

direct route to Moncton, with the most feasible crossing of the straits, should be the one which will benefit the greatest percentage of people on the island. Such being the case this will eliminate the Georgetown and Pictou route, the Charlottetown and Pictou route and the Murray harbor and Pictou route.

HARBORS NOT FAVORABLE. The harbors that are not favorable for the terminus of the car ferry route are as follows:—

Richibucto, on account of its exposed entrance, and difficulty in maintaining a sufficient depth of water over the bar.

Richibucto head, on account of its exposed condition, and difficulty and expense in building and maintaining an artificial harbor, and the construction of about nine miles of railway.

Buctouche harbor on account of its exposed entrance, the expense of removing the solid rock bar across the entrance and the difficulty and expense in making and maintaining sufficient depth of water across the bar.

Pointe du Chene, on account of the expense and difficulty in maintaining a dredge channel $2\frac{1}{4}$ miles long with a 20 mile exposure and at right angles to a heavy sand drift.

Pugwash, on account of being cramped for room, and the difficulty of turning a large vessel in the narrow channel in a swift current, and the rock ledge shoals covering the entrance to the dredge channel which would require to be about a mile long.

Tatamagouche, on account of being shallow.

Brule point, on account of its exposed position, and amount of breakwater and dredging required.

Murray harbor, on account of its exposure and difficulty of maintaining a channel across the bar.

West point, on account of its exposed position, and the difficulty of building and maintaining an artificial harbor.

ROUTES. The harbors that are considered unfavorable eliminate the following routes: Richibucto to West point, Richibucto head to West point, Buctouche harbor to West point, Pointe du Chene to Summerside, Pugwash to Charlottetown.

The following routes are eliminated on account of the ice conditions and length of haul for the preponderance of the traffic: Georgetown and Pictou, Murray harbor and Pictou, Charlottetown and Pictou.

This leaves Cape Tormentine, Wallace harbor, Brule harbor, and Salisbury point on the mainland, and Charlottetown, Carleton head and Summerside on P. E. Island, to be considered, with the various routes that might be established between these points. The mileage of the various routes remaining to be considered is as follows:

CHARLOTTETOWN AND TATAMAGOUCHE Bay Routes. In these routes, a course common to all, which is about 20

be safer to have a shorter route and one by which the termini could be approached by signal as well as lights.

CARLETON HEAD TO CAPE TORMENTINE. The tidal currents are stronger at this point than at any other, being $3\frac{1}{2}$ knots, but the shortness of the route, a distance of 8 miles, and the openness of approach, would enable the making of the landing stage by sound, during thick or foggy weather. The difference of mileage of Charlottetown and Summerside, from Sydney, Halifax to Moncton via Carleton head and Cape Tormentine, as seen in the table of mileage of various routes, is that Charlottetown is further from Sydney by 145 miles, from Halifax by 66 miles, and nearer to Moncton by 30 miles, than by the shortest route, i.e., by Salisbury point. Summerside is further from Sydney by 81 miles and Halifax by 2 miles, and nearer to Moncton by 94 miles than by the Charlottetown-Point Salisbury route, and as the bulk of the Sydney trade will still be done by water the difference in mileage bears a small part.

SUMMERSIDE AND CAPE TORMENTINE Route. The length of this route is about 20 miles, and would increase the haul on freight secured east of Emerald junction by 14 miles and decrease the haul secured at Summerside and west by 19 miles. But the objection to this route is the danger in navigating the straits in thick or foggy weather, due to the liability to overrun, or under run, one's course owing to the uncertainty of the tidal currents, especially near change and full, and the increased distance in which ice may be encountered.

ROUTE RECOMMENDED. Having considered all the conditions as to harbors and their improvements and maintenance, the routes, their lengths, safety of navigation and probable preponderance of traffic, I am of the opinion that the Cape Tormentine and Carleton head route will be the best and safest route of all those to be considered, will serve the convenience of the greatest number of people, and can be operated daily under all weather conditions by a properly designed steamer, adequate shore signals, and landing facilities.

[Editor's Note. Acting on the recommendation in the above paragraph of the report the Minister of Railways and Canals has selected the Carleton head-Cape Tormentine route. Carleton head is on the south coast of P. E. Island, and on the north shore of Northumberland strait, about 3 miles northwest of Cape Traverse, which is the terminus of the P.E.I. Ry. Cape Traverse branch, which leaves the main line at Emerald junction, 31 miles west of Charlottetown and 16.8 miles east of Summerside, the branch being 11.8 miles long. A connection of about 2 miles will have to be built from this branch, from between Albany and Cape Traverse to Carleton head. Cape Tormentine is on the northern coast of New Brunswick and south shore of

DESCRIPTION OF CAR FERRIES. The following is a short description of some of the car ferries and ice breakers built in various parts of the world:

The Maryland in the fifties ferried the Philadelphia, Wilmington and Baltimore cars across the Susquehanna and transferred to the East river, New York. Capacity, 2 tracks, 14 freight cars.

