

THE DAILY EXAMINER.

FEBRUARY 10, 1893.

The Corn Duties.

The agitation for a repeal of the corn duties will be watched with interest by the farmers of this Province. Free corn means sharp competition in the oat market of Nova Scotia and New Brunswick. These Provinces have in recent years been the chief market for P. E. Island oats. The fact that a fairly good price has been received for oats is due to the fact that there has been a demand for them in the neighboring Provinces. This demand has been sharpened on account of the restriction placed upon the importation of United States' corn by reason of the corn duties. Suppose these duties to be repealed, and a large surplus of corn to be stored in the States, large quantities of corn would, without doubt, be slaughtered in Nova Scotia and New Brunswick, to the displacement of P. E. Island oats and the consequent material reduction of their price.

Farmers in all parts of Canada will be prejudicially affected by a repeal of the corn duties—but particularly the farmers of Prince Edward Island. The year before last, the corn surplus in the States was so large that some farmers there burned corn for fuel in order to get rid of it. In a year like that, with corn admitted freely into Canada, the price of oats would certainly go down to a point far below that which remunerates the farmer for his labor in their production. The repeal of the corn duties will be a good thing for the feeders of horses, fat cattle and pigs in towns and villages of the Upper Provinces, but it will be a bad thing for the farmers of the country at large who grow oats. If the repeal be effected as a result of the Parliamentary agitation begun by Mr. Pope, the farmers and their representatives in Parliament ought to rise up and demand a corresponding repeal of duties upon articles which they largely consume—say the duty upon kerosene oil. The repeal of the kerosene oil duties would relieve an article of general consumption from a heavy tax. The questions to be considered are: is it desirable to ruin the petroleum industry of Canada? and is it desirable to strike a heavy blow at the oat growers of Canada? and can the Government stand the loss of revenue? and ought not Canada to produce all the food required by those, whose business it is to feed and fatten live stock? We hope that the Government and Parliament will give these questions careful consideration before taking action.

Mr. Palmer's Report.

CONFIDENCE in Mr. Palmer's report will be somewhat affected by reason of his eccentric conduct in respect to the borings and Senator Howland. But the "cores" taken out of the beds at the bottom are in Ottawa, to substantiate Mr. Palmer's assertion that "the geological formation is as favorable as it can possibly be for the economical construction of a submarine tunnel." The pity is that there are not more of them—that the contract was not completed, as Mr. Henry says it might have been. If even three or four "cores" had been taken out of the Island side of the Strait, Sir Douglas Fox would probably have concluded that sufficient evidence had been obtained to afford a sufficiently sure basis of computation on the part of engineers and tunnel contractors. But the completion of Mr. Palmer's contract will, under the circumstances, probably be required.

B. I. S.—Regular meeting this (Friday) evening.

L. O. O. F.—Wilde Lodge meets to-night at 8 o'clock. Third degree conferred.

POLICE COURT.—This morning, one drunk, Robert Boyle, was fined \$5 or 20 days.

THE STANLEY has not yet moved out of her position in the low miles of Little Sands, according to telegraphic advice to-day.

GO AND SEE "The Troublesome Clerk" in St. Patrick's Hall. This farce alone is worth the small admission, 15 cents.

CITY.—The regular monthly meeting of the City Council will be held on Monday next at three o'clock in the afternoon, instead of at eight in the evening, as usual.

AT THE CAPES.—No crossing from this side. Boat left Cape Tormentine at 9:20 and arrived at Cape Traverse at 2:15. Mail will be due in Charlottetown about half-past four.

THE LEAGUE of the Cross Concert to be given in St. Patrick's Hall on Monday next, promises to be one of the best ever given by the League. The programme is a first-class one.

LECTURE.—Mr. J. Heber Haslam will give his lecture "Canada and its future" in the Lyceum on the evening of the 23rd inst. The lecture will be illustrated by stereoscopic views and will be exceedingly interesting and instructive. Don't forget the date.

PROMISE TO PAY.—After the marriage of a strange couple in Boston the other day the groom placed a sealed envelope in the minister's hands, which the latter supposed contained the usual fee. When opened the following note appeared: "If she turns out as well as I think she will I will come back and pay for your services."

