

THE DAILY EXAMINER.

JUNE 22, 1891.

The Proposed Tunnel.

THE report of Sir Douglas Fox and the correspondence of Mr. Francis Bain, published by THE EXAMINER, give the public a precise knowledge of the position in which this important matter now stands.

If anything more be needed, it is contained in the following lengthy quotation from a letter lately written by Senator Howlan :

"I left Halifax in the Allan steamer Carthaginian for Liverpool, via Newfoundland, on the 4th of April last, touching at Moville in Ireland, and arrived at Liverpool on Thursday morning, the 16th April.

"I wired Sir Douglas Fox from Moville that I would be in London on Thursday evening at the Metropole Hotel, Northumberland Avenue, and was desirous of seeing him at the very earliest moment on the subject of my visit.

"On my arrival at London at 2.15 p. m. I received a note from him at my hotel asking me to call at his office the next day, Friday, at eleven o'clock, which I did and arranged for a meeting at his office on Monday the 20th, at 11 o'clock. On Monday we went over the matter together very fully, in the forenoon, drawing up a memorandum for general reference and further discussion of the different points. We met again on Tuesday and from day to day until Monday, the 4th May. We had also the benefit of the advice of Sir Charles Metcalfe, C. E., Francis Fox, C. E., Chief Engineer of the Mersey Tunnel, Mr. Pearson, of Messrs. Pearson and Sons, contractors for the Hudson River tunnel; Mr. Squiers, C. E. of the Severn tunnel, and Mr. Palmer, C. E. of the Queensland Railways.

"Sir Douglas Fox also held consultations with Sir Benjamin Baker, C. E. and with Mr. Gresham, C. E., the builder of the Borough and Southwark subway under the Thames.

"I visited this subway with Mr. Palmer, and thoroughly examined its system of motive power (electric) and mode of ventilation, by fans.

"After a very full investigation of all the points connected with the Northumberland Straits tunnel, Sir Douglas Fox prepared a report to the Hon. Mr. Foster, the Minister of Finance, a copy of which has been furnished me and which is appended hereto marked "A."

"I was anxious that the Messrs. Pearson and Sons should make an offer to perform the work for a lump sum per year payable by a subvention for a period of years, no money to be paid until the contract was finished and the cars running through the tunnel to the satisfaction of the Chief Engineer of Canadian Government Railways. We had several interviews and some correspondence (which terminated in the letter annexed marked "B.")

"You will observe that Sir Douglas Fox recommends that trial borings should be made at intervals across the Strait down to 'bed rock' of carboniferous sandstone and also that a trial shaft should be sunk on the Island side, which would be bricked up and form part of the permanent work. Messrs. Pearson, you will notice, suggest the same thing. This is done with a view of affording all necessary information to intending contractors, and is, as I was informed, the custom pursued in England in letting public works.

"Mr. Pearson is of opinion, as will appear by his letter, that the money could be much more cheaply obtained by the Government than by any contractor.

"One most important fact has been demonstrated by the investigation, namely, that the red clay shale will make brick entirely free from lime, fit to be laid in cement, thus affording to our own people a large amount of profitable labor, as iron would thereby be very largely superseded. This discovery increases in importance when it is learned that there are only two places in the British Isles where clay can be found to make brick free from lime. I am in hopes that this fact being established may lead to the foundation of an important industry outside of the valuable aid it will be to us in the construction of the tunnel.

"You will observe in the annexed report of Sir Douglas Fox, that he gives an estimate for three sizes of tunnel. I would respectfully suggest that, as a preliminary step, the Dominion Government be requested to make the necessary trial borings, build the shaft on the Island side, and then call for tenders for each sized tunnel, leaving the question, which shall be adopted, to be decided after mature consideration. My reasons for making this suggestion are three-fold :

First.—The cost of building tunnels is cheapening every day. I have been informed on good authority that the St. Clair Tunnel could now be built in one-half the time and for one-half the money.

