

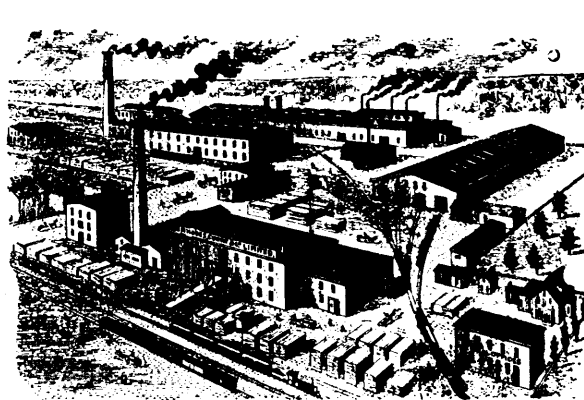
Every Friday night, at 10.35 p.m., a through Tourist Car for San Francisco, carrying first and second-class passengers, leaves the Chicago, Milwaukee & St. Paul Railway Union Passenger Station, Chicago, via Omaha, Colorado Springs and Salt Lake City (with stop-over privileges at Salt Lake City), for all points in Colorado, Utah, Nevada and California.

The Tourist Car berth rate from Chicago to San Francisco is only \$6.00, and the sleeping car berths should be reserved a few days in advance of departure of train.

Through tickets and sleeping car accommodations can be secured from any agent in the east, or by applying at the Chicago, Milwaukee & St. Paul Depot or City Ticket Offices in Chicago.

Send for our free illustrated California folders. Address Geo. H. Heafford, General Passenger Agent, Chicago, Ill., or A. J. Taylor, Canadian Passenger Agent, 8 King street, E., Toronto, Ont.

All Cuts used in the RAILWAY AND SHIPPING WORLD, and owned by the Publishers, are
.....For Sale.



**Rhodes,
Curry & Co.,**
Ltd.,

Railway and
Street Cars

of all descriptions.

Special Cars for Coal, Ore,
Lumber, &c., with Ball-
Bearing Wheels.

Car Wheels, Castings, Forgings, &c.
AMHERST, NOVA SCOTIA.

Direct Results from Advertising.

The new advertiser looks for direct & immediate returns from his advertising, & if he doesn't get them, is likely to think the advertising unprofitable.

The old & experienced advertiser is willing to wait for results, & it is he who generally gets them.

Only bargain advertising brings in business with a rush; & it must be remembered that bargain advertising is not profitable in itself—the profit comes later. Bargains bring people again, & it is the people who come again who make profitable customers.

Advertising lives a great deal longer than most people give it credit for.

An advertisement that is in to-day loses its value only when the last man who saw it is dead.

An experience of mine on the life of advertising may not be amiss.

In a monthly class publication I inserted an advertisement one month, from which immediate replies did not seem to justify continuance, & I stopped it.

Six months afterward I got a reply that brought me more business than the advertisement cost. About ten months afterward I heard from a man who paid me several times the cost of the advertisement.

Who knows but if I had continued the advertising it might have made me rich?

The direct & immediate results were almost nothing. The results that came after I had supposed the advertisement dead & forgotten were as profitable as they were surprising.

As a single advertisement can seldom be hoped to pay, & as the cumulative effect of repeated advertising is the strongest element in the success of advertising, it is not unreasonable to suppose that a continuation of that advertisement would have been highly profitable.—From Sacramento, Cal., Bee.

G.T.R. Brantford Shops.—The Brantford Co-operative Pork Packing Co. is negotiating with the G.T.R. Co. for a lease of the old shop buildings at Brantford.

ELECTRIC RAILWAYS.

Quebec Electric Railways.

Chaudiere Valley Ry.—The Canadian Electric Light Co. is about to develop the water power of the Chaudiere Falls, near Levis, by which a minimum of 5,000 horse power is expected to be secured. It is said the Co. will construct an electric railway, to be known as the Chaudiere Valley Ry., & to run through Levis, Bellechasse, & the neighboring counties.

Hull Electric Co.—The town authorities of Aylmer are applying for an injunction to restrain the Co. from removing its tracks on Main St., Aylmer, the Council believing that it would interfere with the town's business & progress to have the tracks altered, while the Electric Co. desires to make the change to avoid legal complications.

Montreal Park & Island Ry.—At the annual meeting, Sep. 21, the report showed the following results for the year ended Aug. 31:

Earnings.	1898-9	1897-8
Car earnings.....	\$109,988 74	\$104,761 36
Miscellaneous revenue....	1,972 00	207 99
	\$111,960 74	\$104,969 35
Operating expenses.	1898-9	1897-8
Car service.....	\$23,945 71	\$23,446 51
Power house.....	16,952 88	18,442 87
Salaries (office).....	4,461 50	4,725 80
Repairs motors.....	5,459 71	5,783 25
" cars.....	3,328 35	2,921 30
" track.....	3,110 39	3,481 15
" overhead.....	1,023 84	1,320 00
" power plant.....	594 85	1,031 72
" buildings.....	159 28	272 02

tools & machinery	147 33	87 58
Car house.....	2,782 72	3,384 09
Track cleaning.....	2,233 39	2,283 89
General expense.....	2,203 08	1,830 77
Office.....	900 00	1,168 38
Injuries & damages.....	1,650 66	796 97

Balance	\$68,963 69	\$70,976 30
	\$42,997 05	\$33,993 05

Gross Earnings, 1898-9, \$111,960.74; 1897-8, \$104,969.35; 1896-7, \$79,986.93; 1895-6, \$56,446.10. Increase, 1898-9, \$6,991.39, or 6.66%. Operating Expenses, 1898-9, \$68,963.69; 1897-8, \$70,976.30; 1896-7, \$64,621.15; 1895-6, \$55,878.81. Decrease, 1898-9, \$2,012.61, or 2.92%.

Net Earnings, 1898-9, \$42,997.05; 1897-8, \$33,993.05; 1896-7, \$15,365.78; 1895-6, \$567.29. Increase, 1898-9, \$9,004.00, or 26.78%.

Passengers Carried, 1898-9, 1,240,596; 1897-8, 1,216,370; 1896-7, 1,036,975; 1895-6, 730,494. Increase, 1898-9, 24,226, or 1.99%.

Car Miles, 1898-9, 696,314; 1897-8, 696,992; 1896-7, 520,901; 1895-6, 426,530. Decrease, 1898-9, 878, or .10%.

	1898-9	1897-8	1896-7	1895-6
Earnings per car mile....	16.08	15.06	15.30	13.43
Earnings per passenger mile.....	9.02	8.63	7.70	7.73
Operating % of earnings	61.64	67.62	80.81	98.99

The old directors were re-elected as follows:—H. S. Holt, Hon. L. Beaubien, Hon. A. A. Thibaudeau, Hon. J. R. Thibaudeau, W. Strachan, A. Brunet, D. Morrice.

Montreal St. Ry.—The gross earnings are:

	1898-9	1897-8	Increase.
Oct.....	\$133,419.69	\$116,003.09	\$17,326.60
Nov.....	125,126 10	110,608.98	14,427.12
Dec.....	127,678.00	113,029.33	14,648.67
Jan.....	125,276.04	110,155.99	15,120.05
Feb.....	113,828.02	102,425.99	11,402.03
Mar.....	123,754.11	114,476.98	9,277.13
April.....	139,405.96	110,619.27	28,786.69
May.....	145,466.38	123,368.08	22,108.30
June.....	156,828.34	132,964.61	23,863.73
July.....	154,048.07	143,986.63	10,061.44
Aug.....	163,394.47	143,801.19	19,593.28
Sep.....	146,185.06	136,764.80	9,420.26
	\$1,645,450.24	\$1,438,324.91	\$187,125.33

On Oct. 2 the Co. handed over to the City of Montreal \$70,608.57, amount of percentage on the gross earnings of the Co. within the limits of the city for the year ending Sep. 30. The Co. pays 4% on earnings up to \$1,000,000, & 6% on earnings between \$1,000,000 & \$1,500,000. The question of paying the city a percentage on the earnings of the lines outside the city is still in dispute, & no payment has been made by the Co. in this connection. Under the by-laws the Co.'s annual meeting is fixed for Nov. 1, but as that is All Saints' Day & a legal holiday in Quebec it is probable the meeting will be held Nov. 2.

