

SECOND REPORT
ON THE
GEOLOGICAL SURVEY
OF THE PROVINCE OF NEW BRUNSWICK.
By Abraham Gesner, Provincial Geologist, &c.
[Continued.]

HOPEWELL.
At the extremity of Salisbury Cove, in the Parish of Hopewell, the sandstones and shales of coal measures were observed. These rocks from the whole of Cape Enrage, and extend eastward as far as the entrance of New Horton River. The strata run east south east from the cove, and dip south west at a high angle. At the Cape they are nearly perpendicular. The same rocks compose Grindstone Island and Grindstone Point, and also the extremity of Cape Meranguin, where their course and inclination, although not exactly alike, have a general agreement.

These strata of the coal series now seen in the points and headlands on the north west side of Chignecto Bay, belong to the Cumberland coal field of Nova Scotia, and are evidently remaining portions of the series which have not been worn away, or covered by the sea entering this deep estuary. The Cumberland coal field extends beneath the Bay into New Brunswick, embraces the Capes already mentioned, and terminates in a north west direction at the base of Shepody mountains, and the ridge of syenite connected with them. Its margin may be seen distinctly from any eminence in this quarter, and the tract is known by its low and level appearance. We may then look back to that period when the present site of Chignecto Bay, (which will now average ten miles in breadth, and is thirty miles long), was filled with these strata and coal, in continuous lines. But such are the effects of course still in operation, and more remote geological changes, that the former dry land has been removed and the baset edges of the sandstone, shale and coal, are now buried far beneath the waves of the sea.

A narrow belt of new red sandstone extends from the extremity of Salisbury Cove to New Horton and Shepody, resting upon the baset edges of the strata belonging to the coal measures, and meeting the syenite northward. The lower sandstones in this part of the coal field, are of a dark red or chocolate colour, and might in some instances be mistaken for the newer sandstones above them. These chocolate colored strata are also exposed at Cape Meranguin and Westcock, being associated with the lower rocks of this coal basin, along its northern side to the distance of twenty four miles. These strata are very compact, fine grained, and very superior for buildings, as they resist the vicissitudes of the weather, and become very hard by being exposed to the rays of the sun.

The changes of level these rocks have suffered are displayed in a singular manner at Cape Enrage. At a narrow and deep cove westward of the Light house, the strata are resting upon their edges, and to appear to have been separated from each other; their flat surfaces are now placed along the sides of a narrow and deep fosse filled with sand and gravel. At other places a few strata are seen in separate groups which appear like walls built by the mason, or parallel lines. These results were evidently produced in consequence of the strata separating from each other at the time they were uplifted. At the village of New Horton a singular Island has been evidently formed in this manner, and it can scarcely be doubted that these phenomena have resulted from the proximity of these sandstones to the trap, and serpentine, which are known to be of volcanic origin.

NEW HORTON.

New Horton is a thriving settlement on a part of the low lands situated at the foot of Shepody mountains. It contains a tract of excellent marsh, and is covered with a fertile soil derived from the marly and silicious sandstones beneath. At this place the strata of the coal series dip east south east 30°. An extensive flat separates the village from Grindstone Point, where the lower sandstones emerge from beneath the red rock, appearing at the bottom of the estuary, where a bar of sand extends outwards connecting the Point with the main land.

Near Cape Enrage, at Horton, and Grindstone Point, many of the strata will afford excellent building stone of different shades of blue, red, and chocolate color. Quarries of grindstones have also been opened at the above places, to supply a constant demand from the United States. The grindstone strata are however much harder than those of the North and South Joggins; consequently the expense of cutting is increased, and the effect of sharpening edged tools is much diminished.

GRINDSTONE ISLAND.

Grindstone Island is an inconsiderable group of strata, situated about two miles eastward of Grindstone Point, and at the entrance of Shepody Bay. The grindstone quarry at the Island had been worked to considerable extent, but in consequence of "running out," as it is called by the workmen, or suddenly passing into a rock of bad quality, all operations at the quarry have been discontinued. On the south side of the Island there are several strata of soft red shale, with narrow seams of coal. The course of the strata here is west, and the dip south 40°.

