

to the animals and vegetables of tropical climates ; and hence it has been inferred by some geologists, that the central mass of heat is gradually refrigerating. It is, however, the crust of the globe that offers proper occupation to the geologist. The greatest depth to which he can extend his observations from the uppermost strata, to the very lowest beds that have been raised up or laid bare by these natural operations which have formed mountains or valleys, is less than eight miles ; a thickness which, compared with the bulk of the earth itself, does not exceed that of a coat of varnish upon an artificial terrestrial globe. Were we to bear this sufficiently in mind, the mighty catastrophes which have changed the surface of the globe in former periods, and have left traces of their action, appalling to the imagination, would cease to exceed the sober measure of belief.

The superficies of our planet is calculated to contain about one hundred and ninety millions of square miles ; but could we be raised to a sufficient height above the earth, so as to have its whole enlightened hemisphere for our horizon, we might perceive as it revolved under our feet, how small a portion is fitted for the habitation of man. More than three fifths of the earth's surface are covered by the ocean ; and if from the remaining part we deduct the space occupied by polar ice and eternal snow, by sandy deserts, steril mountains, marshes, rivers and lakes, the habitable portion will scarcely exceed one fifth of the whole of the globe. Nor have we reason to believe that at any former period the dominion of man over the earth was more extensive than at present. The remaining four fifths of our globe, though untenanted by mankind, are, for the most part, abundantly stocked with animated beings, that exult in the pleasure of existence, independent of human control, and no way subservient to the necessities or caprices of man. Such is and has been for several thousand years the actual condition of our planet ; nor is the consideration foreign to our subject, for hence we may feel less reluctance in admitting the prolonged ages or days of creation, when numerous tribes of the lower orders of aquatic animals lived and flourished, and left their remains imbedded in the strata that compose the outer crust of our planet.

The ocean has been an important agent in effecting vast changes on the surface of our globe, which will be hereafter considered. The average depth of the sea has been differently estimated. According to Laplace, this depth cannot be less than ten miles, to account for the height of the tides by the laws of gravitation ; but it is more generally admitted that the average depth does not exceed five miles. No admeasurement by soundings has exceeded the depth of one mile and a quarter.

The ocean has not always occupied its present bed, for rocks almost entirely composed of the shells or remains of marine animals, are found in almost every country that has yet been explored ; and these remains occur near the summits of the highest mountains, in