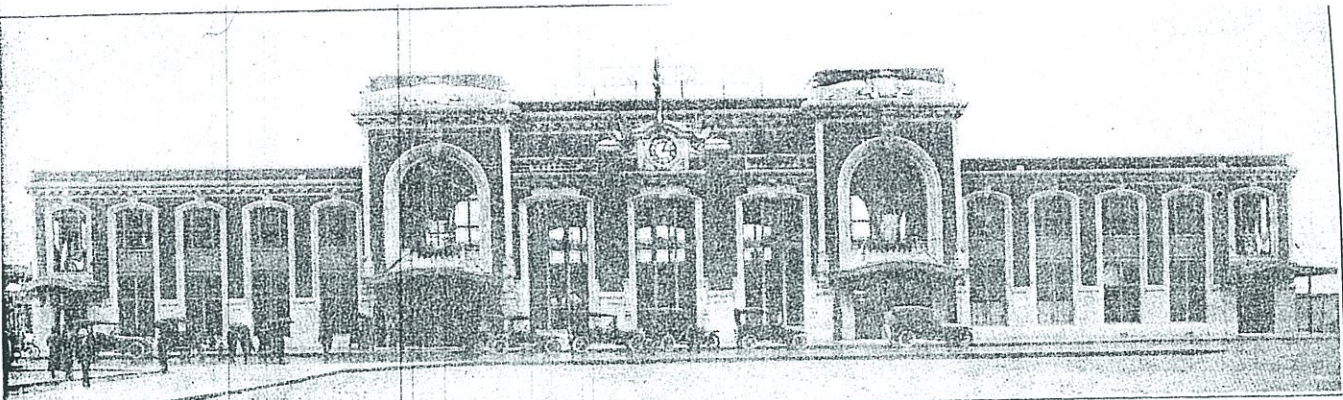


THE
GREAT
NORTHERN
RAILWAY
IN
CANADA
DIARY

C. H. RIFF

L.



Street Elevation of the Northern Pacific-Great Northern Station.

Terminal Developments at Vancouver, B. C.

New Great Northern-Northern Pacific Station Completed, Canadian Northern Facilities Under Construction

WITH the completion of the Canadian Northern passenger station, upon which work was started recently at Vancouver, B. C., that city will be unusually well supplied with modern passenger terminals. The Canadian Pacific occupies a terminal completed only four years ago, while the Great Northern and the Northern Pacific have only recently commenced running trains into their new station. The newly completed freight and passenger terminal of the Great Northern and the Northern Pacific and the former terminal of the Canadian Northern are entirely independent projects so far as ownership, construction or operation are concerned, although the sites are adjacent and the negotiations involved in their acquisition were more or less interdependent. The layouts also bear a striking resemblance.

The new facilities center about False creek, a shallow arm of the Strait of Georgia, in the southeastern part of the city of Vancouver. The original railroad to locate in this vicinity was the Vancouver, Westminster & Yukon, which acquired a right of way on the south side of False creek on which it built a line extending westward across Main street and thence north over a trestle to a terminal fronting on Pender street.

In 1911 the Great Northern as owner of the Vancouver, Victoria & Eastern Railway & Navigation Company, the successor to the Vancouver, Westminster & Yukon, concluded an agreement with the city of Vancouver by which it obtained the title to a U-shaped area around the edges of False creek, east of Main street, leaving a basin in the center about 1,600 ft. wide and 4,500 ft. long that was reserved as public property to be developed as a basin for dock purposes. To fulfill this agreement the railroad was compelled to spend \$2,500,000 for the acquisition of riparian rights from property owners around the basin, in addition it spent considerable sums in purchasing lots to secure the necessary street frontage for terminal development. The filling of the area to permit its use for railroad purposes also involved a large expenditure. Subsequent to the conclusion of this agreement the Great Northern sold a half interest in a portion of the property on the north side of False creek to the Northern Pacific and beginning January 1, 1918, the Northern Pacific will use the Great Northern (V. V. & E.) tracks from Sumas, about 60 miles southeast. The Canadian Northern also operates over these tracks under trackage rights from New Westminster to Vancouver, a distance of 12 miles.

In 1913, after the work on the Great Northern and the

Northern Pacific terminal was well under way, the Canadian Northern, seeking an adequate terminal for its Pacific Coast extension in Vancouver, entered into an agreement with the city whereby it secured title to the basin surrounded by the V. V. & E. property. This made an area of 162 acres of which 127 acres were available for terminal development, the remainder being reserved for a public street and for several small park sites. In addition to filling the area for its own and the city's use, the railroad was required to extend the fill 150 ft. west of Main street to a sea wall which it was also required to construct. This feature of the project entailed an expenditure of \$750,000 for the release of riparian rights. The agreement between the city and the Canadian Northern was founded on a plan of the Vancouver Harbor Commission, contemplating the future construction of a public railroad connecting the two new railway terminals with a public dock, to be located on the Kitsilano Indian Reservation. However, this project has not yet passed beyond the preliminary stages.

THE VANCOUVER, VICTORIA & EASTERN TERMINAL

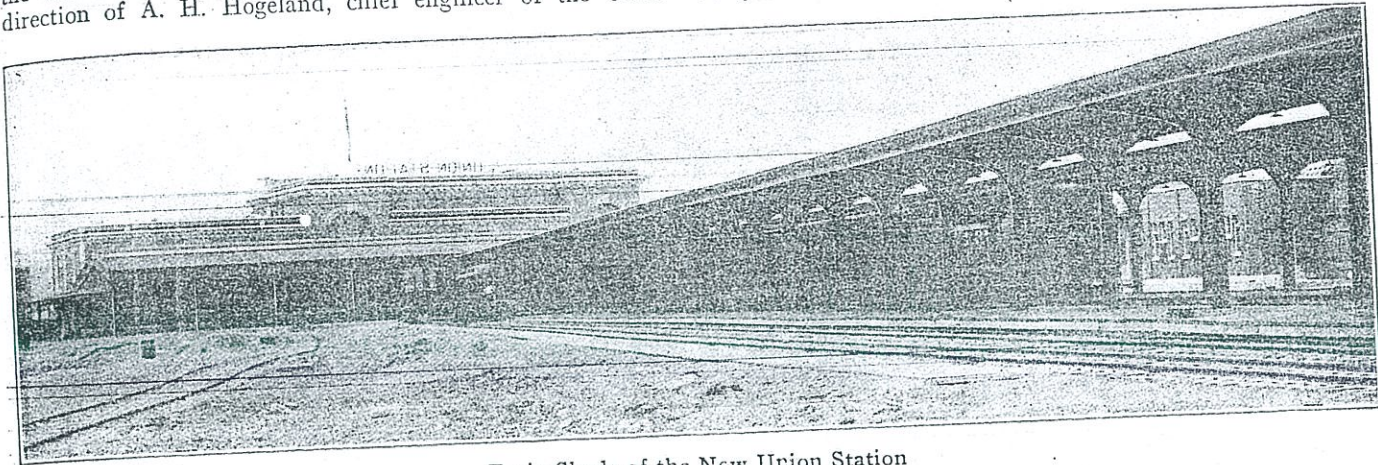
The Vancouver, Victoria & Eastern terminal plan contemplates the ultimate development of the entire U-shaped area, but the improvements made thus far are restricted to the north side of the "U" with frontage on Park lane and Prior street, except for a locomotive terminal in the extreme southeast angle. The terminal as built provides a new union passenger station and coach yard, separate freight houses for the Great Northern and the Northern Pacific and a joint team yard. Each unit is designed to allow for material extension in the future and space is provided along the north side of the property for tracks to serve possible industries located along Prior street.

The passenger station occupies the south side of this portion of the property, with two main tracks leading to six station tracks and two coach cleaning and storage tracks. The future development contemplates moving the main tracks further to the south, thereby permitting the addition of five more station tracks and five additional coach yard tracks. The station tracks are arranged in pairs, spaced 12 ft. 6 in. center to center, with platform 20 ft. wide between each pair.

The station building is shaped like an L, the main building being located at the end of the station tracks, while the baggage, express and mail facilities are in a smaller wing alongside the northernmost track. The main building con-

buildings were built under contract by Grant Smith & Co., and McDonnell, Ltd. Fred L. Townley of Vancouver was the architect. The entire terminal project was under the direction of A. H. Hogeland, chief engineer of the Great Northern, O. S. Bowen, principal assistant engineer at Seattle, and E. B. Ford, engineer in charge.

the area not far from the Great Northern station. The plans provide for a building 321 ft. in frontage with a depth of 105 ft. at the head of a group of 16 station tracks. The design of the building is symmetrical, with a waiting room



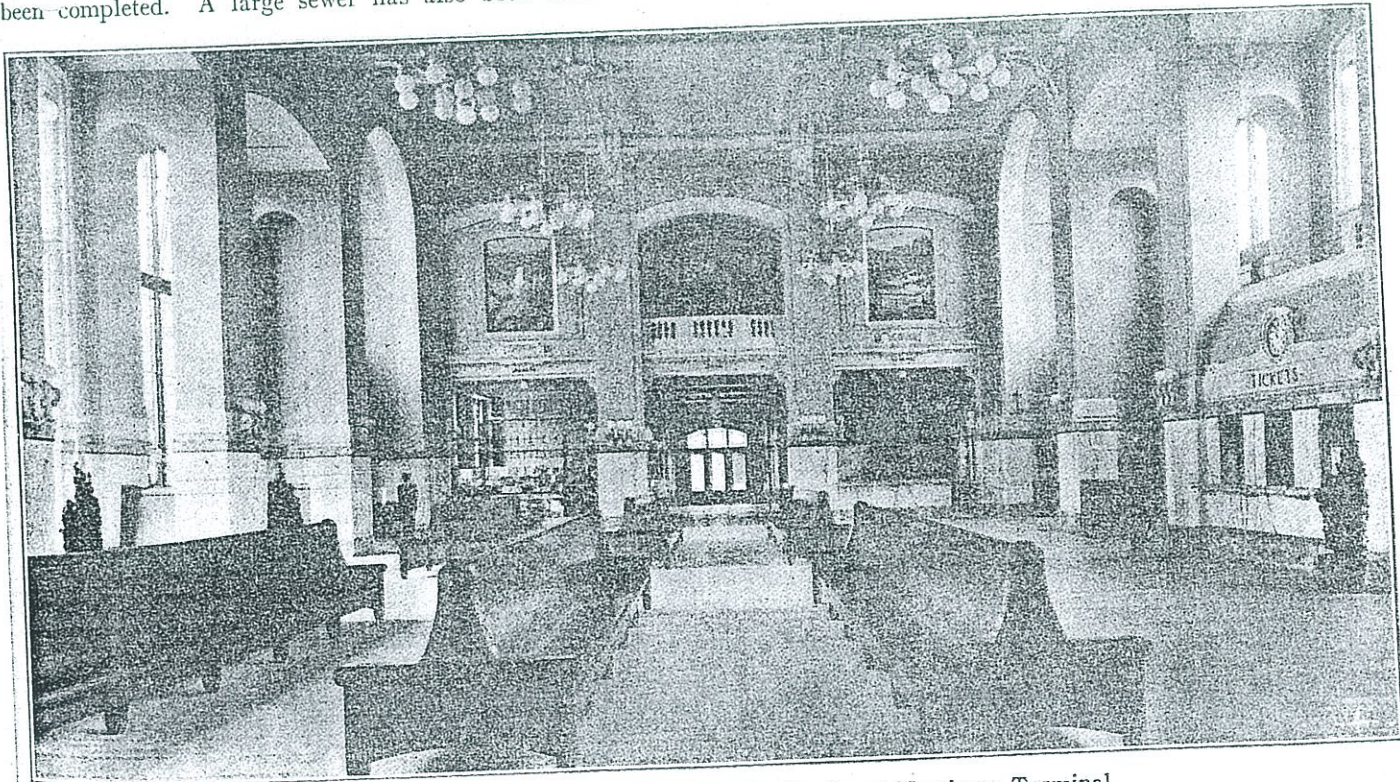
Train Sheds of the New Union Station

Northern, O. S. Bowen, principal assistant engineer at Seattle, and E. B. Ford, engineer in charge.

THE CANADIAN NORTHERN TERMINAL

The map shows the proposed ultimate development of the Canadian Northern terminal in the basin area of False creek. The filling of the submerged land involved over 5,000 cu. yd. of material a large portion of which has been completed. A large sewer has also been constructed

148 ft. by 48 ft. located in the center, supported by wings on either hand containing all the necessary auxiliary facilities. Two upper floors in the wings will accommodate general offices of the railroad, but the central waiting room will have a lofty ceiling extending the full height of the structure. A passenger concourse will occupy the space between the station building and the track platforms. The plans contemplate the use of high grade materials for both interior and exterior treatment, using material originating in



The Main Waiting Room, Northern Pacific-Great Northern Terminal

to drain the terminal property and intercept city sewers which hitherto drained into the basin. The sea wall west of Main street is nearly finished and the outbound freight house, 800 ft. long, has been completed. The contract for the passenger station has been awarded to the Northern Construction Company and Carter, Halls & Aldinger and will be completed early in 1918.

The passenger station is located in the northern half of

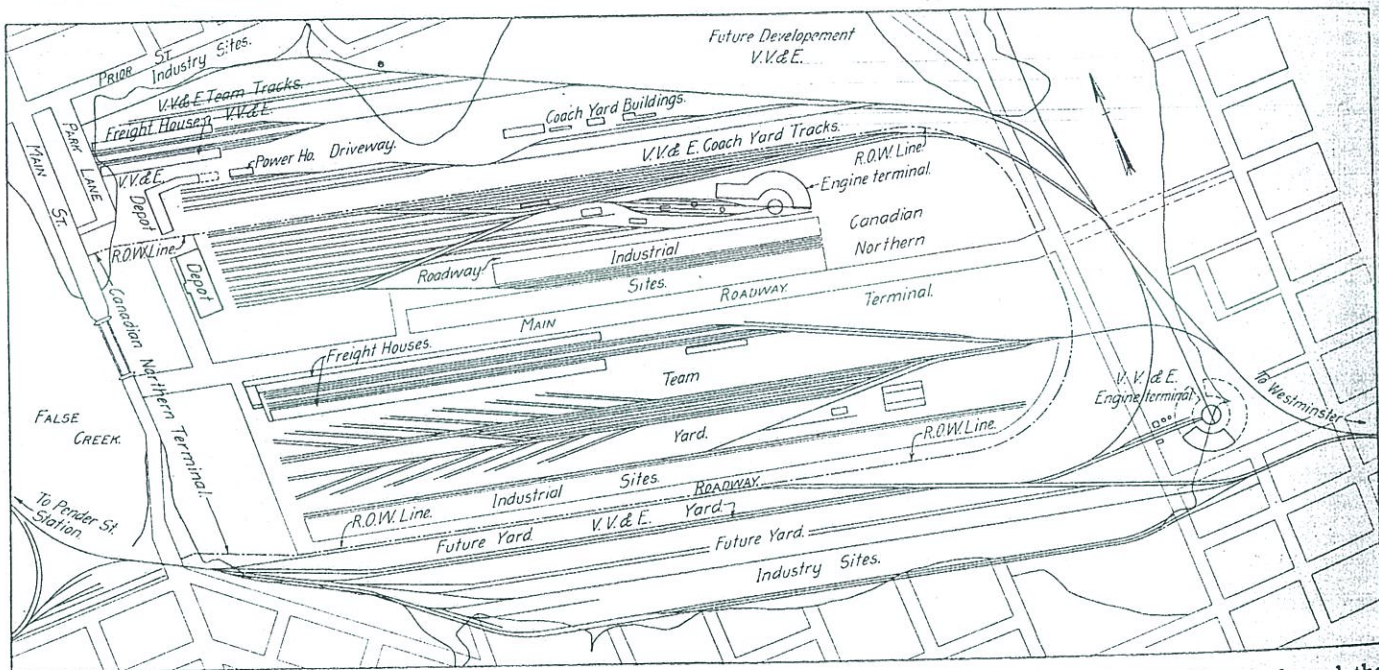
British Columbia as far as possible. The estimated cost of the passenger station is \$1,000,000. East of the station tracks the plan provides for a coach yard and passenger engine terminal.

The freight terminal occupies the center of the terminal area with a team yard in the southern portion. The freight house layout consists of an office building 100 ft. by 50 ft. and two freight warehouses,—an inbound freight house 50

sists of a central portion containing the waiting room 100 ft. by 60 ft., with the auxiliary facilities contained in symmetrical wings on either side. Entrance to the main waiting room is afforded by duplicate doors at each end of the street side, each of which is protected by a suitable marquis. Similar doors directly opposite, in the east wall of the waiting room, lead to the train concourse. The ticket office occupies the center of the east or track side of the waiting room. A woman's rest room and a smoking room together with toilet accommodations are located in the south wing of the building. Behind these is the immigrant waiting room, with a separate corridor leading to the train concourse and a separate street door in the south end of the building. The north wing contains a parcel and news stand, an exhibit room, a stationmaster's office and the checking counter for the baggage room. The main waiting room occupies the full height of the central portion of the building, but the two wings are arranged with second floors that are occupied as local offices by the Great Northern and the Northern Pacific.

The exterior treatment is a red brick above a granite base

minial. They are located on opposite sides of a grid of 6 house tracks, each house having its own driveway on the side opposite the tracks. These houses are 50 ft. wide and 600 ft. long but space is available for an ultimate extension to a maximum of 1,700 ft. A two-story portion at the west end of each of these buildings fronting on Park lane is used for office purposes. The remaining portions of the houses are divided equally into two sections by transverse fire walls, one section serving for bonded freight and the other for free goods. The storage portions of the freight houses have timber roof trusses spaced 22 ft. center to center and spanning the full 50 ft. The entire wall space between columns along the track sides of the storage portions of the freight houses is enclosed by steel roller doors; two to each 22-ft. bay, with windows and wooden sheathing in the space above the doors. The team side has one door 10 ft. wide and 9 ft. high in each bay. The freight house floors are of timber on earth filling, it being the intention to replace these floors with more permanent construction after the filling has had an opportunity to settle. The office portions of the freight houses are of ordinary brick construction with



The False Creek Improvements Showing Present Development of the Vancouver, Victoria & Eastern Terminals and the Ultimate Plan of the Canadian Northern

and a terra cotta dado. Extensive use is also made of terra cotta for the trim. The main waiting room is paneled in Alaskan marble and a cast plaster ceiling. All of the floors in the building are finished with terrazzo tile.

The wing north of the tracks has a width of 42 ft. and a length of 228 ft. Commencing at the west end it is occupied in turn by a baggage room 97 ft. long divided equally between general baggage and bonded baggage, a mail room 48 ft. 6 in. long and two express rooms having a combined length of 81 ft.

The main building has a reinforced concrete frame supporting reinforced concrete floors. The walls are of brick, terra cotta and hollow tile. The longitudinal wing is of ordinary brick wall construction. Owing to the fact that the structure stands on filled ground it was necessary to support it entirely on piles capped with concrete pedestals which carry the system of reinforced concrete girders that support the walls and floors.

THE FREIGHT HOUSES

Duplicate freight houses are provided for the Great Northern and the Northern Pacific, north of the passenger ter-

wooden floors. As in the case of the passenger station the freight houses are supported entirely on pile foundations.

A power plant for heating the terminal buildings is located east of the baggage building. It contains two 125-hp. return tubular boilers with space for a third boiler. The steam pipes for heating the passenger station are conducted through a 6-ft. by 6-ft. pipe tunnel.

As a large part of the area occupied by the terminals was submerged and most of the rest of it was only slightly above tide level, 2,600,000 cu. yd. of filling was required, most of which came from a pit at Sapperton, 10 miles away. A small portion of the material was secured in excavating the cut required to depress the tracks through Grand View, a section of Vancouver southeast of the terminal. The latter project involved eight street viaducts over the track, three of which were steel structures and five timber structures.

Except for a small portion done by the operating department of the Great Northern, the filling was done by A. Guthrie & Co., of St. Paul, Minn., and Portland, Ore., who used two Marion 80-ton steam shovels and 40 Kilbourne & Jacobs air-dump cars of 16-cu. yd. capacity which were operated in trains of 16 cars each. All of the terminal

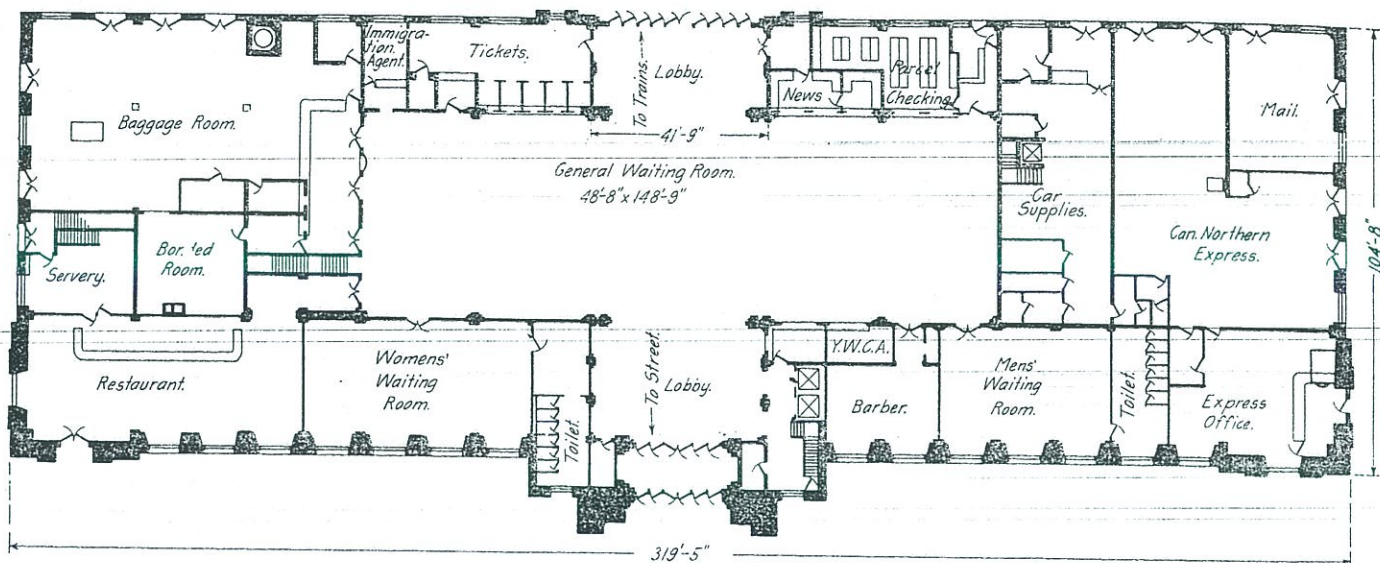
ft. wide and an outbound freight house 40 ft. wide,—with provision for an ultimate length of 1,600 ft. for each house. The freight houses are to be served by six house tracks, arranged in groups of three with a transfer platform in the center.

A section of the outbound freight house, 40 ft. by 800 ft.,

custom's office near the center and accommodations for the clerks and truckers at the west end of the building.

CONSTRUCTION DETAILS

The terminal area required filling to an average depth of 15 ft. The bed of the basin on which this filling was placed

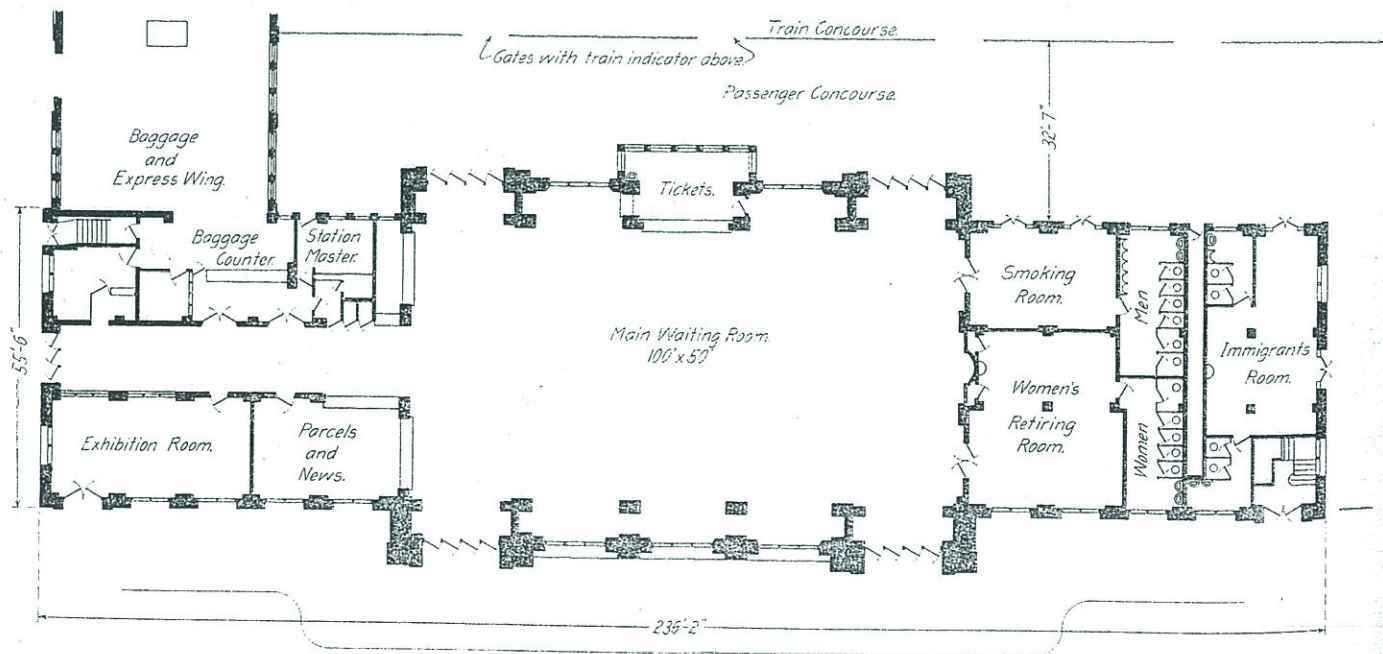


Plan of the Canadian Northern Station

has been completed. This has a steel frame with steel roof trusses supporting wooden purlins which carry a 2 in. plank roof finished with tar and gravel roofing. The floors are of heavy timber construction. Along the track side of the building the doors are continuous, but on the team side they occur only in each alternate 16-ft. bay. Along the entire length of the building above the door head, continuous glazed

consists of a layer of mud and under this a layer of clay, sand and gravel, overlaying hardpan. The two strata varied in thickness but had an average combined depth of about 25 ft. The fill was placed by the hydraulic method with a dredge excavating in False creek west of Main street. The output averaged about 99,000 cu. yd. per month.

The sewer formed an important part of the preliminary



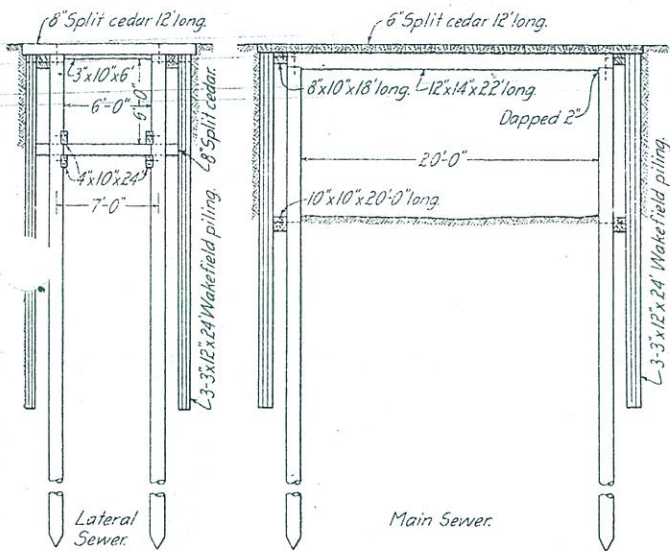
Plan of the New Union Station

transom lights are provided, while the wall portions consist of $\frac{7}{8}$ -in. sheathing on both sides of the studding, covered on the outside with corrugated iron. Three 13-in. brick fire walls divide the house into four compartments. A cold storage rooms is located at the east end of the building, a

work. It consists of a main sewer 20 ft. by 18 ft., 4,400 ft. long with laterals of smaller size having an aggregate length of 6,600 ft. Owing to the soft foundation and the presence of the fresh filling material, it was concluded to be unwise to use anything but timber construction for the

wer, it being the intention to replace this with a more permanent form of construction when the timber sewer requires renewal because of the action of decay or marine borers. The details of the main and lateral sewers are shown in the sketch. The sides consist of Wakefield sheet piling composed of 3-ply, 3-in. by 12-in. timbers with a roof consisting of 6 in. split cedar spanning longitudinally across 12-in. by 14-in. beams supported at intervals of 6 ft. on two rows of piles driven just inside of the sheet piling. The construction of the lateral sewer is somewhat simpler. The roofs of the sewers were left off until they were completed so that they could be cleaned out by means of a clam shell bucket to remove sediment deposited by the return flow of the water from the hydraulic filling. All buildings constructed in the terminal area will be placed on pile foundations, 2,500 piles being required for the passenger station structure alone.

One of the most interesting features of the work is the sea wall west of Main street. This consists of a dock formed by a reinforced concrete slab having a total length of 1,045 ft. This slab is supported along the water side



Section of Canadian Northern Sewers

on a longitudinal concrete girder carried on a row of reinforced concrete piles. Along the land side, the slab is supported on the top of a reinforced concrete retaining wall of the counterfort type. The wall is protected along the water edge by a fender consisting of a heavy timber supported on a row of creosoted piling. The counterfort retaining wall is on timber pile foundation. The construction of this wall entailed the use of 4,800 cu. yd. of concrete, 407,000 lb. of reinforcing steel, 535 concrete piles of a total length of 12,015 ft. and 13,200 lin. ft. of creosoted piles.

The Canadian Northern terminal work at Vancouver is under the general direction of M. H. MacLeod, general manager and chief engineer, Winnipeg, Man., with H. A. Dixon, division engineer, Vancouver, in direct charge. Pratt & Ross of Winnipeg and Vancouver are the architects for all of the buildings. McDonald, Nettleson & Br were the contractors for the freight house, A. G. Creel as the contractor for the sea wall and the Pacific Dredging Company did the hydraulic filling. The sewer work was done by the Canadian Northern Construction Company.



Photo Number: MAT005819
Photographer: unknown
Location: Vancouver, BC
Railway Name: GREAT NORTHERN RAILWAY
Date: 1933-08-00
Subject: Steam locomotive
Equipment Number: 1722
Collection: Mattingly



Photo Number: MAT005768

Photographer: unknown

Location: Puget Sound, Washington

Railway Name: GREAT NORTHERN RAILWAY

Caption: Empire Builder

Subject: Diesel locomotiveTrain, passenger

Equipment Number: 363-C

Collection: Mattingly



Photo Number: MAT003213

Photographer: unknown

Location: White Rock, BC

Railway Name: GREAT NORTHERN RAILWAY

Subject: Steam locomotive Station

Equipment Number: 1061

Collection: Mattingly



Photo Number: MAT001796

Photographer: unknown

Location: Vancouver, BC

Railway Name: GREAT NORTHERN RAILWAY

Date: 1942-06-20

Subject: Steam locomotive

Equipment Number: 1714

Collection: Mattingly



Photo Number: MAT001795

Photographer: unknown

Location: Vancouver, BC

Railway Name: GREAT NORTHERN RAILWAY

Date: 1933-08-00

Subject: Steam locomotive

Equipment Number: 461

Collection: Mattingly



Photo Number: MAT001794

Photographer: unknown

Location: Vancouver, CNR roundhouse, BC

Railway Name: GREAT NORTHERN RAILWAY

Date: 1933-08-00

Subject: Steam locomotive

Equipment Number: 453

Collection: Mattingly

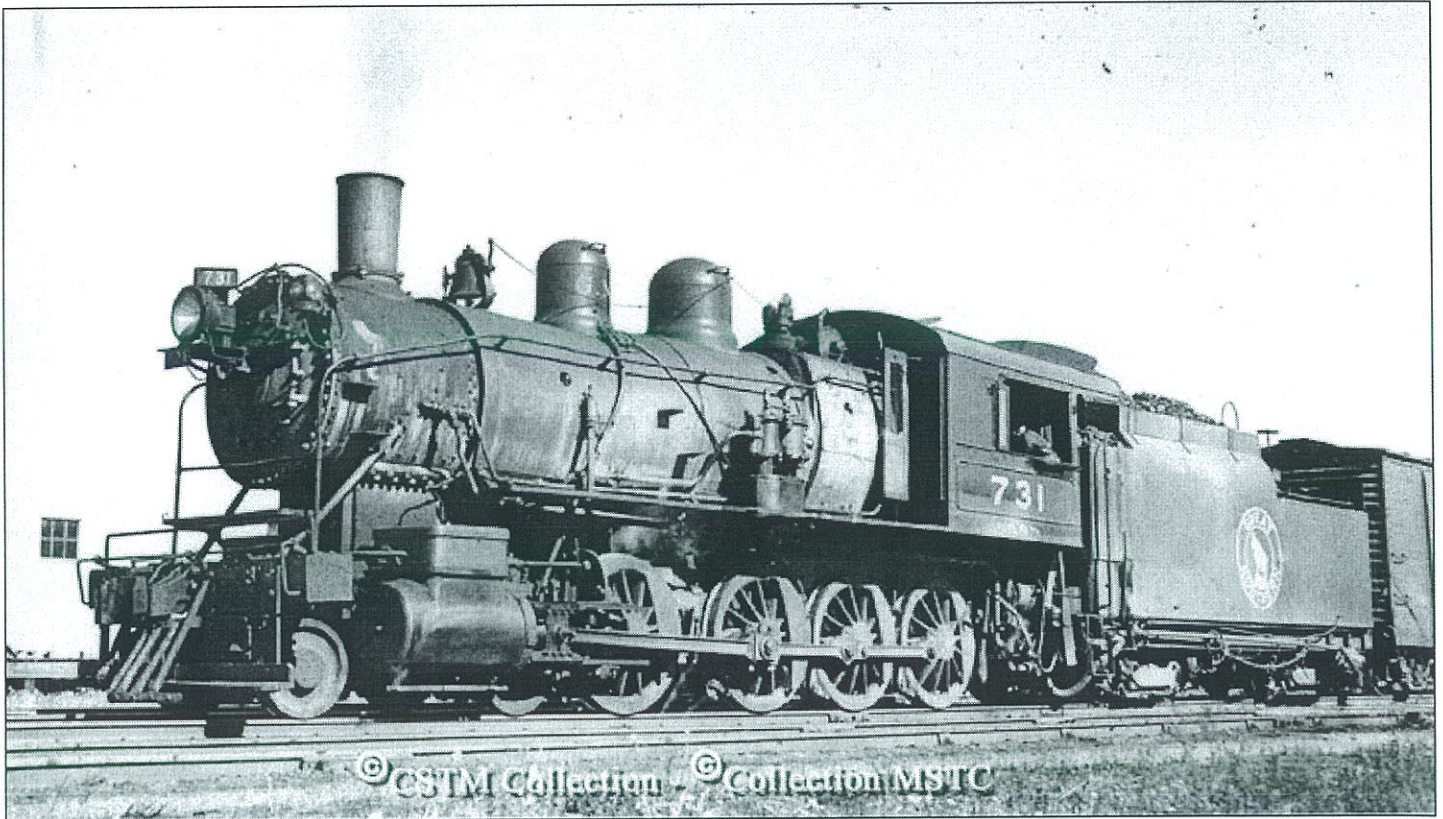


Photo Number: MAT001798

Photographer: unknown

Railway Name: GREAT NORTHERN RAILWAY

Subject: Steam locomotive

Equipment Number: 731

Collection: Mattingly



Photo Number: MAT001793

Photographer: unknown

Location: Vancouver, CNR roundhouse, BC

Railway Name: GREAT NORTHERN RAILWAY

Date: 1933-08-00

Subject: Steam locomotive

Equipment Number: 453

Collection: Mattingly

HURLED FROM CAB FIREMAN MORROW DIES AT HOSPITAL

Vancouver Owl Train Wrecked
Near White Rock by Strik-
ing Landslide — Engi-
neer Badly Injured.

As a result of injuries received early yesterday morning when the Great Northern Owl train from Vancouver struck a landslide near White Rock and was derailed, Albert Morrow, fireman on the train, died at the Vancouver General hospital last night. J. P. Imberg, engine driver, was also brought to the General hospital suffering from severe injuries. It is expected that he will live. None of the passengers were injured.

The accident occurred at 1:45. The train had been running at a twenty-five-mile rate, but had slowed down to half that speed, before taking the curve. Just as the engineer was about to put on speed again, the train plunged into the landslide, ran a short distance then leaped from the track, in the direction of the bay.

Morrow was thrown twenty feet into the water. When picked up it was found that he was bleeding from the mouth as though internally injured, which proved to be the case. The engineer, Imberg, jumped from the cab in time to save himself, but a piece of rail, torn up by the engine as it swerved over the eight-foot embankment, shattered his left leg above the knee.

Both men were rushed back to Vancouver on a special train which was sent out from Everett, Wash. Dr. A. S. Monroe was called in, but every effort to save the life of Morrow was in vain. He died at 10:30 last night.