A careful examination was made at this and the before mentioned places, and although there are indications of coal at several localities, no out-cropping of any practical value was discovered on the shore.

These sandstones abound in the remains and impressions of various kinds of tropical herbage. Some of these are merely casts of the original plants. In other instances those plants have been converted into coal and lignite; again, others are fossilized in part by the surrounding rock, coal, sulphuretted iron, and sometimes sulphate of barytes. Wherever they appear, the rocks contain more than an ordinary portion of iron, in some of its different combinations. Large trees have been thus changed and appear in the cliffs along the shore or scattered in broken masses on the beach.

One of these remarkable relics appears on

the north side of Grindstone Island, at the top of a cliff about fifty feet high. As this cliff is inaccessible, this fossil tree could not be measured; it was estimated to be about two feet in diameter at its largest extremity, and about forty feet of its length is now exposed. How far it extends into the rock is uncertain. It is, however, a most majestic fossil plant, but from the constant breaking down of the cliff, it will, before many seasons pass away, roll from its rocky bed, and be dashed upon the solid pavement over which it now holds a precarious situation.

Several branches extended from its smallest extremity into the strata. Some of these had fallen—were removed and have been carefully examined. The tree belongs to the *dictyodendron* order of vegetables, but of a species unlike any to be found in a living state. Several other trunks and branches of less dimensions may be seen at this spot, and the remains of a variety of small plants, and leaves resembling those of the palm, may be collected from almost every rock on this side of the Island. To these we shall advert hereafter.

SHEPODY.

It has been already stated that there is an extensive ridge of syenite, reaching from the river Saint John in a north-east direction to Hopewell, where it terminates. This ridge as its eastern extremity, where it borders on Shepody Bay, is surmounted by a thick deposit of conglomerate forming Shepody mountain. Following along the base of this mountain, the new red sandstone was found to extend westward to Salisbury Cove.

It had been reported that some kind of ore had been found in this neighbourhood, and upon examination it proved to be the gray oxide of manganese. We first observed this ore in the loose *debris* on the farms of Mr. THOMAS CALHOUN, and JAMES BREWSTER, Esquire, at a part of the village called German Town. A number of large pieces were picked up in a field of potatoes, where they were mixed in the soil. A large mass had formerly been seen near the road, but it has disappeared either by rolling down the side of the hill into a pond, or by the hands of persons who supposed it contained a large quantity of silver. The ore is of a superior quality, and evidently abundant. The inhabitants of the village having been made acquainted with its uses and value will continue to examine its situation, and explore more widely than we were permitted to do from the lateness of the season at the time of our explorations in that quarter.

Shepody River follows the course of a belt of new red sandstone in the direction of Salisbury Cove, which it nearly approaches, terminating in a beautiful lake, three miles long and half a mile wide. This lake abounds in fine trout, and openings are being made between it and the sea, and through sunken bogs at the head of the marsh, to allow the tide to flow in and cover the sunken tracts with alluvium. The tract of country on the above rock is of moderate height and very uneven, being furrowed with deep ravines and abrupt hills. The soil in general is of a superior quality, and such farms as have become unproductive from long culture, might be cheaply renovated by the use of lime and marsh mud for manures.

It was observed that most of the higher grounds were covered with a sandy soil, and there is a general deficiency of clay and alkaline matter. The application of alluvium from the marshes, and lime are therefore especially required, to render such lands productive, and such as will fairly try the experiment may be assured of their success.

Limestone was observed jutting out from beneath the soil on land belonging to S. G. Morse, Esquire, where it is probable a large quantity might be procured.

There are no less than five thousand acres on the Shepody River. Many acres of this fine alluvial tract remain unreclaimed from the sea. Such portions of it as have been diked ore of a good quality, affording the best kind of hay and crops of wheat.

