

*Locality*: Dredged in Cook Strait off Island Bay (exact locality unknown). Holotype and the figured paratype in the Geological Survey, Lower Hutt. Paratypes in the Auckland Museum and the Dominion Museum, Wellington.

The specimens of the new species were collected by the late Mr S. G. Hulme of the New Zealand Geological Survey, Lower Hutt, who realised that the species was new, and the interest of its commensal habit. I have great pleasure in naming it as a tribute to his careful and enthusiastic work on Mollusca and Foraminifera.

The new species differs from *A. bifurca* in its proportionately larger anterior end and more rapidly descending dorsal margin, weaker hinge and absence of definite sculpture. *A. crassiformis* differs further in being heavier with a much thicker hinge (c.f. Fig. 4d with Figs. 4a, b and c, and 4e).

Fifteen specimens of the new species were obtained living, apparently commensally, with the large polychaete worm, the seamouse, *Aphrodita australis* Baird measuring 62 x 26mm. The specimen had been somewhat disarranged when it was received and several of the bivalves were displaced. Their probable arrangement is shown in Fig. 5b. A detailed anatomical investigation was not possible as the animals had been dried before I obtained them and consequently had shrunk. Those animals which still appeared to be undisturbed were under the elytra with their ventral edges uppermost and attached to the inner surface of the elytra by a few fine byssal threads. In most cases the position of an *Arthritica* was marked by a fairly deep depression in the underlying soft integument of the host (Fig. 5a).

Anatomical investigation of the animal revealed the essential features: an anterior pedal pore, two demibranchs, one double and one single, a well formed heel and a byssal groove in the foot and an anterior siphon.

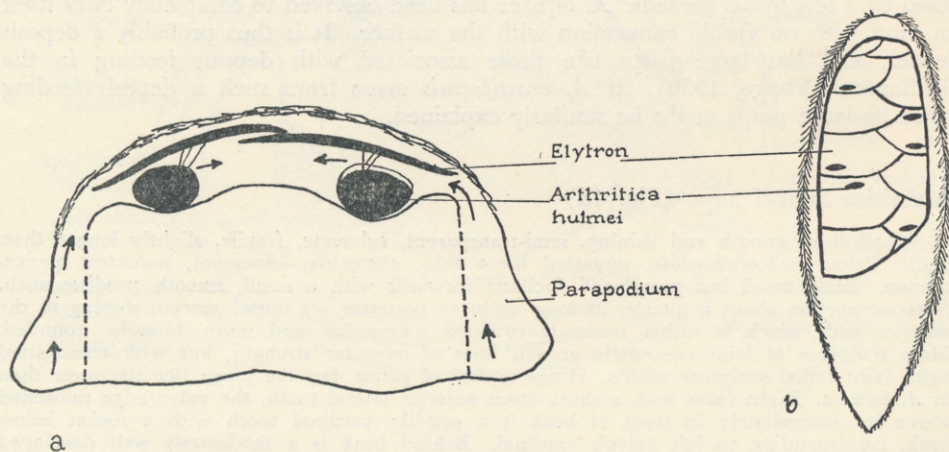


FIG. 5.—(a) A diagrammatic transverse section of *Aphrodita australis* Baird, showing *Arthritica hulmei* n.sp. attached to the elytron by byssal threads. The arrows show the most likely directions of water currents. (b) A diagrammatic dorsal view of *Aphrodita australis* Baird, with the felt cut away to show *Arthritica hulmei* in position under the elytra which are drawn as if transparent.

It is not difficult to see the advantages to the bivalve of such an association. *Arthritica* lies in the respiratory stream of the animal and thus obtains food and protection. Though it was not altogether certain how the bivalves were orientated in life they appeared to have their ends pointing to the sides of the *Aphrodita*, that