MAY 21,
1912

Vancouver Sun

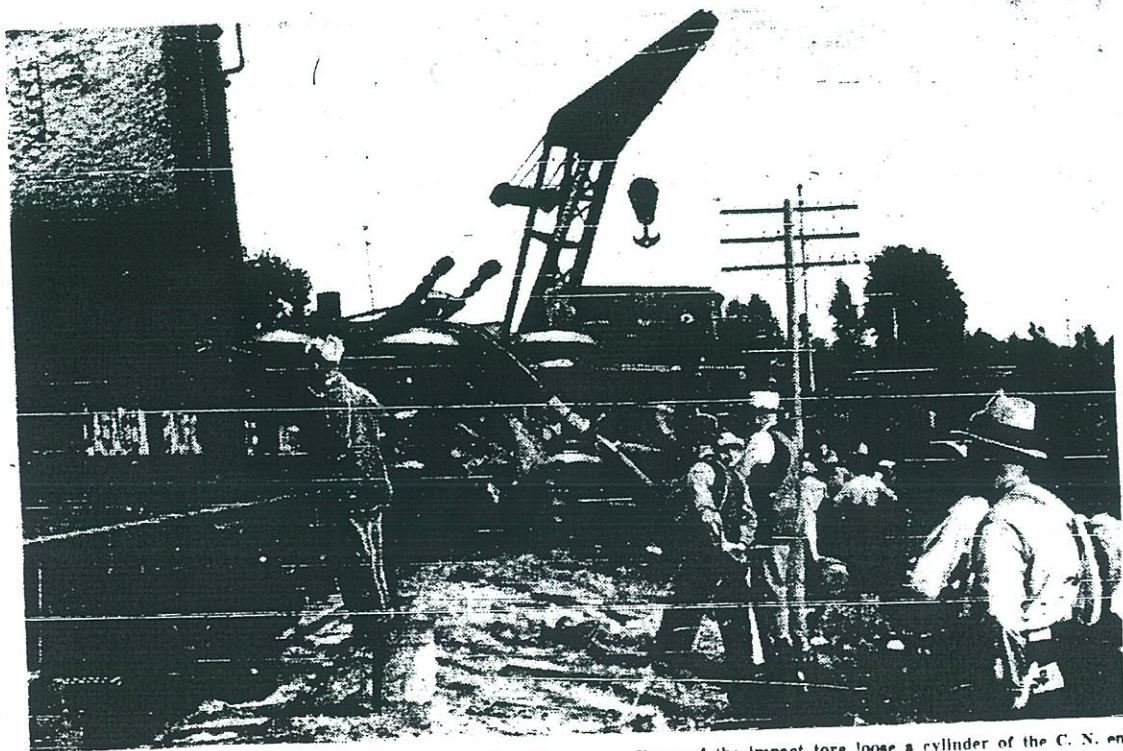
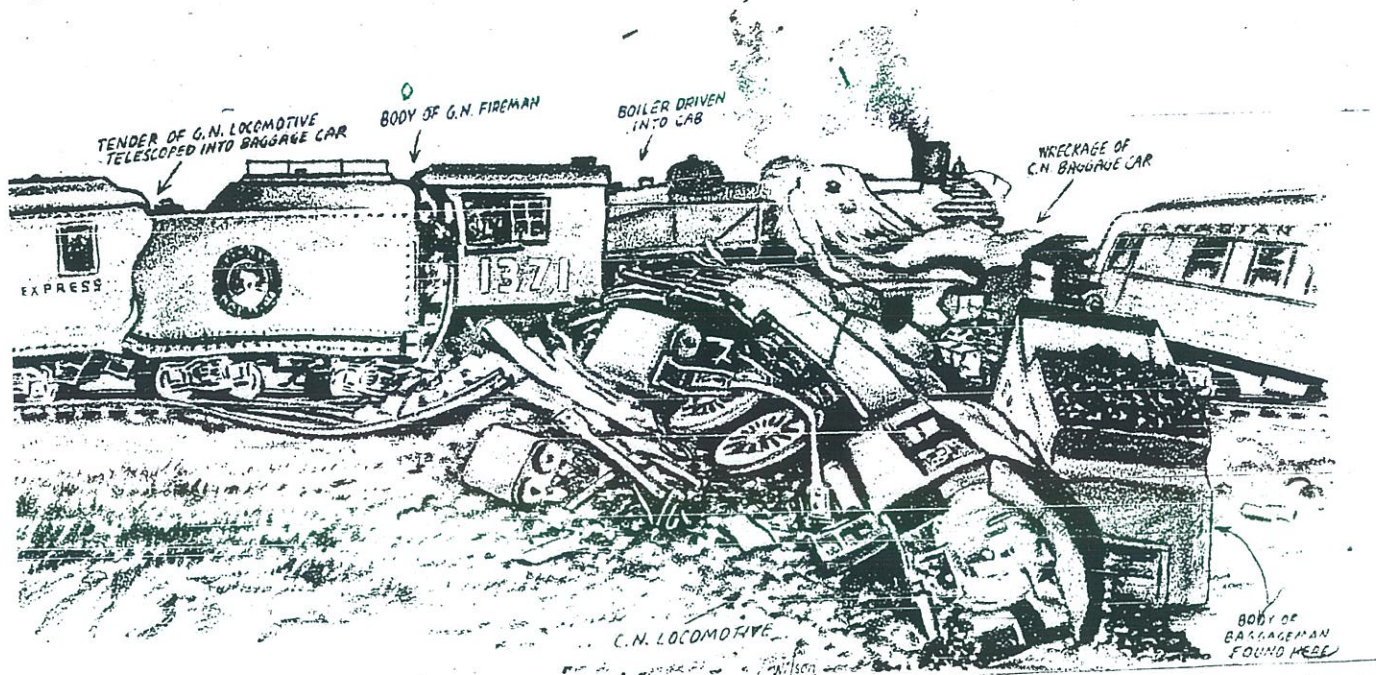
THE SECOND
FRONT PAGE

The Vancouver Sun

VANCOUVER, BRITISH COLUMBIA, FRIDAY, JULY 25, 1941

'Fitness' Graphic Story of Fatal Sapper

The Vancouver Sun Artist Goes to a Train Wreck



This photo shows Canadian National engine, tossed on its side at right angles to original direction of travel. Work gangs and two railway cranes desperately clear debris in effort to open line.

Force of the impact tore loose a cylinder of the C. N. engine, twisted a driving rod (lying diagonally in photo), and left the cylinder at the cab end of the locomotive.

Behind looms the Canadian National tender, disposed of

Carey's condition is reported today to be only "fair." He suffered the loss of a foot which had also been injured in a previous train wreck.

Mrs. Wood is reported to be suffering from serious internal injuries and her condition is "fair."

Dead also are GNR Fireman H. D. Hager, Seattle, who was trapped between the engine and tender; CNR Engineer H. H. Mills, 2012 East Twelfth Avenue, Vancouver; H. H. Krinks, 1809 East Thirteenth Avenue, baggage man on the CNR passenger.

INSTANTLY KILLED

Hager and Krinks were instantly killed when they were trapped in the wreckage, and Mills died in Royal Columbian Hospital at 1:35 p.m., Wednesday.

Wreck crews worked for almost five hours before they managed to raise the tender of the CNR engine under which Krinks' body had been thrown when the wooden baggage car in which he was working telescoped over the locomotive.

Wrecking crews worked for an additional hour during which they tore away the cab of the GNR engine piecemeal to free the body of Hager, which had to be lowered to the ground by means of a rope.

BATTLE TO RECOVER BODIES

The bewildering tangle of the wreckage was responsible for the delay in getting at the bodies of the two crew members.

Acetylene torches were used repeatedly to slice through heavy pieces of steel that were woven together by the terrific force of the impact.

Two wreckers, "big hooks," went to work from either side of the tangle of steel and splinters of wood which had been the CNR baggage car.

A CPR wrecking crew worked from the north end of the pile of debris, while a CNR crew nibbled from the south end.

TOIL THROUGHOUT NIGHT

The stabbing finger of floodlights and the weak yellow glare from oil flares provided the weird lighting by which the hard pressed crew labored throughout the night to clear the line, only outlet of the Canadian National and Great Northern Railways from Vancouver.

Heaviest task for the wreckers was the removal of the CNR engine which straddled the main line.

The heavy locomotive had to be inched by the great cranes to the side of the right-of-way to give clearance along the line.

BUILD TRACK AROUND IT

Day coaches of both trains were left where they stood after the crash and section gangs built new track for the cranes to provide a by-pass for traffic when the line was finally cleared.

"This is the worst mess I have ever seen in the 25 years I have been on this work," a grizzled member of the wreck-

to see where we were going.

CLOUDS OF STEAM

"The whistle of the engine was still blowing and huge billows of steam were rising from the pile of wreckage. We picked up Lynam, whose condition was really bad, and then we found Mills down the track. He had wandered from where he had fallen when his engine turned over.

The scene which Nixon and his companions witnessed was almost indescribable.

The tender and engine of the CNR train were driven off the track.

The locomotive lay on its side.

Just south of the wrecked engine lay the tender, which had buried itself about two feet in the ground.

The wooden baggage car in which Krinks was riding hit the engine and tender and splintered into small fragments like a wave beating up a rock strewn shore.

WHERE HAGER WAS TRAPPED

The CNR steel day coach remained on the track, but it was at a horrible angle. All the other cars of the train remained on the track.

On the other side of this tangle of wreckage was the CNR locomotive, which had turned at an angle and lay diagonally across the tracks. It leaned at a sickening angle, but did not overturn.

The tender was driven up against the face of the boiler and it was in here that Hager was trapped.

The steel express car which followed the engine was telescoped over the tender, which penetrated the first section of the car. The other three cars of the train remained on the tracks.

STEEL RAILS BENT

So great was the force of the impact that steel rails were bent as though in a giant hand.

Huge castings were snapped into fragments and the giant driving rod of the CNR locomotive engine was twisted like a hairpin.

Ties were broken like match-

to clear the line.

Scrap metal was dumped down the bank clear of the right-of-way.

With a sound that resembled a landslide, the huge CNR locomotive tender rolled down the bank to the bottom of a deep ravine. Other wreckage followed it.

OTHER ENGINE SWUNG AROUND

As the big cranes moved forward the sweating crews built up track for them to travel on.

The last heavy piece of wreckage to be moved was the body of the locomotive, which the crews reached about 8 p.m.

It took several hours to swing clear of the right-of-way and parallel to the track.

Thousands of persons crowded an overhead bridge on North Road, about a half mile south of the point where the wreck occurred.

The bridge served as a fine vantage point for the public, but the North Road was jammed with autos.

Police had their hands full trying throughout the day to keep citizens back from the wreck.

Little boys climbed trees along the right-of-way and had to be chased down and out of the danger zone.

When The Vancouver Sun reached homes with news of the wreck, thousands more flocked to the scene of the crash.

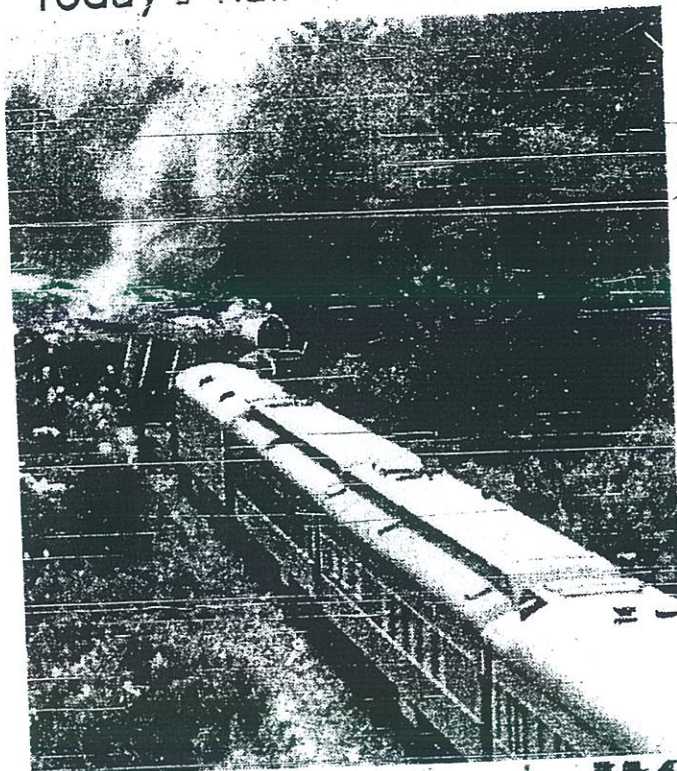
Thursday's is the first serious wreck in British Columbia in the last year, it was reported by railway officials.

INQUEST ARRANGED

Sgt. Charles Anderson, provincial police, stated that an inquest would be opened in Paterson Funeral Home, New Westminster, at 1 p.m. today to establish identification of the dead men and to hear medical evidence.

He said that the inquest would then probably be adjourned for a week to enable railway officials to make a thorough investigation of the disastrous wreck.

Today's Rail Accident



Head-On Crash at Sapperton

Seattle-bound Great Northern
Express and Canadian National
For Vancouver Meet on Curve

Wrecking crews are working feverishly to remove the body of a dead fireman from between a wrecked boiler and tender, one of three men dead and 21 men and women injured when two passenger trains collided head-on four miles west of New Westminster at Sapperton at 9:20 a.m. today.

He was A. Hager of Seattle, the fireman on the Great Northern Railway passenger train, Seattle-bound, which collided with a Canadian National Railway's transcontinental second section passenger train, Vancouver-bound.

The other dead men are H. H. Mills, 2012 East Twelfth Avenue, engineer of the C.N.R. train, and H. H. Krinks, baggage man on the same train, whose home was at 1809 East Thirteenth Avenue.

Mills died at 1:35 p.m. in Royal Columbian Hospital, while Dr. Frank Turnbull, Vancouver brain specialist, was hurrying to New Westminster to attempt to save his life.

J. Lynam, fireman of the C.N.R. train, is in a critical condition at the New Westminster hospital, his left leg severed. He is undergoing blood transfusions.

It is believed the baggage man died instantly.

Three of the 21 injured, all of whom were taken to the Royal Columbian Hospital in New Westminster, are in a critical condition.

Force of the collision of the two heavy trains telescoped the tender of the Great Northern engine into the first section of the steel express car, and threw the Canadian National locomotive from the tracks.

The C. N. engine landed on its side north of the right-of-way.

Twisted steel rails, shattered castings from the engines told of the terrific force of the collision. It tore up tracks and ties, and scattered wreckage for almost 100 feet.

A C.N.R. passenger coach immediately behind the wrecked wooden baggage car was thrown diagonally across the track.

The trucks of the G.N. express car were off the tracks.

Fortunate feature of the disaster was the fact that there was

no fire at time of the collision. Oil lay in pools on the ground, and was spattered over the wreckage, but fire did not start until almost an hour after the crash.

Please Turn to Page Two
See "Train Wreck"

Dead and Injured

The following is the list of dead and injured in the train wreck, as recorded at Royal Columbian Hospital, New Westminster:

DEAD

A. HAGER, Seattle, fireman on Great Northern train.

H. H. KRINKS, 1809 East Thirteenth Avenue, Vancouver, baggage man on Canadian National train.

H. H. MILLS, C.N.R. engineer, 2012

Mr. and Mrs. Harry Woods, St. Paul, Minn.

Mr. and Mrs. J. Garrison, St. Paul, Minn.

Mrs. Margaret Smith, Seattle.

W. G. Mendez, Kelso, Wash., not serious.

Mrs. Rose Manning, Ogden, Utah, not serious.

Mr. and Mrs. Kurt Boyd, Chillicothe, Mo.

Herbert Fishlock, mail clerk on Great Northern, 2000 East

EAT NORTHERN LOCOMOTIVE AFTER THE CRASH

of Kent Will Alert Young
Tour of Canada Lad First to

SIX WORKMEN KILLED BY HUGE SNOWSLIDE MANY OTHERS INJURED

Carpenter Shop of Crow's Nest
Pass Company Struck by
Avalanche Hundred and
Fifty Feet Wide.

SOME DOUBT EXISTS AS TO NUMBER HURT

Not Known for Certain if Thir-
teen or Fourteen Men Were
Within at Last Moment.

(Sun's Leased W. A. F. Wire.)
FERNIE, B. C., Dec. 30.—The
snowslide at Coal creek this morning
was of enormous size, being 150 feet
in width when it struck the carpen-
ter shop of the Crows Nest Pass com-
pany near the northern end of the
big steel tippie.

The avalanche burst upon the shop
so quickly that every man in the
building was caught, no warning
sound having preceded its advent.
The electric light wires supplying light
to the offices and other buildings be-
ing in the path of the slide gave the
first warning to those outside the
shop by ceasing to do their duty, and
a rush of men from all directions was
soon upon the scene and rescue work
began immediately.

Pulmotor Ineffectual.

Five lifeless bodies were brought
out and one other, that of a young
man still showing indications of life.
A pulmotor was used for some time,
but without result. Five other men
are all severely and some perhaps
fatally injured. They are now either
in the hospital at Fernie or in their
homes. The death roll is as follows:

James Buckley, Fernie.
Harry Neil, West Fernie.
Alex Worthington, Coal Creek.
D. Roasrio, Fernie.
D. Naslyczuk, Coal Creek.
T. Kitenary, Coal Creek.

Names of Injured.

The injured are:
Archie Nicholson, Fernie, back in-
jured.

Percy Jones, West Fernie, injured
back and pelvis, perhaps internal in-
juries.

Fred Platt, West Fernie, foot frac-
tured and dislocated, wound on face.

Sam Carnamon, Fernie, shoulder
fractured and back injured.

Tony Seceretti, Coal Creek, fractur-
ed skull.

George Michel, Coal Creek, leg in-
jured.

Walter Campbell, slightly injured.

Coroner H. A. Wilkie has empan-
elled a jury and the inquest will be
held as soon as the government can
be heard from.

Heavy snows had fallen in the last
ten days and last night a still heavier
snow set in. Without warning the
avalanche descended a few minutes
before 7 a. m. and within half an
hour every available man had been
rushed to the scene. By nightfall the
dead and injured had been recovered.
There is some doubt whether there
were 13 or 14 men in the carpenters'
shop at the time of the slide.

December 30

Fatal Sapperton Train Crash

'So Much Steam We Had to Use Lights'; Fourth Victim Dies

Fatal toll of the wreck of passenger trains of the Great Northern and Canadian National near Sapperton mounted to four at 8 p.m. Thursday when James Lynam, 2936 Sophia Street, Vancouver, C.N.R. fireman, died in Royal Columbian Hospital, New Westminster.

Twenty-four hours after the two trains collided on a strip of single track the four mangled bodies of train crew members lay in Paterson Funeral Home, New Westminster, and 21 other men and women were still in Royal Columbia Hospital.

Most seriously injured of those are John Carey, 2323 West Sixth Avenue, Seattle, G.N.R. engineer, and Mrs. Perry M. Wood, St. Paul, Minn.

FOOT AMPUTATED

Carey's condition is reported today to be only "fair." He suffered the loss of a foot which had also been injured in a previous train wreck.

Mrs. Wood is reported to be suffering from serious internal injuries and her condition is "fair."

Dead also are G.N.R. Fireman H. D. Hager, Seattle, who was trapped between the engine and tender; C.N.R. Engineer H. H. Mills, 2012 East Twelfth Avenue, Vancouver; H. H. Krinks, 1809 East Thirteenth Avenue, baggage man on the C.N.R. passenger.

INSTANTLY KILLED

Hager and Krinks were instantly killed when they were trapped in the wreckage, and Mills died in Royal Columbian Hospital at 1:35 p.m., Wednesday.

Wreck crews worked for almost five hours before they managed to raise the tender of the C.N.R. engine under which Krinks' body had been thrown when the wooden baggage car in which he was working telescoped over the locomotive.

Wrecking crews worked for an additional hour during which they tore away the gab of the G.N.R. engine piecemeal to free the body of Hager, which had to be lowered to the ground by means of a rope.

BATTLE TO RECOVER BODIES

The bewildering tangle of the wreckage was responsible for the delay in getting at the bodies of the two crew members.

Acetylene torches were used repeatedly to slice through heavy pieces of steel that were woven together by the terrific force of the impact.

Two wreckers, "big hooks," went to work from either side of the tangle of steel and splinters of wood which had been the C.N.R. baggage car

which shuttled from the wreck to hospital with injured.

"We took 17 of the injured into hospital," Nixon said.

Less than 10 minutes after the call for ambulances was put into by telephone, Nixon and other members of the crew were at the scene of the wreck.

"One engine exploded and the front end of it was away out there in the country," Nixon recounted. "There was so much steam and smoke around when we drove up that we had to turn on the lights of the ambulance to see where we were going."

CLOUDS OF STEAM

"The whistle of the engine was still blowing and huge billows of steam were rising from the pile of wreckage. We picked up Lynam, whose condition was really bad, and then we found Mills down the track. He had wandered from where he had fallen when his engine turned over."

The scene which Nixon and his companions witnessed was almost indescribable.

The tender and engine of the C.N.R. train were driven off the track.

The locomotive lay on its side.

Just south of the wrecked engine lay the tender, which had buried itself about two feet in the ground.

The wooden baggage car in which Krinks was riding hit the engine and tender and splintered into small fragments like a wave beating up a rock strewn shore.

WHERE HAGER WAS TRAPPED

The C.N.R. steel day coach remained on the track, but it was at a horrible angle. All the other cars of the train remained on the track.

On the other side of this tangle of wreckage was the C.N.R. locomotive, which had turned at an angle and lay diagonally across the tracks. It leaned at a sickening angle, but did not overturn.

The tender was driven up against the face of the boiler and it was in here that Hager was trapped.

The steel express car which followed the engine was telescoped over the tender which penetrated the first section of the car. The other three cars of the train remained on the tracks.

STEEL RAILS BENT

So great was the force of the impact that steel rails were bent

sticks and the wreckage was strewn for about 100 feet along the track.

Most forlorn object in the tangle of disaster was a red bicycle, wheels bent and frame twisted, which hung partly out of the splintered C.N.R. baggage car.

Sacks of mail were rescued by police and train crews and placed under guard until they could be removed.

LOCOMOTIVE ROLLED AWAY

While Carey and other injured persons were being treated in Royal Columbian Hospital, the sweating wrecking crews were at work to clear away the debris.

Utter disregard as to where huge chunks of steel and other wreckage landed was shown by the crew as they struggled to clear the line.

Scrap metal was dumped down the bank clear of the right-of-way.

With a sound that resembled a landslide, the huge C.N.R. locomotive tender rolled down the bank to the bottom of a deep ravine. Other wreckage followed it.

OTHER ENGINE SWUNG AROUND

As the big cranes moved forward the sweating crews built up track for them to travel on. The last heavy piece of wreckage to be moved was the body of the locomotive, which the crews reached about 8 p.m.

It took several hours to swing clear of the right-of-way and parallel to the track.

Thousands of persons crowded an overhead bridge on North Road, about a half mile south of the point where the wreck occurred.

The bridge served as a fine vantage point for the public, but the North Road was jammed with autos.

Police had their hands full trying throughout the day to keep citizens back from the wreck.

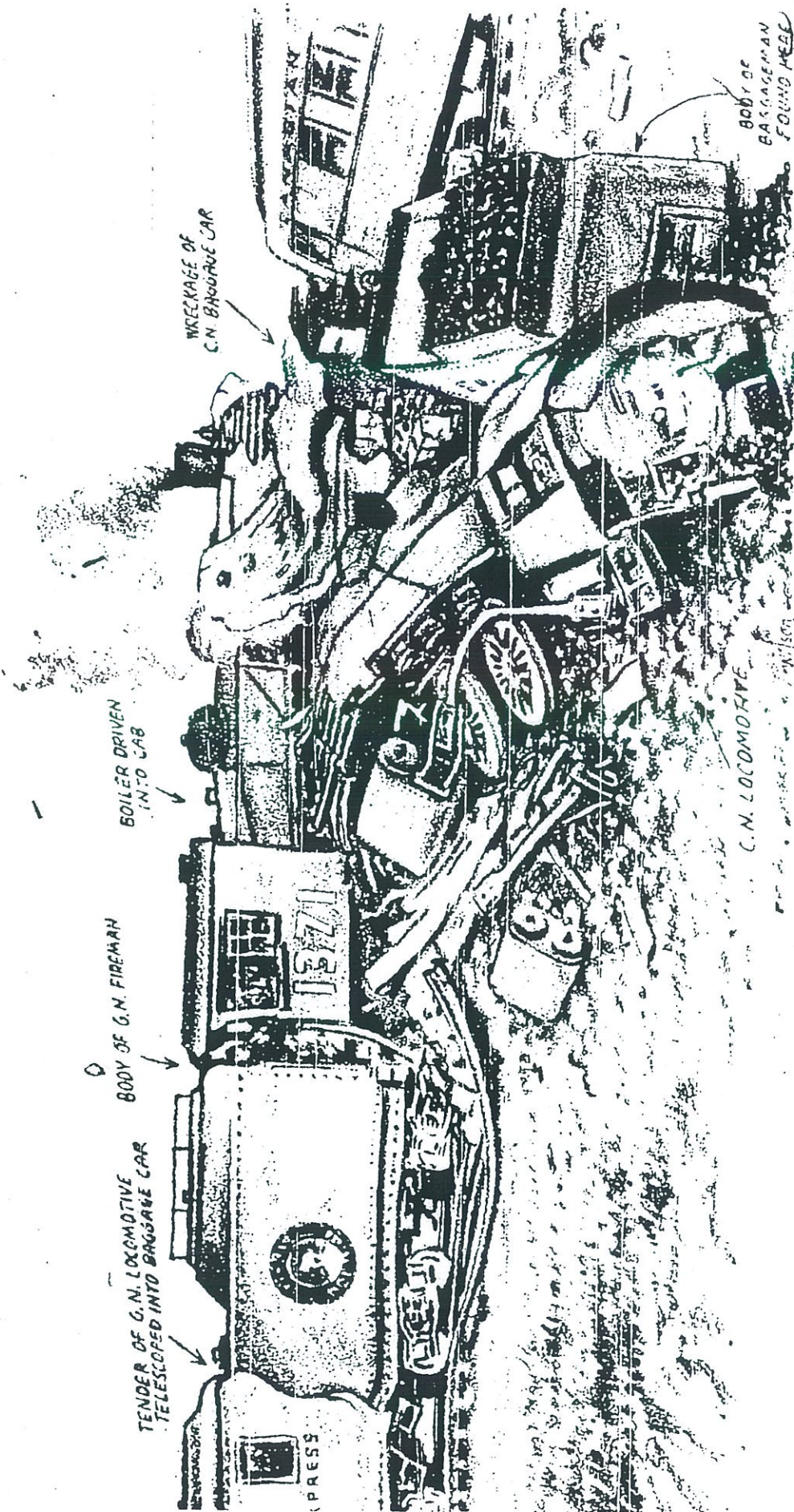
Little boys climbed trees along the right-of-way and had to be chased down and out of the danger zone.

When The Vancouver Sun reached homes with news of the wreck, thousands more flocked to the scene of the crash.

Thursday's is the first serious wreck in British Columbia in the last year, it was reported by railway officials.

INQUEST ARRANGED

Sgt. Charles Anderson, provincial police, stated that an inquest would be opened in Paterson Funeral Home, New Westminster, at 1 p.m. today to establish identification of the dead men



BODY OF G.N. FIREMAN

TENDER OF G.N. LOCOMOTIVE
TELESCOPED INTO BAGGAGE CAR

BOILER DRIVEN
INTO CAR

WRECKAGE OF
C.N. BAGGAGE CAR

C.N. LOCOMOTIVE

BODY OF
PASSENGER
FOUND HERE

Government to build & run 7 lines, one to ply direct between St. John's and Labrador, the others on the large bays, to connect with the railway at various points. By a coastwise steam service every fishing town will participate in the benefits of the railway, & all will be connected with St. John's.

Northern Pacific & Manitoba Ry. Co.—Notice has been given of application to Dominion Parliament for an act to amend chap. 58 of 52 Victoria respecting the incorporation of the C.P.R. to extend the time for completing the C.P.R. extensions authorized by that act, & to amend the acts therein recited & confirmed, with a view to construct the same in sections, & for other purposes.

Northern Pacific, Winnipeg Terminal.—The building which comprised the Manitoba Divisional Station & the divisional offices of the C.P.R. was totally destroyed by fire on the night of Feb. 7. The building was erected in 1887. The hotel portion, 7 stories high, had a height of 216 ft. on Main st., & 212 ft. on Water st., & had accommodation for over 300 guests. The divisional offices extended along Water st. south of the hotel & there was a large train shed in rear of the hotel. The building, furniture, etc., was valued at about \$1,000,000, & it is said the Co. did not carry fire insurance. Guests lost effects valued at about \$100,000. Nothing definite can be said of the intention of the Co. as to rebuilding the hotel. The station & offices are to be rebuilt on the old plan.

Ottawa and New York.—H. W. Gays has been appointed General Manager of this Co., & the New York & Ottawa R.R. Co., with headquarters at Ottawa. Mr. Gays has left the General Managership of the Chicago, St. Louis & St. Louis Ry., with headquarters at St. Louis, Mo., to accept the Ottawa position. Mr. Hibbard will confine himself to the duties of President in future, handing over the General Managership to Mr. Gays.

Portage la Prairie Westward.—M. R. Gies gives notice of application to Manitoba Legislature to incorporate a company to line from or near Portage la Prairie to a point north of the main line of the C.P.R. on the western boundary of Manitoba, with a view to or near Neepawa or Gladstone or near Brandon or Carberry, & westerly or southwesterly to the western boundary of Manitoba.

Appelle, Long Lake & Saskatchewan Ry.—Receipts for Dec., \$1,482.75, compared with \$1,091.37 for Nov.

Central traffic receipts for Jan., 1899, compared with \$24,303.82 for Jan., 1898.

Monmouth, Nicholasville, Irvine & Beattyville.—The sale of this line to G. P. MacKenzie, Toronto, & others, on Oct. 6 last for \$100,000, has been set aside, Judge Barr's decision to that effect having been upheld by the Circuit Court of Appeals.

Rockland, Ont., to Prescott.—Press reports J. S. Ross & others, of Winchester, Ontario, are promoting a scheme for the construction of a line from Rockland, Ont., south about 10 miles via Winchester & Moorewood, to Prescott.

Shedden Forwarding Co., Ltd.—R. A. J. Beattie, H. Paton, D. Macmaster, J. C. MacKenzie, Toronto, have given notice of application under the Dominion Companies Act for incorporation under the title, with a capital of \$700,000.

Yukon Routes.—L. Coste, Chief Engineer, Canadian Public Works Department, who is in Europe, was recently interviewed for the Canadian Gazette in London, which says: "Coste went out to the Yukon country in March by the Stikine-Teslin route. His mission was to inquire more particularly into

the navigability of the rivers which for some time yet must necessarily form the principal means of access to the Yukon owing to the non-construction of the railway from Stikine River to Teslin Lake. Mr. Coste does not, however, hold that the route he took is the best. The best available route, he believes, is via the Skegway & the White Pass to Lake Bennett, & thence by the Lewis & Yukon rivers to Dawson City."

General Manager Hays, of Northern Pacific Hotel and Station, Winnipeg, burned Feb. 7, 1899. The G.T.R., & Mrs. Hays, arrived at Nice Feb. 12. They will visit London at an early date.

The Electric Lighting of Trains.

By Robert A. Ross, F. E.

Electric train-lighting is occupying the attention of the larger railway companies on this continent at present to a large extent, & in a number of cases has been adopted for the better class of train service. In Europe the development has been much more rapid & on many lines it has or is in process of displacing the oil & gas formerly in universal use. The reason for the change is not far to seek. The public demands the utmost luxury when traveling, & having been educated to the advantages of electric lighting at home is quick to appreciate the same advantages on the railways where at the present time it is counted a luxury, but will soon become a necessity. The public recognizes the fact that as the electric lamp is free from flame there is no risk of fire & no vitiated atmosphere to breathe & it has an illuminant & not a mere gloom disperser as with oil & gas. Its ready adaptability to being placed where wanted makes possible the use of reading lights in the seats & in other positions where any other form of illuminant would be impossible.

The railway companies are not slow to appreciate these advantages, but naturally wish to be assured that electrical illumination will not be more costly & less reliable than other methods. As regards the cost, from recent experiences of different companies it appears that it is at least as cheap as gas & more expensive than oil. That this inferiority in point of cost as compared with oil will not hinder its introduction is evident, for oil has superseded candles although more costly, & even if electric lighting were more expensive than gas its acknowledged superiority would render its use advisable. As regards reliability, which is certainly equally important with cost, the apparatus used in all systems of electric lighting is practically identical with that used for the illumination of buildings & should be as reliable in operation.

Storage batteries at the present time are thoroughly commercial, as are the dynamos & generating apparatus. In the case of axle driving some complication in the regulating apparatus may exist, & it is particularly at this point that a careful selection of apparatus is



essential. The several systems in practical operation may be divided into two general classes, the first where each car on the system is independent & capable of taking care of itself, & the second where each car is dependent upon some method of charging located either upon the train or at certain points along the line. The first class necessitates the use of an axle-driven dynamo under each car with sufficient storage battery capacity to carry the lights over the periods when the train is not in motion or running too slowly to enable the dynamo to light the car. Generally speaking the operation of this equipment is as follows: When the train is at rest or running under 15 to 20 miles an hour the battery operates the lights, when the speed mentioned is reached the dynamo having attained the proper voltage is automatically connected to the lights & battery through the operation of a governor or electro magnetic mechanism, & the battery is charged & the lights operated from the dynamo. To regulate the voltage which would increase in proportion to the increase of speed of the train if not controlled two general methods are adopted, either by keeping the speed of the dynamo constant or by regulating its field strength. The first is attained where the machine is belt-driven by allowing the belt to slip, the amount of slip being governed by some form of belt-tightening arrangement. This, while apparently unmechanical at first sight, works well in practice & has the merit of extreme simplicity. Where the dynamo is rigidly geared to the axle the system of the regulation of the field strength to vary in inverse proportion to the speed is adopted, which may be done either by an automatically controlled resistance in the shunt field, by changing the resistance of the magnetic circuit of the field magnet, or by a system of differential field winding. By the above system each car is a separate & self-contained unit & may be attached to any train on any line. Under the second class, where each car is not a separate unit but is dependent upon outside assistance, there are two general systems, the first where the car equipment consists of storage batteries alone, which are charged at suitable stations along the line & second, where either an engine & dynamo unit driven by steam from the locomotive boiler or a separate boiler in the baggage car or an axle driven unit for the entire train is located in the baggage car. Where the simple storage system is used each car is dependent upon obtaining charged batteries at re-

ks - work to 5 & 10 years respectively from the
ne passing of the Act.

gh- **Northern Pacific.**—No decision has been
an- arrived at in regard to the rebuilding of the
ne- Manitoba Hotel at Winnipeg, & it is not prob-
ss- able that it will be done. (Apl., pg. 115.)

Co. In a recent interview President Mellen said:
“We have no intention to withdraw from

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p 176

Cambridge to Fitchburg. Three years after that it was extended to Boston, & since that time to Rotterdam Jet. The Fitchburg Co. owns a large grain elevator, & this with the road comes under the control of the Boston & Maine by the terms of the lease. This will make the Boston & Maine a feeder for all the steamship lines plying between Boston & European ports, & with one or two exceptions the steamers of all the lines will have to tie up to the Boston & Maine docks to receive their grain.

Great Northern (U.S.A.)—The New York Stock Exchange has listed \$9,000,000 additional preferred stock offered to stockholders, making the total stock listed to date \$99,000,000. The new issue was made for the purpose of acquiring \$3,500,000 additional capital stock of the Eastern Ry. Co. of Minnesota & \$5,500,000 additional of the capital stock of the Willmar & Sioux Falls Ry. Co. This acquisition gives to the G.N. Co. "the ownership of the entire capital stock of each of the said companies, & the shares so acquired will then become an asset of this company, subject to the disposition of its stock-holders by their direct action or through their board of directors. The mileage of the Eastern Ry. Co. of Minnesota is as follows:—main single track, 412.48 miles; 2nd main track, 17.28 miles. It also operates leased lines, 7.65 miles. The main track mileage of the Willmar & Sioux Falls Ry. Co. is 430.41 miles."

Great Northwest Central Ry.—Notice was

April
1900

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ove on the south. (Mar., 98, pg. 82.)

Kootenay Ry. & Navigation Co.—In a memorandum issued from the London, Eng., office of this Co., some references are made to the lines which have been acquired by it. Speaking of the Kaslo & Slocan, it says the capital for its construction was found largely through President Hill, of the Great Northern (U.S.A.) "At Kaslo, the K. & S. Ry. connects with the steamers of the International Navigation & Trading Co., which ply from that point to Nelson, where connection is made with the Spokane Falls & Northern R.R. running to Spokane, at which point the Great Northern & Northern Pacific roads are met. But a considerably shorter & more inexpensive connection with the U.S. roads is offered by the building of 53½ miles of railway from

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and the new Rossland terminal & station buildings, which will be located on the Nickel Plate Flat, half-way between the centre of the city of Rossland & the Red Mountain Ry. station. The buildings will consist of a passenger station, a freight station & a 2-stall engine-house. The entire work will be finished about June 1.

A correspondent of the News Advertiser, Vancouver, writing from Midway, B.C., Mar. 14, respecting the line from Robson to Midway, which the C.P.R. Co. is building under the C. & W. R. Co.'s charter, says: "On parts of the line just above Midway men are working night & day at grading, so it is evident that it is intended to complete the grade between Boundary Falls & Midway (where occurs the heaviest work west of the summit of the divide between the North Fork of Kettle River & Boundary Creek) as expeditiously as practicable. Yesterday the C.P.R. survey party, which, under the direction of G. G. Odell, has for several months past been engaged in surveying the projected branch line from Midway up the main Kettle River & thence up the West Fork to Beaver Flat, returned to Midway. It is understood the men are required for work on the branch lines from several of the Boundary Creek mining camps to the main line at the summit."

On returning from a recent inspection trip over the Western lines Manager Whyte said that although he did not go over the Robson-Midway line, he had a long talk with the engineer in charge & learned that work is being carried on very satisfactorily. Some delay was caused in the work on the big tunnel west of Robson by the severity of the weather, the water used to drive the compressor plant which works the steam drills being frozen. Of the 10 drills on the ground only 2 could be operated. This, however, will not delay the completion of the line as a switchback is being constructed & will be used until the tunnel is completed.

In a recent interview in Winnipeg, after returning from a trip to British Columbia Traffic Manager Kerr, of the C.P.R. Western Lines, is reported to have said: "The railway is now being built through the Boundary Creek district from the Columbia River at Robson in a southwesterly direction to Cascade, west to Grand Forks (now called Columbia) thence making a sharp curve up north, then down again to Midway, west to Reek Creek & from there to northwest to Pentticon & up along the Okanagan Lake to Vernon where it joins the branch from Sicamous Jct., thus forming a complete circle around West Kootenay."

We are inclined to think that Mr. Kerr has been misreported or else that he intended to refer to what may be done, rather than to what is under way. At present the line from Robson to Midway is all that is under construction, though possibly the line may be extended to Reek Creek this season. Nothing has been decided about the extension to Pentticon. It was expected it would have been built by MacKenzie, Mann & Co., under the Vancouver, Victoria & Eastern charter, but their contract with the B.C. Government was cancelled at the recent session of the B.C. Legislature &

construction of a large reduction plant in the Boundary Creek region of B.C. This scheme is in the line of the general policy of the Co., to give to the miners in this section of B.C. the benefit of the lowest possible smelting charges on all classes of ores, thus placing them, as regards the cost of reduction, upon the same footing with the miners of the older camps in the U.S. At Trail this has been already accomplished by the establishment of charges of \$7 a ton (and, in some cases, even less) for the treatment of refractory ores requiring roasting, & containing a high percentage of silica & alumina, while running very low in copper. It may be doubted whether more favorable rates are offered to miners of such ores even in Colorado or Montana.

Arrowhead to Kootenay Lake. A survey is being made for this proposed extension, but nothing has been decided in regard to construction.

Nakusp & Shocan Branch.—Some B.C. papers have stated that a large sum is to be spent on this line this year. We are informed that nothing has been included in the estimates for this, & only ordinary maintenance work will be done this year.

New Westminster.—The illustrations on pg. 111 show the track elevation & ground floor plan of the stone & brick station which is to be built on the site of the one destroyed by fire last year. It will be 90 x 40 ft., 2 stories high, & with stone filling on the river side will cost about \$40,000. The architect is E. Maxwell, Montreal. Work has been started on it. The 25 ft. railway reserve is to be filled in & protected with cribbing on the river side. The present track will be moved over several feet towards the water front, & a siding will be laid beyond for the accommodation of the wharves, etc.

Vancouver Terminals.—Tenders were recently asked for 40,000 cubic yards of rock filling required at the Vancouver wharves. When at Vancouver recently Manager Whyte said that the work of filling in all the docks & wharfage extensions laid out in detail & presented to the City Council a year ago, would be gone right on with & he expected to see a large increase of trade in consequence.

It is said the plans for the extension of the Hotel Vancouver are elaborate, & embrace a 7-story addition towards Howe St. which will make the hotel the largest on the whole Pacific Coast.

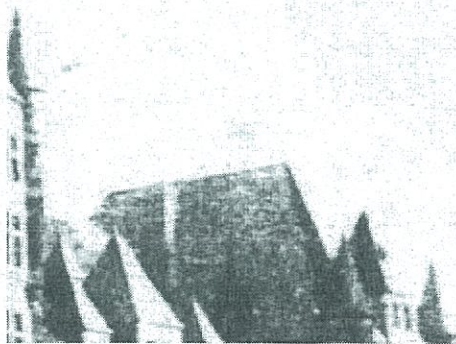
The Minneapolis, St. Paul, & Sault Ste. Marie will probably build new freight terminals at Minneapolis in the near future. The plans have not as yet been fully perfected.

The Mineral Range built 9 miles of road last year from Boston, Mich., southeast & southwest to Arcadian Mine, & from Grasse Point, on Portage Lake, northwest to Dollar Bay, leaving a gap of 4 miles between the lines to be completed this year. Work is now in progress on this gap, & it will be completed by July 1.

amount of such bonds.

