

Devonshire, and with the Silurian rocks of Bohemia. They sometimes contain fragments of clay-slate, and are occasionally fossiliferous. They present amygdaloidal and porphyritic, as well as perfectly laminated structures. Probably they are in most cases true diabase-tuffs, but sometimes they may be forms of diabase-lavas, which, like the stratified formations in which they lie, have undergone alteration, and in particular have acquired a more or less distinctly fissile structure, as the result of lateral pressure and internal crushing.<sup>127</sup>

#### 4. Fragmental Rocks of Organic Origin

This series includes deposits formed either by the growth and decay of organisms *in situ*, or by the transport and subsequent accumulation of their remains. These may be conveniently grouped, according to their predominant chemical ingredient, into Calcareous, Siliceous, Phosphatic, Carbonaceous, and Ferruginous.

1. CALCAREOUS. — Besides the calcareous formations which occur among the stratified crystalline rocks as results of the deposition of chemical precipitates (p. 260), a more important series is derived from the remains of living organisms, either by growth on the spot or by transport and accumulation as mechanical sediment. To by far the larger part of the limestones intercalated in the rocky framework of our continents, an organic origin may with probability be assigned. It is true, as has been above mentioned (p. 216), that limestone, formed of the remains of animals or plants, is liable to an internal crystalline rearrangement, the effect of which is to obliterate the organic structure. Hence in many of the older limestones no trace of any fossils can be detected, and yet these rocks were almost certainly formed of organic remains. An attentive microscopic study of organic calcareous structures, and of the mode of their replacement by crystalline calcite, sometimes detects indications of former organisms, even in the midst of thoroughly crystalline materials.<sup>128</sup>

---

<sup>127</sup> C. Koch, Jahrb. Ver. Nat. Nassau, xiii. (1858), 216, 238. J. A. Phillips, Q. J. Geol. Soc. xxxii. p. 155, xxxiv. p. 471.

<sup>128</sup> Sorby, Address to Geol. Society, February, 1879, and the paper of Messrs. Cornish and Kendall, cited *ante*, p. 216. Gümbel has suggested that the different durability of the calcite and aragonite organic forms may be due rather to structure than mineral composition.