

## THE GENERIC POSITION OF THE BRACHIOPOD *MEGERLIA ECHINATA* (FISCHER & OEHLERT)

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(Text-figs. 1-4)

The genus *Pantellaria* was created by Dall in 1919 for *Megerlia* (= *Terebratul*) *monstrosa* (Scacchi) and *M.* (= *Mühlfeldtia*) *echinata* (Fischer & Oehlert), because he considered that 'the opening for the pedicle in intact specimens is wholly in the flat or sessile valve, as in *Platidia*; when a portion of it appears to involve the other valve it is due to wear'. Dall seems to have been confused over *Platidia*, for Thomson (1927) described the foramen in that genus as amphithyrid, as indeed it is. Dall went into the matter rather more fully in 1921 and his reasons for creating the new genus were summarized by Thomson (1921) as follows: '*Pantellaria* differs from *Mühlfeldtia* only in possessing an amphithyrid instead of a submesothyrid foramen, and in the flattening of the dorsal valve, together with its lack of ornament.' Thomson remarked that 'in view of the marked polymorphism of *Mühlfeldtia truncata* according to its mode of support, it is possible that the attainment of amphithyrid beak characters may in this case be rather of specific than of generic value, unless as in *Amphithyris*, it is found to be a character of very early appearance in development'.

*Megerlia monstrosa* (Scacchi), which Dall made the genotype of his new genus *Pantellaria*, has not been obtained at Plymouth, but a number of *M. echinata* (Fischer & Oehlert) of shell length 1.2 and width 1.3 mm to shell length 13.5 and width 18.5 mm were dredged by R.V. 'Sarsia' in May 1958 and July 1959. These have allowed of a study of the young stages of the shell and the mode of development of the pedicle opening of the adult.

The dorsal valve of *M. echinata* is closely applied to the substratum and externally the adult shell somewhat resembles a large *Platidia davidsoni* (Eudes Deslongchamps). If first the change in shell shape with age is considered, it is seen that in the young of shell length rather more than 1 mm (Fig. 1) the dorsal valve is somewhat more convex than the ventral, especially posteriorly, although the ventral already bears spines and the dorsal is without them. The dorsal valve being closely applied to the substratum reproduces its irregularities, thus in some adult *M. echinata* this valve is flat and even slightly concave anteriorly, although tending to remain somewhat convex posteriorly, while the ventral valve is markedly convex (Figs. 3, 4). Occasion-

ally the dorsal valve is irregularly and rather deeply convex, fitting into a depression in the substratum. Some shells occupied the empty cups of coral polyps, had deeply convex dorsal valves, only slightly convex ventral valves and when large projected beyond the edge of the cup. In fact the degree of concavity of both valves of *M. echinata* varies greatly.

