## PRINCE EDWARD ISLAND RAILWAY

## Car Ferry Service Between Prince Edward Island and New Brunswick.

By A. K. Kirkpatrick, M. Can. Soc. C.E., Professor of Civil Engineering, Queen's University, Kingston, Ont.

The various routes examined between Prince Edward Island and the main land of New Brunswick, with a view to estabof New Brunswick, with a view to entan-lishing a car ferry, are as follows: Richi-hueto to West point, Richibueto head to West point, Buctouche to West point, Shedisc or Points du Chene to West point, Shediac or Pointe du Chene to Summeraide, Shediac or Pointe du Chene to Summeraide, Cape Tormentine to Summeraide, Cape Tormentine to Carleton head, Pugwash to Carleton Bead, Pugwash to Charlottetown, Wallace harbor to Charlottetown Brule harbor to Charlottetown, John bay, Amet sound to Charlottetown, Picton to Georgetown, Pictou to Murray harbor, Pictou to Chariottetown, which will be taken up separately.
ICE CONDITIONS. The bord or shore

ice forms at all ports and will be taken up when considering each hazbor, as it varies n each case, due to the configuration of the shore, depth of water, and exposure.

The pan, rafted, berg, guif, and loiley ice may be considered under one head, although it varies in quantity in the different places, ine to the tides, winds, and shape of the

Pan ice, being the areas of flat ice which forms in the straits and drifts back and forth with the tides and wind, and varies in thickness 5 to 20 ins., would not prove a serious obstruction to a car ferry built

on ice-breaking principles.

Bafted ice, or piled ice, is the ice that is piled one cake upon another, usually at the outer edge of the bord ice, where a large field of pan ice, under motion due to the winds and tide, meets an obstruction in its path, such as the edge of the bord ice. Rafted ice may be formed between two large fields of pan ice of which one or both are in motion. The pan cannot be stopped at once, and the immense force behind drives the ice in tront, on top, and beams derived the loss in some places grounding in 25 ft. of water, and piling up 10 or 12 ft. above water level. If this takes place

ing in a solid in the sales place at low temperature, this piled ice is frozen into a solid mass.

The rafted ice usually forms at head-lands, and grounds on the reefs extending out from the headlands, forming a protection to the bord ice under the lee. It also tion to the bord lee under the lee. It also forms at the edge of the bord ice on straight stretches or bays, where there is sufficient fetch to permit the field or heavy pan ige to get in motion due to the heavy wind, therefore not necessarily forming to wind, therefore not necessarily forming to the same extent in the same place each year. This rafted ice forms some of the objections of the proposed terminals, and the overcoming of these difficulties may be provided for in the design of the vessel.

Berg ice is only encountered in the spring, when the break up occurs, and is chiefly composed of the rafted ice along the bord

ire, which piles on the reefs, breaking loose and drifting with the tide. The evading of these in a matter of navigation.

Oulf ice may be encountered after the break up occurs, and chiefly consists of heavy fields of pan ire, bord ice and raffed ire. from above the aboves of the soil ice, from along the shores of the guif, breaking loose and being driven by the winds into the tidal currents of the straits.

Lolley ice, though not dangerous to navipation, which may slow down the speed of pation, which may slow down the speed of a large steamer, for which provision has to be made in designing the details of the engines, is encountered in the Northumberland strait when the weather is favorable to its formation. From a rough examination of the strain of tion of the crystals, and inquiring as to the

conditions of the weather previous to its conditions of the weather previous to its appearance, I conclude that it is a mixture of anchor and frazil ice. It appears in the form of a heavy dense slush, and sometimes to the depth of 10 or 15 ft., and is husyant enough to bear up a man when standing on an oar or a plank placed on the ice. The an oar or a plank placed on toe ice. Lie frazil ice crystals are probably formed in the cold water when the temperature of the atmosphers is very low, and a wind stirs the water surface and prevents the surface

ice from forming.
The anchor ice, with its sponge like form, is formed on the bottom during very cold, clear nights when the radiation is great. When the sun rises high and its rays penetrate to the bottom, it frees the

rays penetrate to the bottom, it frees the masses formed, or they break away from the bottom owing to the force of the current. The ice drifts back and forth with the tide and wind, but the preponderance of the drift is eastward. The young ice forms in the western portions of the straits, and eventually fetches up in the eastern end of the straits, and gains in thickness from snow and frost as it ages.

