

Archaeozygodiscus gen. nov. and other Triassic coccoliths.

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Pre-Jurassic calcareous nannofossils have been reported by at least 14 authors since 1961 in rocks ranging in age from Cambrian to Triassic. Despite these reports most workers remained skeptical about the existence of pre-Jurassic nannofossils, especially coccoliths, until recent papers by Moshkovitz (1982) and Jafar (1983) described and illustrated abundant and convincing material from the Upper Triassic of the Northern Calcareous Alps. The aim of this note is to describe the genus Archaeozygodiscus and finally dispel any doubt that may remain over the presence of calcareous nannofossils and more importantly coccoliths in the Triassic by means of detailed scanning electron micrographs illustrating coccolith morphology and ultrastructure.

The samples studied were personally collected from 7 published field sections within the Northern Calcareous Alps of Austria ranging in age from Ladinian to Rhaetian. Additional material was provided by Dr M Urlichs. From these 7 sections only samples from Kendelbachgraben, Weissloferbach and Fischerwiese yielded nannofossils, with coccoliths from the latter two: Weissloferbach and Fischerwiese expose rocks of Norian-Rhaetian (Hauptdolomit facies) and Rhaetian (Halstatt facies) age respectively.

At least two species of coccolith have been observed by both light and scanning electron microscopy. Both forms are relatively common (1 coccolith per 10 fields of view) in the two sections and always occur associated with an abundant and enigmatic assemblage of calcispheres and Conusphaera zllambachensis Moshkovitz.

Taxonomy:

GENUS Archaeozygodiscus gen. nov.

Type species: Archaeozygodiscus koesseni sp. nov.

Diagnosis: Elliptical coccoliths possessing a loxolith structured rim imbricating in an anticlockwise direction with an inner cycle of tangential and overlapping calcite laths.

Known Range: Norian-Rhaetian

Archaeozygodiscus koesseni sp. nov.

Plate 1, figs. 1-3.

Diagnosis: A species of Archaeozygodiscus with the short axis of the ellipse spanned by a bar constructed from a number of calcite elements. The centre of the bar has a circular hole which may or may not be a spine base.

Remarks/Differentiation: Superficially similar to the younger form Zygodiscus erectus (Deflandre) Lezaud but a number of features are thought to warrant the recognition of a new genus and species. The elliptical rim of A. koesseni possesses a typical loxolith structure as do the coccoliths of Zygodiscus, however, the elements are imbricating in the opposite direction and the rim includes an additional inner cycle of tangential elements. Archaeozygodiscus is also distinctive in its diminutive size of 1.9 to 3.2 microns.

Holotype: Neg. no. UCL - 2040-33; plate 1, fig. 1.

Paratypes: Neg. no. UCL - 2040-29; plate 1, fig. 2.
Neg. no. UCL - 2028-10; plate 1, fig. 3.

Dimensions: Length holotype 1.9 microns, width 1.4 microns.

Type locality: Weissloferbach, near Kossen, Austria.

Type level: Kossener Schichten; Ch. marshi ammonite Zone, Rhaetian.

Range: Upper suessi Zone, Norian to marshi Zone, Rhaetian.

GENUS Crucirhabdus Prins, 1969 ex Rood, Hay and Barnard, 1973.

Crucirhabdus minutus Jafar 1983
Plate 1, figs. 4-7.

1983 Crucirhabdus minutus-Jafar, p. 247, fig. 12: 6a, 6b, 7, 8, 9, 10a, 10b, 18.

Remarks: First described by Jafar (1983) from light microscope observations alone. Further detailed examination by scanning electron microscope reveals C. minutus to be a small coccolith approximately 2 microns in length possessing a high elliptical rim composed of non-imbricating elements and a central area spanned by a cross which is orientated along the long and short axes of the ellipse. The cross supports a tall central spine.

Range: Upper suessi Zone, Norian to marshi Zone, Rhaetian.

