

§ 4. *Structure and Formation of the Shells of Mollusca.*

THE structure and formation of the shells of molluscous animals is a subject of much interest in comparative physiology, as presenting many beautiful illustrations of the laws by which the inorganic parts of the living system are increased in their dimensions.

All shells are composed of two portions, the one consisting of particles of carbonate of lime, the other having the character of an animal substance, and corresponding in its chemical properties either to albumen or to gelatine. The mode in which these two constituent parts are united, as well as the nature of the animal portion, differ much in different kinds of shell; and it is chiefly in reference to these circumstances that shells have been divided into two classes, namely, the *membranous* and the *porcellaneous shells*.

In shells belonging to the first of these classes, the carbonate of lime is united with a membranous substance deposited in layers, which may be separated from one another, either by mechanical division with a sharp instrument, or by the slow actions of air, water, or other decomposing chemical agents. The shells of the limpet, of the oyster, and of almost all the larger bivalve mollusca which reside in the ocean, are of this kind. They are usually covered with a thick outer skin, or *epidermis*; and their texture is of a coarser grain than that of other shells.

If a shell of this description be immersed in an acid capable of dissolving carbonate of lime, such as the muriatic or nitric acids properly diluted, at first a brisk effervescence is produced, but this soon slackens, and the carbonate of lime contained in the shell is slowly dissolved; the membranous layers being left entire, and sufficiently coherent to retain the figure of the shell, but, having lost the earthy material which gave them hardness, they assume their natural form of soft and flexible plates.

Many membranous shells exhibit, on several parts of their internal surface, a glistening, silvery, or iridescent appear-