

SOME FORAMINIFERA OF THE FAMILY TEXTULARIIDAE FROM THE EOCENE OF CUBA

C. G. LALICKER AND P. J. BERMÚDEZ

ABSTRACT

The relationship between the Textulariidae from the Eocene of Cuba and from other countries is discussed. Three new species of the genus *Textularia* are described.

The Eocene material upon which this paper is based was collected by P. J. Bermúdez while making systematic collections of Eocene foraminiferal material in the various provinces of Cuba.

There are a number of species in this collection which are present in adjacent areas, showing there is a definite relationship between the Eocene of Cuba and the Eocene of Trinidad, Mexico, southeastern United States, and southwestern France.

The holotypes and a representative collection are deposited in the Cushman Laboratory for Foraminiferal Research, Sharon, Mass., and paratypes and representative specimens are deposited in Museo Poey, the University of Havana, Havana, Cuba.

Vulvulina advena Cushman, which is found in the Eocene of Alabama and Mexico, is very common in the Eocene of Cuba, having been found at Bermúdez stations Nos. 20, 257, 283, 285, 312, and 345. (The Bermúdez stations are listed at the end of this paper.)

Vulvulina jarvisi Cushman, which was originally described from the Eocene of Trinidad, is abundant in the Cuban Eocene, being present at the following Bermúdez stations: Nos. 18, 31, 36, 268, 275, 337-A, 355, 357, 363, and 367.

Vulvulina pachyheilus Hadley, which was described from the Mariel formation, Oligocene age, Pinar del Rio Province, Cuba, is present at Bermúdez stations Nos. 36, 337-A, 357, and 363.

Spiroplectammmina carinata (d'Orbigny) which was described as *Textularia cari-*

nata from the Miocene of the Vienna Basin, and which is abundant in the Oligocene of Germany, the Eocene at Biarritz, France, and the Eocene of Italy, is found at Bermúdez stations Nos. 20, 92, 257, 283, 285, 312, and 351.

Textularia recta Cushman, originally described from the Eocene and Oligocene of Alabama and Mississippi, is found at Bermúdez stations Nos. 18, 36, 275, 337-A, and 363.

Textularia rugosa (Reuss), which was described as *Plecanium rugosum* from the Oligocene of France, is present at Bermúdez stations Nos. 110, 275, and 337-A.

SYSTEMATIC DESCRIPTIONS

Genus TEXTULARIA DeFrance, 1824

TEXTULARIA MARIELENSIS Lalicker and Bermúdez, n. sp.

Plate 28, figures 1a-2

Test triangular in front view, subrectangular in top view, compressed, thickest at apertural end, gradually increasing in thickness, periphery sharp, spinose; chambers numerous, low and broad, the upper margin of each chamber slightly overlapping lower edge of each subsequent chamber, each chamber typically terminating at the peripheral margin in a short spine, apertural margin of chambers flattened to somewhat depressed; sutures distinct, slightly depressed, gently curved upward; wall finely arenaceous with a large proportion of calcareous cement, smoothly finished; aperture a very low, broad, rather indistinct opening at the inner margin of

the last-formed chamber, in a distinct reëntrant. Length of holotype, 0.82 mm.; greatest width, 0.82 mm.; thickness, 0.37 mm.

Type.—Holotype (Cushman coll., no. 23,751) from upper Eocene, 4.5 kms. west of Guanajay, on road to Mariel, Pinar del Rio Province, Cuba. Collected by P. J. Bermúdez, station No. 337-A. This species is also present at Bermúdez station No. 363.

Remarks.—This species is more like *Textularia lateralis* Lalicker, from off the North Coast of Porto Rico, than any other. It differs from that species in being more flattened, in having the upper margin of each chamber distinctly overlapping, in having a sharper peripheral margin, and in having distinct spines on the end of each chamber. The sutures in *T. marielensis* Lalicker and Bermúdez are arched upward more than in *T. lateralis*.

TEXTULARIA CUBENSIS Lalicker and

Bermúdez, n. sp.

