

The outline of this species seen in profile is probably more nearly correct than that of the others figured in the same attitude. The test of *Phormosoma luculentum* is far more rigid than that of many of the species of the family, so that with its stiff flattened actinal surface it clearly shows a rounded ambitus and somewhat conical outline as in Plate IX. fig. 2.

In a species of *Phormosoma* closely allied to *Phormosoma placenta* and *Phormosoma luculentum*, which frequently came up in the dredgings of the "Blake" during the expedition of 1878-79, the outline of the test when seen in profile was somewhat like the figure of Plate IX. fig. 2, only the abactinal surface was more globular, and the flattened actinal surface even sometimes bent upwards towards the edge near the ambitus. Still, in all these specimens of *Phormosoma* there was a very decided contrast between the flattened actinal surface and the comparatively high globular abactinal surface.

In the species of *Asthenosoma*, on the contrary, there was no such contrast between the actinal and abactinal surfaces, the outline being in living specimens when seen in profile nearly globular, as if the test had been blown up like a football. This is seen in specimens which came up from moderate depths near 100 fathoms, and in which no difference of pressure would account for such excessive expansion.

The very differently shaped coronal plates composing the test of *Phormosoma*, near the actinostome, in the outer half of the actinal surface, and on the abactinal surface of the test (Pl. X.^a figs. 3, 4), as well as the striking difference in the course and arrangement of the poriferous zone on the two sides of the test, plainly show how hazardous it is among the Palæechinidæ to multiply the genera and species allied to *Archæocidaris* and *Pholidocidaris* on structural features found combined in one and the same species of the recent Echinothuridæ. In this species of *Phormosoma* (*P. luculentum*), the flat intertubercular space between the deeply sunken areolas of the primary spines is broad, and does not form as in *Phormosoma bursarium* the well-defined ridge so characteristic of that species which recalls so strongly a similar structural feature in *Archæocidaris*.

Station 200. October 23, 1874. Lat. 6° 48' N., long. 122° 25' E.; 255 fathoms; mud.

Station 205. November 13, 1874. Lat. 16° 42' N., long. 119° 22' E.; 1050 fathoms; bottom temperature, 2.4° C.; grey ooze.

Station 191. September 23, 1874. Lat. 5° 41' S., long. 134° 4' E.; 800 fathoms; bottom temperature, 3.9° C.; mud.

**Phormosoma bursarium*, n. sp. (Pl. X.^b).

I was inclined at first to consider the specimens on which I have distinguished this species as belonging to *Phormosoma luculentum*, and to regard them as younger specimens. On a re-examination, and after a careful study of the younger stages of the different