Second.—The red clay shale through which our tunnel would pass is very different from the material through which all other tunnels have been built; not being difficult to work and at the same time impervious to water, it offers to contractors a comparatively safe and easy contract.

Third, Sir Douglas Fox, in his estimates for public works, bears the reputation of providing very largely for all apparent as well as unforeseen contingencies.

We hope that the Government and people of this Province, as well as the maritime members of parliament, will second Senator Howlan's efforts to obtain from the Dominion authorities an order for the boring, etc., as suggested. Should it be absolutely proved—we have no doubt that it can be so proved—that Mr. Bain's statements are correct and true concerning the stratum which the tunnel will pierce, the tendency of the information will be to induce a company to undertake the work at less cost than if the fact were left in doubt. The proposed work would be considered a great one in any country. We cannot therefore blame the authorities for hesitating to undertake it while there remains a risk that the cost will be enhanced by reason of leakage. Settle this point to the satisfaction of all concerned, and there ought to be little further question about the matter. We have the assurance of the greatest of living engineers that the project is feasible; we have the contract of the Dominion Government to provide "continuous communication between this Province and the Mainland " winter and summer;" we have the estimate of Sir Douglas Fox that this contract can be fulfilled—even with the question of leakage still in some doubt—on payment of a sum which, for the Dominion of Canada, is not unreasonable; we know that the cost of building tunnels is cheapening, and that all doubt concerning leakage being removed, the cost of building the Northumberland Straits Tunnel will probably fall considerably short of the estimate. Knowing all this, it is but reasonable to ask that borings being made and a shaft sunk. The cost of boring and sinking the shaft will be comparatively trifling. Having done so much, and being so fortunate in every particular, it will be folly to let the matter stand where it is. Let us, therefore, assist Senator Howlan by every means within our power in his effort to induce the authorities to take the next step forward.

THE TUNNEL

CLAY FOR THE BRICKS

Geological Features Discussed.

Reports by the Geologist, Mr. Francis Bain.

The North River, P. E. I., December 9th, 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 harbor. 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 bricks.

No. 3 is clay from Hall Point. 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 those bricks have been subjected to the action of salt water for fifty years, and 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 be 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 Carleton Head on the Prince Edward Island side of the Straits of Northumberland, and after the rate of from eight to ten dollars per thousand.

I am, Sir, Yours respectfully, (Sgd.) FRANCIS BAIN.

North River, P. E. I., December 18th, 1890.

TO HON. GEO. W. HOWLAN, Senator of Canada.

SIR,— In submitting to you the accompanying approximate section of the strata underlying the Strait of Northumberland, between Carleton 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.

First.—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.

Second.—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 No. 2) its beds are thrown up by a transverse, and we have exposed on the sea worn coastline 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 the lower Permian beds, between Capes Traverse and Tormentine consist largely of shales and shaly beds.

Third.—Our examination of the exposures about the Capes proves this conclusion to be correct. The lowest bed of the series, cropping out in the marsh inside of Jourmain Island, is a large shale bed associated with some soft brown sandstone. This bed reposes on the millstone grit. On the top of this shale are five or six feet of red sandstone, seen on the outside of Jourmain Island. This is followed by another extensive bed of shale exposed on the beach at low tide, and for more than a mile out of this clay bottom prevails. Then comes a reef of rock making an elevation in the profile of the bottom of the Strait (See A section, No. 1) This reef is produced by a well-known crown and grey sandstone band occurring in this part of the formation, the same that produces St. Peter's Island reef. Succeeding this, going northward, is another great shale bed whose easy denudation has made the deepest soundings in the Strait. (B, Section 1.) Near the Prince Edward Island coast the sandstone come in with the shales, but that the latter still greatly predominate is evident from the deep soundings, six fathoms well into Carleton Point.

The strata between the capes repose on a very undisturbed position, being out of the line of the great anticline of the Gulf.

