Copy

Lt Col R Young

Jany 17, 1849

In reply to the questions in your note of the 28 inst, I beg to send the following summary of facts relating to the mineral productions of those parts of Colchester & Cumberland traversed by the proposed line of railway from Halifax to Quebec.

As no systematic survey of these counties has been made I can give you only the results of observations made in a desultory manner and without any direct reference to the Railway. Neither can I give most that is new, or has not been already noticed in publications relating to the general geology of the Province. When I find it necessary to refer to any other source of information than my own observations I shall give my authority.

W Logan

Within the County of Halifax, the intended line of Railway passes through a region of Primary or Metamorphic rocks consisting for the most part of grey Quartzite and dark-coloured Slate. — After leaving these rocks the remaining part of its course within this Province may conveniently be divided into five districts.

1 From the Primary rocks of Halifax County to the New Red Sandstone of Truro.

This district extending from near the boundary of Halifax County almost to the Village of Truro, consists as far as yet ascertained of rocks belonging to the older parts of the Carboniferous System, and equivalent to the Mountain Limestone and Millstone grit of England.

The prevailing rocks are Sandstones and shales of various degrees of hardness with beds of Limestone and Gypsum. The general direction of the beds is South west and North East and they extend Westward through Hants County and Eastward to the Coal district of Pictou. Locally however the beds are much fractured & disturbed.

The

The true Coal Measures do not appear to be present; but beds having somewhat the aspect of coal measures, though of small comparative thickness occur in several places. I have seen these at Five Mile river and the upper part of Hemlock R. where they seem to be of no importance. Coal is also said to occur in the valley of the Steuiack R. but I have not visited it and have seen no description of it

Gypsum is very abundant in this district. It occurs in thick beds, in the neighborhood of Gay's R. the Steuiacke & Brookfield Branch, and in many places along the course of the Shubenacadie, where it is now extensively quarried.

Limestone in large beds is everywhere present in the vicinity of the Gypsum.

Argentiferous Galena, a valuable ore of Lead and Silver has been found in a bed of limestone near Gay's River. This place was shown to me by Mr Duncan of Truro. The ore occurs in small crystals scattered through the limestone, and I am not aware that any workable vein has been discovered.

The

the place however merits examination.

Sulphate of Barytes a Heavy Spar a mineral now used as a pigment is found in large quantity in the valley of the Stewiacke. This deposit has been worked by J Roop Esq of Truro. I have not visited it but specimens of the mineral which I have received, are of good quality.

The Sandstones of this district are in general inferior in colour and texture to those of Pictou and Cumberland but in many places they are capable of affording useful building stone.

2 New Red Sandstone of Truro

The low country surrounding the Village of Truro is occupied by soft Red Sandstones in a nearly horizontal position and probably equivalent to the Trias or New Red Sandstone of England and the U. States. These Sandstones extend about 5 miles up the valley of the Salmon R. and border the North

and

and part of the South Side of Cobequid Bay.

In this small district no useful minerals are known to occur in the vicinity of the Line of Railway.

3 Coal Formation of Antrim and Londonderry.

On leaving the last district the line of road enters a band of Carboniferous rocks about four miles in average width, intervening between the New Red Sandstone and the base of the Cobequid hills. This band though narrow is of great length skirting the Southern Side of the Cobequid range in its whole length.

It contains true coal measure rocks, in addition to those of the Lower Carboniferous series. Its Strata are in general much shattered and disturbed but their prevailing direction is parallel to that of the Cobequid range or nearly East & West.

Small

Small beds of Coal have been discovered in the Valleys of the North, Chiganois de Bert, Folly & Great Village Rivers, and probably belong to one set of measures extending across all these Rivers. Of these seams those which I have seen are of no practical importance; and though I have been ~~assured~~ informed that larger beds occur I have seen no precise statements respecting them.

numerous
Clay Ironstone of good quality occurs in thin bands in Shale, in the Coal measures of the North River and probably extends through other parts of the district

Gypsum and limestone occur near the mouth of de Bert R, and also in the vicinity of the North R. These deposits are not however so important as those of the 1st district.

Good sandstones, though usually of rather hard texture occur in this district.

The Coal measures of this district deserve a more careful examination than they have yet received. In a geological point of view they are certainly equivalents of the Coal bearing Strata of other parts of the Province. From the small width of this district however and the fractured condition of its beds it is apparent

that

the available area of any Coal beds which it may contain must be less than that of the coal seams of Pictou and Cumberland.

4. The Cobequid hills.

The Cobequid range in the part traversed by the line of Railway consists of Redstish Syenite, Porphyry, Greenstone, Quartz rock and Slate. The beds of Quartzite and Slate and the dykes and mapes of the other rocks have in general the same direction with the range of hills.

The only useful mineral found in these hills in the vicinity of the road is Iron ore of which a large and valuable deposit occurs on the Southern slope of the range near the Folly R.