It is a remark applicable to all the marshes of the country, that after they are diked and drained they have a tendency to settle and become lower than the banks of the rivers, where the alluvium is rising and becoming more and more compact. The marsh adjoining the upland we found several instances to be six feet lower than the banks of rivers receiving alluvial matter from the tides. From this circumstance the inner margin of the marsh is overflowed with fresh water during a considerable part of the season, and is thereby rendered worthless. The best remedy for this effect would be to allow the sea to flow in again over certain tracts for a few seasons. This would raise and renovate the sunken ground, and entirely destroy the poisonous plants now covering many of the lots. This plan might be effected by throwing up dikes from the upland to the present barrier against the tides, and thus tract after tract might be redeemed. The muddy water of the Bay being introduced and undisturbed by currents, would deposit its sediment equally according to its depth; and as the lower tracts would be covered deeper than the higher ones, they would receive the greatest share of alluvium, and be raised to the common level.

Few Parishes in the Province appear to be in a more thriving condition than Hopewell. The broad marsh on each side of the Shepody River is skirted with fine farms, and a large and rapidly increasing population are clearing higher up the slopes, the bases of which are closely occupied by the older inhabitants and their senior descendants.

Sheltered from the black northern blast by the highlands in the rear, and possessing a rich soil, this extensive settlement, with its new villages, presents a wide rural plain. Its marshes are protected from the fury of the waves by Grindstone Island and Point, and the coming tide that drives the herds of swine from the creeks, does not disturb the droves of cattle and sheep feeding securely within the dikes. Such as are fond of fine scenery will find a view from the mountain extremely interesting, as it commands a sight of a wide range of the eastern direct of New Brunswick, a part of Nova Scotia, and, of a clear day, Prince Edward Island, with numerous bays, rivers, and villages of the most picturesque and pleasing varieties.

There are many traditionary stories of money having been buried at the foot of the mountain, by Pirates and French Canadians, the latter having been the first inhabitants of Shepody; and a number of pits have been opened by visitors from other parts of the country, to recover concealed treasures. It is to be regretted that there are persons in the Province who still believe that there are virtues in the "mineral rod," even in those used in the United States, and thus seek for money that has never been lost.

With the assistance of S. G. Morse, Esquire, we made an excursion from Shepody to the head of Turtle Creek; Mr. EZRA STYLES, and Mr. GEORGE ROGERS having kindly volunteered for guides. The trap and syenite in the neighbourhood of Hammond River, and composing the broken lands northward of Saint Martin's, were found to extend to the Parish of Hopewell, where they are discontinued. At this place those rocks form a high hill and a broken tract of country ten miles wide. This chain is terminated by Shepody mountain, which is about ten miles in circumference at its base, and is the highest land in any of the eastern counties of the Province. This mountain is composed chiefly of conglomerate, which appears to have been elevated by volcanic rocks in its neighbourhood. Our instruments for taking heights had been injured by an accident, and therefore the altitude of the mountain could not be determined. It will be ascertained at a future period.

Along the elevated ridge of trap and syenite there are some excellent tracts of table land, thickly covered with a heavy growth of beach, birch and maple. The soil in general is scanty, but of good quality, a circumstance which may be attributed to the potash contained in the feldspar of the rocks beneath. The lofty trees of the forest were observed to have their tops and largest branches much broken and decayed. This effect was produced by a gale of wind, that swept over the mountains in the winter of 1825, at a time when the trees were loaded with the solid ice, accumulated from a freezing mist.

CAPE MERANGUIN.

The new red sandstone of Sackville extends to within six miles of the extreme point of Cape Meranguin, and crossing the peninsula, reaches along the shore of Shepody Bay, to Point Gilbert. Its strata repose directly upon those of the coal measure to which it is unconformable. In general the rock is of a bright red colour, and is composed of fine siliceous particles mixed with mica, and firmly cemented with the oxides of iron; occasionally it passes into a dark chocolate colored rock, and in a few places it is purple. Numerous quarries of excellent building stone might be opened along these shores; for the sandstone resists all atmospheric changes, and the frost. It should nevertheless be taken from situations above the tide, as the salt water hastens its decomposition. An excellent quarry of the chocolate colored variety has been opened at Grindstone Point, by Mr. ANDREWS, and a quantity of superior freestone is annually shipped to the United States from that place.

At Point Gilbert a quantity of limestone was observed scattered in large masses on the shore. It is derived from a bed of that rock situated in the sandstone, and jutting out at the cliffs, rising perpendicularly above high water mark. How far it is continued eastward is unknown.

