

Limestone, composed of the remains of calcareous organisms, is found in layers which range from mere thin laminæ up to massive beds several feet or even yards in thickness. In some instances, such as that of the Carboniferous or Mountain limestone of Britain and Belgium, and that of the Coal-measures in Wyoming and Utah, it occurs in continuous superposed beds to a united thickness of several thousand feet, and extends for hundreds of square miles, forming a rock out of which picturesque gorges, hills, and table-lands have been excavated.

Limestones of organic origin present every gradation of texture and structure, from mere soft calcareous mud or earth, evidently composed of entire or crumbled organisms, up to solid compact crystalline rock, in which indications of an organic source can hardly be perceived. Mr. Sorby, in the address already cited, called renewed attention to the importance of the form in which carbonate of lime is built up into animal structures. Quoting the opinion of Rose expressed in 1858, that the diversity in the state of preservation of different shells might be due to the fact that some of them had their lime as calcite, others as aragonite, he showed that this opinion is amply supported by microscopic examination. Even in the shells of a recent raised beach, he observed that the inner aragonite layer of the common mussel had been completely removed, though the outer layer of calcite was well preserved. In some shelly limestones containing casts, the aragonite shells have alone disappeared, and where these still remain represented by a calcareous layer, this has no longer the original structure, but is more or less coarsely crystalline, being in fact a pseudomorph of calcite after aragonite, and quite unlike contiguous calcite shells, which retain their original microscopical and optical characters.¹²⁹

The following list comprises some of the more distinctive and important forms of organically-derived limestones.

Shell-Marl—a soft, white, earthy, or crumbling deposit, formed in lakes and ponds by the accumulation of the remains of shells and *Entomostraca* on the bottom. When such calcareous deposits become solid compact stone they are known as *fresh-water (lacustrine) limestones*. These are generally of a smooth texture, and either dull white, pale

¹²⁹ The student will find the address from which these citations are made full of suggestive matter in regard to the origin and subsequent history of limestones.