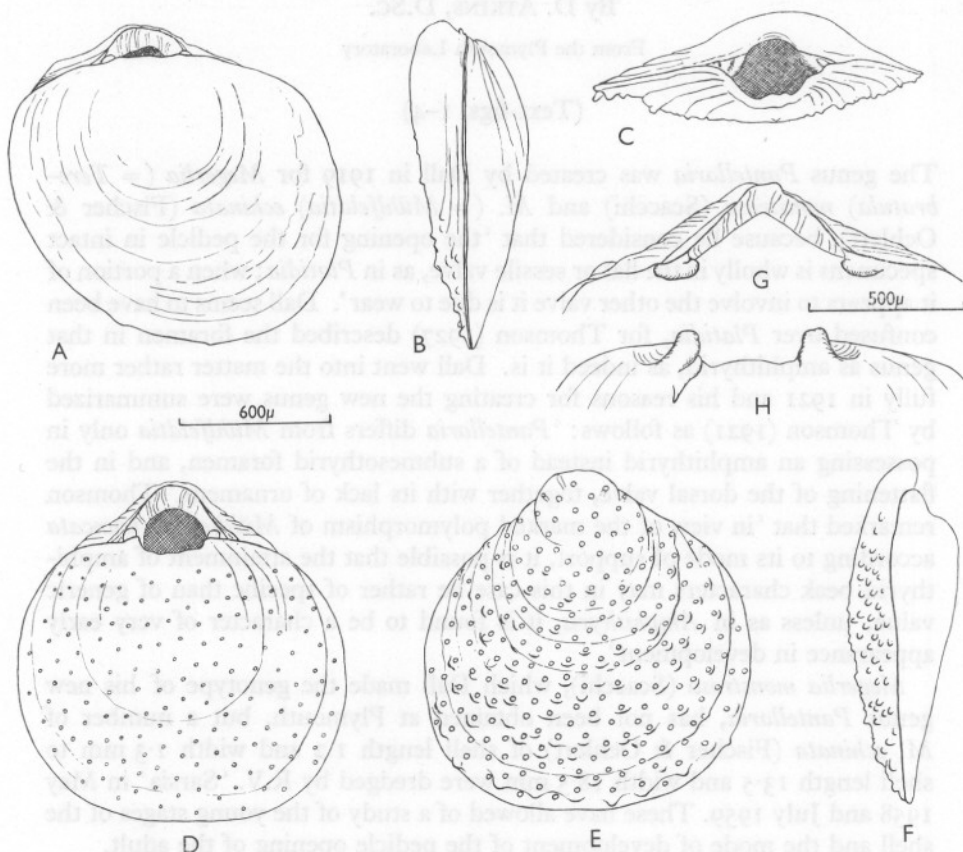


Fig. 1. *Megerlia echinata*. A, dorsal; B, lateral and C, posterior views of a specimen of shell length 1.2 mm and width 1.3 mm. D, dorsal; E, ventral and F, lateral views of a specimen of shell length 1.35 mm and width 1.32 mm. Mantle setae omitted. G, dorsal view of beak; and H, ventral view of cardinalia of a specimen of shell length 1.4 mm and width 1.6 mm; crus present on one side only.

The ventral valve has a radial ornamentation of spines which in some *M. echinata* may be worn down and only visible near the margins and occasionally may be absent. The irregular surface of the dorsal valve, besides showing growth lines may, as mentioned by Fischer & Oehlert (1891), have very indistinct radiating folds, often only visible anteriorly.

When on a smooth surface *M. echinata* is regularly transversely oval, but is sometimes most irregular in shape when attached to coral owing to the irregularities of the surface and in fact is more irregular than the figures of *M. monstrosa* by Fischer & Oehlert (1891, pl. vii, fig. 12). These irregularly shaped *M. echinata* are clearly spinous. Mantle setae are present, but have been omitted from the figures, except for Fig. 2. They reached a length of 1.8 mm in a specimen 1.6 mm long and 1.5 mm wide, and a length of 2 mm in an adult 9 mm long and 12 mm wide, but often setae are broken.

The prominence of the beak evidently varies in the young of about 1 mm shell length; in one 1.2 mm long it projected slightly (Fig. 1A), whilst in another 1.35 mm long it was prominent (Fig. 1D). The pedicle collar is short, and is free of the valve anteriorly: it appears striated in the young owing to the longitudinal direction of the pits. In adult specimens of shell length 9 mm and more the mid-region of the pedicle collar protrudes (Fig. 4B, C), and does not follow the curve of the ventral valve. This protrusion of the collar is not found in *M. truncata*.

As previously mentioned, according to Dall (1921) in *Pantellaria* the pedicle opening is normally confined to the brachial (dorsal) valve, only by wear encroaching on the other. He considered that this encroachment on the ventral valve—as shown in most figures—was abnormal. That this is not so for *M. echinata* can be seen from immature shells 1.2–3.5 mm long (Figs. 1, 2).

In the smallest *M. echinata* seen, shell length 1.2 mm (Fig. 1A) the posterior edge of the dorsal valve appeared to be without a notch in dorsal view. When viewed posteriorly (Fig. 1C) it was evident that the valve was strongly convex posteriorly, and the part of the pedicle opening in it was a slight semi-circular notch, in a plane at right angles to that of the valve. (A notch in this plane has been seen in *M. truncata* of length 6 mm and width 7.2 mm.) It is only in adults in which the dorsal valve has become flattened that the part of the pedicle opening in it is a semi-circular notch in the plane of the valve (Fig. 4), as in *Platidia*. In *Platidia* the notch in the posterior edge of the dorsal valve is as relatively large, and in the same plane as the valve, in an animal of shell length 0.8 mm as in adults of 7 or 8 mm, and the valve is as flat in one as in the other (Atkins, 1959).

In *Megerlia truncata* the dorsal valve is less convex than the ventral and both are free and similarly sculptured. The foramen is described as submesothyrud (Thomson, 1927). The few living adult *M. truncata* seen were held by the very short pedicle at an angle to the substratum, the yellow coral, *Dendrophyllia cornigera* Lamarck, often almost vertically, particularly in large specimens. That the almost erect position is the usual one is supported by additional empty shells with both umbos badly worn. In *M. echinata* on the other hand the pedicle is almost at right angles to the shell, at least in large specimens. Internally *M. echinata* is very like *M. truncata*.

