

to the green sand, and from the mountain limestone to the chalk, it is impossible not to recognise, on a great scale, the gradual change of the physical conditions of the globe which took place during this period. Mineralogically, the rocks successively deposited deviate more and more from the types of the primary strata; considered as to their zoological and botanical relations, it is evident that the circumstances influencing organic life were undergoing gradual but great changes; and a careful study of the geographical areas over which the secondary strata spread, demonstrates that an equal amount of variation occurred in the relations of land and sea. It may, indeed, be objected, that these conclusions, however true, are almost limited to Europe, North America, and India, since elsewhere the secondary rocks are but imperfectly known; but if the data for reasoning are satisfactory, the geographical area of their application is ample.

Several distinct mineral types appear predominant in the secondary rocks of Europe, constituting various groups of strata, which may not always be found to combine into exactly the five systems adopted in these pages. The really oceanic types of limestone are three, viz. —

Chalk.

Oolite.

Mountain limestone.

To each of these belong similiar concretionary masses of flint or chert, often aggregated round organic bodies, and sometimes extended into thin interrupted layers.

The really littoral types of sandstone are various: —

Green or ferruginous sands.

Pale coloured calcareous grits.

Red and white sandstone.

Red conglomerates.

Felspathic sandstones.

Quartzose grits.