

area of considerable extent occurring to the south in the Laurentian of the State of New York.¹

The stratigraphical relation of the anorthosites to the Grenville and Ottawa series are as yet somewhat doubtful. In most cases these are difficult to determine because the localities where these rocks are found are generally difficult of access and the surface is often heavily drifted or covered by a dense forest growth.

Sir William Logan² whose views were chiefly based on an investigation of parts of the Morin area thought that they probably belonged to a newer sedimentary formation which lay unconformably upon the Grenville series, and which although consisting principally of anorthosite, yet included interstratified beds of orthoclase gneiss, quartzite and limestone.

This opinion was apparently supported by the observations which Richardson made on these rocks along the lower St. Lawrence, and in the atlas which accompanied the report of the Geological Survey of 1863, Logan assigned these anorthosites together with the accompanying gneisses to a distinct and higher series which he called the Upper Laurentian.

Sterry Hunt believed that these rocks were identical with the norites of Esmark and called them in consequence of this the Norian Series.³

No detailed study of the stratigraphical relations of these rocks has hitherto been made in the case of any of the areas, but writers other than the above have made definite statements without exact knowledge to the effect that they form a series of strata which rest unconformably upon the Grenville series.

The sequence of these rocks is, according to Logan, as follows:

Norian series	=	Upper Laurentian.
Grenville series	=	Upper division
Ottawa series	=	Lower division
		} Lower Laurentian.

¹ Emmons, Rep. of the geology in the second district of New York, 1842.

² Logan, Rep. Geol. Survey of Canada 1863, p. 839.

³ Sterry Hunt, Chemical and Geological essays, p. 279. Also Special Rep. on the Trap Dykes and Azoic Rocks of S. E. Pennsylvania. 2nd Geol. Survey of Pennsylvania 1878, p. 160.