of the oldest strata at present known to contain fossils than at any subsequent period; and as some are disposed to consider their conclusions on this head much strengthened by the fact that, in North America, as in Europe, there are certain points where granite, mica schist, and gneiss, can be shown to be of prior date to any of the fossiliferous rocks hitherto detected; I shall briefly refer to the leading arguments against this doctrine, which I have advanced both in my "Principles" and "Elements of Geology."

The crystalline formations, such as granite and gneiss, were termed primitive and primary by some of the earlier observers, because in each district they are the lowest in geological position. It is now understood, in regard to granite, syenite, and the unstratified class, that they are of various ages, often newer than fossiliferous strata, and that it by no means follows that they were first in the order of time, because they are inferior in position. Paradoxical as the first statement of this proposition appears, it is now acknowledged, that the superstructure is often older than the foundation on which it rests, the latter having been forced up subsequently from below either in a solid form, or, more frequently, like lava in a volcano. It is also now admitted, in direct contradiction to all preconceived opinions, that many stratified hypogene formations, the gneiss, mica schist, talcose schist, and saccharine marble of the Alps, Appenines, and other districts, have assumed their crystalline texture after the origin of many of the fossiliferous strata, even in some cases long after