

every proprietor is at once anxious to promote it, and ambitious to know something as to the best mode of cultivating and improving his own Estate. With the same blood, with equal pecuniary means, with the far readier access to knowledge which now exists, with the benefits of Scottish experience, and the fuller lights of modern science, the prospects of New Brunswick must be at least as cheering now as those of Scotland were at the period referred to, and its progress towards the present condition of Scottish Agriculture, ought to be far more rapid. What I see defective, therefore, in the knowledge and practice of New Brunswick farmers, awakens no feelings of despondency in my mind. The same lesson which the history of the past teaches, I read in the actual condition of the Agriculture, and of those who practice it in our time. When I consider how much slowness there exists at home in the introduction of easily effected agricultural improvements, when in all parts of Europe I find a more slow progress still, and very much still to be done before they can even arrive at the present state of Agriculture in Great Britain, much less overtake her in the race of improvement, I can look with much forbearance on the backwardness in agricultural practice of a large proportion of the yeomen of this Province. The past circumstances of the country, the mode of settlement especially, and the character of the settlers, have almost necessarily produced the existing state of things; and from all I have been able to learn, it would appear that as much advance had been made towards a rational system of husbandry, as was made after its first settlement by any other part of North America in an equal period of time.

The agricultural condition of a large portion of the cultivated lands, however, is now such as to warrant the expectation that certain changes in the modes of culture and in the practices of the cultivators might be easily introduced, which could scarcely fail to increase the productiveness of the soil, and thus to add to the comforts of those who till it, as well as to the resources and general prosperity of the Province.

In considering the means by which such changes are to be brought about, it ought to be constantly borne in mind, that to thinking men it is not enough to prescribe the adoption of this or that practice, however high the authority may be by which it is recommended. The practice must also be shown to be reasonable, to be more or less easy of adoption in existing circumstances, and above all to be economical, in the sense that it is likely to yield a fair return of profit on the increased expenditure of time or money it may involve. Of this common sense kind, I flatter myself Your Excellency will consider the greater part of the practical suggestions I have ventured to offer in the following pages.

CHAPTER II.

The Agricultural capabilities of the Province as indicated by its Geological structure.

The agricultural capabilities of a country depend essentially upon its Geological structure. That of adjoining countries also, especially of such as lie in certain known directions, may modify in a great degree the character of its soils. In reference to this vital interest of a state therefore, the possession of a good Geological Map is of much importance, not only as an aid in determining the cultural value of its own service, of what it is capable, and how its capabilities are to be developed, but in throwing light on the probable capabilities of adjoining districts.

It has long been considered in Europe as highly creditable to the wisdom and discernment of the Legislature of New Brunswick, and to their energy in developing the natural resources of the Province, that imitating the New York and other State Legislatures, they should have taken such early steps, by the appointment of a Provincial Geologist, and otherwise, to illustrate the physical and Geological structure of this portion of North America, and to determine how far that structure indicated the possession of natural resources, Agricultural or Mineral, upon which reasonable expectations as to the future welfare and progress of the Colony might be based.

On my arrival in the Province, I looked to the results of this enquiry as a means of facilitating my own labors, and of very much shortening the tour I should be obliged to make through the Province, with the view of personally inspecting the nature of its soils and culture. I regretted to find however that the geological survey had been abandoned, and that although Dr. Gesner had gone over and examined a large part of the Province, and had published a series of valuable reports, the results of his labours had not been embodied in a Geological Map from which I could have obtained all the information I required. I therefore requested Dr. Robb, to whom the Geology of the Province had long been a subject of interest, to put together in the form of a Map all the information contained in the reports of Dr. Gesner, with such corrections and additions as his own knowledge of the Province, enabled him to supply; he accompanied me also in my agricultural tour, in the hope that by our joint observations, even during so hurried a journey, some facts might be gleaned which would render the Map more complete. In its present state it is confessedly imperfect, and it is very much to be regretted that a Map containing the entire results of the numerous journeys of Dr. Gesner during the five years of his engagement, and by which the present Map might have been materially improved, had not been obtained from him before his engagement came to an end, and been deposited among the public documents of the Province.

An inspection of this Map (No. 1.) shows that according to our present knowledge, the Province of New Brunswick consists mainly of five different classes of Rocks, represented by as many different colors. The grey, which is by far the most extensive, represents the region of the coal measures, the crimson that of the granites and mica slates, the brownish red that of the red sandstones, the pale blue that of the clay slates, the green that of the traps and porphyries, and the light purple that of the upper Silurian. The dark purple in the upper part of the map represents the lower Silurian rocks, which occupy the northern region toward the shores of the St. Lawrence.