COLUMBIA & WESTERN RY.—A lease in perpetuity of the C. & W. R. to the C.P.R. Co. of its property & franchises was submitted & explained, & it was resolved that the lease submitted to this meeting dated July 12, 1898, whereby the C. & W. R. Co. demises in perpetuity to this Co. with the option of purchase, the lessor's railway from Rossland to Midway, B.C., by the route therein described, & the branches therefrom whether constructed or to be constructed, be & the same is hereby approved, ratified & confirmed; the yearly

rental being an amount equal to the interest on the capital of such bonds as the lessor may from time to time issue, such capital not at any time to exceed the maximum limit of \$35,000 for each mile of the railway & branches which shall then have been completed, or be under contract to be completed, & such interest, not exceeding 5 per annum payable $\frac{1}{2}$ -yearly, to be guaranteed by his Co., by way of rental.



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The Northern Pacific, Winnipeg Terminal—The building, which comprised the Manitoba division of the Northern Pacific, was located at the station & the divisional offices of the company, was totally destroyed by fire on the night of Feb. 7. The building was erected in 1904. The hotel portion, 7 stories high, had a floor area of 10,000 sq. ft. The building was 216 ft. on a Main st., & 212 ft. on a 1st ave. It had accommodation for over 300 persons.

The divisional offices extended along the south of the hotel & there was a tram shed in rear of the hotel. The building, furniture, etc., was valued at about £100,000, & it is said the Co. did not carry any insurance. Guests lost definite can be estimated at £200,000. Nothing definite can be said of the intention of the Co. as to rebuilding the hotel. The station & offices are to be rebuilt on the old plan.

to be rebuilt on the old plan of the city and New York.—H. W. Gay has been appointed General Manager of this Co., and will have his headquarters at the New York & Ottawa R. R. Co., with his headquarters at Ottawa. Mr. Gay has left the Chicago & North Western R. R. Co. and is a member of the Chicago & North Western R. R. Co. and St. Louis Ry., with headquarters at St. Louis, Mo., to accept the Ottawa position. The Board will confine himself to the duties of a President in future, handing over the management of the Co. to Mr. Gay.

Change in Prairie Western.—M. B. Baughman, general manager of the C. P. R., has given notice of application to the Interstate Commerce Commission for authority to change the name of the C. P. R. to the C. P. & N. W. R. Co. and to change the name of the main line of the C. P. R. to the C. P. & N. W. R. Co. main line.

A north of the line.
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such to suit my present needs.

Great Northern (U.S.). A rumor has been current in Vancouver, B.C., that this Co. wants to secure the site of the recently burned Hastings mill for station purposes. It is said the Co. has engineers at work at New Westminster & Vancouver. The G. N. now reaches the south bank of the Fraser River, opposite New Westminster, by the New Westminster Southern Ry., which runs thence 23 miles to the International Boundary at Douglas, B.C., where it connects with the G. N. branch to Seattle, 120 miles farther south. It is rumored the G. N.'s schemes include a bridge over the Fraser at New Westminster, & an extension to Vancouver.

A recent despatch from Tacoma, Wash., says the G. N. is preparing to build a 200 mile extension from the main line at Wenatchee, Wash., through the Okanogan mining district, into British Columbia, with a branch to the mining camp at Eureka, Wash. The proposed line would follow the Columbia River from Wenatchee north to Lake Chelan & thence along the Okanogan River to B.C.

be much more easily built than was expected & there is a strong probability that this route will eventually be adopted. (June, pg. 99.)

The Northern Pacific has this year built the Souris River branch in Manitoba, starting from its Brandon branch, about midway between Belmont & Hilton stations, running southwesterly to the head of Pelican Lake, thence easterly on the centre line of sections from sec. 22, 1sp. 5, r. 17 west to the west boundary of sec. 20, 1sp. 5, r. 19 west, thence northwesterly to the s. w. corner of sec. 31, 1sp. 5, r. 20 west, thence west on the line between 1sps. 5 & 6 to the west boundary of range 22. The distance built this year is 46½ miles, but it will most likely be extended next year to a connection with the C.P.R. at Hartney or Lauder, or a point between them, the extension having been postponed this year on account of some difficulty in regard to right of way. The route traversed is through one of the best parts of Manitoba, well-settled by prosperous farmers. The work through Lang's Valley is exceptionally heavy for prairie work, in the way of cuts & fills, though bridging is light. The town sites are Dunrea, 14 miles from the junction; Minto, 27 miles out; & Elgin, 38½ miles out. The contractors were J. D. McArthur, of Birtle, Man., for the grading & tracklaying; C. Chamberlin, Winnipeg, for the buildings. The survey was commenced in the middle of April & construction at the beginning of June. (May, pg. 65.)

Norton Bay & Yukon Ry.—The Anglo-Alaskan Syndicate of London, Eng., whose U.S. officers are at Seattle, Wash., has completed arrangements for building the Northern Bay & Yukon Ry., & is inviting tenders for rail & rolling stock of U.S. builders. This

south end of

Pembroke from the C.F. Lake, on the been comple Engineer of partment.

The Quel Newington, machine she casting & granite win roof, steel to support to crane work length of the crane runs length of 8 ft. 2 in.; ridge of roofing plant 100 h.p. be works are electricity. The will accom length is 15 store house of the round patent wood stalls will be is complete it., will be spring.

Rutland corporation issue, pgs. tend the Bellow's 1 tension w

The Columbia & Western Railway.

In our last issue we gave the report on the first section of this line, from West Robson to Greenwood, by H. B. Smith, C.E., who inspected it on behalf of the B. C. Government. Following are extracts from his report on the second section, from Grand Forks to Greenwood, up to Nov. 22, 1899, which has only just been made public:—

The Grand Forks-Greenwood division of the C. & W. Ry., is an indirect extension westward of the Rossland-Trail, Trail-West Robson, & West Robson-Grand Forks divisions of the same railway. Beginning at Grand Forks, 1,700 ft. above sea level, at the junction of the North Fork of Kettle River with Kettle River, & distant from West Robson 67 miles, it extends along the west slope of the valley of the North Fork of Kettle River, northerly to Niagara, a small town 2,230 ft. above sea level, & 72.7 miles from West Robson. From Niagara it continues directly north to Brown's Creek, a small tributary of the North Fork of Kettle River, 79 miles from West Robson. At Brown's Creek the railway deflects almost due west, & continues on that course to Eholt, a mining settlement on the summit between the North Fork of Kettle River & Boundary Creek. Eholt is distant from West Robson 80.8 miles, & is 3,080 ft. above sea level. At Eholt a branch railway, 4½ miles long, proceeds to the B. C. mine, & another, 9½ miles long, to Phoenix. From Eholt the course of the railway is south-westerly along the banks of Eholt & Attwood Creeks to Boundary Creek, 2,500 ft. above sea level, & 88.4 miles from West Robson. Here the course deflects almost due south, & continues in that direction to Greenwood, a mining town on the east bank of Boundary Creek, 2,450 ft. above sea level, & 89.7 miles from

West Robson. Greenwood lies north westerly from Grand Forks, & is distant from it in an air line 12½ miles. By the railway the distance is 22.7 miles. Between Grand Forks, at mile 67 & mile 77, the country passed over is a very irregular rocky side-hill, not precipitous, but broken into scattered elevations & depressions. Between mile 77 & Eholt, at mile 80.7, the railway passes over earth flats & side-hills. Between Eholt & Greenwood, at mile 89.7, the country traversed is fairly level, consisting chiefly of earth flats, bogs, & gravel side-hills. It is proposed to construct a branch, 2½ miles long, from Grand Forks northerly to the Granby Smelting Co.'s smelter, & from Greenwood a branch, 5 miles long, is being constructed westerly to the Deadwood Mining Camp.

Considerable skill has been displayed in the choice of alignment, & the result obtained has proved satisfactory so far as economical construction is concerned. It would appear to be possible, & even necessary, to dispense with many existing curves without adding excessive additional cost. The total amount of curves is 53.5% of the whole alignment, whereas the total amount of tangents is 46.5% of the whole alignment. This is not good railway practice, & a change is desirable. Trestling has been skilfully avoided, & all flats affording suitable grades have been taken advantage of.

On all tangents & curves not exceeding 4°, or 1,433 ft. radius, the gauge is standard, the rails being placed 4 ft. 8½ in. apart from inside to inside of rail head. On curves sharper than 4° an additional width or spread, varying with the degree of curvature, has been allowed, in order to prevent the binding of car wheels in passing over them. The additional spread is as follows:—

4 degrees to 6 degrees, 1 of an inch.
6 " " 8 " "

8 degrees to 10 degrees, 1 of an inch.

Curves vary from 40° to 14°, or from 8,594 to 410 ft. radius. These curves are light in mountain railway construction, and in this respect the curvature is not excessive. The total amount of curvature, however, as shown by the subjoined table, is unusually large, and does not appear to be warranted by the physical features of the country traversed:

Degree.	Radius in feet.	No.	Length in feet.
to 40° to 1°	8,594 to 5,730	1	1,561.7
39 " 2 "	5,730 " 2,865	2	1,166.6
38 " 3 "	2,865 " 1,910	7	5,771.3
37 " 4 "	1,910 " 1,433	13	10,491.9
36 " 5 "	1,433 " 1,146	12	7,627.2
35 " 6 "	1,146 " 955.4	11	6,003.7
34 " 7 "	955.4 " 819	8	4,944.2
33 " 8 "	819 " 716.8	5	3,922.7
32 " 9 "	716.8 " 637.3	13	4,549.8
31 " 10 "	637.3 " 571.7	2	674.8
30 " 11 "	571.7 " 521.7	17	6,934.4
29 " 12 "	521.7 " 478.3	4	1,999.3
28 " 13 "	478.3 " 441.7	11	4,031.3
27 " 14 "	441.7 " 410.3	0	0
14	410.3 "	14	5,588.2
Totals		118	64,957.1

The total length of the railway from the center of Grand Forks siding to the centre of Greenwood siding is 121,068 ft. The combined length of curves, as shown by the preceding table, is 64,957 ft. The combined length of tangents is, therefore, 56,111 ft. Hence, as before stated, the total curvature is very nearly 53.5% of the whole length of the railway. The curves of most frequent occurrence are from 10 to 11°. The curves of least frequent occurrence are from 40 minutes to 1°. The longest curve is a 3½ degrees, 1,646.2 ft. long; the shortest is a 4 degrees, 100 ft. long. The longest tangent is 5,707.3 ft. in length, and the shortest, 100.9 ft. in length.

From Grand Forks, mile 67, to mile 68, grades are light, varying from level to 0.525

per 100. At mile 68, a uniform 2.2 per 100 upward grade, compensated for curvature, begins and continues, without interruption, to Eholt summit, mile 86.8. At Eholt the grade is level for 1200 ft. At mile 81 a uniform 1.8 per 100 downward grade begins and continues to mile 84.9. From mile 85.9 to mile 85 grades fall, varying from .07 to .55 per 100. From mile 85 to mile 85.7 grades fall, varying from 1.10 to 1.20 per 100. From mile 85.7 to mile 88.4 grades fall 1.8 per 100, compensated for curvature. From mile 85.7 to Greenwood, at mile 89.7, grades fall, varying from 1.70 to 1.43 per 100.

All grades exceeding 1.5 per 100 are compensated for curvature at the rate of $\frac{3}{100}$ of a foot in each 100 ft. for each degree of curvature, that is to say, that in the case of a 14° curve having a tangential grade of 1.8 per 100, the grade on the curve is reduced $\frac{42}{100}$ of a foot, which subtracted from the

structed, having full formation widths and height.

Excavations are 18 ft. wide at formation level, with side slopes of 1 to 1 in earth, sand & gravel, and $\frac{3}{4}$ to 1 in solid rock. In certain cases where the nature of the material admitted slopes have been vertical, or nearly so. As in the case of embankments all excavations have originally been thoroughly finished. In rock excavations all work, as a rule, has been well done, the faces of the excavations presenting uniform surfaces.

Rock slope walls occur at two points about midway between Grand Forks and Eholt, each wall being about 59 ft. long and 15 ft. high. They are merely dry stone walls, vertical on the inside face, and battering outward 1 in 3 on the outside face. They are substantially built, the stones being rectangular blocks, breaking joint and in every way well laid. The top width is not less than 3 ft., and the inside filling is broken rock. In

surfaces approach very closely to the required symmetrical specifications, which are as follows: Width at formation level and at spring of roof, 16 ft.; clear centre height above formation level, 23 ft. 2 1/2 ins. and above rail level, 21 ft. 6 ins., ballast being 9 ins. deep. The rock through which the tunnels pass is solid, and no timbering has been required. The tunnel at mile 74.3 is 142 ft. long from portal to portal. The approaches are rock excavations; that on the north end being 120 ft. long, and that on the south end 100 ft. long. The grade through the tunnel is 1.80 per 100, rising northward, and the alignment is a 10° curve. The tunnel at mile 77.2 is 511 ft. long from portal to portal. The approaches are rock excavations, that on the north end being 110 ft. long, and that on the south end 150 ft. long. The grade through the tunnel is 1.80 per 100, rising north, and the alignment is a 10° curve. In both tunnels the centre lines have been



FIGURE 1. A SNOW-CUT SHOWING DEPTH OF SNOW ON THE C. P. R., IN THE SELKIRK MOUNTAINS, B. C. (SEE PAGE 158.)

FIGURE 4—A SNOW-CUT SHOWING DEPTH OF SNOW ON THE C. P. R., IN THE SELKIRK MOUNTAINS, B. C. (SEE PAGE 258.)

original grade of 1.8 per 100, leaves 1.38 per 100 as the compensated grade on the curve. This rule has been adhered to very closely, but in cases where changes of alignment during construction have altered distances, slight deviations have been rendered necessary.

The total ascent from Grand Forks to Eholt summit is 1,380 ft., and the total descent from Eholt summit to Greenwood is 630 ft. The average grade from the middle of Grand Forks siding upwards to Eholt summit is 1.9 per 100, and the average grade from Eholt summit downwards to the middle of Greenwood siding is 1.38 per 100.

Embankments are 14 ft. wide at formation level, having the usual slopes of $1\frac{1}{2}$ to 1 in earth, sand & gravel, and 2 to 1 in loose rock. With the exception of two cases, where dry stone retaining-walls are constructed, the toes of all slopes reach solid ground. No retaining timber crib-work has been used. All embankments have originally been well con-

both cases the foundations are "solid" rock ledges. The stability of the road-bed does not depend on these walls, there being a sufficient width of rock excavation to sustain the road-bed, even should the walls be removed.

Drainage under the road-bed has been excellently well provided for by means of culverts. Surface drainage, by means of ballast boxes, is still lacking. Side drainage, by means of catch-water drains, is unusually plentiful, and many of these appear to be unnecessary. All culverts are of the usual log pattern, having solid cedar or fir walls and covering, secured by tree-nails and drift bolts, the whole resting on round sills, in pairs, from 5 to 8 ft. apart, the spaces between the sills being filled flush with solid rock. The workmanship on these structures is excellent.

Two rock spurs have been pierced by tunnels, one at mile 74.3 and one at mile 77.2. Both tunnels are excellently well constructed, and present uniform clear-cut surfaces. The

placed 7 ins. off the centre line of the road-bed, in order to allow for the inclination of the cars, due to the elevation of the outer rail of the curve.

From Grand Forks to Greenwood there are, including bridge approaches, 6 framed timber trestles, which, combined, cover a distance of 1,610 ft. Following is a list of trestles:

Location.	No. of bents.	Total length.	Centre height.
Mile 68.1	2	45	7
" 70.2	10	230	30
" 70.3	10	230	50
" 73.3	27	421	103
" 80.4	34	340	70
" 80.4	6	100	65

Trestle at mile 58 is temporary, and, it is stated, will be filled at an early date. Trestle at mile 70.2 is on a tangent, with a grade rising north 2.2 per 100. It is built across a rock ravine, and has solid rock foundations. Trestle at mile 70.3 has two decks, and is on a 7 degree curve, with a grade rising north 1.92 per 100. It is also built across a rock

ravine, and has solid rock foundations. Trestle at mile 75 has three decks, and is on a 10° curve, with grade rising north 1.80 per 100. It is built across Fisherman Creek, and has solid rock foundations. Both trestles at mile 80.4 are the approaches to a bridge across Boundary Creek. Both have two decks. The first is on a 4° curve, and the second is on a 10° curve. Both are on a grade rising westward 1.43 per 100. Both rest on pile foundations. All trestles are excellently designed and well built, strength, rigidity and durability having been obtained.

All trestle foundations, except those of Boundary Creek, being on solid rock ledges, are of the most secure character. If driven according to specification, the pile foundation at Boundary Creek must be of a reliable nature, so long as the upper part of the pile, exposed to atmospheric action, does not decay. The specification for pile-driving requires that all piles should be driven with a 2,000 lbs hammer, having a free fall of 20 ft. for the end blow, maximum penetration under the last 5 blows not to exceed 5 ins. One pile is directly under each post of the trestle.

All bents are 15 ft. apart, centre to centre. Caps are 12 ins. by 12 ins. by 14 ft., & are secured to posts by 3-in. drift bolts, 21 ins. long. In single deck trestles there are 2 vertical posts & 2 raking posts, each 12 by 12 ins. Sway braces & wales are 3 by 10 ins., & are bolted at the ends through posts by 3 by 18½-in. screw bolts, & spiked to intermediate posts by 3 by 7-in. boat spikes. Longitudinals, 8 by 10 ins., are placed above wales & sills, & are secured at the ends by 3-in. screw bolts, 21½ ins. long. In 2-deck trestles the same design & scantling of timber are retained. The sill of the upper deck is separated from the cap of the lower deck by 8 longitudinals, 8 by 12 ins. Connecting the lower half of each deck are four longitudinal diagonal braces, 6 by 10 ins. In 3-deck trestles the same design & dimensions are retained. The number of posts is increased as follows:—Upper deck, 2 uprights & 2 raking posts; second deck, 2 uprights & 4 raking posts; third deck, 2 uprights & 4 raking posts. All substructures are fully completed.

The trestle superstructure will be unusually strong. There are 8 stringers of Douglas fir, 8 by 16 ins. by 39 ft., breaking joint, & bolted together by 3-in. screw bolts, 25½ ins. long. Ties are 8 by 8 ins. by 12 ft., spaced 4 ins. apart, & spiked to stringers by boat spikes, 3 by 12 ins. Guard rails are double, the outside rail is 8 by 8 ins., bolted

to every fourth tie by 3-in. screw bolts, 18½ ins. long. The inside rail is parallel to the outside rail, except for 20 ft. at the ends, where it flares outwards to a junction with the outside rail. It is secured to the ties at intervals of 3 ft. by means of lag screws, 3 by 8 ins. On curves, the superstructure is ranted to the required elevation by increasing the length of the outside posts of the superstructure. All washers are of cast iron, 8 by 3 by 1½ ins.

Between Grand Forks & Greenwood only one bridge span has been found necessary. This is at the crossing of Boundary Creek, 80.4 miles from West Robson. It is a timber Howe truss deck span of 150 ft., supported on framed timber abutments, each of which consists of 24, 12 by 12 ins., vertical & battering posts resting on 12-in. piles, enclosed in a rock-filled caisson. Rail level is about 75 ft. above river level. The centre alignment is a 4° curve, & the grade 1.43 per 100. The approaches to the bridge have been generated & described under the head of trestles. The length of the north approach, 526 ft., does not appear to be necessary, except as a means of saving embankments & expediting the period of opening the road to traffic.

Ties are of cedar, hemlock, tamarac & fir, both hewn & sawn. They are laid 24 ins. from centre to centre. Faces are from 7 to 8 ins. in width, & the thickness uniformly 7 ins.

The alignment of the rail has apparently been at one time as well done as the character of the rails used would admit of. The sagging of embankments, both vertically & laterally, & the settlement of side ballast, have caused irregularities of contour in many places. Surface-men, however, are now at work remedying these defects. All curves have been eased off at both ends, & the outer rails elevated for velocities varying according to the retardation of the curve, & the particular grade on which the curve is situated. Rails break joint, & are double spiked to each tie.

From Grand Forks, mile 67 to mile 68, rails are 56 lbs. steel, which have been used on other parts of the C.P.R. From mile 68 to Eholt, mile 80.8, rails are new 73 lbs. steel, of a pattern designed by the C.P.R. From Eholt, mile 80.8, to Greenwood, mile 89.7, rails are 72 lbs. steel, which have been used on other parts of the C.P.R. The 56 lbs. rails are provided with 4-hole angle plates, pierced for 3 by 3½ in. bolts. The 72 lbs. rails are provided with 6-hole angle plates, 42 in. long, pierced for 3 by 4 in. bolts. The 73 lbs. rails are provided with 4-hole angle plates, pierced for 3 by 4 in. bolts. All nuts are hexagonal; lock washers are positive & national.

A double-wire telegraph has been constructed from Grand Forks to Greenwood. Poles are 25 ft. long, 8 ins. diameter at the top, & from 150 to 200 ft. apart. This work has been well done.

All timber, for 50 ft. on each side of the railway, has been felled. Side tracks from 1,750 to 4,500 ft. long, & aggregating 13,000 ft., have been built. Y's for reversing engines have been constructed at Grand Forks, Eholt & Greenwood. Permanent water tanks of 10,000 galls capacity each have been erected at four points. Several station & section houses have been built.

The Grand Forks-Greenwood division has been easy of construction as compared with the West Robson-Grand Forks division. The first 9 miles north of Grand Forks cover the whole of the heavy work; beyond this point the works are comparatively light.

A map of the C. & W. R. was given in our last issue, pg. 227.

Altering St. Louis Station.—The main hall of the union passenger station at St. Louis, Mo., one of the finest rooms of the kind in America, is going to be altered, experience having shown that passengers do not use it. The large room beneath it, which is near the street level & the train platform level, & which contains the ticket offices, is used by the great majority of passengers of all classes, & the main floor is nearly always practically empty. An opening is to be made in the floor, in the centre of the room, & a handsome balustrade put in; so that the ceiling of the main hall will become the ceiling of the lower hall, & the main floor, what is left of it, will become a gallery.

St. Lawrence Terminal & Steamship Co.—The Dominion Parliament last session incorporated a company under this name, with power to construct & operate vessels, elevators, wharves, warehouses & other terminal facilities, also to construct & operate railway sidings or spur lines not exceeding 6 miles in length, to connect the Co.'s property with any railway line incorporated by the Dominion Parliament. The incorporators are H. A. Hodge & F. D. White, Rutland, Vt.; G. C. Dessaulles, St. Hyacinthe, Que., & G. H. Semple, Montreal. The capital stock is \$1,000,000. We are informed that matters of detail have been perfected, but that actual operation under the charter cannot be begun until certain improvements have been made at the port of Sorel.

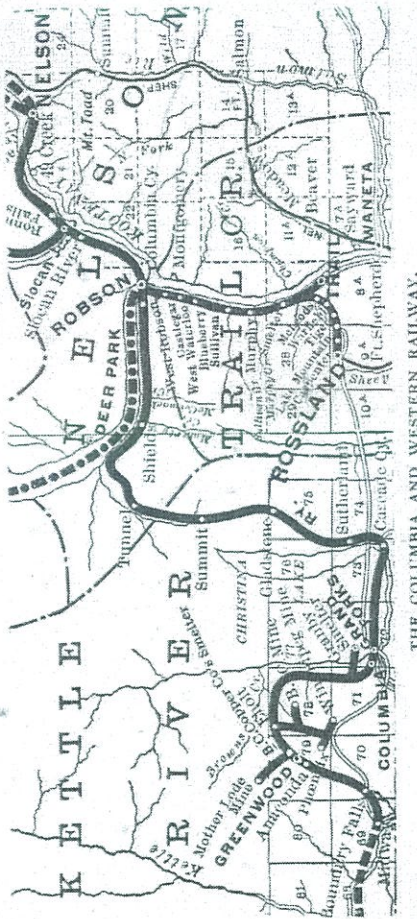
% of the total distance between miles 5.4 & 50.5.

The following is a list of all trestles:

No. of trestles.	No. of posts.	Total length, ft.	Average height, ft.
3 to 9	9	1215	35
10 to 14	15	2865	35
15 to 19	10	2700	66
20 to 24	5	1620	81
25 to 29	5	2475	92
30 to 34	2	975	128
35 to 39	1	555	99
40 to 44	nil	705	170
Totals.	40	13,740	

In the design & construction of these trestles, strength, rigidity & durability have been objects sought for & obtained. They are excellent structures in every detail. Most of the trestles are built over rocky gulches, & in these cases the best possible foundations were obtained, namely, mud-sills resting on solid rock. In earth & soft material it was found, in some cases, advantageous to use piles 10 ins. in diameter at the small end, & 14 ins. at the large end. These were driven with a 2,000 lbs. hammer, having a free fall of 20 ft. for the end blow, the maximum penetration under the last 5 blows not exceeding 5 ins. Pile foundations are used for 10 trestles, one pile under each post. In the substructures all bents are 15 ft. apart, centre to centre. Caps are 12 by 12 ins. by 14 ft., & are secured to posts by $\frac{1}{4}$ in. drift-bolts 21 ins. long. In single deck trestles there are 2 vertical posts & 2 raking posts, each 12 by 12 ins. Sway braces & wales are 3 by 10 ins., & are bolted at the ends through posts $\frac{1}{4}$ by 18 $\frac{1}{2}$ in. screw bolts, & spiked to intermediate posts, $\frac{1}{2}$ by 7 in. bolt spikes. Longitudinals 8 by 10 ins. are placed above wales & sills & are screwed at the ends by $\frac{3}{4}$ in. screw bolts, 21 $\frac{1}{2}$ ins. long. In double-decked trestles the same design & scantling of timber are retained. The sill of the upper deck is separated from the cap of the lower deck by 8 longitudinal 8 by 12 ins. Connecting the lower half of each deck are 4 longitudinal diagonal braces 6 by 10 inches. In 3 deck trestles & upwards the same design & dimensions are retained. The number of posts is increased as follows:

Upper deck, 2 uprights and 2 raking posts.



THE COLUMBIA AND WESTERN RAILWAY.

Mile 8 $\frac{1}{2}$, McCormack Creek.—This is a Howe truss deck span of 150 ft., supported on frame timber abutments, consisting of 24, 12 by 12 ins. posts resting on solid rock. Rail level is about 190 ft. above the creek. The approaches consist of 21 trestle bents. The total distance covered by the bridge & its approaches is 490 ft.

Mile 11, Moberly Creek.—This also is a Howe truss deck span of 150 ft., supported on

about 80 ft. above water level, & the whole structure covers a distance of 1,570 ft.

Mile 55, Kettle River, 2nd crossing.—At this point there has been constructed a Howe truss through span of 130 ft., the east end resting on solid rock, & the west end on a frame timber abutment consisting of 24, 12 by 12 ins. posts on solid rock foundation. Rail level is about 60 ft. above river level, & the whole structure covers a distance of 140 ft.

Mile 64 $\frac{1}{2}$, Kettle River, 3rd crossing.—At this point it is proposed to construct a Howe truss through span of 150 ft., supported on frame timber abutments, each consisting of 24 posts, 12 by 12 ins. The east abutment will rest on a rock-filled crib on solid rock foundation, & the west abutment on piles enclosed in a rock-filled caisson. The approaches are constructed, & consist of 12 trestle bents on piles. Rail level is about 30 ft. above river level, & the whole structure, when completed, will cover a distance of 300 ft.

Mile 67, Kettle River, 4th crossing.—Here it is proposed to construct two Howe truss through spans, one of 150 ft. & one of 100 ft., resting on pile abutments & pier. Each abutment will consist of 24 piles, & the pier of 28 piles, placed in rock-filled crib caissons. The approaches are built, & consist of about 80 pile trestle bents. Rail level is about 12 ft. above river level, & the whole structure, when completed, will cover about 1,470 ft.

The total combined length of bridges & approaches will be about 4,655 ft. Bridges built & proposed to be built are in accordance with the C. P. R. Co.'s standard plans, which have met with much approval, the only changes made being the substitution of steel clamping plates & increasing the depth of the lower chords, from 15 to 17 ins. in 100-ft. spans & 18 to 19 ins. in 150-ft. spans.

The workmanship in all complete bridges is excellent.

Ties are of cedar, hemlock, tamarac & fir, both centre & sawn. They are laid 24 ins. from centre to centre; faces are from 7 ins. to 8 in. width, & the thickness uniformly 7 in. In place of brackets, Service plates are spiked to every tie on all curves of 6 degrees & upwards, holding the track in perfect gauge.

Track laying has been excellently done, the

above wales & sills
& are screwed at
the ends by $\frac{3}{4}$ in.
screw bolts, 21 $\frac{1}{2}$ ins.

long. In double-decked trestles the same design & scantling of timber are retained. The sill of the upper deck is separated from the cap of the lower deck by 8 longitudinal braces 8 by 12 ins. Connecting the lower half of each deck are 4 longitudinal diagonal braces 6 by 10 inches. In 3 deck trestles & upwards the same design & dimensions are retained. The number of posts is increased as follows:

Upper deck, 2 uprights and 2 raking posts.

Second	..	..	4	..	..
Third	..	..	4	..	..
Fourth	..	..	6	..	..
Fifth	..	..	6	..	..
Sixth	..	..	8	..	..

External raking posts batter at the rate of 3 ins. to 1 ft., internal raking posts at the rate of 2 $\frac{1}{2}$ ins. to 1 ft.

There is one exception to the style & dimensions mentioned above. This occurs at mile 27, & is known as Porcupine Trestle. It is stated that timbers of the required length could not be obtained within a reasonable distance. The posts were, therefore, reduced from 30 ft. in length to 18 ft., thus rendering 10 decks necessary. This structure is not as finished in appearance as its neighbors. The posts in the various decks are, upper & second decks, 4; 3rd, 4th, 5th & 6th decks, 7; 8th, 9th & 10th decks, 8. Longitudinals & diagonals, 8 by 10 ins., connect each bent. In one important feature this trestle differs from all others. The customary cap & sill between decks has been dispensed with, & a single timber substituted. It is claimed by the officials that the reduction in weight thus obtained

THE COLUMBIA AND WESTERN RAILWAY.

Mile 8 $\frac{1}{2}$, McCormack Creek.—This is a Howe truss deck span of 150 ft., supported on frame timber abutments, consisting of 24, 12 by 12 ins. posts resting on solid rock. Rail level is about 190 ft. above the creek. The approaches consist of 21 trestle bents. The total distance covered by the bridge & its approaches is 490 ft.

Mile 11, Moberley Creek.—This also is a Howe truss deck span of 150 ft., supported on frame timber abutments, consisting of 24, 12 by 12 ins. posts resting on solid rock. Rail level is about 160 ft. above the creek. The approaches consist of 32 trestle bents. The total distance covered by the bridge & its approaches is 660 ft.

Mile 41 $\frac{1}{2}$.—A timber trestle about 100 feet long was originally constructed. A small snow-slide, however, occurred & swept away the central bents. It is now proposed to erect a small through truss in place of the trestle, & false-work for this purpose has been placed in position.

Mile 53 $\frac{1}{2}$, Kettle River, 1st crossing.—At this point it is proposed to construct 2 Howe truss deck spans, each 150 ft., supported on frame timber abutments & pier, each abutment having 24 posts & the pier 28 posts. All posts will be supported on piles driven until a 2,500 lb hammer, with a fall of 25 ft., will cause 1 in. only of penetration. Piles will be enclosed in rock-filled caissons. The approaches are trestle bents, & are already constructed. The east approach consists of 62 bents, & the west of 19 bents. Rail level is

ft. spans & 18 to 19 ins. in 150-ft. spans.

The workmanship in all complete bridges is excellent.

Ties are of cedar, hemlock, tamarac & fir, both hewn & sawn. They are laid 24 ins. from centre to centre; faces are from 7 ins. to 8 in. width, & the thickness uniformly 7 in. In place of brackets, Servis tie plates are spiked to every tie on all curves of 6 degrees & upwards, holding the track in perfect gauge.

Track laying has been excellently done, the ties & rails presenting to the eye uniform straight lines & curves, without depressions, except at the few points where embankments have sagged. All curves have been eased off at both ends, & the outer rails elevated for velocities varying according to the retardation due to the curve & the particular grade on which the curve is situated. Rails break joint & are provided with the full complement of spikes, bolts, & angle plates.

Rails are of two kinds. Steel rails, 56 & 60 lbs a yard, used on portions of the main line of the C.P.R., have been relaid between West Robson & mile 5 & on the switchback at Bull Dog Tunnel, & also between the first crossing of Kettle River & Grand Forks, a total distance of 17.4 miles. The remaining 50 miles are laid with heavy new steel rails, 73 lbs. a yard. These rails are according to a design of the C.P.R. Co., & are extremely flat-headed. The 56 & 60-lbs. rails are provided with 4-hole angle plates, pierced for 3 $\frac{1}{4}$ in. by 3 $\frac{1}{4}$ in. bolts. Nuts are hexagonal, & lock-washers are positive & national. The 73-lbs. rails are provided with 4-hole angle

A double-wire telegraph has been constructed between West Robson & Grand Forks. Poles are 25 ft. long, 8 ins. diameter at the top, & from 150 to 200 ft. apart. This work

on each side of the centre of the track.

of long tunnel switchback, & at Grand Forks. Water tanks, temporary & permanent, have

lion houses, 3 stations & a round house.
The West Robson-Grand Forks division of

road it presents a finished appearance, all embankments & excavations being neatly sloped

the directly built, & the
falls uniformly straight

though nearly 50% of the whole length of railway

steep, but are rendered necessary by the charac-

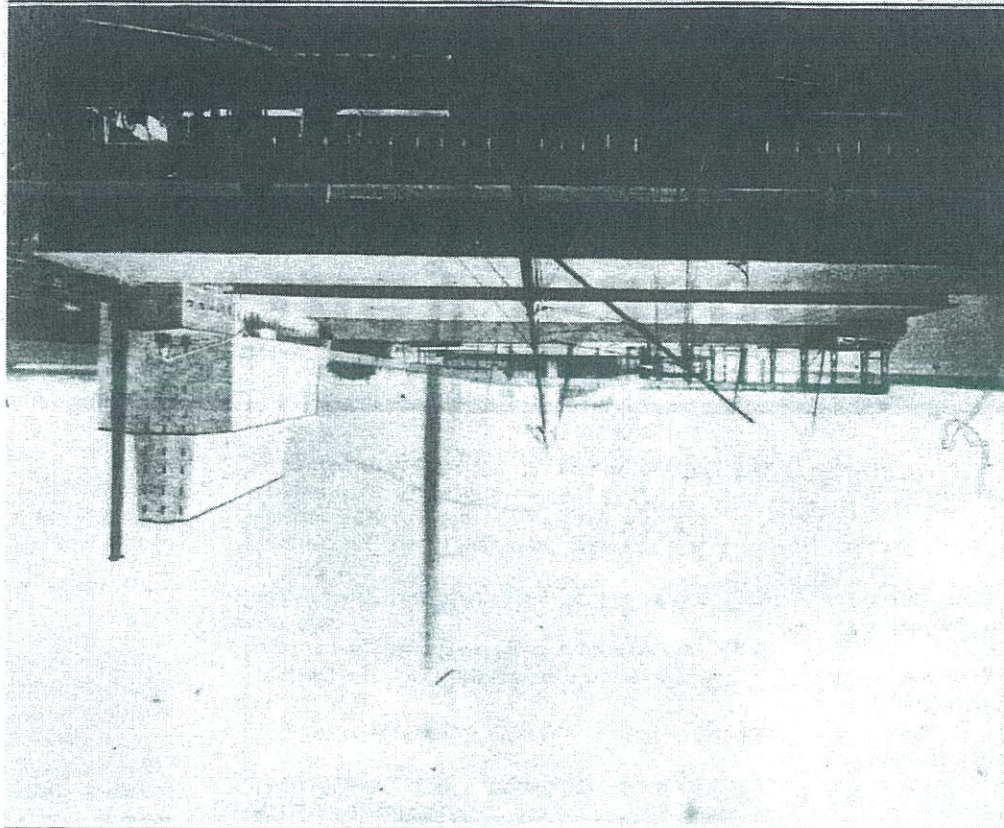
dition for traffic is proved by the fact that con-

ous derailments have been made public. When

of a working railway, &

at speeds up to 25 miles an hour. Many neces-

GRAND TRUNK RAILWAY ELEVATOR AT PORTLAND, MAINE.



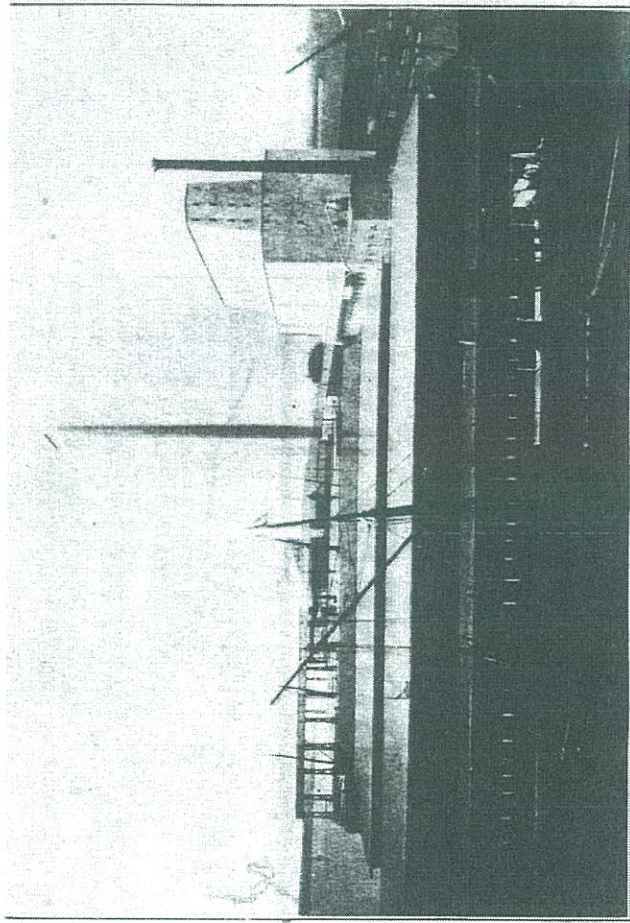
& W. R. All the Howe truss spans which Mr. Smith refers to have been built. The trestle at mileage 68.1, which was temporary, has been replaced. The bridge at the crossing of Boundary Creek, 89.4 miles from West Roberson, has been completed.

The elevator is provided with a spouted into a tire 10 elevating or receiving. There is a sweeper that discharges the burned. A pump is furnished at many points in the pump in the There are first story to one end is a from the first Along the side which leads to each side & wharf. The reverse these trippers, which way of a to,000 bus.

of curvature is light, & though nearly 50% of the whole length of railway consists of curves, the total amount is not excessive. The grades are steep, but are rendered necessary by the character of the country traversed. That the road bed is in excellent condition for traffic is proved by the fact that construction trains are being run up to speeds of 25 miles an hour, & no serious derailments have been made public. When the road-bed is fully ballasted, fully equipped with all the lesser details of a working railway, & placed under ample & constant inspection, it may be safely operated at speeds up to 25 miles an hour. Many necessities, though minor, desirable, are still lacking, such as station houses, engine houses, repair shops, turntables, mile posts, fencing, signboards, whistling posts, caution posts, etc. The steep broken character of the mountain side-hill renders it probable that trouble will be experienced from snow-slides. So far only one small slide has occurred. Earth & gravel slides will be more or less common for some years to come, as in the case of all new railways.

Mr. Smith's report on the Grand Forks to Greenwood section of the line will be given in our next issue.

As stated in our introduction, Mr. Smith's report was written before the completion of the line. The whole road between West Roberson & Midway has since been thoroughly ballasted, & we are informed by competent judges that it is one of the best pieces of new work they have ever seen. No safety switchbacks have been constructed, & we understand that it is not the intention to put any in. It is contended, notwithstanding what Mr. Smith says, that in no place on this continent, & probably on no other, are safety switchbacks used on such grades as exist on the C.



GRAND TRUNK RAILWAY ELEVATOR AT PORTLAND, MAINE.

taken from any of the bins. Two receiving tracks extend through the house, & to receiving legs, with an elevating capacity of 8,000 bush, an hour, take the grain from the sinks to the cupola. The grain is unloaded from the cars with power shovels. There are also 5 loading spouts equipped with bifurcated loaders. In the first story of elevator or working floor is a car puller with two drums arranged for pulling cars on both tracks at the same time, by means of wire cable.

