

Station 188. September 10, 1874. Lat.  $9^{\circ} 59' S.$ , long.  $139^{\circ} 42' E.$ ; 28 fathoms; mud. Honolulu; 18 fathoms. July 30, 1874.

## ECHINOTHURIDÆ.

Family ECHINOTHURIDÆ, Wyville Thomson, Depths of the Sea, 1873, p. 164.

Wyville Thomson, 1874, Echinoidea of the "Porcupine," Trans. Roy. Soc., vol. clxiv. part 2, p. 730.

The characteristic overlapping of the ambulacral coronal plates has been well described and figured by Thomson (Echinoidea of the "Porcupine," Trans. Roy. Soc., vol. clxiv. part 2, p. 730, pl. lxxv. and following; see also A. Agassiz, Revision of the Echini, pl. ii.<sup>o</sup>). I have here given some additional details mainly regarding *Phormosoma*, and have also called attention to the changes in the family characters due to growth.

Thomson speaks, in the Depths of the Sea, of the vermicular movements passing through the test of *Asthenosoma*, when it assumed on deck what appeared to be its normal form and attitude. When handled, the test moved and shrank from the touch, and had much the feeling of the disk of a *Solaster* or other large Starfish. I have in one of my letters to the Superintendent of the U. S. Coast Survey<sup>1</sup> spoken of the globular form of the species of *Asthenosoma* when they came up in the trawl, but I can only corroborate the statements of Thomson regarding the peculiar movements of the test of specimens when on deck, due undoubtedly to the great mobility of the plates of the test. It is quite dangerous to handle these specimens when alive (or even in spirits); the wounds they made with their numerous minute sharp stinging spines producing a decidedly unpleasant sensation, accompanied with a slight numbness, fully as painful as that occasioned by the stinging of a *Physalia*.

Some of the species of Echinothuridæ here described, show that some of the important characters upon which this family is distinguished from the Diadematidæ may become gradually obliterated, and the existence of such species as *Phormosoma asterias*, *Asthenosoma gracile*, and *Phormosoma rigidum*, where the lapping of the plates is reduced to a minimum, if it exists at all, and where, as in all the young of the group, the distinction between the actinal and abactinal surfaces, so striking in the larger specimens, does not exist, and develops only with increasing size, show how difficult it is to separate this group of Echinids as a distinct family from the Diadematidæ.

The lapping of the coronal plates in the Echinothuridæ is not so absolutely a characteristic feature of the family as has been supposed. It exists already well-developed in *Astropyga* (Pl. X.<sup>o</sup> fig. 9), but with this important difference, that the overlapping of the plates is in the same direction in both areas. The lower edge of the plate passes under the upper edge of the preceding plate. In *Echinothrix* and *Diadema* also, the shape

<sup>1</sup> Letter No. 3, Bull. Mus. Comp. Zool., vol. v., 1879.