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**GROWTH RINGS AND POPULATION DYNAMICS OF *BELEMNITELLA*
IN THE BEESTON CHALK, UPPER CAMPANIAN,
CAISTOR ST. EDMUND, NORFOLK**

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ABSTRACT

*The **Belemnitella** populations in a section of the Beeston Chalk (Upper Campanian) are examined in terms of their diameter at the protoconch. An attempt is made to determine the relative ages of a number of specimens by counts and estimates of the total number of growth rings. The current views of belemnite palaeobiology are reviewed and revised in the light of recent advances in cephalopod research. The analysis of growth rings on a number of specimens leads to a tentative conclusion that species of **Belemnitella** had a life-span of c. 200-300 days.*

*Analysis of populations within the Beeston Chalk show that the **B. mucronata** group is dominant on hardgrounds and that the **B. langei** group dominates in the soft white chalks. The **B. mucronata** group is only represented by adult or near adult individuals whilst the **B. langei** group is represented by juveniles and adult forms. This suggests the latter group was endemic to the Caister area and that the **mucronata** group migrated there from some distance away. The observed variations suggest cyclicity, possibly related to sea level change.*



**A NOTE ON THE POSSIBLE OCCURRENCE OF *BELEMNITELLA* CF.
AMERICANA? (MORTON) IN THE BEESTON CHALK,
UPPER CAMPANIAN, NORFOLK**

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INTRODUCTION

*Wood, (1988) noted finding a "single example of an extremely elongate fusiform belemnite with a distinctly triangular cross-section, which may belong to the North American group of **Belemnitella americana** (Morton)" in the **Echinocorys** Bed of the Beeston Chalk Member (Upper Campanian) at Caistor St. Edmund. A single specimen was also found by Godwin, (1998) in the same bed. At least two further examples were collected at the same locality by University of East Anglia undergraduates in 1990. These specimens were larger than the example discussed here.*

*Attempts to identify the students' specimens to specific level at the time were unsuccessful - the overall morphology was suggestive of **Actinocamax** or even **Neohibolites** but the presence of a small mucron on one of the specimens suggested it was a species of **Belemnitella**. (**B. minor** and **B. langei** are the normal constituents of the belemnite population at this horizon). The specimen probably represents an early growth stage but is dissimilar to any other juvenile **Belemnitella** collected by Godwin, (1998) in this section.*

No formal abstract available for this paper.

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**PALAEOENVIRONMENTS AND CYCLICITY OF THE BEESTON CHALK
(UPPER CAMPANIAN), NORFOLK AND THEIR POSSIBLE LINKS
WITH THE NEKTONIC PALAEOECOLOGY
OF *BELEMNITELLA***

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ABSTRACT

*The palaeoenvironments of the Beeston Chalk at Caistor St. Edmund are examined in terms of their palaeogeography, palaeoclimatology and palaeoceanography. The area was probably influenced by nutrient-rich up-welling currents, which led to an abundance of pelagic life and a sparse benthos. The faunas and environments at Caistor in the Upper Campanian are comparable to those found on modern sea-mounts and off-shore banks. The evolution, palaeobiogeography and palaeoecology of **Belemnitella** is reviewed and the facies distribution of the **Belemnitella mucronata** and **Belemnitella langei** groups is discussed. The concentrations of large numbers of individuals was probably caused by a combination of winnowing and predation.*

*The changing faunas and facies within the Beeston Chalk also allows the demonstration of cyclic climate change. Meso-cycles in the order of 41-100,000 years and macro-cycles of 300-360,000 years are believed to have been detected. It can be shown that the dominant group of **Belemnitella** at any given horizon is dependent on whether a cycle is in a transgressive or regressive phase.*