Plate 28, figures 3a-c

Test thick, subrhomboidal in front view, rectangular in top view, thickest at apertural end, periphery subacute; chambers few, low and broad, the upper margin of each chamber greatly thickened, causing it to overhang lower portion; sutures rather indistinct, being in a groove between raised upper margins of chambers; wall finely arenaceous, slightly roughened, with a large proportion of calcareous cement, thick; aperture a broad rather highly arched opening at the inner margin of the last-formed chamber, in a distinct reëntrant. Length of holotype, 0.75 mm.; greatest width, 0.74 mm.; thickness, 0.50 mm.

Type.—Holotype (Cushman Coll., no. 23,752) from upper Eocene, type locality, Principe formation, Loma Principe, cut between F and Avenida de los Presidentes Sts., 20 meters west of Monument Vedado, Havana, Cuba. Collected by P. J. Bermúdez, station No. 345. This species was not noted at any other localities in Cuba.

Remarks.—This species is similar to *Textularia excavata* Cushman, from the Pacific Ocean, but differs in having a greater overlap of the chambers, and in having a longer test in proportion to the width. It is also somewhat like *T. albatrossi* Cushman, but differs in having the aperture at the base of the last-formed chamber instead of above the base with a distinct lip, as in *T. albatrossi*.

TEXTULARIA MAGNIFICA Lalicker and

Bermúdez, n. sp.

Plate 28, figures 4a-c

Test large, subovoid in front and side views, subrectangular in top view, widest and thickest near apertural end, periphery broadly rounded throughout; chambers few, about as high as broad, the apertural chambers being rounded; sutures very indistinct, marked by a slight depression between the chambers; wall coarsely arenaceous, roughened, with calcareous cement between calcareous grains and small tests of other foraminifera, thick; aperture a low, broad, rather indistinct opening at the inner margin of the last-formed chamber. Length of holotype, 2.55 mm.; greatest width, 1.85 mm.; greatest thickness, 1.70 mm.

Type.—Holotype (Cushman coll., No. 23,400) from upper Eocene, Principe formation, Tejar Consuelo quarry (upper beds), Cerro, Havana, Cuba. Collected by P. J. Bermúdez, station No. 36. It is also present at Bermúdez stations Nos. 109, 337-A, and 367.

List of Bermúdez Stations

Station No.

- 18, Upper Eocene, Principe formation, Alturas de Almendares quarry, west side of Almendares River, Havana, Cuba.
- 20, Lower Eocene, Universidad formation (= Aragon formation, Mexico), Avenida de los Presidentes, Vedado, Havana, Cuba.
- 31, Upper Eocene, 1 km. north of Arroyo Arenas, on road to Jaimanitas, Havana Province, Cuba.
- 36, Upper Principe formation, upper Eocene, Tejar "Consuelo" quarry (upper beds), Cerro, Havana, Cuba.
- 92, Middle Eocene, under R.R. bridge on

