

cut back at some former period by the denuding action of the sea.

Even if the imbedded fossil shells of the loess had been lacustrine, instead of being, as we have seen, terrestrial and amphibious, the vast height and width of the required barrier would have been fatal to the theory of a lake: for the loess is met with in great force at an elevation of no less than 1,600 feet above the sea, covering the Kaiserstuhl, a volcanic mountain which stands in the middle of the great valley of the Rhine, near Freiburg in Brisgau. The extent to which the valley has there been the receptacle of fine mud afterwards removed is most remarkable.

The loess of Belgium was called 'Hesbayan mud' in the geological map of the late M. Dumont, who, I am told, recognised it as being in great part composed of Alpine mud. M. d'Archiac, when speaking of the loess, observes that it envelopes Hainault, Brabant, and Limburg like a mantle, everywhere uniform and homogeneous in character, filling up the lower depressions of the Ardennes, and passing thence into the north of France, though not crossing into England. In France, he adds, it is found on high plateaus, 600 feet above some of the rivers, such as the Marne; but as we go southwards and eastwards of the basin of the Seine, it diminishes in quantity, and finally thins out in those directions.* It may even be a question whether the '*limon des plateaux*,' or upland loam of the Somme valley, before alluded to,† may not be a part of the same formation. As to the higher and lower level gravels of that valley, which, like that of the Seine, contain no foreign rocks,‡ we have seen that they are each of them covered by deposits of loess or inundation-mud belonging respectively to the periods of the gravels, whereas the upland loam is of much older date, more widely spread, and

* D'Archiac, *Histoire des Progrès*, vol. ii. pp. 169, 170.

† No. 4, fig. 7, p. 103.

‡ See above, p. 133.