"Grand Tasse" is a considerable Bay southward of the Point. There is here an extensive deposit of gypsum, situated immediately upon the shore. Plaster has been shipped from this locality to the United States, and notwithstanding the trade in that article is at present very limited from this quarter, this deposit of gypsum is a valuable part of the mineral wealth of the County of Westmorland. This sulphate of lime frequently contains large and transparent crystals of selenite, and near its junction with the subjacent sandstone, specimens of phosphate of lime were procured. A quantity of superior flag stones was shipped to New York from a quarry near the gypsum, during the present season. The general course of the strata is west north west, with a dip of 28° north north east: both the course and inclination deviate at different situations.

The Cape, to the distance of six miles on each of its sides, is composed of sandstones and shales, belonging to the coal measures of Cumberland. The shale (slate variety) is most frequently of the red and blue varieties, and often contains clay iron and stone balls. The course of these strata is east 10° south, and the dip is south 10° west, at an angle of 42°; from these facts it is evident these strata belong to that coal basin, the principal area of which is situated on the east side of Cumberland Bay, where the rocks have a similar dip, and follow nearly the same course. The strata on each side of the Bay are also identical in their chemical components, and general character.

There are no less than nineteen strata of coal at the South Joggins of Cumberland, and it was inferred at the time of our explorations in Nova Scotia, that some of these might be found on New Brunswick side; but upon a close examination, their original situations were found to be occupied by the Bay, itself, and the outcroppings which were at a former period continuous from one side to the other have been removed and now have their remaining portions buried beneath the waves of the sea. Upon the causes that have contributed to destroy so large a tract of country, as that now forming the site of Chignecto Bay, we do not at present stop to speculate. There cannot, however, be any doubt, that the sea, which has made such vast inroads into this coal basin, has, in its turn, been driven back, by the collections of alluvium on the Tantara and other adjacent streams, and the sites of the great tracts of marsh, the lakes and extensive peat bogs reaching twenty four miles into the interior, were once washed by the saline waters of the Bay of Fundy.

(To be continued.)

FOR SALE.
50 BARRELS Prime PORK, 15 ditto Prime Mess PORK, 10 Firkins BUTTER.—Apply to **MACPHERSON & COY.**
19th February, 1840.

By Authority.

RETURN of sums which became due at the Crown Land's Office from the 1st December 1839, to the 29th February, 1840, inclusive, for Land, and which have not been paid. Published for the information of the Parties, by order of His Excellency the Lieutenant Governor.