The first floor of the 5-story cupola is the distributing floor. It contains 20 Mayo trolley spouts & 12 telescope trolley spouts. The Mayo spouts distribute the grain from the scale hoppers, & the telescope spouts distribute grain from a reversible belt conveyor, which runs the full length of the second floor of the cupola. This conveyor is supplied with an automatic travelling tripper. The third story of the cupola contains ten 1,200-bush Fairbanks' hopper scales. The fourth is the garner story. Along one side of this story, extending the full length of the building, is a line shaft from which power is taken to drive the elevators. The top story is occupied by

gines, 24 x 42 in. stroke. All power is transmitted by means of rope drives & all machinery which is required to start or stop while the shafting is in motion is provided with friction clutches.

John S. Metcalf Co., Chicago, were the architects & engineer of the building, etc.

A grain transfer house has recently been completed in the G.T.R. yards at Elsdon, Ill., near Chicago. The elevator is 30 x 120 ft. & 130 ft. high, with track shed 15 ft. wide on each side, & extending the full length of the building. The foundation consists of concrete piers, resting on piles. The elevator is a frame structure, the bins being of the usual crib construction, & equipped with first-class

machinery for rapid handling & transfer of grain. The shipping track runs through the shed on the south side of the house, & the receiving track through the north shed. The elevator is equipped with receiving legs of 8,000 bush, capacity per hour. They have large sinks, & each leg supplied with a pair of power shovels. The 3 shipping legs are each of 6,000 bush, capacity. On the shipping side of the elevator there are also 4 car-loading spouts, fitted with car-loaders. These spouts are located far enough apart so that 4 cars can be placed on the track & loaded simultaneously. On the 1st floor of the elevator is located the heavy geared car-puller, having 2 wire rope drums so arranged as to pull cars on either track with steel wire cable & heavy car-puller hooks. On the first floor are also located no. 9 oat clippers, arranged so as to spout 13 elevator legs put in for handling the grain from the clippers. On the roof of the track shed on the shipping side of the house are located 4 dust collectors for the above mentioned clippers. Under these dust collector is a pipe connected with the sweeper system

OLD SERIES, No. 112.
NEW SERIES, No. 36.

TORONTO, CANADA, AUGUST, 1900.

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The Columbia & Western Railway.

The extension of this line from West Robson to Midway, B.C., was inspected on behalf of the B.C. Government by H. B. Smith, M. Inst. C.E., whose reports, which have only just been made public, contain a lot of interesting information about the line. The first report deals with the first section of the line between West Robson & Grand Forks, & it must be borne in mind that it was dated Sep. 29, 1899, when the line was uncompleted & that since that date it has been finished & opened for traffic. Following are extracts:

The West Robson-Grand Forks division of the C. & W. Ry. is an extension westward of the Trail-West Robson division of the same railway. It commences at West Robson, 1,400 ft. above sea level on the south bank of the Columbia River, directly opposite the Columbia & Kootenay Ry. terminus at Robson. From thence it extends westerly along the banks of the Columbia River & Arrow Lake to Brooklyne, 2,750 ft. above sea level, 13 miles from West Robson. From Brooklyne it follows a southerly and westerly course to 22 miles distant from West Robson. Here a tunnel 13,000 ft. long & 3,180 ft. above sea level has been found necessary to reach the valley of Dog Creek. From this tunnel the course is southerly to McRae Creek Pass, 3,090 ft. above sea level, & 40½ miles from West Robson. From McRae Creek Pass the course is southerly & westerly along the valley of McRae Creek to the valley of Christina Lake, 17 miles from Robson. It then follows southerly the valleys of Christina Lake & Christina Creek to Cascade City, 1,650 ft. above sea level, & 54 miles from West Robson. From Cascade City the course is nearly due west along the valley of Kettle River to Grand Forks, 1,700 ft. above sea level, & 67 miles from West Robson. Up to 5 miles from West Robson the main extensive flats; it then winds along inclosures & meadows.

railway, therefore, passes over 18½ miles of flats, & 48½ miles of side-hill.

The location of the railway, from an economical point of view, has been unusually skillfully made, & leaves little room for improvement without heavy additional expenditure.

necessitated many long & very high timber trestles, several of which could be dispensed with, but only at considerable outlay. The long tunnel, 22 miles from West Robson, at the head of Bull Dog Creek, has been found necessary in order to avoid the circuitous & much more costly route via Arrow Lake & Dog Creek. In Kettle River valley, the Kettle River is crossed four times. There appear to be no means by which any one of these crossings could be advantageously avoided.

The railway is of standard gauge, 4 ft. 8½ ins. from the side to inside of rail head, except on curves exceeding 4 degrees. The additional width or spread for sharper curves is as follows:—

1 degree to radii of	1 of an inch
8 "	8 "
10 "	10 "
12 "	12 "

The general curvature is light for a mountain railway. Curves vary from 20 minutes to 14 degrees, or from 17,189 to 110 ft. radius, & cover 32.884 miles of the total length. The combined length of tangent is 31,058 miles. The total curvature is, therefore, 39.42° of the total mileage. The curve of most frequent occurrence is 14 degrees. The total number of curves is 503, made up as follows:—

Curves	No. Length, of Whole
20 min.	13 1.283
22 "	43 3.647
24 "	41 3.410
26 "	34 2.892
28 "	31 2.637
30 "	26 2.187
32 "	16 1.369
34 "	9 0.764
36 "	4 0.341
38 "	3 0.258
40 "	3 0.258
42 "	1 0.085
44 "	1 0.085
46 "	1 0.085
48 "	1 0.085
50 "	1 0.085
Total	303 2.607

The longest curve is 1 degree N. 30 minutes, 217.3 ft. in length. The longest tangent is 581.20 ft. in length. From West Robson to mile 5.4 grades include N. 10 W. 8.00, exceed 0.75 per cent. At mile 5.4 an uniform 1.2 per cent upward grade, compensated for curvature, begins & continues to the long tunnel at mile 22.0. The grade through the long tunnel rises

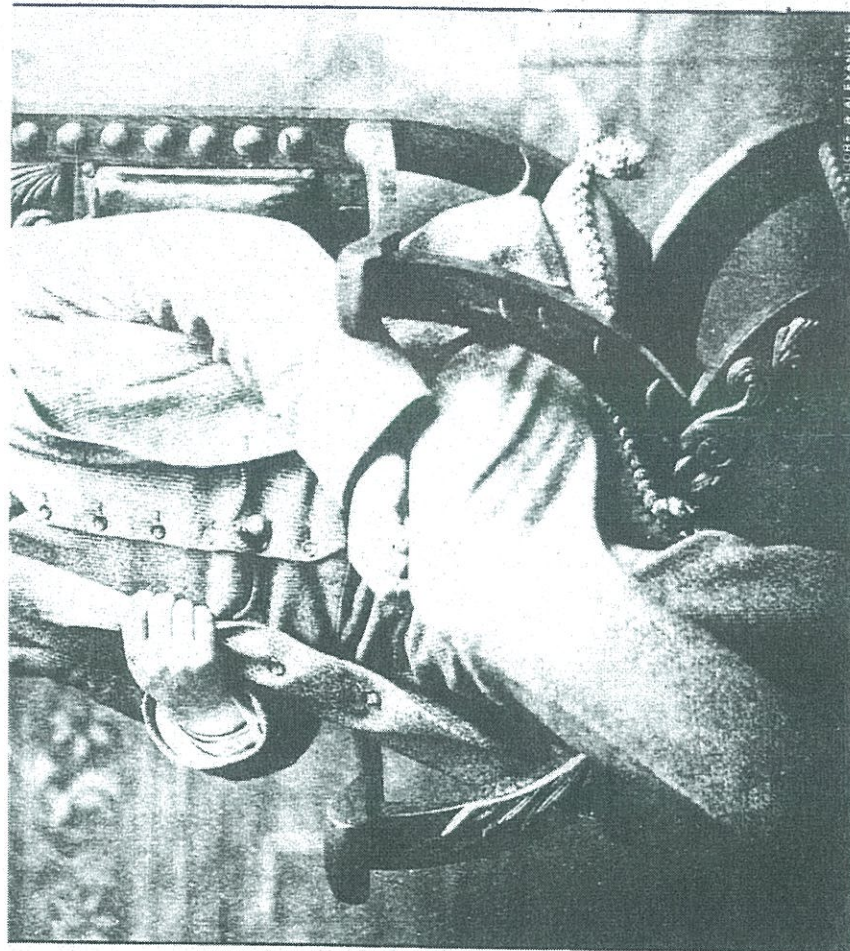


JAMES P. SMITH.

Vice-President of the Esquimalt & Nanaimo Railway & Director of British Columbia

The general course is as direct as the rugged nature of the country would permit. Every

level on the south bank of the Columbia River, directly opposite the Columbia & Kootenay Ry. terminus at Robson. From thence it extends westerly along the banks of the Columbia River & Arrow Lake to Brooklyn, 2,750 ft. above sea level, 13 miles from West Robson. From Brooklyn it follows a southerly and westerly course to 22 miles distant from West Robson. Here a tunnel 43,000 ft. long & 3,180 ft. above sea level has been found necessary to reach the valley of Dog Creek. From this tunnel the course is southerly to McRae Creek Pass, 3,000 ft. above sea level, & 30½ miles from West Robson. From McRae Creek Pass the course is southerly & westerly along the valley of McRae Creek to the valley of Christina Lake, 47 miles from Robson. It then follows southerly the valleys of Christina Lake & Christina Creek to Cascade City, 1,650 ft. above sea level, & 54 miles from West Robson. From Cascade City the course is nearly due west along the valley of Kettle River to Grand Forks, 1,700 ft. above sea level, & 67 miles from West Robson. Up to 5 miles from West Robson the railway passes over extensive flats; it then winds along irregular & precipitous & rocky side-hills to Cascade City, where the beautiful & uniform valley of Kettle River is reached, which it follows for 13 miles to Grand Forks. The



JAMES DUNSMUIR.

Vice-President of the Esquimalt & Nanaimo Railway & Premier of British Columbia.

The general course is as direct as the rugged nature of the country would permit. Every flat affording suitable grades & alignment has been taken advantage of, & on the side hills the curvature fits the natural irregularities of the ground with great precision. This has

been for a mountain railway. Curves vary from 20 minutes to 14 degrees, or from 17,186 to 110 ft. radius, & cover 32,884 miles of the total length. The combined length of tangent is 31,058 miles. The total curvature is, therefore, 49.12 of the total mileage. The curve of most frequent occurrence is 14 degrees. The total number of curves is 563, made up as follows:

Degree.	No.	Length.	of Whole.
2-10	11	1,885	1.10
12	45	20,477	5.78
14	31	15,130	4.28
16	31	9,922	2.90
18	35	16,722	4.76
20	42	18,218	5.17
22	36	12,667	3.47
24	29	7,924	2.23
26	30	6,884	1.98
28	13	2,818	.77
30	57	14,212	4.02
32	14	3,373	.98
34	39	18,737	5.29
36	4	1,119	.31
38	3	703	.20
40	1	263	.07
Total.	563	173,097	49.12

The longest curve is 14 degrees & 30 minutes, 2,753 ft. in length. The longest tangent is 58,146 ft. in length.

From West Robson 460 mile 3-4 grades undulate & in no case exceed 0.75 per 100. At mile 5.4 an uniform 2.2 per 100 upward grade, compensated for curvature, begins & continues to the long tunnel at mile 21.6. The grade through the long tunnel rises 1.1 per 100 to mile 22.5. At mile 22.5 an uniform 2.2 per 100 upward grade, compensated for curvature, & broken by a small portion of level grade at mile 24.6, continues to McRae

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ers, Mich.

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Melinda Street, Toronto.

NEXT ANNUAL MEETING at Montreal, Oct. 16, 1900.

Creek summit at mile 30.2. This is the highest
elevation attained by the railway. From mile
30.2 to mile 30.4 is level. At mile 30.4 a con-
tinuous downward grade to the Kettle River
commences. From 30.4 to 32.6 the maximum
downward grade, compensated for curvature,
is 1.8 per 100. From 32.6 to Kettle River at
mile 53.2, the downward grade, compensated
for curvature, is uniformly 2.2 per 100. From
mile 53.2 to mile 53.6 the grade rises at the
rate of 0.26 per 100. From mile 53.6 to Cas-
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for curvature, rises uniformly at the rate of
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undulate, the maximum being 0.5 per 100.
From mile 59.3 to Grand Forks at mile 67.2,
grades undulate, the maximum being 1.5 per
100. All grades over 1.5 per 100 are com-
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dredths of a foot in each 100 ft. for each de-
gree of curvature, that is to say, that in a 14-
degree curve, having a tangential grade of
2.2 per 100, the grade on the curve is reduced
56 one-hundredths of a foot, which subtracted
from the original grade of 2.2 per 100, leaves
1.66 per 100 as the compensated grade on the
curve. The total rise of the railway from
West Robson to McRae Creek summit is 2,-
590 ft., the total fall from McRae Creek sum-
mit to Kettle River is 2,440 ft., & the total
rise from Kettle River to Grand Forks is 136
ft.

All embankments at formation level are 14
ft. in width, with side slopes of $1\frac{1}{2}$ to 1 in
earth, sand & gravel, & 1 to 1 in loose rock.
On side-hill these slopes reach the flats below
in most cases. In a few instances, however,
the vertical nature of the side-hill has rendered
it necessary to retain embankments by crib-
work or dry stone walls. The toes of all em-
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mark of the waters adjacent to them, except
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has been added as a protection.

All excavations are 18 ft. wide at formation
level with side slopes in earth & sand of 1 to
1, & in rock of $\frac{1}{4}$ to 1. In hard-pan cuts the
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of the material. All excavations have been
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ished appearance, except where ballasting
material has been borrowed.

There are two places only at which timber

comprising the walls are of large size & are
roughly shaped into rectangular blocks; a
very solid & permanent dry rock wall has thus
been obtained.

Excellent provision for the passage of
streams & surface drainage across the track
has been made by means of log culverts, bal-
last boxes, rock & log drains. The total
number of log culverts is 156. They are of
the usual log culvert pattern, having solid
cedar or fir walls & covering, secured by
tree-nails & drift-bolts, the whole resting on
round sills in pairs from 5 to 8 ft. apart, the
spaces between the sills being filled flush with
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There are five tunnels. All have been care-
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lows: width at formation level & at spring of
roof, 16 ft.; clear centre height above forma-
tion level, 23 ft. $2\frac{1}{2}$ ins.; & above rail level,
21 ft. 6 ins., ballast being 9 ins. deep. The
nature of the rock through which the tunnels
pass is granitic, & is of such solidity that but
little timbering, 200 ft. in all, has been re-
quired. On curves from 8 to 14 degrees, the
centre lines of the tunnels have been placed 7
ins. off the centre line of the road-bed; on 6
degree curves, 5 ins.; & on 4 degree curves,
3 ins. Following is a list of tunnels:

Mile 34,	104 ft. from portal to portal
" 12	187 "
" 15	291 "
" 22	3,004 "
" 36	329 "

Combined these tunnels cover a total dis-
tance of 4,004 ft.

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There are two places only at which timber crib-work has been erected for the purpose of retaining embankments. The rock in the immediate vicinity is decayed, & this is the reason given for their construction. They occur at mile $4\frac{7}{8}$ & are of excellent design. They are each 60 ft. long & from 12 to 15 ft. high. The plan of these structures shows inside & outside batter of walls to be $\frac{1}{4}$ to 1. Each crib is 7 by 7 ft. inside horizontal measurement, & consists of 12 in. round logs dovetailed & box-jointed, & secured with tree-nails 2 in. diam. & 20 ins. long, & with wrought iron drift-bolts $\frac{3}{4}$ in. diam. & 22 ins. long. Each drift-bolt penetrates through one log & at least 6 ins. into the log below.

Rock slopes occur on the steep side-hills of Arrow Lake, Bull-Dog Creek, McRae Creek & Christina Lake. There are 29 in all, varying from 30 to 270 ft. in length, & from 10 to 40 ft. in height. Combined they cover a total length of 2,640 ft. The rear wall is vertical, & the front wall batters at the rate of 1 in 3. The top of the wall is 3 ft. wide. The filling behind the wall is broken rock. In all cases the foundations are on solid rock. The stones

constructed. In a railway having so many miles of grades exceeding 2 per 100, safety switchbacks are a necessity & should be built without delay. Owing to the length of time required to construct the long tunnel at mile 22, & the desire of the railway company to open the railway for traffic, a temporary switchback was constructed over the mountain at that point. It consisted of 10 switches, 5 on the east slope & 5 on the west slope. The total rise from the east portal of the tunnel was 507 ft., & from the west portal 403 ft. The grade both ascending & descending was uniformly 4 per 100, & curves varied up to 22 degrees. The total length of the switchback from main line to main line was 5.12 miles, & the time occupied in traversing it by trains was one hour. The steep grade, & the temporary character of the work, necessitated extreme care on the part of the officials operating it.

From West Robson to mile 5.4 & from mile 50.5 to mile 67 at Grand Forks there are no trestles. Between miles 5.4 & 50.5 trestles have been constructed to a most unusual extent. The location of the line in this respect has been made with an undue regard to economy, & should the railway become a trunk line many of these structures must be eliminated. Every trestle is an element of danger, & the only excuse in the present instance is the immense cost of obtaining a more solid road-bed by throwing the alignment further into the side hill. There are in all 49 timber trestles, covering a distance of 13,140 ft. or $5\frac{1}{2}$

C. (See Jan., 1904, p. 8.)
o- **Great Northern (U.S.A.)**—When at New
ys Westminister, B.C., recently President J. J.
or Hill said the G.N. would cross the Fraser
ge River & get into Vancouver some day, but
& when he could not state, adding: "Not ano-
re ther mile of railroad building in the West until
ter the country is developed & actually needs the
out construction, & until such extension will be a
ter business investment."

or The B.C. Weekly says: "The brusque
is equivocations & general reticence of Presi-
ept dent Hill, on the occasion of his recent visit to
ny- Nelson & other Kootenay points, have not de-
o a ceived the Kootenay public. They are well
om aware he did not visit their country for nothing,
has but instead with big-schemes in view. These
re- probably include the taking up of Mr. Corbin's
52, projects for securing further railroad access
The from the South into the Kootenay & Okana-
ere gan country."

the It is said the G.N. has a survey party run-
for ning a line from Jennings, Montana, north,
s in following the meanderings of the Kootenay
the River, & that a second party is in the Still-
950 water valley trying to get a line on the north
dge fork. The objective point of both parties is
said to be Fort Steele, B.C.

rom A Rossland, B.C., paper says the G.N. is
ider surveying a line from Trail, B.C., on the Col-
2 to umbia River west to Sayward, so as to tap
, & the Salmon River & Ymir districts, & to carry
to 1/2 any ores from there that may be consigned to
n is the Trail smelter, thus competing directly
has with the C.P.R. It is said the G.N. will put
ated a steamer on the Columbia river between
Northport, Waneta, Sayward, Trail & Water-
loo, the object of which will be to carry ores
low- from any point upon the river to either of the
bec two smelters. The impression in B.C. is that
ed in the G.N. is going to make a tremendous ef-
con- fort to secure a good share of the Kootenay
line traffic.

and- It is said surveys are being made for a cut
to a off from Milan on the G.N.'s main line, 24
that miles east of Spokane, to Loon Lake, on the
ders, Spokane & Northern, 39 miles north of Spo-
U.S. kane, which would reduce the through dis-
pital- tance from the east to Rossland, Nelson &
ng to other B.C. points about 40 miles.

f this Press reports say the advisability of work-
inter- ing the section between Leavenworth & Sky-
struc- komish, 66 miles, by electricity, is being con-
is un- sidered. The Cascade tunnel, which will be
gland- completed in about 2 years, & will be 2 1/2
work miles long, is in this section. There is plenty
of water power, & the grades are not severe.

River was thoroughly discussed, President Hill writes that there is no truth in the report that the Co. contemplates building a line between the cities named.

A B.C. correspondent writes: "Engineers of the Great Northern are locating a line into the Lardeau & Trout Lake district to tap them. It is said this is a scheme of Mr. Hill to extend the Bedlington & Nelson Ry. up to the east side of Kootenay Lake, to ultimately connect with a line in the Trout Lake district. The C.P.R. does not view this intrusion with favor, & has decided to offset it by losing no time in building into the country itself. Mr. Hill has shown himself so active that the C.P.R. will lose no more time in checkmating him."

Great Northwest Central.—We are advised

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Hawkesbury bridge themselves.

Great Northern (U.S.A.)—The Railroad Gazette having stated that at a meeting of officials of this Co., held in Vancouver, B.C., recently, maps of the section between Vancouver & New Westminster were gone over, & the question of building a line between the two cities from the south side of the Fraser

1902. (Nov., pg. 335.)

Great Northern Ry. (U.S.)—The following extracts from the annual report for the year ended June 30 have reference to the construction of lines connecting with lines in Canada: "The Montana and Great Northern Ry. Co. is building from Jennings, Mont., northerly along the Kootenay river, about 51 miles, to the International boundary, where it will connect with a line being built by the Crow's Nest Southern Ry. Co. to the coal-fields of the Crow's Nest Pass Coal Co. at Fernie, B.C. The length of the lines from Jennings to Fernie, including spurs, will be about 100 miles. Crow's Nest Pass coal and coke are of superior quality. The coal company's plant is being enlarged and the output increased. In addition to furnishing coal for company use and for commercial and domestic purposes in the Northwest, these mines are expected to supply the smelters at Great Falls, Butte, Anaconda, Northport and Everett, and will furnish a heavy and profitable traffic. Since the close of the fiscal year, the M. and G. N. R. Co. has purchased the line of the Great Falls and Canada Railway, extending from Great Falls, Mont., to Sweet Grass, on the International boundary, 134.37 miles. This line is now narrow gauge, and, until widened to standard gauge, during the current fiscal year, it will be operated by the G. F. and C. Ry. Co. As a portion of a projected extension, the M. and G. N. Ry. Co. has built 10.32 miles of line from Kalispell, Mont., south to Flathead Lake. The Washington and Great Northern Ry. Co., in the State of Washington, and the Vancouver, Victoria and Eastern Ry. and Navigation Co., Ltd., in B.C., are now building lines of railway that will form a through line from Marcus, Wash., on the Spokane Falls and Nor-

December 1901

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THE]

thern, to Republic, Wash., via Kettle River and Cascade, B.C., a total distance, including branches, of about 108 miles. This line will afford transportation to several large, rich and already well developed mining camps, and its opening for traffic will be followed by the development of many properties that have been waiting for rail transportation. It is expected that this line will add largely to the Co.'s traffic and revenue."

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The Vletoria, Vancouver and Eastern Ry.
is constructing so much of its eastern section

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this season as is necessary to enable the Great Northern Ry., U.S., to obtain access into Republic, Wash., from Marcus. This will be from the International boundary near Cascade, B.C., along the Kettle river to the International boundary at Carson, a distance of 15 miles. The contractor is P. Siems, who is also reported to have the contract for the portions of the line in Washington territory. The V.V. and E. has several survey parties out under the general charge of J. H. Kennedy, chief engineer, locating the line westerly from Midway, B.C., traversing the Okanagan and Similkameen districts. The distance from Midway to Vancouver is about 335 miles by the route proposed. It is not expected construction will be undertaken on this part of the line this year. Mackenzie, Mann & Co., and the Great Northern Ry., U.S., are jointly interested in the V.V. & E. R.

Negotiations are in progress for the amalgamation of the towns of Grand Forks and Columbia, B.C. The latter town suggests that both places consent to the location of the V.V. & E. depot at the dividing line, and that each town furnish the road free of cost whatever land it may need for station or other purposes, the passenger station to be located in one town, and the freight sheds in the other, subject to the decision of the railway.

September 1901

this season as is necessary to enable the Great Northern Ry., U.S., to obtain access into Republic, Wash., from Marcus. This will be from the International boundary near Cascade, B.C., along the Kettle river to the International boundary at Carson, a distance of 15 miles. The contractor is P. Siems, who is also reported to have the contract for the portions of the line in Washington territory. The V.V. and E. has several survey parties out under the general charge of J. H. Kennedy, chief engineer, locating the line westerly from Midway, B.C., traversing the Okanagan and Similkameen districts. The distance from Midway to Vancouver is about 335 miles by the route proposed. It is not expected construction will be undertaken on this part of the line this year. Mackenzie, Mann & Co., and the Great Northern Ry., U.S., are jointly interested in the V.V. & E. R.

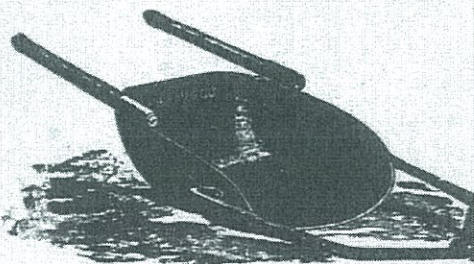
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White Pass and Yukon Route.—Press reports recently stated that during the next two years this railway would be extended 200 miles from White Horse to Fort Selkirk, on the Yukon 200 miles above Dawson, thus ob-

viating the necessity of steamers passing through the Five Finger rapids, where steel cables have to be used to line them up and down. We are informed that the management does not at present contemplate any additional construction.

Crow's Nest Southern Ry.—The proceedings instituted by the C.P.R. to stop construction, to which reference was made Aug., pg. 227, arose out of the proposal of the C.N.S.R. to build a spur up the Morrissey creek, for which surveys were made and plans filed at Victoria, June 19. The C.P.R. was also surveying for a line along the creek parallel to the C.N.S.R., and filed its plans at Ottawa, June 6, and at Nelson, June 24. Both companies commenced work, the C.N.S.R. on the north side of the creek, and the C.P.R. on the south side, but at a lower level. With the filing of the injunction the work was stopped by the C.N.S.R. The grounds upon which the C.P.R. wished to have the C.N.S.R. Co. enjoined from entering upon the lands of the B.C. Southern Ry. Co., or interfering with its right-of-way up Morrissey creek, rested largely upon the facts that the former Co. is a competitor, that it will connect its lines with an U.S. company, that its line is being constructed under a B.C. charter, and that according to the Railway Act a company crossing into a foreign country or an adjoining province, must secure the consent of the Dominion Government before starting construction. When the application to make the injunction permanent came up before the court in Victoria, the injunction was dissolved.

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the presence of the South African contingents in Halifax during the past year.

The lighting system shows a satisfactory increase, the equivalent of 2408 10 c.p. lamps having been installed during the past year, making a present total installation the equivalent of 10675 10 c.p. incandescent lamps throughout the city.

Mechanical stokers with forced draft have been placed under four boilers, & the power station equipment has been increased by one 750 h.p. condenser. Line transformers 97000 Watts capacity & 125 meters have been installed. Vestibules have been placed upon all box cars, of which has entailed an expenditure of \$14,511.84, charged to construction account.

In consequence of the death of Dr. A. Haley, a vacancy occurred on the board of directors. This has not been filled, owing to the suggestion made at a previous meeting of shareholders that it was a matter for consideration whether the number of directors might not be reduced as vacancies occurred.

The old board of directors was re-elected, J. C. MacIntosh succeeding the late Dr. Haley. The board for 1901 is: President, Hon. D. MacKeen; Vice-President, J. Y. Payzant & W. B. Ross; Secretary, B. E. Pearson; other directors, F. Paul, A. Kingman, J. C. MacIntosh. F. A. Huntress continues as manager.

MANITOBA'S RAILWAY POLICY.

The leasing of the Northern Pacific lines and re-leasing to the Canadian Northern.

The most important event of the month in railway matters has been the announcement of the contracts entered into by the Manitoba Government, under which the Government has leased all the lines of the Northern Pacific Ry. within the Province, & has released them to the Canadian Northern Ry.

The Northern Pacific entered Manitoba as a culmination of the anti-disallowance agitation which raged there in the eighties. In 1887 the Legislature passed a bill introduced by Premier Norquay, empowering the Railway Commissioner of the Province to build, as a public work (belonging to the Province, the Red River Valley Railway from Winnipeg along the west side of the Red River to the International Boundary at West Lynne. Work was started on this line under Mr. Norquay as Railway Commissioner, & was continued under the Greenway Government which succeeded him. In 1888 the Greenway Government made a contract with the Northern Pacific & Manitoba Ry. Co., a subsidiary of the Northern Pacific R. R. Co., under which the Province was to complete the Red River Valley Ry. from the International Boundary to a point on the south side of the Assiniboine River within the city of Winnipeg, & to sell the line, with a limited amount of equipment, to the N. P. & M. R. Co. for \$720,000, to be paid for by 1st mortgage bonds of the Co. on the line, payable in 20 years with interest at 5%. The Co. agreed to bridge the Assiniboine River at Winnipeg, the Government contributing \$40,000 as a bonus, & to continue the line to the north side of the river. The Government agreed to secure right-of-way from a point on the Red River Valley Ry. near Winnipeg to Portage la Prairie, & to pay on behalf of the Co. for the construction of a railway between those points & in purchasing equipment for it, such payments not to exceed \$400,000, any cost in excess of this to be borne by the Co. except that the Government agreed to contribute \$40,000 towards bridging the Assiniboine River, near Portage la Prairie. The Co. agreed to construct a railway from the Red River Valley Railway, near Morris, to Brandon. The Co. was empowered to issue bonds to the extent of \$10,000 a mile, the \$720,000 of bonds issued on the Red River Valley Ry. to be given to the Government in payment therefor to be 1st mortgage bonds & the balance of \$320,000 to be 2nd mortgage bonds. The Government agreed to guarantee the interest on these 2nd mortgage bonds at par, & also to guarantee the interest on bonds on the Portage la Prairie branch to the extent of \$6,400 a mile and also on bonds of the Morris-Brandon branch to the extent of the amount required to make up \$6,400 a mile for the whole of the railways mentioned in the agreement, including the Red River Valley line. The Co. was given important taxation exemptions for 20 years & the Manitoba Government was empowered to fix & regulate all freight charges on the lines mentioned.

Under the contract above summarized the following lines were constructed:

	Miles.
International Boundary to Winnipeg	65.04
Morris to Brandon	145.74
Portage Jct. to Portage la Prairie	37.32
	248.10

Subsequently the N. P. & M. Co. through a subsidiary, the Winnipeg Transfer Ry. Co., built a connection of 1.24 miles between the N. P. terminal in Winnipeg & the C. P. R. Within the last two or three years three short branches have been built, one from Departure, on the Morris-Brandon branch, to Hartney, on the C. P. R. Souris branch, 51 miles; one from Portage la Prairie, northwesterly to Beaver, 19 miles, & one from Portage la Prairie, northerly to Oakland, 9 miles, making the Co.'s total mileage in the Province 344.04 miles.

Figures as to the cost of the N. P. lines in Manitoba vary considerably. The returns made by the Co. to the Department of Railways state the cost up to June 30, 1900, to have been \$4,556,698.76. In the agreement between the Manitoba Government & the N. P. Co., the value of the lines is placed at \$7,000,000, while in Premier Roblin's recent speech at Neepawa, which is given on another page, the cost was stated as \$8,445,613.04. In making up the latter figures, capital stock & other items are counted in. The return made by the N. P. Co. to the Department of Railways is a sworn one, & in the absence of evidence to the contrary must be accepted as reliable.

The aid given by the Manitoba Government to the line up to June 30, 1900, was \$632,750. Of this, according to a speech made in the Legislature in April, 1898, by the then Premier, Mr. Greenway, \$532,250 was given to the line between the International Boundary & Winnipeg & to the Brandon & Portage la Prairie branches. The remainder was given to subsequent extensions, principally to the branch from Departure to Hartney.

The N. P. Co. did not receive any municipal aid in Manitoba, but the Hudson's Bay Co., through its then Land Commissioner, the late C. J. Brydges, sold most of the land for the Winnipeg terminals for a nominal consideration.

The earnings of the N. P. lines in Manitoba for the past four years have been as follows:—

Year ended.	Gross Earnings.	Operating Expenses.
June 30, 1896	\$271,500.00	\$268,623.00
" 1897	246,627.50	234,162.38
" 1898	315,876.07	323,528.87
" 1899	378,724.23	308,577.59
" 1900	301,047.40	577,525.61
	\$1,604,730.19	\$1,802,417.45

Net loss in operating for five years, \$287,681.26.

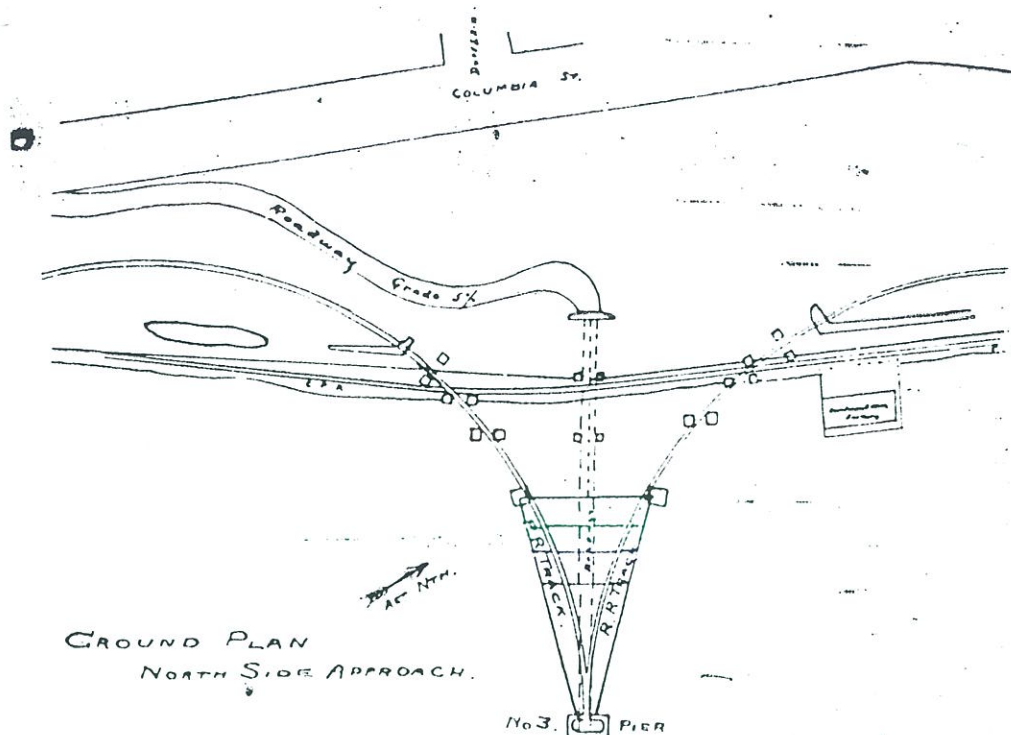
Contract With the Northern Pacific.

Following is the agreement between the Manitoba Government & the Northern Pacific Ry. Co. divested of some of the legal verbiage:

This indenture, made Jan. 15, 1901, between the Northern Pacific & Manitoba Ry. Co., the Winnipeg Transfer Ry. Co. Ltd., the Portage & Northwestern Ry. Co. & the Waskada & North Eastern Ry. Co., together hereinafter called the lessors of the first part; the Queen, represented herein by the Executive Government of the Province of Manitoba, acting by the Minister of Public Works of the Province, hereinafter called the lessee, of the second part, & the Northern Pacific Ry. Co., hereinafter called the Pacific Co., of the third part.

Whereas the lessors are respectively the owners of & operate certain railways in Manitoba, hereinafter demised, & such railways connect with each other & are operated as one system, the interests of the lessors being common interests in connection with said system; & whereas certain mortgage bonds have been issued by the Northern Pacific & Manitoba Ry. Co., one of the lessors, secured by mortgage upon its railways & undertak-

STATISTICAL STATEMENT.	
	1896
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1897
Gross receipts	\$1,043,370.91
Railway, light & power	30,072.82
Increase 1900 over 1896	11,947.50
Operating expenses	11,350.00
Increase 1900 over 1896	55.00
Operating expenses	10,795.00
Per cent. of total earnings	1.12
Net earnings	1,032,020.91
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
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Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
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	1901
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Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
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Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1902
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1903
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1904
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1905
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
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Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1906
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
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Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1908
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
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Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1909
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1910
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1911
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1912
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1913
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1914
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1915
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1916
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48
Increase 1900 over 1896	55.00
Operating expenses	10,952.48
Per cent. of total earnings	1.12
Net earnings	1,092,103.73
Increase 1900 over 1896	128,836.20
Passengers carried	352,881
Increase 1900 over 1896	4,535
Average receipts per passenger (Reduced rates in 1899 and 1900)	3.12
Car Mileage	102,139
	1917
Gross receipts	\$1,111,211.21
Railway, light & power	28,125.35
Increase 1900 over 1896	129,134.07
Operating expenses	13,007.48



THE NEW WESTMINSTER END OF THE FRASER RIVER BRIDGE.

On the New Westminster side the bridge ends in a Y, the left or westerly fork of which leads to the location for a station for any new lines entering the city, while the right or easterly fork heads for Sapperton, on the way to Vancouver.

The Fraser River Bridge.

The substructure for the bridge being constructed by the B.C. Government over the Fraser river at New Westminster is almost completed, and preparations are well under way for starting the erection of the superstructure. The completed structure, of which a view of the engineer's perspective sketch is given on pgs. 274 and 275, will span the Fraser river from near the foot of Dufferin st. to a point not far from the little Indian church on the south side of the river, above Brownsville. It will have thirteen spans, five each 160 ft. in length, one of 225 ft.; one of 380 ft.; and a swing span 361 ft., giving a passage for steamers on either side of 180 ft. Also there will be two plate girder spans, each 40 ft. wide, and one of 60 ft., at the railway track on the city side. At the south, or Surrey end, there will be a trestle approach 1,310 ft. long. The clearance under the bridge, with an average tide, will be 25 ft. This will allow steamers only that height to pass without opening the draw or swing span, but most of the small river tugs may thus pass, while even larger tugs may do so by simply having their funnels constructed so that they may be lowered, as is done in other places. The structure will be of the double-deck type, the railway track occupying the lower chord of the bridge. Where this track leaves the bridge it will pass 25 ft. above the C.P.R. track on the city shore, and the same height above the Great Northern Ry. track on the Surrey shore; and on the city shore, moreover, space is left beneath for building two tracks outside that of the C.P.R. The railway approach on the city side presents a novelty in bridge architecture, viz., a fan tail approach. From the end of the bridge proper, at the deep water pier, the railway track will branch into two, one curving westerly, the other easterly. A sketch showing this approach appears on this page. At pier no. 3 is the deepest water and a 225 ft. span. Over this pier the girders are 20 ft. centres, while on no. 2 pier, nearer shore, the fan spread has extended to 135 ft., no. 2 pier being a double pier in shallow water near shore. On

the south, or Surrey side of the river, the railway approach will be on a high embankment or trestle curving east from the bridge. The grades of the approaches will be 1% compensated. Where the track crosses the C.P.R. it will be 25 ft. above it, but at a distance of 700 or 800 yards it reaches the level of the C.P.R. track on Front st., about the Brackman-Ker wharf, the level to the east being reached beyond the penitentiary. On the south side the level is reached on neutral ground, where connection is made with the tracks of the G.N.R. or any other railway seeking to cross the river at this point. The highway for wagons and other vehicular traffic will be on the upper deck of the bridge, with the usual clearance of 23 ft. above the railway track. On the shorter spans this deck will be on the upper chord, and on the longer spans it will be about mid-height. On the city side this highway does not follow the curves of the railway tracks beneath, but, on leaving the bridge proper at no. 3 pier, goes straight ahead and strikes the bank of the Pleasure Grounds, about 50 ft. above the level of Front st., and nearly as much below the level of Columbia st. at that point.