The Louise was built in the sixties, was built to run between San Francisco and the Oakland Rd.

The Transfer was built in the early seventies to transfer cars across the Detroit river between Amherstburg and Grosse Isle, for the Chicago and southern railways.

The Express, the first ice breaker, was built in 1887 at Oscarshamn, Sweden. Length 139 ft., beam $22\frac{1}{2}$ ft., draught, loaded, $11\frac{1}{2}$ ft., i.h.p. 400, speed 11 knots.

The Isbrytare, an ice breaker, was built in 1881 in Sweden, to keep open Catherburg harbor. Length $131\frac{1}{2}$ ft., beam 34 ft., draught $12\frac{1}{2}$ ft., i.h.p. 700.

The Oland was built in 1883 at Stockholm. Length 105 ft., beam 24 ft., draught 7 ft., i.h.p. 290, speed 10 knots.

The Bryderen was built in 1885 at Malmo, Sweden. Length 142 ft., beam 32 ft., draught 13 ft., i.h.p. 900, speed 11 knots.

Cape Charles was placed in the early eighties by the New York, Philadelphia and Norfolk Rd. as a transfer steam boat on the route from Cape Charles to Old Point Comfort, across the mouth of Chesapeake bay. Length 259 ft., beam 36 ft., draught 7 ft., capacity 4 passenger cars, speed $18\frac{1}{2}$ miles.

The Solano was put in service in the eighties across the Straits of Carquinez on the line of the Northern Rd., leased to the Central Pacific Rd. The current in these straits runs at 8 miles an hour and the range of tide is 9 ft. Length 424 ft., beam 64 ft., draught $6\frac{1}{2}$ ft., capacity 48 freight cars, or 24 passenger cars, length of run 1 mile.

The Switzer was built in 1885 at Copenhagen. Length 135 ft., beam 25 ft., draught $9\frac{3}{4}$ ft., i.h.p. 800.

The Starkodder was built in 1885 at Copenhagen. Length 150 ft., beam 27 ft., draught 10 ft., i.h.p. 900, twin screws, speed 11 knots.

The Ice Boat No. 2, a side wheeler, was built in Philadelphia, about 1886. Length 196 ft., beam $29\frac{1}{2}$ ft., draught $10\frac{1}{4}$ ft.

The Finnish Government designed a steam boat to take the place of the Express. Length $181\frac{1}{2}$ ft., beam 27 ft., draught 13 ft., speed $11\frac{1}{2}$ knots, i.h.p. 650, four bladed cast steel propeller.

The Detroit, a car ferry ice breaker, was built in 1905. Capacity 24 cars, tracks 3, length 308 ft., beam 64 ft., draught 14 ft., screws twin at each end, owner Michigan Central Rd., run Detroit, Mich., to Windsor, Ont.

The Drottning Victoria, a car ferry built in 1909, one of the four of this class between Sassnitz, Germany, and Trelleberg, Sweden, distance 65 miles. Length 370 ft., beam $53\frac{1}{2}$ ft., draught $16\frac{1}{2}$ ft., h.p. 4,400, not an ice breaker. Built at Walker-on-Tyne, England., owners, German and Swedish governments.

The Odin, a car ferry, was built in 1909, to ply between Korson and Nybork, Denmark. Length 293 ft., beam $48\frac{1}{2}$ ft., draught $12\frac{1}{2}$ ft., twin screws, i.h.p. 1,800, speed 15 knots, load 300 tons of cars.

The Christian IX., a sister ship to the Odin, was built in 1908.

In Denmark there are eight connections of railway ferries, their sailing distances ranging from 1 to 26 miles. Over 18 car boats are owned by the Government for working the traffic over these routes. Special ice breakers are in use to keep navigation open during the winter.

	To Sydney.	To Halifax.	To Moncton.	Via
Charlottetown	244	173	159	Salisbury point.
	247	176	152	Brule harbor.
	271	200	135	Wallace harbor.
	389	239	129	Cape Tormentine.
Summerside	292	221	207	Salisbury point.
	295	224	200	Brule harbor.
	319	248	183	Wallace harbor.
	372	223	113	Cape Tormentine.

miles long, is from light to light. One of the drawbacks to this common route is the uncertainty of the tidal currents, and their effect on running a compass course in thick or foggy weather, as evidenced by the grounding of the Earl Grey at Tonny river, her crippled condition very likely contributing to the accident. Another drawback is the shoals which beset the entrance to either harbor. For these reasons it would

Northumberland strait. It is reached by the New Brunswick and Prince Edward Island Ry., which runs from the Intercolonial main line at Sackville, N.B., 36 miles. The N.B. & P.E.I. Ry. will probably be acquired by the Government and made part of the I.R.C. system. The direct distance across the strait from Carleton head to Cape Tormentine is about 9 miles. —Editor.]