

NOTES ON NANNOLOGY -1. CLAUSICOCCUS, A NEW GENUS OF FOSSIL COCCOLITHOPHORIDS.

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The systematical position of a number of Paleogene species related to Discolithus fenestratus DEFLANDRE & FERT 1954 is still a matter of controversy. An increasing number of authors tend to place these species, all having a perforated central plate, in the genus Ericsonia BLACK 1964. However, the type species of this genus, E. occidentalis BLACK 1964, appears to be a species with a fairly large open centre, which represents in my opinion the proximal side of Coccolithus crassus BRAMLETTE & SULLIVAN 1961. The peculiar orientation of the crystals in wall and proximal shield, on which Black based his genus Ericsonia, can be found in most genera of the Coccolithaceae. For this reason I consider the genus Ericsonia to be a junior synonym of Coccolithus SCHWARZ 1894. A new genus, Clausicoccus, is introduced herewith to accomodate Discolithus fenestratus and allied species.

Genus Clausicoccus, new genus

Generotypus: Discolithus fenestratus DEFLANDRE & FERT 1955

Diagnosis: Elliptical coccoliths with a narrow wall, connecting two fairly broad shields, of which the proximal one consists of two layers (cycles). The wall, of which the extinction lines between crossed nicols curve counterclock-wise, surrounds a perforated central plate.

Description: The coccoliths have a broadly elliptical outline.

The marginal area consists of two fairly broad shields. The distal shield is single layered; the proximal one is composed of two layers (cycles) with opposite inclinations of their crystal elements. Between crossed nicols the distal shield has a weak birefringence. The birefringence of the proximal shield is much stronger, being visible through the distal shield.

The wall is narrow. Between crossed nicols it is well visible, with extinction lines curving in a counterclock-wise direction when viewed from the distal side. The areas of birefringence border those of the proximal shield. In older species the distal surface of the wall is well exposed. In younger species the wall is overlain ('engulfed') by the distal shield.

A perforated plate fills the entire central area between wall or distal shield, the number of its perforations depending on the species. In crossed polarized light with the nicols parallel to the axes of the coccolith the plate becomes subdivided into four segments: two polar ones and two along the long sides of the coccolith. Their orientation and, with the gypsum plate added, also their colour distribution, is equal to those of the cross-structure in the genus Cruciplacolithus HAY & MOHLER 1967. The colours of the central plate oppose for the greater part those of the bordering parts of wall and proximal shield.

Discussion: The genus Clausicoccus differs from the genus Cruciplacolithus, from which it evidently evolved, in having an elliptical central plate with perforations, instead of an imperforated central cross. It differs from the genus Coccolithus SCHWARZ 1894 in having a central plate with, between crossed nicols and the gypsum plate, colours opposing those of a narrow wall, instead of having a broad wall, occasionally enclosing a vary reduced central cross.

Stratigraphical distribution: Early Eocene (NP 10) to Early Miocene (NN 2).

New combinations

Clausicoccus bireticulatus (ROTH 1970) nov. comb.

Basionym: Ericsonia bireticulata ROTH 1970; Eclog. Geol. Helv., vol.63(3), p.840,841, pl.1, figs.4,5.

Clausicoccus cribellum (BRAMLETTE & SULLIVAN 1961) nov. comb.

Basionym: Coccolithites cribellum BRAMLETTE & SULLIVAN 1961; Micropal., vol.7(2), p.151, pl.7, figs.5,6.

Clausicoccus fenestratus (DEFLANDRE & FERT 1955) nov. comb.

Basionym: Discolithus fenestratus DEFLANDRE & FERT 1955; Ann. Paléont., vol.40, p.139, pl.11, fig.15, text fig.52.

Clausicoccus obrutus (PERCH-NIELSEN 1971) nov. comb.

Basionym: Ericsonia obruta PERCH-NIELSEN 1971; Kongl. Danske Vidensk. Selsk., Biol. Skr., vol.18(3), p.14, pl.4, figs.4-7, pl.8, figs.5-6.

Clausicoccus pauciperforatus (ROTH 1970) nov. comb.

Basionym: Ericsonia pauciperforata ROTH 1970; Eclog. Geol. Helv., vol.63(3), p.842, pl.2, fig.1.

Clausicoccus singularis (PERCH-NIELSEN 1971) nov. comb.

Basionym: Ericsonia? singularis PERCH-NIELSEN 1971; Kongl. Danske Vidensk. Selsk., Biol. Skr., vol.18(3), p.15, pl.7, figs.1-3,5.