Gentlemen, secure a good waterproof coat for spring. We keep in stock the Melissa, English tweeds, Scotch tweeds in all the different makes, also black, brown and drab cashmeres, with deep capes. See our stock before purchasing.—Jas Paton & Co. 18-41

MR. PALMER'S REPORT

Concerning the Proposed Tunnel Under the Northumberland Straits, Between New Brunswick and P. E. Island.

To the Hon. Geo. E. Foster, Minister of Finance for the Dominion of Canada, Ottawa, and Sir Charles Douglas Fox, Consulting Engineer, London.

GENTLEMEN,—Having been called upon to test the geological formation across the Straits of Northumberland between the narrowest points of land as officially suggested in 1886 by the Hon. (now Chief Justice and Acting Lieutenant-Governor) Sullivan for the proposed tunnel to connect Prince Edward Island with the mainland of New Brunswick, I beg to state that ten borings varying in depth from 60 feet to 184 feet 8 1/2 inches were sunk by means of a steam diamond drill, and the cores of the same preserved in wooden boxes which are now in the hands of the Government, at the Geological Museum.

It is believed that these ten borings will prove conclusively the character of the stratum which is to be found on the line of the proposed tunnel. The points of land referred to are Money Point (slightly northwest of the Cape Jourmain lighthouse) in New Brunswick, and Carleton Point in Prince Edward Island, which from an engineering and traffic point of view are well selected. The azimuth of their alignment is 41.15 degrees east of north and the computed distance between them from shore to shore (or from signal station to station) is 40,716 feet, whilst the tunnel itself, as shown upon diagram Nos. 2 and 3 has total length of 14,908 yards, or nearly 8 1/2 statute miles.

The mid-latitude of the axis of the proposed tunnel is 46 degrees, 12 minutes, 39 seconds north—and mid-longitude of the same 63 degrees, 45 minutes, 26 seconds west of Greenwich.

The length of ARC between Money Point, and Carleton Point (having an azimuth, as previously stated of 41 degrees 15 minutes) computed to 6 minutes 42 seconds, gives us according to Wharton's Hydrographic Tables, which allow for a compression of 1.294, the above-mentioned distance of 40,716 feet. I may say, we have not had the instruments for more precisely determining this distance, but as soon as work is commenced would suggest the erection of observatories on both headlands connecting the same with the telegraph system of the Dominion, and so establishing the length of alignment to the fractional part of an inch.

Spring Tides..... Rise 7.80 feet Neap "..... " 3.10 " "..... "..... "..... range 2.30 "

Throughout these investigations I have taken as a datum the lowest spring tide level established at Cape Jourmain Light-house, and Cape Tormentine by Mr. Louis Coste, Engineer in Chief of Public Works, and Mr. Eugene D. Lefebvre, Assistant Engineer, who I understand in taking the tidal gauge fully considered the position of the heavenly bodies really producing the tides, as well as the other agents affecting the same, such as atmospheric pressure, and temperature; also, direction and velocity of wind at time of readings.

Diagram No. 1 shows the approximate range of junction of flood tides in the Northumberland Straits in the vicinity of the proposed tunnel as well as the course of the two branches of the main tidal wave entering the gulf between Newfoundland, and Cape Breton, and which advancing from opposite directions, meet as indicated by shaded lines at the same nominal hour, viz: 10 hours full and change, although the western wave from its longer course northwest of the Magdalen Islands, thence southwest, thence southeast over shallower waters, takes 12 hours longer on its journey than the eastern wave.

The greatest depth of water along the line of tunnel is 16 fathoms, or 96 feet below lowest springtide, and the soundings indicate a gradual and uniform rise towards both shores.

In diagram No. 2 you will observe a traverse of deepest soundings, two 5 fathom contours, as well as a line of soundings between Capes Traverse and Tormentine reduced to the same datum.

The favorable position of the Anglo-American submarine cable already connected with the New Brunswick Terminal will also be noticed.

The shores upon either coast are exceedingly well adapted for tunnel approaches, and have a mean altitude of about 30 feet. They both fall back towards the interior to high water level, and the soil is of a red, clayey nature.

About 5 1/2 miles "overland" or "surface" railway will be required to connect with the existing systems of New Brunswick and Prince Edward Island. As these systems, however, are of the standard 4 ft. 8 1/2 in. and 3 ft. 6 in. gauges respectively, it would be well that whichever gauge the tunnel is designed to accommodate, its terminals for purposes of construction should be first connected with the railways on either shore.

