

We find here no such sharp line of demarcation as exists in other regular Echinids between the abactinal system (composed of the anal system and the plates forming the genital ring) and the abactinal extremity of the coronal plates; the abactinal system in nearly all the groups except the Diadematidæ being in the adult set in, as it were, independently within the upper extremity of the coronal plates. In some of the Diadematidæ we find something analogous to the structure of the abactinal system in this group. In *Echinothrix*, *Diadema* and *Astropyga* the long-pointed triangular genital plates, encroaching far into the median interambulacral line and separating the opposing abactinal plates of the interambulacral areas, form the beginning of a closer connection between the outer plates of the anal system and the new plates of the interambulacral area. This connection is so close that it is well-nigh impossible to state with certainty whether the new interambulacral plates formed at the abactinal extremity are derived from the splitting up of the upper interambulacral plates or of the outer plates of the anal system (see Pl. XVIII.<sup>b</sup> figs. 1, 2). In both these figures the anal plates intercalated between the genital and ocular plates cannot be distinguished from the adjoining interambulacral plates. This intercalation is not so apparent in the younger stage figured on Plate XVIII. fig. 9.

In the same way at the junction of the actinal plates with those of the ambulacral system the continuity is unbroken (Pl. XVIII.<sup>b</sup> fig. 3; Pl. XII. fig. 4), and although there are a few additional plates formed at the line of junction of the two systems, yet at a very early stage the number of plates characteristic of the actinal system are formed, and the growth of the test merely separates the suckers piercing the actinal membrane; although the additional plates of the actinal membrane are formed, as I have shown, from the separation of the last small intercalated ambulacral plate and its subsequent lateral growth.

Neither in *Asthenosoma* (Pl. XVII. fig. 1) nor in *Phormosoma* (Pl. XII. figs. 3, 4; Pl. XVIII. fig. 8; Pl. XVIII.<sup>b</sup> fig. 3) are there any prominent actinal cuts for the passage of the gills; there are slight indentations between the plates at the actinal junction of the ambulacral and interambulacral systems, and the gills appear in the youngest stages I have examined.

The plates covering the actinal membrane are, with the exception of a few in the outer central part opposite the median interambulacral line, all ambulacral plates occupying the whole of the membrane (Pl. XVII. fig. 4; Pl. XVIII.<sup>b</sup> fig. 3). The arrangement of the actinal plates in this family, and their close structural connection with the plates of the ambulacral system, are a further step in showing the gradual modifications which the actinal ambulacral plates have undergone, so as to form gradually an imbricating actinal membrane such as is characteristic of the Cidaridæ, passing into an actinal membrane in which we find, as in the majority of the regular Echinids, only ten buccal plates, the rest of the membrane being more or less strengthened by irregularly arranged imbricating plates which may form a thick close pavement, as in some species of *Echinus* and the like, or else an entirely bare membrane with a few scattered calcareous