

and sea, has undergone great changes within, to speak geologically, a comparatively recent period. The upper part of the cliffs, extending from the commencement of the low range by Shoreham, to Rottingdean, is composed of chalk with rubble, flints slightly rolled, and clay and loam; the whole being clearly an accumulation of water-worn materials, deposited in an estuary or bay of the sea. The base of the cliffs, to the height of a few feet, is composed of the solid chalk, which may be seen at low water extending far out to sea, and is covered here and there by shingle and sand. Between the chalk and the superincumbent mass just described, is a bed of shingle, composed of rolled chalk, flints, pebbles, and sand, with boulders of granite, porphyry, and other rocks, not now met with on those shores; in fact, an ancient sea beach, formed at some remote epoch, in like manner as the present bed of shingle, which skirts the base of the cliffs, is in the progress of formation. Among the pebbles of this ancient beach, are rolled masses of chalk and limestone, which are full of perforations made by boring shells; here are several specimens, which are similar to those made in the chalk-rock by the recent *pholades* and *mytili*. As I shall have occasion to revert to these cliffs in the next lecture, this brief description will suffice for our present purpose.

The following diagram represents a natural vertical section of the cliffs, as seen in those parts