In the event of your selecting the standard gauge tunnel, suggested in diagram No. 3, having an external diameter of 21 feet., and which besides accommodating the most spacious rolling stock in the United States and Canada, would render the construction of "manholes" or "sanctuaries" unnecessary, it might be thought advisable to lay down an "overland track" for 12 miles of the standard, or 4 ft. 8 1/2 in. gauge from Carleton Point to Bedeque and Summerside.

Upon the same diagram, No. 7, is shown a direct and tolerably easy route of 90 miles along the south shore of the Island, from Carleton Point to Traverse, Tryon, Crapaud, DeSable, Cornwall and Charlottetown, crossing the river at White's Point by means of a combined road and railway bridge.

Referring again to diagram No. 1, the position of the proposed tunnel and its proposed connections on both shores will be readily seen, but I would draw your attention to a route (proposed by Mr. E. T. P. Shewen, C. E., of the Public Works Department) from Moncton to Pugwash, crossing the Sackville and Tormentine railway at Midgie—where this line constructed the distance from Moncton to the New

Brunswick terminal of the tunnel would be shortened by at least 20 miles.

Mr. Josiah Wood, M. P., and President of the Sackville and Tormentine Railway has suggested that if electricity is used for the construction of the tunnel, the same power might be used for operating his own and other railways connecting with it.

With reference to the grading of the proposed tunnel, 40 feet of cover has been allowed. To economize cost of construction a gradient of 1 in 50 has been laid down upon the longitudinal section, but from an engineering point of view, and in order to reduce working expenses a lighter ruling gradient should be adopted.

If we consider the formation, as proved by the borings, to consist of equal parts of red sandstone and stiff red clay shale, the roof of impervious material of at least 20 feet.

By using the number of shafts shown on the longitudinal section it is believed that the tunnel may be completed within two years, instead of 6 or 8, if worked from the ends alone.

The "geological formation through which the proposed tunnel is located is what is known as the upper, or permo-carboniferous, consisting of sandstones and stiff red clay shales, in approximately equal proportions, the latter being impervious to water.

The base upon which this formation appears to rest is known as the millstone grit portion of the carboniferous, the order of formation being as follows, viz:

- 1. Upper or permo-carboniferous. 2. Productive coal measures. 3. Millstone grit. 4. Lower carboniferous.

No. 2 or the productive coal measures are apparently wanting in the vicinity of the Northumberland Straits at this point.

The mill stone grit formation is seen at the surface along the centre of the Tormentine peninsula in New Brunswick, and there it dips about two degrees from the horizontal, or one in 25 towards Prince Edward Island. The beds, as indicated by the borings, and preserved in their nearly horizontal attitude across the Straits between the coast of New Brunswick and the south shore of Prince Edward Island.

I may say that the structure of the greater part of the Island of Prince Edward, as well as the opposite portion of New Brunswick, comes under the head of this upper or permo-carboniferous formation, whilst the base upon which this formation rests extends from underneath the entire Island across the Straits, and is exposed over a large area of New Brunswick, where it is known as the millstone grit formation, as already stated.

Diagram No. 8 shows distinctly the outline and limit of these two formations which directly concern the project you have under consideration.

An area of the lower carboniferous is shown in Northern Nova Scotia, but this does not concern us any more than the coal, pre-Cambrian and dolomite formations appearing in other parts of that province and in New Brunswick.

You will also observe in dotted lines upon the diagram the six anticlinals, extending about north-easterly, which underlie and divide the waters of the Gulf and Northumberland Straits into five broad and shallow synclinals. The position of these anticlinals was determined by Dr. R. W. Ellis, of the Geological Survey, in 1884, and is especially from the report of his investigation of the permo-carboniferous of the Island and New Brunswick that I have, since 1890, been enabled to declare that this same formation which extends under the Northumberland Straits is entirely suitable for the construction of a submarine tunnel.

