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Robb Report

96 St Francois Xavier St

Montreal 9th Augt

1866

Genl A Drummond Esq

Montreal

Dear Sir

In compliance with the instructions with which, on behalf of myself and associates you honoured me, I have visited the Coal mining areas reported to the Province of Nova Scotia and have devoted the greater part of one month to the investigation of the points of interest respecting their value. I beg now, as the result of my observations to lay before you the following Report together with illustrative maps and plans as hereinafter specified.

In the prosecution of this enquiry I have enjoyed the great advantage of Dr Dawson's co-operation and advice both previous to my departure from this city and during my visit to the Provinces. I should be ungrateful were I not to acknowledge the valuable services rendered by Dr Bell of this city, who accompanied me on my tour and who had previously visited the district and reported on the points in question; and I may here remark that in all essential particulars I find his report fully verified by my own observations.

I had also the pleasure of joining forces with Messrs Shaw and Alexander Campbell of Halifax, who had selected and

partially explored the areas specified and who accompanied and assisted me during the whole of my explorations.

[Enumerate and describe Maps]

The properties in question consist of three distinct localities as indicated by the red tints on the Maps; each comprising one square mile, more or less. On that marked No 1, which at present appears to be the most important and to which you have specially directed my attention, the amount of work done is sufficient to entitle the proprietors to claim the Mining lease from Government in accordance with their regulations. Upon the claims effective mining operations have not yet been instituted.

Method of Exploration

In the Picton, as in most other Carboniferous districts, the rocks are, for the most part concealed under a great depth of soil and drift clay; and the new Mining areas are covered with dense forests. Hence the geological structure is locally somewhat complicated and difficult to trace. Hence the direct method of exploration by tracing and uncovering the coal seams is

a sufficient extent to determine their precise
value upon any given area would be a work
of extreme difficulty, involving the expenditure
of much time and heavy Shaft
sinking command or would endeavor, in any
case necessary or practicable. Fortunately in
the present instance this method is not indispensable
in order to arrive at satisfactory results.
Notwithstanding the intricacy of the structure, the
productive coal beds are found, upon a compre-
hensive survey of the district, sufficiently to
occupy the proper position in the measures,
although the quality of the seams may vary in
different localities; And the faults & disturbances
by which they have been affected subsequently to
their deposition do not appear to have
impaired them extensively for any great extent.
According with the directions
of the proprietors I commenced due attention to
so far as the means at my disposal would admit
and devoted considerable study to the investigation
of the structure of the rock formations immediately
surrounding or underlying the respective areas
in question; ascertaining their stratification
dips and directions as exhibited in natural
exposures or otherwise. The details of these
inquiries as regards the dips of the rocks
the approximate probable positions of the coal

seams so are shewn on the sections and the general results as beyond the surface specified are highly satisfactory (with respect to two of them at least) as confirming the views and expectations of the parties who selected these properties for mining purposes.

Geological Sections.

The geological structure of the Carboniferous district of Pictou has been recently described by Dr. Dawson in his "Acadian Geology" to which work I would also refer for much valuable information as to the quality and quantity of coal on the different seams, the results of mining &c.

Without entering in the pursuit of questions with my general theoretical discussions I may state briefly my views as to the peculiar and exceptional character of the Pictou Coal field; and the local complexities of structure which it has been my business to endeavour to unravel.

There are two causes to which the disturbances of folds or flexures in the older rocks previous to the deposition of the Coal measures; causing irregularities of surface which by determining

the direction and intensity of currents, would produce a great disturbance in the thickness and quality of the beds; and Secondly, to the continuance of the same elevating forces which had produced the flexures, subsequently to the filling up of the troughs; and producing in the Coal measures themselves a series of anticlinal and synclinal forms with dips varying in direction according to the original bend of the rocks; and in amount according to the sharpness of the folds.—

Area No 1

The Burn Brook Main.

