

particularly than in the nearly allied Pylonida; the greater number of the species are very rare. Besides this they seem to be very variable and inclined to produce numerous abnormalities. Very often intermediate forms of transition are to be found between the Tholonida and other Larcoida, particularly the Pylonida and Lithelida. In many species the thick-walled shell is very opaque, and offers great difficulties to the clear study; in the greater number the structure of the shell cannot be understood completely without rolling the shell to the different sides; and the distinction between the Staurotholida and Cubotholida is often very difficult.

The primordial chamber of the Tholonida, or the central chamber in which its growth begins, is either a simple lentelliptical shell (without enclosed medullary shell), like *Cenolarcus*, or it is a trizonal shell, like *Larnacilla*, and contains a small concentric medullary shell. But this important inner shell of the central chamber offers peculiar difficulties for study. In many cases (probably in the greater number) there is no doubt the same characteristic trizonal medullary shell, which we found in the Larnacida and Pylonida, and this is our principal argument, if we regard the Tholonida as Larcoida, which are most nearly allied to both these families, and in which the fenestrated open cortical girdles of the Pylonida are replaced by fenestrated closed cupolas or domes; the characteristic "gates" or large fissures in the cortical shell of the former are therefore here perfectly closed by network. The Tholonida agree in this point with the Larnacida, but are distinguished from them by the prominent vaultings of the hemispherical cupolas or domes, which give them a peculiar appearance. Each pair of domes (opposite on both poles of one dimensive axis) corresponds to one single girdle of the Pylonida.

Regarding the absence or presence of a medullary shell in the central chamber, we may divide the Tholonida into two groups, Cenotholida (without medullary shell) and Coccotholida (with medullary shell). The absence of the medullary shell in many Tholonida may be either primary (original) or secondary (by reduction and loss of it). Probably in the larger proportion (if not always?) its absence is the consequence of reduction and loss, and in this case the Cenotholida must be derived phylogenetically from the Coccotholida, but possibly often (or always?) the contrary may also be the case. At present we cannot find certain arguments for one opinion or the other.

The connection between the medullary (internal) and the cortical (external) shell of the central chamber in the Coccotholida is effected by two lateral wings of a latticed transverse girdle; on both sides of the latter remain the four internal open "gates" of the Pylonida and Larnacida. Very often the limiting edges of these four gates are prolonged into eight external radial spines which lie opposite in pairs in two crossed diagonal planes, and correspond to the eight portal-spines of *Tetrapyle octacantha*. Besides these, we often find four other beams opposite in pairs in the two crossed axes (principal and lateral). Very often also these radial beams (between medullary and