

Chitons it must certainly be looked upon as the more primitive and the more closely related to the Solenogastres.”<sup>1</sup>

On the other hand, Dall finds “in *Chitonellus fasciatus* the representative of the most highly developed type of Chiton.”<sup>2</sup>

The shell is remarkable in many ways, not least for the great development of the articulamentum as compared with the tegmentum, and, with the exception of three slits in the anterior valve, all the insertion plates are unslit.

The structure of the shell indicates that the Leptochitons are the most primitive forms. In the group of the Leptoidea, the sutural laminæ are small and are present in all the valves except the first, but the laminæ of insertion first appear on the terminal valves only, next on the intermediate valves also, in all cases they are small and never slit. In all other Chitons the insertion plate of the anterior valve is slit, but in *Cryptoplax* alone the lateral insertion plate is unslit. *Cryptoplax* agrees with some of the Acanthoidea and with the Schizoidea and Placiphoroidea in having the insertion plate of the terminal valve also unslit. It is probable that this condition has been independently acquired in several of these instances, whereas in *Cryptoplax* it is possibly a primitive condition.

The scales of the girdle in the Leptoidea are delicate and scattered, and in the higher members of the series (*Hanleyia* and *Hemiarthrum*) small sutural tufts appear, and in the latter, at all events, there are anterior tufts as well. The presence of sutural tufts appears to be quite irregular, even in closely allied forms; as, for instance, among the subgenera of *Plaxiphora* and in the genus *Cryptoplax* itself. We may conclude then that the possession of tufts is not of very great importance, at all events when they are feebly developed, and especially when they have a tendency to disappear. It must not be forgotten that there are amongst the Ischnoidea forms with and without girdle pores; in *Angasia* there are stated to be sutural hair-tufts. It may be that, with the exception of the Leptoidea, the pore-bearing forms represent the lower members of their series.

The microscopical structure of the spines of the girdle of *Cryptoplax* (*Cryptoplax larvæformis* and *Cryptoplax striatus*) is identical with that of *Acanthochiton* (*Acanthochiton discrepans*, Brown, and *Acanthochiton garnoti*, Blainv.), and differs from that of all the other species of Chitons which I have as yet examined. These spines may fairly rank as the most specialised in the whole group.

The great thickness of the girdle itself in *Cryptoplax* certainly recalls the thick spiniferous body wall of the shell-less *Isopleura*, and the comparatively narrow foot lying within the pallial groove bears but slight resemblance to the incipient foot of *Chætoderma* or *Proneomenia*.

The gills present us with some points of interest. In *Proneomenia* amongst the shell-less forms gills are entirely absent, respiration, according to Hubrecht, probably taking place all along the wall of the intestine and the foot, and perhaps more especially in the

<sup>1</sup> *Quart. Journ. Mic. Sci.*, 1882, p. 214.

<sup>2</sup> *Proc. U.S. Nat. Mus.*, 1878, p. 314.