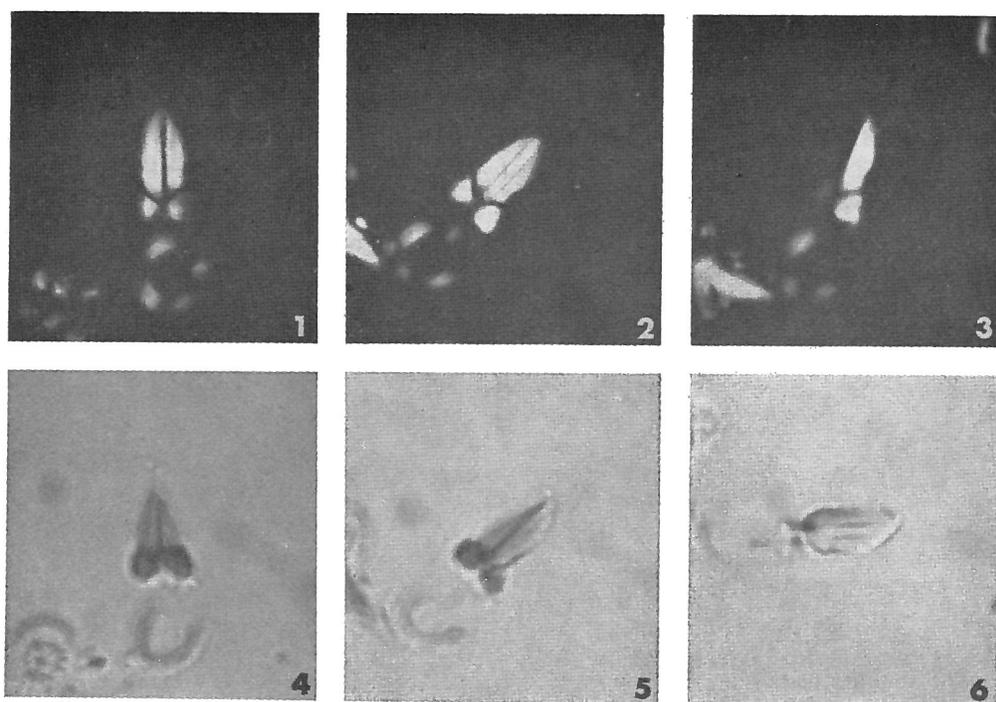


Sphenolithus obtusus BUKRY, 1971



Figs. 1-6 — *Sphenolithus obtusus* n. sp., x 2,000. 1) holotype USNM 176913, DSDP 44.0-4-2, 145-150 cm, cross-polarized, 0°, 2) holotype, cross-polarized, 45°, 3) holotype, cross-polarized, 22°, 4) holotype 0°, 5) holotype, 45°, 6) holotype, 90°.

Description:

This species has a short cycle of small basal spines and a large tapering apical spine constructed of two vertically matched halves. The apical spine halves are flush and terminate together. Seen in side view and cross-polarized light, the contact between the two spine crystallites is planar, because (1) a black median line appears when the median plane of the spine is aligned to a polarization direction, (2) a solid black or white spine appears if a specimen is rolled so that the median plane is parallel to the microscope stage and thus perpendicular to the polarization directions, and (3) oblique orientations produce an off-center black line. In bright field, with a single polarizer, the apical spine is at low relief when aligned to a polarization direction, and the basal cycle is at high relief. When aligned perpendicular to a single polarization direction, the broad base of the apical spine shows a round outline. In cross-polarized light this contributes to the diagnostic obtuse angle made by the extinction line between the apical spine and the basal spine cycle. The basal cycle is short and simple. No side-oriented spines lie between the apical spine and the downward, proximally directed basal cycle.

Dimensions: 6-12 microns.

Remarks:

Sphenolithus obtusus is distinguished from *S. furcatolithoides* LOCKER by the consistent obtuse angle formed between the apical spine and the extinction line between the basal spine in cross-polarized light. *Sphenolithus furcatolithoides* has a single straight extinction line that is perpendicular to the nannofossil axis; it also has divergent halves of the apical spine. *Sphenolithus obtusus* is distinguished from *S. distentus* (MARTINI) by the three-line extinction pattern of the basal spines, which are also longer than those of *S. distentus*.

In its most typical orientation on prepared slides, *S. obtusus* has the median plane of the apical spine perpendicular to the slide surface. In cross-polarized light at 15° to 25° one whole side of the nannofossil — the base and apical side — is dark. At 45°, the extinction line is missing from the apical spine; instead a light blue line is present that marks the trace of the median plane.

Type level:

Upper Middle Eocene.

Occurrence: *Sphenolithus obtusus* is common in upper middle Eocene sediment from Horizon Ridge, northwestern Pacific Ocean. *Sphenolithus furcatolithoides* occurs with *S. obtusus* only in the lower part of the range of *S. obtusus*. This distribution, together with the similarity in construction, suggest the derivation of *S. obtusus* from *S. furcatolithoides*.

Type locality:

DSDP 44.0-4-2, 145-150 cm, Horizon Ridge, northwestern Pacific Ocean.

Depository:

United States National Museum.

Holotype: USNM 176913 (figs. 1-6); paratype: USNM 176914-176915.

Author:

Bukry D., 1971, p. 321; pl. 6, figs. 1-9.

Reference:

Cenozoic Calcareous Nannofossils from the Pacific Ocean. San Diego Soc. Nat. Hist., Trans., vol. 16, (14), pp. 303-327; 7 pls., 3 tabs.