

standard for estimating the minimum of time required for the upheaval of the fundamental granite, and its marine shelly covering, to the height of so many hundred feet; but according to the greatest average, of five or six feet in a century, the period required would be very considerable, and nearly the whole of it, as well as the antecedent epoch of submergence, seems to have preceded the introduction of man into these parts of the earth.

There are other post-tertiary formations of fluviate origin, in the centre of Europe, in which the absence of human remains is perhaps still more striking, because, when formed, they must have been surrounded by dry land. I allude to the silt or *loess* of the basin of the Rhine, which must have gradually filled up the great valley of that river since the time when its waters, and the contiguous lands, were inhabited by the existing species of freshwater and terrestrial mollusks. Showers of ashes, thrown out by some of the last eruptions of the Eifel volcanos, fell during the deposition of this fluviate silt, and were interstratified with it. But these volcanos became exhausted, the valley was re-excavated through the silt, and again reduced to its present form before the period of human history. The study, therefore, of this shelly silt reveals to us the history of a long series of events, which occurred after the testacea now living inhabited the land and rivers of Europe, and the whole terminated without any signs of the coming of man into that part of the globe.

To cite a still more remarkable example, we observe in Sicily a lofty table-land and hills, sometimes rising to the height of 3000 feet, capped with a limestone, in which from 70 to 85 per cent. of the fossil testacea are specifically identical with those now inhabiting the Mediterranean. These calcareous and other argillaceous strata of the same age are intersected by deep valleys which have been gradually formed by denudation, but have not varied materially in width or depth since Sicily was first colonized by the Greeks. The limestone, moreover, which is of so late a date in geological chronology, was quarried for building those ancient temples of Girgenti and Syracuse, of which the ruins carry us back to a remote era in human history. If we are lost in conjectures when speculating on the ages required to lift up these formations to the height of several thousand feet above the sea, how much more remote must be the era when the same rocks were gradually formed beneath the waters!

To conclude, it appears that, in going back from the recent to the Eocene period, we are carried by many successive steps from the fauna now contemporary with man to an assemblage of fossil species wholly different from those now living. In this retrospect we have not yet succeeded in tracing back a perfect transition from the recent to an extinct fauna; but there are usually so many species in common to the groups which stand next in succession as to show that there is no great chasm, no signs of a crisis when one class of organic beings was annihilated to give place suddenly to another. This analogy, therefore, derived from a period of the earth's history which can best be compared with the present state of things, and