The Co. is appealing against its assessment by the city, the assessors having valued the poles, wires & rails, independent altogether of the plant & machinery, at \$280,000. The Co. have about 96 miles of single track in the city, so that the valuation is on the basis of \$3,000 a mile. The Co. claims that the valuation for a similar tax in Toronto is only \$1,050 a mile, & asks that the assessment be reduced to the valuation imposed in Toronto. This would reduce their valuation by about two-thirds, & the assessment to something like \$100,000, instead of \$280,000. The Co. also objects to the imposition of the special business tax on the basis of the assessment of its real property, including that already taxed under the poles, wires & rail tax & the machinery tax. The Co. points out that in reality as the law is construed by the assessors, it is being taxed no less than three times on some of its property which the city charter designated as real property. The Co.'s protest to the assessors contends that the charter, while it authorizes the taxation of machinery as being part of the immovable property, & also the taxation of poles, etc., as forming part thereof, does not authorize the taxation of the rental value thereof as part of the business premises of the Co. The machinery, poles, etc., are not subject to water rates. The poles, wires & rails of the Co. have been

valued at a higher price than the Co. would be able to obtain for the same if desirous of disposing of them. The 2nd clause of the Co.'s contract with the city reads:

"The Corporation shall grant the said Co. all licenses, rights & privileges necessary for the proper & efficient use by electric power to operate cars in the said streets in the manner successfully in use elsewhere; including the right to open said streets," etc., etc.

The understanding & agreement between the City & the Co., the document continues, was that the percentage of its earnings paid by the Co. was accepted by the City in lieu of all taxes, rates & assessments, with the exception of the tax upon immovable property & the water rate. This agreement or contract, it is argued, having been confirmed by the Legislature, cannot be annulled by the charter. In support of this sec. 567 of the charter is quoted, which reads:

"Nothing contained in this Act shall be construed as allowing the city to violate any of its obligations undertaken by contract or as affecting or repealing any powers specially granted by statute to corporations or companies."

In conclusion the notice of appeal says: "The Montreal St. Ry. Co. respectfully submit to the Board of Assessors, That an excessive valuation has been placed upon its property on Delisle & Notre Dame Streets. That its machinery, poles, wires, etc., did not constitute, at the time of the contract, real estate, & consequently it is not liable for assessment thereon under the present charter of the city. That it is liable only for an assessment of the property which was immovable in 1893. That if the machinery, poles, etc., are immovable they should be assessed only at such value as the Co. could obtain for them if they were desirous of disposing of them. That it is not liable for water rates on any part of the assessment which represents machinery, poles, etc. That the Co., having a grant from the City of all licenses necessary for business, the city cannot levy any tax or license upon it, & inasmuch as all personal taxes, including business tax, are licenses within the meaning of the charter & the contract referred to, the Co. is not liable for the same."

The Co.'s car shops at Hochelaga, on which work was started early in the spring, have been completed. They cover an acre & a half of ground at the corner of Harbor & St. Catherine Streets. The blacksmith shops & a portion of the storerooms are the only rooms occupied at present, the workmen in these having been removed recently from Coté St. The vacated building on Coté St. is to be used for storing reserve cars & for urgent repairs at all times. The new shops include those for machine, blacksmith, winding & car-building purposes. The latter building is nearest St. Catherine St., & is fitted with a full system of tracks, where a large number of cars may be kept in the course of alteration or construction at once. The premises are all to be heated by the hot blast system. The machine shop & storeroom are 35 ft. high, while the other building is only 20 ft. high, & is well lighted by hundreds of windows & a dozen large skylights. Near by the Co. is erecting a reading room & recreation building for employes, which is to be fitted with a gymnasium, bathroom & barber shop, & will be ready before the snow flies. On St. Denis St. the Co. has well under way large storage sheds, measuring 250 by 100 ft., which will accommodate nearly 100 cars.

The city attorney has given his opinion that the Co. is bound to remove the snow from its tracks, & also to pay half of the cost of removing the snow from the rest of the street from curb to curb, including that thrown from the tops of buildings.

The Co.'s winter cars now being put in service have the front vestibules entirely closed in, thus making the motor men more comfortable & keeping the cars warmer, owing to the doors on the front vestibules not being opened.

The city surveyor states he intends to take steps to compel the Co. to repair the asphalt near its tracks on the asphalted streets, as he contends that much injury is done to the asphalt by the vibration of the cars.

The Co. has placed a gang of men at work constructing the Cote des Neiges line. It is said work will be continued to the city limits on the Cote des Neiges road.

Quebec Ry. Light & Power Co.—At the annual meeting, Sep. 12, the following report was presented:—The directors having been authorized at a special meeting of shareholders to complete the purchase of the stock, assets, franchise, etc., of the Montmorency Electric Power Co., take pleasure in reporting the satisfactory completion of the negotiations entered into, the Co. taking possession of the property Aug. 16, 1898. By the amalgamation of this division the original intentions of the Co. were accomplished, & it became advisable to apply to the Dominion Parliament for legislation ratifying & confirming the purchase of the Quebec District Ry. Co. & the Montmorency Electric Power Co., & advantage was taken of the application to change the name of the Co. to the Quebec Railway, Light & Power Co., & to obtain further important & valuable legislative powers, the principal being:—Sub-sec. 4 of sec. 10 of chap. 59 of the statutes of 1895 was repealed, & power to construct railways in municipalities without their consent, was obtained, provided the railway was not laid along the public highways. Power to acquire the business of gas & lighting companies. Confirmation of the agreements made with the Quebec District Ry. & Montmorency Electric Power Co. Power to expropriate for pole lines & other purposes under the provisions of the Railway Act. This bill was assented to, & became law July 10, 1899.

The by-laws passed at a special general meeting on Mar. 20 last, were approved by the Governor-in-Council, & in accordance therewith the number of directors was increased from 7 to 9, W. Shaw & G. H. Thomson being added to the board. The directors submit a statement showing the result of the year's operations, which may upon the whole be considered satisfactory, taking into account the broken period on the power division, & the fact that the winter was excessively severe, over 120 inches of snow having fallen, the summer unfavorable & the inability of the Co. to properly operate its electric cars, owing to the paving & asphaltting of the streets. The legal, notarial & other expenses incident to the amalgamation of the several companies, & which have been very large, have been charged & included in the year's operations. Judging from the results of the past year & of the previous year, the directors expect for the future very considerably increased earnings, & they are confirmed in their belief by the results of the last two months, which show an increase on the Montmorency division of 16% & 7¼% on the Citadel division over the same period of last year.

During the past year the mileage of the Citadel division has been increased from 13.77 to 17.22 miles, the principal extension being from Aqueduct st. to St. Valier Toll Gate or St. Charles Cemetery, & the Co. is only awaiting the sanction of the Railway Committee of the Privy Council before operating this extension. The Beauport & Montmorency extension has been left in abeyance for future consideration. The cars, electrical equipment, & everything necessary for the electrical conversion of the steam road, except the copper & other material for the overhead construction & bonding, have been purchased or ordered, & the directors expect that this work will be fully completed during the ensuing year. The Co.'s financial arrangements did not contemplate any provision for the cost of installing the necessary plant for the electrical power for

the railway to Ste. Anne, or for the railway to Montmorency, nor was there any provision made for the extensions of the Citadel division, which have been found essential to the profitable working & operation of the whole system. The cost of all these improvements is estimated at \$150,000, & the directors have called a special general meeting of shareholders for Oct. 9, to consider this subject, when they will recommend that the treasury stock remaining in the hands of the Co. be issued & sold by tender for the purpose of providing the additional necessary capital.

Montmorency, Citadel and Power divisions; general financial statement for year ended June 30, 1899:

ASSETS.	
Road and equipment, real estate, buildings, etc.	
Montmorency division.....	\$2,055,091 71
Power division.....	1,526,689 05
Citadel division.....	1,107,790 64
Beauport & Montmorency division.....	52,107 92
Stores in hand.	
Montmorency division.....	5,057 67
Power division.....	9,813 21
Citadel division.....	3,076 00
Cash on hand.	
Montmorency division.....	1 50
Citadel division.....	1,518 36
Power division.....	286 47
Head office.....	137 93
Accounts receivable.....	2,044 03
Montreal Trust and Deposit Co.....	372,500 36
	\$5,136,114 85
LIABILITIES.	
Capital stock.....	\$3,000,000 00
Less treasury stock.....	500,000 00
	\$2,500,000 00
Bonds, 5 p.c.....	2,500,000 00
Accrued interest on bonds.....	165 34
Accounts payable.....	90,251 94
Rolling stock.....	2,020 47
Subsidy account.....	16,523 32
Insurance fund account.....	12,720 00
Profit and loss account.....	14,433 78
	\$5,136,114 85
PROFIT AND LOSS ACCOUNT.	
Net earnings, Montmorency division.....	\$24,561 02
Net earnings, Citadel division.....	41,007 51
*Net earnings, Power division, 10½ months only.....	51,358 17
	\$116,926 70
LESS.	
Interest on bonds.....	\$96,096 88
Directors fees, legal and notarial charges, general expense.....	9,967 99
	106,064 87
	\$10,861 83
ADD.	
Profit and loss account, Power division.....	3,571 35
	\$14,433 78

*System was only taken over on Aug. 16, 1898.
Net earnings during 6 weeks between July 1, and Aug. 16 was over \$8,000 00.