Clausicoccus subdistichus (ROTH & HAY 1967) nov. comb.

Basionym: Ellipsolithus subdistichus ROTH & HAY 1967; Trans. Gulf Coast Ass. Geol. Soc., vol.17, p.446,447, pl.6, fig.7.

Clausicoccus tasmaniae (EDWARDS & PERCH-NIELSEN 1975) nov. comb.

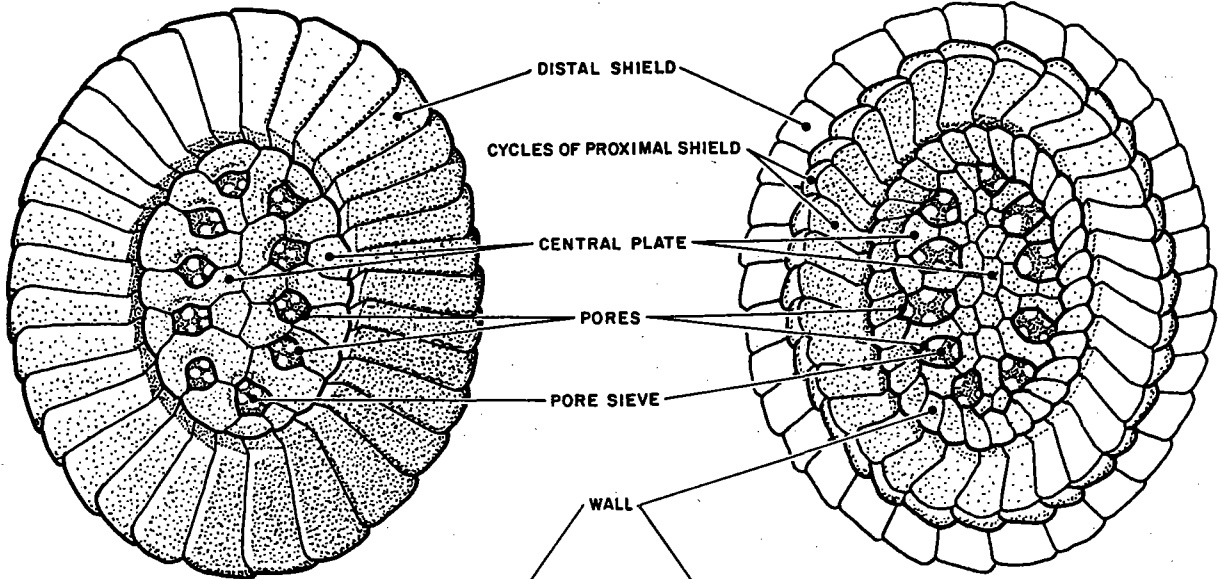
Basionym: Ericsonia tasmaniae EDWARDS & PERCH-NIELSEN 1975; Init. Rep. DSDP, vol.29, p.481,482, pl.20, figs.5-12, pl.21, figs.2-6.

References

- BLACK, M., 1964; Cretaceous and Tertiary coccoliths from Atlantic seamounts. - Palaeontology, vol.7, pp.306-316, pls.50-53.
- BRAMLETTE, M.N. & SULLIVAN, F.R., 1961; Coccolithophorids and related nannoplankton of the Early Tertiary in California. - Micropaleontology, vol.7, pp.129-188, 14 pls., 1 fig., 1 tb.
- DEFLANDRE, G. & FERT, C., 1955; Observations sur les Coccolithophoridés actuels et fossiles en microscope ordinaire et électronique. - Ann. Paléont., vol.40, pp.115-176, 15 pls., 127 figs.
- EDWARDS, A.R. & PERCH-NIELSEN, K., 1975; Calcareous nannofossils from the southern Southwest Pacific, Deep Sea Drilling Project, Leg 29. - In: Kenneth, J.P., Houtz, R.E. et al., Init. Rep. DSDP, vol.29, pp.469-539, 21 pls., 1 fig., 12 tbs.
- HAY, W.W. et al., 1967; Calcareous nannoplankton zonation of the Cenozoic of the Gulf Coast and Caribbean - Antillean area and transoceanic correlation. - Trans. Gulf Coast Assoc. Geol. Soc., vol.17, pp.428-480, 13 pls., 13 figs.
- PERCH-NIELSEN, K., 1971; Elektronenmikroskopische Untersuchungen an Coccolithen und verwandten Formen aus dem Eozän von Dänemark. - Biol. Skr. Dan. Vid. Selsk., vol.18(3), pp.1-76, 61 pls., 2 figs., 1 tb.
- ROTH, P.H., 1970; Oligocene calcareous nannoplankton stratigraphy. - Eclog. Geol. Helv., vol.63(3), pp.799-881, 14 pls., 17 figs.