24 ft. of water would be required at this sutrance across the bar. This depth would be difficult to maintain, on account of the littoral drift, also the stopping of the drift to the west of the breakwater is eventually going to weaken the sand beach to the east of the jetty if built, and cause a brenk, which will weaken the ebb and flow through the channel on which it would raly for its maintenance. This harbor would be very difficult, if not impossible, to make in a difficult, if not impossible, to make in a north to northeast gale and an ebb tide, on account of the sea and shoal water. Once inside there is a good protection and plenty of water. Good position for a slip could be secured, and when once dredged could be selected. could easily be maintained.

AT RICHIBUCTO HEAD, N.B., the bord ice forms at from 1,000 to 1,500 ft. out from the shore, and is liable to heavy rafted les on account of the exposure. Gulf ice may be met with in the latter end of March and April, when the winds are favorable for its movement to this point. This occurs occisionally, not annually. An artificial harbor, as well as about nine miles of rail-



Car Ferry Marquette and Bessemer No. 2, Percing Through Piled Ice, on Lake Bris.

The littoral drift is principally southward and eastward, due to the prevailing winds and configuration of the above, and in daveloping some of the harbors along the straits the litteral drift has to be serionaly considered when designing perman-ent improvements.

RICHIBUCTO HARBOR, N.B. Bord ice RICHIBUCTO HARBOIK, N.B. Bord ice forms only a short distance out from the entrance, and is liable to go out a couple of times during the winter, depending on the direction and force of the wind, and on account of its exposed position. A north to northeast wind, with a large field of pan ice, is liable to cause heavy raited ice across the entrance. The ice in the harbor makes the entrance. The ice in the harbor makes to the depth of from 18 to 24 ins. The old depth of from 18 to 28 ins. The one entrance to the east is now partially closed and has only about 10 ft, of water over the bar at low water, and it is only a matter of time until it will be completely closed by the littoral drift. The new entrance to the east of the breakwater may be improved by the construction of a jetty, but on account of the exposed position at least

way, would have to be constructed, includ-ing the bridging of the Richibusto river, if it were to be considered for one of the termini of the car ferry service. The bord ice forms as far out as the outer bar, and sometimes rafts heavily at this point, and is liable to go out a couple of times during the winter, depending on the wind and tide. East and west breakwaters would have to be built, enclosing a sufficient area to allow for the manoeuvring of a large vessel, and the exposure that it has and the distance required to go out to get deep water, would make this proposition a vary expensive one, and with a northerly gale it would be a question whether the harbor could be entered.

BUCTOUCHE HARBOR, N.B., is protected by a sand beach, along the shore of which there is considerable littoral drift. The entrance is at the east and of the spit and is obstructed by a stone ledge upon which there is only 12 to 14 ft. of water at low tide. There is also an outer bar of sand, on which there is only 14 to 18 ft. of water at low tide. All that can be counted on in the

tion to the bord ice under the lec. procee-It also forms at the edge of the bord lee on straight stretches or bays, where there is sufficient fetch to permit the field or heavy pan ice to get in motion due to the heavy wind, therefore not necessarily forming to the same extent in the same place each year. This rafted ice forms some of the objections of the proposed terminals, and the overcoming of those difficulties may be provided for in the design of the vessel.

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and drifting with the tide. The evading of these is a matter of navigation. Gulf lee may be encountered after the break up occurs, and chiefly consists of heavy fields of pan ice, bord lee and rafted ice, from along the shores of the gulf, breaking loose and being driven by the winds into the tidal currents of the straits. Lolley ice, though not dangerous to navi-gation, which may slow down the speed of gation, which may slow down the speed of

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inner harbor is 16 to 18 ft. at low water. To give 20 ft. of water at low tide to this harbor and its approach would entail a very large expenditure, and great difficulty and expense in maintaining an entrance channel, on account of the littoral drift.