The following were elected: President, A. Thomson; Vice-President, F. Ross; other directors, H. J. Beemer, Judge Chauveau, W. Shaw, W. Hanson, Hon. S. N. Parent, G. H. Thompson, E. E. Webb.

It is stated that during the 4 months from May 1 to Aug. 31, 1899, there was an increase, of \$15,817.83 in the gross receipts over the corresponding months of 1898.

Roberval.—It is said the British American Pulp & Paper Co., in which R. Prefontaine, of

Montreal, & J. Tessier, of Quebec, are interested, will construct an electric railway from a point on the Quebec & Lake St. John Ry. around the lake to Roberval, with branch lines.

Ontario Electric Railways.

Brantford Electric Railway.—The Co. has expended about \$8,000 in improvements this year. A rumor recently current to the effect that the Electric Ry. Co., the Electric Power Co. & the Gas Co. were about to amalgamate, has been denied by officials of each company.

Brantford to Port Dover, etc.—T. Elliott recently returned to Brantford from a trip through the lake townships in the interests of electric railway extension. He interviewed the town council of Port Dover, & also the councils of rural municipalities, & reports very favorable feeling towards the project.

Glenora to Wellington.—G. W. Goodwin recently wrote a Picton paper suggesting the building of an electric railway from Glenora to Picton, the sand banks, & thence skirting the shore of Lake Ontario to Wellington. He claimed it would prove an attractive route, & predicted that Kingston citizens would subscribe \$250,000, Picton \$250,000, & Deseronto \$150,000.

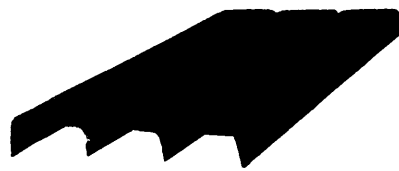
Hamilton, Ancaster & Brantford.—The negotiations which have been pending for some time between the promoters of the Hamilton, Ancaster & Brantford Electric Railway & Mr. Marcus, of New York, have not resulted satisfactorily, & the project has received a set-back. It is said the Cataract Power Company may possibly take hold of it later on.

The Hamilton Consolidations.—The Cataract Power Co. has now complete control of the Hamilton Street Ry. Co., the Hamilton Radial Electric Ry. Co. & the Hamilton & Dundas Electric Ry. Co. Some time ago J. Patterson, acting on behalf of the Cataract Co., obtained some \$90,000 worth of stock of the Hamilton Street Ry. Co., which, however, was not a majority; the other holders of stock pooled their interests so that Mr. Patterson had to secure all or none of the balance, consequently the balance, some \$125,000 or \$130,000, was bought. The new officials of the Co. are: President, Hon. J. M. Gibson, M.L.A.; Vice-President, J. Dickenson, M.L.A.; Sec.-Treas., J. B. Griffith.

The management of the Hamilton Radial Electric Ry. Co. has been reorganized as follows: President, J. Patterson; Vice-President, Hon. J. M. Gibson; other directors, J. Dickenson & J. A. Kammerer; Secretary, S. E. Malloch; Treasurer, J. Moodie; Manager, C. K. Green.

For the Hamilton & Dundas Electric Ry. it is said the Cataract Co. paid over \$110,000 in cash & assumed the bonds of the H. & D. Co., amounting to some \$90,000. Since its conversion into an electric Co. the H. & D. has obtained its power supply from the Cataract Co. Its new officers are: President, J. W. Dickenson; Vice-President, J. A. Kammerer;

Q. & W. TIE PLATES



SAVE EXPENSE

MAINTENANCE

STANDARD ON MAJORITY
U.S. RAILROADS

SEE ROADMASTER'S CONVENTION TIE PLATE REPORT

F. E. CAME,

17 Place d'Armes
Hill,

Montreal

Secretary, J. Patterson; Treasurer, J. Moodie; other director, Hon. J. M. Gibson.

Supplementary letters patent have been issued under the Ontario Companies Act, extending the powers of the Hamilton Electric light & Cataract Power Co., so that when the Co. has acquired at least two-thirds of the capital stock of any corporation, being one which the Co. is, by its charter, authorized to promote, the Co. may assist such corporation in carrying on & extending its business, &c., by furnishing by way of bonus, loan or otherwise, moneys for such purpose. The Co. is also authorized to act as the agent, or manager of any such corporation in the carrying on of its business upon such terms as to remuneration or otherwise as may be agreed upon.

It is again rumored that the Cataract Power Co. is after the Hamilton, Grimsby & Beamsville Electric Ry.

J. Patterson is said to have assured the Mayor of Berlin that grading on an electric line from Hamilton to Berlin will be started this season.

London St. Ry.—A special general meeting was called for Sept. 29, to authorize an increase of capital to \$750,000, or less.

It would appear that the strikers have no intention of withdrawing from the fight. They recently took out four more bus licenses. The Trades & Labor Council has purchased 10 teams for the use of the strikers. For the winter closed buses have been engaged. They will be heated by stoves, & when snow comes will be put on sleighs.

Proceedings have been taken by the Co. against the Police Magistrate & the Mayor to recover \$20,000 damages, for alleged illegal licensing of buses. The by-law passed under the statute fixed the license at \$10, & it is claimed that the Mayor & Magistrate, as members of the Police Commission, granted bus licenses to J. Garnett & others for a less amount. The reason Judge Elliot, the third member of the Police Commission, is not made a party to the suit is said to be that he voted against issuing licenses at less than \$10.

Metropolitan Railway Co.—At the annual meeting at Toronto, Sep. 8, the following were elected:—President, C. D. Warren; Vice-President, S. M. McElroy; other Directors, W. A. & F. B. Warren; Sec.-Treas., R. Jenkins.

Niagara Falls Park & River Ry.—The power house in Queen Victoria Park was totally destroyed by fire Sep. 4, the loss being placed at \$85,000. The railway was crippled for a couple of days until power lines were run over from the U.S. side. The power house will be rebuilt as soon as possible.

The two high wooden trestles near the Whirlpool are being gradually filled in. One of them will require 20,000 yards of earth, & the other about 15,000.

A large number of ties are being replaced. About 3,000 new ones have already been put in, & about 7,000 more will be laid, oak being used. The first track which was laid had tamarac & hemlock ties, & most of these have to be renewed. The second track in which cedar was used is in better shape.

The Co. is building at its shops, 4 open motor cars, 36 ft. long, with double trucks.

Ottawa Electric Ry.—Heney & Smith, of Ottawa, have the contract for building an electric railway for this Co. from Ottawa to Britannia, on Lake Dechene, 7 miles, & it is expected to have it completed by Nov. 1.

Owen Sound.—The Town Council recently rejected a report of a committee proposing that a delegation of the Mayor & two aldermen should visit Berlin & Guelph to obtain information about the conditions under which electric railway franchises have been granted in those places. J. McLaughlan & other promoters of the proposed line to Owen Sound recently waited on the Town Council & asked

the sanction of the Council as required by statute before a charter could be secured. They stated that the municipalities of Derby & Sarawak had already given consent. When the Co. was organized it was the intention to extend the line to Meaford, Chatsworth, Durham & Southampton, but it has since been decided to confine the undertaking, for the present at least, to Owen Sound & the immediate vicinity, it being the intention to go down the shore as far as Balmy Beach & to the cement works. The Council appointed a special committee to deal with street railway matters.

The Port Stanley Electric St. Ry. Co. has been incorporated under the Ontario Companies Act, subject to the provisions of the Street Railway Act, to construct & work street railway lines in Port Stanley & adjoining municipalities. The capital is \$40,000 & the head office is at St. Thomas. The provisional directors are E. H. Caughell, A. E. Marlatt, Mary L. Caughell & Emma L. Marlatt.

Rideau Route.—It is proposed to build an electric railway to connect the towns along the Rideau Canal & Lakes. Good water power is available at Jones Falls.

Queenston Heights Bridge Co.—At the annual meeting at Niagara Falls, Ont., Sept. 12, the following directors were elected: E. B. Osler, W. H. Beatty, T. G. Blackstock, W. Nesbitt, Toronto, Ont.; W. B. Rankine, New York City; W. C. Ely, B. Van Horn, Buffalo, N.Y.