References:

Jafar, S A 1983 (INA code A172-3)
Moshkovitz, S 1982 (INA code A165-4)
Urlichs, M & Hagn, H (1981) Site C2: Weissloferbach. Pages 135-141 in
Hagn, H. Die Bayerischen Alpen und ihr Vorland in Mickropalaontologischer Sicht. Geologica Bavarica 82: 1-408.

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PLATE 1

Figs. 1-3: *Archaeozygodiscus koesseni* gen. et sp. nov.

Fig. 1: Holotype, UCL - 2040-33; distal view, x 16,300; sample E136.

Fig. 2: Paratype, UCL - 2040-29; distal view, x 15,800; sample E136

Fig. 3: Paratype, UCL - 2036-25; proximal view, x 15,000; sample E136.

Figs. 4-7: *Crucirhabdus minutus* Jafar

Fig. 4: UCL - 2025-23; distal view, x 14,300; sample W(e)39.

Fig. 5: enlargement of central area of Fig. 4, x 22,000.

Fig. 6: UCL - 2040-13; distal view, x 15,000; sample E136.

Fig. 7: UCL - 2025-9; distal view, x 16,500; sample W(e)39.

Figs. 8,9: '*Crepidolithus*' sp.

Fig. 8: UCL - 2036-32; distal view, x 13,000; sample E136.

Fig. 9: UCL - 2036-33; distal view, x 15,000; sample E136.

All specimens above from *marshi* Zone, Rhaetian, Weissloferbach, Austria.
Specimen numbers refer to negatives stored in the Micropalaeontology Unit,
University College London.

Figs. 10a-10d: UFO 1, *Sphenolithus* sp.

