

It is obvious that these can be used only as relative terms. Every truly volcanic mass which, by being poured out as a lava-stream at the surface, came to be regularly interstratified with contemporaneous accumulations, must have been directly connected below with molten matter which did not reach the surface. One part of the total mass, therefore, would be included in the second group, while another portion, if ever exposed by geological revolutions, would be classed with the first group. Seldom, however, can the same masses which flowed out at the surface be traced directly to their original underground prolongations.

It is evident that an intrusive mass, though necessarily subsequent in age to the rocks through which it has been



Fig. 278.—Section showing the relative age of an Intrusive Rock (B).

thrust, need not be long subsequent. Its relative date can only be certainly affirmed with reference to the rocks through which it has broken. It must obviously be younger than these, even though they lie upon it, if they bear evidence of alteration by its influence. The probable geological date of its eruption must be decided by evidence to be obtained from the grouping of the rocks all around. Its intrusive character can only certainly determine the limit of its antiquity. We know that it must be younger than the rocks it has invaded; how much younger, must be otherwise determined. Thus, a mass of granite or a series of granite veins (*a a*, Fig. 278) is manifestly posterior in date to the plicated rocks (*b b*) through which it has risen. But it must be regarded as older than overlying