St. Catharines, Niagara Falls & Toronto Ry.—This is the new name of the St. Catharines & Niagara Central Ry., which runs from St. Catharines to Niagara Falls, 12.35 miles. Manager F. A. Cheney recently stated that work will commence on the extension of the line from St. Catharines to Port Dalhousie during Sept., & that it will be built as an electric line, the intention being to convert the old line into an electric one at an early date.

St. Thomas Electric St. Ry.—Manager J. E. Taylor having resigned, President J. H. Still is looking after the Co.'s finances, & F. Dart is superintending the operating. On leaving Mr. Taylor was presented with a gold watch & address by the employes, who evidently have a high regard for him.

Sarnia St. Ry.—The following officers were recently elected:—President, J. S. Symington; Vice-President, S. A. McVicar; Secretary & Manager, H. W. Mills; directors, C. Mackenzie, J. Cowan, J. H. Jones, J. Flintoft & F. Smith.

It is proposed to change the horse car system to an electric one & the preliminary work is being done by J. H. Jones, C.E. The route of the new line will be along Front & Christina sts., & from Christina st. north to St. Clair st., Point Edward, through that village to the lake shore & thence along the shore to a point to be decided upon. The southern end of the line will be by the present route to the tunnel & also along Christina st. to the Imperial Oil Works & the proposed new nail & wire works factory. These lines are laid out with a view to increasing the mileage of the road by belt lines, &c., as the town grows & business demands them. The present horse system has proved of great value to the town by giving connection with Point Edward, the G.T.R. employes at which place do most of their shopping in Sarnia.

Toronto Railway.—The gross earnings are:

	1899.	1898.	Increase.	Decrease.
Jan.	\$95,690.12	\$86,502.36	\$9,187.76	.....
Feb.	91,860.30	82,402.19	9,458.11	.....
Mar.	103,234.88	92,318.12	10,916.46	.....
April	95,212.37	86,898.83	8,313.54	.....
May	104,806.62	92,670.35	12,136.27	.....
June	109,063.18	94,119.32	14,943.86	.....
July	116,824.94	104,302.92	12,522.02	.....
Aug.	123,282.70	110,300.54	12,982.16	.....
Sept.	137,621.10	138,021.74	.....	\$400.64
	\$977,506.21	\$887,536.67	\$90,059.54	.....
Increase, Jan. 1 to Sep. 30,			\$89,658.90.	.....

For the year ended Aug. 31, 1899, the Co. paid the city \$109,108.65 as percentage, an increase of \$14,821 over the previous year.

Negotiations are in progress between the Co. & the town council of Toronto Junction, for the extension of the Co.'s lines to the corner of Keele & Dundas streets in that town. Further information on this matter will be found under the head of Toronto Suburban St. Ry.

Toronto Suburban St. Ry.—A deputation from Toronto Junction Town Council recently met the directors of this Co. in Montreal & arrived at the following understanding: The Co. is either to abandon its franchise over the portion of Dundas st. between Keele st. and Humberstone avenue, or grant running powers over it to the Toronto Ry. Co. In return for this the town is to forego its right to collect an annual mileage rate from the Suburban Co., but this Co. is to pay \$125 a year towards the maintenance of the track allowance of the portion of its road which it will continue to operate in the town. The franchise of the Suburban Co., which has about 12 years to run under the old agreement, is to be extended for a further term of 10 years. This new agreement will not go into effect unless the Toronto Ry. Co. undertakes to run its cars over the portion of Dundas st. which the Suburban Co. is to give up. It is also a part of the scheme to have the Suburban line extended along Dundas st. as far as Cooksville, & out the Weston road to Woodbridge. The proposed transfer point at Keele st. is the business centre of Toronto Junction.

In the Ontario Court of Appeal, Sept. 29, in the case of the City of Toronto vs. this Co., counsel for city appealed from judgment of Ferguson, J., in so far as it holds that plaintiff is not to be entitled to mileage payments in respect of the 950 ft. of street railway track on Queen st. or the lake shore road west of Roncesvalles avenue, Toronto, & against the judgment upon defendant's counter claim for a reference to ascertain the damages sustained by the conversion by plaintiff of the pavements & roadbeds & interest of defendant therein under the contract of sale & conditions & act of incorporation of defendant. Osler, Q.C., & J. Bicknell, for defendant, opposed appeal, & cross-appealed from the finding of the judgment that plaintiff's contention as to meaning of the word "turn out" in clause 15 of the contract is correct, & declining to exclude from payment of mileage any of the tracks where there is more than one double track on the "street railway" part of a street, or where there are "connecting railway tracks" or "Y tracks," or temporary tracks, or tracks to sheds, or broken parts of a mile, or tracks in places where plaintiffs have not put down permanent pavements in conjunction with the laying of the tracks. Judgment was reserved.

The Lines in Western Canada.

British Columbia Electric Ry. Co.—The earnings & expenses for Aug. are as follows:

	1898.	1899.	Increase or Decrease.
GROSS EARNINGS.			
Railway—Vancouver division	\$8,239	\$9,718	\$1,479+
Victoria "	7,998	8,441	443+
Westminster "	6,947	8,061	1,114+
Lighting—Vancouver "	5,903	7,032	1,129+
Victoria "	4,084	4,757	673+
Gross earnings	\$33,171	\$38,009	\$4,838+
Working expenses	\$19,124	\$20,255	\$1,131+
Net earnings	\$14,047	\$17,754	\$3,707+
Aggregate gross earnings			
April 1 to Aug. 31	\$154,412	\$167,856	\$13,444+
Aggregate net earnings April			
1 to Aug. 31	\$60,903	\$71,974	\$11,071+
+Increase. - Decrease.			

C. A. Verner, director of the Southern Punjab Ry., the Dooars Tea Co., & of the Russian Petroleum & Liquid Fuel Co., has been elected a director of the B.C.E. Ry. Co., to fill the vacancy on the board caused by the death of R. Northall-Laurie.

The Co. has placed on its interurban route between Vancouver & New Westminster, two new cars which, instead of being numbered, are named Vancouver & New Westminster respectively. The aisles are placed in the centre, & the handsomely upholstered reversible seats on either side accommodate about 90 passengers in each car.

The Co. is considering two extensions of its system in Victoria, one to take the cars nearer the outer wharf, & the other to improve the Gorge road service. It is expected the outer wharf extension will be made very shortly & that the cars will be run right down to the wharf. The building of a line to the Gorge depends upon the residents along the road giving the necessary financial assistance.

There has been some misunderstanding lately between the Co. & the city of New Westminster, but an agreement has been entered into which is said to be satisfactory to both parties. The Council allows track to be run from Columbia St. into a lot about to be purchased by the Co. for terminals. The Co. promises to put up the terminal station at once; to put up a shelter shed at the city limits terminus of the city line, to build the Sapperton extension next spring; to put on a two-car service in the city immediately after the fair; to grant transfers for city passengers between interurban & city cars, & to give the same terms as to low rate tickets that are given in Vancouver, which means 3 cent fares within certain hours.

The Nelson Tramway Co. has let a contract for the erection of the trolley poles along the line of the road. Work has been started on the power station, which is erected at the end of the Hall Mines switchback, near Cottonwood Creek. The Bonnington Falls Power Co. is clearing the right of way for its pole line, & promises to have the line over the 9 miles to the power station & deliver power by Oct. 15. The car barn has been located at the corner of Kootenay St. & the Mines Road. An order has been given for 2 motor cars, with removable vestibules & double trucks. Each car will be equipped with four 40 h.p. motors, owing to the steep grades to be encountered. The overhead trolley sys-

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The fund created is divided equally between the family of the late Eugene Field and the Fund for the building of a monument to the memory of the

tem will be used. The power from Bonnington Falls will be transformed to a lower working voltage by oil cooled transformers, & then will drive a synchronous motor of 450 h.p. which will be directly connected to a rotary-converter-motor-generator of the same size. The alternating current will then be converted into a direct current. The synchronous motor will be of the revolving field type, & the railway generator of the multipolar ironclad armature type. On the grades 60 lbs. rails will be laid, lighter ones being used on the level.

Rossland, B.C.—T. G. Duncan & W. A. Macdonald, of Nelson, are applying for the incorporation of the Rossland & Sophie Mountain Electric Ry., Ltd., with power to construct lines within the limits of the City of Rossland, & extending on Washington St. from the city limits around the southern slope of Red Mountain, the southern slope of Spokane & O. K. Mountains, crossing Record Creek, along the east slope of Sophie Mountain, crossing the summit of Sophie Mountain near the crossing of the Dewdney Trail, along the west slope of the mountain to the Velvet Mine, thence to Main Sheep Creek, a distance from Rossland of some 12 miles.