The substructure possesses a number of features of interest. Piers 1 and 2 are double, making seventeen piers, exclusive of the abutments and pedestals on the shore. The borings failed to discover solid rock bottom within reasonable depth. The water at no. 3 pier was found to be 80 ft. deep, at low tide, and as the foundations of this pier are sunk in the river silt 55 ft. this makes the distance from the surface of the river at low tide to the bottom, 135 ft., one of the deepest foundations sunk in America. On this is built a stone pier 35 ft. high, and on this in turn is a truss 50 ft. high, so that from the extreme top of the bridge to the bottom of this pier the distance is 215 ft. The pressure of the water at the bottom of the caisson used in sinking the foundation is too great for man to work at that depth, either in diving suits or by pneumatic process, being about 52 lbs. a square inch. The necessary excavating, therefore, is being done by open dredging system. The caissons are built on shore, of

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crossed timbers a foot square, and floated to the site of the pier. In the centre is a large well hole, but the surrounding sections of the mass are at the bottom, of solid timber which tapers gradually to a cutting edge about a foot wide, furnished with steel. This framework being kept in position by piles, etc., the outer compartments are filled with concrete, and as the whole affair settles down, the walls and cross sections are built upon by timbers of like dimensions, so that there is always a considerable portion above the level of the river or the temporary wharf erected on the site. Eventually this huge concrete-laden frame reaches the river bottom, and then the work of raising the silt and other material commences. When the flow of silt, etc., stops, and only clear water comes up, the operators know something is wrong, and the long heavy pipes are hauled up and there is lowered in their place a heavy clam-shell (trudging bucket, which grasps any boulder or tree trunk and never lets go until the obstruction has been removed. Nowhere else on this coast can this operation of the hydraulic jack and clam-shell companion be seen on such a large scale. The hydraulic jack, as this affair is called, is operated by a pump with a hydraulic pressure of 180 lbs. A large steel pipe, 5 or 6 in. in diameter, is put down to the bottom of the well. The deepest water was encountered at pier no. 3, though at no. 1 it was nearly as deep. At this point the water at low tide is 75 ft. deep. The foundations for some of the piers in the shallow water towards the Surrey side are piles. These were driven under great pressure deep down into the clear hard sand and gravel. In fact, hydraulic work had to be resorted to, to loosen this bed of natural cement-like sand and gravel. This now grips the piles and seals them, far below the bed of the river. The approaches on the Surrey side have required over 1,000 piles. The incline commences not far from the Liverpool station of the Great Northern Ry., and rises gradually till it reaches the level of the track on the bridge, the curve being near the Indian church at Brownsville. The traffic approach will lead from the upper floor of the bridge straight inland, the level being reached about a fifth of a mile back from the river, where connection will be made with the country roads, including no doubt the proposed Ladner river road extension.

The engineers for the bridge are Waddell & Hedrick, of Kansas City, Mo., and the contractors for the substructure are Armstrong, Morrison & Balfour, of Vancouver, B.C.

Compiled from New Westminster Daily Columbian.

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THE Railway and Shipping

With which is incorporated The Western World. Established
Devoted to Steam & Electric Railway, Shipping, Express, Telegraph & 7

OLD SERIES, No. 176.
NEW SERIES, No. 94.

TORONTO, CANADA, DECEMBER, 1905.

RAILWAY DEVELOPMENT.

Projected Lines, Surveys, Construction, Betterments, Etc.

Atlantic, Quebec and Western Ry.—Some track has been laid on the line constructed from the Atlantic and Lake Superior Ry. at Paspébiac, Que., towards Gaspé, and it is hoped to have the first 15 miles completed this year. (Sept., pg. 405).

Bella Coola to Telkwa River.—Application will be made next session of the British Columbia Legislature for an act incorporating a company to construct a railway from the mouth of Bella Coola River, at the head of Burke Channel, following the Bella Coola River for 30 miles, thence north-easterly to Fraser Lake, thence eastward to Fort George on Fraser River, and westerly along the south shore of Fraser Lake to the Bulkley Valley, at the mouth of the Telkwa River, with branch lines. A. P. Luxton, solicitor, Victoria, is acting for the applicants.

Brandon, Saskatchewan and Hudson's Bay Ry.—According to press reports from Winnipeg, the Great Northern Ry., U.S., has secured the charter to construct this railway. Further reports state that L. Hill, 1st Vice-President Great Northern Ry., U.S., crossed into Manitoba from St. John, N.D., recently, in an automobile, and went over the proposed route to Brandon, Man. He also visited Portage la Prairie, and returned into the U.S. by way of Gretna.

The company was incorporated by the Dominion Parliament in 1903, the provisional directors named in the act being M. S. and A. C. Fraser, J. D. MacGregor, K. Campbell, P. B. H. Ramsay, J. A. Osborne, C. Whitehead, T. C. Norris, of Brandon; C. A. Young, and J. W. Bettes, of Winnipeg. The company was authorized to construct a railway from a point on the International boundary between ranges 23 and 25 west of the principal meridian north-easterly to Brandon, thence to tp. 29, where it connects with the second meridian west, thence through ranges one to six west of the second meridian, to tp. 48, thence in a northerly direction to Pas Mission, Sask.

Location plans have been approved by the Board of Railway Commissioners for the construction of a line from sec. 1, tp. 7, range 20, west of the first principal meridian, to sec. 17, tp. 9, range 19, w.p.m. This represents a line from a point about four miles east of Souris, Man., north-easterly to a point north of the Brandon Hills.

The surveys have all been completed and the line is under construction. It starts at

Brandon and runs south-easterly through Carrot, Minto and Boissevain, Man., connecting with the Great Northern Ry., U.S., at range 17 on the International boundary. It is expected to keep one or two steam shovels working all winter at the crossing of the Souris River, where there is a good deal of heavy work. This portion of the line will be about 70 miles long, and is expected to be completed early in the summer of 1906. P. E. Thain is Chief Engineer.

The officers and directors are: President, K. Campbell, Brandon; Vice-President, J. Fisher, K.C., Winnipeg; Treasurer, A. C.

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Vancouver, Westminster and Yukon Ry.—
In connection with the projected extension of this line from Vancouver towards the Yukon, J. J. Hill, President Great Northern Ry. (U.S.), stated in an interview at Vancouver, that the G.N. Ry. had nothing to do with it, and he did not know anything of its plans. The company proposes to commence at once the erection of wharves and warehouses on the waterfront at New Westminster, on a total area of seven and a half water lots. *On the completion of the work the company* will lay a track or tracks from its railway to the wharves and warehouses. (Oct., pg. 461).

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Fraser, Brandon; other directors: M. S.
Fraser, J. D. McGregor, P. H. B. Ramsay,
Brandon; T. C. Norris, Griswold, Man.; A.
C. Ewart, Winnipeg.

Conner, B.

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Vancouver, Victoria and Eastern Ry.—The lines belonging to this company at present in operation in British Columbia, are 45.87 miles in length as follows:—Grand Forks to Granby Smelter, 4.75 miles; Grand Forks to Phoenix, 24.62 miles; International boundary line at Laurier to International boundary line at Danville, including spur into Grand Forks, 16.50 miles. South of the International boundary the line connects with the Washington and Great Northern Ry., which is operated by the Spokane Falls and Northern Ry., a subsidiary of the Great Northern Ry., U.S., as well as the V., V. and E. Ry. This line runs from Marcus, Wash., to the International boundary near Laurier; from the International boundary near Danville to Republic, and from a point north of Republic to the International boundary near Midway, B.C. There are now under construction the following lines under the V., V. and E. charter, with connections with the W. and G. N. Ry. on the Washington state side of the boundary:—From Midway to Molson, 29 miles; from International boundary to Princeton, 59 miles; Cloverdale to Sumas on the west side of the Cascade mountains, about 27 miles; total, 115 miles. The contractors are Siems and Shields, St. Paul, Minn. The officers of the company are:—President, J. Hendry, Vancouver, B.C.; Vice-President, L. W. Hill, St. Paul, Minn.; Secretary, J. Jeffrey; Treasurer and Assistant Secretary, E. Sawyer; Chief Engineer, J. H. Kennedy, Grand Forks, B.C.; controller, J. G. Drew. (Dec., 1905, pg. 509.)

West Canadian Collieries Co.'s Line.—A spur line, 2,850 ft. in length, of double track, with a double crossing about the centre, has been constructed between the C.P.R. tracks and the Bellevue collieries of the W. C. C. Co. The Bellevue mine is 51.4 miles west of Macleod, Alta.

The Western Lumber and Development Co. will apply next session of the Dominion Parliament for an act giving extensive powers, including the right to construct railways, telegraph and telephone lines, and to charge tolls for the use of the same.

Yonge St., Toronto, Bridge.—A deputation from the Toronto City Council recently had an interview with representatives of the C.P.R. and G.T.R. with respect to the proposed bridge over the railway tracks at the foot of Yonge St., Toronto. The Mayor has given out the following statement:—"Two suggestions were considered; (1) That the railways pay the city a lump sum and let the city build the bridge; \$100,000 was mentioned, but only approximately. (2) That the railways build the bridge and the city take care of any land damage. These are both to be looked into, and the engineers of the railways and city are, in any event, to at once determine more definitely the location and plans of the bridge with a view of minimizing all possible land damages."

Yukon.—Application will be made next session of the Dominion Parliament for an act incorporating a company with authority to construct a standard or narrow gauge railway from the Yukon River, near the mouth of Indian River, along the valley of the latter river to Quartz Creek; thence southeasterly to Dominion Creek, and along Dominion Creek to Arkansas Creek and Lombard Creek; also from the mouth of Quartz Creek to Hunker Creek, along the

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couver, Victoria and Eastern Ry., in B.C., and as the Washington and Great Falls Ry. in Washington, a line between Grand Forks and Vancouver. It was over this line that the great fight with the C.P.R. as owners of the British Columbia and Southern Ry. took place in the House of Commons in 1905. In the end Parliament granted permission to the V., V. and E. Ry., at such points as the contour of the country made it necessary, to connect its lines with those of a U.S. company, and directed that the plans be subject to the approval of the Board of Railway Commissioners. The other piece of construction work in which the company is engaged in Canada, is under the charter of the Brandon, Saskatchewan and Hudson's Bay Ry., the section under construction extending from Brandon southerly to the International boundary, with the object of making a connection with the branch line from Church's Ferry, now terminating at St. John, N.D. The surveys for this line have also been prosecuted from Brandon northerly.

The press reports referred to credit the G.N. Ry. with having completed surveys for connecting its lines in British Columbia with Lethbridge, Alta., and constructing a new line thence to Winnipeg, running its line from Brandon to Hudson Bay, and finally extending its line from Winnipeg easterly to an unnamed port on the Atlantic coast. One paper, however, stated that it was intended to run the line from Winnipeg north of any existing or projected line and make the Atlantic port on Hamilton Inlet. In regard to these projects, L. W. Hill, Vice-President G.N. Ry., is reported to have said in an interview at St. Paul, recently, that the new transcontinental line would be entirely independent of the Canadian Northern Ry., and that it would probably be completed some time before the G.T. Pacific Ry. is built through to the coast. "Our line," he added, "includes only 800 or 900 miles that are still to be constructed west of Winnipeg. We have already secured our own terminals in Winnipeg, and will soon construct an independent line into the city instead of having to run over the Canadian Northern Ry. from Emerson under lease." A letter has been addressed to the Board of Trade by J. J. Hill, President G.N. Ry., in which he promised to visit Winnipeg as soon as possible after May 1, and gave some details of the company's plans. In regard to this letter, A. Strang, President, recently said: "The G.N. Ry. will come into Winnipeg from the east and will continue on through western Canada to the Pacific coast. The Great Northern project," Mr. Hill says, "will begin at a connection from Montreal to Boston. From Montreal west, the line will parallel the Canadian Pacific." A recent despatch from St. Paul, Minn., quotes a leading contractor as saying: "That within 60 days more than 4,000 miles of J. J. Hill's Canadian road would be under contract. While the contract for the road west of Winnipeg," he said, "which we have undertaken, calls for the building of the line to the Pacific coast, there will be no less than 12 branch lines running south into the gold fields, the oil fields and the coal deposits. Of these seven lines will run into northern North Dakota, Montana, Idaho and Washington, and connect with the main line of the Great Northern. These branch lines will touch the great coal fields and the mining centres on the southern Canadian border."

Be these reports true, even in part, there is no doubt that the Great Northern Ry. intends to become an active factor in the railway field in the Canadian Northwest. At present it has surveyors out all over the country; it has purchased land for right of way and terminals in Winnipeg; it is reported to have secured charters in the Dominion Parliament and in the Manitoba Legislature for a large number of lines from the original

local promoters; and is interested in a number of applications for charters to construct railways now before the Legislatures of Saskatchewan and Alberta. The construction of the lines from the International boundary into Manitoba appears to be the immediate object of the company, and of these, U.S. papers report that a line from Emerson, Man., to Winnipeg has been surveyed, and that construction is in progress on the line to connect St. John, N.D., with the Brandon, Saskatchewan and Hudson's Bay Ry., now under construction southerly; and on a line from the International boundary at Neche, N.D., to Portage la Prairie, Man. In connection with the line into Winnipeg, the company is said to have secured the following properties: right of way between Ross and Pacific Avenues from Princess to Neva streets; right of way across Elgin, William and Notre Dame avenues, from Ross Avenue to block 45, St. James; right of way west of the city to the Assiniboine River, through block 45, St. James, property for yards, shops and terminals. The estimated cost of the station, offices, shops, freight sheds and yards is put at \$500,000. Negotiations for land for terminals are in progress at Regina and other points in Manitoba and Saskatchewan.

Reviewing the field of railway construction in Canada, the Railway Age, recently said: "Recently the press has indicated with much positiveness the new transcontinental line which it is declared Mr. Hill has begun to build between Vancouver and Winnipeg, with connections planned as far as the Atlantic. This theory hardly seems tenable. . . . What Mr. Hill doubtless intends to do is to continue the plan of pushing branches from his main line northward into Canada to tap the three trunk lines, and to extend beyond them as the development seems to warrant."

J. J. HILL'S VISIT TO WINNIPEG.

J. J. Hill visited Winnipeg May 15, and remained there until May 18. He was entertained at luncheon by the Canadian Club, at which he made a speech on general transportation topics, and deprecating the giving of bonuses. Subsequently he met a delegation from the Board of Trade, and from various parts of the province, and, in reply to the addresses, made a lengthened speech in which he reviewed the development of the west during the fifty years that had passed since he left Canada, and referred to the opening up of the river route into Manitoba, as well as to the development of railways in which he was interested in conjunction with Sir Donald Smith, now Lord Strathcona. Referring to the railway projects which his company had undertaken in Canada, he said: "We want a good road with low grades. Transportation is nothing but overcoming the laws of gravitation. The nearer the level the road is the easier to run our trains."

"We must help you to get your stuff to market and get it where you can sell it for a price that will make you happy, otherwise you would not continue in business and our investment would not be a good one."

"I hope when we come here we will find our friends east of here ready to carry anything to or from our lines. If they do not, we will try and get along without them. We have no present desire to extend east of Winnipeg. There will always be a large trade with the country south of you."

In an interview subsequently, he said: "Our line, the Great Northern Railway, will be built from the Pacific Ocean to Winnipeg as soon as both the Canadian transcontinental lines, the C.P.R. and the G.T. Pacific Ry., are ready to compete for our freight. From the determination expressed and the work already in progress on the G.T. Pacific you can estimate how long that will be. We will be in a position to forward our freight

over the first trains run eastward by the G.T. Pacific. The possibilities of the Canadian west are almost without limit, and as the country makes the city, Winnipeg must be a great city. There will be as great a population west of the Red River in Canada as in all the rest of the Dominion within a comparatively short time. Our line in the far west from Vancouver will be through the Rocky Mountains to the prairies in one year from this fall. Now that there is no doubt about other railways to the east to carry freight from the west we bring here, work on our line will be proceeded with vigorously. There will be no occasion for more lines north of Lake Superior."

On subsequent days Mr. Hill was met by W. Mackenzie, President Canadian Northern Ry., and F. W. Morse, Vice-President and General Manager G.T. Pacific Ry., for the purpose of discussing the probabilities of arranging joint terminals in the city.

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Great Northern Ry. (U.S.) in Canada.

The daily newspapers in Canada, and a number in the United States have, for some time past, been discussing the extensive railway building and chartering in Western Canada—and more particularly along the International boundary—and have been constructing on paper, not only a large number of branch lines destined to divert the produce of the west from Canadian to U.S. lines, but another transcontinental line in Canada, for the Great Northern Ry. (U.S.). Much of this activity of construction and chartering of new lines is said to be due to the competition of the C.P.R. and the G.N. Ry., and to be a measure of retaliation by the G.N. Ry. for the recent extension of the Minneapolis, St. Paul and Sault Ste. Marie Ry.—a C.P.R. controlled line—in the Dakotas, and the persistent opposition of the C.P.R. to the construction of the Vancouver, Victoria and Eastern Ry.—a G.N. Ry. subsidiary—in British Columbia.

The Great Northern Ry., which has its eastern terminus at St. Paul and Duluth, Minn., extends to the Pacific coast at Spokane, Wash., and, including branches, has a length of about 6,000 miles. The main line for the greater portion of the distance is almost parallel with the International boundary, but from 50 to 100 miles south, and is connected at Emerson and Gretna, Man., with Canadian lines. There are also branch lines running northerly, terminating at Roseau, Minn.; Walhalla, Hannah, Sarles, north of Starkweather, St. John, Dunseith, Antler, Maxbass and Sherwood, N.D. The Great Falls and Canada Ry., extending from Great Falls to the International boundary at Sweet Grass, Alta., was acquired from the Alberta Ry. and Coal Co., in 1902, and was made a standard gauge line the same year, as was also the A. Ry. and Coal Co.'s line from Sweet Grass to Lethbridge, Alta., thus giving another connection at the border. In B.C., however, the G.N. Ry., through subsidiary companies, has a large interest in the following mileages:

	Miles.
Crow's Nest Southern Ry.—Swinton to International boundary, where it connects with the G.N.R. system.....	43.80
Hedlington and Nelson Ry.—From Kuskomook to International boundary, where connection is made with G.N.R. line to Bonnar's Ferry, Wash.....	15.30
Kaskin and Skocan Ry.—This is connected by the International Navigation and Trading Co.'s steamers on a 45 mile run with the B. and N. Ry. at Kuskomook.....	31.80
Nelson and Fort Shepherd Ry.—From Five Mile Point to International boundary.....	55.42
Red Mountain Ry.—From Rossland to International boundary.....	9.59
Vancouver, Victoria and Eastern Ry.—Laurier to Grand Forks, Grand Forks Jet. to Danville, Grand Forks to Phoenix.....	50.10
These three lines are being operated by the Spokane Falls and Northern Ry., a G.N. Ry. subsidiary.	
New Westminster Southern Ry.—South Westminster to Douglas, on International boundary, where connection is made with G. N.R. line to Seattle, Wash.....	24.10
Vancouver, Westminster and Yukon Ry.—New Westminster to Vancouver.....	14.00
Victoria Terminal Ry. and Ferry Co.—Cloverdale to Port Guichon, and 1.14 miles in Victoria.....	18.40
Victoria and Sydney Ry.....	16.26
	278.77

These four lines give the company a direct line between Seattle and Victoria, through New Westminster, and over the leased Fraser River Bridge to Vancouver.

The company at the present time makes connection with Canadian lines at three points of the International boundary, and through its own subsidiary lines runs its trains across the boundary at six other points—operating in connection therewith 1,000 miles of track, and 45 miles of steam, will remain. It is engaged in constructing:

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Midland Ry. of Manitoba.—A party is reported to be in the field making a survey for a line from Carman, Man., to Gretna and Walthalla, N.D., where it is proposed to make connection with the Great Northern Ry., U.S. The company proposes to apply next session of the Manitoba Legislature for an act amending its act of incorporation in several particulars. Application will be made at the current session of the Manitoba Legislature for an act amending the act of incorporation, and authorizing the construction of an additional line from Carman, on the proposed line between Emerson and Portage la Prairie, southerly to the International boundary between range 4 and range 1 west of the 1st principal meridian. Power is also asked to construct telephone and telegraph lines, and for other purposes. (Dec., 1905, pg. 567).

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The Hill Lines in Canada

What is termed the invasion of Canada by J. J. Hill, President of the Great Northern Ry., U.S., continues to form the subject of a great deal of discussion and speculation in press, railway and legislative circles, not only in Manitoba and British Columbia, but at Ottawa. After his visit to Winnipeg, Mr. Hill returned to New York, and on June 3 reached Ottawa. On the following day he was the principal guest at a luncheon at the Canadian Club, and in the course of a speech said as to his own proposed line in the west, all that remained to be built was the portion from the Rocky Mountains to Winnipeg. The heaviest end of the work, from Vancouver to Fernie, has been practically constructed. They expected to be able to retain the title to this line. It had no bond issue, so that the sheriff could not get it. From the Rocky Mountains to Winnipeg was not a far cry. Winnipeg, owing to its position on a comparatively narrow strip of land between Lake Winnipeg to the north, and the Lake of the Woods to the south-east, was, and always would be, the gateway of the Canadian West. When the produce was got to Winnipeg by his lines it could be taken east by the C.P.R., the G.T. Pacific, or the Canadian Northern Ry.; he would be content with either of them. He expected that the lines in which he was interested would be built into Winnipeg before those of the G.T. Pacific Ry. No bonuses were being asked; the lines were being built simply because it was thought they would pay, and all that was asked was for fair play.

In the course of his speech Mr. Hill said that the lines were not being built by the Great Northern Ry., U.S.; they were being built by independent companies with money supplied by himself and his associates, and would be completed without any bond issues or the issue of other securities. Bonuses were not asked for, as it was his opinion that they were no great help to a line; and that if a line could not be made pay without a bonus, there was no great necessity why it should be built at all.

The construction of the Brandon, Saskatchewan and Hudson's Bay Ry., from Brandon, Man., to the International boundary is being rapidly proceeded with. It is expected that the grading will be completed by Aug. 1. Tracklaying will be rushed forward, and it is hoped to have the line in readiness to haul part of the current season's crops. The grade is less than 1%, and the work is being done to the best standards. The construction of the bridge across the Souris River is well advanced, and the 200 ft. span will be placed in position at an early date. From Brandon the line parallels the C.P.R. main line for some distance, then turns almost due south, crossing the C.P.R. Glenboro branch at Carrol; the Canadian Northern Ry. at Minto, and the C.P.R. at Boissevain; thence to the boundary, where it will connect with a line now under construction from the G.N. Ry. at St. John, N.D. The question of terminals at Brandon has been under discussion for some time, the negotiations having

been in charge of Jas. Fisher, K.C., Winnipeg; and M. J. Costello and G. J. Ryan, of St. Paul, Minn. The company desires to secure the closing of 12th St. and Pacific Avenue, so as to provide for the erection of the station and the laying out of yards. Nothing has been arranged with regard to construction northerly of Brandon.

At Gretna, Man., the Midland Ry. of Manitoba is arranging to lay out a large yard. A branch of the G.N. Ry. terminates at this point and makes connection with the C.P.R. The Midland Ry. Co. has a charter from the Manitoba Legislature to construct a number of lines throughout Manitoba. The charter was obtained in the interests of C. S. Mellen, formerly President Northern Pacific Rd., which, prior to 1901, operated railways in Manitoba. Jas. Fisher, K.C., is also solicitor for this company. The Railway Commissioners have granted this railway permission to cross the Canadian Northern Ry. tracks at Carman. Work is also being carried on by Farelly Bros. upon a line between Alexander and Miniota, Man.; and contractors are at work in other sections of the country in a line with this. Local reports state that this line is the Hill main-line from Winnipeg westward.

There are a number of provincial and Dominion charters under which the lines mentioned by Mr. Hill could be constructed, but the Brandon, Saskatchewan and Hudson Bay Ry., and the Midland Ry. of Manitoba, are the only two under which at the present time Mr. Hill and his associates are definitely known to be acting in Manitoba.

Upon the Vancouver, Victoria and Eastern Ry. work is being pushed on the extension from near Laurier, B.C., to Princeton, B.C., via Oroville, Wash., and it is expected to get it completed within two years. On the portion of the line between Princeton and Vancouver, a number of construction parties are reported to be making considerable progress. This portion of the line does not present any difficult engineering problems, such as are being experienced in the more mountainous regions. Chief Engineer Kennedy, of the V. V. and E. Ry., stated recently that the company will build a branch line up the north fork of the Kettle River, to the Pathfinder Mine, a distance of 16 miles. It is also reported in railway circles that the Hill interests have secured a controlling interest in the Shawan and Okanagan Ry., a present operated line run by the C.P.R. and the charter of the Midway and Vernon Ry. The promoters of this latter line made a demonstration of construction in 1905, at the time the V.V. and E. Ry. and the C.P.R. contractors were fighting about the right of way between Midway and Rock Creek.

Another railway charter, with which the Hill interests are more or less connected, is the Vancouver, Westminster and Yukon Ry., which is applying at the current session of the Dominion Parliament for an act conferring extensive powers for the construction of additional lines. The company already has power to construct lines from Vancouver to New Westminster, B.C.; from some point on this line northerly to Hazelton, or some other point on the Skeena River, on to Dawson, and to the western boundary of the Yukon Territory. Of these the line from Vancouver to New Westminster has been constructed and is being operated by the Spokane and Northern Ry., a G.N. Ry. subsidiary. The new lines for which power is now being asked are: from between Anderson and Green Lake, passing Lillooet Lake, Lillooet River, and Harrison Lake, south-easterly to the International boundary; from the projected main line between Lillooet and Quesnelle easterly through the basin of Quesnelle Lake to the Tete Jaune Cache; from the projected main line between the Cottonwood and Willow Rivers south-easterly to Barkerville; from near Willow River easterly to the Fraser

River, Tete Jaune Cache, through the Yellowhead Pass, and thence by the most convenient route to Edmonton, Alta. These proposals brought about a good deal of discussion in the Senate, and an amendment was adopted by which all railways reaching the Yellowhead Pass are to have running right over the line through the pass, subject to the order of the Railway Commissioners (See: Brantford, Saskatchewan and Hudson Bay Ry., Dec., 1905, pg. 561; Great Northern Ry. (U.S.), June, pg. 321; Midland Ry. Manitoba, April, pg. 193; Midway and Vernon Ry., May, pg. 255; Vancouver, Victoria and Eastern Ry., Mar., pg. 133; Vancouver, Westminster and Yukon Ry., Feb., pg. 65.

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Great Northern Ry., U.S.—Nothing in the way of an official announcement has been made in regard to the operation of the various lines which the Hill interests have under construction in Canada. The daily gossip in the newspapers is persistent in setting forth the view that the primary object of the construction of the lines is to divert the grain traffic of the Canadian Northwest from Canadian channels to Duluth, Minn. This view was brought up in the House of Commons, and led to considerable opposition to some of the bills respecting the lines. It was stated in the course of the discussion that there was room enough and traffic enough for all the lines, and that when the Hill lines had brought the share they obtained east to Winnipeg, it did not make any difference whether it went to the seaboard by the C.P.R., the Canadian Northern Ry., or the G.T. Pacific Ry. The newspapers say that J. J. Hill is too good a railway man to collect traffic for other lines to handle, and that if he is not going to build easterly, at least to Lake Superior, he must be going to switch the traffic into the United States; unless, as one newspaper suggests, he is going to construct a canal to give a 25 ft. navigation between Winnipeg and Lake Superior. A bill to provide a navigable waterway not only from Lake Superior to Winnipeg, but to the headquarters of the Saskatchewan River, was presented to the House of Commons within the last few years, but nothing came of it.

Of the various lines under construction, tracklaying is reported to have commenced on the Brandon, Saskatchewan and Hudson Bay Ry., at the International boundary north of St. John, N.D., and to be proceeding rapidly. Work is also being pushed on the Midland Ry. of Manitoba at various points, and also on what is understood to be the main line from Winnipeg to connect with the lines in British Columbia. Reports from British Columbia state that the work on the Vancouver, Victoria and Eastern Ry. is being pushed ahead as fast as possible. A number of the G.N.R. officials were at New Westminster and Vancouver recently in connection with Vancouver, Westminster and Yukon Ry., and Victoria Terminal Ry. and Ferry Co.'s affairs; and it is reported that the construction of a large hotel has been authorized at Vancouver, and of a station at New Westminster.

The Victoria Terminal Ry. and Ferry Co. was authorized at the last session of the British Columbia Legislature to construct a railway from near Mud Bay, on the mainland section of its line, to the International boundary near Blaine, and to connect it with the line of the Seattle and Montana Rd. It is also provided that the line may be leased or sold to the Vancouver, Victoria and Eastern Ry. and Navigation Co. (July, pg. 383).

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States subjects. As we are not U.S. but British subjects, ambitious to build up a British nation on this continent, our policy has hitherto been to confine Canadian traffic as far as possible within Canadian channels, just as, since 1879, we have endeavored to do our own manufacturing. There was no other way by which we could hope to solidify the country.

The Intercolonial, which has cost \$80,000,000, was the first railroad built from east to west to serve this great political object. The Grand Trunk united Upper and Lower Canada, but in a commercial rather than a political sense. Then came the Canadian Pacific, built primarily to connect the Northwest and British Columbia with Old Canada. Though its eastern division traverses Maine, it does so in the interests of St. John and Halifax. As a Canadian line, it was obliged to build along the north shore of Lake Superior, a more or less hopeless wilderness 600 miles wide, and to face the enormously expensive work involved in crossing at right angles the mountain ranges of British Columbia. The Canadian Northern, a commercial and, as yet, local railway, has been built from east to west within Canadian territory in order that its traffic may be handled by Canadian lake and ocean ports. The Grand Trunk Pacific is to run in the same direction and on Canadian soil all the way from Moncton to the Pacific, for the same purpose. The cost of these four roads, counting public and private expenditure, will approach \$500,000,000.

With the same determination to make herself independent of the United States, Canada has built canals between Montreal and Sault Ste. Marie at a cost of \$100,000,000. There were some who argued that, instead of going to so much expense, she should use the Erie, Oswego and Champlain canals to reach New York with her products, but they were promptly overruled. In addition Canada has spent many millions of public and private capital in dredging channels, improving harbors and building elevators, docks and ocean steamships in the belief that Canadian traffic, including that of the West, would be preserved for Canadian ports. When Mr. Blake and Sir David Macpherson suggested that the Canadian Pacific should commence opposite Pembina, N.D., on the U.S. boundary south of Winnipeg, and going up to Winnipeg and Selkirk, cross the prairies and mountains to the Pacific ocean, its eastbound freight being turned over to the U.S. lines at Pembina, they found few sympathizers. Liberals as well as Conservatives in Old Canada asked, "Why should we tax ourselves for so great an enterprise if the U.S. people are to be the principal beneficiaries—if Montreal and Quebec, Halifax and St. John are to be cut out of the export and import traffic?"

Canada's policy in these vital matters is apparently about to be reversed. Some time ago, with Mr. J. P. Morgan's assistance, J. J. Hill consolidated the Northern Pacific with his own road, the Great Northern. They are still separate corporations in name but are both under his immediate control. At present he taps Canadian territory between the Red River and New Westminster at a dozen different points, nine or ten other branches run to within a few miles of the boundary, and he is building a main line through British Columbia, which is to be extended eastward, he says, to Winnipeg. All these roads are or will be feeders of the Northern Pacific and Great Northern, and all the Canadian traffic they bring down will be carried to U.S. ports. When Mr. Hill has fully executed his plans, the Northwest and British Columbia will be much more closely attached to the U.S. than to Old Canada, so far as railway communication is concerned.

Mr. Hill is a veteran campaigner. He knows how to appeal to human nature. His promise to spend \$30,000,000 on his road from Fernie to Winnipeg, \$25,000,000 on the Vancouver, Victoria & Eastern, and an indefinite sum on his new spurs in Manitoba, has, of course, aroused much enthusiasm in Manitoba and British Columbia. His announcement that Canadian hard wheat is about to be admitted free into the U.S. is another happy stroke of the same kind. If Mr. Hill is to be believed, one purpose of his in thus entering Canadian territory is to feed the Canadian Pacific and Grand Trunk Pacific. However, by carrying their traffic for shipment to U.S. lake and ocean ports, he will seriously impoverish the Canadian roads, besides doing great damage to Port William, Midland, Depot Harbor, Owen Sound, Montreal, Quebec, St. John and Halifax.

Taking the Northern Pacific and Great Northern together Mr. Hill now has lines reaching the Canadian boundary, or to within a short distance of it, at the following points: 1. From the Great Northern main line to Greenbush, near Warroad, on the Canadian Northern, at the south end of Lake of the Woods. 2. From the Northern Pacific to Pembina, two spurs from the Great Northern to Emerson and Greta, further west. 3. From the Great Northern to Wallhalla, Hannah, Hansboro, Thorne, Sarles, St. John, Bottineau and Sherwood, all separate spurs. 4. From the Great Northern to the boundary at Sweet Grass (Coutts) and thence to Lethbridge. 5. From the Great Northern, separate spurs to Fernie, Kootenay Landing by way of Creston, Nelson, Kaslo and Sandon, Rossland, Grand Forks and Midland. 6. A Northern Pacific line from Mission Junction, B.C., to Seattle and Portland, together with a Great Northern line from New Westminster and Vancouver to the terminus of the main line at Seattle. In other words, Mr. Hill has already tapped Canadian territory at 12 or 13 different points, and is within striking distance of the boundary at nine more.

His entrance into Canada is of vital moment not only to the Canadian transcontinental railroads, but to Canadian lake and ocean ports as well. Canada has sunk a vast amount of public money in all three, and private capital has sunk more. Canadian ocean ports, Montreal and Quebec, St. John and Halifax, have been handicapped in various ways from the beginning. The navigation laws, whereby none but British bottoms were allowed to participate in the colonial trade, were the cause of excessively high outward ocean rates from Quebec down to their repeal 60 years ago, with the result that a great deal of the produce of Upper Canada destined for Europe was sent by way of the Erie Canal to New York. Nature is somewhat unkind. For five months of the year the St. Lawrence is icebound, and business has to be transferred to St. John and Halifax. Such a break in the continuity of trade is, of course, a very serious matter for Montreal and Quebec. Halifax and St. John are excellent winter ports, but geography is against them, since the Ontario exporter and importer finds it cheaper to use Portland, Boston, and New York, which are considerably nearer. Marine insurance favors the U.S. and discriminates against Canadian ports, more especially in the fall, when export grain is going out. The Welland and St. Lawrence canals, on which \$100,000,000 has been spent, are not deep enough to accommodate the modern type of steam vessel employed on the upper lakes, the result being that a considerable percentage of wheat grown in the Canadian Northwest, and the great bulk of that grown in the Northwestern States, reaches the Atlantic by way of Buffalo and New York or by other U.S. routes, and is lost to Mon-

treau. Ocean traffic at Montreal is crippled to some extent by inadequate harbor accommodation as well as by the danger involved in taking the larger vessels up the St. Lawrence. This will be improved with the deepening and widening of the channel; meanwhile the port of Montreal is suffering from those drawbacks and must for some time yet continue to suffer. Great sums are and have been spent by the U.S. Government in improving the harbors of New York, Boston, Portland, Baltimore, Newport News, Philadelphia, etc. As the efficiency of those seaports increases, they become more and more formidable competitors of Canadian summer and winter ports.

In giving J. J. Hill the free run of the Northwest and British Columbia, thereby enabling him to carry their traffic south, Canadian ports will be dealt a hard blow. When the Government chartered the Grand Trunk Pacific, it did what it could to prevent the diversion of traffic to Portland. But what will that avail if traffic is to be switched south to the U.S. seaboard at the points of origin? The question is one of momentous importance to eastern Canada and its ports. They believe they have a better right to handle Canadian traffic than Mr. Hill's railways, than Duluth and Buffalo, New York and Boston. In taking this ground eastern Canada cannot be accused by the U.S. of narrowness of spirit. Its wish is simply to retain Canadian business in Canadian channels, on which a vast amount of money, public and private, has been spent; just as the U.S. people keep their home market to themselves by means of a high tariff wall, and their coasting trade to themselves by prohibiting Canadian vessels from trafficking between one U.S. port and another. *Railroad Gazette.*

The writer of this article is not quite correct in his reference to the Canadian Northern, which he speaks of as having been built from east to west within Canadian territory. As a matter of fact, the main line of the Canadian Northern passes through northern Minnesota, U.S.A., between the Rainy River, Ont., the International boundary between Ontario and the U.S. and the International boundary in southeastern Manitoba. —Editor.

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The Great Northern Railway (U.S.A.) in Canada.

By J. A. Macdonald, C.E.

Mr. Hill's invasion of Canada is now an assured fact. Western Canada, from Manitoba to the coast, hails his advent with the greatest enthusiasm. The West wants all the railway competition possible, and cares not whence it comes. What further accentuates Mr. Hill's welcome in the West is the large number of his old neighbors from Dakota, Montana and Minnesota, who are now settled and settling there. But if the West hails the invasion of Mr. Hill with such evident delight, Old Canada does not nor do the Canadian railways. Their cry is, "Canada for the Canadians."

Had Canada and the United States been under one flag since 1770, it is safe to say the main lines of Canadian railways would have been built from north to south rather than from east to west. Starting at British Columbia, we should have had roads running, not diagonally across the mountains, but down the valleys into Washington, Oregon, California, Idaho and Montana. The wheat of the Northwest would have been carried to Minneapolis and Duluth and the north shore of Lake Superior given a wide berth. It would not have been necessary to bring the Intercolonial to Levis or Montreal. Montreal and Quebec would have been the summer ports, but in winter the provinces of Quebec and Ontario would have used Portland, Boston and New York, nearer to them than St. John or Halifax. This would in all probability have been the state of things now existing had we been United

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7519

8715
Vancouver, Victoria and Eastern Ry.—Reports from the Pacific coast state that it is expected to have trains in operation on the section of the line between Midway, B.C., and Oroville, Wash., by the end of Oct. The distance between these points is 60 miles, and tracklaying is said to have been progressing at the rate of a mile a day for some time past. Work on other sections of the line is also being proceeded with rapidly. There arrived at Vancouver, Aug. 31, from Sydney, N.S., a cargo of 6,000 tons of 75 lb. steel rails for use in the Fraser River valley section of the line. On the heavy grades in the mountains 85 lb. steel is being laid. A survey party under W. W. Amburn, who had just completed a reconnaissance of the Similkameen River route through the Hope mountains, is engaged in making a survey of the country on the divide between Silver Creek and Fraser River. (July, pg. 381.)

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7529

Brandon, Saskatchewan and Hudson Bay Ry.—Track has been laid on a considerable mileage from the International boundary towards Brandon, Man., and a train service is being operated to Alcester. Tracklaying is being gone on with on other portions of the line, and it is expected to have a train service in operation from the International boundary to Brandon before the end of the year. (July, pg. 379).

October 1906

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Great Northern Ry. (U.S.).—Orders are reported to have been given for the construction of a branch from Ayr, westerly through the Willow Lake country, to cross the Cheyenne River, and strike the Coopers-town branch of the Minneapolis, St. Paul and Sault Ste. Marie Ry. between Coopers-town and Rogers, Minn. From this point it will parallel the main line of the M., St. P. and S.S.M. Ry. to Minot. There is under construction a branch line from near Minot running north parallel with the M., St. P. and S.S.M. Ry. to the International boundary.

Reports from the Pacific coast state a new line from Spokane to Puget Sound ports, by way of Portland, Wash., is being surveyed and that construction will be pushed forward with all speed. The new road will cut out all the gradients of the

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Vancouver, Victoria and Eastern Ry.—A large quantity of construction material has been delivered at Cloverdale, B.C., where a large yard is being laid out for the construction of a section of the line easterly from this point. The right of way for a considerable mileage has been acquired and it is reported that construction will be started at once. Tenders have been called for the construction of 50 miles of line easterly from Cloverdale, B.C. The grading on the section of the line between Midway, B.C., and Oroville, Wash., is reported completed, and it is expected that tracklaying will be completed in a month. This piece of line is reported to have been a most difficult one to construct. Midway has an elevation of 2,100 ft. above the sea level; Molson, at the summit of the mountain, is 3,703 ft.; and nine miles below is Oroville, only 900 ft. To get down from Molson to Oroville requires a maximum gradient of 2%. It takes 27 miles of railway to reach Oroville from Molson, a distance of nine miles as the crow flies. (Oct., pg. 385).

