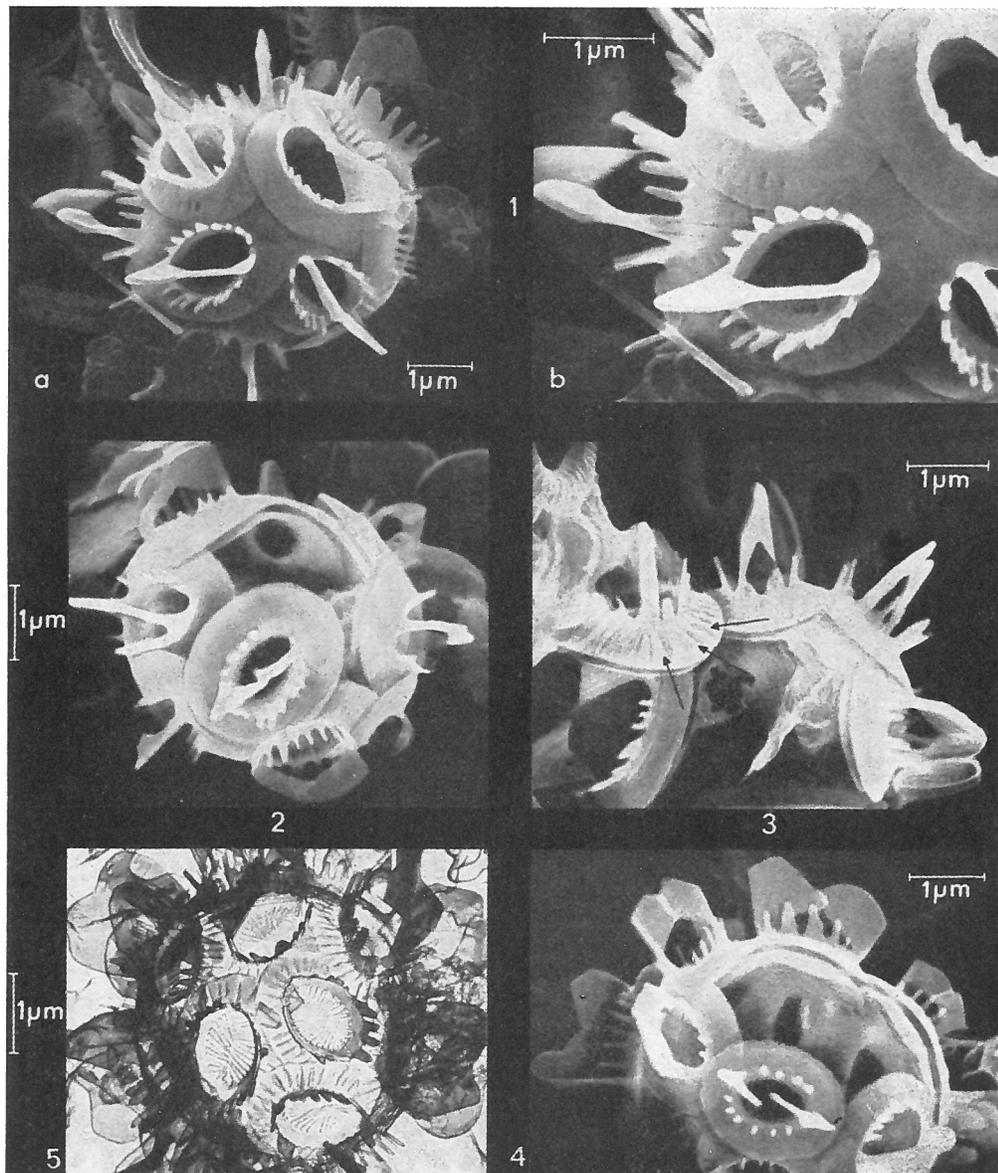


Gephyrocapsa ornata HEIMDAL, 1973



Figs. 1-5 — *Gephyrocapsa ornata* HEIMDAL n. sp. 1a) General view of the holotype showing the structure of the coccoliths and their arrangement on the cell. 1b) Higher magnification of a part of the same cell. 2) A nearly complete cell. Notice the position of the bridge subparallel to the long axis of the coccolith in the centre. 3) Coccoliths in distal side view. Arrows pointing to the segments of one of the distal shields. 4) An incomplete cell. Plates forming the bridge in the central coccolith separated. 1-4) Scanning electron micrographs. 1, 3, 4) 26° 25.0' N-25° 48.5' N, 14° 43.0' W-15° 33.0' W, January 1970. 2) 32° 54.0' N-32° 39.0' N, 09° 00.0' W-09° 17.0' W, January 1970). 5) Transmission electron micrograph illustrating the coccolith microstructure. Some of the coccoliths have lost the bridges. (26° 03' N, 21° 18' W, July 1965. Photo A. McIntyre).

