

but few in number between the secondary tubercles of the inner part of the test where the white lines separating the coronal plates are again quite as prominent as on the abactinal surface (Pl. X. fig. 1), while on the outer third of the test towards the ambitus the sutures of the plates are concealed by the thickened cuticle extending over the scrobicular area of the large primary tubercles, and by the crowded miliaries and secondaries. The miliaries, though more crowded, do not form (Pl. X.^a fig. 4) as in *Phormosoma placenta* the very characteristic edge running along the ambitus as described by Thomson, which takes almost the prominence of a fasciole (see also *Phormosoma bursarium* for the description of a similar fasciole), and is interesting as showing how such a structure may exist in a rudimentary form in the *Desmosticha*.

Both in this species and in *Phormosoma bursarium* (Pl. X.^b) the differences between the primary spines of the actinal and abactinal surface is very striking. In the one (*Phormosoma luculentum*) we have the actinal surface with its large, hollow primary spines tipped with the enormous white conical hoof (Pl. X. fig. 1) and the small, sharp or club-shaped miliaries and secondaries, while the abactinal surface carries long, slender curved primary spines gradually tapering to a point with short, sharp secondary and miliary spines (Pl. IX. fig. 1). In the other (*Phormosoma bursarium*) the general appearance of the abactinal spines (Pl. X.^b) is quite similar to that of *Phormosoma luculentum*, while on the actinal side we find the remarkable primary spines with the bag-like terminal appendage simulating the hoof of the other Echinothuridæ. In *Phormosoma luculentum* a few of the secondary ambulacral and interambulacral spines near the apical system resemble the peculiar sheathed spines so characteristic of the whole of the abactinal surface of *Asthenosoma grubii* (Pl. X.^a figs. 5, 6).

The actinal membrane is covered by secondary tubercles arranged in irregular concentric rings round the actinostome (Pl. X. fig. 3; Pl. X.^a fig. 4), carrying slender spines slightly club-shaped at the end. The abactinal system is characterised by the large size of the anal plates extending from near the central part of the anal system to the edge of the abactinal system (Pl. X. fig. 2; X.^a fig. 3); each of these irregularly-shaped plates carries from one to two slender secondary spines. The genital plates are small and elliptical, widely separated from the indistinct ocular plates by the plates of the anal system encroaching upon the genital ring. The madreporic body is not prominent.

In this species, as in *Phormosoma hoplacantha*, the continuation of the poriferous zone from the abactinal side to the actinostome is exceedingly irregular (Pl. X. fig. 1; Pl. X.^a fig. 4), and although on the actinal side the sutures of the ambulacral and interambulacral plates and of the poriferous zone are well defined, the poriferous zone never becomes prominent and regular again as on the abactinal side.

Thomson has already noticed the very irregular course of the poriferous zone on the actinal surface of *Phormosoma* (Porcupine Echinoidea, Trans. Roy. Soc., 1874).