

elevated the existing continents. This distinction was assented to by many succeeding geologists. The forces which have raised into the clouds the vast chains of the Pyrenees, the Alps, the Andes, must have been, it was deemed, something very different from any agencies now operating.

This opinion was further confirmed by the appearance of a complete change in the forms of animal and vegetable life, in passing from one formation to another. The species of which the remains occurred, were entirely different, it was said, in two successive epochs: a new creation appears to have intervened; and it was readily believed that a transition, so entirely out of the common course of the world, might be accompanied by paroxysms of mechanical energy. Such views prevail extensively among geologists up to the present time: for instance, in the comprehensive theoretical generalizations of Elie de Beaumont and others, respecting mountain-chains, it is supposed that, at certain vast intervals, systems of mountains, which may be recognized by the parallelism of course of their inclined beds, have been disturbed and elevated, lifting up with them the aqueous strata which had been deposited among them in the intervening periods of tranquillity, and which are recognized and identified by means of their organic remains: and according to the adherents of this hypothesis, these sudden elevations of mountain-chains have been followed, again and again, by mighty waves, desolating whole regions of the earth.

The peculiar bearing of such opinions upon the progress of physical geology will be better understood by attending to the *doctrine of uniformity*, which is opposed to them, and with the consideration of which we shall close our survey of this science, the last branch of our present task.

Sect. 2.—Of the Doctrine of Geological Uniformity.

THE opinion that the history of the earth had involved a series of catastrophes, confirmed by the two great classes of facts, the symptoms of mechanical violence on a very large scale, and of complete changes in the living things by which the earth had been tenanted, took strong hold of the geologists of England, France, and Germany. Hutton, though he denied that there was evidence of a beginning of the present state of things, and referred many processes in the formation of strata to existing causes, did not assert that the elevatory forces which raise continents from the bottom of the ocean, were of the same order,