

CHAPTER III.

THE IMPERFECTION OF THE GEOLOGICAL RECORD.

COMPLAINTS of the imperfection of the geological record are rife among those biologists who expect to find continuous series of fossils representing the gradual transmutation of species. No doubt these gaps are in some cases portentous, and unfortunately they often occur just where it is most essential to certain general conclusions that they should be filled up. Instead, however, of making vague lamentations on the subject, it is well to inquire to what causes these gaps may be due, to what extent they invalidate the completeness of geological history for scientific purposes, and how they may best be filled.

Here we may first remark that it is not so much the physical record of geology that is imperfect as the organic record. Ever since the time of Hutton and Playfair we have learned that the processes of mineral detrition and deposition are continuous, and have been so throughout geological time. The erosion of the land is constantly going on, every shower carries its tribute of earthy matter toward the sea, and every wave that strikes against a beach or cliff does some work toward the grinding of shells, pebbles or stone. Thus, everywhere around our continents there is a continuous deposition of beds of earthy matter, and it is this which, when elevated into new land, has given us our chronological series of geological formations. True, the elevating process is not continuous, but, so