This deposit is a true vein and like metallic veins in general it is of very variable width in some places expanding to the width of about 26 yards and in others diminishing to a few insignificant strings of ore. Its direction is nearly East and West or parallel

To

to that of the chain of hills.

The ore contained in this vein consists of different varieties of Specular Iron ore, (Peroxide of Iron) associated with large quantities of a ferruginous limestone (Ankerite) consisting of the Carbonates of Lime Magnesia and Iron.

The ore ~~[illegible]~~ is remarkably pure and ~~[illegible]~~ contains from 64 to 69 per cent of iron. The Ankerite contains 23.2 per cent of Iron and in connection with the other ores will be of great value. It will also afford a very durable though dark-coloured Mortar for building.

The small extent of the excavations made at this place prevent me from giving any estimate of the comparative extent of the productive and barren portions of the vein. It is evidently however capable of yielding a very large quantity of ~~the~~ the valuable ore above named, which is especially adapted to the manufacture of Malleable Iron.

The continuation of this vein both East and West of the Folly River has been

Obs

observed by Mr Duncan and others; but its dimensions and value in these directions are little known. I have received Specimens of Iron ore from the Continuation of the same rock formation at Hadrington R. nearly 30 miles west of the Folly, and at Salmon R. about 25 miles Eastward of the same place.

5, Carboniferous rocks of Cumberland.

The whole of Cumberland north of the Cobequid hills, rests on Strata of the Carboniferous System.

In this district all the members of the Carboniferous System occur. The Lower Carboniferous Series skirts the Northern side of the Cobequid hills and also forms a broad belt in the northern part of the County. While the Coal formation proper, apparently with a trough-shaped arrangement occurs in an intervening band.

On —

On the Western and Eastern coasts of the County the Coal measures are exposed and have been examined but in the more inland parts of the County, their structure and contents are little known.

On the Western coast the Joggins Coal measures have long been known and one of the beds, three feet in thickness, is now worked, and yields a bituminous coal of fair quality though much injured by the presence of an easily decomposed sulphuret of Iron.

The other beds exposed in the cliffs of the Joggins appear to be less valuable than that which is worked and my impression derived from a hasty visit several years ago, and from the published descriptions of Messrs Smith & Brown and other geologists, is that the Joggins measures are of small value when compared with the deposits worked in other parts of this Province.

A more favourable indication of the probable value of the Cumberland Coal field is afforded by a bed discovered at

Spring

Spring Hill near the northern base of the Cobequid hills and about five miles from Maccan R. This bed is described by Dr Semen and others as from 10 to 12 feet in thickness and affording good coal. I have not seen it.

On the Eastern coast small and unimportant beds of coal appear at Malagash Point, Wallace harbour and the Gulf shore of Wallace. As the coast sections here are imperfect it is quite possible that there may be larger beds which have not been observed.

The strata of the coal formation of Cumberland appear to have rather uniform East and West strikes, a circumstance which renders it probable that the coal seams of the Joggins and Spring Hill may extend continuously far into the interior of the County. For the same reason they are likely capable of being worked over large areas and if not intersected by the railway can easily be connected with it by transverse roads.

Clay ironstone has been found in some of the sections of the Cumberland

Coal Measures.

Abundance of excellent freestones and grindstones occur in this district

Gypsum and Limestone are plentiful in the lower carboniferous Rocks of Cumberland especially in the Northern part of the County.

It will be observed that the direction of the rocks in 3 last districts is [illegible] as generally E & W. This is accounted for by the E & W direction of the great anticlinal line of the Cobequid hills which has caused the strike of the strata in Cumberland & part of Colchester & Pictou to depart from the S W & N E course prevailing over the greater part of E[illegible] America.

Although the line from White Haven to be condemned in the report — it may be [illegible] that on this line [illegible] a series of greater mineral value than those already noticed — and those in ~~[illegible]~~.

With respect to the ~~probable value~~ quality of the coal — & the price at which it could be obtained * in the present state of knowledge I can not venture to give any opinion. The only coal now worked in [illegible] or [illegible] is that of the [illegible] which is too [illegible] for the [illegible] [illegible] — & by [illegible] only [illegible] with it. [and only the [illegible] to be worked [illegible]] ~~And I believe that no [illegible] of the bed in this country has been sufficiently established to give any reliable data for estimating its value~~

All that can be confidently affirmed at present is that in the districts No 3 & 6 above noted the railway seen by Major [illegible] must pass over coal measures whose [illegible] at a distance from the railway are known to contain workable beds and there is a strong probability that coal more or less of these districts — coal will be [illegible] in the vicinity of the Road. I may add that there is no [illegible] ~~for~~ knowledge of the geo structure of the districts ~~[illegible]~~ [illegible] [illegible] when researches for coal can be made with the greatest probability of success.

To give any accurate answer to the question of whether necessary to try the dimensions & extent of the deposits [illegible] — the quality of the coal in reference to [illegible] [illegible] and the [illegible]

Letter to
J R Young
Jany 1849