

463. Each formation represents an immense period of time, during which the earth was inhabited by successive races of animals and plants, whose remains are often found, in their natural position, in the places where they lived and died, not scattered at random, though sometimes mingled together by currents of water, or other influences, subsequent to the time of their interment. From the manner in which the remains of various species are found associated in the rock, it is easy to determine whether the animals to which these remains belonged lived in the water, or on land, on the beach or in the depths of the ocean, in a warm or in a cold climate. They will be found associated in just the same way as animals are that live under similar influences at the present day.

464. In most geological formations, the number of species of animals and plants found in any locality of given extent, is not below that of the species now living in an area of equal extent and of a similar character; for though, in some deposits, the variety of the animals contained may be less, in others it is greater than that on the present surface. Thus, the coarse limestone in the neighborhood of Paris, which is only one stage of the lower tertiary, contains not less than 1200 species of shells; whereas the species now living in the Mediterranean do not amount to half that number. Similar relations may be pointed out in America. Mr. Hall, one of the geologists of the New York Survey, has described, from the Trenton limestone, (one of the ten stages of the lower Silurian,) 170 species of shells, a number almost equal to that of all the species found now living on the coast of Massachusetts.

465. Nor was the number of individuals less than at present. Whole rocks are entirely formed of animal remains, particularly of corals and shells. So, also, coal is composed of the remains of plants. If we consider the slow