

MESSAGE

FROM

HIS EXCELLENCY THE GOVERNOR GENERAL,

WITH

REPORTS ON GEOLOGICAL SURVEY,

PRESENTED TO THE LEGISLATIVE ASSEMBLY ON 27TH JANUARY, 1845.

C. T. METCALFE.

THE GOVERNOR GENERAL transmits for the information of the Legislative Assembly, the accompanying Copies of Reports that have been received from Mr. W. E. LOGAN, who is employed on a Geological Survey of the Province.

THE Geological investigations made within the last few years in Pennsylvania, New York, and other States of the American Union, at the expense of their Governments, have thrown great light upon the structure of a considerable portion of the country lying between the Rocky Mountains and the Atlantic Ocean; and it would seem that a vast trough of deposits, conformable from the coal downwards, extends longitudinally from Alabama to some point below Quebec on the St. Lawrence, and transversely from the shores of Lake Huron to the borders of the Atlantic.

Confining attention to those regions, which serve to illustrate the probable structure of Canada, it would appear that a nucleus of coal measures coming from the southwest is spread out in Pennsylvania, and that from the southwest corner of this State these measures extend more than 200 miles in a north-east direction, while their greatest breadth, from within a few miles of Lake Erie to the Apalachian range of mountains, may be about 120 miles. From beneath this enormous coal-field, there crop out in succession a variety of conformable deposits, which roughly follow its contour in parallel bands, and among them, at a distance of more than 20,000 feet below the coal, as measured on the south-eastern side of the trough, is a well marked limestone formation, supposed from its fossils to be contemporaneous with the lower Silurian rocks of Britain. This, in its south-eastern development, passes from the State of Pennsylvania to that of New York, and, reaching the banks of the Hudson River and Lake Champlain, sweeps into Canada, in the eastern section of which it constitutes the trough of the St. Lawrence, forming the banks of the river to some distance below Quebec. Returning from this, its north-western outcrop touches the north shore of Lake Ontario, and passing to the south of Lake Simcoe, strikes upon Lake Huron.

This limestone rests upon a deposit of sandstone of considerable thickness, and I am inclined to think that in the western section of the Province, and on the northern bank of the St. Lawrence in the eastern section, these two formations are generally succeeded by primary and granitic rocks, which extend to a great distance northward, while in the Eastern Townships, of the eastern section, they rest upon clay slate. In that part of the country which lies between Lake Ontario and Lake St. Claire, it is probable that several of the formations occupying the space between the

lime-stone above mentioned and the coal will be found; among them being one which in the State of New York is said to bear valuable beds of gypsum.

If this general view of the structure of the country should be confirmed by such a hasty reconnaissance as can be made during the present season, it appears to me that a judicious mode of bringing out the details of its Geology would be, to make several parallel sections in a northward and southward direction, the number and locality of which must be determined by circumstances. These would fix with accuracy the boundaries of the various deposits at certain points, and by intermediate examinations the continuous direction of the lines of outcrop could be ascertained.

It is, I believe, upon the secondary rocks enumerated that the chief part of the settlement of the country exists. The primary rocks, however, most of which are still covered with forest, will probably constitute the metalliferous portion of Canada. To what distance upon these it will be judicious to carry the sections and examinations is a subject that will require consideration. It will probably be prudent, in the first instance, to proceed but a short distance beyond the limit of settlement, until so much of the general Survey is completed as will be sufficient to determine with truth the prominent geological features of the country, and so connect them together as to form the foundation of a more extended or more elaborate investigation subsequently, should the Legislature deem it expedient to permit the present Survey to continue sufficiently long for the purpose, or institute a similar one at a future period.

The proposed mode of proceeding to examine the geological structure of the country will be perfectly efficacious in obtaining a correct general knowledge of its mineral riches, which, no doubt, is the first and main object to be attended to in the investigation. It will be essential for true sections to contain these mineralogical details, and they can be ascertained as the examination proceeds, to that degree of minuteness to which a due attention to an economy of time and means may permit the adoption, while there is no contemplated object of the Survey that may not be served by the plan in question, whether it be to ascertain the existence of rocks that may afford good materials for building or ornamental purposes, or for the repairs of roads; of mineral springs, of substances