This mining area which is regarded as the most important of those in which you are interested and to which you have specially directed my attention comprises — acres or — square miles in extent. It is situated about four miles from the town of New Glasgow; and although for the most part covered with and unbroken forest, is accessible by good roads at the North East side. On this side also and towards the South East boundary, it abuts upon the lands of the Acadia Coal Company which have been recently secured and are now being very efficiently opened

with a view to extensive mining operations

General Considerations

In surveying and examining the property so far as means and opportunity was afforded to me, I have very carefully applied both methods of exploration above adverted to; and from the structure of the underlying rocks (~~[illegible]~~) taken in conjunction with the actual discoveries made on the property I cannot resist the conclusion that the entire series of Coal seams found in the Albion and Acadia Mines will be found to underlie the greater part of the area at no great depths and in good and workable condition.

The Structural evidence is afforded by numerous natural exposures of the rocks in two small brooks lying to the West South and East of the property; showing the rocks dipping inwardly in each case; and at angles which seem to indicate their undisturbed condition.

The entire area is nearly level, constituting a table land situated about midway between the East and Middle Rivers. It is elevated from 200 to 250 feet above the river valleys and champaign country to the North which is also occupied by the same measures, and the conditions appear to indicate that during the carboniferous era, it has constituted

either a sheltered bay or upland Swamps, in either case admitting of greater tranquillity and regularity as well as richness of deposit than in the more exposed areas surrounding it.

Such theoretical views are amply confirmed by the results of actual exploration within the area. Although these explorations have actually exposed the great Coal Seams only in one part of the property, the numerous trial pits and borings which have been scattered at various points throughout its extent (within or below the Crop of the Main Seam) shew everywhere the peculiar soft laminated black shales which overlie the Main Seam of the Albion Mines, charged with their characteristic fossils and invariably dipping inwardly.

The Seams traversing the Albion Mines, and that part of the Acadia Co's property lying immediately to the South, undergo a rapid deterioration in the western extension of their Crops, and even appear to terminate abruptly having nowhere been found west of the points marked in the large map although numerous and costly attempts have been made to trace them farther in that direction. This must have been occasioned either by a pre-existing sharp promontory of the older rocks occurring at this point, and

affecting the measures in the manner above adverted to, or by a fault or succession of faults throwing them down to the eastward (of which there is direct evidence) or more probably by a combination of both causes.

Practically the value of the property in question will not in my opinion be materially or prejudicially affected by this disturbance; as the measures must have resumed their normal attitude and conditions before approaching it; And the discovery upon the opposite side of the property of a series of coal seams bearing such a close resemblance in relation position and character as to prove their identity with those of the Albion mines, affords the strongest collateral evidence that these valuable deposits will be found to embrace the entire area in which you are specially interested.

Description of the Coal Seams

Seam No. 1. I shall proceed to a more detailed description of the results of actual exploration and work upon the property both previous to and during my visit.

I found that, at the place indicated upon the Map — quite near the North East boundary of the property a pit or shaft had

been sunk to the depth of 40 feet on the crop of a great seam of coal of most excellent quality; and about 1400 cubic yards, equal to 1350 tons of coal extracted; of which a pile of about 200 tons still remained upon the banks, the balance having been previously disposed of and removed. This amount of excavation is sufficient to thoroughly test the thickness and quality of the seam, making allowance for its proximity to the surface &c.

On my arrival I found the excavation full of water the drainage of which was accomplished just before the arrival of Dr Dawson by working day and night with the aid of a span of horses. The thickness dip and direction as well as quality of the coal were carefully measured and noted by Dr Dawson and myself. We found the dip to be North 75° East angle 20° and the total thickness of the seam (exclusive of a two feet band of shally bad coal at the bottom) to be 19 feet 9 inches or upwards of 18 feet measured at right angles to the measures. The whole being composed with the exception of a few inches of clay parting and pyritous bands of pure solid bright bituminous coal. The coal excavated although taken so near to the out crop is of a quality said to be superior to any found in the district; and even in

the very short distance to which it has been worked to the dip, shows a very marked improvement in sinking

Samples were taken by me for assay at each foot apart in the thickness of the Seam, but no opportunity has yet been afforded for a thorough examination. Dr Dawson has however made a rough assay of samples representing three different levels in the Seam, with the undernoted results.

~~Upper Layer~~	Volatile Matter		Fixed Carbon & Ash
Upper Layer	25.6	—	74.4
Middle do	27.4	—	72.6
11 ft from top	27.8.	—	72.2

The lower three or four feet of this Seam are harder and tougher than the rest and appear to be peculiarly well adapted for the manufacture of illuminating gas, for which the Pictou Coal seems to be peculiarly well adapted being largely exported for that purpose to the United States —

An unselected sample of this Coal from this seam was tried at the Pictou Gas Works with the following results as certified by the Manager —

("— — + a + — 10.000 cubic ft per ton. The Coke is of a better quality &c see Ross letter.

According to Dr Dawson the largest quantity of Gas yielded by the best sample of coal from the Albion Mines (that from the deep seam) was 8,000 cubic feet per ton.
(State yield at Montreal Gas works &c &c)

In a north easterly direction from the pits above described and upon adjoining properties, openings have been made upon the same seam of coal by Mr Freeman French and by the Acadia Company at the distances respectively of 32 and 65 chains; at which points preparations have been made for permanent working and considerable quantities of coal already extracted. further operations having been in the meantime suspended until pumping machinery can be erected and railway connections with shipping ports effected. At the nearest of these openings the dip is the same as at Campbells pit (20°) and the quality of the coal is similar although apparently not so good. At the further pit referred to the dip is 30°, and the earthy impurities contained in the seam are found to have largely increased in amount [Specify]. The measures when traced still further to the Northwest dip at still higher angles and a corresponding deterioration occurs From these facts we are justified in inferring

that the extension of the seam in the opposite direction — that is further to the South East on the Deer Creek area will be marked by a corresponding improvement in quality and purity.

About 25 chains in this direction and on or near the line of strike at the Morgan pit an extensive series of borings had been made by Mr Campbell along the banks of a small Creek cutting the measures diagonally but apparently without striking the crop of the seam. I sunk three test pits to the rock near this point chiefly for the purpose of determining the dip. In the nearest of these I found strike [illegible] E. 7° S. ∠ 16° and in the farthest which is about 5 chains to the South West E 27° S ∠ 16 These observations indicate that while no evidence of any fault exists the outcrop of the seam will be found further to the west than the line of strike from the Morgan pit and that it continues to bend in a westerly direction on tracing it further toward the property. The effect of this change in direction will be to cause a much larger area of the property to be underlaid by the coal than would otherwise be the case

Seam No 2.

Seam No 2. In the Report made by
Mr J B Moore upon this property the Seam
above described is regarded as being the
Continuation of the deep Seam of the Albion
Mines. My investigations however seem to place
it beyond a doubt that it is the equivalent
of the Main Seam. Of this I am satisfied from
its position in the measures — from its being found
everywhere overlaid by the same thick body of
soft laminated Shale which is characteristic of
the Main Seam, and from the fact that the extensive
searches made in the adjoining properties have
failed to discover any great Seam of Coal
overlying the one in question. The most
satisfactory proof however, is the discovery
both on the Bear Brook, the Acadia and
on Mr Prince's property of a Seam cor-
responding in position and apparently also
in quality with the deep Seam of the Albion
Mines. This discovery was made upon the
Bear Brook property during the time of my
visit and is of the utmost importance
not only as affording a vast increase to
the available amount of Coal content

part of the property but as corroborative
evidence of the probable unbroken character
of the seams found here with those so
successfully worked on the Albion Mines
and Frazer's property. This fact taken
in connection with the northerly and
westerly dips of the strata at the South
and East boundaries of the property
respectively would seem to prove the whole
area to be underlaid at a workable
depth by these valuable deposits.

A shaft was sunk by me
to the depth of 22 feet upon the crop
of the seam No 2 above referred to
exposing the whole thickness eleven
feet at right angles to the dip.
The coal appears to be nearly homogeneous
throughout the whole thickness and is
of a harder grain and brighter quality
than that of the more northerly seams and is
more of a laminated slaty ~~character~~ structure
corresponding in this respect with
that of the deep seam of the Albion Mines.
It is free from sulphur ~~[illegible]~~

&c &c