POINTE DU CHENE, N.B. The bord ice forms for about 1% miles out from the present pier, and is subject to raft ice under tavorable conditions, with a northeast to southeast wind. There are several rock ledge shouls covering the entrance to this harbor, and it is \$1\%\$, miles from the pier head before a depth of 20 ft. at low water can be obtained. This would necessitate the dresigns of a channel \$2\%\$ miles long, a part of which would probably be through solid rock. This channel, when dredged, would rock. This channel, when dredged, would southeast wind. There are neveral re be expensive to maintain, on account of its exposed position and the littoral drift, as it is exposed to the northeast sea until under the les of the breakwater or railway wherf

CAPE TORMENTINE, N.R. The bord ice at Cape Tormentine forms at a straight line from the outer end of the shoals at Cape Jourimain and Tormentine reefs, upo which the ice piles and grounds, and forms a protection to the bord ice. There is a strong tidal current at this point, and betw n here and the island shore a curious condition of the tide is found, slack water commring at both shores first, and the reversal of the tides and slack water workreversing of the times and stack water work-ing out towards the centre, so that the reversing of the tide in the centre of the straits is from I to I½ hours later than on either shores. This condition of current has a tendency to open up leads in the pass ice when the straits are full. A considerable amount of lolley ice is encountered here during severe cold weather. Hafted ice may form at this point when a large field of pan ice is moving under a northeast gale at the flow of the tide. An extension to the pres-ent pier would be required, with slip and apron, and a short breakwater protecting them from the seas from the agron, and a short breakwater protecting them from the seas from the east, the amount of dradging varying with the largeth of pier extension. The tide varies from 3 to 8 ft. fall in seap and spring tide, with a 5 knot current in the straits. PUGWASH, N.B. Bord les forms for about

half a mile outside of Pugwash reef, and it is liable to rafted ice with winds from a northerly direction, ice in the roads forming about 18 ft. in thickness. There is a clay har across the entrance opposits Fishing point lighthouse. A channel would have to be dredged across this bar and the roads, to the channel side of the middle grounds to deep water in the harbor, this distance being about a mile. There are some rock ledge aboats covering the entrance to this harbor about two miles from the bar. The only position available for the allp and railonly position available for the allp and rail-way connection is just outside of the pres-ent wharves at Oxiey point. The tide at this point is from 4 ft. near to 7 ft. apring, and causes a current at the narrow ment of the channel of about 3 miles an hour. There would be great difficulty in turning a vessel in the narrow view with the atrees current in the narrow river, with the strong current.

WALLACE HARBOR, N.B. Bord ice forms about a mile out, and is subject to

rafting with a northeast wind. Harbor les rafting with a northeast wind. Harbor lea makes about 18 ins. thick. There is a sand har covering the entrance, which would require to be dredged. There is from 25 to 35 ft. of water at low tide inside the bar.

35 ft. of water at low tide inside the bar.

The harbor is exposed to a wind from
the northeast to east, but a landing alip
could easily be protected by a short breakwater. The Dominion Coal Co. contemplate
building a soul pier at this point, which will
necessitate dredging a channel through the
har and berth of the pier. The greatest
difficulty would be in getting a low line for
the railway, with abunting streamle in

and quite high and of sandatone formation. The connecting line to the Intercolonial Ry. would be about 7 miles.

TATAMAGOUCHE HARBOR, N.B., is

exposed to the east wind, and is very shaland would require extensive dredging and is out of the question for the forms

BRULE POINT, N.B., which is on Tata magouche bay, is exposed to northerly winds, and would require breakwaters to be built and a considerable amount of dradg-ing to get the necessary draught of water. The connecting link to the L. R. C. would be about 7 or 8 miles in length, through hald

country.
BRULE HARBOR, N.B., which is a part of Tatamagouche bay, is well protected, but would require a channel to be dredged for about % of a mile and a turning hasin at landing alip. The railway to connect Bruie harbor with the L. E. C. would be about 5

iles long. SALISBURY POINT, N.B., or John bay, which is part of Tatamagouche has 20 to 25 ft. of water at low tide, at a che bay, has able distance from the shore, and, with the breakwater, good protection could be obtained for a landing allp. The railway connecting link would be about 3 miles.

Ame ice conditions for Tatamagouche harbor, Brule point, Brule harbor Tatamagouche Salisbury point are all Tatamagouche bay. The bord ice forms across the entrance to the bay, from 18 to 24 ins., and raft ice piles on the shoals and at the edge of the bord ice. There is a deep water entrance to Amet sound, less than a mile wide, and flanked by the Amet and Waugh shoals, through which there is a heavy current due to the tides, and it would be a difficult place to enter during

thick or foury weather.
PHITOU HARBOR, N.S., has good water inside of har. Channel crooked over bar, but well lighted with range lights; 2% to 3 knot current over bar. Bord les sometimes forms from Lagan point to McKenzie head, and is liable to rafting, with a northeast wind. Heavy drift he is liable to choke up in the bay formed between Picton island and the mainland. Tides, spring rise 6 ft. and nesp 4 ft. Jes forms in the harbor from 18 to 18 ins. thick.

