

**Geminilithella** BACKMAN, 1980

**Description:**

Diagnosis: Circular placoliths with two flattened shields connected by a central tube. Large central opening.

Description: The placoliths of the genus *Geminilithella* are built of two circular discs which are equal or almost equal in size. The discs are flat and connected by a central tube. The individual elements in the discs are commonly straight and radially arranged, but they can also be slightly curved. The appearance of the specimens between crossed nicols varies between showing a faint interference pattern with straight or slightly curved extinction bands and not showing any interference pattern. The tube forms a large central opening. A ring or collar structure surrounds the central opening, as observed in normal light.

Derivation of name: Latin: *gemi* = double or twin, referring to the double-shielded appearance of the specimens in this genus.

**Remarks:**

The major part of calcareous nannofossil placoliths are weakly dome-shaped, which is probably an adaption to the spherical shape of the coccosphere. Placoliths with relatively flat shields cannot be included in genera characterized by dome-shaped placoliths. The type species of *Geminilithella*, *G. rotula*, has previously been referred to *Cyclococcolithus*, which is a synonym of *Calcidiscus* (see Loeblich & Tappan, 1978). Haq & Berggren (1978) noted that *G. rotula* cannot be referred to *Cyclococcolithus* (read *Calcidiscus*) because of structural differences between *G. Rotula* and the type species of *Calcidiscus* (*C. leptoporus*). These differences include: different size relationship between the two shields, different shape of the shields (*G. rotula* has flat shields whereas *C. leptoporus* has dome-shaped shield), different construction of the central area. Thus, there are obvious reasons to place *G. rotula* in a genus different from *Calcidiscus*. It is also obvious that *G. rotula* cannot be referred to *Cyclolithella* since this genus by definition only consists of one disc, but *Geminilithella* otherwise shows some affinity with *Cyclolithella*. It is not either suitable to place *G. rotula* in the genus *Umbilicosphaera*. The status of this genus is questionable because Lohmann (1902) originally characterized the placoliths in this genus as possessing proximal shields larger than the distal shields. McIntyre & Bé (1967) demonstrated that the type species of *Umbilicosphaera* (*U. mirabilis*) changes the size relationships of the shields as a function of temperature. This implies that only some specimens of the type species *U. mirabilis* can be referred to *Umbilicosphaera*. Cohen & Reinhardt (1968), in recognizing the observation made by McIntyre & Bé, provided an emended diagnosis of the genus *Umbilicosphaera* (Lohmann, 1902) - Reinhardt, 1968, to incorporate all circular placolith species. This emended diagnosis is unfortunate and has not been received as an appropriate solution to the problem, since placoliths with

highly different constructions, optical behaviour and stratigraphic ranges would be included in one giant, vaguely defined genus. Regardless of this, the construction of placoliths belonging to *G. rotula* and *U. mirabilis* respectively is different enough to warrant the placing of these two species in different genera.

**Type species:**

*Cyclococcolithus rotula* KAMPTNER, 1956.

**Author:**

Backman J., 1980, p. 51.

**Reference:**

Miocene-Pliocene Nannofossils and sedimentation rates in the Hatton-Rockall Basin, NE Atlantic Ocean. Stockholm Contr. Geol., vol. 36, no. 1, pp. 1-91, pls. 1-8.