

one can seldom be sure in such cases that one is not dealing with a later intrusive.

That there are igneous gneisses in the region which are older than the anorthosite is certain, since such rocks are found cut intrusively by it. That these rocks are for the most part thoroughly gneissoid, more so than is true of any of the larger intrusive masses, is also certain. It would therefore seem that they must have been somewhat metamorphosed before the appearance of the intrusives, but that the criterion is not one which can be used in all cases for the purpose of discriminating between the two sets of rocks.

If the intrusion of the great igneous masses had been the prime factor in the metamorphism of the older gneisses, their foliation should show a general parallelism to the boundaries of the intrusions. In general it does not show this, but on the contrary is mostly independent in direction. Adams has described a notable instance in Canada, where the strike of the foliation of the gneiss around the Morin anorthosite rather minutely parallels the boundary on three sides of the mass.¹ But it does not follow it on the fourth side, the anorthosite is also foliated near the boundary, and its foliation everywhere parallels that of the gneiss, and Adams regards it as having been produced in both at the same time, and necessarily subsequent to the intrusion.

No similar case of striking parallelism has been noted in the Adirondacks so far as the writer is aware, and it is also true here that locality for locality, the foliation of the older gneisses and of the intrusions corresponds, indicating that it is due to a common cause, operating after the appearance of all the intrusives, since they all show foliation. It is no doubt true, as urged by Adams, that the contact lines between the two sets of rocks will form lines of weakness, along which there will be a special tendency to stretching, and which may locally influence the direction taken by the foliation, when not overbalanced by other things. But so far as the writer's observation in the Adirondacks goes, parallelism is the exception rather than the rule.

The universal concordance in foliation between the gneisses and the intrusives makes it impossible to say whether the former possessed any previous foliation or not. If so, it was either

¹Geol. Sur. Can. 8:13J-15J.