Due.	Name.	County.	Nature of Debt.	Amount.
Dec. 2,	Hamilton, George	Charlotte,	4th Instalment.	£25 0 0
" 5,	Wetmore, Justus S.	Queen's,	4th ..	30 0 0
" "	Millican, James	St. John,	4th ..	75 0 0
" "	Robinson, George D.	"	4th ..	75 0 0
" 8,	Robinson, Daniel L.	"	4th ..	75 0 0
" 9,	Smith, Thomas	King's,	4th ..	6 0 0
" 10,	McCarthy, Michael	Northumberland,	4th ..	6 0 0
" "	McKim, Robert	Queen's,	4th ..	5 0 0
" 13,	McKim, George	"	4th ..	5 0 0
" "	Ruel, Robert	Carleton,	4th ..	34 10 7½
" 15,	Ruel, John	St. John,	4th ..	2 8 9
" "	Kinne, James	"	4th ..	4 2 6
" "	Greaves, Riley	"	4th ..	5 0 0
" "	Farley, Nathaniel	Carleton,	4th ..	8 3 1½
" "	Robicheau, John B.	Kent,	4th ..	4 7 6
" "	Pearce, Robert	Carleton,	4th ..	6 5 0
" "	Cormac, William E.	"	4th ..	21 17 6
" "	Fitzherbert, James	"	4th ..	7 10 0
" "	Matthews, John	St. John,	4th ..	4 2 6
" "	Hogan John	Northumberland,	4th ..	3 10 0
" "	Hunter, William	King's,	4th ..	5 9 4½
" "	Sinkler, Finlay	St. John,	4th ..	10 0 0
" "	Dunaresq, Perry Jr.	Gloucester,	4th ..	8 15 0
" "	Cox, Abraham	Carleton,	4th ..	4 7 6
" "	Maddox, Patrick	Northumberland,	4th ..	7 0 0
" "	Starrett, William	Carleton,	4th ..	4 7 6
" "	Pye, John	Charlotte,	4th ..	2 9 0
" "	Long, John	York,	4th ..	5 0 0
" "	Smith, James	King's,	4th ..	6 5 0
" "	Tunny, James	"	4th ..	4 2 6
" "	Tuff, Richard	St. John,	4th ..	2 10 0
" "	Tippin, Joseph	"	4th ..	5 0 0
" "	Donavan, Timothy	"	4th ..	5 0 0
" "	Downing, Alexander	Carleton,	4th ..	7 10 0
" 16,	Dunloy, James	Kent,	4th ..	4 7 6
" "	Corbit, William	Charlotte,	4th ..	5 5 0
" "	Ellis, Francis	Gloucester,	4th ..	2 3 9
" 17,	McElhenry, Thomas	Northumberland,	4th ..	5 0 0
" "	Coglan, John	St. John,	4th ..	4 10 0
" "	Ellis, George	York,	4th ..	7 10 0
" "	Delong, Aaron	St. John,	4th ..	7 10 0
" "	Chaisson, Frederick	Gloucester,	4th ..	1 10 0
" "	Barber, Duncan	Charlotte,	4th ..	12 10 0
" "	Fraser, James, Jr.	"	4th ..	8 15 0
" 19,	Laundrie, Peter	Gloucester,	4th ..	8 15 0
" "	King, Joseph	Charlotte,	4th ..	6 3 9
" "	Godine, Moyes	Gloucester,	4th ..	2 10 0
" "	Fitzgerald, Patrick	Westmorland,	4th ..	3 15 0
" "	Duncan, Andrew	Gloucester,	4th ..	15 0 0
" "	McClelland, William	Charlotte,	4th ..	10 0 0
" "	McKenzie, John	York,	4th ..	17 10 0
" 20,	McQuey, Thomas	"	4th ..	10 0 0
" "	Dowd, William	Charlotte,	4th ..	5 0 0
" "	Black, Samuel	Carleton,	4th ..	3 0 0
" "	McLawren, Archibald	St. John,	4th ..	18 2 6
" "	McMillin, Mary	Northumberland,	4th ..	6 5 0
" 21,	McCurdy, Peter	Charlotte,	4th ..	4 8 6
" "	Broder, James	King's,	4th ..	7 0 0
" 23,	Bedell, William J.	York,	4th ..	357 7 11
" 28,	Hutson, John	Northumberland,	4th ..	4 7 6
" 29,	Mazrall, Lazard	Gloucester,	4th ..	3 15 0
" "	Starrett, William	York,	4th ..	2 19 6
" "	Burns, Peter	Northumberland,	4th ..	10 0 0
" 30,	Hooke, Bridges J.	Sunbury,	4th ..	21 17 6
" 26,	Wright, Caleb	York,	2d ..	12 10 0
Jan. 4,	Smith, Samuel	St. John,	4th ..	9 0 0
" "	DeCantillon, John	Northumberland,	4th ..	3 2 6
