

The bones of horses, with the tooth of an elephant, have been found in a bed of unctuous clay, resting on chalk, near Margate; but as the clay is superficial, it may be a diluvial formation.

In France, near d'Auteuil, and south of the Dordogne, according to Humboldt, bones of vertebrated land animals are found in a formation resting on chalk, analogous to the plastic clay. Baron Cuvier says, however, that he has not discovered the bones of land quadrupeds, in any strata below the *calcaire grossier*, which covers the plastic clay. But, neither the plastic clay nor the gypsum beds of Paris can be taken as types of the tertiary strata in other countries.

The London clay is placed over the plastic clay and sand, and is, in fact, an upper member of the great arenaceous and argillaceous formation that covers chalk. Some geologists attempt to identify the London clay with the beds of *calcaire grossier*, and of gypsum, in the Paris basin, but their mineral characters are most essentially different. By attempting to force an agreement with artificial classifications, where it does not exist, we mystify what is clear and simple, and retard the progress of knowledge.

The uppermost bed of the London clay is of a reddish brown colour, and is more arenaceous than the lower beds: the colour of the lower beds varies from a bluish lead colour, to a blackish brown; they are often considerably indurated, and have somewhat of a slaty structure. The thickness of the London clay varies from one hundred to four hundred feet or more: this variable thickness is occa-

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called calcareous. In the Valley of les Echelles, the immediate junction of the limestone with the sandstone may be seen, soon after entering the valley from the archway. This vast wall of limestone, nearly one thousand feet in thickness, rests upon a mass of sandstone of unknown depth: there is very little dip, where the first junction is seen, but about a mile below, you meet with the limestone again in conjunction with the sandstone, and thrown into a vertical position. The workmen whom I met with, near the mouth of the gallery, said they always found sandstone below the limestone, and they considered it as the lowest bed in the country: but this is obviously a mistake. The sandstone, or molasse, on which the limestone in this part of Savoy reposes, or which is subordinate to the limestone, is composed of smallish grains of quartz and chlorite, pretty equally mixed. In the sandstone of les Echelles, which I got from its junction with the limestone, there were some particles of rose quartz and mica. It scratched glass, strongly, when rubbed upon it; but when put into a dilute muriatic acid, it effervesced, violently, and became friable, owing to the solution of the calcareous cement by which it appears, from this experiment, to be agglutinated. The molasse, which is interstratified with limestone and associated with coal on the lake of Annecy, also effervesced; but, the particles being smaller, it appeared nearly homogeneous, when examined without a lens. It has been recently stated, that the molasse of the Alps belongs to the same formation, as the sandstone above chalk near Paris. There may be sandstone of that formation in the canton of Berne; but the molasse or sandstone in this part of Savoy, I am well convinced, is a member of formations that are lower than chalk. It is possible, however, that beds of this molasse may have been worn down, during the great destruction of the strata, that has evidently taken place since they were deposited, and from the debris of this sandstone, upper beds may have been formed covering strata that are above chalk. The molasse which covers the bones and teeth of the mastodon and other large mammalia, near Alpnach, nearly resembles that in this part of Savoy; but the particles are smaller, and more intimately mixed."—P. 176.