With reference to the formation in the vicinity of the proposed tunnel, Dr. Ellis in his report of May, 1884, states:

"At Cape Traverse, which is the portion of the Island most nearly connected with the mainland of New Brunswick, the rocks seen there are identical with those seen to extend from Cape Brule to Cape Tormentine already described in my report of 1880-81 under the heading of permo-carboniferous, viz., soft red sandstones, with scales of whitish mica interstratified with hard, dark red, calcareous conglomerate. It is highly probable that the beds at Cape Traverse represent the lower portion of the formation brought into view by the extension of the Cape Tormentine anticlinal, the course of which, as shown in New Brunswick would cause it to reach the Island in this vicinity. In this case, the waters of the Bay would like those of Egmont, occupy a shallow synclinal."

With regard to the anticlinal already referred to in Diagram No. 8, Dr. Ellis states that the "generally horizontal position of the strata prevents the exact location of these several anticlinals, though the general structure is sufficiently apparent." He then goes on to say exactly what the borings have proved, and which may be observed by any one when walking along the shores of the straits.

"The difficulty is still further increased by the presence of much false bedding in the various strata, so that a great seeming diversity of dip is disclosed at many points."

From Diagram No. 8, it will be seen that the proposed tunnel is located, north 41 degrees 15 minutes, east upon a syncline from Hillsborough Bay to Cape Egmont, Prince Edward Island and from Cape Tormentine to Shediac in New Brunswick. Attached to this report are tables which show precisely the number and nature of beds penetrated by the steam diamond drill in each particular boring through the Permo-carboniferous formation. The sum total of these borings amounts to 845 feet 8 inches, distributed over ten holes varying in depth from 60 feet to 184 feet 8 inches. An analysis of these will give a proportion in the strata of one part of hard impervious clay shale to one part of compact red sandstone, the specific gravity of the former being about 25.92, and that of the latter 22.32.

I might add that the boring operations recently completed for the purpose of making final investigations, have not only proven the feasibility of the work in question and the deductions of eminent geologists concerning the same, but have also demonstrated the scientific world the novel possibility of being able to test or examine in a most economical manner the geological structure of the earth's surface beneath almost any depth of water, and which heretofore has generally been considered beyond the pale of the practicable. In the Scientific American of November 26, 1892, is an illustrated article descriptive of

the apparatus designed by myself for accomplishing this interesting work.

The cores obtained are 1 inch in diameter. They are in charge of Mr. Alfred D. C. Selwyn, C. M. G., Director of the Geological Survey, and have proved of great interest to all who have examined them. They clearly show change and structure, as well as dip of beds. The formation across the Straits appears to be thoroughly impervious to water, and cores of water have shown no perfectly dry fracture. However, in borings Nos. 6 and 8, distant 2000 and 3000 yards from the New Brunswick shore respectively, a slight leakage appears in one or two thin beds of brown sandstone—after passing through these beds no leakage whatever manifested itself.

Six deep water borings, distant 500 to 3000 yards from the New Brunswick shore, have been sunk to an average depth of 60 feet, 6 1/2 inches, each slightly to the westward of the tunnel alignment. On that same shore, at high water mark (Money Point) a boring was sunk 140 feet, 1 inch down to the millstone grit formation, whilst on the Prince Edward Island shore at high water mark (Carleton Point) the drill penetrated a distance of 184 feet, 8 1/2 inches. The inland borings in New Brunswick, and Prince Edward Island were sunk to depths respectively 60 feet, and 97 feet, 8 inches.

The position of each of the sea, or deep water borings, was determined by triangulation from a traverse run by Mr. W. A. Henry, C. E., Government Engineer, who should chiefly on account of the false bedding of this upper or Permo-carboniferous formation, as proved by the borings, and indicated by geologists in many reports. Mr. Joseph Unsworth, C. E., has suggested boring machinery similar to English Channel tunnel apparatus, and is of opinion that the excavation will stand exposure without shoring previous to receiving its lining.

I have to thank Mr. Collingwood Schreiber, Deputy Minister, and Chief Engineer of Railways and Canals, and others for much official assistance shown me during the progress of the work here reported upon.

I am, Gentlemen, Your Obedient Servant, (Sgd.) ALFRED PALMER.

Lecture and Entertainment.

