Geological Survey of Canada

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1899

N.W. Sheet

Eastern Townships Map

Legend

Silurian

Medina

Cambro-Silurian

D5 Hudson River (Lorraine)

D4 Utica

West of the St Lawrence & Champlain Fault

D3 Trenton and Black River

D2 Chazy

D1 Calciferous

D14 Potsdam sandstone

East of the St Lawrence & Champlain Fault

D23 Black graptolitic slates and limestone

Cambrian

C3 Sillery slates, sandstones and conglomerates

Archæan

A Crystalline Limestone

A Gneiss and Granite

Anor. Anorthosite

Gr. Granite

Strike and Dip

Fossils

Glacial Strice

Iron

Infusorial Earth

Mica

Quarries

Mineral Hints

Compiled and drawn by J. White and C.O. Sendeal, from Eastern Townships Map 1863, and from later surveys and Survey and Crown Lands Dep.t Quebec.

Accompanying Part A. Vol. XI. (New Series). Geologically surveyed by Sir W.E. Logan, F.R.S. Ells, F.G.S. Adams, and other members of the Geological Survey staff.

TORONTO LITHOGRAPHING CO. Ltd.

PROVINCE OF QUEBEC.

Three Rivers Sheet.

(Eastern Townships Map.)

Nat. Scale - 25440

1 0 1 5 10 15 Statute Miles

Longitude West from Greenwich

NOTE 1.

Throughout much of the district covered by this map great deposits of sand and clay occur. The former overlies the clay in the St. Lawrence River area, and these deposits conceal almost entirely the line of contact between the Palæozoic formations and the crystalline rocks, so that this line of division is at most points largely conjectural.

Glacial strie are seen at a number of places and have been indicated on the map. The course of these is usually a few degrees east or west of south. The deposits of sand extend apparently to the height-of-land, beyond the limits of the map-sheet, and boulders of gneiss, often of large size, are scattered over the surface in this direction.

NOTE 2.

The areas of Silurian, outlined in the south-east corner of the map-sheet, consist of reddish sandy shales and sandstone. No fossils have been found in these rocks, but they apparently rest conformably upon the greyish shales of the Lorraine formation, and have, in consequence, been referred to the horizon of the Medina. The country east of the St. Lawrence in this direction is largely drift-covered. Rock sections are seen along several streams, but the outlines of the Medina outliers in general depend upon the peculiar red colour given to the soil by the decomposition of the reddish rocks of that formation.

NOTE 3.

The Lorraine (formerly the Hudson River) formation consists largely of greyish sandy shales and flags with occasional thin bands of dolomitic limestone. In places, as along the Bocancour and the Nicolet rivers, the strata are well exposed and contain fossils in abundance. The formation near the St. Lawrence River lies in a nearly horizontal attitude, but in the southern portion is affected by several faults and folds by which the strata are inclined at an angle of nearly ninety degrees. The breadth of the formation east of the St. Lawrence is not far from 15 miles, and north of that river it constitutes a somewhat narrow strip that extends east as far as Ste. Anne de la Pérade, having a breadth near Three Rivers, where it rests on the Utica, of from four to six miles.

NOTE 4.

The Utica formation, while probably continuous north of the St. Lawrence, underlying the Lorraine shales, is rarely exposed. It appears on the sheet adjacent to the south and also on that to the east, but in this area the characteristic Utica shales have been noticed at one point only, viz., on the St. Maurice River, about seven miles from the mouth, near the old St. Maurice forges. The area occupied by the rocks of this formation is all covered by sands and clays.

NOTE 5.

The rocks of the Trenton formation are exposed at a number of points in the area north of the St. Lawrence, and several important quarries for building stone are here worked in the limestone. From these localities large collections of fossils have been made, the lists of which will be found in the accompanying report on this district. The outcrops are at somewhat widely separated points, the most numerous being at Joliette, and between that town and the Mashtawan River. The principal points from which the fossils are obtained, and where quarries are located, are at Ste. Ursule, St. Justin, St. Barthelemi, St. Cuthbert, the Chaloupe River and at Joliette. East of the St. Maurice River the rocks of this formation are seen at Radnor Forges, and near St. Casimir on the extreme eastern limit of the map-sheet, the extension of the formation being elsewhere concealed by clay and sand.

NOTE 6.

On the south side of the St. Lawrence River, the Utica formation has not yet been recognized in this area. The Lorraine shales are in direct contact with certain black slates and limestones which are apparently the northern extension of the similar rocks seen to the south in the vicinity of Farnham (Montreal Sheet). They belong, in so far as can now be determined, to the horizon of the lower Trenton, though in their fossils certain forms appear which are not found in the typical Trenton or Black River limestone. The contacts between the rocks of this series and the Lorraine shales on the one hand, and with those of the Hillery formation on the other, are marked by lines of fault.