Description:

Observations in electron microscope. Cell spherical, diameter 3.3-4.2 μm (exclusive protrusions). Coccoliths elliptical placoliths, tightly interwedged, about 0.4 μm high (exclusive protrusions). Distal shield slightly wider than proximal, composed of 30-36 flattened segments, concurrent or with narrow slits in between, periphery continuous. Length of distal shield averaging 2.3 μm , width 1.9 μm . Central area radially perforated, about 1.0 μm long and 0.6 μm wide. Central tube crossed on distal side by a narrow bridge consisting of two diametrically opposite thin plates of varying shape. Plates generally overlapping, sometimes separated or missing. In distal view bridge axis clockwise displaced at low angle to long axis of coccolith. Maximum height of bridge above distal shield 1.5 μm . Outwardly widening central tube continuing in a ring of flattened irregularly formed tooth-like protrusions reaching from 0.3 μm to 0.6 μm above distal shield. Coccolith number from 14 to 18.

Per microscopum electronicum observata. Cellula sphaeroides, diametro 3.3-4.2 μm (protrusionibus exclusis). Coccolithi placolithi elliptici, dense interplicati, circiter 0.4 μm (protrusionibus exclusis) alti. Scutum distale paulo latius quam proximale, 30-36 segmentis applanatis, cocurrentibus vel rimis angustis interjectis, in peripheria continuis, compositum. Scutum distale plus minus 2.3 μm longum, 1.9 μm latum. Area centralis radialiter perforata, longa circiter 1.0 μm , lata circiter 0.6 μm . Tubo centrali pons angustus in parte distali injectus, duabus laminis tenuibus, forma variantibus, diametrice oppositis formatus. Laminae fere imbricatae, nonnumquam separate vel absentes. Distaliter visus, axis pontilis angulo minore ad axem longum coccolithi dextrorsum traductus. Maxima pointis super scutum distale altitudo 1.5 μm . Tubus centralis, exterius proventus, orbe protrusionibus applanatis, denticulatis, forma non constantibus, 0.3 ad 0.6 μm super scutum distale erectis, prosecutus. Numer coccolithorum 14 ad 18.

Remarks:

The new species has been referred to the genus *Gephyrocapsa* KAMPTNER on the basis of the following characteristics:

1. The coccoliths are elliptical placoliths with a radially perforated central area.
2. A bridge formed by two diametrically opposed plates, arches obliquely across the central tube on the distal surface.

On account of its minute size it has been infeasible to provide a detailed description of the morphology of *G. ornata* based upon light microscope observations. The species occurred sparsely and only a few specimens and single coccoliths were available for closer examination in the scanning electron microscope. The dimensions given above, therefore, should not be regarded as representative. However, even these few observations indicate that *G. ornata* is closely connected with the recent species *G. ericsonii* McINTYRE & BÉ (1967) and its relative, the fossil species *G. protohuxleyi* McINTYRE (1970). Cells of *G. ornata* and *G. ericsonii* are of about the same size. Also, the number of coccoliths is approximately the same in these species. The size and the segment count of the distal shield are similar in *G. ornata*, *G. ericsonii* and *G. protohuxleyi*. In addition, the position of the bridge subparallel to the long axis of the coccolith is common in all of them.

But the maximum height of the bridge above the surface is considerably larger in *G. ornata* and *G. protohuxleyi* McINTYRE (1970) than in *G. ericsonii*. Thus, the main significant mark of distinction is the presence of the tooth-shaped protrusions at the distal ridge of the central tube in *G. ornata*.

According to the original description of *G. ericsonii* the segments of the distal shield are completely fused along their sutures to produce a solid shield. The present observations indicate that in the distal shield of *G. ornata* the segments are tied more loosely together (figs. 3, 5), thus resembling that of a transitional type between *G. ericsonii* and *G. protohuxleyi* as illustrated by McIntyre (1970). Watabe & Wilbur (1966) and McIntyre & Bé (1967) observed that the elements of *Coccolithus huxleyi* (LOHMANN) KAMPTNER vary in shape and development depend-

ing upon the environment. McIntyre (1970) found the same type of variation in *G. proto-huxleyi*, and it is possible that an analogous variation in coccolith microstructure occurs in *G. ornata*. *Gephyrocapsa ornata* has previously been observed in the Atlantic by Professor A. McIntyre (personal communication).

Type level:

Recent.

Type locality:

Atlantic Ocean (26° 25.0' N-25° 48.5' N, 14° 43.0' W, 15° 33.0' W).

Depository:

Electron Microscopical Unit for Biological Sciences, University of Oslo.

Holotype: Negatives d 4623 - d 4624.

Author:

Heimdal B., 1973, p. 71, figs. 1-5.

Reference:

Two New Taxa of Recent Coccolithophorids. « Meteor » Forsch.-Ergebnisse, Reihe D, n°. 13, pp. 70-75, figs. 1-7.