Winnipeg Electric Railway.—A second track is being laid on Broadway & River Ave. so as to afford a double-tracked belt line.

Maritime Provinces and Newfoundland.

Halifax Electric Tramway.—A press report to the effect that this Co. has been authorized by the City Council to obtain Parliamentary powers for extending its line, & that it is estimated the cost of the proposed extension will be about \$110,000, appears to be without foundation, as the Manager advises us he knows nothing whatever about it.

The Co. has declared a quarterly dividend at the rate of 5% per year, warrants for which will be mailed to shareholders Oct. 2.

St. Johns, Nfld.—Good progress is being made with the construction of the street railway by R. G. Reid & Sons, the work being under the management of W. McKay. Some of the equipment has already arrived.

A Popular Route to New York



Canadian Pacific, and Toronto, Hamilton and Buffalo Railways in connection with the New York Central & Hudson River Railroad.

Leaving Toronto in the evening at 5.20 p.m. in one of the through sleeping cars of the Wagner Co., you are landed at Grand Central station, in the very heart of the City of New York, 4th Avenue and 42nd Street, at 8.15 next morning, adjacent to all hotels and business houses and avoiding the annoyance of transfer.

This is also the route of the famous "EMPIRE STATE EXPRESS"

Fastest Train in the world.

Call on nearest ticket agent of the C.P.R. or T.H. & B. for further information, or address

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Can. Passr. Agent, Genl. Agent,
TORONTO, ONT. BUFFALO, N. Y.

Electric Roads in the Future.

In a recent paper on Canadian water power & its electrical product in relation to the undeveloped industries of the Dominion, T. C. Keefer, C.M.G., says: The substitution of electricity for steam as the motive power for railways on many roads is regarded as inevitable sooner or later. It has already taken place as regards suburban railways, notably in the case of the Quebec, Charlevoix & Montmorenci road, & the Hull & Aylmer railway, where water is doing the work which has heretofore been done by coal. The chief obstacles to an early change on the larger roads are the hundreds of millions invested in locomotives, & the very large outlay required to equip existing steam roads with the electric system. The principal inducement would be the passenger service, owing to the increased speed possible, it being confidently stated that, with electricity, a speed considerably over 100 miles an hour could be attained. Moreover, there would be entire abolition of the poisonous smoke which drops upon the sleeping car in preference to any coach ahead of it.

While the conversion of trunk lines would be attended with a cost which is for the present prohibitory, this objection does not apply to new lines, which may be worked independently, or in connection with electric ones. When the time arrives for such railways, water power will have a field of usefulness of which we can at present form little conception. Water wheels & wires would displace the coal docks, the coal-laden vessels, the huge coal yards, & the trains required for distributing their contents over hundreds of miles of lines.

An interior line connecting Lake St. John, on the Saguenay, with Lake Temiscamingue, on the Ottawa, which could ultimately be extended, via Missanabie, Nepigon & Lac Seul to the Saskatchewan, would be a colonization road, removed from the frontier—one which could be worked possibly altogether by water power, & would open a virgin tract in

Spokane Falls & Northern System. Nelson & Ft. Sheppard R'y Co. Red Mountain R'y Co.

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They regulate the Bowels. They Cure Sick Headache. A Single One Gives Relief.

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A case of bad health that R-I-P-A-N-S will not benefit. R-I-P-A-N-S, 10 for 6 cents, or 12 packets for 48 cents, may be had of all druggists who are willing to sell a low-priced medicine at a moderate profit. They banish pain and prolong life. One gives relief. Accept no substitute.

Note the word R-I-P-A-N-S on the packet. Send 5 cents to Ripans Chemical Co., No. 10 Spruce St., New York, for 10 samples and 1,000 testimonials.

which electro-chemical & electro-metallurgical industries might arise, as well as those connected with the products of the forest & the mine.

Electricity for Main Line Railways.

At the recent convention of the American Society of Civil Engineers a prominent place was taken by the discussion upon the applicability of electricity to main line railways, & it is rather interesting to notice how the views of the various speakers indicated their present affiliations. It is very difficult for any railway man to see anything good in electric propulsion for anything but local and suburban traffic, & the possibility of railway traffic ever becoming modified because of the use of electricity is something which the orthodox railway engineer does not want to think about. Col. Haines showed that electricity was more suitable for light, frequent trains than for heavier ones running less often, but no one seemed to see in that an argument for running light, frequent trains altogether, obvious as the suggestion might appear. The fact that the fuel-saving of power houses over locomotives is not great, was brought out strongly in opposition to the use of electricity, but the absence of reciprocating parts, & the advantages of independent motor cars were features altogether too radical for the average railroad man to accept. It must not be forgotten that the traffic conditions which are assumed to control the subject, are themselves the creation of the present railroad system, & that a new system may create new traffic conditions adapted to its capabilities, & none the less effective because they happen to be different from those which now exist. No one doubts that if aerial navigation should become a practicability, an entirely new set of traffic conditions would instantly be created, & the old conditions would be altogether powerless under such circumstances. When the mechanical conditions which are necessary to adapt electric traction to main line surface are fulfilled, the traffic conditions may be found equally powerless.—*Engineering Magazine.*

Fair Warning.—Visitor—Does the trolley line lead to the cemetery? Citizen—Yes, if one isn't careful.

F. A. Huntress, Manager of the Halifax Electric Tramway Co. has been visiting Barbadoes, Port au Prince, & Georgetown, in the West Indies, where it is said there are favorable openings for electric railways, which are likely to be taken advantage of by Canadian capitalists.

At the recent Trades & Labor Congress in Montreal, it was decided to petition the Dominion Government for the passage of an Act to provide that employes of electric railways shall be compelled to serve an apprenticeship of 30 days, & to pass an examination as to competency before entering upon active duties.

General Telegraph Matters.

The Commercial Cable Co. has declared its usual quarterly dividend of 1 3/4% payable Oct. 1.

The C.P.R. Co.'s telegraph is extending its service along the Columbia & Western Ry., between West Robson & Midway as fast as track is laid, offices being opened at the principal stations.

J. H. Helmcken, of Victoria, B.C., is advocating the establishment of telegraph communication between Vancouver Island & the smaller islands adjacent to it, particularly a cable from Comox to Texada.

The Spokane & Northern Telegraph Co.'s lines have been extended to Midway, B.C., via Republic, Wash. It is the intention to ex-

tend through the Boundary Creek country, including Cascade City, Grand Forks, Columbia, Curlew & Greenwood.

The Dominion Government telegraph line, connecting the Cape Beale & Alberni lines, thus circling the southern end of Vancouver Island, has been completed. The wire follows the coast line, but is strung on trees, cleared of branches, & a good trail has been cut, so there is not likely to be much trouble from falling timber. The line is 60 miles long.

The C.P.R. Co.'s telegraph office in Vancouver has been removed to the General Passenger Agent's office on Granville Street where the work of the office will be carried on pending the completion of the building being erected on Hastings St. When the new station is completed a branch office will be opened in it, which, with the Carrall St. branch, will give the Co. three telegraph offices in the city.

At the annual meeting of the G.N.W. Telegraph Co. in Toronto, Sep. 27, the directors & officers were re-elected, viz.:—President, H. P. Dwight, Toronto; Vice-President, A. Brown, Hamilton; Directors, H. N. Baird, J. Hedley, A. S. Irving, W. C. Matthews, Toronto; R. Fuller, Hamilton; Hon. W. McDougall, Ottawa, & C. A. Tinker, New York; Secretary & Auditor, G. D. Perry; Treasurer, A. Cox. The Co. does not make its report public, but it is said the financial statements presented showed a marked improvement in the revenue of the Co. over the previous year, & it was stated that the outlook for the coming year was still more hopeful.

The establishment of the Marconi system of wireless telegraphy in the northern part of Newfoundland, & along the Labrador coast, seems to be seriously contemplated by the Newfoundland Government, whose Minister of Marine & Fisheries, in a recent interview, stated that the plan at present thought of, if arrangements can be made with Mr. Marconi for instruments, fitting up, etc., is to connect the whole Labrador coast with the nearest telegraph station on the island, probably Tilt Cove. The distance between Tilt Cove & Rama, Northern Labrador, in a line along the coast, is something over 850 miles. This means that about 18 stations at a distance of about 50 miles apart will be placed. The system will probably be worked only during the fishing season of some four months in the year.

