

original constituent parts; very little changed; in chalk, and all the strata under chalk, the organic remains are, more or less completely, impregnated with mineral matter. The outer crust or shell of many chalk fossils is calcareous, and the internal part filled with flint. In some cases we meet with an internal cast formed in the cavity of a crustaceous animal, and the external covering has disappeared: in other instances, the shell or crust of the animal has formed a mould in the stone, into which mineral matter has been subsequently infiltrated, and has thus made an external cast.

It is particularly deserving of attention, that some animal remains contain the most delicate fibres and spines, perfect and unbroken: this proves that the mineral matter in which they are imbedded was deposited in a finely comminuted state, and in a tranquil sea. In some instances the most delicate shells are regularly arranged in the same position in which the animals lived and died, while the animal remains in the strata above or below them, are broken and confusedly aggregated together. The most remarkable instance of this kind I have ever observed, occurs at Westbury Cliff, on the northern bank of the river Severn, about seven miles below Gloucester. It is a low cliff, nearly perpendicular; the lower part is composed of what is generally called red marle, over which are the lower beds of dark argillaceous limestone and clay, called lias. A few yards above the junction of the lias and red marle, there is a thin stratum of dark micaceous sandstone, entirely filled with bones, and the teeth of the shark, and animals of the saurian or lizard tribe, broken and intermixed in the greatest imaginable disorder. Near the upper part of the cliff, not many feet above the stratum filled with bones, there is a thin stratum of whitish argillaceous limestone, called white lias, which is filled with the most delicate minute bivalve shells all arranged in the same position, without any intermixture with shells of other species.

Facts like these are particularly deserving of the attention of the geologist, as they mark in a striking manner the convulsions which the surface of the globe has, undergone, at different periods.

The stratum with aggregated bones of saurian animals appears again, on the other side of the Severn, at Aust Passage, where also the junction of the lias and red ground may be observed; but I could not discover there, any trace of the white lias bed with the bivalves, similar to those at Westbury Cliff.

Some of the more delicately constructed animals and the fish whose bodies are found entire, imbedded in stone, appear to have been instantaneously destroyed and enveloped in mineral matter, before the putrefactive process could commence.* The process of

* In the Museum at the *Jardin de Plantes* in Paris, there is a large specimen of two fossil fish, which are supposed to have been destroyed and covered with mineral matter, when one of them was in the very act of swallowing the other; but an inspection of the specimen inclined me to infer, that the two heads had been pressed together, by the incumbent weight of stone deposited upon them.