In those *M. echinata* in which the notch in the dorsal valve is small, the

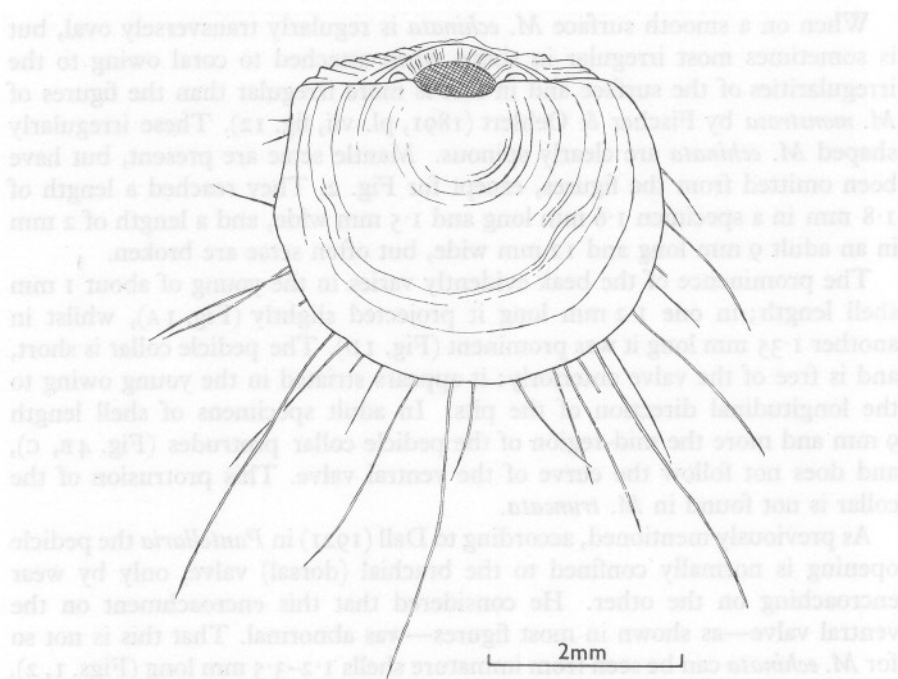


Fig. 2. *Megerlia echinata* of shell length 3.5 mm and width 3.9 mm; dorsal view, with such mantle setae as remain.

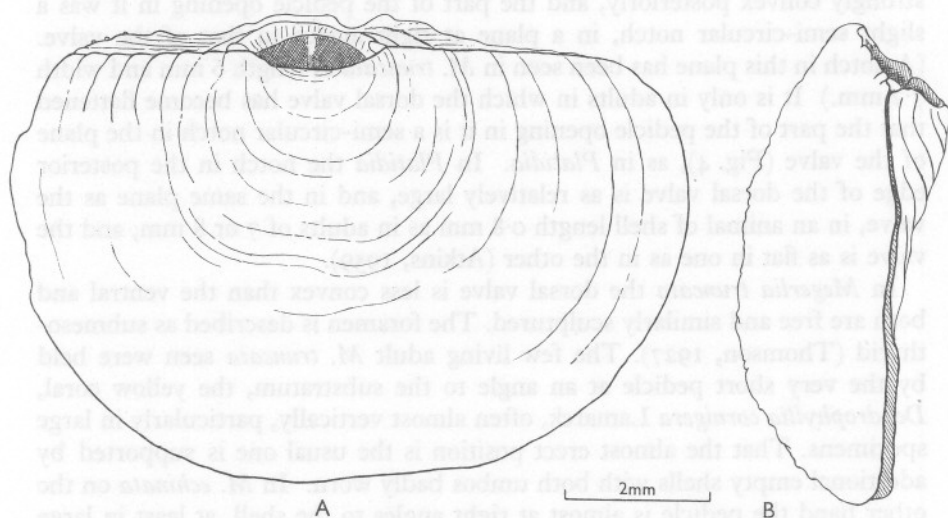


Fig. 3. *Megerlia echinata* of shell length 6.2 mm and width 8.7 mm. A, dorsal and B, lateral views.

crural bases are as in *M. truncata*, and have been figured by Fisher & Oehlert (Fischer & Oehlert, 1891, pl. vii, fig. 13e). But in those with wide semi-circular notch the crural bases arising from the inner socket ridges are produced, following the curve of the semicircle (Atkins, 1961, fig. 16). They are excavate underneath; their ventral surfaces are hollowed posteriorly and serve for the attachment of the dorsal pedicle muscles.

