

***Hyalea orbignii* Rang, 1827: a fossil Cavolinia species
(Mollusca, Pteropoda)**

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In my papers on pteropods (Van der Spoel, 1967, 1968a, 1971) I fully misinterpreted Souleyet's (1852) remarks on *Hyalaea orbignii*. Souleyet did indicate a resemblance of *Hyalaea orbignii* with *Hyalaea quadridentata* but he did not in any sense state that *H. orbignii* was a recent species. From Souleyet's description and illustration I incorrectly got the impression that *Hyalea quadridentata* var. *costata* Pfeffer, 1879, was identical to *Hyalea orbignii* (ms. Rang) (Souleyet, 1852), so that I have given priority to the name *orbignii* (corrected to *orbignyi*). This is completely incorrect as *Hyalea orbignii* is a fossil species already published by Rang in 1827; it belongs to the genus *Cavolinia* in which it shows most affinity to species like *C. globulosa* (Gray, 1850) and *C. gibbosa* (d'Orbigny, 1836).

The holotype of *Hyalea orbignii* is preserved in the Museum d'Histoire Naturelle at Paris, where I have consulted it at the Department of Malacology. As a good figure of the holotype has so far never been published, it is shown here in figures 1-3. The figures by Souleyet (1852, pl. III figs. 16-18) are in all probability also based on this specimen, as in the original description (Rang, 1827) only one specimen is mentioned. These figures are rather small, however, and do not give the most characteristic details. The holotype was fixed on a piece of cardboard, after the figures for the plates of Souleyet's work had been completed, as could be concluded from the hole in the dorsal side surrounded by fragments of glue. The original description by Rang



Figs. 1-3. *Cavolinia orbignyi* (Rang), holotype. 1. Ventral view. 2. Dorsal view. 3. From the right side. Highly enlarged.

(1827) is generally correct and as such translated below:

"Shell longer than wide, rounded anteriorly, with nearly square outline of the posterior side, the dorsal side which is much longer than the ventral side is vaulted, ribbed, and bent ventrad, the ventral side is strongly vaulted and faintly transversally striate; the aperture is rather wide, the lateral spines are situated completely posteriorly and they are blunt, turned to the dorsal side, the lateral prolongations of the aperture are slightly curved, the caudal spine is short and curved downwards. Length "deux lignes", collected from the fossil sand beds of Saint-Paul-de-Dax."

Measurements of the type: length 4.45 mm, width 3.77 mm, thickness about 3.0 mm.

Saint-Paul-de-Dax is a village in South West France at 43° 43'N 01° 03'W.

This description should be completed with a few notes. Dorsal and ventral aperture lip are both provided with a thickened rim, a character typical for recent *Diacria* species. The shell aperture is narrower than in most *Cavolinia* species. The lateral aperture prolongations are only visible in dorsal view of the shell, which is caused by the strong curving of the small lateral spines in a dorsal direction. The caudal spine is strongly curved dorsad but nearly completely present; only the embryonic shell is lost but a mechanism, as found in *Diacria*, to shed the caudal spine is absent. This indicates that the species can never be classified with the genus *Diacria*. There are five subequally developed ribs on the dorsal shell surface. This resembles the situation as found in *Diacria*; in *Cavolinia* the two lateral ribs on the dorsal side are usually markedly less developed than the other three.

From these facts it is clear that the fossil species should be called *Cavolinia orbignyi* (Rang, 1827) (= *Hyalea orbignii* Rang, 1827: 383; *Hyalea perovalis* Koenen, 1882: 354, pl. VII fig. 15a, b) while the name *Diacria quadridentata* (De Blainville, 1821) forma *costata* (Pfeffer, 1879) (= *Hyalea quadridentata* var. *costata* Pfeffer, 1879: 234, fig. 5; *Hyalea costata* Pfeffer, 1880: 91, fig. 11, 11a) should be given to the form of *Diacria quadridentata* with strong dorsal ribs.

The shape of the shell in *Cavolinia orbignyi* is an example of convergence in the development of adaptations to floating as the shape of this species is in general identical to that of *Diacria quadridentata* forma *costata*. The floating capacity, expressed as Log. F. (Van der Spoel, 1968b) in the adults of both species is about 2, which value is reached in *C. orbignyi* by the curvature of the caudal spine and in *D.*

quadridentata by shedding the spine.

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