

BOOK II.

CHANGES IN THE INORGANIC WORLD.

AQUEOUS CAUSES.

CHAPTER XIV.

Division of the subject into changes of the organic and inorganic world—Inorganic causes of change divided into aqueous and igneous—Aqueous causes first considered—Destroying and transporting power of running water—Sinuosities of rivers—Two streams when united do not occupy a bed of double surface—Heavy matter removed by torrents and floods—Inundations in Scotland—Floods caused by landslips in the White Mountains—Bursting of a lake in Switzerland—Devastations caused by the Anio at Tivoli—Excavations in the lavas of Etna by Sicilian rivers—Gorge of the Simeto—Gradual recession of the cataracts of Niagara.

Division of the subject.—GEOLOGY was defined to be the science which investigates the former changes that have taken place in the organic, as well as in the inorganic kingdoms of nature. As vicissitudes in the inorganic world are most apparent, and as on them all fluctuations in the animate creation must in a great measure depend, they may claim our first consideration. The great agents of change in the inorganic world may be divided into two principal classes, the aqueous and the igneous. To the aqueous belong Rain, Rivers, Torrents, Springs, Currents, and Tides; to the igneous, Volcanos, and Earthquakes. Both these classes are instruments of decay as well as of reproduction; but they may also be regarded as antagonist forces. For the aqueous agents are incessantly labouring to reduce the inequalities of the earth's surface to a level; while the igneous are equally active in restoring the unevenness of the external crust, partly by heaping up new matter in certain localities, and partly by depressing one portion, and forcing out another, of the earth's envelope.

It is difficult, in a scientific arrangement, to give an accurate view of the combined effects of so many forces in simultaneous operation; because, when we consider them separately, we cannot easily estimate either the extent of their efficacy, or the kind of results which they produce. We are in danger, therefore, when we attempt to examine the influence exerted singly by each, of overlooking the modifications which they produce on one another; and these are so complicated, that sometimes the igneous and aqueous forces co-operate to produce a joint effect, to which neither of them unaided by the other could