

# Northumberland Straits Tunnel.

THE NORTH RIVER, P.E.I., 9th December, 1890.

Hon. G. W. HOWLAN, Charlottetown.

DEAR SIR,—Referring to the several samples of brick clay which you have placed in my hands for examination as to their freedom from lime, I beg to report as follows:

No. 1. Is the clay from Cardiff's brickyard, Charlottetown Harbour. The sample examined by me was free from lime, showing no trace, when subjected to hydrochloric acid under water. The bricks manufactured from it show no stains of lime under a good magnifier.

No. 2. Is clay from Hughes' brickyard, Tignish. The sample examined showed scarcely a trace of lime. It makes good firm brick.

No. 3. Is clay from Nail Pond. It occurs in large deposits, but is only suitable for general purposes.

No. 4. Is brick made at Hurd's Point, Bedeque. It shows a very small trace of lime. The other clays examined I think not sufficiently clear of lime to be considered here.

No. 1 clay. The clay no. 1 seems the most suitable from which to manufacture bricks for a tunnel. Bricks made from it are here laid in cement for tanks and experience shows them to be very suitable. Specimens of these bricks subjected to the action of salt water for fifty years have remained intact.

The deposits of this clay seem to be of sufficient extent to make a very large amount of bricks.

No. 5. The shale across the straits. I have examined also a specimen of the shale which is shown on my geological map of the straits of Northumberland and I am of the opinion whilst it would make a good brick for ordinary work it is not sufficiently free from lime for tunnel work.

In conclusion I beg to say that in my opinion good hard burned bricks could be delivered at either Cape Jourmain on the New Brunswick side or Carlton Head on the Prince Edward Island side of the straits of Northumberland at and after the rate from eight to ten (10) dollars per thousand.

I am yours respectfully,

FRANCIS BAIN.

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NORTH RIVER, P.E.I., 18th December, 1890.

To Hon. GEO. W. HOWLAN,  
Senator of Canada.

SIR,—In submitting to you the accompanying approximate section of the strata underlying the straits of Northumberland between Carlton Point and Cape Jourmain on the line of the proposed tunnel, I think it proper to give the following explanation of the data on which I based the conclusions therein expressed.

1. We know from a careful study of the exposures on either side of the strait that the strata in question belong to the lower half of the Permian formation.

2. We learn from its exposure by various upheavals on the borders of the strait what the nature of this group of strata is. At Rice Point, for example (see accompanying section n<sup>o</sup> 2), its beds are thrown up by a transversal and we have exposed on the sea worn coast line a beautiful section of them which we can examine in detail as we pass along the shore.

Here they seem to consist largely of red clay shale, and in every other instance when we find the same group of strata exposed it bears the same general character. This is the case in Hillsborough bay, in Bedeque and Malpeque bays, and on the western shore of the island, so that we may conclude that the lower Permian beds between capes Traverse and Tormentine consist largely of shales and shaley beds.