

STRUCTURE OF THE PRO-OSTRACUM AND MUSCULAR MANTLE IN BELEMNITES

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The pro-ostracum of belemnites has been explained as a remnant of the dorsal wall of the body chamber of the ectocochlean ancestors (Naef, 1922; Jeletzky, 1966). A different view, mentioned by Naef (1922) as less probable, considered the pro-ostracum as a new structure unrepresented in the ancestors. On our view the pro-ostracum of belemnites represents a remnant of the ridged rostrum of the aulacocerid ancestors. The belemnite rostrum would therefore have appeared as a new structure as Jeletzky (1966) believed. Fossilized muscular mantle showing crisscross pattern of the tunic of collagen fibres was previously described in *Belemnotheutis* (Kear & al. 1992), which is in some respects is anormal belemnite.

This paper investigates the pro-ostracum and the conotheca with the SEM in *Megateuthis* (M. Jurassic) and *Mesohibolites* (L. Cretaceous). We can show from imprints on the conotheca of *Megateuthis* the presence of typical coleoid mantle including the tunic with intersecting collagen fibres. This is the first record from typical belemnites of muscular mantle structure as known from living coleoids. Remains of the mantle are recorded in *Passaloteuthis* (L. Jurassic) as well.

In *Megateuthis* the pro-ostracum occupies about half the circumference of the shell at the anterior end of the phragmocone (Naef, 1922, Fig.73). A broad median field is flanked by narrow hyperbolar zones. The median field shows forwardly convex growth lines. It has a weak median ridge and one or more lateral ridges on each side. The hyperbolar zones bear flattened longitudinal ridges which converge forwards and are separated by narrow grooves. These carry regularly-spaced transverse pits forming a pattern comparable to that on the rostrum of *Hematites* (see Doguzhaeva et al., herein). The inner surface shows a feather-like pattern unrelated to that seen on the dorsal surface. A narrow central area is bounded by weak ridges. Areas lateral to the "feather" structure show a longitudinal pattern with subsidiary transverse elements. It looks similar to *Cylindroteuthis* (Naef, 1922, Fig. 87). The muscular mantle was attached to the sides of the pro-ostracum. Between the intersecting collagen fibres there are numerous irregular pits and traces of thin fibrous structure. In longitudinal shell section the pro-ostracum is represented by a distinct rather thin layer between the nacreous layer of the conotheca and the rostrum. This layer is irregularly mineralized, with a high organic content. Besides the nacreous layer the conotheca includes an inner spongy prismatic layer.

The outer surface of the pro-ostracum in *Mesohibolites* is similar to that of *Megateuthis*; it shows a broad median field with convex growth lines and narrower hyperbolar zones with longitudinal ribs. In section the layer which seems to represent the pro-ostracum is situated between the nacreous layer and rostrum.