The lecture and entertainment given in the Lyceum last evening under the auspices of the Benevolent Irish Society was very well attended. Mr. Peter McCourt, President of the Society, presided. The entertainment began with a piano duet by the Misses Murphy, after which the Chairman announced that as the views for Mr. Haslam's lecture had not arrived, that gentleman would be unable to deliver his lecture upon "Canada and its future," as advertised. Mr. Haslam, he hoped, would be able to favor them with his lecture on the evening of the 23rd inst. Mr. Haslam then took the platform and explained that the views for his lecture were detained at Pictou on account of the irregular trips of the Stanley, and as these views were a very important feature of his discourse, and many people would like to see them, he did not feel like going ahead at present.

However, he had arranged with Mr. Ferguson to make an address on the Northwest in his place, and he felt sure that his discourse would be both interesting and instructive. Mr. Ferguson then came forward, and for nearly an hour and a half held the undivided attention of his auditors. His discourse was altogether from memory, and was given with an ease and attention to detail that occasioned many complimentary remarks. Mr. Ferguson gave a decidedly interesting historical sketch of the Northwest, beginning with the period when the Hudson Bay Company were given absolute control of the Saskatchewan, Assiniboine, and a vast amount of country east of Hudson Bay. He showed how the Hudson Bay Company controlled the trade of the country, fixed the prices of almost everything, and for years made money rapidly. Then he spoke of the appearance on the scene of competition in the shape of the Northwest Fur Company and of the war and bloodshed which followed as a result of which the Hudson Bay Company was nearly ruined, and the poor people of the country suffered severely until the two companies amalgamated in 1821. During the period that the Northwest was under the control of the Hudson Bay Company, they did all they could to keep the facts relative to the great natural resources of the country from the outside world. It was not until early in the fifties that light began to dawn on the people of the outside Province. He said he would not advise any person who was comfortable here to leave home for the Northwest or any place else; but to the young people who had made up their minds to go abroad he would say "Go to the Canadian Northwest by all means." Our little country, from an agricultural point of view, is not a mean country by any means. One will have to travel far before he will find a more fertile country than we have here. It is here where the people have more advantages.

After some remarks by Hon. David Laird in corroboration of what had been said by Mr. Ferguson, a hearty vote of thanks moved by E. Hackett, Esq., and seconded by Mr. P. F. Doyle, was accorded to the lecturer. Then followed vocal solos by Miss Trainor and Mr. Bell and a violin solo by Professor Gaudet, with piano accompaniment by Miss Murphy. Mrs. Peter Doyle was accompanied to the soloists. The proceedings were brought to a close with the National Anthem.

J. B. Macdonald, Esq., has returned from Montreal.

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Charlottetown, February 3, 1893.

SCOTCH STORE, BROWN'S BLOCK.

A New Departure in Melissa.

According to the persistent demands of our many patrons, and recognizing the soundness of their arguments, viz.—that in all but the large cities, it is almost impossible to get wraps properly made, we have made arrangements during the past few weeks to supply to the trade of CANADA MELISSA RAINPROOF GARMENTS for Ladies, Misses and Children, in all the novelties of the New York market. We have secured at great trouble and large expense one of the best designers and pattern cutters in New York city, who will provide over this special department of our business, and aided by his imported and trained staff of assistants, will at once, without any costly or annoying experiments, be able to turn out TAILOR MADE GARMENTS equal in finish, fit and design to any obtainable in New York, and superior to any of European manufacture.

Our entire output will be manufactured on the premises, under the personal supervision of our foreman. All our operators are men and are practical Cloak makers. None of our work is given out to women nor is outside labor of any kind employed, thus only can we secure one uniform finish.

In connection with our Ladies' Melissa Wrap Department, we are also inaugurating a Mantle Department, but owing to the late date at which we entertained this latter idea, we will for this season show only a comparatively small range, but sufficient to enable the discerning public to form an idea of what they may expect for next season.

One of the many advantages which merchants will secure by patronizing us will be that they can assort their sizes from time to time, thus doing away with the necessity of having broken lines before the season is half over. They can also at all times, on short notice, get garments to fit out-sized figures and figures of irregular proportions, by filling in measuring forms which we will furnish on application.

Our travellers will shortly be upon the road with a large range of patterns of Melissa, in many new and common sense styles of Wraps, both for Spring sorting and for Fall delivery, and at the same time will offer for the inspection of the trade a representative exhibit from our Mantle Department.

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