

# The Canadian Journal.

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## Geological Survey of Canada.

### REPORT OF PROGRESS FOR THE YEAR 1852-3.

The Report for the year 1852-3, recently printed by order of the Legislative Assembly, is one of the most voluminous of the series. It occupies one hundred and seventy nine octavo pages, and embodies a large amount of very valuable and instructive information respecting the Geology and Topography of Canada, as well as the distribution of economic materials in both Provinces. Mr. Logan's examination of the district which lies on the north side of the St. Lawrence, between Montreal and Cape Tourmente, below Quebec, appears to have been rendered very laborious on account of the want of a good map of the country. So inaccurate and deficient were the maps of the settled parts, that it became necessary to go over the whole ground on foot, and to measure, by pacing, the distances travelled. Mr. Logan pithily observes, that "the weariness resulting from the attention required to count one's paces accurately, every day, and all day long, for five or six months of assiduous exploration, is best understood by those who have made the attempt."

"The country which lies between the upper end of the island of Montreal and Cape Tourmente on the left side of the St. Lawrence, and occupies the space intervening between the river and the flank of the metamorphic hills, to which Mr. Garneau, in his History of Canada, has given the name of the Laurentides, has a length of about 200 miles, and it gradually widens from a point at Cape Tourmente, to about thirty miles at Montreal, having thus an area of about 3000 square miles. It presents a general flat surface, rising in many places by abrupt steps, (the marks of ancient sea margins,) into successive terraces, some of which are from 200 to 300 feet above the level of the river, and the whole have a general parallelism with it. These terraces are occupied by clay and sand, and the latter predominating, gives them, as a whole, a light soil. In some parts extensive swamps prevail on the terraces, but there is not a lake in the whole area. The rivers which cross it, (some of them large streams, of which the St. Maurice is the greatest,) descending the flank of the metamorphic hills, all give a succession of falls and rapids before reaching the plain, affording a great variety of picturesque and beautiful cascades, and yielding a vast extent of water-power, capable of application to sawing timber and other manufacturing purposes.

Quitting the metamorphic rocks, these streams at once cut deep into the softer deposits of the plains, sometimes at a leap attaining nearly the level of the St. Lawrence, and intersect the country by numerous nearly parallel ravines; they generally display steep banks of clay and sand, but in a few instances run in troughs, exposing perpendicular sections of slightly inclined strata of limestone or black shale, piled upon one another to the height of from twenty to eighty feet.

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The name which has been given in previous reports to the rocks underlying the fossiliferous formations in this part of Canada is the Metamorphic series, but inasmuch as this is applicable to any series of rocks in an altered condition, and might occasion confusion, it has been considered expedient to apply to them for the future, the more distinctive appellation of the Laurentian series, a name founded on that given by Mr. Garneau to the chain of hills which they compose.

The geological formations which underlie the district in ascending order would thus be as follows:—

1. Laurentian series.
2. Potsdam sandstone.
3. Calciferous sandrock.
4. Chazy limestone.
5. Birds-eye, Black-River, and Trenton limestones.
6. Utica slate.
7. Hudson-River group.
8. Queida conglomerate.

Mr. Logan then proceeds to describe the distribution of these formations, together with the attitude they assume in the physical structure of the region. The occurrence of economic materials is next adverted to. No very promising field of enterprise appears to present itself in any part of the district examined.

"The materials having an economic value seem to be almost wholly confined to bog iron ore and iron ochres, together with stone fit for the purposes of construction and flagging, as well as lime-stone for burning, clays for common bricks and pottery, and peat, in some parts, fit for fuel." The observations of Mr. Logan respecting the distribution of auriferous drifts are highly important, as they settle, for the time, the question of the presence of workable gold fields in Canada.

"In the month of December, a few days were devoted to a farther examination of the distribution of this metal in the Eastern Townships, and particles of it were found in the valley of the St. Francis at various intervals from Richmond to Hunting's mills on the Salmon river, flowing into the Massawippi, a little above Lenoxville. Though the weather was rather adverse to the examination, on account of the cold and frost, yet the results were much the same as those of similar previous explorations farther to the east. One of the positions examined was on the road passing to the north of the mill-pond on the Magog river above Sherbrooke, where particles were met with in an ancient hard bound gravel, which probably has never been disturbed since the time when the surface arose from beneath a tertiary sea. The position is about 156 feet above the level of the St. Francis at Sherbrooke, and would probably be over 600 feet above the St. Lawrence in Lake St. Peter; this fact serves to shew that the metal is not confined to the lowest parts of the valleys, but will have a distribution extensive with the original drift of the district.

It may be considered that the auriferous drift has now been shown to exist over 10,000 square miles on the south side of the St. Lawrence, comprehending the prolongation of the Green Mountains into Canada, and the country on the south-east side of them. In following the range of this drift north-eastwardly, the researches of the survey have not extended beyond Etchemin Lake; but the general similarity of the rocks beyond, renders it probable that little change will be found for a distance extending much farther; perhaps to the extremity of Gaspé. It may be proper to remark that though the ascertained auriferous area is thus so much increased be-