GEORGETOWN HARBOR, P.R.I. There is good water in this barber, but it is exposed to a southeast blow. The bord ice forms from 12 to 36 ins. thick, about mile out, and is subject to rafting with a southeast wind. The bord les, for a consoutheast wind. The bord les, for a con-siderable distance in from its edge, is liable to move out several times during the winter, if tide and wind are favorable. Heavy field ice is liable to jam into the harbor, with northeast or southeast winds. A landing slip could be protected by making the easterly leg long anough to provide abelier behind it. There is no current to speak of in this harbor. Tides, spring rise 5 th, peop 354 ft. ft, peop DA ft. MURRAY HARBOR, P.RI.

forms across the entrance of this harbor, and is liable to raft heavily. The entrance is exposed to the east winds and is narrow and finited by shoals. There is a bar across the entrance, through which a channel would have to be dredged. There would be great difficulty in maintaining this channel on account of the litteral drift. When once inside there is good prodrift. When once inside there is good pro-tection, but considerable dradging would be required to deepen and straighten the channel and give a turning hasin. There is a branch of the P.E.I. Ry. to this point. CHARLOTTETOWN, P.E.I. There is good water inside this harbor and land locked when inside the narrows. Ice forces

locked when inside the antrows, from 18 to 24 ins. thick. Current 21/2 knots

from Point Prim to St. Peter's island, and from rount rains to be resers assand, an is subject to rafting. Under favorable conditions the first ice may raft in one a more windrows inside of the final edge a bond ice to the depth of from 4 to 8 ft bord lee to the depth of from 4 to 8 ft.

There is a good site for landing allo eax
of the railway wharf, with plenty of room
for turning basin. Tide, spring rise 9 ft
and neap 3 ft.

CAPE TRAVERSE, P.E.I. There is to:

much littoral drift at this point, and to-

far to go to obtain deep water.

CARLETON HEAD, P.E.I. The bord ice forms from 18 to 30 ins. thick from the outer end of the piled ice on the reef at Cariston head, to a corresponding point our from Cape Traverse. The early ice is liable to raft in one or more windrows inside of this line. In 1903 the most severe conditions were reported, when it is claimed that the rafted ice grounded in 25 ft. of water in some places. The conditions of the tidal currents and ice in the straits are the same here as at Cape Tormentice. Good water is to be had for a landing for a landing alip about 2,000 ft. east of Carleton head under protection of the point and at a short distance from the shore. This would under protection of the shore. This would accessitate the building of a connecting link with the P.E.I. By., Cape Traverse branch, of about 2 miles. Tide, spring rise

5 ft. and meap 3 ft.
SUMMERSIDE OR BEDEQUE HAR-bor, P.E.I. Bord ice forms from Sea Cow head to the Muscouche banks, with a probable rafting of earlier ice in one or more windrows inside of this line. Under favorable conditions the rafted ice at the edge of the bord ice may be quite heavy. The harbor is well protected when inside of the breakwater. There is considerable littoral drift from the west. The channel would require straightening and deepening inside of the breakwater, part of which work the Public Works Department contemplates doing during 1912. A suitable site can be obtained for a landing silp, with railway breakwater. There is considerable littoral connection.

WEST POINT, P.E.I. The bord ice off West point to Cape Egmont, and is subject to heavy rafting and piling under favorable conditions, when the piled ire will ground in four fathems of water and is from 20 to 50 ft. wide. This point is exposed to winds from the south and west and with a gale from north to northeast the heavy seas awing round the point and cause a heavy undertow. Two breakwaters would have to be constructed enclosing a large enough area for turning basin. About 10 miles of line would have to be built to connect with the P.R.I. Ry. There is considerable littoral drift to the south and cast. The drifting ice is seldom very beavy, and nearly always some open water may be seen, the position of the ice depending on the wind and tide. The current varies from 3 to 4 knots, the heaviest being during

TRAFFIC. The summer and fall trade with Cape Breton and the Nova Scotia mainland, sepecially from the east end of P. E. Island, will not be affected by the car ferry service no matter where the ferry is established, as the water rates will be less than the rail rates. It is the summer shipments to points south and west, and the winter shipments to all points that will be benefitted by the ferry service. With the opening up of continuous winter communication the produce now rushed out in the fall or held over well and make all the in the fall or held over until spring will fad an outlet during the winter at better prices, and will very likely affect the direc-tion of the traffic, the bulk of it passing through Moneton on its way to Rosion. Montreal, Ottawn and the Cohalt district. th the en the d Yaris sysited as miles;
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oranch,

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extending the time for the construction of the various lines authorized.