They have, however, a gentle inclination towards the centre of the Gulf basin, giving them a dip of 1° E. N. E. This undisturbed condition and small inclination of the beds makes them very favorable for tunnelling, as the excavation would enter the great shale bed on Jourmain Island, and be able to follow then a long way with little cutting across the strata. I must say, however, that the section given is but a rough outline of the general features of the formation under the Strait. In order to give a detailed and accurate account of the beds, one would need to examine carefully and extensively the sections along the borders of the Strait and probably require the

assistance of some test borings along the line of the proposed tunnel.

Most respectfully yours, (Sgd) FRANCIS BAIN.

North River, March 14th, 1891.

HON. SENATOR HOWLAN:—

SIR,— In reference to an extract from a communication of Sir Douglas Fox, which you kindly showed me, I beg to state that the cross section of the Straits referred to, viz: that sent to Sir Douglas last November, was drawn on a scale which represented the vertical depth proportionally thirteen times greater than the horizontal extension. This represented the beds with a dip thirteen times greater than they actually possess.

The real dip of the beds is very small, being about 60 feet to the mile on the average.

This small dip also is not quite regular, being greater on the Cape Jourmain side and less on the Prince Edward Island side. So far as I can ascertain, there are no abrupt flexures or upheavals of the strata, but they lie undisturbed on the slightly inclined ancient carboniferous floor of the Gulf. This floor has been broken up by in other parts of the basin, thus relieving the strain on the beds and leaving the strata undisturbed at the Capes.

I now send you Sheet No. 2 with a section (Fig. 1), in which the beds are represented on a natural scale. It has the advantage of presenting that nearly horizontal position at once to the eye.

In this section, as in the former, there appears "several well defined beds of sandstone." To these Sir Douglas Fox refers in particular. The most important of these are No. 2 and the sandstone bands in No. 4 (see Figs. 1 and 2, sheet 2.)

No. 2 represented as being 50 feet sandstone. In reality it consists of irregular deposits of brown and red sandstone, and red shale, with some calcareous beds. We find it appearing in several widely separated localities, but it is irregular and not continuous.

The upper sandstone bands in No. 4 are probably as well defined as any other sandstone in the whole series.

They bear the same characteristics as the sandstone beds of No. 5. We have these last well exposed in the shore section at Cape Traverse. In figure 3, I have given a section of the upper half of No. 5 as it appears in following its strike carefully for 3 miles. In that distance the sandstone is changed three times into extensive deposits of shale. The same is probably the case with the sandstone bands of No. 4.

In fig. 4 I have given a section of part of the calcareous band in No. 5. This shows its irregular and complex structure.

Indeed the minor bands of this series have no sort of continuity. The great shale beds are persistent and uniform, but the small arenaceous or calcareous deposits which occur in them are local, lenticular and discontinuous, and not likely to form leads for water. The great shale beds No. 1 and 3 are found continuously over an extent of more than 100 miles, along the basin of the strait, and compose the great bulk of the mass of the strata of the lower Permian.

They are much more extensively developed in the Cape crossing. These shales are impervious to water. Their surface always affords the water beds of the system on which the underground drainage accumulates until it finds an outlet. Bed No. 1 was partly penetrated by a well on Jourmain Island. A small quantity of water lay on the top of it, affording a weak spring, but not a drop occurred in its mass for the depth of 36 feet, which it was penetrated, and in well digging this is always found to be the case when these shales are penetrated.

The Carboniferous base of sandstone will probably form a dangerous source of water and it should be avoided, but as already remarked it does not break up under the bed of the strait here.

It is my duty to state, that, though convinced of the accuracy of what I now present a more minute and detailed geological investigation should be made before active engineering operations are begun.

I have the honor to be, Sir, Your obedient servant, (Sd.) FRANCIS BAIN.

Will sell at a bargain 30 unmade costumes, all new and fashionable.—Porkins & Sterns. j18 3i eod

TROTTER RACES

—AT— Little River, Lot 56,

—ON— SATURDAY,

18th DAY OF JULY.

When a Purse of SIXTY DOLLARS will be given to the following Classes:

THREE MINUTE CLASS, \$24—\$10 to first, \$8 to second, \$6 to third.

