

The main points really affecting the progress of sound theoretical geology, will find a place in one of the two next Sections.

[2nd Ed.] [I think I do no injustice to Dr. Hutton in describing his theory of the earth as *premature*. Prof. Playfair's elegant work, *Illustrations of the Huttonian Theory*, (1802,) so justly admired, contains many doctrines which the more mature geology of modern times rejects; such as the igneous origin of chalk-flints, siliceous pudding stone, and the like; the universal formation of river-beds by the rivers themselves; and other points. With regard to this last-mentioned question, I think all who have read Deluc's *Geologie* (1810) will deem his refutation of Playfair complete.]

But though Hutton's theory was premature, as well as Werner's, the former had a far greater value as an important step on the road to truth. Many of its boldest hypotheses and generalizations have become a part of the general creed of geologists; and its publication is perhaps the greatest event which has yet occurred in the progress of Physical Geology.]

CHAPTER VIII.

THE TWO ANTAGONIST DOCTRINES OF GEOLOGY.

Sect. 1.—Of the Doctrine of Geological Catastrophes.

THAT great changes, of a kind and intensity quite different from the common course of events, and which may therefore properly be called *catastrophes*, have taken place upon the earth's surface, was an opinion which appeared to be forced upon men by obvious facts. Rejecting, as a mere play of fancy, the notions of the destruction of the earth by cataclysms or conflagrations, of which we have already spoken, we find that the first really scientific examination of the materials of the earth, that of the Sub-Apennine hills, led men to draw this inference. Leonardo da Vinci, whom we have already noticed for his early and strenuous assertion of the real marine origin of fossil impressions of shells, also maintained that the bottom of the sea had become the top of the mountain; yet his mode of explaining this may perhaps be claimed by the modern advocates of uniform causes as more allied to their