G. F. Baillargé, C. E.

most thorough survey was made of the whole Isthmus by Mr. G. F. Baillargé, Assistant Chief Engineer of Public Works.

Sir Casimir Gzowski.

In 1872 Sir Casimir Gzowski and the late Mr. Samuel Keefer, C. E., surveyed and recommended a line of Canal approximately on the route of the present Ship Railway.

Samuel Keefer, C. E., observed that in the comparatively isolated condition of the Provinces before Confederation the necessity for this short line of communication was not felt: but now that they form one united Dominion, bound together by ties, political and commercial, the trade growing up between them must tend year by year to give greater importance to the proposed shorter and safer line of navigation.

Cost of Canal.

The estimated cost of this line of canal by these engineers was $5,317,000, but Mr. Page, on examination of the estimate, alleged that there had been undervaluations and omissions, and he added to it 25 per cent. for undervalue placed on works, $1,329,250, and for omissions $450,000, making the probable actual cost of work, according to Mr. Page, $7,100,000.

Estimate revised by Mr. John Page.

Mr. Page declares a Canal unusually difficult of construction.

Mr. Page declared "that the construction of a navigable channel between the Bay of "Fundy and the Gulf of St. Lawrence, on any line that can be selected, will be an undertaking "attended with unusual difficulty, not only from the nature of the work to be done, but from "the great difference in the elevation of the respective tides."

Tides of the Bay of Fundy.

The range of the tides in the Bay of Fundy has always been exaggerated in school books and gazetteers. The most careful observations taken by Mr. Baillargé, C. E., in 1870, resulted in establishing the range of tides to be 38 feet at Neap and 48 feet at Spring tides. The greatest tide ever known occurred on the 5th October, 1869, at new moon. The range was then fifty-seven feet, six inches. It is well known as the Saxby tide, so called from a prediction made nearly a year before it happened, by Lieut. S. M. Saxby, R. N., which appeared in the London *Times* in December, 1868. The following reasons for the prediction were given in his own words: "At 7 a. m., October 5th, the moon will be at that part of her orbit "nearest the earth. Her attraction will therefore be at the maximum force. At noon of "same day the moon will be on the earth's equator, which never occurs without marked "atmospheric disturbance, and at 2 p. m. same day lines drawn from the earth's centre would "cut the moon and sun in the same arc of right ascension. The moon's attraction and "the sun's attraction will therefore be in the same direction. In other words the new moon "will be on the earth's equator and nothing more threatening can occur without miracle." This prediction was verified by very high tides and terrible storm on the Bay of Fundy.

Saxby's Prediction.

Tides of Baie Verte.

The extreme range of tides in Baie Verte was observed to be 10 feet 8 inches; the ordinary range being only 5 feet 7 inches. Thus while the fluctuations above and below the mean sea level were only 2 feet 9 inches at Baie Verte, they were at the same time 19 feet above and below mean sea level on the Bay of Fundy at Neap tides, and 24 feet at Spring tides.

Royal Commission of 1871.

Sir Hugh Allan, Chairman.

A Royal Commission composed of the most representative commercial men of Canada, selected from the different provinces, was appointed by the Government in 1871 to investigate the whole canal system of Canada, with the late Sir Hugh Allan as Chairman. The Baie Verte Canal after full enquiry and examination, was placed by them in the first rank of all the canals of the Dominion. The following is extracted from the report of the Canal Commission: "The "growth of Intercolonial trade depends on cheap transit, since the merchandise passing "between the Maritime Provinces and Ontario *must be of a bulky character*, requiring large "vessels and rapid dispatch to be really profitable. When a propellor can go direct with a

Traffic expectations.