

## BOOK VII

## PHYSIOGRAPHICAL GEOLOGY

**A**N investigation of the geological history of a country involves two distinct lines of inquiry. We may first consider the nature and arrangement of the rocks that underlie the surface, with a view to ascertain from them the successive changes in physical geography and in plant and animal life which they chronicle. But besides the story of the rocks, we may try to trace that of the surface itself—the origin and vicissitudes of the mountains and plains, valleys and ravines, peaks, passes, and lake-basins which have been formed out of the rocks. The two inquiries traced backward merge into each other; but they become more and more distinct as they are pursued toward later times. It is obvious, for instance, that a mass of marine limestone which rises into groups of hills, trenched by river-gorges and traversed by valleys, presents two sharply contrasted pictures to the mind. Looked at from the side of its origin, the rock brings before us a sea-bottom over which the relics of generations of a luxuriant marine calcareous fauna accumulated. We may be able to trace every bed, to mark with precision its organic contents, and to establish the zoological succession of which these superimposed sea-bottoms are the records. But we may be quite unable to explain how such sea-formed limestone came to stand as it now does, here towering into hills and there