Prince Edward Island Ry.—The new car shops at Charlottetown, P.E.I., will be constructed in concrete to 4 in. above the floor, and the remaining height will be brick walls. The roof will be reinforced concrete on steel trusses. The contract has been let to E.A. Walberg, C.E., Montreal. (Oct., pg. 585).

Quebee Bridge and Ry. Co.—There have been erected by the contractors six sections, or 336 ft., and a start has been made

September 1906

Midway and Vernon Ry.—Spokane and Seattle, Wash., unconfirmed press reports state that survey parties are in the field locating a line between Midway and Vernon, B.C.; that R. A. Alley, of Seattle, is interested in the project; that R. Smalley, of Greenwood, B.C., was engaged in financing the line; that 5,000 tons of steel rails had been ordered in Pittsburg, Pa., and that it was understood that the C.P.R. was at the back of the project. (July, pg. 381.)

Minudie Coal and Ry. Co.—The report of the Provincial Engineer for Nova Scotia for 1905 showed that the plans, profiles and books of reference for the line throughout had been approved, and also standard plans for the structures for the same. Considerable construction work had been done on the line before work was suspended for 1905. We were advised, Aug. 17, that it was expected to have the line completed by Sept. 1, and that it would be opened for traffic immediately thereafter. The contractors, A. and W. D. Wheaton, have completed the grading, and have done the tracklaying and ballasting. The line extends from River Hebert on the Canada Coals and Ry. Co.'s line, to Minudie, where the company has its collieries, and was constructed to provide for the shipment of the output. The total length of the line is seven miles. (May, 1905, pg. 185.)

Owen Sound and Meaford Ry.—The distance between Owen Sound and Meaford, Ont., by the prospective route, will be about 30 miles. The route will follow the bay shore and will not pass through any villages except Leith. No contract had been let, and no construction had been done when we were last advised. J. G. Kerry, a G.T.R. engineer, made the surveys, and R. McDowal, C.E., of Owen Sound, will likely have charge of construction. No definite arrangements have been made with respect to the building or the operation of the line. Following are the officers and directors for the current year: President, Jas. McLauchlin; Secretary-Treasurer, A. G. Mackay; other directors: J. Wright, B. Allen, C. Eaton, H. B. Smith, G. Brown. (Aug., pg. 455.).

Prince Albert and North Saskatehewan Ry.

—J. E. Bradshaw, F. C. Baker, Senator Davis, W. Cowan, S. McLeod, O. B. Manville, V. S. Cook, Judge McGuire, of Prince Albert, Sask., and J. Simpson, of Yorkton, Sask., are the provisional directors named in the act passed last session of the Dominion Parliament for the purpose of constructing a railway from Prince Albert to Hudson Bay, via Pas Mission, connecting there with the Canadian Northern Ry. At a meeting of the provisional directors at Prince Albert, Aug. 19, it was decided to have a preliminary survey made of the route, and to arrange for an early start at construction. It was also decided to apply to the Dominion Government to guarantee the company's bonds at the rate of \$13,000 a mile.

Prince Edward Island By.—Tenders are being received for the construction of a car shop at Charlottetown, P.E.I. The new buildings will be erected on the site of the old ones, and will be of brick and concrete and of the most modern design. (Aug., pg. 455.)