GREEN RACE, \$18—\$8 to first, \$6 to second, \$4 to third.

THREE YEAR OLD RACE, \$18—\$8 to first, \$6 to second, \$4 to third.

In addition to the above, a prize will be given to a Two-Year-Old Class, should there be enough to enter.

Entrance fee, 10 per cent. of purse. Five to enter and three or more to start.

There will be a well-stocked Saloon on the ground, but no intoxicating liquors will be sold, and anyone who will sell any on that day near the ground will be watched and punished according to law.

Horsemen are invited to attend and have a good day's fun. SAMUEL McPHERSON. Little River, June 22, 1891—dy wy

Muriatic Acid.

10 CARBOYS PURE. For sale by HORACE HASZARD.

Oiled Clothing.

50 DOZEN SUITS Carter's Best American. HORACE HASZARD.

Grain & Potato Sacks.

5,000 SACKS, large and small sizes. HORACE HASZARD. Charlottetown, June 22, 1891—3i eod

LUMBER.

TWO CARGOES ON HAND and others to arrive. For sale cheap in lots. E. H. NORTON & CO.

CIGARS.

15,000 ON HAND, the best value in the market. For the trade only. E. H. NORTON & CO.

STOVES.

WE are receiving a large new stock of the "Jewel" Ranges and "Home Jewel" Stoves, the best manufactured. E. H. NORTON & CO., Agents. ju22—1w eod

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The Nova Scotia Sugar Refinery, Ltd., HALIFAX, N. S.

UNTIL such time as the Sugar Duty question is settled, I am prepared to supply the trade in small quantities as required from warehouse at Refinery prices.

HORACE HASZARD, Agent. Charlottetown, June 22, 1891—2i

City Schools.

THE PUBLIC EXAMINATIONS of the City Schools will take place as follows: WEST KENT STREET SCHOOL—Wednesday, June 24th.

PRINCE STREET SCHOOL—Thursday, June 25th.

QUEEN SQUARE SCHOOL—Friday, June 26th.

Examinations commence at 10 o'clock, a. m. Pupils assemble in the Hall of each School at 12 o'clock.

The public are respectfully invited. B. BALDERSTON, Secretary of Board. ju22—dy 2i

"DYSPEPTICURE"

IS indeed a "Wondrous Remedy." It acts like magic in all STOMACH troubles. Thousands upon thousands are sounding its praises all over Canada. 1w—ju22

BOSTON STEAMERS.

EGG SHIPPERS

WILL please note that there will be a WEEKLY BOAT for remainder of the Season, leaving Charlottetown every THURSDAY EVENING, at six o'clock.

CARVELL BROS., Agents. ju20—pat gua 2i

TEA AND FANCY SALE

—IN THE— MARKET HALL,

—ON THE— 24th and 25th of June.

A TEA AND FANCY SALE will be held in the Market Hall on the 24th and 25th of June, for the benefit of Notre Dame Convent.

The ladies in charge of the tables intend to leave nothing undone to make it the most successful and enjoyable affair of the season.

Tea on the tables from 5.30 p. m. Entrance 10 cents; Tea, 25 cents.

Strawberries, Ice Cream and Refreshments at any hour during the afternoon and evening. Special fares from all stations along the line of railway and on the steamer from Pictou. June 10

FOR SALE.

I WILL sell at Public Auction, at the Clifton Wharf, New London, on SATURDAY, 27th day of June, at 2 o'clock, p. m.:

The Schooner "Golden Ball," 12 Tons Register.

Further particulars can be obtained by intending purchasers from the undersigned. Terms easy and made known at sale. RUBEN TUFILIN. Kensington, June 22, 1891—dy li pat

Charlottetown Athletic Association Classes.

LADIES'.—Tuesdays, Thursdays and Fridays, from 11 until 12 o'clock, noon.

BOYS'.—Every day, from 4.30 until 5.30 p. m.

MENS'.—Tuesdays, Thursdays and Saturdays, from 6.30 until 7.30 a. m., and Tuesdays, Thursdays, Fridays and Saturdays, from 8.30 until 10 p. m.

