

conceive that a much greater volume of fine sediment was swept along by rivers swollen by melting ice at the time of the retreat of the gigantic glaciers of the olden time. The fact that a large proportion of this mud, instead of being carried to the ocean, where it might have formed a delta on the coast, or have been dispersed far and wide by the tides and currents, has accumulated in inland valleys, will be found to be an additional proof of the former occurrence of those grand oscillations in the level of the Alps and parts of the adjoining continent which were required to explain the alternate advance and retreat of the glaciers, and the superposition of more than one boulder clay and stratified alluvium before mentioned, p. 321.

The position of the loess between Basle and Bonn is such as to imply that the great valley of the Rhine had already acquired its present shape, and in some places, perhaps more than its actual depth and width, previously to the time when it was gradually filled up to a great extent with fine loam. The greater part of this loam has been since removed, so that a fringe only of the deposit is now left on the flanks of the boundary hills, or occasionally some outliers in the middle of the great plain of the Rhine where it expands in width.

These outliers are sometimes on such a scale as to admit of minor hills and valleys, having been shaped out of them by the action of rain and small streamlets, as near Freiburg in the Brisgau and other districts.

Fossil Shells of the Loess.

The loess is generally devoid of fossils, although in many places they are abundant, consisting of land-shells, all of living species, and comprising no small part of the entire molluscous fauna now inhabiting the same region. The three shells most frequently met with are those represented in