I think it is evident from the foregoing description of immature shells that the form of the pedicle opening is of specific and not of generic value and that *Pantellaria echinata* should be transferred back to *Megerlia*.

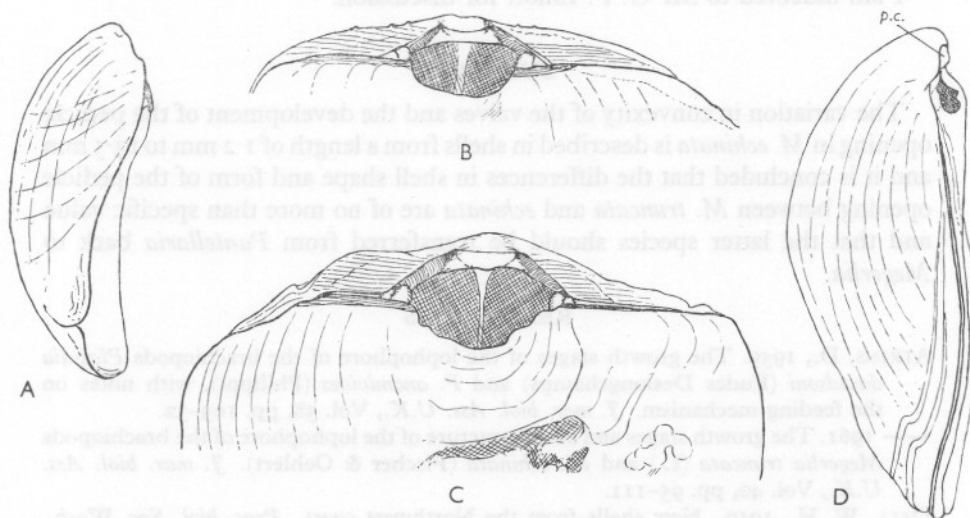


Fig. 4. *Megerlia echinata*, A and B of shell length 9.2 mm and width 13 mm; C and D of length 12 mm and width 15.6 mm. A and D lateral views; B and C posterior regions viewed dorsally. The spines of the ventral valves of these two specimens were small or abraded. Both show narrow cardinal areas on the dorsal valve, although partly abraded on the right side; the worn region is indicated by a broken line in B. In the shell shown in C, deltidial plates could not be distinguished. p.c., pedicle collar.

*M. echinata* has much the appearance when viewed ventrally of the illustration given by Deshayes (1863) of his *Morrisia gigantea* from off the Isle of Reunion in 200 fathoms (wrongly given as 33 fathoms by Thomson, 1927). His single specimen was attached to a crustacean. He did not mention its mode of attachment, although as he identified it as a *Platidia* (= *Morrisia*) and mentioned that the pedicle opening was equally divided between the two valves, it is probable that it had the habit of that genus, the dorsal valve applied to the substratum. Deshayes said that 'les valves sont inégales et ornées à l'extérieur, surtout la plus grande, de costules étroites, peu épaisses et granuleuses; elles sont peu visibles sur la valve supérieure [i.e. dorsal]; examinée à la loupe, la surface montre une multitude de fine granulations.'

Dall (1921) tentatively placed *Morrisia gigantea* in *Megerlia* (= *Pantellaria*) *echinata*: it had previously been identified with *Megerlia truncata* by Jeffreys (1878) and Davidson (1887). Jackson (1921) was not convinced of Dall's identification, and was more inclined to refer *Morrisia gigantea* to his *Megerlia truncata* var. *paucistriata* from the Persian Gulf. After examining Jackson's *Megerlia* from this locality I would be inclined to agree rather with Dall's view than that of Jackson, but identification can only be tentative without seeing Deshayes' shell.

I am indebted to Mr G. F. Elliott for discussion.

#### SUMMARY

The variation in convexity of the valves and the development of the pedicle opening in *M. echinata* is described in shells from a length of 1.2 mm to 13.5 mm and it is concluded that the differences in shell shape and form of the pedicle opening between *M. truncata* and *echinata* are of no more than specific value and that the latter species should be transferred from *Pantellaria* back to *Megerlia*.

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