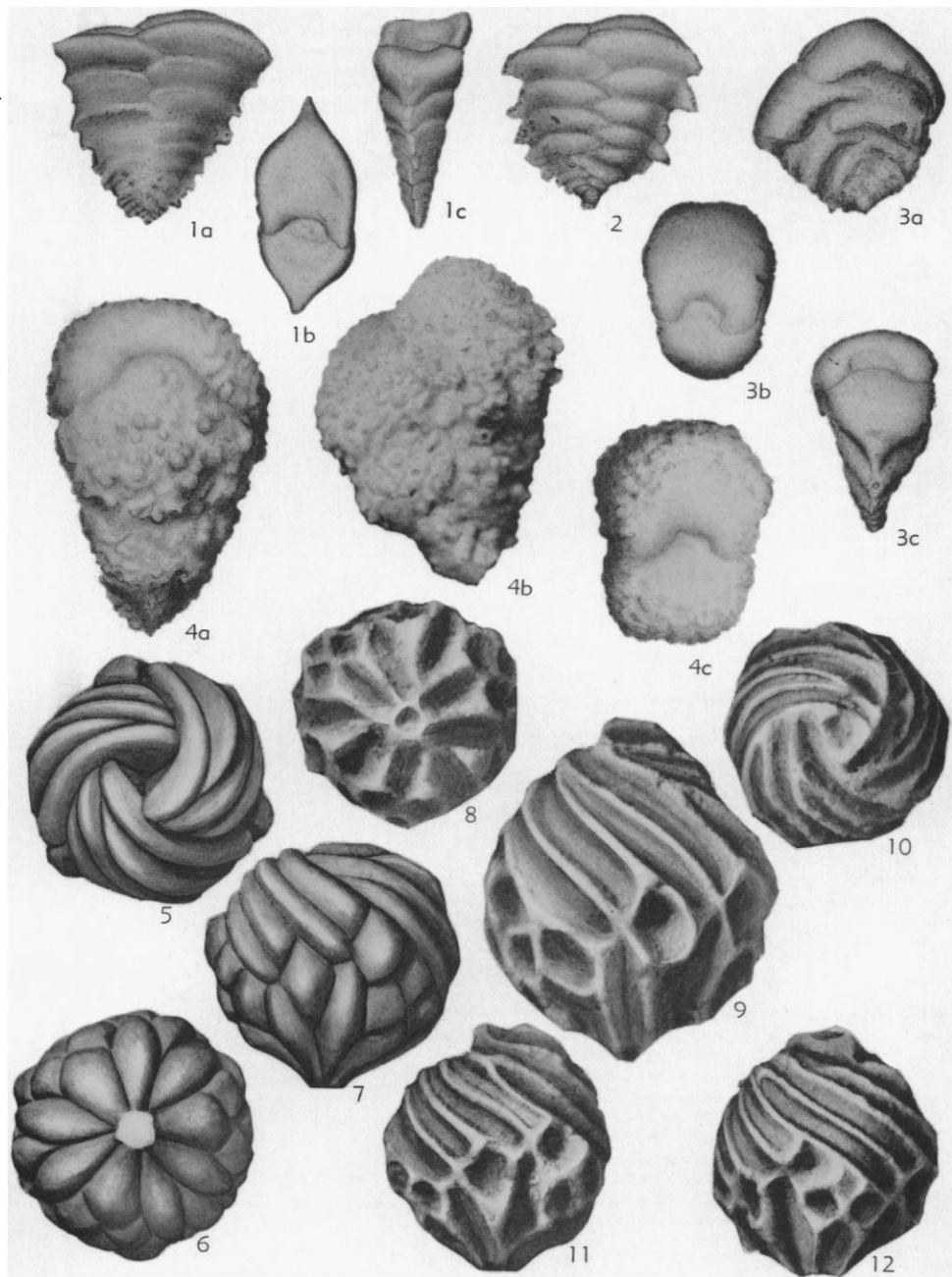
- highway in Jicotea, Santa Clara Province, Cuba.
- 109, Middle Eocene, Santa Catalina, 4 kms. northwest of Yaguajay, Santa Clara Province, Cuba.
- 110, Middle Eocene, Peñón Hole, 7 kms. south of Martí, Matanzas Province, Cuba.
- 257, Lower Eocene, type locality, Universidad formation, under Havana University Library, Havana, Cuba.
- 268, Upper Eocene, Noroña, north of Guanajay, Pinar del Rio Province, Cuba.
- 275, Same as 268 (lower beds).
- 283, Lower Eocene, Universidad formation, Tejar "Consuelo" quarry (lower beds), Cerro, Havana, Cuba.
- 285, Lower Eocene, "Cantera Grande," east side of Almendares River, Havana, Cuba.
- 286, Same as station 36 (Resample).
- 312, Lower Eocene, El Husillo quarry, Puentes Grandes, Havana, Cuba.
- 337-A, Upper Eocene, Jabaco formation, 4.5 kms. west of Guanajay on road to Mariel, Pinar del Rio Province, Cuba.
- 345, Upper Eocene, type locality, Principe formation, Loma Principe, cut between F and Avenida de los Presidentes Sts., 20 meters west of Monument Vedado, Havana, Cuba.
- 351, Lower Eocene, Tejar Toledo, Marianao, Havana, Cuba.
- 355, Middle Eocene, 5 kms. west of Palma Soriano, Central Highway cut, Oriente Province, Cuba.
- 357, Highway cut, 13.5 kms. west of Palma Soriano, Oriente Province, Cuba.
- 363, Highway cut, 4 kms. west of Baire; 47 kms. west of Palma Soriano, Oriente Province, Cuba.
- 367, Upper beds at R. R. Station in F. C. C. of Hershey, one-half km. north of Peñas Altas, Havana Province, Cuba.
- C. G. LALICKER, PHILLIPS PETROLEUM COMPANY, CORPUS CHRISTI, TEXAS. P. J. BERMÚDEZ, MUSEO POEY, UNIVERSITY OF HAVANA, HAVANA, CUBA. MANUSCRIPT RECEIVED BY THE EDITOR, DECEMBER 1, 1937.

