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### AGRICULTURE.

REPORT ON THE AGRICULTURAL CAPABILITIES OF THE PROVINCE OF NEW BRUNSWICK.

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(Continued from our last.)

In the Geological map, No. I., attached to the Report, it will be seen that a large breadth of the Province rests on what are called the Coal Measures. These strata or beds of rock are of the same general age as those in which the productive coal beds of Nova Scotia, of Prince Edward Island, of England, and of the United States occur, and they contain in various places the seam of coal which are to be seen in many parts of the Province. Attempts have been made from time to time to work these beds, especially on the Grand Lake, the Memramcook, the Petticodiac, the Salmon River, the Coal Creek of the Saint Nicolas River, and in other localities; all these attempts however, owing in part to the thinness of the seams, to the impurity of the coal, and to their occasional high inclination, have failed to raise the mineral in any considerable quantity, or to yield a reasonable profit to the undertakers.

The existence of available beds of coal in the Province, has hitherto been looked upon more in an exclusively manufacturing and mercantile, than in an agricultural light. Iron ore is said to be abundant, and if coal could be found to smelt it, centres of industry would spring up which would enhance the price of agricultural produce in their neighbourhood. This is true, but the actual existence of the coal would render unnecessary the large growth of wood for fuel, and would thus set free a great extent of land for the exercise of rural industry and the growth of corn.

On the other hand, if this iron is to be smelted with wood, the extent of the manufacture, however desirable in other respects, would greatly increase the demand for fuel, or of land to be kept in perpetual forest, and would in like proportion lessen the agricultural resources of the Province.

The existence and possibility of profitably working beds of coal in New Brunswick, is as important therefore to the agricultural as it is to the other interests—to the development of the agricultural resources of the different parts of the Province, and to the formation of anything like a correct estimate of the extent of these resources.

In reading over Dr. Gesner's reports in regard to the Geology of the Province, I have been struck with the labour he has felt himself obliged to expend year after year in exalting the dignity of geological science, its money value in discovering the natural resources of a country, and its consequent claims upon general consideration and support; like all men whose fate it is to pioneer the way to new views, new studies, and new habits of thought, he evidently writes as if he felt his work to be very much up-hill—as if he were labouring for men who did not generally understand or appreciate his task, and he was therefore induced occasionally to minister a little too strongly to the vulgar views of immediate profit from scientific enquiry, and thus to create expectations which his own labours did not realize.

This was especially the case in regard to the richness of the coal fields of New Brunswick. From all I have seen or learned, the opinions he expressed and the hopes he awakened on this subject were much too sanguine, and in a considerable degree exaggerated. This proved unfortunate in many ways; it has not only injured his own reputation for general accuracy, and diminished the confidence with which his Reports generally were read, but it has lessened the confidence of the people in the predictions of science generally, and probably prevented or retarded other researches which might have been undertaken in reference to the Geology and Mineralogy of the Province.

With a view of placing before Your Excellency at a glance, a summary of all that is yet known of the coal deposits in New Brunswick, I have requested my friend Dr. Robb to fill up the following Table. (No. I.) The materials are derived chiefly from Dr. Gesner's reports, but the principal observations of Dr. Robb and myself are also included.

From this table and the report annexed to it, it appears that nearly all the seams that have been discovered are

very thin, that such as are thicker are represented to be poor in quality, and that very little coal has yet been extracted or is likely to be profitably obtained from them.

Many of those varieties called cannel and gas coal appear to be only bituminous shales which leave an ash nearly as bulky as the original coal. The gas coal of the Memramcook river is of this kind, and its quality for the manufacture of gas may be judged of from the fact that a ton of it yields only a thousand pounds of gas, as tried at the Saint John gas works, while the best qualities of English and Scotch cannel used, and of Behimmon's coal from the County of Durham in England, yield 12,000 cubic feet.

The discovery said to have been made of a thick bed of bitumen on Frederick's brook, in Albert county, is very interesting, and should reports not be exaggerated, will undoubtedly prove a source of profit.

Fredericton, 20th Nov. 1849.

Sir,—In compliance with your request that I should prepare a "short notice of the existence of coal in New Brunswick, and its consequences to the Colony as derived from my own observations and enquiries, and the published Reports of Dr. Gesner," I have drawn up the following Report:—

More than one third of the area of New Brunswick is occupied by rocks whose composition and contents, both mineral and fossil, resemble those peculiar to that which, as a whole has been termed the Carboniferous system of rocks.

A great portion of the space occupied by them, say seven or eight thousand square miles, has been termed by Dr. Gesner the "Great New Brunswick Coal Field." Its area certainly is very considerable, although it is not "one of the largest ever discovered upon the globe." (Rep. IV. p. 64.) The Illinois coal field, says Sir C. Lyell, is about as large as the whole of England. (Travels in N. A., I. 28;) and the area of the Appalachian coal field, according to Prof. H. Rogers, "upon a moderate estimate amounts to sixty three thousand square miles." (Trans. Assoc. Am. Geology, I. 436.)

The carboniferous rocks of New Brunswick form but a part of that series, which as a whole, has been termed by Mr. Logan and others the Eastern Coal Field of North America. The rocks of this series first appear on the northern margin of the Bay de Chaleur, (and probably at one period occupied the whole of it,) thence pass deeply into the interior of New Brunswick and Nova Scotia, and constitute no inconsiderable portion of the Islands of Prince Edward, Cape Breton and Newfoundland.

The rocks or measures which constitute this system are conglomerates, sandstones and shales of various degrees of fineness and purity, and of various colours, but all obviously deposits from water. Subordinate to these we have beds of limestone coal and plaster, and occasionally ores of iron, copper and manganese.