General Superintendent McGuigan, of the G.T.R., has issued a circular in which he points out that numerous complaints have recently been made that public telegraph business at several stations is not handled in a prompt or satisfactory manner. "It is our desire," he says, "that this service be made as satisfactory to the public as possible. Therefore, agents & operators will be expected to expedite the handling of this class of business, & will, hereafter, be held strictly to account for unnecessary delays or failures. Passengers & others offering messages at our stations for transmission are to be given prompt & courteous attention, & their messages transmitted with the least possible delay consistent with the proper performance of railway duties. The delivery of such messages must also be made without unnecessary loss of time."

The Plant S. S. Co.'s str. La Grande Duchesse is to carry an excursion to the International yacht race between the Shamrock & Columbia, & will have Marconi on board to transmit a report by wireless telegraphy. A cable ship will be stationed at some convenient point & connected with the cable, the land end of which is at Coney Island. The cable ship will at times be 20 miles or more from La Grande Duchesse, but it is claimed that it will be possible to receive messages on the latter & transmit them to England in one

minute's time. The Duchesse is particularly adapted to the work from the fact that a long spar is necessary in order to convey the sound successfully. The fore truck of La Grande Duchesse is 135 ft. from the water line, upon the extreme top of which will be placed at right angles a short gaff, or arm, about 3 ft. long. From this arm will be suspended an insulated wire, the lower end of which will connect with the operating instruments in a room immediately below the arm or gaff.

The extension of the Dominion's Gulf of St. Lawrence telegraph system to the Strait of Belle Isle will shortly be effected. The line on the north shore of the Gulf extends from Murray Bay to Big Romaine, 500 miles. The stretch between Big Romaine & Chateau Bay on the Strait of Belle Isle is 315 miles, & the contract for the construction of the line between these points has been let to X. Gendreau, of Quebec. The poles are being laid along the route. Chateau Bay is the nearest point on the Labrador coast to Belle Isle, the light station at the "front door of the St. Lawrence," which station it is intended to connect with the government signal system. But the experts are as yet undecided how the connection shall be made. A cable could easily be laid from Chateau Bay to Belle Isle, but the grinding of the immense masses of ice which pass through the straits in early spring would make short work of a cable. The only alternative, therefore, seems to be the adoption of a scheme of wireless telegraphy, & the experts of the Public Works Department are eagerly following the experiments being made in Europe, with a view to adopting wireless telegraphy as a means of connecting Belle Isle with the coast signal system.

At the hearing of the North Waterloo, Ont., election protest recently, subpoenas were served upon the G.N.W. Telegraph agents at Berlin, Waterloo, Elmira, & the C.P.R. Co.'s telegraph agent at Berlin, requiring them to produce all telegrams relative to the election which had passed through their respective offices. Large batches of messages were produced. The G.N.W. T. Co.'s Berlin agent, on the advice of his superior officers, submitted to the court that the subpoena served upon him was not sufficiently definite, as it referred to certain telegrams passing through his office during a period of 5 or 6 months, & did not give names or dates. He was instructed by Judge Osler to obey his subpoena. The Elmira agent, when called, said that his instructions from the Co. were not to produce telegrams without an order from the judge, who declared emphatically that he would not give an order; that telegraph people must understand that they must obey a subpoena. President Dwight, of the G. N. W. T., & Superintendent Pingle, of the C.P.R. Co.'s telegraph, were called upon to produce all telegrams sent in & out of Toronto & the different stations in North Waterloo by the Ministers of the Province & various others interested in the election. These gentlemen, however, did not respond, & it is now stated that application will be made to set aside the subpoenas served upon them. The effect of this subpoena, it is argued, would be to place in the hands of the petitioner & solicitors all the public & private despatches of the Ministers for months together, whether relating to the case or not, & also to destroy confidence in the telegraph companies & thus injure their business. The local manager of the Bell Telephone Co. at Berlin, & the telephone agent at Elmira, were also subpoenaed & testified as to conversations in reference to the election having taken place over their wires.

The Yukon Telegraph Line.

The Dominion Government's line was completed in Aug. to Fort Selkirk, 417 miles from its starting point at Lake Bennett, and the 176

ASSESSMENT SYSTEM.



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Initiation fee (minimum).....	\$1 00
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Sick benefits, when required, cost extra.	

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- 5.—**An Old Age Benefit** consisting of exemption from payment of premiums and Court dues after age 70.
- 6.—**An Old Age Disability Benefit** of one-tenth of face value of policy payable yearly for ten years, on being declared totally and permanently disabled by infirmities of age after the seventieth birthday.
- 7.—**An Old Age Pension** payable during disability, which may be taken as a substitute for the Old Age Disability Benefit.
- 8.—**A Burial Benefit** of \$100 at death of a Pensioner.
- 9.—**A Funeral Benefit** of \$50 at death of a member enrolled in Sick and Funeral Benefit Department.
- 10.—**The Mortuary Benefit** of \$500, \$1,000, \$2,000, \$3,000, \$4,000 or \$5,000.

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Year.	Total Membership.	Benefits Paid.	Total Surplus.	Surplus per Capita.	Death Rate per 1,000.
1881	1,019	\$ 1,300 00	\$ 4,568 55	\$ 4 48	4.50
1882	1,134	12,058 86	2,967 93	2 61	11.00
1883	2,210	9,493 68	10,857 65	4 91	4.73
1884	2,558	13,914 31	23,081 85	9 01	4.23
1885	3,642	26,576 99	29,802 42	8 18	7.76
1886	5,804	28,499 82	53,981 28	9 30	4.85
1887	7,811	59,014 67	81,384 41	10 44	5.78
1888	11,800	89,018 16	117,821 96	9 98	6.43
1889	17,349	116,787 82	188,130 36	10 84	5.85
1890	24,604	181,846 79	283,967 20	11 54	5.18
1891	32,303	261,436 21	408,798 20	12 65	6.40
1892	43,024	344,748 82	580,597 85	13 49	6.25
1893	54,484	392,185 93	858,857 89	15 76	5.41
1894	70,055	511,162 30	1,187,225 11	16 94	5.41
1895	86,521	685,000 18	1,590,733 16	18 03	5.07
1896	102,838	820,941 91	2,015,484 38	19 60	5.59
1897	124,685	992,225 60	2,558,832 78	20 52	5.58
1898	144,000	1,170,125 14	3,186,370 36	22 12	5.67

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James Marshall, 24 Charing Cross, London, Eng.

John A. McGillivray, Q.C., S.S., Toronto, Ont.
A. E. Stevenson, 6436 Kimbark Ave., Chicago, Ill.

Or Any Officer or Member of the Order.

miles from Fort Selkirk to Dawson were completed Sep. 28.

Frank Richards, Surveyor for the telegraph construction party, was drowned in Five Finger Rapids, Aug. 2.

The present rate for a 10-words message from Bennett to Five Fingers, 319 miles, is 75c.

A. B. Clegg has been appointed Manager of the office at Dawson, & W. Brownlow has been appointed to the Selwyn River office.

It was recently reported in Victoria, B.C., that the Government intends constructing a line from Tagish to Atlin, about 115 miles. A telephone system is already in operation in the Atlin district.

The cheques accompanying tenders put in on Aug. 24 for the supply of telegraph wire for the proposed line between Quesnelle, B.C., & a connection with the line from Bennett to Dawson having been returned to the tenderers it was reported that the Government had abandoned the idea of constructing this line, for the present at least. The Government press announces that the report is unfounded, that the policy of the Government has undergone no change, & that a contract for the supply of wire has been let to the same contractors as supplied that necessary for the Bennett-Dawson line.

Arrangements have been made by the C.P.R. Co.'s telegraph by which messages received by it at Vancouver for transmission to the Yukon, will be forwarded by steamer every other day from Vancouver, & every intermediate day from Victoria & Nanaimo, making practically a daily service with the north. At Skagway the messages will be handed to the White Pass & Yukon Ry., & sent over its wires to the starting point of the Government line at Bennett. It is expected that messages can be got to Dawson within 4 days after leaving Vancouver. Coming down the same arrangement will be in effect. The steamers will bring messages from Skagway, and at the first port of call, whether Comox, Nanaimo, Victoria or Vancouver, the messages will be delivered to the telegraph office for transmission to the points to which they are addressed.

The Pacific Cable Scheme.