" 19,	Burke, Robert	Gloucester,	4th ..	5 0 0
" 20,	Wilson, Martin	Westmorland,	4th ..	4 2 6
" "	Parlee, Abraham	King's,	4th ..	7 10 0
" 21,	McLaughlin, Daniel	Charlotte,	4th ..	4 7 6
" "	O'Shea, James	Northumberland,	4th ..	4 7 6
" "	Wall, John	Gloucester,	4th ..	8 15 0
" "	Dougherty, Bernard	Westmorland,	4th ..	2 19 6
" 24,	Carruthers, Mathew	Northumberland,	4th ..	3 15 0
" "	Donavan, Florence	St. John,	4th ..	7 10 0
" 25,	Maher, Thomas	Northumberland,	4th ..	3 15 0
" "	Robicheau, Charles	Gloucester,	4th ..	10 16 0
" "	Pratt, James	York,	4th ..	4 10 0
" 26,	Shaw, James	Charlotte,	4th ..	2 10 0
" "	Robinson, Joseph	Gloucester,	4th ..	4 7 6
" "	Pionette, Marcelle	"	4th ..	6 9 9
" "	Rodgers, Andrew	Carleton,	4th ..	5 12 6
" "	McBrien, William Jr.	Charlotte,	4th ..	2 10 0
" "	Stone, Thomas	Queen's,	4th ..	3 5 0
" "	Cardiff, Edward	Northumberland,	4th ..	3 14 4½
" 27,	Wilson, John	Charlotte,	4th ..	25 0 0
" "	Pemroy, Joseph Y.	"	4th ..	7 15 0
" "	Clarke, William	Queen's,	4th ..	5 19 10½
" "	Jepson, Robert	Northumberland,	4th ..	3 0 0
" "	Vernon, James	Charlotte,	4th ..	20 12 6
" "	Kilgrace, Noble	Queen's,	4th ..	3 15 0
" 30,	Christal, John	Kent,	4th ..	3 15 0
" "	Meny, L'Ange	"	4th ..	3 15 0
" 16,	Watson, George	King's,	4th ..	3 0 0
" 18,	Ross, James	Charlotte,	3d Instalment.	3 15 0
" 22,	Heafy, James	Carleton,	3d ..	3 15 0
" "	McClusky, James	Sunbury,	3d ..	3 15 0
" 23,	Hetherington, Joseph	Charlotte,	3d ..	3 15 0
" 31,	Price, Robert	King's,	3d ..	2 1 3
" 29,	Dowling, William	York,	2d Instalment.	3 15 0
Feb. 6,	Crosil, William	Charlotte,	4th Instalment.	3 10 0
" 8,	Coughlan, Charles	Gloucester,	4th ..	3 0 0
" 10,	Leak, Jacob	King's,	4th ..	4 7 6
" "	Moran, James	St. John,	4th ..	31 5 0
" "	Moore, Josephus	Charlotte,	4th ..	12 10 0
" "	Hayes, James	Gloucester,	4th ..	2 10 0
" "	Hill, John	York,	4th ..	375 0 0
" 15,	Mailie, Firman	Gloucester,	4th ..	3 15 0
" "	Bluemortier, Charles G.	Charlotte,	4th ..	2 3 9
" "	Parle, John	Gloucester,	4th ..	2 10 0
" 17,	Boudreaux, Jerome	"	4th ..	3 13 6
" "	Eady, William Jr.	"	4th ..	3 2 6
" "	Eady, William	"	4th ..	3 2 6
" "	Eady, John	Gloucester,	4th ..	3 2 6
" "	Good, Edward	"	4th ..	1 17 6
" "	Good, William	"	4th ..	1 17 6
" "	Collis Timothy	"	4th ..	2 0 7½
" "	Murphy, Jeremiah	"	4th ..	3 19 4½
" "	Maloney, Thomas	"	4th ..	4 6 3
" "	Dailey, Joseph	"	4th ..	3 2 6
" "	Caro, John	"	4th ..	2 10 0
" "	Smith, James	"	4th ..	3 2 6
" "	Smith, John	"	4th ..	3 2 6
" "	Kerr, Gavin	"	4th ..	5 0 0
" 20,	Smith, William	"	4th ..	4 7 6
" 8,	Marshall, Joseph	King's,	3d Instalment.	3 15 0
" "	Marshall, John	"	3d ..	3 15 0
" 19,	Waters, Patrick	Charlotte,	3d ..	3 15 0
" "	White, Robert	King's,	2d Instalment.	3 15 0
" "	Manning, Robert	"	2d ..	3 15 0
" 1,	Avery, Peter	"	2d ..	3 15 0
" "	Melvin, John	York,	4th Instalment.	9 2 0

Total £1799 0 6½
Dec. 24. And one Instalment of one fourth part of Annual payments on Leases to cut Timber or Lumber.
Crown Land Office, 2d March, 1840.