SIPHUNCULAR MEMBRANES IN UPPER PALEOZOIC PROLECANITID AMMONOIDS FROM NEVADA, USA

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Almost all previous work on intracameral membranes in ammonoids is based on Lower Mesozoic material from Spitsbergen and northeastern Arctic Siberia. This report discusses the formation and function of intracameral membranes in the Upper Paleozoic (Permian) prolecanitid ammonoid *Akmilleria electraensis* (Plummer and Scott).

These prolecanitids are preserved in carbonate concretions exposed near the base of the Arcturus Formation (Lower Permian - Wolfcampian) at Buck Mountain, Nevada. The Buck Mountain concretions are unusual in that they sometimes contain hundreds of carbonized cephalopod mandibles. Detailed *in situ* study of the intracameral membranes utilized complete phragmocones of *Akmilleria* that were prepared as longitudinal and transverse sections etched in weak acetic acid and then observed by SEM.

Intracameral membranes are a relatively new discovery (Weitschat and Bandel, 1991; Checa, 1996 and other reports). In the Triassic material that Weitschat and Bandel (1991) studied, three types were present. In the five Permian prolecantid specimens we observed, these are only two kinds of intracameral membranes present; there are siphuncular sheets and a modified form of horizontal sheets. Transverse sheets like those in the tips of the sutural lobes of the Triassic ammonoids have not been observed. The prolecantid intracameral membranes exhibit both regularity in chamber placement and similarity in the branching patterns. Because of this regularity and similarity, it is likely that the membranes were produced at the posterior end of the animal when it was forming a new siphuncle prior to the formation of a new septum. We therefore reject the suggestion that the membranes were formed by chemical changes in the cameral liquid chemistry during fluid removal because changes in cameral liquid chemistry during liquid withdrawal would have created random membrane patterns in each chamber and extensive variation between specimens. We did not observe random membrane patterns; instead there are distinct membrane pattern similarities among the prolecantid specimens.

Checa, A., 1996. Origin of Intracameral Sheets in Ammonoids. Lethaia 29, 61-75.

Weitschat, W. and Bandel, K., 1991. Organic Components in Phragmocones of Boreal Triassic Ammonoids: Implications for Ammonoid Biology. Palaeont. Zeitschrift 65, 269-303.