All the Australian colonies interested in the proposed Pacific cable from Vancouver, B.C., to Sydney have been discussing the subject of late. The Victoria Assembly has passed a motion declaring it expedient that that colony co-operate with the United Kingdom, Canada, New South Wales, Queensland & New Zealand in the construction & working of a cable across the Pacific Ocean from B.C. to Australia, touching upon British territory only. Victoria is thus committed to the Pacific cable, & if the Eastern Extension Co. wants the Cape route it must carry it out itself. In New South Wales nothing will be done in the direction of bringing the Pacific cable question before Parliament until a definite agreement has been arrived at on the subject. The latest phase of the matter is the representation on the board which is to arrange all the preliminary business & prepare the tariff. The original proposal was that a board of eight should be appointed, comprising three delegates from Great Britain, two from Australia, one from New Zealand & two from Canada. The Australian colonies, & especially New South Wales & Victoria, considered that the representation for Australia was too small, & the suggestion has been made that the three

Australian colonies & New Zealand shall each have a member on the board, thus making four for Australia. This it was recognized would necessitate an increase in the representation of Great Britain & Canada. The matter is now under the consideration of the home authorities.

Subways for Electric Wires.

City Engineer Galt, of Ottawa, having been instructed by the city council to report upon the feasibility of having all electric wiring underground, has done so as follows:

Underground wiring is quite practicable from a civil, mechanical & electrical standpoint notwithstanding all the objections, difficulties & obstacles to be encountered. The most important feature to be considered from the standard of municipal requirements is the system of underground work. The ideal method, unquestionably, would be separate open subways on each side underneath the sidewalks or along the street roadway close to the gutter or curbing, large enough in size for the accommodation of water & gas mains, electric wiring, etc., including facilities for examining, making all repairs & house connections. This seems to be the only suitable plan of subway construction, & will give separate underground space on each side of the street for pipes & wire service to the street line. Of course, this would require duplicate water & gas mains, etc., but there could be no objection outside of the extra cost, because in the central portion of the city this is most desirable & highly advantageous, subway or no subway. My conclusions are as follows:

In cities overhead wiring is objectionable from every standpoint. Underground systems are practicable for all kinds of service, notwithstanding the serious objections urged, including interference on account of electrical induction.

A single subway in the middle of the street, although practicable, is entirely unsuitable, because connections to house properties would require constant cutting up & repairing of streets.

It is more than apparent, without further explanation or illustration, that under municipal ownership the extent & interference in the tearing up of streets will be reduced to a minimum.

In the end the results will be highly satisfactory & economical to all concerned, while at the same time the dangerous, annoying & objectionable overhead system will be abolished.

I submit a preliminary sketch showing a brick lined underground subway 4 ft. wide by 4½ ft. high, located inside the roadway close to the curbing. The total cost of the actual construction of this double subway on the ordinary macadam roadways would be \$12 per lineal foot & on permanently paved roadways \$16 per foot, to which would have to be added all the other large incidental expenses connected with the conversion of the present system into the new. If subways were placed directly underneath the concrete sidewalks the cost of construction would be increased to 25%, & would still have to cross over road-

ways at all street intersections; & in addition be a serious hindrance to pedestrian traffic during period of construction.

General Telephone Matters.

A telephone line has been established between Atlin, B.C., & Discovery, a distance of 6 miles.

The poles for the extension of the N.B. Telephone Co.'s line from Moncton to Buc-touche have all been placed.

The Town Council of Neepawa, Man., has awarded contracts for the installation of an electric light & telephone service.

The Bell Telephone Co. will shortly have all its wires on Main St., Winnipeg, under ground & next season will extend the conduit system to other central streets.

Salt Spring Island, Strait of Georgia, B.C., has a telephone service with about 35 miles of wire & 12 'phones. The postmaster keeps the central & maintains the lines, etc.

The Winnipeg City Council has extended its contract with the Bell Telephone Co. for the operation of the fire alarm system for another year, at the old figure, \$3,000.

The Hudson's Bay Co. has decided to establish telephone communication between Fort Smith & Smith Landing, on Great Slave River, N.W.T., a distance of 16 miles.

The Bell Telephone Co. gives notice that a direct heavy copper wire having been built from Toronto to Buffalo, improved communication can now be had with places in the U.S.

The New Westminster & British Columbia Telephone Co. has now over 800 subscribers on its Vancouver list & will shortly have to install a switchboard of larger capacity than the present one.

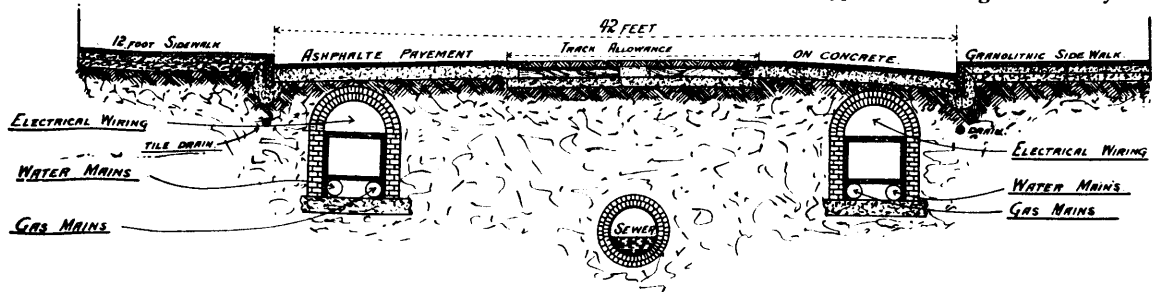
The Vernon & Nelson Telephone Co. intends to string another wire to accommodate its rapidly increasing business. It makes connection with the C.P.R. Co.'s telegraph at Cascade, B.C.

Telephone communication has been established between Mine Centre, Algoma, & all the mines of the Vermillion group, including the Golden Star, Decca, Manhattan, Olive, Lucky Coon, Aria, Alice A, & many others.

The premises of the Telephone Exchange & Public Works Warehouse, at Kingston, Jamaica, were recently destroyed by a fire caused by some mishap to the West India Electric Co.'s trolley wire. The loss is estimated at £6,000.

Rat Portage, Ont., municipal council has made a contract with the Citizens' Telephone & Electric Co. for street lighting. The Co. gives free lighting for the town hall, free telephone service for the same & for the police station & pump house, as well as a fire alarm service without cost to the town.

The Bell Telephone Co.'s plant in Ottawa is to be greatly improved, in fact almost entirely renewed, at an expenditure of about \$150,000. The present switchboard, which cost \$35,000 when installed, is to be replaced by one which will be 50% quicker. All the wiring is to be renewed, copper wire being used solely. A



SKETCH OF SUBWAYS FOR ELECTRIC WIRES.

conduit is being laid along Elgin St. for the Co.'s wires, & it is probable that one will also be laid to the Parliament Buildings.

The Eastern Townships Telephone Association, is the name of a new company which is endeavoring to start business in the eastern townships of Quebec. The points to be connected are Waterloo, Knowlton, Magog, West Shefford, Cowansville, Sweetsburg, East Farnham, Adamsville, Roxton Pond, Roxton Falls, St. Valerien, St. Anne de Stukely, Lawrenceville, Bonsecours, St. Alphonse, Angeline, L'Ange Gardien, Valcourt, St. Marie, Mawcock, Milton, St. Cesaire, Farnham & Granby. The association purposes connecting with the Sherbrooke line at Magog, & the new St. Hyacinthe Co., at St. Hyacinthe.

A Grand Forks, B.C., despatch of Sept. 12, says:—"C. O'Brien Reddin, of Spokane, President & General Manager of the Columbia Telephone & Telegraph Co., is here to carry out a contract with J. P. Graves for the construction of 50 miles of private telephone lines connecting the head offices here with the City of Paris, Majestic, Knob Hill & Old Ironsides & Aetna mines, the Granby smelter & the smelter dam on the North Fork of Kettle River. Connection will be made at Eholt with the trunk line of the Columbia Co. between Grand Forks & Greenwood. The Co. has a system extending from Rosslund to Camp McKinney, & there are local exchanges at all leading intermediate points. Later on the line will be extended to Penticton & Vernon. Its U.S. ally is the Spokane & B.C. Telephone Co., which reaches Spokane, Republic & other points in Washington. Mr. Reddin occupies the same executive position in the U.S. Company, which with the Canadian Corporation owns 350 miles of telephone lines."