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\$641

Hill Lines in Canada.--A contract has been let to Neil & Moody, of Warroad, Minn., for the clearing of the right of way secured in Winnipeg, Man., for the J. J. Hill railway interests. The site includes a large area of land on Ross avenue, and it is stated that on the land to be cleared there are about 800 buildings, including a number of wholesale warehouses. The work is to be gone on with at once, and it is expected that construction of the railway into Winnipeg will be gone on with in the spring. (July, pg. 383).

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Vancouver, Westminster and Yukon Ry.—Plans have been filed in the registry office at Vancouver, B.C., showing the company's proposals for water front terminals. A frontage of nearly a mile in length has been secured, and the plans show large wharves for ocean-going vessels, with a railway line skirting the east end of False Creek along Raymond Avenue to Burrard Inlet. Notice of expropriation proceedings has not been filed.

The survey of the projected line from Vancouver northerly is reported completed as far as Squamish, and arrangements have been made for the construction of a bridge across the Second Narrows. Press reports from Vancouver state that it is expected to let contracts for the construction of the first 40 miles early in Jan. (July, pg. 381).

White Pass and Yukon Ry.—The plans under consideration for the betterment of the line include the elimination of wooden bridges and the substitution of gravel fills. Where necessary these are made by the construction of concrete walls to hold the gravel in place. Some improvements in curvature are also contemplated, but it is not intended to do very much in this way until the bridge work has been renewed. (June, pg. 327).

Winnipeg and Galveston Ry.—This company has filed an amendment to its charter in Oklahoma increasing the capital stock to \$60,000,000. The road is projected from Winnipeg, Man., to Galveston, Tex., and the route in Oklahoma is through the counties of Grant, Garfield, Logan, Kingfisher, Cleveland and Pottawatomie. The directors are: A. H. McMahon, Wakita, Okla.; W. M. McGibbon, Gibbon, Okla.; W. O. Jones, Wakita, Okla.; J. A. Koontz, Hutchinson, Kan.; T. C. Spaulding and H. V. Goodrich, Kansas City; J. H. Ledgerwood, Denver; Grant Dale, A. G. C. Bierer, Robert Sohlberg and B. F. Hegler, Jr., Guthrie, Okla.

Winnipeg Terminals.—Notice is given by Z. A. Lash, solicitor for the Canadian Northern Ry., and W. H. Biggar, solicitor for the Grand Trunk Pacific Ry., that application will be made at the current session of the Dominion Parliament for an act confirming an agreement between those companies relating to joint terminals at Winnipeg, empowering the parties to carry out and enforce the terms thereof, and conferring upon the Canadian Northern Ry. the necessary powers of issuing securities to raise the moneys required for expenditure upon the terminals. S. N. Parent, Chairman of the National Transcontinental Ry. Commission, stated, Nov. 9, that the agreement had not been finally approved of, but it was expected that it would be completed at another meeting of the interested parties.

Wolfe, Megantic and Lotbiniere Ry.—An agreement is said to have been made for the sale of the charter and franchises of the company to the Lotbiniere and Megantic Ry. for \$1,000. The L. and M. Ry. may take advantage of the agreement any time within 12 months from Aug. 8, 1906, but upon acceptance agrees to proceed with the survey of the extension from Lyster station to Lime Ridge, Que., as soon as the right of way is voted by the municipalities, and that the extension shall be completed to St. Ferdinand d'Halifax within two years of the voting of the right of way. The shareholders of the W., M. and L. Ry. met at Inverness Que., Oct. 29, to ratify the agreement.

Yonge St. Bridge.—The Toronto City Council has agreed on a payment of \$100,000 by the railway companies toward the construction of a bridge across the Esplanade at the water front of Yonge St. The question of the future maintenance of the bridge is undecided. A vote of the ratepayers will be taken at the annual elections upon a by-law authorizing the raising of the funds necessary to construct the bridge. (Aug. pg. 457).

Railway Rolling Stock Notes.

The Quebec, Montreal and Southern Ry. will, it is said, shortly place orders for locomotives.

The Colchester Coal and Ry. Co., Parrsboro, N.S., is in the market for a 40 ton second-hand locomotive.

The Dominion Coal Co. is having a six-wheel switching locomotive built by the Locomotive and Machine Co. of Montreal.

The Intercolonial Ry. has received two wing elevator plows and one double track plow from Rhodes, Curry & Co., Amherst, N.S.

The Prince Edward Island Ry. has sold one of its locomotives to Mr. Reid, Avondale, P.E.I., who will utilize it for driving the machinery at his lumber mill.

The Central Ontario Ry. has placed an order for 20 box cars, 60,000 lbs. capacity, the general specifications being similar to those ordered by the G.T.R., and referred to in Sept. issue, pg. 513.

The Canadian Northern Ry.'s order for 200 Hart convertible cars mentioned in our last issue as having been given to the Canada Car Co., was given to the Dominion Dump Car Co. The cars are being built by the Canada Car Co. ♡

The C.P.R. between Oct. 14 and Nov. 13 placed orders for the following rolling stock at its Angus, Montreal, shops: two switching locomotives, four tourist cars, one mail and express car, one colonist car, 65 box cars, 45 flat cars, and 10 stock cars.

The Canadian Locomotive Co., Kingston, Ont., has recently delivered two 10-wheel locomotives to the Canadian Northern Ry., two 6-wheel switching locomotives to the Temiskaming and Northern Ontario Ry., and three switching locomotives to the Intercolonial Ry.

The C.P.R. between Oct. 14 and Nov. 13 received the following rolling stock: five locomotives, two sleeping cars, five first-class cars, three colonist cars, 25 box baggage cars, and 520 box cars from its Angus, Montreal, shops; and two vans from its Barnham, Que., shops.

The G.T.R. has decided to make an experiment with a smoke consuming device on one of its switching locomotives in the Toronto yards, and if it is successful will equip all its locomotives. The C.P.R. was recently investigating the possibilities of smoke consuming devices for its locomotives.

A. Patterson, C.P.R. Master Mechanic at Medicine Hat, Alta., has fitted up a dummy engine with a view of testing natural gas as a fuel. In a pit underneath the locomotive is fixed a set of car wheels which revolve beneath those of the locomotive and so enable tests of speed to be made. Storage tanks for the natural gas are being made at Montreal with a view of being fitted to a locomotive so that tests can be made in actual running.

The G.T.R., we were advised Nov. 12, had, within the previous 60 days placed orders for the following rolling stock: 1,000 steel coal cars, 100,000 lbs. capacity; 1,250 box cars, 60,000 lbs. capacity; 1,500 flat cars, 60,000 lbs. capacity; 250 furniture cars, 60,000 lbs. capacity; 300 single deck stock cars, 60,000 lbs. capacity; 200 double deck stock cars, 60,000 lbs. capacity; and 300 ballast cars, 100,000 lbs. capacity. It was also expected to place within the next few days thereafter, orders for 500 refrigerator cars, 60,000 lbs. capacity.

The Quebec, Montreal and Southern Ry. (owned by the Delaware and Hudson Rd.), has ordered 1,500 steel underframe box and stock cars from the Canada Car Co., Montreal. The cars are to be 60,000 capacity, and will be similar in size and construction to those of

the Delaware and Hudson Rd. The car company will begin the deliveries in Feb., 1907. The Dominion Steel Car Co. will supply the structural steel underframes for the 1,400 box cars and 100 stock cars, which will be equipped with Simplex trucks and castings, brakebeams and truck bolsters.

We were advised recently that a report had not been received by the Department of Railways from G. R. Joughins, Superintendent of Motive Power, Intercolonial Ry., upon his recent inspection of motor cars in Europe. He was at Ottawa upon his return and discussed the matter at some length with M. J. Butler, Deputy Minister. No definite conclusions can be reached until the report has been prepared and has been fully considered. The motor cars on the Great Western Ry. of England, the Department has been advised, have reached a higher degree of efficiency than those in service upon any other railway in the world. It is quite possible that the Department will adopt, so far as they are practicable for Canadian requirements, the solutions reached by the Great Western Ry.

Following are general specifications of the 15 consolidation locomotives for which the Canadian Northern Ry. has placed an order with the Canadian Locomotive Co.:

WEIGHT.—In working order, on drivers, 151,000 lbs.; total, 170,000 lbs.
WHOLE BASE.—Engine, 15 ft. 6 in.; total, 23 ft. 6 in.; engine and tender, 56 ft.
HEATING SURFACE.—Firebox, 176 sq. ft.; tubes, 2,259 sq. ft.; total, 2,435 sq. ft.
WHEELS.—Diameter, 57 in.; material of centre: cast steel, others cast iron; diameter and length of driving journals, 9 by 12 in.
CYLINDERS.—Diameter, 21 in.; stroke, 26 in.
BOILER.—Type, extended wagon top; working pressure, 200 lbs.; number of tubes, 300; diameter, 2 in.; length, 14 ft.
BRAKES.—Westinghouse combined automatic and straight air.
TENDERS.—Weight loaded, 140,000 lbs.; tank, 6,000 imperial galls. water; coal capacity, 12 ton truck, 4-wheel; diameter of wheel, 33 in.; kind of wheel, cast iron chilled tread; journals, 5½ by 1 in.; brake beam, Simplex.

The G.T.R. was opened on Oct. 27, 185 as far westward as Stratford, Ont., at which point there was a public celebration.

Application will be made next session of the Saskatchewan Legislature for an act incorporating the Moose Jaw Railroad and C. V.M.C.A.

It has been decided to hold the annual conventions of the Master Mechanics' and Master Car Builders' Associations for 1907 at Atlantic City, N.J., in June.

The Merchants Line, Montreal, is reported to be negotiating for the purchase of the Anchor Line str. Japan, to be placed on the Toledo-Montreal route in conjunction with the Bickerdike.

The Kingston, Ont., Board of Trade has passed a resolution inviting other similar organizations in the Dominion to petition the Dominion Government to deepen the W. land Canal, so as to allow of its navigation by the larger vessels now operating on the Upper Lakes.

The C.P.R. action against the Ottawa Fire Insurance Co. has reached the Supreme Court. The C.P.R. held a policy insuring it against damages caused by locomotives to property in the State of Maine, not including company's own property. A quantity of standing timber was destroyed by a started by sparks from a C.P.R. locomotive. The company indemnified the owners of the timber, but the Ottawa Fire Insurance refused to reimburse the C.P.R. on the ground that its charter did not authorize it to insure standing timber. The C.P.R. thereupon sued for the amount paid damages, or in the event of the policy being invalid, for a return of the premiums paid with interest. Upon the first trial the court found for the fire insurance company.

Midland Ry. of Manitoba.—It is expected that this line will be completed and opened for traffic early in Dec. The line is 77.01 miles long, and extends from a junction with the Great Northern Ry. U.S., branch from Grand Forks to Neeche, N.D., to Portage la Prairie, Man. It passes through Plum Coulee, Roland, Carman, and Magnas. (Nov., pg. 641). See also Great Northern Ry., U.S.

December 1906

p 713

RAILWAY AND MARINE WORLD

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itoba. (Nov., pg. 639).

rest

December, 1906

Vancouver, Victoria and Eastern Ry.—The map attached to the annual report of the Great Northern Ry., U.S., shows the sections of this line and its U.S. connection, the Washington and Great Northern Ry., which have been completed, and the route as located or projected into Vancouver, B.C. The line starts at Marcus, Wash., and runs over the B.C. boundary in the vicinity of Grand Forks, then back into the U.S. to Curlew; once more into B.C. to Midway, and thence to Oroville, Wash., to which point it has just been completed. From Oroville the boundary will be crossed again, and for the last time. The located route follows the Similkameen valley past Keremeos and Princeton and southerly of Black Mountain; thence southerly, gradually approaching the Fraser River to Agassiz, and thence to Cloverdale. At this point the line will connect with lines constructed under the charters of the Vancouver, Westminster, and Yukon Ry., and the Victoria Terminal Ry. and Ferry Co., as well as the Great Northern Ry. line from Blaine. The line from Blaine connects over the Fraser River bridge, built by the Provincial Government, with the V.W. and Y. Ry. line from New Westminster to Vancouver, and the V.T. Ry. line extends from Cloverdale to Port Guichon, from which ferry connection is maintained with the Victoria and Sidney Ry. on Vancouver Island. The line westerly to Oroville is expected to be put in operation by Jan. 1, and construction is reported to be in a forward state as far as Keremeos. J. H. Kennedy, Chief Engineer V.W. and Y. Ry., and A. H. Hogeland, Chief Engineer Great Northern Ry., inspected the construction in progress recently, and had a consultation at Keremeos with A. E. Baldwin, who has charge of the surveys in progress west of Princeton. It is reported from Cloverdale that a contract has been let to the British Columbia General Contract Co. for the construction of a line from Cloverdale easterly to Abbotsford; that a contract has been let for a line 32 miles in length from Cloverdale, B.C., to Sumas, Wash.; and for a new line 22 miles in length from Blaine, Wash., to New Westminster, B.C. This latter line, it is reported, will run along a stretch of low coast land, thus avoiding steep grades further in shore. G. O. Loss & Co., G. B. Bright, and Ironsides, Rannie & Campbell are reported to have sub-contracts upon the line. (Nov., pg. 641). See also Great Northern Ry., U.S.

December

1906

P 715

Brandon, Saskatchewan and Hudson Bay Ry.—Tracklaying was completed from the International boundary to Brandon, Man., 69.45 miles, Nov. 3. At the boundary the line connects with the branch of the Great Northern Ry., U.S., heretofore having its terminal at St. John, N.D., and the present terminus in Brandon is near 18th street. Work is in progress in laying out terminals, ballasting and otherwise finishing up the line. It is expected that a passenger service will be put in operation early in Dec. (July, pg. 379). See also Great Northern Ry., U.S.

December 1906

7711

Great Northern Ry. (U.S.).—The annual report for the year ended June 30, contains information as to the construction completed and at present in hand upon various parts of the system. The total tracks of all kinds in the system, including lines operated independently, is 7,763.76 miles; the total miles of road being 6,289.67, an increase of 179.25 miles during the year. Under the charter of the Dakota and Great Northern Ry. there were constructed 131.34 miles, including a branch from Towner to Maxbrass, 46.13 miles; a branch from York to Thorne, 34.68 miles, and the following extensions: Westthorpe to Antler, 12.76 miles; Munich to Sarles, 20.53 miles; St. Johns to International boundary, 3.88 miles; Ellendale to Forbes, 13.30 miles. The two new branches extend northerly towards the International boundary, and the extensions either bring existing branches nearer to, or run them parallel with the International boundary. The extension from St. John is in connection with the construction of the Brandon, Saskatchewan and Hudson Bay Ry. Under the charter of the Washington and Great Northern Ry. the line from Carlew to Ferry, at the International boundary, B.C., was completed and opened for traffic Dec., 1905. The other increases of mileage are on lines away from the Canadian boundary. The Vice-President's report gives the following particulars as to construction in hand: The works on the line being built by the Washington and Great Northern Ry. Co., and the Vancouver, Victoria and Eastern Ry. and Navigation Co. from Midway to Keremeos, B.C., which was described in last year's report as in progress, has been continued. Grading is nearly completed, and tracklaying commenced June 20. The Minnesota and Great Northern Ry. Co.'s extension from Greenbush to Warroad, Minn., a distance of 44 miles, is graded, but track will not be laid this fall. This line will connect with the Canadian Northern Ry. at Warroad, Minn. A line is also under construction, under the charter of the Dakota and Great Northern Ry., from Berthold to Crosby, 89 miles, which it is expected to have completed by Dec. 1, and an extension from Thorne to Dunseith, N.D., 7 miles, was opened in Oct.

The Brandon, Saskatchewan and Hudson's Bay Ry., from a connection at the International boundary with the Dakota and Great Northern Ry. Co.'s extension from St. John, N.D., to Brandon, Man., 69.45 miles, was expected to be completed by Nov. 1. This line runs through a fine country, already well developed and farmed. The Midland Ry. Co. of Manitoba, from a connection at Neche on the International boundary with the St. Paul, Minnesota and Manitoba Ry., to

December
1906
2713

Brandon, Saskatchewan and Hudson Bay Ry.—Tracklaying was completed from the International boundary to Brandon, Man., 69.45 miles, Nov. 3. At the boundary the line connects with the branch of the Great Northern Ry., U.S., heretofore having its terminal at St. John, N.D., and the present terminus in Brandon is near 13th street. Work is in progress in laying out terminals, ballasting and otherwise finishing up the line. It is expected that a passenger service will be put in operation early in Dec. (July, pg. 379). See also Great Northern Ry., U.S.

December 1906

P711

Great Northern Ry. (U.S.).—The annual report for the year ended June 30, contains information as to the construction completed and at present in hand upon various parts of the system. The total tracks of all kinds in the system, including lines operated independently, is 7,703.76 miles; the total miles of road being 6,289.67, an increase of 179.25 miles during the year. Under the charter of the Dakota and Great Northern Ry., there were constructed 131.34 miles, including a branch from Towner to Maxbrass, 46.13 miles; a branch from York to Thorne, 34.68 miles, and the following extensions: Westthorpe to Antler, 12.76 miles; Munich to Sarles, 20.53 miles; St. John to International boundary, 3.88 miles; Ellendale to Forbes, 13.36 miles. The two new branches extend northerly towards the International boundary, and the extensions either bring existing branches nearer to, or run them parallel with the International boundary. The extension from St. John is in connection with the construction of the Brandon, Saskatchewan and Hudson Bay Ry. Under the charter of the Washington and Great Northern Ry. the line from Carlew to Ferry, at the International boundary, B.C., was completed and opened for traffic Dec., 1905. The other increases of mileage are on lines away from the Canadian boundary. The Vice-President's report gives the following particulars as to construction in hand: The works on the line being built by the Washington and Great Northern Ry. Co., and the Vancouver, Victoria and Eastern Ry. and Navigation Co. from Midway to Keremeos, B.C., which was described in last year's report as in progress, has been continued. Grading is nearly completed, and tracklaying commenced June 20. The Minnesota and Great Northern Ry. Co.'s extension from Greenbush to Warroad, Minn., a distance of 44 miles, is graded, but track will not be laid this fall. This line will connect with the Canadian Northern Ry. at Warroad, Minn. A line is also under construction, under the charter of the Dakota and Great Northern Ry., from Berthold to Crosby, 89 miles, which it is expected to have completed by Dec. 1, and an extension from Thorne to Dunseith, N.D., 7 miles, was opened in Oct.

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December
1906

p 713

THE RAILWAY AND MARINE WORLD

Portage la Prairie, Man., 77.01 miles, was the expected to be completed in Nov. li.

Of the important works now in progress the Vice-President mentions the construction of 6-10 of a mile of track from Neche, N.D., to the connection at the International boundary with the tracks of the M. Ry. of Manitoba. (Nov., pg. 639).

December 1906

Dec., 1906]

Dominion Parliament for an act incorporating a company with this title to construct a railway to be operated by steam, electricity or other power, from the Intercolonial Ry. in the parish of St. Leonard, across the Nicolet River, to the point of junction of the Quebec Central Ry. and the Maine Central Ry., at Cookshire, in the county of Wolfe, Que. It is also desired to have power to construct branch lines or tramways, telephone and telegraph lines, and to have it declared that the company's undertaking is one for the general advantage of Canada. L. R. Laverigne, Arthabasca, Que., is solicitor for the applicants.

Edmonton, Dunvegan and British Columbia Ry.—The Dominion Parliament will be asked at its current session for an act incorporating a company with this title to construct a railway from near Edmonton, Alta., north-westerly to Dunvegan, thence following the Peace River Valley to its confluence with the Parsnip River, and thence to Fort George, B.C. Pringle & Guthrie, Ottawa, are solicitors for the applicants.

Great West Ry.—Application will be made at the current session of the Dominion Parliament for an act amending the acts relating to the company by extending or altering its railway route as follows: (1) From near Cowley on the C.P.R. Crow's Nest branch, following the north fork of the Oldmans River up to and through the Gap in the Livingstone range of the Rocky Mountains, thence northerly in the valley of the Livingstone River to its headwaters, and on to a junction with the C.P.R. (2) From near the Gap southerly to a junction with the C.P.R. Crow's Nest branch at or near Frank, Alta. (3) From about six miles north of the Gap easterly and northerly to a junction with the Calgary-McLeod branch of the C.P.R. It is also asked that the time for the construction of the line be extended. Gallihier & Hannington, Nelson, B.C., are solicitors for the company. The G.W. Ry. is the title which was given in 1905 to the company formerly known as the Northwest Coal and Coke Co. The latter company was incorporated by the Dominion Parliament in 1903 with power to construct a railway from near Bull Park, Alta., to the C.P.R. Crow's Nest branch between Cowley and Livingstone.

Intercolonial Ry.—Tenders are under consideration for grading and double-tracking the cotton factory branch between the old locomotive house and Kempt Road; for grading and tracklaying in the new yard between Kempt Road and Windsor St.; for the erection of a 36-stall locomotive house, and for the removal and dredging out of pier 9, Halifax, N.S.

A. R. Macgowan, of the engineering staff, is making a survey at St. John in connection with the proposal to locate a second track between St. John and Hampton, N.B.

While considerable progress has been made with the erection of the new shops at Moncton, N.B., not so much has been done as was expected, owing to the scarcity of labor.

Tenders will be received to Dec. 10 for the erection of locomotive shops at Moncton, N.B. (Nov., pg. 641).

December

1906

Great Northern Ry. (U.S.) -L. W. Hill, President G.N. Ry., was credited with saying April 9 that the company was endeavoring to secure extensive terminals in Winnipeg, Minneapolis and Chicago, and had secured all the land required for its business for years to come in Portland and Seattle. If the company's plans for Canada did not miscarry, he expected that within the next 10 years the company would have a railway system there which would be almost an equivalent of the G.N. Ry. system as it at present existed in the U.S. In Canada the company's lines would touch Winnipeg, Brandon, Regina, Calgary, Edmonton and probably Prince Albert. It was very likely that the company's lines would traverse the Peace River country. The line to that country would be some hundreds of miles further north than any existing lines. He could not state just when construction would actually begin, but the company's representatives were in Canada looking over the ground, and everything would depend upon their reports. Winnipeg will be made the general Canadian terminus, and an office to conduct Canadian business will be established there.

It came out before the Railway Committee of the Saskatchewan Legislature recently that the company's lines in that province were being arranged for under the title of the Saskatchewan Central Ry. T. C. Norris, a member of the Manitoba Legislature, who appeared in support of the bill at Regina, stated that the lines proposed to be constructed under it were in continuation of the lines to be constructed by the Great Northern Ry. interests in Manitoba. The maps of the survey laid before the committee showed a route which runs through the southern part of the Cannington district, crosses the C.P.R. Portal-Pasqua branch, and proceeds through Willow Bunch to Alberta boundary. It was stated that connection will be made with Moose Jaw, Regina, Indian Head, Wolseley and other places. (April, pg. 243.)

MAY

1907

7 323

Great Northern Ry. Canada. —We have been advised that in Canada. —We have been advised that the company has under construction a line from Walhalla, N.D., to Morden, Man., a distance of about 24 miles. Walhalla is the present terminus of a branch of the G.N.R. extending from Grafton on the Grand Forks-Neeche line. This latter line has been extended to Portage la Prairie, Man., about 78 miles, under the charter of the Midland Ry. of Manitoba. The company's other line in Manitoba extends from St. John, N.D., to Brandon, 73 miles, and was constructed under the charter of the Brandon, Saskatchewan and Hudson's Bay Ry. P. E. Thian is Chief Engineer, and A. Guthrie & Co., St. Paul, Minn., constructed the two lines already completed, and are now grading the Walhalla-Morden line. The houses on Ross Ave., Winnipeg, part of which has been acquired by the G.N.R. for terminal purposes, are being moved.

A survey party under R. E. Segar, of the G.N.R. staff, has been working along the Elk River to Michel, B.C. P. E. Thian, the company's engineer at Winnipeg, was recently over a portion of the route, in conjunction with Mr. Segar. The party expected to complete its work early in Aug. The G.N.R. is interested in the Crow's Nest Southern Ry., which extends from Fernie to the International boundary, and to a junction with the G.N.R. line at Rexford, Mont. The Crow's Nest Pass Coal Co., which is also interested in the C.N.S. Ry., owns the Morrissey, Michel and Fernie Ry., which serves a part of the territory at any rate, through which the survey is being made. (July, pg. 479.)

Track is reported laid on the branch from Berthold to Lignite, N.D., 66 miles, and progress is being made with the construction between Lignite and Crosby, a further distance of 33 miles. Berthold is 23 miles west of Minot, the point at which the Minneapolis, St. Paul and Sault Ste. Marie Ry. from St. Paul, Minn., to the C.P.R. main line in Saskatchewan, crosses the G.N.R., and the branch parallels this line until near the International boundary, when it takes a westerly direction to Crosby, just south of the boundary.

August 1907
7561

Great Northern Ry. (U.S.A.) Lines in Canada.—A passenger service has been put on the Brandon, Saskatchewan and Hudson Bay Ry., which is the Canadian extension of the G.N. Ry. branch line formerly terminating at St. John, N.D. The line is 69.45 miles in length, at present terminating at Brandon, Man., where freight yards are being laid out. A contract is expected to be let at an early date for the erection of freight warehouses, and a passenger station at Brandon.

Under the title of the **Midland Ry of Manitoba**, a line has been completed from Gretna on the International boundary to Portage la Prairie, Man., 77 miles, upon which a freight and passenger service is being operated.

JULY 1907

p479

Vancouver, Victoria and Eastern Ry. and Navigation Co. Track has been laid this season from Chapaka, B.C., on the International boundary, to the Similkameen River, and from the river to Keremeos, 12 miles, and grading operations are in progress from Keremeos to Princeton, 45 miles. It is expected to have this part of the work completed this season. The company is also constructing some short branches to mines at Phoenix, B.C. (April, pg. 245).

September 1907

7665

Vancouver, Westminster and Yukon Ry.—
At the recent sittings of the Railway Commissioners in Vancouver, a number of matters affecting the construction of this line were considered and disposed of. Permission has been given to build a line round False Creek, but its lines will have to join, not cross the C.P.R. tracks, unless a further order is obtained. See also National Transcontinental Ry. (May, pg. 327.)

October 1907

Great Northern Ry., U.S.—At the annual meeting of stockholders to be held at New York Oct. 10, there will be presented for consideration and action a proposition that the Great Northern Ry. acquire, subject to the existing liens thereon, any or all of the properties of its subsidiary companies. Accompanying the circular is the following statement to stockholders issued by J. J. Hill, chairman of the Board of Directors: "The Great Northern Railway Co. now controls the various companies constituting its railway system through ownership of their stocks. The proposition to be submitted for your action at the annual meeting for the purchase of the railways and properties of these subsidiary companies as outlined in the formal notice of meeting sent to you herewith is to substitute for the present form of ownership through stocks a direct ownership of the railways and properties of the Great Northern Ry. Co. Your directors consider this change desirable, as it will consolidate ownership of the property and simplify the management of the system, and they recommend the proposition for your favorable action."

There are 7 of the subsidiary companies. The G.N. Ry. owns the entire capital stock of 16 of them, and all except about \$360,000 of the \$20,000,000 capital stock of the seventeenth, the St. Paul, Minneapolis and Manitoba Ry.

October 1907

p 731

Great Northern Ry. (U.S.) in Canada.—
Nothing is being done at Winnipeg, Man.,
in connection with the project to construct
extensive terminals in that city. The
property which was purchased by the com-
pany is being repaired and the tenants of
the Ross Ave. property have not been given
notice to leave. It is not expected, there-
fore, that anything will be done in the mat-
ter until early in 1908.

A contract has been let to R. N. Wil-
loughby for the erection of freight sheds
at Brandon, Man., at a cost of about \$12,-
000. The sheds are to be located between
Thirteenth and Fifteenth Streets. Work
is already in progress.

November 1907

7829

Crow's Nest Southern Ry.—The line under construction from Fernie to Michel, B.C., is an extension of the line at present in operation from the International boundary, where a connection is made with a branch of the Great Northern Ry., U.S. The extension follows the valley of the Elk River to the mouth of Michel Creek, then follows the valley of this creek to the town of Michel, a distance of 21 miles. The maximum gradient is 0.8%, and the maximum curvature 3°30'. The total rise is 600 ft., and there is no adverse gradient; there are in all 11 curves, and the longest tangent is 6.72 miles. In general, the valley followed is a broad, flat one, and presents no very difficult engineering features. The Elk River winding across it has to be crossed four times and its channel changed once. This was probably the most difficult task, but was accomplished without much trouble. The bridges are of the ordinary Howe truss type, two spans of 150 ft. each at each crossing, and two spans of 125 ft. each at the crossing of Michel Creek. P. E. Thian, who has charge of the Great Northern Ry. construction in Canada, is Chief Engineer, and D. Taylor, Fernie, B.C., is Division Engineer in charge of construction. (Dec., 1907, pg. 889.)

Crow's Nest Pass to Grave Creek.—Application will be made next session of the British Columbia Legislature for an act incorporating a company for the purpose of constructing a railway from near Crow's Nest Pass on the C.P.R., to the summit of the divide between the north fork of Michel Creek and the waters of Grave Creek, via the west side of the north fork of Michel Creek to the confluence of the two north branches of the same; with power to construct branches not to exceed in any one case 50 miles. E. V. Bodwell, Vancouver, B.C., is solicitor for the applicants

January 1908
719

Vancouver, Westminster and Yukon Ry.—
J. Hendry, President, submitted an agreement to the Vancouver, B.C., City Council, Dec. 4, respecting the construction of terminals in that city. The suggested agreement proposed to change the reservation of sections of the False Creek foreshore, as at present proposed for specific railways, to a general reservation. Mr. Hendrie said it was the present intention to allow the Northern Pacific Ry. to acquire the location for its Vancouver yards. The consideration of the matter was adjourned to permit of a thorough examination of the agreement and plans. (Oct., 1907, pg. 743.)

January 1908

P 23

boundary north of St. John, N.D., north to Brandon, Man., 69.45 miles, was opened for traffic, April 4.

THE MIDLAND RY. OF MANITOBA from the International Boundary north of Neche, N.D., north-west to Portage la Prairie, Man., 77.01 miles, was opened for traffic Mar. 11. The line from the International Boundary north of Walhalla, N.D., to Morden, Man., 15.54 miles, is to be opened this fall. The Great Northern Ry. has constructed an extension of its branch from Neche, to connect with the Portage la Prairie line, 0.64 miles, at the International Boundary, and also from Walhalla to connect at the International Boundary with the line to Morden, 5.35 miles.

CROW'S NEST SOUTHERN RY.—Work is under way on this railway upon a 24-mile extension from Fernie, B.C., north to the Crow's Nest Pass Coal Co.'s mines at Michel, B.C.

VANCOUVER, VICTORIA AND EASTERN RY. AND NAVIGATION CO.—The construction work of this railway covers the work on the Canadian side, and that of the Washington and Great Northern Ry., the work on the U.S. side of a line to connect Spokane, Wash., and Vancouver, B.C. The line runs from the G.N.R. near Spokane, to Marcus, at which point branches run to Nelson and Rossland, B.C. The W. and G.N.R. runs from Marcus to the International Boundary, then the V.V. and E. R. carries it round Grand Forks, with a branch to Phoenix, B.C.; then comes another dip into the U.S. to Curlew and Republic, and from Curlew back to the boundary, from which point the V.V. and E.R. has completed the line to Midway. The report says: "The V.V. and E. R. and the W. and G.N.R. have been opened for operation from Midway, B.C., to the International Boundary near Molson, Wash. (V. V. and E.), 28.89 miles, and from the International Boundary near Molson to Oroville, Wash. (W. and G.N.), 27.82 miles. On the section from Oroville west to the International Boundary at Chopaka, (W. and G.N.), 20.64 miles, and from that place to Keremeos, B.C. (V.V. and E.), 18.20 miles, tracklaying has been finished. The V.V. and E. is also building from the Pacific coast east to meet the line building west from Keremeos. On this section work is under way from Cloverdale, B.C., east to Abbotsford, 26.25 miles. The V.V. and E. and the Victoria Terminal Ferry and Ry. Co. is building a low-grade line from New Westminster, B.C., south to Blaine, Wash. The portion of the line from New Westminster to Olivers, 9.80 miles, is being built by the V.V. and E., and from that place to the International Boundary north of Blaine, 11.32 miles, is being built by the V.T.F. and Ry. Co." When completed this piece of line will permit of the abandonment of the present New Westminster Southern Ry.

February
1908

Great Northern Railway Report.

The report of the directors for the year ended June 30, 1907, presented at the annual meeting recently, said that as shown by the last annual report the capital on June 30, 1906, was \$150,000,000. On Dec. 11, 1906, the directors, subject to the approval of the stockholders, authorized the increase of the capital by \$60,000,000, such additional stock to be issued and paid for in cash at par, and the proceeds used to provide for additional equipment, additional facilities and terminals on existing lines, including second main track, and for reduction of gradients, improvement of lines, and to acquire the stocks or bonds, or both, of the following companies: Dakota and Great Northern Ry., Montana and Great Northern Ry., Billings and Northern Rd., Washington and Great Northern Ry., Portland and Seattle Ry., Vancouver, Victoria and Eastern Ry. and Navigation Co., Brandon, Saskatchewan and Hudson's Bay Ry., and Midland Ry. of Manitoba, and such other securities as the directors might from time to time determine. The shareholders were asked to sanction this increase of capital, but the State of Minnesota brought an action to prevent the increase. After some litigation the Supreme Court held that the act under which the suit was brought was unconstitutional, and the additional share capital was issued. There has been collected on stock subscriptions to June 30, 1907, \$34,616,212, but the certificates will not be issued until May, 1908. The capital outstanding June 30, 1907, was \$149,577,500, and there were in the treasury 4,225 shares of G.N. stock not used in acquiring 3,380 shares of St. Paul, Minneapolis and Manitoba Ry. Co.'s stock.

The lines to be acquired had, in most cases, been built with funds advanced by the company, and were being operated by the G.N.R. as a part of its system. In the majority of cases these lines were branches or extensions of the St. Paul, Minneapolis and Manitoba Ry. lines, and such as would ordinarily have been built by the Manitoba company. That company had no means of providing the funds to pay for their construction. All of these lines were constructed for cash at the lowest possible cost for roads of the standard required. The securities that have been issued by the subsidiary companies have been applied on such cost. The amounts advanced for construction purposes to June 30 were: Minnesota and Great Northern Ry., \$606,699.87; Dakota and Great Northern Ry., \$1,011,135.97; Montana and Great Northern Ry., \$3,091,915.01; Billings and Northern Rd., \$3,151,553.98; Iowa and Great Northern Ry., \$1,730,388.08; Washington and Great Northern Ry., \$3,300,211.19. The following Canadian companies, upon completion of their lines, will issue stocks or bonds to repay advances made by the G.N. Ry. for construction purposes, up to June 30, as follows: Midland Ry. of Manitoba, \$1,857,828.78; Brandon, Saskatchewan and Hudson's Bay Ry., \$1,675,221.82; Crow's Nest Southern Ry., \$2,349,744.89; Vancouver, Victoria and Eastern Ry. and Navigation Co., \$6,574,289.10. The Portland and Seattle Ry. Co. is to be jointly owned by the G.N. Ry. and the Northern Pacific Ry., the proportionate share of the advances being \$9,184,794.48, making a total of \$37,536,783.17. In addition the company has purchased 2,858 shares of the Kootenay Ry. and Navigation Co. common stock, so that it now owns and holds the entire issue of £500,000 of common stock.

There has been a net reduction of \$323,000 during the year of the bonded debt of the St. Paul, Minneapolis and Manitoba Ry. During the year there had been ex-

pendent \$4,999,150.29 on the capital accounts of proprietary companies. A portion of this amount was advanced by the G. N. Ry., and there was advanced for construction \$18,315,794.83, and \$5,991,532.78 was paid for additional equipment for the G.N.R. There had been placed to the credit of the fund for replacement of equipment \$3,083,836.51, of which amount the G.N.R. is responsible for \$2,934,976.22. There had been \$2,000,000 charged against net revenue, and credited to the fund for permanent improvements and renewals, and there had been charged to the fund \$4,036,434.76, the cost of improvements, other than those charged to operation, made during the year to property leased from the St. Paul, Minneapolis and Manitoba Ry.

The gross earnings increased during the year \$3,868,121.85; the operating expenses \$6,709,852.80, and taxes \$279,326.80, causing a decrease of \$3,121,057.75 in income from operation. The reduction in rates, some of which were voluntary and others forced on the company, caused a reduction of revenue of about \$1,000,000. There was a loss of revenue caused by the excessive snow of the winter of 1906-07, and an increased expenditure of \$950,000 to keep the lines open.

The report of the President contained considerable statistical information and details of works of improvement upon existing lines and new construction. The information upon new construction, as regards the company's lines in Canada and the branch lines connecting them with the main line in the U.S., is referred to on another page.

One of the schedules attached to the report shows that of the \$396,087.51 received as interest on bonds owned, \$77,580 was received from the Nelson and Fort Sheppard Ry., \$17,460 from the Columbia and Red Mountain Ry., \$13,020 from the Red Mountain Ry., and that of the \$996,079.04 received as dividends on stock owned, \$30,617.99 was on account of Crow's Nest Pass Coal Co.'s stock held.

REVENUE ACCOUNT.

Gross earnings.....	\$50,048,041.01
Operating expenses.....	\$29,602,029.83
Taxes.....	1,882,699.31
	<u>\$18,563,311.87</u>

Income from operation--

Rentals.....	\$6,219,825.76
Dividends, etc.....	2,139,540.00
Net rentals.....	\$4,080,285.76
Permanent improvement fund.....	2,000,000.00
Replacement fund--	
Equipment.....	2,934,976.22
	<u>9,015,261.98</u>
Transferred to income account..	<u>\$9,548,049.89</u>

INCOME ACCOUNT.

From revenue account.....	\$9,548,049.89
Other income.....	3,414,798.16
Total income.....	<u>\$12,962,848.05</u>
Interest accrued on payments made on stock subscriptions.....	\$337,483.13
Dividend at 1 1/2% paid Aug. and Nov. 1906, and Feb. and May, 1907.....	10,469,661.65
	<u>10,807,144.78</u>
Profit and loss.....	<u>\$2,155,703.27</u>

The jury at the Toronto assizes, Jan. 17, returned a verdict of guilty against the G.T.R. and the C.P.R., for maintaining a common nuisance at the Bay St. railway crossing, Toronto. The case was brought forward as the result of an accident May 24, 1907, when two men were killed. The railway companies will appeal against the verdict.

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Great Northern Ry. Lines in Canada.

The report of the directors for the year ended June 30, 1907, contains a large amount of information relative to construction being carried on in Canada, and upon the branch lines running up to the International Boundary.

Nothing appears to have been done according to the report upon the projected extension of the branch line now terminating at Greenbush, Minn., from that point to Warroad, where a junction would be effected with the Canadian Northern Ry., which runs through Minnesota, round the angle of the Lake of the Woods in that state. An extension of the branch from near York, N.D., was opened Nov. 6, 1906, from Thorne, north-west to Dunseith, near the International Boundary, 7.61 miles, just south of Turtle Mountains. The extension from Berthold north-west to Crosby, 89.09 miles, was expected to be completed by Dec. 1, 1906, but the work has been considerably delayed. On June 30, 1907, there had been laid 55.50 miles of track, and it was expected to have the line completed by Nov. This branch line runs very close to the Minneapolis, St. Paul and Sault Ste. Marie Ry., for about half its distance, and then bears away to the west, terminating at present at Crosby, just south of the International Boundary, near where the Long Creek River runs into Montana from Saskatchewan. The branch was opened from Lignite to Crosby, 34 miles, Dec. 1, the section from Berthold to Lignite having been opened earlier.

