MINING.

THE GEOLOGY OF CAPE BRETON—THE LOWER SILURIAN.

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In my last paper I gave a brief sketch of the Devonian Measures of Cape Breton, and now come to the Lower Silurian rocks. I have already drawn attention to the remarkably limited developments of geological horizons in this island. Between the basal conglomerate of the Carboniferous and the Pre-Cambrian there intervene only a few limited areas referred to the Devonian and the Lower Silurian. The Laurentian hills of the island may have borne on their crests much fuller representations of the geological sequence than are now presented, but evidence is not wanting to show that for long periods they must have stood as now, bare and patriarchal.

The Lower Silurian of Cape Breton rests frequently upon the Laurentian, and its conglomerates include pebbles of its felsites, gneisses, etc. It is in turn overlaid at many points by Lower Carboniferous strata, and has yielded its fragments to form the basal conglomerates of the latter formation. The fact that hitherto the Lower Carboniferous conglomerates have failed to yield pebbles differing from the Lower Silurian and Laurentian rocks, forms an argument in favor of the view that the Lower Silurian and Devonian alone in Cape Breton mark the gap already alluded to. This argument is the stronger because the Carboniferous conglomerates are composed of material derived from strata close to the point of formation. They do not, as in several cases in Nova Scotia, contain boulders and pebbles that have been carried many miles.

The extent of these Silurian strata is observed at many points by the overlying Carboniferous conglomerates, and at other localities they appear to have been preserved by the protection against denudation afforded by the Laurentian ridges. These strata are not found in the counties of Richmond or Inverness, and are represented in Victoria County only by a small outcrop near Cape Dauphin, referred with doubt, in the absence of fossil evidence, to this age.

A long narrow band runs from Moore's Brook, in St. Andrew's Channel, (Little Bras d'O.) along the shore to the mouth of McLeod's Brook, which it ascends to its source, and then follows Indian Brook down until within a mile of its mouth, at the Chapel on the Eskasoni Indian Reserve on East Bay. Except at Owl's Brook, this band is no where over a mile in width. Long Island is entirely composed of the slates and limestones of this group. At the Long Island, Barasois and McSween's Brook there is an uncomfortable capping of conglomerate. At Dugald's Point the conglomerate completely obscures it, and rests upon the Baisdale felsites. No exposure of the Silurian strata is visible for several miles until Maclean's Brook is reached, where it reappears as a narrow strip between the Laurentian and Conglomerate. This outcrop terminates at Shenacadie, but a small outlier is visible about a mile to the westward. Similar outliers occur on East Bay, near the mouths of Mackintosh and Bown's Brooks.

At the head of East Bay, these strata outcrop again resting on the syenitic masses of the Coxheath Hills, and are in turn obscured by the Carboniferous conglomerate. The northern edge of this exposure runs from the foot of Gillis Lake, and passes a little south of McAdams Lake and continues to a point on the East Bay road about one mile west of the bridge over Spruce Brook. This strip is about a mile wide in the centre and gradually narrows at each end.

The greatest development of this horizon, however, is met in the Mira River district, and here it has been carefully traced and minutely described by Mr. Fletcher of the Canadian Geological Survey.

The Mira River forms its northern boundary until a point on the northern bank is reached, about two miles east of Marion Bridge, where the formation is met on the north side of the river, covering a tract of land nearly square and about three miles broad. The next exposure on the north side of the river is met at the mouth of Salmon River, where these measures are interposed between Lower Carboniferous limestone and Laurentian felsite. The felsite rocks cut out this patch and almost completely surround it. Still passing toward the head of the lake, after an interval of about a mile, the Silurian strata are met again, and occupy the shore of the lake to its head, and the banks of the Giant Lake River to the foot of Giant Lake. This exposure, about seven miles long and four wide, projects into the felsites of the Mira Hills, and is in several places pierced by masses of felsite.

The shore of the lower half of Giant Lake is occupied by syenites and felsites, succeeded in the upper half by the Silurian strata, which form a band about seven miles long and three wide terminating on the northern shore of the Upper Mari Joseph Lake. There are several small outliers in this district, at Five Islands Lake, and on the shores of Framboise Cove ponds.

A line drawn from the head of Mira River to the shore at the northern side of Catalegne Lake forms the extreme southern boundary of these measures. This line passes within about a mile and a half of the head of Gabarus Bay. While the Silurian measures are unbroken in the northern part of this district along the shore of the Mira River, they are broken into by isolated ridges and projections of the Laurentian felsites, etc., of the Gabarus district. Thus we find within and to the north of the line running from the head of Mira to Catalegne, the felsites, etc., of the White Granite Hills, the String Lakes, Blue Mountains, Bengal Lakes and Catalegne Road.

(*To be continued.*)