

The *protoconch* or earliest embryonic stage is not preserved.¹ Its former presence outside of the initial apical cone of the shell is clearly indicated by the perforation of the apical end and the opening of the endosiphontube.

The growth stages of the animal of *C. brainerdi*, as recognized in the shells, are characterized by the successive forming of the apical cone, of the chambered portion, the filling of the siphuncle and the formation of the final endosiphosheath [see text fig. 16-18]. The shell (protoconch) in which the embryonic stage was passed has not been preserved. The first shell which could be preserved was an open small cup which grew out into a long cigar-shaped open conch, the preseptal or apical cone, or *nepionic bulb* of Hyatt [see text fig. 16, 19]. It was originally entirely filled by the animal and its wall consisted only of the present outer conchiolinous periderm. The aseptate stage is in Nanno termed the *ananeptionic* stage by Hyatt. In *C. brainerdi* it must have extended through a considerable period of the life of the animal if we can use the length of the preseptal cone as an indicator of the lapse of time.

The *metanepionic* substage in Nanno is characterized by Hyatt as that with septa and a huge empty siphuncle, while the *paranepionic* stage is that with the first endocone and an endosiphuncle formed at the apex. The formation of the first cameras in *Vaginoceras belemniforme*

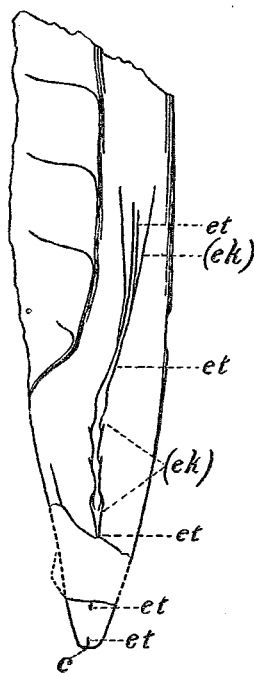


Fig. 19 *Vaginoceras belemniforme* Holm (sp.) Section of apical part showing the nepionic bulb, first cameras, cicatrix [c], endosiphontube [et] remains of endosiphosheaths [ek] and long septal necks, characteristic of *Vaginoceras*

¹Several authors have at first considered the large apical cone of *Nanno aulema* and of *Vaginoceras belemniforme* as a protoconch. But the finding of the opening of the endosiphontube at the apical end in both species and of a cicatrix at this opening in the closely related *Piloceras* (by Foord) leave no doubt that the protoconch in these forms has not been capable of preservation.