The Gymnasium will be open daily to members from 6 a. m. until 10.30 p. m. From 10 a. m. until 12, noon, to Ladies only.

Boys' tickets not good after 6 p. m. Tickets may be obtained from the Secretary. Admission by ticket only. H. D. JOHNSON, M. D., Secretary C. A. A. ju20—tf

REDPATH CONCERT COMPANY

Lyceum, Monday, 22nd inst.

ONE NIGHT ONLY.

PROGRAMME.

- 1. PIANO.—(a) "Transcendental Grand March".....Gilder (b) "Concert Polka".....Gilder MR. JOHN FRANCIS GILDER. 2. RECITAL—"Amateur Theatricals".....Shakespeare MR. EDWARD K. HOOD. 3. VIOLIN—"Gipsy Dance".....Sarasate MISS EDITH E. CHRISTIE. 4. WHISTLING SOLO—"Flor di Margherita".....Arduini MISS ELLA M. CHAMBERLIN. 5. RECITAL—"The Light From Over the Range".....Barton MR. HOOD. 6. PIANO.—(a) "Andante and Rondo Capriccioso".....Mendelssohn (b) "Plantation Echoes".....Gilder MR. GILDER. 7. VIOLIN—"Legende".....Wieniawski MISS CHRISTIE. 8. WHISTLING SOLO—"Selections from 'Erminie'".....Jakobowski MISS CHAMBERLIN. 9. RECITAL—"A Sure Cure".....Mark Twain MR. HOOD.

POPULAR PRICES:

Reserved Seats, - - - - 35 Cents. Admission, - - - - 25 "

Tickets may be procured at the Diamond Bookstore, Haszard & Moore's, Reddin's Drug Store, Apothecaries' Hall, W. R. Watson's, A. S. Johnson's and F. De C. Davies'.

Beyond a Doubt

THERE IS NOTHING that interests the average man as much as the price he pays for his Clothing—unless it is the price he pays for his Wife's Clothing. We don't deal in the latter. In the former we have an assortment that for General Excellence and Low Prices has absolutely no equal in the city. We do not claim to be the Cheapest Clothier, but we claim to give the Best Value.

Our READY-MADE CLOTHING is manufactured on the premises by competent workmen, and of good material. No shoddy. No moss-back cloths. We can give you a solid ALL-WOOL TWEED SUIT for \$7.25. It pays to deal with

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Charlottetown, June 22, 1891—dy & wk

MONDAY HALF HOLIDAY!

WE, the undersigned Merchants of Charlottetown, hereby agree to close our Stores EVERY MONDAY AFTER-NOON, from ONE o'clock, beginning the first Monday in July until the first Monday in September, both days inclusive.

- DRY GOODS. BOOTS & SHOES. JEWELERS. James Paton & Co., A. E. McEachen, E. W. Taylor, Stanley Bros., C. B. Warren, G. G. Jury, Beer Bros., J. C. Sprague, F. S. Bonnell, Prowse Bros., Goff Bros., J. A. Cameron, J. B. Macdonald, J. B. Macdonald, F. S. Mitchell, Perkins & Sterns, R. K. Jost (2 stores) G. H. Taylor, Harris & Stewart, W. W. Wellner.

BOOKSTORES—T. L. Chappelle, the Bazaar Store, Haszard & Moore. Charlottetown, June 20, 1891.

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HELLIBORE—To rid Bushes of Caterpillars. INSECT POWDER—Guaranteed Pure. MOTH BALLS—The Cheapest and Best Moth Destroyer known. Largely used by Merchants, Dealers in Cloth and Furs, and by Housekeepers. The Balls placed between folds of Garments, etc., or in Wardrobes prevent destruction of Clothing, &c., by Moth s. Price 5 cents per dozen; 10 cents for Box of 36.

PARIS GREEN, for destroying Potato Bugs.

FOR SALE AT WATSON'S DRUG STORE. Charlottetown, June 12, 1891.