

beneath the shingle, to examine microscopically on our return home, let us sit down on this mass of fallen chalk, and consider the nature of those changes in the relative position of the land and sea, which the phenomena before us appear to indicate.

We have seen that these cliffs are composed of the following deposits:—1. The Elephant-bed (*Lign.* 159 and 160, *a.*); a series of calcareous strata, with bones and teeth of Elephants, Horses, Deer, and Oxen. 2. An ancient sea-beach (*b.*), with pebbles and boulders of plutonic rocks, and bones of mammalia; and a bed of sand beneath, in which cetacea and mollusca (apparently of existing species), have been found. 3. Lastly, the regular Chalk-strata (*Lign.* 160, *c, c.*), extending far out to sea.

These appearances demonstrate the following sequence of physical changes, namely—

1stly. The Chalk terrace (*c, c.*), on which the ancient shingle-bed (*b.*) rests, was on a level with the sea for a long period; for this beach must have been formed, like the modern, by the action of the waves on the then existing chalk cliffs (see *Lign.* 160, *Chalk*). But there must have been some cause in operation, by which pebbles and boulders of granite, porphyry, and other rocks, foreign to our shores, and bones of Elephants, &c. were thrown up on the strand, and imbedded in the beach then in the progress of formation. These transported materials may have been floated to the Sussex coast by icebergs; an agency by which the delicate bones and