THE BRANDON, SASKATCHEWAN AND HUDSON'S BAY RY.—From the International

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Vancouver, Victoria and Eastern Ry. and Navigation Co.—An agreement has been made between this company and the Victoria Terminal Ry. and Ferry Co., for the sale by the latter of its existing line between Cloverdale and Port Guichon, on the mainland of British Columbia, and its charter rights to construct a line from near Mud Bay, on the existing line southerly to the International boundary. A duplicate of this agreement has been deposited with the Provincial Secretary, and the approval of the Government of the same is being asked.

A meeting of the shareholders of the Vancouver, Westminster and Yukon Ry. was held Jan. 8, to approve of an agreement for the sale to the V.V. and E. Ry. and N. Co., of the V.W. and Y. Ry. in Vancouver; from Vancouver to New Westminster and all lines connecting it with the bridge over the Fraser River at New Westminster, B.C.

Vancouver, Westminster and Yukon Ry.—See Vancouver, Victoria and Eastern Ry. and Navigation Co.

Victoria Terminal Ry. and Ferry Co.—See Vancouver, Victoria and Eastern Ry. and Navigation Co.

February 1908

7 III

On the other hand there is a considerable mileage of railway lines in Canada owned or controlled and operated by railway companies having their principal lines in the U.S. There are nine operating companies in the U.S. having altogether 29 lines of railway in Canada, the total mileage being 1,665.99 miles. Of these operating companies the Boston and Maine Rd. and the Maine Central Rd. are controlled by the New York, New Haven and Hartford Rd.; the Michigan Central Rd., the New York Central Rd. and the Rutland Rd. are owned by the Vanderbilt interests; and the Central Vermont Ry. is controlled by the G.T.R., a British corporation operating both in Canada and the United States. The Great Northern Ry. owns the largest mileage, and is engaged in the construction of a number of extensions of its lines with the apparent object of securing a through line north of the International Boundary between Winnipeg and Vancouver. The Delaware and Hudson Co. was the last of the U.S. lines to secure Canadian connections, and it also is engaged in constructing an extension of its existing lines—about 90 miles being under contract or survey. Following is a list of the U.S. railways, together with details of their mileage in Canada:

International Railway Ownership.

The question of the control and ownership of railways in the United States by Canadian railways has been brought before the U.S. Senate by Senator Tillman. The resolution he submitted was in the following terms: "That the Interstate Commerce Commission is directed to inform the Senate whether any corporations engaged in interstate commerce are the owners of any of the capital stock of other corporations which are transporting passengers and freight; and, if so, the Commission is further directed to transmit a statement showing the extent and details of such ownership so far as the facts now appear in the office of the Commission, and to state in what cases the corporations whose stock so owned have been competitors for traffic with the corporations owning their stock."

In this connection it may be of interest to notice that there are four railway companies and one transportation company—three Canadian and two British corporations having their principal lines in Canada which own or control and operate railways in the U.S. These companies, with the lines operated and mileages, are:

	Miles	Miles
CANADIAN NORTHERN RY.		
Minnesota, Ontario boundary near Rainy River, to Minnesota-Manitoba boundary	43.6	
CANADIAN PACIFIC RY.		
Maine-Quebec boundary to Maine New Brunswick boundary (1)	201.00	
Minneapolis, St. Paul and South Ste. Marie Rv. (including spur lines) (2) ..	2,262.88	
Duluth, South Shore and Atlantic Rv. including Mineral Range Rv. (3) ..	590.68	
	3,054.56	
GRAND TRUNK RY.		
Vermont-Quebec boundary to Portland, Me.	174.00	
Grand Trunk Western Rv.	336.00	
Detroit, Grand Haven and Milwaukee Rv.	189.00	
Central Vermont Rv. (4)	612.00	
Toledo, Saginaw and Muskegon Rv.	116.00	
Cincinnati, Saginaw and Muskegon Rv.	53.00	
Detroit and Toledo Shore Line Rd. (5) ..	78.00	
	1,558.00	
KETTLE VALLEY LINES.		
R.C. Washington boundary south of Grand Forks to Republic, Wash. (6) ..	36.14	
WHITE PASS AND YUKON ROUTE.		
Skagway to White Horse Summit, Alaska.	26.38	
Total.	4,712.68	

(1) This mileage includes the Maine Central Rd. line between Mattawamkeag and Vanceboro, Me. over 43.8 miles of which the C.P. has running rights. (2) The mileage given does not include trackage rights over 19.17 miles of terminal property in Minneapolis, St. Paul and South Ste. Marie. (3) The mileage given includes 9.64 miles of trackage rights. (4) The Central Vermont Rv. mileage includes 125.26 miles of line in Canada. (5) The Detroit and Toledo Shore Line Rd. is owned jointly by the G.T.R. and the Toledo, St. Louis and Western Rd. (6) The Kettle Valley Lines are being extended from Republic to Seattle, Wash., the surveys being practically completed.

	Miles	Miles
BOSTON AND MAINE RD.		
Massachusetts Valley Ry.		34.46
CENTRAL VERMONT RY.		
Montreal and Province Line, formerly Montreal, Portland and Boston Ry.	58.60	
Montreal and Vermont Jct. Ry.	23.60	
Stanstead, Shefford and Chambly Ry.	43.00	
	125.20	
DELAWARE AND HUDSON CO.		
Quebec, Montreal and Southern Ry., formerly United Counties Ry., East Richelieu Valley Ry. and South Shore Ry.	143.75	
Naperville Junction Ry.	28.30	
	172.05	
GREAT NORTHERN RY.		
Bedlington and Nelson Ry.	15.30	
Crow's Nest Southern Ry.	53.20	
Kaslo and Shocan Ry.	31.08	
Kaslo and Fort Sheppard Ry.	55.42	
Nelson and Westminster Southern Ry.	24.10	
New Mountain Ry.	9.59	
Vancouver, Victoria and Eastern Ry. and Navigation Co.	74.76	
Vancouver, Westminster & Yukon Ry.	14.81	
Victoria and Sidney Ry.	16.26	
Victoria Terminal Ry. & Ferry Co.	18.40	
Brandon, Saskatchewan and Hudson's Bay Ry.	69.45	
MIDLAND RY. OF MANITOBA.		
Portage la Prairie Line.	77.01	
Waltham Line.	15.54	
	92.55	
	474.92	
MAINE CENTRAL RD.		
Hereford Ry. (including Dominion Line Co.'s line)	53.30	
Princeton Branch Washington Co. Ry.	5.10	
	58.40	
MICHIGAN CENTRAL RD.		
Canada Southern Ry.	359.24	
Sarnia, Chatham and Erie Ry.	7.00	
Leamington & St. Clair Ry.	15.95	
	382.19	
NEW YORK CENTRAL AND HUDSON RIVER RD.		
Ottawa and New York Ry.	56.90	
St. Lawrence and Adirondack Ry.	46.12	
Toronto, Hamilton and Buffalo Ry. (control)	83.67	
	186.69	
PERE MARQUETTE RD.		
Lake Erie and Detroit River Ry., including Erie and Huron Ry.	204.69	
London and Port Stanley Ry. (leased) ..	24.00	
	228.69	
RUTLAND RD.		
Rutland and Noyan Ry.	3.39	
Total.	1,665.99	

T. P. Phelan, President of the Canada Railway News Co., has bought the Cedar Grove stock farm at Oakville, Ont., containing 393 acres. As well as conducting the breeding establishment carried on by the former owner, Mr. Giddings, with one of the best stock horses in Canada, imported Bessetlaw, at its head, it is the intention to establish a dairy and fruit farm on a large scale, for the purpose of supplying butter, milk, etc., to the various hotels and restaurants on the G.T.R. and other lines operated by the Canada Railway News Co.

Great Northern Ry.—A Winnipeg despatch says the G.N.R. staff is moving from its Main St. offices to new premises on Portage Ave. Other despatches state that several parties of engineers have been placed in the field between Brandon, Man., and Calgary, Alta., with the object of locating a line about midway between the International boundary and the C.P.R.

A. Guthrie, the St. Paul, Minn., contractor, stated in Vancouver, B.C., recently, that the extension of the Vancouver, Victoria and Eastern Ry. from Michel through the Crow's Nest Pass would probably be completed by April 1. This is the first time that the V.V. and E. Ry. has been mentioned in connection with the line in the vicinity of Michel, all previous references to the latter having been that it was an extension of the Crow's Nest Southern Ry., which runs from Fernie, B.C., to a junction with the G.N.R. at Rexford, Mont. Another extension, said Mr. Guthrie, was being planned in that district, but he declined to discuss it. Tracklaying is reported to be in progress on the V.V. and E.R. between Keremeos and Headley City, B.C., about 20 miles. Slow progress is being made and it is not expected that the work will be completed before May. There are three crossings of the Similkameen River, and the bridge work is causing some delay. The company has given notice of its intention to construct spur lines to mills on the water front between New Westminster and Port Kells. (Feb., pg. 97).

April 1908

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April 1 1908
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THE BRITISH Columbia Legislature, at its current session, passed an act incorporating a company with this title, for the purpose of constructing a railway from the C.P.R. at the Crow's Nest Pass, B.C., to or near the summit or divide between the waters of the north fork of Michel Creek, and the water of Grave Creek, via the west side of the north fork of Michel Creek, to the confluence of the two north branches of the creek, and thence by both branches to points near the divide. The capital is fixed at \$2,000,000, and it is authorized to issue bonds to the extent of \$50,000 a mile of railway constructed. Agreements may be made with other railway, steamship, transportation, telegraph or other companies, to lease or convey its undertaking either in whole or in part. The company is also authorized to carry on a general telegraph, telephone and express business. The provisional directors are: R. G. Belden, J. H. Hemphill, C. L. Butterfield, A. E. Wayland, Spokane, Wash. (Jan., pg. 19.)

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JUNE, 1908]

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for the property and franchises of the
Victoria Terminal Ry. and Ferry Co., with
respect to lines constructed, under con-
struction and authorized, on the mainland.
The lines in question were operated by the
Great Northern Ry. through a subsidiary
company, and connection was obtained be-
tween the two lines over the Fraser River
bridge, built by the British Columbia Gov-
ernment, for the use of which tolls are paid.
Their amalgamation with the V.V. and
Ry. and N. Co., the Great Northern
lines in the vicinity of Vancouver have
been consolidated under one company.

June 1908

accommodate the traffic via the G.T.P.

Great Northern Ry. Lines in Canada.

Emerson, Man., to Winnipeg.—Press reports state that the survey being made by the company's engineering staff from Emerson, at the International boundary, to the south-eastern limits of Winnipeg, have been completed. The located route runs from Emerson, on the east side of the Red River, to Ste. Agathe, where it crosses to the west side of the river and runs northwesterly to the right-of-way purchased a couple of years ago in the city, and running parallel with the C.P.R. Gretna branch to Ross St. It has not been announced when construction will be started, but it is said that grading will be commenced in the spring.

Midland Ry. of Manitoba.—Application will be made next session of the Dominion Parliament by the G.T. Pacific Ry. Co., for an act ratifying and confirming an agreement made June 6, 1908, with this company, respecting the provision of joint facilities at Portage la Prairie, Man.

Coutts to Crow's Nest Pass.—The passing of the Alberta Ry. and Irrigation Co. under the control of the C.P.R. has brought about an increased activity of G.N.R. locating engineers in Alberta. The G.N.R. has a line extending to the International boundary at Sweet Grass, Mont., and Coutts, Alta., connecting with the A.R. and I. Co.'s line. A Frank, Alta., report states that the President of the G.N.R. has expressed an opinion that within a couple of years the company would be cut off from this connection, and to forestall such an event is preparing for the construction of a line to connect Sweet Grass with its lines in the Crow's Nest Pass district. The reports further state that two charters have been purchased by the J. J. Hill interests for the construction of lines in the territory mentioned. One of these is for an east and west line through the Crow's Nest Pass, and the other for a north and south line somewhat to the east of the Pass.

Crow's Nest Southern Ry.—The extension of this line from Fernie, through Hosmer and Olsen to Michel, B.C., 20.9 miles, was opened for traffic Nov. 30. Connection is made at Michel with the Crow's Nest Pass Coal Co.'s tracks. (Dec., 1908, pg. 855.)

January

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Red River southwesterly towards the Red River, a distance of 25 miles. The Ottawa, is solicitor for the ap-

Properties owned by this syndicate are located around the headwaters of the Red River, Pembina and the Embarras Rivers, about 130 miles from the Saskatchewan River, and about 30 miles from the Pacific Ry., and the railway located between them will connect with that line at the headwaters of the Red River.

The engineer of the syndicate, Mr. J. H. Fisher, is reported to have said, recently, that it was hoped to have the line completed by July next, when operations will be commenced on the development of the coal fields.

The gradient of the projected

and undergo an eye and ear test by a competent examiner before being eligible for appointment as such engineer. Except in cases of emergency, every conductor of such companies must have at least one year's experience as brakeman or conductor and be at least 21 years of age before being eligible for appointment as such.

6. The telegraph operators of such companies required to handle train orders shall be at least 18 years of age, able to write a legible hand, to send and receive messages at the rate of not less than 20 words a minute, and be thoroughly familiar with and required to pass an examination upon train rules before a competent examiner.

7. Every employe of such railway companies engaged in operating trains shall, before undertaking such duties, be required to undergo a color test by a competent examiner.

8. All railway companies shall strictly conform to the rules and regulations from time to time approved by the Master Car Builders' Association, governing the loading of lumber, logs, and stone on open cars, and the loading and carrying of structural material, plates, rails, and girders. No material of any kind shall be carried upon the roofs of cars.

9. All open drains crossing tracks in the yards of such companies shall be covered for 5 ft. on each side of the rails, except in times of flood, when temporary open drains may be provided; semaphore and signal wires, when they cross under tracks, shall be carried in pipes or boxes; new buildings and semaphores and poles erected shall be placed not less than 6 ft. from the rail of the main track; water stand supply pipe shall be fastened parallel with the main line, and enginemen shall be required to see that this is done after using such pipes.

10. Every person or company offending against any of the foregoing provisions shall forfeit and pay \$50 for every such offence.

Great Northern Railway Lines in Canada.

In a recent interview J. J. Hill stated that it was the determination of his company to push railway construction in Western Canada generally, and in Manitoba particularly. It is said that as soon as spring opens work will be begun on some additional lines under the Midland Ry. of Manitoba's charter. This work, a Winnipeg despatch says, will probably be on a line from Emerson to Winnipeg, and upon the laying out of terminals and a station in Winnipeg. The company purchased land in Winnipeg for terminals, and for an entrance into the city, nearly three years ago, but beyond some clearing nothing was done. The company's operations in Manitoba are being carried on under the charters of the

operate telegraph and telephone lines in connection therewith, and all other powers necessary or incidental thereto. Fisher, Wilson, Battram and Hamilton, Winnipeg, are solicitors for the applicants.

Notice is also given for the Midland Ry. Co. of Manitoba, by the same firm of solicitors of intention to apply to the Legislature for an Act empowering the company in connection with its authorized line of railway between Winnipeg and the International boundary, to construct and operate a branch line from some point on the east side of the Red River, in tp. 1, range 2, or 3, to the International boundary, on the west side of the river in range 2. It is also desired to have power to sell its existing lines, viz., from Gretna to Portage la Prairie, and from Morden to the International boundary, to another company.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—During 1908, the company completed tracklaying on the section of the line from the International boundary to Olivers, B.C., 11.33 miles (of this distance 0.86 mile was laid in 1907); and from Olivers to Brownsville, B.C., 9.72 miles (of which 5.22 miles was laid in 1907). On this portion of the line grading is in progress between Keremeos and Princeton, 40.3 miles. Tracklaying was expected to be well in hand between Keremeos and Princeton, Jan. 31. Beyond Princeton surveys only are being made, but south of New Westminster, and in the vicinity of Vancouver, construction is going on, in connection with the lines amalgamated with the V.V. and E. Ry. and N. Co., and formerly known as the Vancouver, Westminster and Yukon Ry., and the Victoria Terminal Ry. and Ferry Co. The work there has been the completion of tracklaying on the line from Cloverdale to Sumas, of 29.28 miles, of which 1.38 miles were laid in 1907.

Vancouver press reports state that the G.N.R. proposes to expend \$3,000,000 during the current year on terminals in that city. This report arises out of the recent purchase by G.N.R. and Northern Pacific Ry. interests of False Creek waterfront property valued at about \$350,000. The property involved in the purchase comprises all the waterfront on the north side of the upper basin of False Creek lying between Heatley Ave. on the east and Boundary Ave. on the west. L. C. Gilman, of Seattle, Wash., attorney for the G.N.R., who made the purchases, is quoted as saying: "In making these purchases the company had in view not only its own requirements in Vancouver, but also those of the Northern Pacific Ry., which has the intention of entering the city, and doing business directly here. What we expect to do now is to go to the Northern Pacific people and endeavor to join with them in some plan for the location of joint facilities for terminal purposes at some convenient spot

Protection for Railway Employees.

The Board of Railway Commissioners has issued the following order 5888, Dec. 16: "In pursuance of the Memorial of the Trainmen's Association of Canada, for the adoption of certain regulations by the Board, to protect the protection of employees of railway companies subject to the Board's jurisdiction. Upon the report of the operating officials of the Board, and upon hearing the representatives of the railway companies and of the employees, and in pursuance of the powers conferred upon it by secs. 200 and 201 of the Railway Act, and of all other powers possessed by the Board in the premises, it is ordered that:

1. Every freight train, except work or construction trains of 15 cars or less, now in service, shall be made up or allowed to be made up upon its journey unless at least one car of the cars composing such train shall have air brakes in good working order.

2. The number of cars that may be coupled to freight trains shall be left entirely to the judgment of the operating officials of the railway companies; in all cases, however, in which it may be found necessary to couple a car to the leading engine shall be coupled to the train.

3. Every road locomotive engine shall be equipped with a step or steps and handholds on both sides of and at or near the front and rear ends of tenders; foot-rests shall be provided for the pilots of every such engine, and shall be wide for a man to stand on; the coupling or yard engine shall be equipped with footboards and headlights at the front and rear ends of the engine; such footboards to be not less than 18 inches wide; the back of such footboards shall be protected by a board not less than 18 inches high, and if cut in the centre, the ends shall be protected in like manner; and footboards and headlights shall be provided on the rear end of the tender of every road locomotive engine used for

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Great Northern Railway Lines in Canada.

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Midland Ry. Co. of Manitoba.—Application will be made next session of the Manitoba Legislature for an act incorporating a company with this title, with authority to acquire and operate the existing constructed lines of the Midland Ry. of Manitoba, viz.: the line from Gretna, at the International boundary, to Portage la Prairie, and from Morden to the southern boundary of the province; and to construct the following additional lines: From or near Winnipeg, westerly to Brandon; thence westerly to near Elkhorn, and thence westerly to the western boundary of the province; a line from near Morden, running northwesterly to near Rathwell, thence northwesterly to the first mentioned line. It is also desired to obtain authority to construct and

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operate telegraph and telephone lines in connection therewith, and all other powers necessary or incidental thereto. Fisher, Wilson, Battram and Hamilton, Winnipeg, are solicitors for the applicants.

Notice is also given for the Midland Ry. Co. of Manitoba, by the same firm of solicitors of intention to apply to the Legislature for an Act empowering the company in connection with its authorized line of railway between Winnipeg and the International boundary, to construct and operate a branch line from some point on the east side of the Red River, in tp. 1, range 2, or 3, to the International boundary, on the west side of the river in range 2 e. It is also desired to have power to sell its existing lines, viz., from Gretna to Portage la Prairie, and from Morden to the International boundary, to another company.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—During 1908, the company completed tracklaying on the section of the line from the International boundary to Olivers, B.C., 11.33 miles (of this distance 0.86 mile was laid in 1907); and from Olivers to Brownsville, B.C., 9.72 miles (of which 5.22 miles was laid in 1907). On this portion of the line grading is in progress between Keremeos and Princeton, 40.3 miles. Tracklaying was expected to be well in hand between Keremeos and Princeton, Jan. 31. Beyond Princeton surveys only are being made, but south of New Westminster, and in the vicinity of Vancouver, construction is going on, in connection with the lines amalgamated with the V.V. and E. Ry. and N. Co., and formerly known as the Vancouver, Westminster and Yukon Ry., and the Victoria Terminal Ry. and Ferry Co. The work there has been the completion of tracklaying on the line from Cloverdale to Sumas, of 29.28 miles, of which 1.38 miles were laid in 1907.

Vancouver press reports state that the G.N.R. proposes to expend \$3,000,000 during the current year on terminals in that city. This report arises out of the recent purchase by G.N.R. and Northern Pacific Ry. interests of False Creek waterfront property valued at about \$350,000. The property involved in the purchase comprises all the waterfront on the north side of the upper basin of False Creek lying between Heatley Ave. on the east and Boundary Ave. on the west. L. C. Gilman, of Seattle, Wash., attorney for the G.N.R., who made the purchases, is quoted as saying: "In making these purchases the company had in view not only its own requirements in Vancouver, but also those of the Northern Pacific Ry., which has the intention of entering the city, and doing business directly here. What we expect to do now is to go to the Northern Pacific people and endeavor to join with them in some plan for the location of joint facilities for terminal purposes at some convenient spot on the shores of False Creek." (Jan.,

February 1909
P107

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February 1909
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Great Northern Railway Lines in Canada.

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Manitoba Great Northern Ry. Application is being made to the Manitoba Legislature by L. W. Hill, President of the Great Northern Ry. and others, for an act incorporating a company with this title, for the purpose of constructing railways in the province.

Midland Ry. of Manitoba. The Manitoba Legislature is being asked to pass an act authorizing the company to construct certain lines in addition to those which it was originally authorized to construct, viz.: From Winnipeg to Brandon, Elkhorn, and the western boundary of the province, and from Morden, northwesterly to Rathwell, thence to the first-mentioned line.

A Winnipeg press despatch states that it is the intention of both the Great Northern Ry. and the Northern Pacific Ry. to operate in Manitoba, under the charter of the Midland Ry. of Manitoba.

Vancouver, Victoria and Eastern Ry. and Navigation Co. H. A. K. Drury, of the Board of Railway Commissioners' engineering staff, has completed an official inspection of the company's recently completed lines from Cloverdale to Sumas, and from Olivers, B.C. to the International boundary.

L. P. Gilman, Assistant to the President G. N. R., and President Elliot, Northern Pacific Ry., and a number of officers of both companies, arrived in Vancouver Feb. 1, concerning the location of terminals on False Creek, in the east end of the city. They waited on the city council and asked for the co-operation of the city in securing the remaining properties required to carry out the plan of providing union terminals on a large scale, and making the creek available for deep sea shipping. The companies, it was stated, had expended \$600,000 in acquiring properties at the head of the creek, but further purchases were blocked by the abnormal prices asked, hence the desire to secure the aid of the city. The proposals for the improvement of the Vancouver harbor was presented to the authorities Feb. 5. They involve the construction of a breakwater two miles long, from Spanish bank across the mouth of English bay, creating an enclosed harbor of 3,600 acres at the mouth of False Creek, at an estimated cost of \$1,000,000. Other parts of the scheme contemplate the construction of locks in False Creek, making the waterway available for shipping at all stages of tide, and cutting the canal to the coal harbor at the head of Burrard Inlet, connecting the city's two harbors. The council decided to send a deputation to Ottawa to consult with the Dominion Government in regard to the matter. The city will apply to the Provincial Government for authority to expropriate an extensive tract of land at False Creek. (Feb., pg. 107.)

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Great Northern Railway Lines in Canada.

Manitoba Great Northern Ry. An act has been passed by the Manitoba Legislature, incorporating a company with this title, the provisional directors being L. W. Hill, R. I. Farrington, Jas. Fisher, C. P. Wilson, and J. F. Fisher. The company is authorized to construct a single or double track railway from Winnipeg to Brandon, thence to Elkhorn, and on to the western boundary of the province; also a line from Morden northwesterly to Rathwell, and thence, still northwesterly, to the Winnipeg-Elkhorn line; together with such branch lines as may be necessary or convenient. The line may be constructed in sections, and the company may acquire plans and surveys now existing for these lines or for any portions of the same. It may also enter into agreements with other railway companies for any purpose, and it is authorized to acquire the existing constructed lines of the Midland Ry. Co. of Manitoba, viz.: A line from the International boundary at Gretna to Portage la Prairie; and a line from the International boundary in range 1, west of the principal meridian, to Morden. The company's capital stock is fixed at \$2,500,000.

April 1909

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and bonds to the amount of \$20,000 a mile of line constructed may be issued. The company is also authorized to carry on an express business, to construct telegraph and telephone lines, and to maintain bridges.

Midland Ry. Co. of Manitoba.—The Manitoba Legislature has passed an act authorizing this company to construct, in connection with its authorized line between Winnipeg and the International boundary, a branch running from such line on the east side of the Red River, in tp. 1, range 2 or 3 east, to the west side of the Red River in tp. 1, range 2, east of the principal meridian. The company is also authorized to sell the lines already constructed under its charter to the Manitoba Great Northern Ry.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—The Board of Railway Commissioners has authorized the company to open for traffic the portions of its line from Huntingdon to Cloverdale; from Olivers to the International boundary near Blaine, Wash.; and from Olivers to the Fraser River bridge, at New Westminster, B.C. These pieces of line connect up the company's lines south of the Fraser River, with the bridge over the river, and so with the line from New Westminster to Vancouver, constructed by the Vancouver, Westminster and Yukon Ry., which the V. V. and E. Ry. and N. Co. acquired.

Press reports state that the company will ask for tenders at an early date for the laying out of its terminals on Burrard Inlet, Vancouver. The work, it is expected, will extend over about three years. A Stewart, Assistant Chief Engineer, and J. S. Napp, Right-of-Way Agent, have been in Vancouver for some time in connection with the work. (Mar., pg. 195.)

April 1909

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Dereham tp., Ont.

Great Northern Railway Lines in Canada

Winnipeg to Emerson, Man.—G.N.R. engineers are procuring land and laying out station sites on the route of its projected railway between Winnipeg and Emerson. A press report states that the company expects to have the line completed by Sept. 1.

Midland Ry. of Manitoba.—An act passed by the Dominion Parliament provides for the ratification of an agreement with the G.T.P. Ry. for the provision of a union station and other joint facilities at Portage la Prairie, Man.

Elkhorn and Autter, Sask.—A deputation from Elkhorn waited on the Manitoba Government recently in connection with the projected construction of a line from a G.N.R. branch at present terminating at the International boundary through Manitoba to Elkhorn and Autter, Sask.

Michel to Calgary.—Construction work was reported to have been started April 1, on the proposed line from Michel, B.C., to Calgary, Alta.

Vancouver, Victoria & Eastern Ry. & Navigation Co.—A letter was recently sent out by the United Empire Co., Princeton, B.C., stating that it was expected that the first train on the G.N.R. line would reach Princeton June 1, from Keremeos. (April, pg 257.)

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Approximate earnings for Apr. \$3,142,748, and for 2 weeks ended May 11, \$1,456,700, against \$2,934,901 and \$1,417,229 for same periods, 1908.

TRAFFIC RECEIPTS OF THE SYSTEM

Aggregate from Jan 1 to Apr. 30, 1909

Grand Trunk	11,799,139	11,730,462	468,677
Can. Atlantic	100,252	90,118	9,804
G. T. Western	360,111	348,950	1,164
O. G. H. & N.	99,416	96,328	3,088
Total	12,358,921	12,276,188	82,733

Great Northern Ry. Lines in Canada

A press despatch from Chicago, Ill., states that the G.N.R. construction for the current season provides for the expenditure of \$15,000,000, mainly through its subsidiary lines. The more important part of the work is said to be the inauguration of construction west of Winnipeg, and the plan laid out shows the completion of a fourth through line from Winnipeg to the Pacific coast. The company has branch lines running from its U.S. main line, to Portage la Prairie, Man.; Brandon, Man.; Fernie and Michel, B.C., and into the Red Mountain district of B.C. The proposition now outlined is to construct the long talked of line from Emerson into Winnipeg, and then to work westerly cutting across the branch lines, to meet a line, now being surveyed from Michel easterly to Calgary, Alta. This will then be followed up by a line from Fernie, westerly connecting up the lines in the Red Mountain district with the Vancouver, Victoria and Eastern Ry., at Grand Forks, B.C. The

In the valley of the Flathead River, particularly on the Montana side of the international boundary, there is a great deal of survey work going on, the Great Northern Ry., and the Chicago Milwaukee and Puget Sound Ry., each having several parties in the field. The outcome of these surveys is being watched with interest, as they will affect the construction of lines in the coal districts on the borderland of British Columbia and Alberta, in which both companies are interested, and through which both hold charters to construct railways.

While construction is being proceeded with on the section of the Vancouver, Victoria and Eastern Ry., westerly—the section between Keremeos and Penticton being the scene of operations—the point to which the company's officials are paying most attention at present is in Vancouver, B.C., where terminals are being

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1909

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up by a line from Fernie, westerly connecting up the lines in the Red Mountain district with the Vancouver, Victoria and Eastern Ry., at Grand Forks, B.C. The work is now in progress.

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While construction is being proceeded with on the section of the Vancouver, Victoria and Eastern Ry., westerly—the section between Keremeos and Penticton being the scene of operations—the point to which the company's officials are paying most attention at present is in Vancouver, B.C., where terminals are being provided. The lines which the company constructed were south of the Fraser River, these are carried over that river into New Westminster by the bridge erected by the Government, and thence into Vancouver by a line constructed by Vancouver, Westminster and Yukon Ry., which the V.V. & E.R. acquired over a year ago. In Mar., 1907, the company obtained an order from the Board of Railway Commissioners with respect to the location of a line from False Creek to Burrard Inlet, and after developing its plans a new order was obtained Jan. 23, 1909. Under this latter order the work of laying out the terminals is being proceeded with, the contractors being Ironside, Rennie and Campbell, who state that they have instructions to push the work as rapidly as possible. The route of the line crosses the British Columbia Electric Ry. at Harris and Hastings Sts., and that company has given permission so that work may not be delayed pending the obtaining of the formal order from the Board of Railway Commissioners.

June 1909
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Great Northern Ry. Lines in Canada.

A Winnipeg press despatch referring to railway construction work in Manitoba and the other western provinces says that under the name of the Great Northern Ry. the Hill interest operations are practically nil but there are at least a dozen companies operating under local charters actively engaged in constructing short lines, or in surveying for short lines, which when connected will form a formidable rival to existing lines in Canada, as seven or eight of them will give direct connection between the projected main line in Canada and the main line in the U.S., making outlets for Canadian wheat which, of course, will be taken direct to Minneapolis mills.

Jas. Fisher, K.C., the legal representative of the G.N.R. in Winnipeg, stated May 27 that all surveys for the G.N.R. direct air line between Noyes, N.D., and Winnipeg had been completed, and he had no doubt but that the line would be constructed this year. A contract had not yet been let, but it was not too late, as the line would be only 60 miles long.

The company's plans for entering Winnipeg have been filed with the Railway Department, but not with the city council.

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it. The plans show that in order to come into the city by surface tracks it will be necessary to cross Leonard, Ellen, Isabel, Nava, Teuamseh, Brand, Xante and McPhillips Sts. The company proposes to put in subways at Nava and Isabel, and the two main avenues.

the company is proceeding with the work of station building and otherwise providing facilities for carrying the increasing traffic.

Location surveys for the line to Vancouver, are being proceeded with along the valley of the North Thompson River.

At Prince Rupert, C. M. Hays, President, stated recently, it was expected that of the first 100 miles there would be completed by Oct. 1, the section to the Copper River. The sale of lots at the Prince Rupert townsite took place at Vancouver, B.C., May 25 to 29, and it was reported that over \$1,000,000 was realized.

realized.
Pacific, Northern and Omnica Ry.—
In 1902 the Dominion Parliament incor-
porated a company with this title, to
construct a railway having a total length
of about 900 miles, from Kluhat Inlet
on the Pacific coast, via Hazelton to
Teslin, or Atlin Lake, or both, and from
Hazelton to Peace River Pass, and
thence to Edmonton, Alta. Extensions
of time were granted in 1904 and 1906.
The charter came into the possession of
the C.T. Pacific Ry., and a section of
the line is now under construction.

G.T.P. Branch Lines.—E. J. Chamberlin, General Manager, stated recently that the company was preparing to let contracts for all its branch lines in Western Canada, so that construction could be gone on with. The Mayor of Regina, stated that W. Watnwright, fourth Vice-President G.T.P., had informed him that

term Canada, so that the Mayor of Regina, be gone on with. The Mayor of Regina, stated that W. Watnwright, Fourth Vice-President G.T.R., had informed him that the first line to be constructed would be that from near Yorkton to Regina, and that it would be finished this year, and that it would be finished this year, if men and money could do it. Contracts have been awarded to McMillan Bros. & Kenny, Winnipeg, for the section from Melville towards Regina, Sask., 35 miles; and to Rigby & Hyland, Fredericton, N.B., for the section from Melville to Yorkton, Sask., 25 miles. Tenders have also been received for the construction of a branch line from Biggar, northerly to Battleford, Sask., 43 miles. It is also hoped to be able to start construction this year on lines north and south from Melville, Sask., 200 and 330 miles.

Lines in Canada.

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Brandon and Southwestern Ry.—The Dominion Parliament in 1890 incorporated a company with this title to construct a line from tp. 1, r. 23 or 24, w. 4th mer., to the C.P.R. near Brandon, and extensions of time for construction were granted in 1894, 1896 and 1898. In 1899 it was given power to construct an additional line from tp. 1 to the western boundary of Manitoba, and in 1900 to construct lines to Gladstone, Cameron and Winnipeg, with a number of branches. This latter act also granted an extension of time for construction, and a further extension was granted in 1903. The original mileage authorized was 70 miles, and no construction has taken place.

Kaslo and Lardo-Duncan Ry.—The Dominion Parliament in 1877 incorporated a company with this title to construct a railway of 150 miles from Kaslo to Lardeau, thence to Upper Kootenay Lake, to the mouth of the Duncan River, with a headwaters of the Duncan River, with a branch from the mouth of Lardo River to Lardeau on Arrow Lake. The time for the construction of the railway was extended in 1900 and in 1905, but up to the present there has been no work done.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—Vancouver press reports state that the company will start construction shortly upon its proposed wharves on Burrard Inlet. A spur in connection with the work is under construction from the head of False Creek, and will be completed by June 30. It is reported that 80% of the grading between Hedley and Princeton, B.C., on this line has been completed. Track-laying from Keremeos will be started as soon as there is no danger from high water, but Chief Engineer Kennedy says he cannot state when the steel will be laid into Princeton. The grading has reached a point near the Similkameen bridge, where a temporary structure will be put up for construction purposes. Plans have been prepared for a tunnel and a roundhouse at Princeton, for terminal purposes during the construction of the Ashcroft branch, and the main line up the Tulameen. A number of spurs and side tracks are also to be constructed in the vicinity for the handling of the output of the V.F.M. Co.'s colliery. (June, pg. 417.)

The Canadian Northern Ry. is reported to have purchased the Empire Hotel, Winnipeg, adjacent to the Fort Garry station.

Grand Trunk Pacific Ry.—It is expected that by Sept. 1, the company will have its line in operation from the head house, Lakes to Edmonton,

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Consolidated Co. to the above.

Great Northern Ry. Lines in Canada.

Land is being purchased in the vicinity of Winnipeg for right of way, one report stating that it is for the Northern Pacific Ry. As this company is in alliance with the G.N.R., the work being done will probably have some bearing on the construction of the latter company's projected line from Emerson to Winnipeg. The N.P.R. as well as the G.N.R. owns charters enabling it to construct a considerable network of lines throughout Manitoba.

A copy of a resolution passed by G.N.R. directors was filed July 7 at Helena, Mont., announcing the company's intention to construct a line northerly from Poplar, Valley county, Mont. to the International Boundary. Poplar is a station on the G.N.R., in the Fort Peck Indian reservation, and the proposed line will follow the Poplar River valley to the boundary line between Montana and Saskatchewan. It is reported that work is to be started this season, and that on reaching the boundary line, construction will be continued to Regina, Sask., under a Canadian charter.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—Tracklaying is being proceeded with rapidly upon the extension of this line westerly into Penticton, B.C. It was expected that track would be laid to the second crossing of the Similkameen River by July 31, and it is hoped to reach Twenty-mile creek by Aug. 15, to complete the bridge across that creek by the end of the month, and to get into the yards at Hedley by Sept. 1. Past Hedley, it is expected to be over the third crossing of the Similkameen River by Sept. 15, and to have the track laid into Penticton by Oct. 15. The ballasting gang is following up the tracklaying work, and it is expected to have the ballasting completed so that trains can be run into Penticton by Dec. 1. Beyond Penticton, the located line is being opened up so as to be ready for the grading gangs as they come off the section into Penticton. (July, pg. 503.)

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Great Northern Ry. Lines in Canada.

Midland Ry.—J. Fisher, K.C., President, together with a number of officers of the Great Northern Ry., St. Paul, Minn., met the Railway Committee of the city of Winnipeg, Aug. 3, to discuss the question of the entrance of the various G.N.R. subsidiary lines in Manitoba, into Winnipeg. The plans, which were filed with the Board of Railway Commissioners in 1906, show an entrance from the city boundary on lot 56 to a site on Paulin St., between Ross and Pacific avenues, west of Princess St. At that time it was intended that a passenger station would be constructed on Paulin St. It is now proposed that the site be used for a freight shed and yard only, and that the passenger traffic come in over the Canadian Northern Ry. from Fort Whyte, and be deposited at the Fort Garry station. The land purchased in Winnipeg in the interests of the G.N.R. comprises blocks A, B, and C, 110 acres. It is said that according to the original plans, the property between Ross and Pacific avenues will be used for tracks, crossing Leonard, Ellen, Isabel and Nena streets. The track will pass between Ross and Pacific until about midway between Nena and Tecumseh, then it will swing south, crossing Ross and Elgin avenues diagonally. After Tecumseh the line will run along the north tier of lots between Elgin and William streets. It will cross Tecumseh, Brant and McPhillips streets and join the old roadbed of the Manitoba and Southwest Colonization Ry., now owned by the C.P.R., crossing Notre Dame St. on river lot 50, and continue along the old route to lot 45. It will then run south, adjoining the C.P.R. Pembina branch, to the Assiniboine River. Adjacent to the river it will turn east to approach a swing bridge across the river, which will be necessary to provide for the passage of steamers. On the other side of the river it will enter lot 56, pass through the Borebank property and parallel the C.P.R. to the city limits. The shops and yards will be on the west side of McPhillips St., on the n.w. quarter of sec. 7, tp. 11, range 3, east. The conference was private, but it is understood that the company's engineers and the City Engineer will go over the plans, and consider the question of subways, crossings, etc., before another conference takes place.

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Vancouver, Victoria and Eastern Ry. and Navigation Co.—The Board of Railway Commissioners has approved of the company's plans for a branch line to connect its main line with the line it owns south of the international boundary. The negotiations between the company and the Vancouver city council with respect to the improvement of False Creek by dredging have been practically settled. As soon as the necessary papers have been drawn up and signed the company will be enabled to go ahead with the construction of its passenger station, freight sheds, and deep water shipping pier, etc. (Aug., pg. 577.)

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Mackenzie, Mann & Co.'s Railway Lines east of Port Arthur, Montreal, born at Kemptville, Ont., Oct. 31, 1857.

W. S. Taylor, ex-Treasurer C.P.R., born at Dornoch, Sutherlandshire, Scotland, Oct. 18, 1839.

E. N. Todd, Export Freight Agent C.P.R., Montreal, born at Huntington, Que., Oct. 17, 1879.

L. H. Wheaton, Engineer Maintenance of Way and Structures, Halifax and Southwestern Ry., Bridgewater, N.S., born at Sackville, N.B., Oct. 5, 1866.