Quebec, Montreal and Soldhern Ry.—The newly organized company, a subsidiary of the Delayare and Hudson Rd., which has

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Prince Edward Island Ry.-The Premie in reply to a question in the House of Commons, Jan. 22, said the total cost of th Hillsborough River bridge to date had been \$1,363,085.57, which included the substructure and the superstructure of the braige also the approaches and completion of road and floor for highway purposes. There wa a claim outstanding from M. J. Hancy, the contractor for the substructure and approaches, amounting to \$393,821.04, and from Hugh MacDonald, for work on the superstructure amounting to \$16,081,39 Mr. Haney's claim had been submitted to arbitration, Collingwood Schreiber, Consult ing Engineer to the Department, laving beer appointed sole arbitrator.) (Feb., pg. 99). In the course of a dispussion in the House of Commons, Feb. 17, respecting a motion for papers as to the construction of branel lines in P.E.I., it was stated that the presen-Covernment had practically reconstructed the line, and had built 60 miles of new railways. The Minister of Railways said that since 1875 there and been expended upor construction, renewals and operating expenses \$12,041,000. Since that year the railway had not come within \$2,500,000 of paying operating expenses. In the pass II years the Government had expended \$3,350,000 in construction works on the line. The railway, it appeared, could not be made to pay, but notwithstanding that the transportation claims of the Island would he given due consideration by the Govern

Queber Bridge and Ry. Co. The Minister

ment. (Feb., pg. 99.)

## Canadian National Railways Construction, Ber

Prince Edward Island Ry. Standardization.-The standardization of gauge on the Tignish Subdivision, Island Division, Atlantic Region, between Summerside and Tignish, 67.74 miles, preparatory work for which had been in progress for over a year, was completed Aug. 13. All the 31/2 ft. gauge rolling stock was removed from the subdivision on Aug. 11, and the changing of the rails from narrow to standard gauge was done on Aug. 12 and 13, in 18 hours and 20 minutes, so that, as Aug. 12 was a Sunday, there was practically no interruption of traffic. Shortly before the changing of the gauge, where rails then in use were to be retained, every other spike was drawn, ready for the moving out, and where new rails were to be used, they were laid outside the narrow gauge ones. In the standardization work, rails were used between the points mentioned, as follows:-Between Summerside and Wellington, 11.69 miles, 50 lb. rails theretofore in use. Between Wellington and Ellerslie, 11.76 miles, 67 lb. second hand rails from other C.N.R. lines. Between Ellerslie and Coleman, 13.33 miles, 50 lb. rails theretofore in use. Between Coleman and Alma 21.90 miles, 671/2 lb. rails which were rolled for the old Russian government. Between Alma and Tignish, 9.11 miles, 50 lb. rails theretofore in use. The gauge of the most important sidings was changed practically simultaneously with the main line, and the others are being done as fast as possible. The standardization work was done under the direction of T. B. Grady, Superintendent, Island Division, and A. Scott, Division Engineer, J. J. Bethune, Roadmaster, being in direct charge.

The standardization of Tignish Subdivision gives a standard gauge track through from Charlottetown to Tignish, 115.17 miles. There is also standard gauge on the Borden Subdivision, 12.11 miles, between Emerald Jct., 30.30 miles west of Charlottetown, and Borden. The standardization between Charlottetown

A full description, with plans and illustrations, of the laying of the third rail between Charlottetown and Summerside, and between Emerald Jct. and Borden, so as to allow the operation of both standard and narrow gauge trains, was given in Canadian Railway and Marine World for Feb., 1922.

Halifax and Southwestern Ry. Bridges.—The Board of Railway Commissioners has authorized the replacement of the following bridges:—Mile 65.9, across the Mush-a-Mush River, Chester Subdivision; mile 52.4, across the Annapolis River, Middleton Subdivision, Bridgewater Divi-

sion, Atlantic Region.

St. John Improvements.—Canadian National Rys. and the Public Works Department engineers are reported to be collaborating on plans for the development of the harbor and terminal facilities at St. John, N.B. Three different suggestions are said to be under consideration for the area at the South End, near Reed's Point, as follows:-1. That a wharf be built from the sugar refinery wharf to Reed's Point, and the area inside be reclaimed for yardage, etc. 2. That instead of closing up the gap, additional shipping be provided for, and one of two new berths be built according to a scheme which would not involve a straight line wharf. This would give the south end industries access to the harbor by water. The third scheme aims primarily at the removal of the present trestle and carrying the railway in the rear of the properties facing on Britain

Hardwood Ridge to Minto.—We are officially advised that a contract has been let to J. W. McMulkin and Fraser H. Fox, Upper Gagetown, N.B., for building a spur line from Hardwood Ridge, mile 58.84, Chipman Subdivision, Atlantic Region, to Minto coal mines, 4.88 miles. It will have gradients up to 1.5%, and curvatures up to 7 degrees. The only structure of any size will be an 85 ft deck plate girder span over Newcastle

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fore in use. The gauge of the most important sidings was changed practically simultaneously with the main line, and the others are being done as fast as possible. The standardization work was done under the direction of T. B. Grady, Superintendent, Island Division, and A. Scott, Division Engineer, J. J. Bethune, Roadmaster, being in direct charge.