I do not here enter into any details in regard to the order of superposition of these rocks, because that general order is fully detailed in books of Geology, because in this Province there are certain districts in which the local order of superposition is far from being determined, and because a knowledge of the order is by no means essential to a clear understanding of the relations of these rocks to the agricultural character of the soil which covers them.

It is of more importance to understand—

1. That rocks of all kinds are subject to be worn away, degraded, or made to crumble down, by various meteorological and mechanical agencies;
2. That the fragments of the rocks when thus crumbled, form the sands, gravels and clays which usually cover the surface of a country, and upon which its soils are formed and rest; and
3. That for the most part the materials of which the crumbled sands, gravels and soils consist, are derived from the rocks on which they rest, or from other rocks at no great distance. How they come to be derived occasionally from rocks at some distance, will be explained in the following chapter.

These facts show that a close relation most generally exists between the rocks of a country and the kind of soils which cover it. It is this relation which gives Geology its main interest and importance in relation to Agriculture.

A. *The coal measures* which cover so large a breadth of New Brunswick, consist for the most part of gray sandstones, sometimes dark and greenish, and sometimes of a pale yellow colour. The siliceous matter of which they consist, is cemented together or mixed with only a small proportion of clay, (decayed felspar principally,) so that when these rocks crumble, which they do readily, they form light soils, pale in colour, easily worked, little retention of water, admitting of being easily ploughed in Spring and late in Autumn, but hungry, greedy of manure, liable to be burnt up in drouthy Summers, and less favorable for the production of successive crops of hay.

Of course among the vast number of beds of varied thickness which come to the surface in different parts of this large area, there are many to which the above general description will not apply,—some which contain more clay and form stiffer soils—some which though gray or green internally, weather of a red colour, and form reddish soils, but lightness in texture and in colour forms the distinguishing characteristic of the soils of this formation. This single generalization therefore gives us already a clear idea of the prevailing physical characters of the soils over a large portion of the Province, and illustrates the nature of the broad views which makes the possession of Geological Maps so valuable to the student of general Agriculture.

This coal measure district is further distinguished by the general flatness of its surface, undulating here and there indeed, and intersected by rivers, and occasional lakes, but consisting for the most part of table lands more or less elevated, over which forests, chiefly of soft wood, extend in every direction. These flat tracts are not unfrequently stony, covered with blocks of gray sand stone of various sizes, among which the trees grow luxuriantly, and from among which the settler may reap a first crop of corn, but which almost defy the labour of man to bring the land into a fit condition for the plough. Such land abounds, for example, behind Fredericton on the way to the Hanwell Settlement, and is scattered at intervals over the whole of this gray sandstone country.

Another feature which results from this flatness is the occurrence of frequent bogs, swamps, cariboo plains, and barrens. The waters which fall in rain, or accumulate from the melted snow, rest on the flat lands, fill the hollows, and from want of an outlet, stagnate, and cause the growth of mosses and plants of various other kinds, to the growth of which such places are propitious. Thus bogs and barrens, more or less extensive, are produced. A comparison of the Geological Map (No. 1.) with the Agricultural Map, No. 3, appended to this Report, will show that the greater number of the extensive barrens of this kind yet known in the Province, is situated upon this formation.

The Miramichi, the St. John, the Richibucto, and numerous other rivers, run in part or in whole through this district. Along their banks a fringe of soil is often found better than the uplands present; and hence along the rivers the first settlers found comparatively fertile tracts of country on which to fix their families and commence their earliest farming operations. The Intervals and Islands of the river Saint John form some of the richest land in the Province; but this richness arises in a considerable degree from the circumstance that this River flows in the upper part of its course through geological formations of other kinds, and brings down from the rocks of which they consist, the finely divided materials of which alluvial soils of the Counties of Sunbury and York for the most part consist.

In other countries, as in England and Scotland, the coal measures contain a greater variety of rocks than is found over the carboniferous area of New Brunswick.—They are distinguished from the latter by frequent beds of dark-coloured shale of great thickness, which form cold, stiff, dark-coloured poor clay, hard to work, and until through drained, scarcely remunerating the farmer's labour. Numerous sandstones which occur among them produce poor, sandy and rocky soils, so that large portions of the Counties of Durham and Northumberland, in the north of England, long celebrated for their richness in coal, still remain among the least advanced, and least agriculturally productive of the less elevated parts of the Island.

B. *The Upper Silurian Rocks*, coloured light purple, cover an extent of surface in New Brunswick only inferior to that formed by the coal measures. They form the northern portions of the Province, from the mouth of the Elmtree River on the East, and Jacksontown on the west, as far as the Canadian border. In other countries these upper Silurian strata consist of various series of beds lying over each other, each of which gives rise to soils possessed of different agricultural values. This is particularly observable in the western part of the State of New York, where some of the richest soils are formed from, and rest upon, rocks of this formation. It is a matter of regret that

in this Province the large extent of northern country over which these rocks extend has not been sufficiently explored to allow of such subdivisions being traced and indicated on the Map. That they exist, I have seen reason to believe, in my tour through the country; but the time at our disposal did not allow Dr. Robb and myself to go out of our way to explore their character or limits.