G. B. Wyllie, Travelling Passenger Agent, Illinois Central Rd., Buffalo, N.Y., born at Toronto, Ont., Oct. 15, 1851.

Great Northern Ry. Lines in Canada

Vancouver, Victoria and Eastern Ry. and Navigation Co.—The route at present adopted for the continuation of this line from Penticton, B.C., towards Vancouver is known as the Coquilalla route. Chief Engineer Kennedy and a survey party are working in the vicinity of Eagle Creek, a tributary of the Tullameen River, with a view of securing a route which will save a considerable amount of heavy construction at the head of Coquilalla pass. From the head of Eagle Creek to Unknown Creek there is a long divide, which, if favorable for tunneling, will save some mileage in addition to a lot of heavy cutting.

Oroville to Brewster, Wash.—A contract has been let for the construction of a branch line southerly from Oroville, a station on one of the sections of the line known in Canada as the Vancouver, Victoria and Eastern Ry., which crosses over into the State of Washington, to Brewster, a distance of about 70 miles. The new line will tap the semi-arid district which the government is reclaiming in the Pouge Flat country, and will also furnish transportation to a considerable fruit growing area irrigated by private corporations. It is intended ultimately to extend the line from Brewster to a junction with the G.N.R. main line at Wenatchee, Wash.

Vancouver Terminals.—The proposition submitted by the company to the Vancouver city council for the construction

of terminal facilities in that city is under consideration. The draft agreement submitted states that the company will erect terminal facilities at, or near the intersection of False Creek and Jackson Ave., Dunleavy Ave., Gore Ave., or Park Lane produced. The city is asked to obtain the removal of all governmental restrictions, so as to be able to convey the lands constituting the bed of False Creek. The company will purchase the uplands on the north shore of False Creek from the easterly end of block 118, d.l. 198, over to a point opposite to its terminals, the city, if necessary, to appropriate the lands for the company. The company in turn will convey to the city the present foreshore of these lands, and the city will grant to the company the bed of False Creek further out. The company proposes to fill in the part granted to it within 90 days, and to establish its terminals thereon. They are to be completed within five years, and the Northern Pacific Rd. will join with the G.N.R. in the work, using the terminals for its own purposes. If the city desires, the company will fill in the foreshore adjacent, owned by the city, the latter to provide the bulkheading. The terminals are to be designed for union terminals so that the G.N.R., the N.P.R. and the Grand Trunk Pacific Ry. can all build lines into them. (Sept., pg. 647.)

H. Elliott, President of the N.P.R., spent some time recently in Vancouver, B.C. In an interview he said his company had not yet acquired any interest in the foreshore purchase on the north side of False Creek by the Great Northern Ry., and its entrance into Vancouver would hang entirely upon the outcome of the negotiations going on between the city and the G.N.R. The N.P.R. was anxious to enter Vancouver and the full completion of this project would depend upon the reasonableness of cost with which terminal facilities could be created. For the present the N.P.R., if it went in, would run its trains over the G.N.R. line between Sumas and Vancouver, using the B.C. Government bridge over the Fraser River. Present business would not justify the construction of a separate line, and the cost of such a line could be better employed at present in the construction of terminals.

achievement."

Great Northern Ry. Lines in Canada

Winnipeg Terminals.—It is understood that the Hill interests have recently made offers for the purchase of the amusement park, known as Happyland, to add to the properties already acquired for terminal purposes in Winnipeg. The price offered was said to be insufficient, but the matter has not yet been finally disposed of.

Midland Ry. of Manitoba.—The Manitoba Legislature has passed an act amending sec. 3 of the company's act of incorporation by striking out a number of words defining the route from Winnipeg to Brandon and westerly, and inserting the following words:—"In a generally westerly direction to the city of Brandon, thence in a generally westerly direction." Power was also given to transfer its constructed lines, together with all its franchises and rights to another company. (See Manitoba Great Northern Ry.

Manitoba Great Northern Ry.—The Manitoba Legislature has incorporated a company with this title for the purpose of acquiring the Midland Ry. of Manitoba, together with all its rights and franchises, subject to the approval of the Lieut.-Governor in Council. The capital is fixed at \$50,000, and it has power to issue bonds to the amount of \$20,000 a mile. The provisional directors are : L. W. Hill, R. I. Farrington, J. Fisher, C. P. Wilson and J. F. Fisher. Notice has been given that all formalities having been complied with, the M.G.N. Ry. has taken over the lines of the Midland Ry. of Manitoba, and has become possessed of all its rights, fran-

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chises, and other property. The lines taken over are two in number, namely, one from Gretna, on the International boundary, to Portage la Prairie, and the second from Morden southeasterly to the International boundary. A press report from Morden, Oct. 6, says that one of the first works to be undertaken will be the extension of the Morden line. The proposition under consideration is to extend the line in a northwesterly direction, passing two miles to the east of Miami and about four miles west of Rosebank, then, to near Rathwell, probably touching Carberry.

Saskatchewan.—Surveys are being made for a line running easterly from Regina, to connect with the Brandon, Saskatchewan and Hudson Bay Ry. at Brandon, Man., and also for a line from Regina to the International boundary to connect with one of the G.N.R. branch lines running northerly from near Minot, N.D. It is stated that construction will be started on these two lines by the end of the year.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—Preliminary surveys have been completed for the tunnel route for this line in the vicinity of Princeton, B.C. The new route diverges from the old at Otter Flat, following the Tulameen River to the mouth of Eagle Creek, thence along the creek for about a mile, where the tunnel begins and extends for eight miles to the Coquihalla. The tunnel will have a gradient of about 1%. The old route was a circuitous one via the Otter valley and the Coldwater and necessitated a 2% gradient. The tunnel route will reduce the distance between Princeton and Vancouver from 154 to 124 miles. It is estimated that the tunnel will take about five years to construct. While it is under construction a temporary line will be built to meet the pressing need of early connection with the coast. J. H. Kennedy is Chief Engineer of the line.

Nothing yet has been decided with reference to the projected terminals in Vancouver. Plans have been prepared for the erection of a new station at New Westminster, B.C. It will be located immediately to the east of the present station. The building will be two stories high, accommodation being provided on the ground floor for the company's business, while the second floor will comprise agent's quarters. Work will be started immediately. (Oct., pg. 713.)

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help to make your country great and they have done their work and made their mark in every realm of activity—in your senatorial chambers and legislative halls, in your colleges, in your laboratories, in your factories and workshops; and now you are paying us back; you are sending the cream of your western farmers to seize upon the Canadian west. In doing this, you are not only honorably paying a debt, but you are making a gilt edged investment. These good Yankee farmers will help to build up a new empire in the west, and help to develop the gold mine that never peters out, the golden wheat field. This year the Canadian west has reaped 120,000,000 bushels of wheat with only a tenth part of our wheat land gashed by the plough. When we reflect what the present means and foresee what the future holds, we can see the boundless international travel and traffic possibilities. You want no. 1 hard wheat for the mills of Minneapolis and elsewhere, and we shall want your manufactured and other products, and they will come and go, for no line of custom houses can dam the tide of trade, nor any tariff tinkers build a wall that a mogul engine will not flatten.

The railway men of both countries have an interest in taking advantage of these conditions and friendly co-operation (and good-will and friendliness are the cue), and the right spirit is abroad. Your association has hung out friendly signals, by holding your annual meeting last year in Canada. You elected as your president a Canadian (and he is a specimen brick), and you have in other ways practically recognized the obligations arising from a common interest. To show international amity the Canadian Ticket Agents Association has held several of its annual meetings in the U.S. for the promotion of good fellowship and the creation of an esprit de corps, as between the traffic officials of the two countries. This has more than a sentimental interest; it has a real, a substantial and tangible value, represented by facilitated and increased business. And the cordial reception that has been tendered me today, as the delegate of the Canadian Ticket Agents Association, is another proof of the freemasonry of railroading. The more we get together the more we see and know of each other and of the systems over which we route passengers to be handled by the lines under your jurisdiction, the better it will be for all of us and for the vast and closely interrelated interests we represent.

This brings me to a sore, or at least a tender spot in the hearts of the Ticket Agents Association. In our business capacity we can do everything, but one thing. We can send thousands of travelers over your systems, but we can't send ourselves except on the same degrading

changes is the best man for the business. Free transportation is the best possible means to this, and the legislation I have referred to shuts out many of the best ticket agents, men who, in connection with an honorably connected commercial business, have worked themselves high in the confidence of the public, and who can easily, and with advantage, use that confidence in connection with a ticket agency. With all the extensions you railway gentlemen are making, you might include the extension of free transportation to the now contraband class of our ticket agents. It won't cost the railroads much to carry us—our good company should be enough compensation—and we won't take up much room (with my native modesty, I speak for others and not for myself). It won't hurt the railway companies and will be a great benefit to us—on the same principle of the big hulking Cornish miner, who, on being chaffed for allowing his little wife to thrash him, philosophically answered "It pleases she and it don't hurt Ol."

In conclusion I wish to repeat my acknowledgments of the courtesy of your kind reception, of your patience in listening to my remarks, and to re-assert that the railway interests and the general national interests of both countries are very largely in common. We live under different flags, and though these two flags differ in color-blending and blazonry, they are woven of the same sterling fibre, constitutional liberty and free institutions, they stand for the same principles of enterprise, progress, and the rights of humanity. Although we owe and own different allegiance, we all spring from the same stock, the same blood flows in our veins, and common interests and common ambitions should make us allies and co-workers in all things separate in name, but united in aim. Both in the railway world and in national activities these two countries pulling together will make a team that cannot be beaten—fit to "make the grade" on a double track line, that will carry humanity on this continent to the highest destination of human achievement."

Great Northern Ry. Lines in Canada

Winnipeg Terminals.—It is understood that the Hill interests have recently made offers for the purchase of the amusement park, known as Happyland, to add to the properties already acquired for terminal purposes in Winnipeg. The price offered was said to be insufficient, but the matter has not yet been finally disposed of.

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The Governor in council has confirmed the act passed last session by the Ontario Legislature amending the Ontario Railway Act, 1906, in so far as the statute purports to prohibit or regulate work, business or labor within the legislative authority of the province on Sundays.

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ys. **Vancouver, Victoria and Eastern Ry. and Navigation Co.**—The Dominion Parliament is being asked to pass an act extending the time within which the company may complete its railway and extensions.

The G.N.R. annual report says the extension from Cloverdale to Sumas, B.C., 29.29 miles, has been completed, but is not yet formally opened for traffic. Work on the extension from Keremeos to Princeton, B.C., 41 miles, has been continued during the year. The grading had been completed and 1.5 miles of track laid to June 30. It was expected that the line would be completed to Princeton about Nov. 1. On March 15 the V. V. and E. Ry. and N. Co.'s line from South Westminster, via Olivers, to the International boundary, 21.05 miles, was put in operation. On the same day the new line from Blaine, Wash., to the International boundary, 2.96 miles, was put in operation. This gives a new through line between these points and does away with the New Westminster Southern Ry.'s old line. In connection with the new line from Blaine to the International boundary a new passenger station, custom house and water station was erected at Blaine, and the freight station enlarged. On June 4 the company completed the laying of track on its branch line at Vancouver to Baurrard Inlet. This takes the company's tracks to the shipping district of Vancouver, where it has valuable property which will shortly be developed.

We were advised Nov. 5 that track laying had been completed into Princeton, thus completing this year 45 miles of new track on this line. The track-laying work for the year was commenced at Keremeos. The company will complete a spur to the V.M. coal mine, 0.75 mile. The surfacing and bridging on the Keremeos-Princeton section was expected to be completed by Nov. 25. No further tracklaying will be gone on with this year. The question of the proposed tunnel from Tulameen to Coquihalla river, 7.49 miles, is still under consideration.

Recent reports from Hedley, B.C., state that the track laying gang had reached close up to Princeton at the end of October, and that ballasting and surfacing was being carried on with all the help available. It was expected that the regular train service would be put on by Dec. 1. The line has been fenced to Hedley; a station building and tank have been completed at Bradshaw, and the wires for the telegraph-telephone

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liability the company must allow the shipper the choice of paying the higher rate of freight, and being fully protected against loss if he wants to, and not compel him to accept a reduced liability without any option.

The second bill has for its object the limiting of appeals from the Board of Railway Commissioners' decisions. At present, he explained, it was very doubtful if any time limit existed. The bill provides that the Board shall not grant leave to appeal after 30 days from the making of the order; that leave to appeal to the Supreme Court shall not be given unless some doubtful question of law is involved and unless serious loss and injury will result from immediate compliance with the order sought to be appealed from, and that no appeal, even should leave have been granted, should lie if it is not prosecuted within 60 days, that is within 30 days after leave to appeal has been granted.

The third bill deals with the question of level crossings, and was introduced for the purpose of changing the amendment to sec. 238a passed last session. The proposed amendment reads:—"And where the railway has been constructed before the passing of this Act and is permitted by the Board to pass over any highway crossing at rail level, the municipality shall not be ordered to pay any portion of the cost or expense of protecting such crossing unless and except it is otherwise provided by agreement, approved by the Board, between the company and the municipal corporation." The Minister of Railways said the proposed amendment was subversive of one of the principles of the Act passed last session.

Great Northern Ry. Lines in Canada

Crow's Nest Southern Ry.—The G.N.R. annual report makes reference to the extension of this line from Fernie to Michel, B.C., 20.98 miles, which was substantially completed by May 1, 1908. The line had not been formally opened for operation when it was seriously damaged by the fire at Fernie, on Aug. 2. The damage was repaired and the line opened Nov. 30, 1908.

New Westminster Southern Ry.—In the G.N.R. annual report reference is made to the opening of the new line between Blaine, Wash., and South Westminster, B.C. The completion of this line, the report says, will permit of the abandonment and removal of the larger portion of the old heavy grade line, the Canadian portion of which is owned by the New Westminster Southern Ry., between the same points. (See also Vancouver, Victoria and Eastern Ry. and Navigation Co.)

with the new line from Blaine to the International boundary a new passenger station, custom house and water station was erected at Blaine, and the freight station enlarged. On June 4 the company completed the laying of track on its branch line at Vancouver to Baurrard Inlet. This takes the company's tracks to the shipping district of Vancouver, where it has valuable property which will shortly be developed.

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Recent reports from Hedley, B.C., state that the track laying gang had reached close up to Princeton at the end of October, and that ballasting and surfacing was being carried on with all the help available. It was expected that the regular train service would be put on by Dec. 1. The line has been fenced to Hedley; a station building and tank have been completed at Bradshaw, and the wires for the telegraph-telephone line have been strung between Keremeos and Hedley. Survey parties are still at work on the revision survey of a route from Otter Flat to the summit. The question of further construction between Princeton and the coast has not been decided. Chief Engineer Hogeland, of the Great Northern Ry., was in Hedley recently and made an inspection of certain portions of the proposed new route through the Hope Mountains. He made no statement as to when work would be gone on with beyond Princeton, but said that the men would shortly be engaged on new contracts. (Nov., pg. 851.)

The Temiskaming and Northern Ontario Ry. has increased the demurrage charges on freight cars from \$1 to \$3 a day, and the storage charges on package freight from 5c. to 10c. per package a day.

The British Government, a London, Eng., cable of Nov. 11 states, has decided to grant £135,000 towards the construction of the Collooney and Blacksod Bay Ry. in Ireland. The construction of this piece of line is a part of the project for the establishment of a fast All-Red rail and steamship line round the world, via Canada and Australia.

Great Northern Railway.

In connection with the various lines in Canada, owned by the G.N.R., the following information as to work done during 1909, and the work in progress will be of interest:—In Minnesota, the company has laid about 20 miles of track from Nashawauk to Grand Rapids. The extension is not yet completed. Nashawauk is on the Duluth, Swan River and Virginia line, and Grand Rapids is on the main line from Duluth westerly. In Washington State it has laid 60.62 miles of tracks from Columbia River to Westfield, a line projected to connect up in course of time with the company's line either at Marcus or Republic, and so give a through connection with its existing lines in the Kettle and Kootenay valleys in British Columbia. Another piece of line completed is the reconstruction from Blaine to the International boundary, 2.96 miles. This line connects with the Vancouver, Victoria and Eastern Ry., at the boundary and runs into Vancouver, replacing the old New Westminster Southern Ry., which has been abandoned. The lines under construction or projected are:—In North Dakota, from Stanley to Powers Lake, 24 miles; this branch runs north-westerly, towards the International boundary. In Montana a line is projected for 52 miles from Bainsville, to Plentywood, also just south of the International boundary. In Washington State a line is under construction from Oroville, on the section of the Vancouver, Victoria and Eastern Ry., which runs south of the International boundary, to Pateros, 76 miles. This line will ultimately connect with the main line at Wenatchee. In connection with the Spokane, Portland and Seattle Rd., the company is also constructing two miles of line at Spokane.

Midland Ry. of Manitoba.—We are advised that no recent purchases of land have been made for terminal purposes in Winnipeg by the M. Ry. of M., or any of the other companies connected with it; neither is any further purchase contemplated. Practically all the property required was purchased some time ago. It is not likely that any construction will be proceeded with during the winter.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—The laying of track into Princeton, B.C., is reported completed, the mileage laid during the year, from Keremeos, being estimated by A. H. Hogeland, Chief Engineer, St. Paul, Minn., at 42 miles; and by J. H. Kennedy, Chief Engineer on the work at about 45 miles. The estimates were made on different dates, and at neither time was the work completed. The company also completed and put in operation 21.05 miles of new line from the International boundary, north of Blaine, Wash., to New Westminster, replacing the old New Westminster Southern Ry.; the track laying for this line was completed in 1909. It also completed the portion of the line from Cloverdale to Sumas, B.C., 29.29 miles; 27.29 miles of track had been laid on this line up to Dec. 31, 1908, so that only two miles

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The section of the line between Keremeos and Princeton was taken over by the operating department, Dec. 8, and a permanent train service was put on Dec. 11. The company is purchasing a right of way for the extension of the line from Princeton and Abbotsford in the Fraser River Valley, west of the Hope Mountains. (Dec., 1909, pg. 887).

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Great Northern Ry. Lines in Canada.

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	Midland Ry. of Manitoba.—The Winnipeg City Council has refused to adopt the plans submitted by the company for an entrance into the city, and has referred the whole matter back to the railway committee for further consideration. The principal objection to the plans was that they only provided for the erection of a freight shed, whereas the city had been led to expect that a passenger station would be provided.
150,545	At a joint meeting of the Winnipeg City Council railway committee and a number of ratepayers with L. C. Gilman, a proposition was submitted to the company that opposition to the entrance of the line, on the plans presented, would be withdrawn if provision be made for operating the line in the city by electricity. Mr. Gilman said the matter would be considered by the officials at St. Paul, Minn.
594,627	Brandon, Saskatchewan and Hudson's Bay Ry.—The Dominion Parliament has granted an extension of time for building the remaining portion of the company's projected railway.
320,469	Penticton Ry.—A company with this title has been incorporated by the British Columbia Legislature to build a railway from Penticton to the International boundary in the vicinity of Osoyoos Lake. The provisional directors are:—A. H. MacNeill, J. H. Kennedy, and E. B. Howes.
107,145	J. H. Kennedy, Chief Engineer V.V. and E. Ry., was in Oroville, Wash., April 3, for the purpose of going over the route surveyed for this projected line by — Russell. The line is to connect with the V.V. and E. Ry. at Penticton.
235,746	Vancouver, Victoria and Eastern Ry. and Navigation Co.—Work on the round-house and other divisional buildings at Princeton, B.C., the present end of track, is reported to be proceeding rapidly. Sixty acres have been reserved for yard and other purposes.
82,942	J. H. Kennedy, Chief Engineer, arrived at Keremeos, April 5, from a trip of inspection of the construction going on between Abbotsford and Hope.
139,398	An agreement was finally made April 12, between the company and the Vancouver City Council with respect to location of the proposed terminals for the Great Northern Ry. lines at the head of False Creek. The corporation assigns to the company its right to the bed of False Creek, between certain defined points, which is to be filled in by the company, and there is to be erected thereon, freight and passenger stations and terminals within five years, to cost not less than \$1,500,000. A union passenger station is to be constructed near Gore Ave., and the company releases to the corporation certain riparian rights in the bed of False Creek, east of Westminister Ave. The agreement has to be approved by the ratepayers before becoming operative.
43,661	The Provincial Engineer has written
1,082,479	
580,589	
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Vancouver, Victoria and Eastern Ry. and Navigation Co.—Work on the round-house and other divisional buildings at Princeton, B.C., the present end of track, is reported to be proceeding rapidly. Sixty acres have been reserved for yard and other purposes.

J. H. Kennedy, Chief Engineer, arrived at Keremeos, April 5, from a trip of inspection of the construction going on between Abbotsford and Hope.

An agreement was finally made April 12, between the company and the Vancouver City Council with respect to location of the proposed terminals for the Great Northern Ry. lines at the head of False Creek. The corporation assigns to the company its right to the bed of False Creek, between certain defined points, which is to be filled in by the company, and there is to be erected thereon, freight and passenger stations and terminals within five years, to cost not less than \$1,500,000. A union passenger station is to be constructed near Gore Ave., and the company releases to the corporation certain riparian rights in the bed of False Creek, east of Westminster Ave. The agreement has to be approved by the ratepayers before becoming operative.

The Provincial Engineer has written to the mayor of New Westminster, B.C., stating that the Government will not permit the Great Northern Ry., to erect a station on the grounds leased at the north end of the Fraser River bridge, until it agrees to allow the station to be used by any other railway company, which may make an arrangement with the Government to operate trains over the bridge. (April, pg. 275).

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Great Northern Ry. Lines in Canada.

Midland Ry. of Manitoba.—After several meetings between representatives of the company and the Winnipeg City Council, a compromise was reached in regard to the route which the company will follow in entering the city, and an agreement is being drawn up for signature. The arrangement was concluded by the Assistant to the President of the G.N.R., and the agreement is being prepared by J. Fisher, K.C., the company's legal representative in Winnipeg. The line proposed to be constructed will start from the terminus of a G.N.R. branch south of the International boundary near Emerson and makes an over line into Winnipeg. It is stated that construction will be started immediately after the agreement is signed. It is also stated that work will be started immediately building a second track on the company's line from Gretna, at the International boundary to Portage la Prairie.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—Construction is being proceeded with on the section between Abbotsford and Hope, B.C., the contractors being J. W. Stewart & Co. A sub-contract for 20 miles from Abbotsford to Chilliwack has been let to M. Welch & Co. and sub-contracts will, it is said, be let at an early date for the mileage between Chilliwack and Hope. It is expected that the work will be completed in about a year and a half. East of Hope Mountain construction gangs are at work between Princeton and Otter Tail, 18 miles. The route between Otter Tail and Hope has not been decided on, the question of tunnel or open construction being still under consideration.

A large force of men is engaged ballasting the line between New Westminster and Port Guichon, New Westminster and Cloverdale, and Port Guichon and Cloverdale.

Negotiations are being carried on with a view of bringing about a settlement of the differences between the B.C. Government, the company and the New Westminster City Council, as to the new station at the Fraser River bridge.

Speaking at Vancouver, April 30, J. J. Hill, who was accompanied by his son, L. J. Hill, President G.N.R., said it would be only a few years before his company would have a direct Canadian line between Vancouver and Winnipeg, tapping Calgary and other centres. (May, pg. 361).

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Great Northern Ry. Lines in Canada.

Midland Ry. of Manitoba.—The recent negotiations between representatives of the C.N. Ry. and the railway committee of the Winnipeg city council have resulted in an agreement by which, in order to cross various streets, six subways will be constructed at Brant St., Tecumseh St., Elgin Ave., lane between Elgin and Ross Streets, Ross St., and Nena St. A resolution was passed by the committee agreeing to a level crossing at McPhillips St., provided that a subway or overhead bridge be provided when the council at some future date might decide it was necessary, and that in the meantime the crossing be protected to the City Engineer's satisfaction. The company is allowed six months from July 1 to construct the subways, and the whole work has to be completed by April 1, 1911. The agreement applies to the entry of the line into the city, and the work to be completed by April 1, includes the track, shunting yards and freight sheds. These latter will take up the whole of the property acquired by the company between Ross and Pacific Avenues, west of Isabella St.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—In a recent interview at Keremeos, B.C., J. H. Kennedy, Chief Engineer, said construction on the line was proceeding satisfactorily beyond Princeton, but he did not think that any tracklaying would be done this year. A contract has been awarded to Ferguson for clearing about seven miles of the right of way in the vicinity of Abbotsford.

The by law confirming an agreement made between the company and the city council was voted upon by the citizens of Vancouver June 23. The city in 1907 granted certain lands on False Creek, east of Westminster Ave., to the Vancouver, Westminster and Yukon Ry., which company transferred them to the V.V. and E. Ry. This latter company acquired other lands in the same vicinity, and being desirous of obtaining further areas, after considerable negotiations with the city, an agreement was entered into by which the city grants the company, subject to Provincial and Dominion sanction, all its right to the bed of False Creek, east of Westminster Ave., above the ordinary high water mark, except the area to be occupied by Boundary Ave., extended 66 ft. from the north shore of False Creek to Glen Drive on the south shore, and some other small areas near by. The company agrees to reclaim the territory and to lay out its freight and passenger terminals there, within five years, and to expend on the work not less than \$2,500,000. A union passenger station is to be built near the intersection of Park Lane and Prior St., for the use of the G.N.R., the Northern Pacific Ry., the G.T. Pac-

JULY
1910
P537

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Vancouver, Victoria and Eastern Ry. and Navigation Co.—In a recent interview at Keremeos, B.C., J. H. Kennedy, Chief Engineer, said construction on the line was proceeding satisfactorily beyond Princeton, but he did not think that any tracklaying would be done this year. A contract has been awarded to Ferguson for clearing about seven miles of the right of way in the vicinity of Abbotsford.

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Great Northern Ry. Lines in Canada.

Midland Ry. of Manitoba.—It is said to have been decided for the present to abandon the intention to build a line from Emerson, at the International boundary, into Winnipeg, an arrangement having been made for running rights over the Canadian Northern Ry. between these two points. The M.R. of M. will build a line from Fort Whyte Jct., at the south-west corner of the city limits, to the freight terminals on Ross St. This line, which will be used for freight purposes only, the passenger trains being run to the Fort Garry union station, will run parallel with the C.P.R. Gretna line from Fort Whyte, on the east side, to Elgin Ave., where it will turn eastward to Ross St. The tenants of the property on Nena St. were all required to vacate by July 15, in order that the different premises might be pulled down. J. Fisher K.C., the company's solicitor, recently said an engineer and party were preparing plans and as soon as they are sufficiently matured work would be started. The first work to be taken in hand will be the subways.

Offices have been opened in the Oris Block, Nena St., with A. Jackson, of the C. N. Ry. engineering staff, St. Paul, Minn., in charge.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—The amended plan and profile and book of reference of the company's proposed line from the east side of sec. 15, tp. 16, to the west line of tp. 26, New Westminster district, 18.3 miles, certified by the Board of Railway Commissioners, has been deposited in the New Westminster city land registry office.

Application is about to be made to the Board of Railway Commissioners for authority to build a spur track to the Vancouver-Prince Rupert Meat Co.'s plant at Sapperton, B.C., and a connection with the C.P.R., as shown on plans deposited in the Land Registry office at New Westminster.

The construction of a bridge at Broadway East, Vancouver, is recommended by Assistant Chief Engineer Stewart in connection with the False Creek reclamation and development plans. The bylaw confirming the agreement as to this property, referred to in the last issue, was voted on June 28, and was carried by a vote of 2717 against 657, or 692 more than necessary. A. E. Howard, on behalf of the company, said steps would be at once taken to buy out or expropriate the other owners of riparian rights around the head of False Creek, and the company would then go ahead, file plans, and start work immediately on their approval. The work would go ahead fully as soon as the city had secured from the Dominion and Provincial Governments a relinquishment of their rights over the tide flats in the creek.

Two new tracks for passenger traffic and two for freight are being added to the company's present yard terminals in Vancouver. (July, pg. 537.)

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Great Northern Ry. Lines in Canada.

Midland Ry. of Manitoba.—In connection with the reports mentioned in our last issue, that a survey was being made for a line from the G.N.R. track in St. Vincent, Minn., to the Northern Pacific Rd. station at Pembina, N.D., over which the G.N.R. trains would be run to a more direct connection with the Canadian Northern Ry. than at present, we are officially advised that nothing is being done by the G.N.R.

Kaslo and Slocan Ry.—During the recent forest fires in British Columbia the line of the K. and S. Ry. was practically burned out. The line is being rebuilt as far as Sprouls, and it is reported that the work of rebuilding to the terminus at Sandon, will be completed in the spring of 1911.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—The grading on the 15 mile stretch westerly of Princeton, B.C., was reported practically completed, and several gangs of men were reported to have been laid off at the end of Aug. About 100 men were reported at work early in Sept. finishing up the work. No further work is to be done on this section of the line at present.

J. H. Kennedy, Chief Engineer, arrived in Princeton, Sept. 1, from Hope, via Coquihalla Pass and the Otter Valley. He had been going over the line of the survey made by the company's engineers who had been engaged in trying to locate lower gradients than previously obtained over the Hope Mountains. He stated that along the Coquihalla River it was expected that a gradient of 2.50% would be obtained, but there was a possibility of its being reduced to 1%. The heaviest part of the work is on the western side of Hope Mountain. The highest point reached will be at Coquihalla summit, 3,600 ft. high. From the summit along Coldwater and Otter creeks as far as Tulameen a 1% gradient can be obtained. The survey is being made to reduce gradients, not for the purpose of laying out a new route. C. Shaw, is in charge of a party making a survey between Hope and Abbotsford, west of the mountains. Construction work on the line at Abbotsford has been suspended for the present. One reason for the suspension of the work is that satisfactory arrangements cannot be made for purchasing the right of way in Chilliwack township, and that the grading gangs are being laid off as their work at Abbotsford is completed.

The company proposes to start at an early date building a 120 ft. addition to its freight station in Vancouver.

The Mayor and a delegation of the Vancouver city council recently had a conference with the Provincial Government relative to the plans for work at False Creek, in connection with the carrying out of the agreement made with the company. (Sept., pg. 735).

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October
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P. 845

Great Northern Ry. Lines in Canada.

Virginia, Minn., to Winnipeg, Man.—Reports are current in Duluth, Minn., that surveys are about to be made for the location of lines to connect up the G.N.R. near Virginia, Minn., with Winnipeg.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—It is expected that a contract will be let shortly for a line from Oroville on the International boundary to Penticton, B.C. The grading of the 18 mile section between Princeton and the Tulameen River, at the approach to the Hope Mountains, is expected to be completed in Oct. Just west of Princeton is a tunnel having a length of 1063 ft. Instructions have been received from St. Paul, Minn., that the gradients across the Hope Mountains must be still further reduced before any further contracts for construction will be given out. The gradient going east from Coquehalla summit and from the same summit west down to Hope, according to last year's surveys are 1% and 2½% respectively. From Princeton to Hope the distance by the route surveyed is 92 miles. The alternative to this long mileage and heavy gradient was an eight mile tunnel, but it does not seem likely that the tunnel will be adopted, as a revision survey is now in progress under J. E. Floyd. This survey party was sent out on the return of A. H. Hogeland, Chief Engineer G.N.R., and J. H. Kennedy, Chief Engineer V. V. & E. Ry. and N. Co., from a trip between Hope and Abbotsford.

Construction is in progress along a stretch of 13 miles from Abbotsford and Sumas River. There are six construction camps with a force of about 350 men. In addition to ordinary equipment the contractors are using three steam shovels and six dinkeys. Tenders for bridge construction were closed recently. The located lines of the V. V. & E. Ry. and the Canadian Northern Ry. from Sumas to Hope, 36 miles, are on the same right of way. In some instances for miles they are less than 15 ft. apart.

The amended plan, profile and book of reference for a line from the east line of section 15, township 16, to the west line of township 26, New Westminster district, a distance of 18.3 miles, certified by the Board of Railway Commissioners for Canada, has been deposited in the Registry office at New Westminster.

Work is in progress in Vancouver on five new tracks in the yards there. (Aug., pg. 623.)

Western Canada Power Co.—The com-

September

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P 735

Great Northern Ry. Lines in Canada.

Midland Ry. of Manitoba.—The Mayor of Winnipeg informed Jas. Fisher, solicitor for the company, Oct. 3, that unless the company's representatives immediately signed the agreement to proceed with the erection of terminals in the city, the streets closed would be declared open, and all negotiations with the company would be at an end. Mr. Fisher appeared before the Board of Control, Oct. 4, and stated that the company, he understood, was prepared to go ahead with the work on its projected terminals at Ross Ave. in the spring. He was in communication with St. Paul, Minn., on the subject, and was awaiting instructions. The wording of the agreement had not been definitely settled, but everything could be arranged if he had his instructions. The Mayor said the city was anxious to have the matter settled, the agreement signed, and the work started as soon as possible.

Projected Lines in Alberta.—A press report from Calgary states that Great Northern Ry. interests are planning to extend its railways through Alberta. The idea is to secure a line from near Sweet Grass, at the International boundary, which is a terminal point of the G.N.R., just south of Coutts, Alta., to Pincher Creek, to Calgary and Edmonton, and thence to the Peace River, with a branch through the Kootenay country to connect up with the Vancouver, Victoria and Eastern Ry. The report states that the Pincher Creek, Cardston and Montana Ry. charter will be acquired. This company is making surveys for a Coutts-Pincher Creek line, and applying to the Dominion Parliament for powers to build the additional lines named. The New York people at present interested in the P.C., C. and M. Ry. are said to be friendly to G.N.R. interests. (See Pincher Creek, Cardston and Montana Ry. under Railway Development.)

Vancouver, Victoria and Eastern Ry. and Navigation Co.—A spur line is being built from near Princeton, B.C., to the United Empire coal mine. No further construction is being gone on with at this end of the line, but the contractors are still pushing forward the work between Abbotsford and Chilliwack. Survey work from Chilliwack, through the Hope Mountains is still being proceeded with, and the engineers are hopeful of getting a route with a maximum gradient of less than 2%. Nothing has been announced as to when construction will be gone on with.

The improvements at False Creek, Vancouver, which are to be carried out under an arrangement between the company and the city council, have been held up by the Provincial Government declining to give its consent to certain parts of the plans. The matter is still under consideration and it is expected that something will be done, so that the work can be gone on with. The ques-

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after

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Great Northern Ry. Lines in Canada.

In the company's annual report for the year ended June 30, reference is made to its Canadian lines, as follows:—

The Manitoba Great Northern Ry. is the title of a company authorized by the Manitoba Legislature to take over the lines and charter rights of the Midland Ry. of Manitoba. To pay for these two lines—one from the International boundary to Portage la Prairie, and the other from the International boundary to Morden—the company issued \$2,040,000 of stock, which was subscribed and paid for in cash at par by the G.N. Ry. This sale left the M. Ry. of Man., which is controlled jointly and equally by the G.N. Ry. and the Northern Pacific Ry., divested of all its railways, but owning valuable properties in Winnipeg, which have not been developed, for terminal purposes. The G.N. Ry. investment in these properties is \$1,253,043.06.

The Winnipeg city council has the question of the terminals under consideration, and is desirous of ascertaining when it is proposed to proceed with the work. The company was granted an exemption from taxation on the understanding that the terminals were to be built immediately.

Brandon, Saskatchewan and Hudson Bay Ry.—An additional \$20,000 of the company's capital stock was issued to and paid for at par by the G.N. Ry., the proceeds being used to pay for additions and improvements completed to the line during the year.

It has been reported frequently recently that there was a likelihood of the line being sold to the Grand Trunk Pacific Ry., but this is denied by officers of both companies.

Crow's Nest Southern Ry.—There was issued \$30,000 of additional capital stock during the year, which was subsidized and paid for in cash by the G.N. Ry. The proceeds of the issue were used in repaying advances of \$19,393.32 made for betterments during 1908-09 by the G.N. Ry., and the balance used for additions and improvements to the property during 1909-10.

Nelson and Fort Sheppard Ry.—During the year there was expended on ad-

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December
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THE RAILWAY AND MARINE WORLD.

ditions and improvements on the line \$2,094.64, advanced by the G.N. Ry.

Red Mountain Ry.—Repairs, etc., on this line during the year were done to the value of \$767.84, which was supplied by the G.N. Ry.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—During the year the G.N. Ry., advanced to the V.V. and E. Ry. and Nav. Co., \$1,742,355.21 for construction purposes and to pay for property acquired. In partial repayment of advances previously made them has been issued to the G.N. Ry. the fully paid capital stock at par to the amount of \$10,000,000. It is proposed to apply to the Dominion Parliament for authority to issue additional common stock, to be issued to the G.N. Ry. in liquidation of its account.

The President's report showed that 40.91 miles of an extension from Kere-meos to Princeton had been opened for traffic on Dec. 23, 1909. A branch line was under construction from Oroville, Wash., southerly to Pateros, 78 miles, which was expected to be opened in the spring of 1911. Grading was being carried on from Princeton westerly to Tulameen, and from Abbotsford, near Sumas, easterly to Chilliwack, B.C.

The Board of Railway Commissioners, Oct. 28, directed the construction of a subway at Montrose Ave., Abbotsford, the cost to be met by a grant of 20% from the Dominion Railway Grade Crossing fund, but not to exceed \$5,000; the British Columbia Government consenting to pay 48% of the cost, the balance of 32% to be paid by the railway.

The question of acquiring foreshore rights at False Creek, Vancouver, by the city corporation is being brought before the Provincial and Dominion Governments, in order that the terms of the agreement between the city and the G.N. Ry. may be carried out. The terminals which it is proposed to erect on the site will be used not only by the G.N. Ry., but by the Canadian Northern Ry. and the Grand Trunk Pacific Ry.

New Westminster Southern Ry.—Additions and betterments completed on the line during the year cost \$10,304.70, which was paid by the G.N. Ry. (Nov. pg. 927.)

December
1910

THE RAILWAY AND MARINE WORLD.

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Great Northern Ry. Lines in Canada.

Manitoba Great Northern Ry.—Alderman Douglas, Winnipeg, stated Dec. 10, after an interview with J. Fisher K.C., who is solicitor for the G.N.R. in Winnipeg, that he had been advised from St. Paul, Minn., that no further progress would be made with the company's projects in Winnipeg and Manitoba at present.

Kaslo and Slocan Ry.—A. H. MacNeill, Solicitor for the G.N.R. in Vancouver, had a conference with the Premier of British Columbia, Nov. 29, respecting the question of the restoration of the K. & S. Ry. track and the resumption of train service on the line. A Kaslo dispatch Dec. 3, states that the G.N.R. is not anxious to operate the line at all, and another press dispatch, states that, "what is left of the line" will be "transferred to the C.P.R. and that the line will be rebuilt and operated next year."

Vancouver, Victoria and Eastern Ry. and Navigation Co.—Work has been suspended on the line in the vicinity of Princeton, B.C., for the season. Grading has been completed to Cardiff, and tunnel work at the entrance to Princeton was completed Nov. 30, 1910. It is said work will be resumed in June.

The Board of Railway Commissioners has authorized the building of an industrial track from False Creek to Powell St., Vancouver, paralleling the company's present track on Boundary St. Application is being made to the Board for permission to build two additional industrial tracks in the city.

Plans have been laid before the Board of Works of the Vancouver city council, showing the bridges which the company proposes to erect over the cut in Grandview at Broadview and Lakeview Drive. The plans were disapproved as they did not conform to the stipulations concerning similar structures in the city. The plans which the company is working out contemplate the laying down of two extra tracks in the Grandview cut, which will be widened all the way through the city. Three industrial spur lines are also contemplated in the same vicinity. The plans for the laying out of the land to be reclaimed at False Creek are being prepared, and these show that it is intended to lay at least 20 tracks. (Dec., 1910, pg. 1047.)

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