

character by which it can be distinguished from Primary. Greenstone composed of felspar and hornblende, in which the felspar is white, and sienitic greenstone, in which the felspar is red, sometimes occur in beds among transition rocks, particularly of slate. But more frequently rocks of greenstone, sometimes called Trap, occur in an unconformable position, covering rocks both of the transition and secondary class, and will be described in the chapter on Unconformable Rocks; after the description of coal strata, called by the miners *Coal measures*.

OBSERVATIONS ON CONFORMABLE TRANSITION ROCKS.

The order of succession in conformable transition rocks is extremely variable, and the thickness of the same beds differs greatly in different situations. In one district we find a whole uninterrupted series of calcareous strata, forming entire mountains; and in an adjacent district, the same series are widely separated by intervening beds of slate, greywacke, or sandstone; and many of the strata which occur in one place, will often be wanting in another. We have before observed, that calcareous transition strata are subject to sudden variations of quality in the same mountain: we cannot therefore be surprised, that in distant districts a great diversity should exist, both in the number and thickness of calcareous strata of the same formation; no single stratum can be regarded as an universal formation. In whatever manner the strata were deposited, the deposition has been interrupted by causes to us unknown, which have accumulated thick masses in one situation, and prevented their formation in other parts. With respect to beds composed chiefly of the fragments of older rocks, it is evident that the contiguity to rocks which were most easily disintegrated, would produce thicker beds of fragments in certain situations than in others, and that their formation must be local.

The organic remains found in transition rocks, belong almost exclusively to genera no longer existing, and which do not occur in the upper secondary strata. Vegetable remains are rare in transition rocks; they occur sometimes in slate rocks. The trilobite is peculiar to transition rocks: the gigantic species occurs in slate, and the smaller species in limestone. The orthoceratite is chiefly found in transition limestone; univalve shells rarely occur in it. The prevailing fossils in this class are madrepores, corallites, and encrinites. The remains of vertebrated animals are rarely, if ever, found in transition rocks. Many instances cited by foreign geologists of vertebrated animals found in this class of rocks are erroneous; the rocks in which they occur belong to the secondary strata; and it should be noticed, that some English conchologists have described fossil remains from specimens collected in particular counties, without knowing precisely their true localities, or whether they were found *in situ* or in diluvial deposits. In the near vicinity of the transition limestone in Derbyshire, I have collected gryphites and nummulites, and even the fossils of the chalk formation, but they had no relation to the ancient limestone; they were found in beds of gravel.