

of late years been recognised and applied to the building of ships, namely, that of the diagonal arrangement of the framework, and the oblique position of the timbers, is identical with that which from the beginning of creation, has been acted upon by nature in the construction of shells.

When the form of the crystals is prismatic, the fibres are short, their direction is perpendicular to the surface, and the prisms are generally hexagonal. This structure is observable in the *Teredo gigantea* from Sumatra,\* and also in many bivalves, such as those belonging to the genera *Lividula* and *Pinna*.

When porcellaneous shells are subjected to the solvent action of acids, the animal matter in their composition offering but little resistance, there is a considerable and long continued effervescence. The solution of the carbonate of lime proceeds rapidly, in consequence of the speedy disintegration of the animal substance, which is broken up, and partly dissolved. The remainder is reduced to minute fragments, which subside in the form of flakes or scales to the bottom of the fluid. Poli has given a minute and elaborate description of the appearances of these fragments of membrane, when seen under the microscope.†

The difference between the textures of these two kinds of shell is farther illustrated by the impression made upon them by fire. Porcellaneous shells, when exposed to a red heat, give out neither smell nor smoke: they lose, indeed, their colour, but retain their figure unaltered. Membranous shells, on the contrary, emit a strong fetid odour, and become black; after which the plates separate, and the structure falls to pieces.

This variety in the composition and structure of different kinds of shell is accompanied by corresponding modifications of their mechanical properties. The toughness of the fibrous basis of membranous shells, imparts to them greater

\* In this shell the crystalline appearance is so perfect, that when some fragments were sent to England, they were mistaken for a mineral production. Home; Lectures, I. 53.

† See his folio work on the Testacea of the Two Sicilies.