

4. A NEW *BOLBOFORMA* (ALGAE, CHRYSOPHYCEAE?) FROM THE LATE EOCENE OF THE SOUTHERN INDIAN OCEAN, OCEAN DRILLING PROGRAM LEG 120¹

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ABSTRACT

Bolboforma lamari Mackensen and Spiegler, n. sp., is described from the upper Eocene of Holes 748B and 749B drilled during Ocean Drilling Program Leg 120 on the Southern Kerguelen Plateau.

INTRODUCTION

During Ocean Drilling Program (ODP) Leg 120, different *Bolboforma* species were found in Holes 748B and 749B ranging from late middle Eocene through early Oligocene times. *Bolboforma* Daniels and Spiegler is a stratigraphically useful microfossil of uncertain origin that is similar in shape to the benthic foraminifer genus *Lagena*; but, in contrast with benthic foraminifers, it generally consists of a monocrystalline, low-magnesium calcite.

Bolboforma is currently believed to be an algal cyst. Consequently, it is assigned an uncertain position within the Class Chrysophyceae (Tappan, 1980) and is grouped informally into the Family Bolboformaceae (Spiegler, 1987). Since specimens with an inner encapsulated test are found (Poag and Karowe, 1986, 1987; Spiegler, 1987), however, it is suggested that, in comparison with other protophytes, *Bolboforma* (outer test) seems to represent the vegetative stage and not the cyst stage of the organism (Spiegler, 1987).

During the last few years, the number of new finds of *Bolboforma* rapidly increased, but its occurrence in Paleogene samples is still rare. To date, the oldest *Bolboforma* is reported from the middle Eocene of Leg 114 holes in the southern South Atlantic (Spiegler, in press). Late Eocene *Bolboforma* spp. are found in the western North Atlantic and the western South Pacific on Deep Sea Drilling Project (DSDP) Legs 95 and 90 (Poag and Karowe, 1986, 1987), as well as in the Labrador Sea on ODP Leg 105 (Pallant and Kaminsky, 1989).

TAXONOMY

Family BOLBOFORMACEAE Spiegler, 1987
Genus *BOLBOFORMA* Daniels and Spiegler, 1974

Bolboforma lamari, n. sp.
(Plate 1, Figs. 1-9)

Derivation of name. In honor of ODP Cruise Operations Superintendent Lamar Hayes, who died while on Leg 120.

Holotype. GIK 3612 (Plate 1, Fig. 1)

Type locality. ODP Leg 120, Hole 748B, Southern Kerguelen Plateau, southern Indian Ocean (58°26.45'S, 78°58.89'E).

Type horizon. Sample 120-748B-15H-CC, 133.1 mbsf, *Subbotina linaperta* Zone, NP18, upper Eocene.

Paratypes. GIK 3613 through 3620 (Plate 1, Figs. 2-9)

Diagnosis. Single-chambered, empty spherical test, coarsely reticulated with furcated spines, aboral ring.

Description. The usually large spherical test is ornamented with polygonal bladelike ridges arranged in a coarse reticulation. Test wall and ornamentation is of monocrystalline calcite. Polygons are large (two to three polygons in lateral view). Spines, often furcated and of different lengths, preferably protrude from ridge intersections. The aboral part of the test is bordered by a large polygon with spines (aboral ring). No aperture and no oral neck is visible in this material.

The overall morphology is relatively constant with little variation in size and shape observed between individuals. Some of the variation in ornamentation, which is shown in the type material, may partly be caused by abrasion or dissolution of spines during fossilization.

Size. 150-210 μ m in diameter, including ornamentation.

Comparisons. The contemporaneous *Bolboforma geomari* Spiegler, in press, has no spines and tubercles on its reticulation.

The early Oligocene *B. latdorfensis* Spiegler, in press, is finer in reticulation (four to five polygons in lateral view), generally smaller, and lacks an aboral ring.

The late Oligocene *B. irregularis* Daniels and Spiegler, 1974, has irregularly arranged tubercles and ridges and no spines.

Observed occurrences. South Atlantic ODP Leg 114, Holes 699A, 700B, 702A, and 703A on Georgia Rise, Islas Orcadas Rise, and Meteor Rise. Southern Indian Ocean ODP Legs 119 and 120, Holes 744A, 748B, and 749B on the Southern Kerguelen Plateau.

Known stratigraphic range. Late middle through late Eocene, rare to common.