In many other countries there is a very exact line of demarcation recognized between the rocks of the coal series and those above and below it, but in this country there is still considerable difficulty in defining the limits of these respectively; and although I consider most of the sandstones, conglomerate, and shales of New Brunswick, to belong to the carboniferous system of rocks, this term must for the present be construed so as to include the true coal measures and others below them as far as the old red sandstone or Devonian series, as understood by Sir C. Lyell and other Geologists.

By the observations of Lyell, Brown and Dawson, in Nova Scotia and Cape Breton, it would appear that the carboniferous system of the Eastern portion of North America may be divided into three groups or formations, each of which is no less than six thousand feet in thickness.—These are—1st, an upper, consisting chiefly of reddish measures, with two thin beds of coal and one of gypsum; 2nd, a middle, which consists of gray and brown sandstones with workable beds of coal and ironstone; 3rd, a lower, consisting chiefly of reddish sandstones and conglomerates, with a few thin seams of coal, and with much plaster and limestone.

In Dr. Gesner's reports on the Geology of this Province, red rocks, or rocks accompanied with plaster, have generally been termed new red sandstone, and have been said to overlie the coal measures; but if the red rocks which contain the plaster, really underlie the productive coal measures of New Brunswick as in Nova Scotia and Cape Breton, and as I suspect they do, a revision of the matter will be required; at present there is much difficulty in making use of his data regarding the order of superposition in this part of our series of rocks.

Speaking of the consequences of Coal to this Colony, Dr. Gesner says, (Rep. IV. 18)—"The immense but unexplored deposits of coal in the Province are sufficient to

supply Canada and all the demands of the extensive coasts of the Gulf; they are capable of sustaining manufactories, railroads and steam communication to an extent scarcely to be contemplated in the present day, and they will also support a trade with other parts of the world." Further he adds. (IV. 64) that "when it is considered that one third part of this country contains more or less of the bituminous mineral, the quantity of coal in New Brunswick will appear inexhaustible;"—and in another Report to the Legislature, when speaking of the same subject, he says, "when all the circumstances are duly considered, it may be seen of what importance New Brunswick is destined to become, not only to herself and her sister Colonies, but to great Britain and the United States, whose supplies of Coal must, to a great extent, be dependent on these colonial resources."—(III. 36.)

In order to afford more definite ideas concerning the beds of coal actually known to exist in the Province, and to enable us to estimate at its real value the ground work of the many vague assertions which from time to time have been made concerning this department of our mineral resources, I propose to bring together short notices of all the known out-croppings of coal in the different Counties of the Province.

York.—1. An out-cropping of coal, resting on fire clay, may be seen at a side cut on the right bank of the River Nashwaak, nearly opposite Mr. M'Lean's farm; the coal does not seem to be more than a few inches in thickness, and could not be worked with any profit there.

2. On the Tay Creek, a branch of the Nashwaak, coal has long been known to exist. In walking up the stream, from its mouth, drift pieces are found occasionally, and then become larger and more abundant till we reach a bend in the river, under a high bank of gray sandstone, above which no more coal is observed; hence it may be supposed that the out-crop is near, and as it is not in the cliffs it must be in the bed of the brook, where, however, I did not detect it. Some of the pieces found near this place were about ten inches thick, though it is possible that the proper seam may have been thicker. The dip of the sandstones was easterly, and very low, so that the coal may have been connected with the seam seen on the Nashwaak.

3. I have a specimen of coal from land near M'Leod's hill, on the Royal Road; but I am informed, on good authority, that the seam from which it came is thinner than either of the above.

4. Dr. Gesner (IV. 26) considers "it is far from being improbable that coal might be procured at the very capital of the Province, although the rocks themselves offer but few indications of its existence near the surface." As the rocks near Fredericton have an easterly dip, and as there are no appearances of coal in the sandstones, which run out a short distance to the westward, we are hardly warranted, as yet, in supposing that coal will ever be mined at this locality.

5. I have long understood that coal has been got on Lyons' creek, a small tributary to the Oronocto River, and that it had been used by a blacksith near Hart's Mills; on making further enquiry, however, I found that it was only a few inches in thickness, and therefore unavailable. I presume that this is the bed alluded to by Dr. Gesner, (I. 71) of which he says, "the coal is only four inches thick, and appears on the bank of the river between strata of bituminous shale, where fossil remains are abundant; that there are thick beds of coal beneath, however," he adds "there can be no doubt." Enough is said to excite the imagination, but not to satisfy the reason.

Sunbury.—Exploratory surveys and boring for coal were undertaken some years ago in the Parish of Burton, but in no case, I believe, was workable coal discovered.

Queen's.—1. I have understood that some borings were made near Gagetown, but they were unsuccessful. Dr. Gesner (I. 73) observes, that "no doubt can be entertained that Coal may be procured in the County adjacent to Fredericton, and Gagetown." This remains still to be seen.

2. Coal has been got on the Grand Lake for upwards of forty years, but as yet there are no workings of any extent in any part of its valley.

The coal occurs near the head of the Lake, and at present it is chiefly worked on the Shore road, south of the Newcastle creek; the workings are either open to the day, or adits run in from the side of the hill, on the rise of the measures, which dip towards the lake, at an angle less than 10°. At one of the levels the section observed by me was as follows:—

Clay drift of surface,	8 ft. Cin.
Shaly sandstone, (shel.)	1 6
White clay,	0 8
Fire clay,	4 0
Coal with pyrites,	0 4