TELESCOPING IN ORTHOCONIC NAUTILOIDS: AN INDICATION OF HIGH OR LOW ENERGY HYDRODYNAMIC REGIME ?

Histon, Kathleen

Geological Survey of Austria, A-1031 Vienna, Austria (hiscat@cc.geolba.ac.at)

The phenomenom of telescoping in nautiloids has been widely accepted as an indicator of a high energy depositional environment in the Cephalopod Limestone facies. However, the actual mechanism of how it occurs is not clearly understood. It is hoped by studying the frequency and taphonomic preservation of these telescoped specimens both in the field and in thin section to determine whether it is really (a) a high energy factor or (b) a dissolution factor of the shell material itself due to prolonged exposure on the sea bottom thereby giving a very different environmental interpretation. The majority of specimens studied are from the Silurian of the Carnic Alps. Examples are also illustrated from the Silurian of the Prague basin and Morocco.

It has been noted that smaller orthoconic shells accumulated within the body chambers of larger cones and these appear to be randomly oriented within the sedimentary infill of the latter. The smaller cones in some cases have also penetrated the most adoral part of the siphuncle and sometimes form a plug as sediment infilling the body chamber is restricted in its infiltration of the siphuncle by these obstructions. The smaller cones invariably display geopetal structures which seem to reflect the position of the larger enclosing cone as it was deposited on the seafloor. This may reflect a slow accumulation of the smaller cones within the larger more immobile cone as deposition took place.

In thin section rare specimens have been observed with smaller cones telescoped within the phragmocone of the larger specimen. The septa of the smaller cones are intact however, those of the larger enclosing cone show dissolution effects and are in some cases no longer preserved. This may reflect long term exposure on the seafloor of the larger cone which with time becomes infilled with sediment and smaller elements of the fauna including smaller orthocones. Evidence of breakage of septa due to high energy penetration of smaller cones into the phragmocone appears to be rare and fragmented septa within the phragmocone have not been noted in thin sections of the material from the Carnic Alps.

The observations presented of the telescoping phenonomen may reflect local hydrodynamic conditions but it is important to note that environmental interpretations other than high energy are possible.