

Appendix
(V.)
1st July.

the siliceous grains prevail, and the latter frequently to a considerable extent; the color of the beds is in general a dirty white. To the west of the boat cove there are two hummocks of the rock, forming the bluff from which White Cape takes its name. The character of the strata here displayed very much resembles what has already been described; the face of the cliff shows a section giving a thickness of between fifty and sixty feet, across a shallow trough in the strata, which on the west side, rise up at an angle, as displayed on the beach, of seventy degrees, maintained for sixteen yards, which would give a thickness of forty-five feet more. There then occurs an irregularity, beyond which a dip of N. 45° E. mag. 85° to Euomphalus, in the more calcareous layers. On the east side of Murray Bay, where the white quartz occurs within sight of the church, it is immediately followed by a coarse conglomerate bed, which though on the whole conformable with it, fills up hollows and inequalities in its surface. The conglomerate appears to be composed of various moderately sized fragments of the quartz rock, and even considerable boulders or large angular blocks of it, held in various attitudes, in a partially calcareous cement, from which it would seem that the elements of the quartz rock had become indurated before the deposit of the conglomerate. This conglomerate is the base of the calciferous sand rock, and it is followed by finer calcareo-arenaceous layers; but though the succeeding formation makes its appearance not far from them, there are too many irregularities in the vicinity to give data to determine the total thickness of the deposit. Near Les Ecorehis the development is more complete; the lower part of the deposit there consists of calcareous sandstone, with a band or two of conglomerate, holding pebbles as large as pigeons' eggs, followed by gray and whitish layers, which weather of a yellowish white, assuming a light drab while the stone is wet. These are followed by a set of calcareo-arenaceous beds, which, though of a nearly uniform light gray color in fresh fractures, weather to a yellowish white and a reddish white, the two colors alternating with one another in the upper half of the deposit. The total thickness of the deposit is about sixty feet.

4. *Bituminous Limestone.*—The calcareous sandstones are followed by bituminous limestone beds, which are highly fossiliferous, and these in some parts display a considerable thickness. The following is a section at Les Ecorehis, in which are given, in descending order, all the deposits in succession to the gneiss:

Dark gray bituminous limestone, holding numerous fossils; this constitutes the face of the cliff, say..	150 feet
Dark gray bituminous thin bedded limestone, holding fossils.....	12
Dark gray bituminous thin bedded limestone, somewhat nodular, holding fossils.....	16
	178
Light gray calcareous sandstone; slight differences of shade alternate, the darker weathering to a reddish white, the lighter to a yellowish white.....	13
Light gray calcareous sandstone, in a thick bed, weathering to a yellowish white.....	10

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Light gray calcareous sandstone, in alternating differences of shade, weathering yellowish white and reddish white.....	7
Light gray calcareous sandstone, weathering yellowish white.....	1
Light gray calcareous sandstone, weathering reddish white.....	3
Light gray calcareous sandstone, weathering to a yellowish white; when wet the exterior of the stone is a light drab.....	13
Light gray and whitish sandstone, of a calcareous character.....	7
Light gray calcareous sandstone, some of the beds of a conglomerate character, holding quartz pebbles as large as pigeons' and hens' eggs.....	3
	57
Measures imperfectly exposed, in which a few alternating beds of gray and white quartz rock or sandstone are seen.....	14
White quartz rock, divided into plates by the presence of silvery mica.....	25
Measures concealed, supposed to be white quartz rock, succeeding which gneiss appears.....	6
	45
Total thickness displayed.....	280

The fossils met with in the bituminous part of the section, several of them having been found loose at the base of the cliff at Les Ecorehis, adopting the nomenclature of Mr. Hall of New York, in the first volume of his Paleontology, are as follows:—*Charites lycoperdon*, *Stictopora*? —? *Streptoplasma corniculum*, *S. crassa*, *Receptaculites neptuni*, *Schizocrinus nudosus*, *Leptena alternata*, *L. sericia*, *Orthis pectinella*, *O.* —? *Atrypa ambigua*, *Orthis cervas* —? *Platynotus trentonensis*, *Calymene senaria*.

At Bay St. Paul there is a great development of bituminous limestone at Cap au Rets, between which and the gneiss running out into Cap Rouge, the cliff exposes a section nearly at right angles to the strike of the strata. The general dip is westward, at an angle increasing irregularly from sixteen up to sixty degrees, as it approaches the gneiss; between the limestone and the gneiss there is an interval of concealment of about fifty yards across the measures, in which the calciferous sandstone may perhaps exist; but independent of this, and making an allowance for one or two twists visible in the cliff, there is breadth enough completely denuded to give a thickness of between 600 and 700 feet, the whole of which consists of dark gray and black bituminous limestone, with the exception of a band of white sandstone, within about thirty-five feet of the bottom: the calcareous beds are of various thicknesses, separated by partings of black bituminous shale. The rock is fossiliferous, and among the remains here met with are *Fucoides* —? *Graptolithus amplexicaule*, *Asterias matutina*, *Leptena sericia*, *Orthis testudinaria*, *Atrypa extans*, *Arvicula trentonensis* *Calymene senaria*, *C.* —? and *Trinucleus concentricus*,—nearly all, as well as those occurring at Les Ecorehis, belonging to the Trenton limestone of New York. There can therefore be little doubt of the true age of the deposit, and of the fact that it is far beneath the recognized carboniferous rocks of North America.

On the west side of Bay St. Paul, the same bituminous limestone is met with at the mill on the Rivière au Moulin. The deposit is here seen to dip eastward, and there is evidence to prove that it is brought into position by a dislocation. The bituminous beds abut against the gneiss without the intervention of the calciferous sandstone, or white quartz rock, and at the point of contact, the slope, which near the mill does not exhibit more than twenty to thirty degrees, is suddenly turned up on one side of the stream, at the cascade, to sixty and on the other to ninety degrees, while in one spot the