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The standardization of Tignish Subdivision gives a standard gauge track through from Charlottetown to Tignish, 115.17 miles. There is also standard gauge on the Borden Subdivision, 12.11 miles, between Emerald Jct., 30.30 miles west of Charlottetown, and Borden. The standardization between Charlottetown and Summerside, 47.38 miles, and also on the Borden subdivision, was completed in Aug., 1919. Out of a total mileage of 276.77 on the Island Division, the following portions are still narrow gauge: Souris Subdivision, from Royalty Jct. to Souris, 54.98 miles; Elmira Subdivision, from Harmony Jct. to Elmira, 9.85 miles; Georgetown Subdivision, from Mount Stewart Jct. to Georgetown, 24.10 miles; Montague Subdivision, from Montague Jct. to Montague, 6.33 miles; Murray Harbor Subdivision, from Charlottetown to Murray Harbor, 47.70 miles; and Vernon Subdivision, from Lake Verde to Vernon, 3.78 miles.

The three rails, providing for both standard and narrow gauge operation, have been left down between Charlottetown and Royalty Jct., on Kensington Subdivision, 5.26 miles, so-that standard gauge rolling stock may be operated between those points and on west via Summerside to Tignish, and from Emerald Jct. to Borden; and so that narrow gauge rolling stock may be operated between Charlottetown and Royalty Jct, and on to Souris and Elmira, on the Souris and Elmira Subdivisions; and to Georgetown and Montague on the Georgetown and Montague Subdivisions. One of the three rails laid from Royalty Jct. west and on the Birden Subdivision, will be taken up, so that these lines will be standard gauge only.

September 1923 Prince Edward Island Ry.—The swing-span of the Hillsboro River bridge was placed in position, Oct. 19, and a special train passed over it, carrying a large number of officials and other guests on a through trip from Charlottetown to Murray Harbor, 44 miles, Oct. 26. The bridge was formally opened Nov. 1, and the Murray Harbor branch trains are being run regularly into Charlottetown.

Tracklaving on the branch from Cardigan to Montague, was completed Oct. 30, when only about a mile of ballasting was necessary in order to finish it ready for opening. The station building and turntable were built

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The plans for the new station at Charlottetown have been received by G. A. Sharp, The new building will be Superintendent. erected on the corner of Weymouth and Water streets, opposite the present station; it will be three stories high, with a frontage of 118 ft on Weymouth St., and 43 ft. on Water St., with a baggage room 28 by 45 ft., fronting It will be built of local on the latter street. sandstone, on a concrete and stone foundation, with expanded metal and concrete floors supported on steel beams. On the ground floor there will be located the general waiting-toom 40 by 40 ft; ladies' waiting-rooms 24 by 34 ft., and 16 by 24 ft.; smoking-room 16 by 25 it ticket office, trackmaster's, and paymaster's offices, vaults and lavatories. the second floor there will be provided offices for the superintendent, and auditor, engineers, accountant, cashier and their staffs, and traindispatchers, and rooms for trainmen, and the official files; vaults are also provided on this floor, and there is a 6 ft. hallway running from end to end of the building. It is not proposed to finish the third floor at present floor and wainscotting will be finished in narrow-width hardwood, and the ceilings There will be a concrete will be metal platform on the Weymouth St. front, and between the building and the tracks there will be a covered platform 12 ft. wide. will be four tracks approaching the station, where there will be platforms 14 ft. wide, covered by umbrella roofs, supported on Tenders will be called for at steel columns an early date. (Oct., pg. 459).

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Delivery is to be made in April.

Prince Edward Island Tunnel. Rev. Father Burke, who has been prominent in the agitation favoring the construction of a tunnel between Prince Edward Island and the mainland, on his return to P.E.I., from Ottawa, Jan. 19, stated that E. D. Lafleur, one of the engineers of the Department of Public Works, had been examining all the plans and data in the possession of the Department in connection with the matter, and was preparing a report for presentation to Parliament. It was anticipated that the report would be favorable to the project.—(Oct., 1905, pg. 461).

The Canadian Society of Engineers proposes

February 1906