Fig. 10a: nomarski

Fig. 10b: oriented 60° to x-nicols

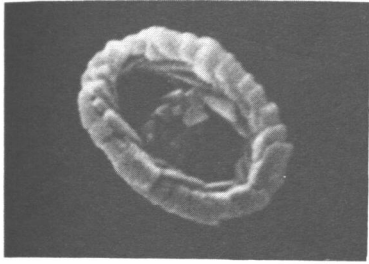
Fig. 10c: oriented 10° to x-nicols

Fig. 10d: oriented 27° to x-nicols

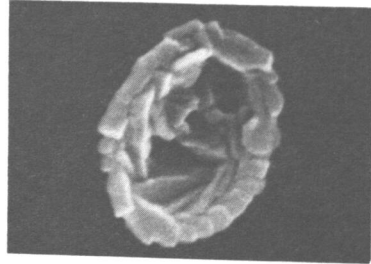
Figs. 11-13: UFO 2

magnification: 2000 x

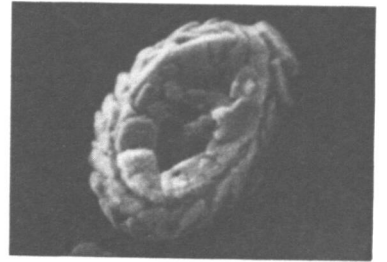
Plate 1



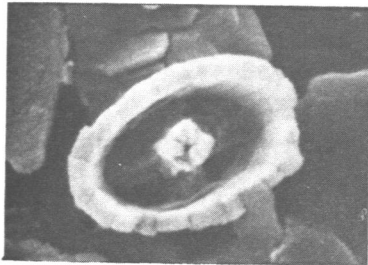
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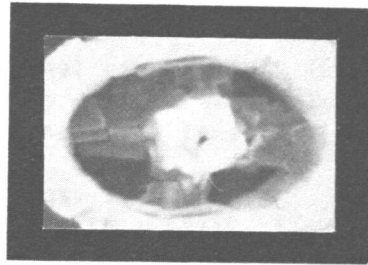
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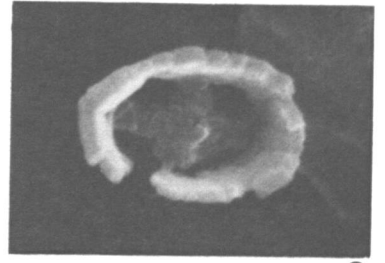
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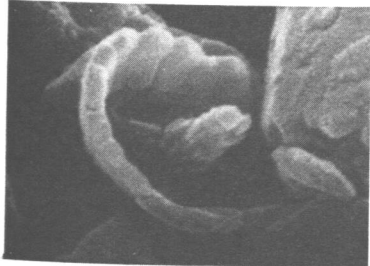
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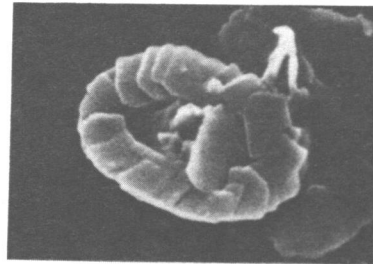
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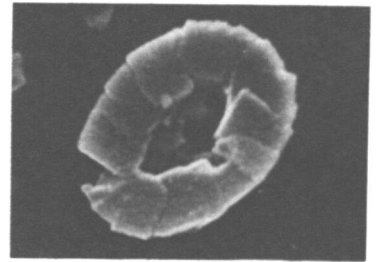
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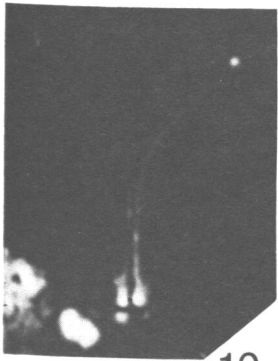
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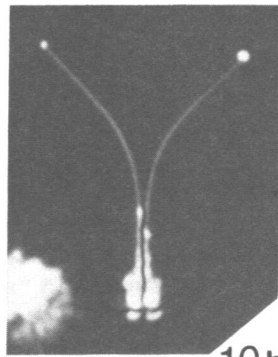
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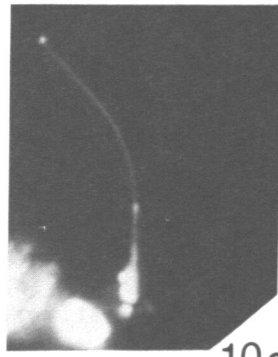
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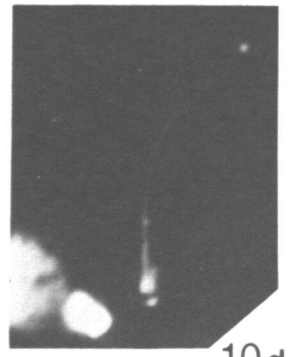
10a



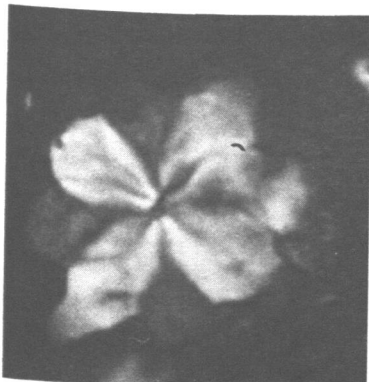
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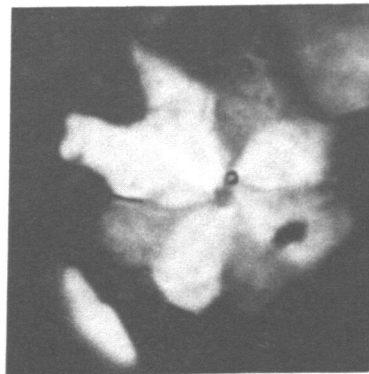
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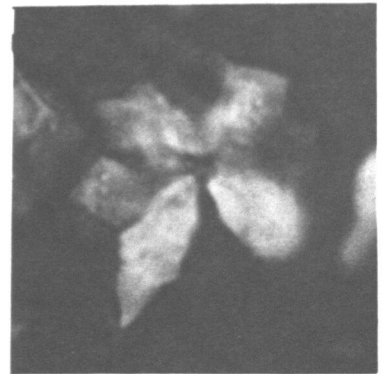
10d



11



12



13