SIX NEW SPECIES OF CALCAREOUS NAMNOFOSSILS FROM THE LOWER CRETACEOUS STRATA OF ENGLAND AND GERNANY

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The Late Hauterivian to Early Barremian sediments of Speeton, (Yorkshire) and the Otto Gott clay pit, (Sarstedt near Hannover) contain rich nannofloras in which six new species and one new genus of coccolith have been found. These sections are described in detail and dated with ammonites and belemnites in Rawson and Mutterlose (1983) and Mutterlose (1984). Five of the new species of coccoliths; Chiastozygus cepekii, Clepsilithus polystreptus, Cretarhabdus inaequalis, Rhagodiscus pseudoangustus and Watznaueria rawsonii are heterococcoliths, the sixth species Calculites sarstedtensis is a holococcolith.

Genus Chiastozygus Gartner 1968

Chiastozygus cepekii sp. nov. Pl. 1, Figs. 1-3, 6, 18-20. (holotype Fig. 1)

Derivation of name: After P. Čepek, nannofossil specialist.

Diagnosis: A species of *Chiastozygus* with a large flaring spine. The spine has a serrated edge and is cut by four slits which run parallel to the supporting crossbars. The proximal side of the coccolith is covered by a reticulate grill.

Remarks: The possesion of the distinctive spine distinguishes this species from other members of the genus *Chiastozygus*. Length of coccolith $3.9-4.1~\mu m$ (four specimens measured).

Type level: Bed 72 Otto Gott, Sarstedt (bed number after Mutterlose 1984).

Range: Late Hauterivian - Early Barremian, Otto Gott and Speeton.

Genus Clepsilithus gen. nov.

Derivation of name: After the Greek clepsi-deceiving lithos-stone.

Diagnosis: Elliptical coccoliths with a loxolith rim. The central area contains a spine base from which five or more bars radiate. Some of these bars may bifurcate before joining the outer wall of the coccolith.

Remarks: The genus *Clepsilithus* is similar to the genera *Corollithion* Stradner 1961 and *Stradnerlithus* Black 1971 but differs in the construction of its rim.

Type species: Clepsilithus polystreptus sp. nov.

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Clepsilithus polystreptus sp. nov. Pl. 1, Figs. 10 and 11. (holotype Fig. 10)

Derivation of name: From the Greek polystreptos- much twisted.

Diagnosis: A species of Clepsilithus with nine to twelve bars.

Remarks: The central bars have a rope like appearance in proximal view. Length of coccolith $2.6-3.1~\mu m$ (two specimens measured).

Type level: Bed 72 Otto Gott, Sarstedt (bed number after Mutterlose 1984).

Range: Recorded in the Late Hauterivian of Otto Gott (due to different definitions for the Hauterivian-Barremian stage boundary in Speeton and Otto Gott this record is possibly equivalent to the Barremian of Speeton).

Genus Cretarhabdus Bramlette and Martini 1964

Cretarhabdus inaequalis sp. nov. Pl. 1, Figs. 7-9 and 22. (holotype Fig. 7)

Derivation of name: After the latin inaequalis- irregular (not uniform).

Diagnosis: A species of *Cretarhabdus* with an irregular central grill. The grill has a cross in which the two halves of the longer bar are offset where they join the shorter bar. The four quadrants of the central area are further sub-divided by small bars parallel to the long and short axes of the elliptical coccolith.

Remarks: This species differs from other species of *Cretarhabdus* and *Retecapsa* Black 1971 by the distinctive construction of its central

Length of coccolith $3.4-5.5 \mu m$ (six specimens measured).

Type level: Bed 72 Otto Gott, Sarstedt (bed number after Mutterlose 1984).

Range: Late Hauterivian - Barremian (top not seen), Otto Gott and Speeton.

Genus Rhagodiscus Reinhardt 1967

Rhagodiscus pseudoangustus sp. nov. Pl. 1, Figs. 4, 5, 16 and 17. (holotype Fig. 4)

Derivation of name: After the Greek pseudes- false angustus.

Diagnosis: A species of *Rhagodiscus* whose shape is an elongated ellipse, the sides being parallel to slightly convex. The central area is bridged by a large spine base which completely crosses the coccolith.

Remarks: This species is very similar to *Rhagodiscus angustus* (Stradner 1963) Reinhardt 1971. It differs by having a larger spine base which completely crosses the coccolith. Forms attributable to *R. pseudoangustus* (*R. angustus*) were also recorded by Perch-Nielsen (1979). She noted that there were no granules of calcite present in their central area. Most specimens observed in the present study also lack calcite granules, but they are present in well preserved specimens (Pl. 1, Fig. 5). *R. pseudoangustus* has a stratigraphically older range than *R. angustus*. It occurs in the Late Hauterivian to Early Barremian strata of Speeton and Otto Gott, while R. angustus has a worldwide occurrence in Late Aptian and younger strata.

Length of coccolith $4.3-7.2~\mu m$ (five specimens measured).

Type level: LB 6 Specton (bed number after Rawson and Mutterlose 1983).

Range: Hauterivian - Early Barremian, Otto Gott and Speeton.

Genus Watznaueria Reinhardt 1964

Watznaueria rawsonii sp. nov. Pl. 1, Fig. 12. (holotype Fig. 12)

Derivation of name: After P. F. Rawson, Mesozoic stratigrapher.

Diagnosis: A species of Watznaueria with a central tube surrounding a central area which is filled by a delicate, irregular grill of calcite laths.