NOTE 7.

The Chazy, the Calciferous, and the Potsdam sandstone have their widest development near Joliette, on L'Assomption River. Thence eastward the breadth decreases till they are overlapped or concealed by the Trenton limestone to the north-west of Radnor Forges, where the latter formation rests on the crystalline rocks and maintains this position as far east as Quebec city.

The Chazy beds are exposed near Joliette town, and for a short distance along the river above that place, but are not definitely recognized to the east of this point. The Calciferous limestone has a breadth along L'Assomption River, at this place, of about four miles and passes down into the Potsdam sandstone, which rests on the gneiss with a breadth of about a mile and a half, the lowest beds being a conglomerate. The several formations lie in a nearly horizontal attitude, but at Joliette some of the strata are tilted as if through the agency of faults. On the St. Maurice River, the Potsdam and Calciferous are both exposed, the contact of the latter with the gneiss being about four miles and a half below the Shawenegan Falls. The breadth of the three formations at this place is not more than a couple of miles. A few fossils were seen in the Calciferous along L'Assomption River, but no collections were made.

The contact between the Palæozoic formations and crystalline gneiss and granite is rarely seen, being for the most part concealed by heavy deposits of sand or clay. It has, however, been noted at several points, notably on the St. Maurice and L'Assomption rivers where the channels are cut down to the underlying strata.

NOTE 8.

In the south-eastern part of the area, a portion of the Hillery formation is represented. The rocks here exposed along the Beaucour River and at points to the south, consist of red, grey and green slates with areas of greenish-grey sandstone. They are part of the Hillery extending from Point Levis on the one hand to near Farnham on the other, and they probably represent some portion of the Cambrian system. Fossils are very rarely found in these rocks and none were obtained from the rocks of the Beaucour section. The Hillery is here in contact with the lower Trenton rocks along a line of fault.

NOTE 9.

The great area of gneiss and granite with quartzite and small outcrops of crystalline limestone, belongs to what is known as the Grenville Series, but the large masses of limestone found in association with the same series north of the Ottawa river are here wanting, having apparently been removed by denudation. These rocks extend northward beyond the limits of the sheet, and at the heads of the Matawin and Manuan rivers there are large masses of grey quartzite associated with the greyish and black garnetiferous gneiss. The fundamental gneiss rarely appears, but masses of anorthosite and granite penetrate the grey gneiss at many points and occasionally form large areas. Over much of the country occupied by the crystalline rocks on either side of the Matawin River, the gneiss is in low undulations, often with dips ranging from five to twenty degrees, shallow synclines being defined. East of the St. Maurice, the inclination of the strata is much greater. The crystalline limestones are in the form of narrow bands, which are exposed at intervals but cannot be traced continuously to any considerable distance. They are associated frequently with bands of rusty gneiss like those found north of the Ottawa River, and, like the limestones of that area, they sometimes occur in a graphitic; while at times the strata are so disturbed that the exact relations are difficult to determine.

NOTE 10.

The characters peculiar to the areas of anorthosite and granite have been already stated in the notes on the map adjacent to the south (Montreal sheet). It may here be said merely that these rocks penetrate the limestones and gneisses of the Grenville Series and are more recent in age. The principal area of the former is situated in the south-west corner of the map, but a number of less important ones are scattered at intervals throughout the area west of the St. Maurice, south of the Mashawin river. These are generally of small extent. Sometimes the anorthosite is foliated, especially along the outer margin of the mass, but it is generally a massive rock.

The principal granite area outlined is that in the counties of Maskinonge and Berthier. The rock is generally reddish in colour and it forms a somewhat rough tract of country. The central portion of this granite area is often coarsely granular and massive, but a well defined foliation is visible at many points. The western part of this mass, extending through the townships of Brandon and Peterborough, consists of a finer-grained variety, but this also is frequently foliated, though it is distinguishable by its physical characters from the great area of gneiss of various kinds, which is the predominating rock of the region.

665. †Northwest Quarter-sheet. Eastern Townships Map (Three Rivers Sheet). Part J, Vol. XI. Scale 4 miles to 1 inch.

Topographical Map of the Eastern Townships (in four sheets) from St. Jerome and Lake of Two Mountains, on the west, to the New Hampshire and Maine Boundary on the east, and from Latitude 45° N. to 47° 50' N. Scale 4 miles to 1 inch.

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PETROLOGICAL SCIENCES DIVISION

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