

Changes in a river plain, such as those above alluded to, give rise frequently to ponds, swamps, and marshes, marking the course of old beds or branches of the river not yet filled up, and in these depressions shells proper both to running and stagnant water may be preserved, and quadrupeds may be mired. The latest and uppermost deposit of the series will be loam or brick-earth, with land and amphibious shells (*Helix* and *Succinea*), while below will follow strata containing freshwater shells, implying continuous submergence; and lowest of all in most sections will be the coarse gravel accumulated by a current of considerable strength and velocity.

When the St. Katharine docks were excavated at London, and similar works executed on the banks of the Mersey, old ships were dug out, as I have elsewhere noticed,* showing how the Thames and Mersey have in modern times been shifting their channels. Recently, an old silted-up bed of the Thames has been discovered by boring at Shoeburyness at the mouth of the river opposite Sheerness, as I learn from Mr. Mylne. The old deserted branch is separated from the new or present channel of the Thames, by a mass of London clay which has escaped denudation. The depth of the old branch, or the thickness of fluviatile strata with which it has been filled up, is seventy-five feet. The actual channel in the neighbourhood is now sixty feet deep, but there is probably ten or fifteen feet of stratified sand and gravel at the bottom; so that, should the river deviate again from its course, its present bed might be the receptacle of a fluvio-marine formation seventy-five feet thick, equal to the former one of Shoeburyness, and more considerable than that of Abbeville. It would consist both of freshwater and marine strata, as the salt water is carried by the tide far up above

* Principles of Geology.