

neighbouring Downs, partially covered with sand and beach; which are the detritus of the flints that have been washed out of previously existing layers of chalk, and ground down by the action of the waves. Now, along the eastern part of the coast, towards Rottingdean and Newhaven, the chalk rises into mural precipices immediately from the sea-shore; but at this place the cliffs are composed of very different materials.

1. In the first place, there is, lying immediately on the terrace of chalk that forms the boundary-wall of the base of the cliff (*Lign.* 159, *c*, and *Lign.* 160, *c*, *c*), a bed of sand (denoted by the letter *o*, *Lign.* 160.), of irregular thickness and variable extent; from this sand, marine shells, and the jaw of a Whale (see p. 824.), have been obtained.

2. Upon the sand is a bed of loose shingle—a regular sea-beach—appearing in no respect different, to the common observer, from that forming at the foot of the cliffs at the present moment; this bed is marked *b*, in *Lign.* 159, and 160. Upon examining this shingle, it is found to contain numerous pebbles and boulders of granite, porphyry, sienite, and other plutonic rocks (see p. 46.), none of which occur in the present beach. And in this ancient shingle, teeth and bones of extinct species of Elephant, Horse, and Deer, have been discovered. We have here, then, unquestionable evidence that this beach has been formed under conditions altogether different from those which now prevail; for not