

they were originally laid down, their clear order of succession would carry with it its own evident interpretation. But such have been the changes that have arisen, partly from the operation of forces from below, partly from that of forces acting on the surface, that the true order of a series of rocks is not always so easily determined. By starting, however, from where the succession is normal and unbroken, the geologist can advance with confidence into regions where it has been completely interrupted; where the rocks have been shattered, crumpled, and even inverted.

The clue which guides us through these labyrinths is a very simple one. It is afforded by the remains of once living plants and animals which have been preserved in the rocky framework of the land. Each well-marked series of sedimentary accumulations contains its own characteristic plants, corals, crustaceans, shells, fishes, or other organic remains. By these it can be identified and traced from country to country across a whole continent. When, therefore, the true order of superposition of the rocks has been ascertained by observing how they lie upon each other, the succession of their fossils is at the same time fixed. In this way the sedimentary part of the earth's crust has been classified into different formations, each characterised by its distinct assemblage of organic remains. In the most recent formations, most of these remains are identical with still living species of plants and animals; but as we descend in the series and come into progressively older deposits the proportion of existing species diminishes until at last all the species of fossils are found to be extinct. Still lower and older rocks reveal types and assemblages of organisms which depart farther and farther from the existing order.

By noting the fossil contents of a formation, therefore, even in a district where the rocks have been so disturbed.