

Appendix
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11th April.

Ingall, in his remarks on the district traversed by the St. Maurice Expedition in 1829, as occurring above the Forges on the St. Maurice, at the Rapids au Grès. Above Montreal, as has already been stated in a previous Report, the same formation is found in a narrow belt on each side of the Ottawa at its mouth, running on the one hand from Rigaud to the Cascades, and forming on the other a few points in the vicinity of Mont Calvaire, which it probably surrounds, as well as the upper extremity of the Island of Montreal at St. Ann. It is the rock also of Isle Perrot, while on the south side of the Saint Lawrence and Lake St. Louis, starting with a breadth of five miles between the Cascades and the cove below St. Louis River, it crosses the County of Beauharnois, and entering the State of New York, gradually widening as it proceeds, it finally splits against the mountains of Franklin and Clinton Counties, in that State, into two branches, one turning up the valley of the Saint Lawrence, and the other sweeping round into that of Lake Champlain.

The next formation which presents itself on our line of section is a limestone which is arenaceous at the bottom, black and bituminous at the top, while in the middle it consists of thick, solid grey beds of excellent quality of building stone and for burning into quick lime. Kept at the surface by a small dip and several gentle undulations, it occupies about thirty miles of the line, and the summit approaches to within a short distance of the St. Lawrence, on the eastern side of the island of Montreal. With this side of the island the strike runs nearly parallel from Sault St. Louis to Bout-de-l'Isle, maintaining a direction a little to the east of north; further down the river it gradually assumes a little more easterly, and the formation keeps wholly on the left bank, without, in any instance that I am aware of, reaching the margin before attaining the vicinity of the Grondines. In an opposite direction the summit of the formation crosses the St. Lawrence at Sault St. Louis, and gradually sweeping round the extremity of a trough with a deep curve towards the south, it reaches the vicinity of St. John, where, affected by a dislocation or folding over an anticlinal axis, it turns up the Richelieu River, and keeping on the west side of the stream, enters the State of New York. On the islands of Montreal and Jésus the thick grey beds of the middle run in a line from the vicinity of Lachine and Caughnawaga to that of Terrebonne, keeping close behind the Montreal mountain, and perhaps running under it in their range, and they are displayed in various quarries extensively worked in the rear of the city. In these quarries the dip is always gentle, and occasionally almost imperceptible; the surface breadth of this valuable part of the deposit, in consequence appears to be considerable, stone of the character which characterises it, being found as far back as the village of St. Laurent, and above Lachapelle's Bridge, in the neighbourhood of Côte St. Louis or Bois-Franc. Some of the quarries in the rear of the city display a number of trap dykes of various thicknesses up to three feet, which run in several directions, and intersect one another as well as the limestone; and in some instances the limestone having been removed from among them, the dykes left standing up several feet above the bottom of the quarries, represent in a marked manner the various details of the cracks they once filled; on the old parade ground, on the Priests' Farm, and other places around the mountain, similar dykes are met with, and they are all probably connected with the great body of trap of which the mountain is composed. This mass, though apparently conformable or very nearly conformable in many places with the stratification, is perhaps an intercalated intrusion rather than an overflow; superficially it presents the form of an

oval, or rather the frustrum of a wedge with the corners rounded off, the smaller end of which towards the north-east is about fifteen acres, and the larger to the south-west, about twenty acres wide, the length being about forty acres, extending from Mr. Lauzon's premises, on the Côte des Neiges road, to the terrace overlooking the old parade. The volcanic area would thus have an extent of about 700 acres; it consists of several varieties of trap, of which a detailed account has been given by Dr. Bigsby, in a paper published in the 2nd volume of the Annals of the New York Lyceum; that of the mountain summit, which overlooks the St. Catherine's road, is light-grey in colour, being composed of a preponderating quantity of white feldspar, with rather thinly disseminated black hornblende; in the summit overlooking the town, the hornblende appears to become more abundant than the feldspar, giving the rock a darker hue, and mica occasionally accompanies the other constituents; while that part which is in the vicinity of the Côte des Neiges road is augitic, forming black masses, which under the decomposing influence of the weather are disintegrated into a coarse, granular but fruitful soil; the position the whole mass occupies in the strata appears to be about the division between the grey and black limestones, but I have not yet been able to trace it to any visible interstratification with these rocks. A very important band of interstratified trap crosses the Papineau road about a mile and a half from the St. Lawrence, and it has been followed in the strike of the limestone for five miles to the northward, but southwardly it is lost beneath tertiary sands and clays in less than half a mile; if the band were carried farther forward in this direction it would come into place about ten acres to the east of the trappan precipice on that side of the Mountain, and it may be the means hereafter of assisting to establish the stratigraphical position of the mountain trap. The direct breadth of the band in the vicinity of the Papineau road, is between 200 and 300 yards; it is divided into thick layers, and exhibits two distinct escarpments running parallel to one another; it dips, with the stratification of the black limestone overlying it, at an angle of about five degrees, which would establish a thickness of between fifty and eighty feet; the colour of the rock is in general a light-grey with a slight tinge of brown, and its composition appears to be an intimate mixture of hornblende and adularia, distinct crystals of both of which, of larger size than in the fine-grained matrix (the hornblende of a brilliant black) are disseminated through it. The rock is marked by white and reddish-white spots, composed of analcime and bladed crystals of feldspar or albite, associated with which, and also in separate crystals brown sphenocane occurs; with these are likewise found occasional crystals of brownish-green Heulandite, and this mineral is also met with colourless and transparent. The white spots sometimes shew small druses in their centres, in which small but well-defined crystals of these various associated minerals are exposed, now and then combined with acicular crystals of black hornblende, and these druses give to the trap a slightly amygdaloidal character. In some parts of the band, as where it crosses the Côte de la Visitation road, about two miles northward of the Papineau road, this variety of trap exhibits a distinct slaty structure, by a cleavage nearly vertical to the face of the layer, giving plates of one tenth to one quarter of an inch in thickness. In a quarry on Mr. James Logan's land, about four acres south of the Papineau road, the white spots are fewer than in the localities mentioned; the rock there appears to possess more hornblende, rendering it darker in colour, and of this mineral there are occasionally large patches exceeding three or four inches in diameter, and sometimes reaching eight inches; the rock also holds large leaves of

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