On this formation a large part of the richest upland soils of the Province are formed. The fertile, cultivated and equally promising wild lands of the Restigouche—and those on either side of the Upper Saint John, from Jacksontown to the Grand Falls, rest upon, and are chiefly formed from the debris of these rocks, and were it not for the Granite, trap, and red sandstones which intervene, similar good land would probably be found to stretch across and cover the whole northern part of the Province, from the Restigouche River to the region of the Tobique Lakes.

From his published reports, Dr. Gesner had obviously collected much information regarding this region, which has hitherto been very difficult to explore; it would have cleared the way very much to an accurate estimate of its agricultural capabilities, had he been able by means of fossils or otherwise to establish the subdivisions among its several members which we believe to exist.

The soils of this formation are for the most part of a heavier or stronger character than those of the coal formation. The rocks from which they are formed are generally slaty clays, more or less hard, but usually crumbling down into soils of considerable strength—as agriculturists express it—and sometimes of great tenacity. Among them also are beds of valuable limestone, more or less rich in characteristic fossils, and, so far as I am at present informed, chiefly from the reports of Dr. Gesner, the presence of lime in considerable quantity as an ingredient of the slaty rocks themselves—a chemical character of much importance—distinguishes the beds and soils of these Upper Silurian rocks.

A comparison of the Geological, with the coloured Agricultural Map will show that the pale red and blue colours which in the latter mark the first and second class upland soils, are spread over the same parts of the Province which in the former are coloured light purple—indicating the region of the Silurian deposits. Thus the geological indications and practical experience in these districts coincide. But the same comparison will show that this concordance is by no means uniform, but that soils marked by the Nos. 3, 4, and even five, occur upon parts of the country coloured upper Silurian in the Geological Map.—This arises from one or other of several circumstances—

1. From the defective state of our knowledge of the real geological structure of the interior state of the Province over which these rocks are supposed to extend. In the impassable state of the country there is a sufficient excuse for such knowledge being still incomplete. But the absence of such knowledge explains also why we cannot accurately describe and represent upon our Map the true relations of the geology of large portions of this interior country to its practical agricultural value; or

2. To the fact of this formation, like that of the gray coal measure sandstone, has its level table lands on which water stagnates and produces extended barrens, and deep hollows in which swamps are formed, and burned lands, which the repeated passage of these devastating fires to which this Province has been occasionally subjected, has rendered apparently worthless; or

3. To the proximity of trap and granite districts—(coloured green and carmine)—from which numerous blocks of stone and drifted gravel have been transported and spread over the Silurian surface so as to render the soils that rest upon it inferior in quality to what, according to the geological indications, they ought naturally to be.

How much of the differences observable between the two Maps is due to each of these causes, can only be determined by future careful observations.

(To be Continued.)

A MERCHANT'S WIDOW.—We transfer to the pages of the *Merchant's Magazine* from the *Boston Bee* the following picture of life in a city. It is but one of many cases of destitution to be found in all our large commercial cities which pass unrecorded. We have reason to believe the statement to be literally true. The facts are too significant to require comment:—

One bitter cold night last week, between the hours of eleven and twelve, as one of the night guardians of our city was taking his accustomed round, he heard a noise, and in turning to learn whence it came, observed an object which proved, as he drew nearer, to be a female in a lumber yard in the act of gathering stray laths and pieces of board, and endeavouring to hide them under her apron. The officer took her into custody. He was about conveying her to prison, when she began to plead for her little children, begging that he would take them to prison too, that they might not freeze, and promising if he would that she would not murmur at her own fate. She stated that within an hour she had put them to bed by the scanty warmth of the last burning ember which she owned; that she left them sleeping quietly, not realizing the poverty which surrounded them; that her name was P—, and that she resided in C— street.

At the announcement of her name the officer looked at her intently, and by the light of the street-lamp, which shone through the cold air 'till upon her face, he was almost horror-struck to recognize in his prisoner the widow of his deceased partner in business! Without divulging his name, or speaking a word, he turned with her toward her dwelling, and found her domestic affairs as she had stated. On the floor lay three pretty children, the oldest about seven years of age, and the youngest, a golden haired boy, aged one year. The hearth-stones were fireless. On the table a lamp burned brightly, as if to exhibit with more truthfulness how scantily the lone cabin was furnished.—The woman and her children were in a wretched condition, not having sufficient clothing, food, or fuel to sustain life another day. She and her little ones were very soon provided with the comforts of life.

The mother, a New England born woman, was too