

CHAPTER XV.

THE DISTRIBUTION OF ANIMALS AND PLANTS AS RELATED TO GEOGRAPHICAL AND GEOLOGICAL CHANGES.

ALL are now agreed that to explain the extraordinary and often apparently anomalous distribution of animals and plants over the surface of the earth, and the occurrence of like forms in very distant localities, and even on islands separated by vast stretches of ocean from one another and from the continents, we must invoke the aid of geology. We must have reference to those changes of climate and of elevation which have occurred in the more recent periods of the earth's history, and must carry with us the idea, at first not apparently very reasonable, that living beings have existed much longer than many of the lands which they inhabit, or at least than the present state of those lands in reference to isolation or continental connection. To what extent we may further require to call in the aid of varietal or specific modification to explain the facts, may be more doubtful; and I think we shall find that a larger acquaintance with geological truths would enable us to dispense with the aid of hypotheses of evolution, at least in so far as the local establishment of new generic and specific types is concerned.

One of the most remarkable and startling results of geological investigation, and one which must be accepted as an established fact, independently of all theoretical explanations, is that the earth has experienced enormous revolutions of