ACKNOWLEDGMENTS

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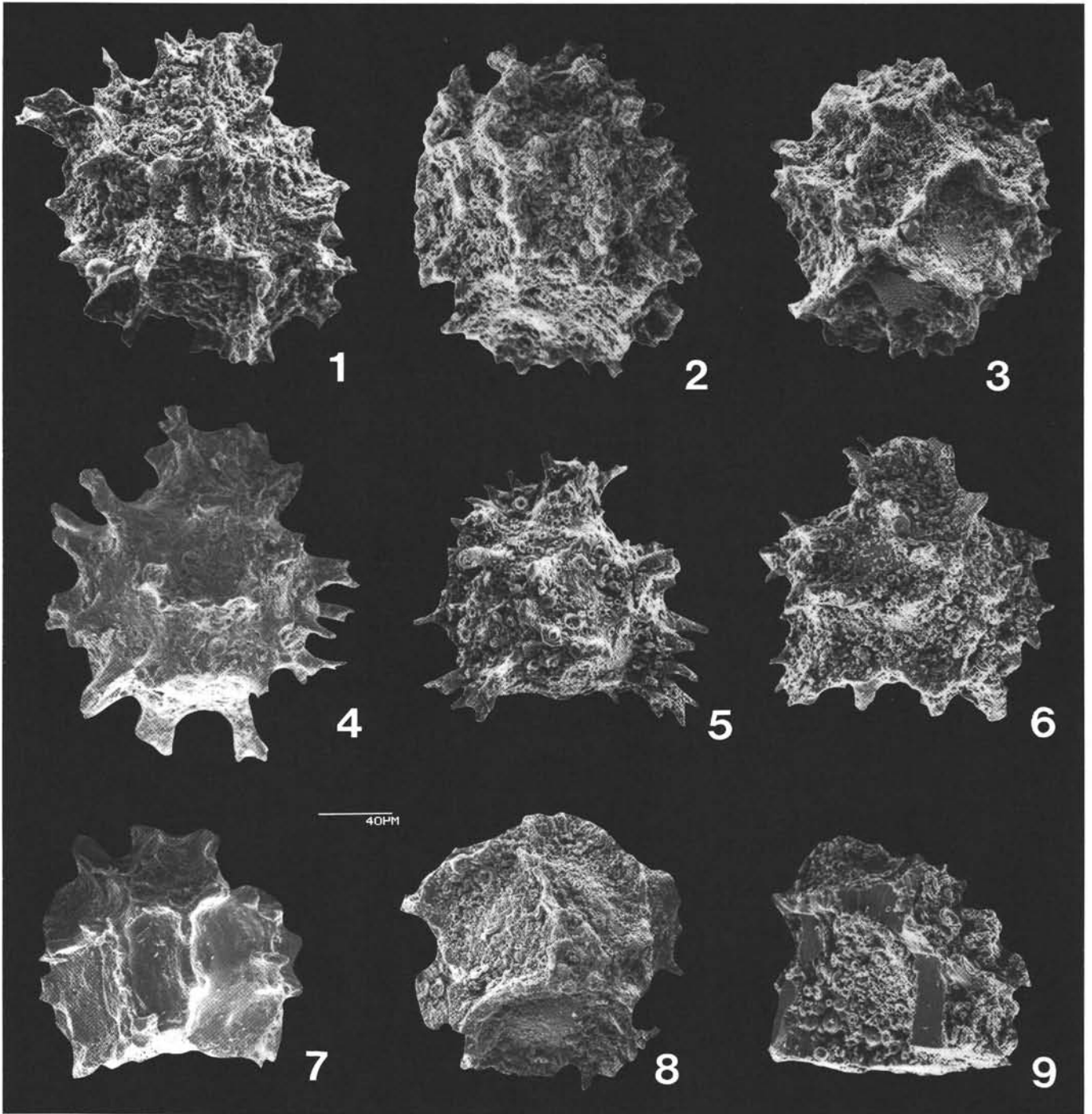


Plate 1. *Bolboforma lamari* Mackensen and Spiegler, n. sp. 1. Holotype, Sample 120-748B-15H-CC, Registration No. GIK 3612. 2-3, 5-6. Paratypes, Sample 120-748B-15H-CC. 4. Paratype, Sample 114-699A-36X-7, 45-47 cm. 7. Paratype, Sample 114-699A-36X-6, 85-87 cm. 8. Paratype, Sample 120-749B-3H-CC. 9. Broken specimen showing monocrystalline wall and ornamentation.