

the deposition of those which repose directly upon them.

Nevertheless, if we confine the term primary to all rocks which we can prove to be of older date than strata in which organic remains have yet been discovered, we may affirm that the gneiss of Kinnekulle in Sweden before alluded to, or of the Falls of Montmorenci, and many of the unstratified or Plutonic rocks of the Adirondack Mountains, west of Lake Champlain, are truly primary. We may also extend the same appellation, without much liability of error, to all the crystalline rocks found for a considerable space on every side of the points where the lowest strata charged with fossils are incumbent upon the non-fossiliferous formations. But the farther we go from such points of departure, the more unsafe does our generalization become; and the American geologists have already found reason to retract their first conclusion, that the gneissose, micaceous, and talcose schists, of the Taconic range (see above, p. 245, Vol. I.), are referable to a *primary* series.

The posteriority of age of many masses of granite and other Plutonic rocks is more easily proved than the modern origin of the stratified hypogene formations, because the former produce alterations of moderate extent, at the point of contact, or send veins into the newer fossiliferous strata. But where these strata have been altered on a great scale in texture, by heat and other subterranean causes, the evidence of transmutation is difficult to detect in proportion to the intensity of the metamorphic action. The study of the Alps and Appenines has shown that it is characteristic of such action to annihilate all signs of the