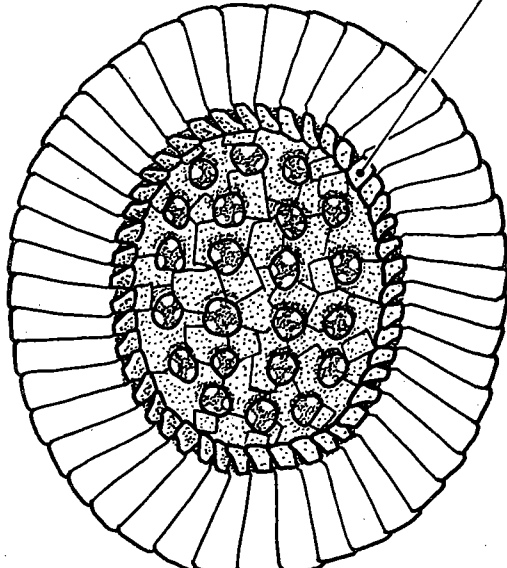
Plate 1 - The genus Clausicoccus n.gen.; Fig.5: optical behaviour;
A and B: X-nicols with gypsum plate; cross-hatched: blue; blank: yellow;
C: X-nicols only.

PLATE 1

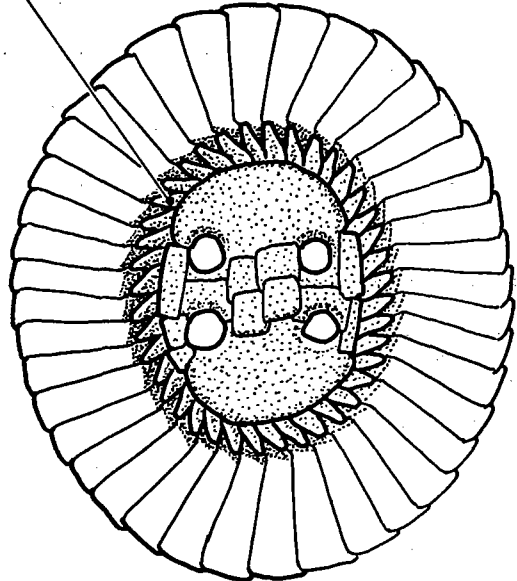


1 *C. subdistichus* (distal view)

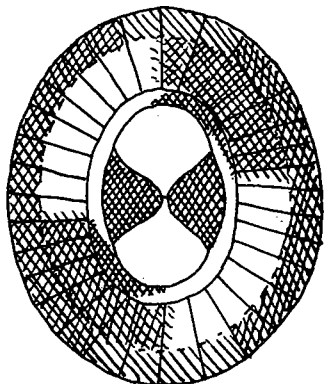
2 *C. subdistichus* (proximal view)



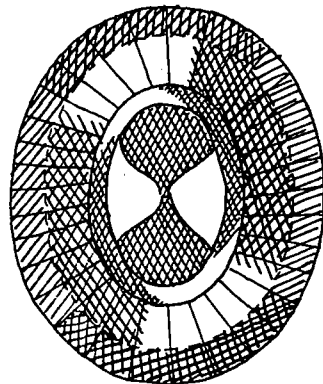
3 *C. fenestratus* (distal view)



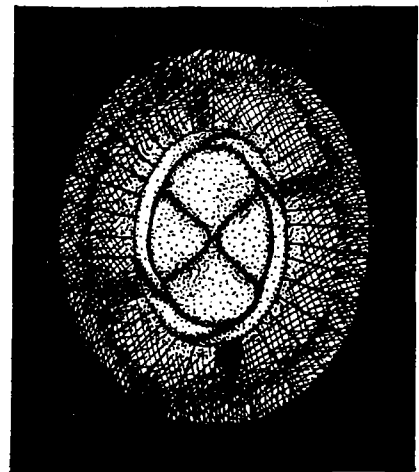
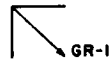
4 *C. obrutus* (distal view)



5A distal view



5B proximal view



5C distal view