For the purpose of preventing the free use of the telephone by persons who are not entitled to the privilege of communication, the Bell Telephone Co. has adopted the nickle-in-

the-slot machine, to open up a new source of revenue. The Co. complains that its telephones are very improperly used by a large number of persons, especially the instruments in drug stores, grocery establishments & hotels, who pay nothing whatever for service which in many cases must be of great value. Business people who have telephones in their establishments are usually willing to oblige any person who politely asks for the favor, and they are in a measure repaid for their courtesy by the popularity which attaches to a kindly act which costs them nothing. In fact, some subscribers go so far as to provide an extra 'phone with a switch for the use of their customers & the public generally. The Co.'s records state that in some semi-public places as many as a hundred people a day use the instruments promiscuously & thus entail a large amount of work upon the Co.'s staff, for which it receives no remuneration whatever. The five-cent-in-the-slot instrument is to be distinct from the ordinary telephone in the office or store. The person desirous of using the instrument calls up the central operator, who responds by a request to put 5c. in the slot. If this is done an interrupted battery current signals through the operator's telephone that the money has been deposited. The number required is then called & the user can then proceed with his business; but if no money is put into the slot there is no service so far as the central is concerned. It is the intention of the Co. to keep a strict watch on all private 'phones where there is a slot instrument available, to see that the former are not put to an improper use. The nickel-in-the-slot machine is being put in in Montreal, Toronto, Hamilton & London, & will probably be introduced in Ottawa & Quebec a little later on.

Among the Express Companies.

The Dominion Ex. Co.'s office in the Hotel International, Fort Steele, B.C., was recently destroyed by fire.

The Dominion Ex. Co. has opened offices at Gladstone, Cascade, & Grand Forks, B.C., on the Columbia & Western Ry.

The Yukon Overland Express & Transportation Co. has been incorporated under the Dominion Companies Act, with a capital of \$500,000, & with powers to construct & operate a waggon toll road from Cariboo crossing, on Lake Bennett, to Dawson. It is specified in the charter that the whole work shall be completed by Aug. 1, 1901. The provisional directors are, J. T. Cornforth & Jos. Roos, of Denver, Col.; I. R. Hedges, Vancouver, B.C.; Irwin Mahon, Carlisle, Pa.; W. Hutchinson, M.P., & T. McVeity, Ottawa, Ont. The Co. will operate a stage waggon line in summer & a line of sleighs in winter. Mr. Cornforth is said to be an old hand at the stage coaching business, having many years ago conducted a stage line from the Missouri River to Denver. He has gone over the ground of the projected line & believes that when the stages are running, the 400 miles between Cariboo crossing & Dawson can be done in from 3½ to 5 days for express stages. Of course the heavier laden coaches or sleighs will take considerably more time to take in loads of freight. In the place of following the sinuosities of the river a bee line will be made across country from Bennett to Selkirk, thus making a 200 mile journey out of what by the river would be a 350 mile trip. It is the intention to erect way stations every 15 miles, where passengers can rest for the night, & where meals can be obtained. The stages will start from Bennett twice a day, & the directors hope that by the new year the road will be built within 50 miles of Selkirk. It is said to be intended to charge only small tolls to vehicles using the road & not belonging to the Co., as it will be easily seen that the business of the organization will be the better the greater the number of travellers who put up at the wayside inns. The coaches will be constructed in Concord, N.H., but the sleighs & other equipment will, it is said, be purchased in Canada.

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Air Brakes & Fittings Westinghouse Mfg. Co. Hamilton, Ont.	Gas & Gasoline Engines Northey Manufacturing Co. Toronto.	Shipbuilders' Supplies Rice Lewis & Son. Toronto.
Ales E. L. Drewry. Winnipeg.	Gates Page Wire Fence Co. Walkerville, Ont.	Ship Carpenters' Tools Rice Lewis & Son. Toronto.
Aluminum Rice Lewis & Son. Toronto.	General Supplies The Hudson's Bay Company.	Ships Polson Iron Works. Toronto.
Anchors Rice Lewis & Son. Toronto.	Grain Elevators John S. Metcalfe & Co. Chicago, Ill.	Shovels Rice Lewis & Son. Toronto. The Hudson's Bay Company.
Asbestos Eureka Min. Wool & Asbestos Co. Toronto.	Grease Eureka Min. Wool & Asbestos Co. Toronto.	Signal House Numbers Acton Burrows Co. Toronto.
Axles Rhodes, Curry & Co. Amherst, N.S.	Groceries The Hudson's Bay Company.	Signals Noah L. Piper & Sons. Toronto.
Babbit Rice Lewis & Son. Toronto.	Half Tones Acton Burrows Co. Toronto.	Signs Acton Burrows Co. Toronto.
Badges John Martin, Sons & Co. Montreal.	Hardware Rice Lewis & Son. Toronto. The Hudson's Bay Company.	Snow Ploughs Rhodes, Curry & Co. Amherst, N.S.
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Bellows Rice Lewis & Son. Toronto.	Hose Rice Lewis & Son. Toronto.	Spikes Rice Lewis & Son. Toronto.
Bells Rice Lewis & Son. Toronto.	Illustrations Acton Burrows Co. Toronto.	Springs Rhodes, Curry & Co. Amherst, N.S.
Belting Eureka Min. Wool & Asbestos Co. Toronto. Rice Lewis & Son. Toronto.	Iron Rice Lewis & Son. Toronto.	Station Name Signs Acton Burrows Co. Toronto.
Blankets and Bedding The Hudson's Bay Company.	Iron Signs Acton Burrows Co. Toronto.	Steamboats Polson Iron Works. Toronto.
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Boiler Covering Eureka Min. Wool & Asbestos Co. Toronto. Mica Boiler Covering Co. Toronto.	Lanterns Rice Lewis & Son. Toronto.	Switch Targets Acton Burrows Co. Toronto.
Boilers Polson Iron Works. Toronto.	Launches Polson Iron Works. Toronto.	Telegraph Office Signs Acton Burrows Co. Toronto.
Boiler Tubes Rice Lewis & Son. Toronto.	Life Insurance Independent Order of Foresters. Toronto. Travelers' Insurance Co. Montreal.	Telegraph Spoons Rice Lewis & Son. Toronto.
Bolts Rice Lewis & Son. Toronto.	Linoleum and Floor Coverings The Hudson's Bay Company.	Telephone Office Signs Acton Burrows Co. Toronto.
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Buckets Rice Lewis & Son. Toronto.	Matches E. B. Eddy Co. Hull, Que. The Hudson's Bay Company.	Tobacco and Cigars The Hudson's Bay Company.
Bunting Rice Lewis & Son. Toronto. The Hudson's Bay Company.	Milepost Numbers Acton Burrows Co. Toronto.	Tollet Paper Rice Lewis & Son. Toronto. The Hudson's Bay Company.
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Car Wheels Rhodes, Curry & Co. Amherst, N.S.	Oakum Rice Lewis & Son. Toronto. The Hudson's Bay Company.	Track Tools Rice Lewis & Son. Toronto.
Castings Rhodes, Curry & Co. Amherst, N.S.	Oils Eureka Min. Wool & Asbestos Co. Toronto. Galena Oil Co. Franklin, Pa.	Trucks Rice Lewis & Son. Toronto.
Chains Rice Lewis & Son. Toronto.	Office Signs Acton Burrows Co. Toronto.	Typewriters Creelman Bros. Typewriter Co. Georgetown. Creelman Bros. Typewriter Co. Toronto.
Cross Arms, Top Pins & Side Blocks The Firstbrook Box Co. Toronto.	Packing Eureka Min. Wool & Asbestos Co. Toronto.	Uniforms John Martin, Sons & Co. Montreal.
Curtains The Hudson's Bay Company.	Pipe Rice Lewis & Son. Toronto.	Uniform Caps John Martin, Sons & Co. Montreal.
Cuts Acton Burrows Co. Toronto.	Pipe Covering Eureka Min. Wool & Asbestos Co. Toronto. Mica Boiler Covering Co. Toronto.	Valves Rice Lewis & Son. Toronto.
Door Signs Acton Burrows Co. Toronto.	Plushes The Hudson's Bay Company.	Varnishes McCaskill, Dougall & Co. Montreal.
Dry Goods The Hudson's Bay Company.	Porter E. L. Drewry. Winnipeg.	Vessels Polson Iron Works. Toronto.
Electric Car Route Signs Acton Burrows Co. Toronto.	Portland Cement Rice Lewis & Son. Toronto.	Waste Eureka Min. Wool & Asbestos Co. Toronto. Rice Lewis & Son. Toronto. Noah L. Piper & Sons. Toronto.
Enameled Iron Signs Acton Burrows Co. Toronto. Rice Lewis & Son. Toronto.	Printing The Hunter, Rose Co. Toronto.	Water Meters Westinghouse Mfr. Co. Hamilton, Ont.
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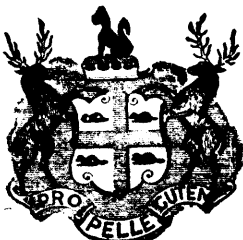
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