REFERENCES

- COLE, W. S., 1928, A foraminiferal fauna from the Chapapote formation in Mexico: *Bull. Am. Paleontology*, vol. 14, no. 53, pp. 1-32, pls. 1-4.
- CUSHMAN, JOSEPH A., 1921, Foraminifera of the Philippine and adjacent seas: *U. S. Nat. Mus., Bull.* 100, vol. 4, 608 pp., 52 text figs., 100 pls.
- , 1923, The Foraminifera of the Vicksburg group: *U. S. Geol. Survey, Prof. Paper* 133, pp. 11-71, pls. 1-8.
- , 1926, Some new Foraminifera from the upper Eocene of the southeastern coastal plain of the United States: *Cushman Lab. Foram. Research, Contr.*, vol. 2, pp. 29-38, pls. 4, 5.
- , 1932, The genus *Vulvulina* and its species: *Cushman Lab. Foram. Research, Contr.*, vol. 8, pt. 4, pp. 75-85, pl. 10.
- HADLEY, WADE H., JR., 1934, Some Tertiary Foraminifera from the North Coast of Cuba: *Bull. Am. Paleontology*, vol. 20, no. 70A, pp. 1-40, pls. 1-5.
- LALICKER, CECIL G., 1935, Two new Foraminifera of the genus *Textularia*: *Smithsonian Misc. Coll., Johnson Fund*, vol. 91, no. 22, pp. 1, 2, pl. 1.
- ORBIGNY, ALCIDE D', 1846, *Foraminifères fossiles du Bassin Tertiaire de Vienne*. 4to. Paris, 312 pp., pls. 1-21.
- REUSS, A. E., 1869, Zur fossilen Fauna der Oligocänschichten von Gaas: *Sitz. Akad. Wiss. Wien*, vol. 59, Abth. 1, pp. 446-486, pls. 1-6.

EXPLANATION OF PLATE 28

- FIGS. 1a-2—*Textularia marielensis* Lalicker and Bermúdez, n. sp. 1, Holotype, X28; 2, paratype, X40. a, Front view; b, top view; c, side view. Upper Eocene, Pinar del Rio Province, Cuba. (p. 170)
- 3a-c—*Textularia cubensis* Lalicker and Bermúdez, n. sp. Holotype, X28. a, Front view; b, top view; c, side view. Upper Eocene, Loma Principe, Havana, Cuba. (p. 171)
- 4a-c—*Textularia magnifica* Lalicker and Bermúdez, n. sp. Holotype, X13. a, Side view; b, front view; c, top view. Upper Eocene, Cerro, Havana, Cuba. Figures 1a-4c drawn by Ann Shepard. (p. 171)
- 5-7—Summit, lateral, and basal views of a plaster model illustrating the probable appearance of a specimen of *Atopochara trivolvis* Peck, n. sp., on which the enveloping cells became almost filled with calcite. X33. (p. 174)
- 8-12—*Atopochara trivolvis* Peck, n. sp. 8, 10-12, Basal, summit, and lateral views of holotype from Magnolia No. 3 at 550 ft., