

the nature of this cavity having been as yet published, it is not possible to compare the two modes of carrying the young in these two genera more closely.

“In Spatangoids, with deeply sunken ambulacra, we find, nearly in all cases, that from the sharp edge of the ambulacral groove, long spines extend, so as nearly to close the opening of the cavity, entirely bridging it over, and completely concealing from view the ambulacral pores. This arrangement has usually been considered in Spatangoids as a sort of filter to keep foreign particles from affecting the delicate water tubes, which in the Spatangoids perform more or less the function of gills. This is undoubtedly the case in several genera, but in the case of *Hemiaster*, and perhaps in other allied genera, the sunken ambulacral area is used for an entirely different purpose, as was correctly observed by Philippi—that of sheltering the young.

“That the many specimens (eight) found in the two posterior sunken ambulacral areas are really the young of *Hemiaster*, is, of course, only probable, from the fact that the genital openings, which are unusually large, open directly into the upper part of their sunken area; so that the eggs (or more properly an imperfectly developed pluteus, like that of *Echinaster*) on escaping from the genital openings would readily find their way into the artificial cavity formed by the spines which conceal the presence of the sunken areas.

“Unlike many Echinids, the ovaries of this genus are small, consisting of compact grape-like clusters of eggs, in very different stages of development, a few of the eggs only attaining a considerable size (nearly 1 mm.), and apparently ready to escape into the sunken area as soon as the place should be left unoccupied by the preceding brood. No two of the small Echinids were in the same stage of development; they varied in size from 2 mm. to 3 mm., the smaller specimens having a somewhat pentagonal outline, with rounded angles; the larger were more nearly elliptical and cylindrical in shape. In the smaller specimens (Pl. XX.^a fig. 7) the spines were short, straight; the longest, and only a few in each interambulacral area, about one-fifth the length of the axis, while the greater number were mere tubercles, scarcely rising above the level of the test. In the largest specimens (Pl. XX.^a fig. 6) many of the spines, nearly equalling the radius of the test, had become curved and had assumed the characteristic appearance of Spatangoid spines. Seen from below (Pl. XX.^a fig. 10) the large angular mouth, covered by a thick membrane, was nearly central, somewhat anterior, the edge of the mouth on the level of the test, and a few small indistinct pores arranged in parallel lines, showing the position of the future actinal petal; the ambulacral areas were occupied by coarse granulation, while the tubercles of the interambulacral spaces were large with well-developed crenulation, and already perforated. The interambulacral areas were already broad, leaving but narrow ambulacral spaces, in which the short, club-shaped ambulacral tubes could with difficulty be traced; they were largest near the apex, and near the actinostome. Seen from above (Pl. XX.^a fig. 9), the most marked feature of all these young Echinids was the broad fasciole, occupying so large a part of the abactinal surface, the position of