Remarks: This species is similar to $\it Watznaueria\ fasciata\ Wind\ and\ Cepek\ 1979$; the two species are differentiated by the constructions of their central grills. Like $\it W.\ fasciata$ the central grill of $\it W.\ rawsonii$ could be removed by dissolution, leaving a form resembling $\it Watznaueria\ ovata$ Bukry 1969. There is no way of knowing if the holotype of $\it W.\ ovata$ is in fact a poorly preserved specimen of $\it W.\ rawsonii$, however, it could equally well be a poorly preserved specimen of $\it W.\ fasciata$ or another, as yet undescribed species. Wind and Cepek (1979) noted that $\it W.\ fasciata$ was smaller than $\it W.\ ovata$, the holotypes of $\it W.\ fasciata$ and $\it W.\ rawsonii$ are both approximately $\it 4\mu m$ in length. The central grills were not observed under the light microscope.

Length of coccolith $3.9-5.7~\mu m$ (three specimens measured).

Type level: Bed 72 Otto Gott, Sarstedt (bed number after Mutterlose 1984).

Range: Recorded in both Late Hauterivian and Early Barremian strata of Otto Gott and Speeton respectively (due to the Hauterivian-Barremian stage boundary being defined differently in the two areas the Late Hauterivian record in Otto Gott may be equivalent to the Barremian of Speeton).

Genus Calculites Prins and Sissingh 1977

Calculites sarstedtensis sp. nov. Pl.1, Figs. 13-15 and 21. (holotype Fig. 13)

Derivation of name: After Sarstedt, the type locality.

Diagnosis: A species of *Calculites* with a thin outer rim and up to eight depressions in the distal surface arranged around a central boss or spine base.

Remarks: Calculites sarstedtensis is the earliest known representative of its genus, it occurs in Late Hauterivian strata, while the other members of this genus are restricted to the Late Cretaceous. Prins and Sissingh (1977) originally described Calculites as a heterococcolith genus, but Perch-Nielsen (1985) has noted that well preserved specimens show a holococcolith structure.

Length of coccolith 3.4-4.0 μm (five specimens measured).

Type level: Bed 72 Otto Gott, Sarstedt (bed number after Mutterlose 1984).

Range: Recorded in the Late Hauterivian of Otto Gott (due to the Hauterivian-Barremian stage boundary being defined differently in Otto Gott and Specton, this record may be equivalent to the Barremian of Specton).

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REFERENCES

- Mutterlose, J. (1984): Die Unterkreide Aufschlusse (Valangin Alb) im Raum Hannover - Braunschweig. Mitt. geol. Inst. Univ. Hannover, 24, 5-61.
- Perch-Nielsen, K. (1979): Calcareous nannofossils from the Cretaceous between the North Sea and the Mediterranean. IUGS Series A, 6, 223-272
- Perch-Nielsen, K. (1985).: Mesozoic calcareous nannofossils. In: Bolli, H. M., Saunders, J. B. and Perch-Nielsen, K. (eds.) Plankton Stratigraphy, 329-426. Cambridge University Press.
- Rawson, P. F. and Mutterlose, J. (1983): Stratigraphy of the Lower B and basal Cement Beds (Barremian) of the Speeton Clay, Yorkshire, England. Proc. Geol. Ass., 94, 133-146.
- Wind, F. H. and Čepek, P. (1979): Lower Cretaceous calcareous nannoplankton from DSDF Hole 397A (Northwest African Margin) Initial Rep. DSDP, 47, 221-255.

For further references see Perch-Nielsen (1985).

PLATE 1

bars at the top of scanning electron micrographs equal 1 μm

- Figs. 1-3, 6, 18, Chiastozygus cepekii sp. nov. 19 and 20.
 - distal view, 2. proximal view, 3 and 6. side view Late Hauterivian, Bed 72 Otto Gott, Sarstedt.
 - 18. bright field, side view, X 4600, Late Hauterivian, Beds 34-38 Moorberg, Sarstedt.
 - 19. bright field, 20. x-nicols, X 4600, Late Hauterivian Bed 72 Otto Gott, Sarstedt.
- Figs. 4, 5, 16 and 17.

Rhagodiscus pseudoangustus sp. nov.

- 4. distal view, 5. proximal view, Early Barremian, LB 6 Specton, Yorkshire.
- 16. bright field, 17. x-nicols, X 3400, Early Barremian, LB 6 Speeton, Yorkshire.
- Figs. 7-9 and 22. Cretarhabdus inaequalis sp. nov.
 - 7. distal view, Late Hauterivian, Bed 72 Otto Gott, Sarstedt.
 - 8. distal view, 9. proximal view, Early Barremian, LB 6 Speeton, Yorkshire.
 - 22. x-nicols, X 3800, Late Hauterivian, Bed 58 Otto Gott, Sarstedt.
- Figs 10 and 11. Clepsilithus polystreptus sp. nov.
 - 10. distal view, 11. proximal view, Late Hauterivian, Bed 72 Otto Gott, Sarstedt.
- Fig. 12. Watznaueria rawsonii sp. nov.
 - 12. distal view, Late Hauterivian, Bed 72 Otto Gott, Sarstedt.
- Figs. 13-15 and 21.

Calculites sarstedtensis sp. nov.

- 13. distal view, 14. proximal view, 15. side view, Late Hauterivian, Bed 72 Otto Gott, Sarstedt.
- 21. bright field, X 5400, Late Hauterivian, Bed 72 Otto Gott, Sarstedt.

Otto Gott and Moorberg bed numbers after Mutterlose (1984). Speeton bed numbers after Rawson and Mutterlose (1983).

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