

RECENT CONCLUSIONS IN QUEBEC GEOLOGY.

R. W. ELLS, LL. D., F. R. S. C., Geological Survey, Ottawa.

(Read before Section C., British Association Meeting, Toronto, Canada, 1897.)

The paper gives a brief outline of the progress of geological exploration in this portion of the Dominion, with a statement of the most recent conclusions arrived at as the result of the detailed study of the rocks in the field. It is largely a summary of the conclusions stated in the published report of the Geological Survey of Canada,* on this district.

The principal problems west of the St. Lawrence were the relations of the great Anorthosite masses, lying to the north of Montreal, to the Laurentian Fundamental Gneiss and the Grenville Series; and secondly, the relations of the Grenville Series itself to the underlying Gneiss on the one hand and to the Hastings Series of Ontario on the other.

These may now be regarded as fairly well settled, at least to the satisfaction of those who have most recently worked in this field. In regard to the age of the Anorthosites the old contention that these were an altered series of the sedimentary rocks, resting unconformably on the gneiss and limestone of the Grenville series, has been abandoned. It has been found that the Anorthosites and Gabbros which are associated with these, are igneous in character, and that they are newer, in point of time, than the Grenville rocks; that they have invaded these at many points and altered them along the lines of contact.

The change of view in regard to their origin dates back to about 1879-80, and their igneous intrusive character was first pointed out by Vennor nearly twenty years ago. This view was expounded by Dr. Selwyn in the report for the years mentioned, but the whole question has more recently been investigated, principally by Dr. F. D. Adams, whose observations in the field and in the laboratory have finally conclusively settled the problem and shewn that the anorthosite areas are masses of igneous rocks newer than the Grenville limestone and associated gneisses.

The second grand problem as to the relations of the Grenville limestone and associated rusty and hornblende gneisses to the Fundamental Gneiss of the Laurentian proper, has also been conclusively settled. It is now held by all the recent observers in this field that the rocks of this division are a newer

* Annual Report, Vol. VII, N. Series, 1894, Part J.