

and the plagioclase rocks of the diorite and gabbro families. A common characteristic of all these orthoclase gneisses is the presence of a banding or foliation which may be and often is as well pronounced as the lamination of any sedimentary rock, but which, on the other hand, in some cases is so indistinct that it can only be detected by the examination of large weathered surfaces. Some of the gneisses are highly acid, consisting essentially of quartz and orthoclase feldspar. Most of them, however, contain in addition a considerable quantity of biotite or hornblende, while others, owing to the presence of a considerable proportion of plagioclase as well as of hornblende or pyroxene, with a corresponding diminution in the amount of quartz present, are properly classed as basic gneisses.

Many of the basic gneisses are closely related to and associated with the anorthosite masses. Some probably of igneous origin.

Many of these gneisses differ in no way in composition from igneous rocks. This is especially true of those which from their uniform character and absence of all associated limestones, quartzites, etc., are referable to the Fundamental Gneiss rather than to the Grenville series, although many gneisses in the Grenville series belong to this class as well. These gneisses usually show in a marked manner what is known as a cataclastic structure, produced by the mechanical breaking down of the original web of the crystalline rock, by movements induced by great pressure, which movements cause in the rock a foliation or parallel arrangement of constituents more or less distinct, according to their intensity. In this way a coarse-grained granite may be converted first into an augen-gneiss, and finally into a very finely foliated gneiss in which all the original quartz grains have the form of thin leaves. This structure is also remarkably well seen in the anorthosite, in most places where it occurs in this area, and will be more particularly described in treating of this rock. Many of these gneisses, at least, were originally of igneous, probably of intrusive, origin. Examples of these are abundant in that part of the area lying between St. Columban and St. Jérôme and between this latter place and Ste. Sophie.

In order to ascertain the chemical composition of a typical gneiss of this class, Logan's typical Fundamental Gneiss from Trembling Mountain was selected. An analysis of it is given under No. 1.