

## The position of the aptychus in some Jurassic ammonites

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With 2 figures in the text

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**Abstract:** In 24 measured specimens of Hildocerataceae the mean angular distance of the aptychus from the aperture is  $52^\circ$ , most lying between  $35^\circ$  and  $75^\circ$  from the aperture.

**Key words** Perisphinctida (*Hildoceras*), Jurassic, jaw (aptychus).

### Introduction

This is a preliminary report, based on the relatively small number of measurements I have been able to obtain so far, mainly from ammonites of the superfamily Hildocerataceae. I thank Prof. LEHMANN and Dr. WEITSCHAT (Hamburg) and Dr. WESTPHAL (Tübingen) for free access to collections.

I am not concerned here with the function of aptychi, see LEHMANN (1972 etc.). This is only a survey of where they occur in relation to the ammonite shell. The aptychus was not connected to the ammonite shell by non-perishable material and so was liable to be displaced from its position in life during the fossilisation processes. This is one of the major problems in trying to assess where the aptychus belonged in the ammonite, and I have measured only those specimens with the aptychus in or near the normal position (Normalstellung) of TRAUTH (1927—38). Any far removed from this position have almost certainly been disturbed after death but before fossilisation, and such specimens have not been used.

I define the position of the aptychus as the angular distance from the aperture. The measurement used is the angle subtended about the protoconch (axis of coiling) by the umbilical end of the aperture and the nearest part of the aptychus (C1). Where possible the length of the body chamber was also measured, as the angle subtended by the aperture and the tips of the saddles of the last suture (C2).

## Results

So far I have been able to measure 24 specimens from the superfamily Hildocerataceae, plus 4 specimens of *Arnioceras* and 1 of *Amaltheus*. Other groups have not yet been sufficiently investigated. The distance from the aperture is shown in Fig. 1 for Hildocerataceae (solid line) and

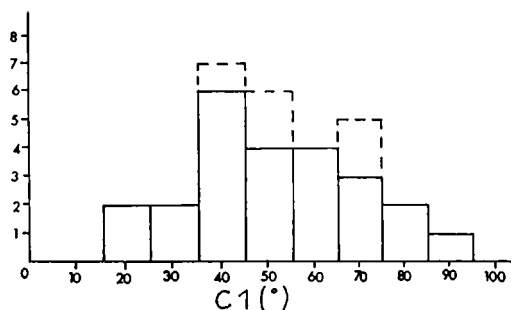


Fig. 1. Histogram of angular distance of aptychus from aperture (C1) for 24 specimens of Hildocerataceae (solid line) and 4 specimens of *Arnioceras* and 1 of *Amaltheus* (broken line).

the others (broken line). The modal class for the Hildocerataceae (including examples of *Eleganticeras*, *Hildoceras*, *Hildaites*, *Harpoceras*, *Sonninia* and *Euhoploceras* with bivalved aptychus *Cornaptychus* or *Laevicornaptychus*) is 40° (35° to 44° inclusive), but the distribution is skewed and the mean is 52° with standard deviation 19°. The distribution is not much affected by the inclusion of data for *Arnioceras* and *Amaltheus* (both with *Anaptychus*).

Relationship between distance of aptychus from aperture and length of body chambers, is shown in Fig. 2 for the 12 specimens of Hildocerataceae for which data are available. If extreme values of C1 are ignored (20% of the 24 measured specimens, 25% of the 12 specimens for which C2 is also available, possibly representing displaced aptychi) there may be a positive correlation between length of body chamber and distance of aptychus from aperture. The results are not conclusive, though, and a much larger sample will have to be investigated.

## Conclusions

In the superfamily Hildocerataceae most aptychi in the normal position occur between 35° and 75° from the aperture, the mean being 52°. There is as yet no proof whether this would indicate the position of the aptychi.

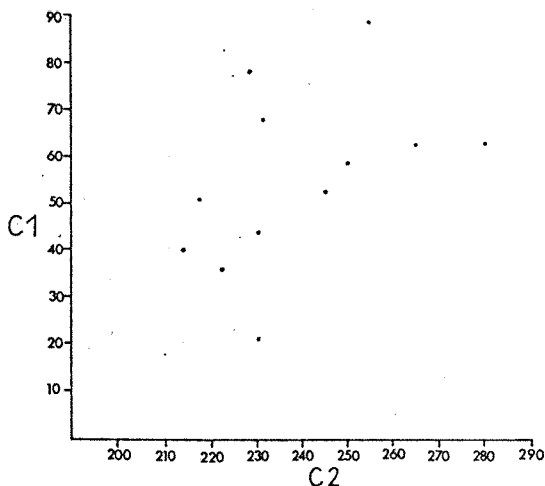


Fig. 2. Plot of angular distance of aptychus from aperture (C1) against angular length of body chamber (C2) for 12 specimens of Hildocerataceae. Specimens with  $C1 < 25^\circ$  or  $> 75^\circ$  may have the aptychus displaced.

thus during life or the post-mortem settling position. The close comparability of symmetry between aptychus and shell in specimens of *Sonminia* from Scotland (Morton 1973) would suggest that the former is more likely.

I have not yet been able to locate enough specimens to indicate whether the aptychus tends to occur in a similar position in other groups of ammonites.

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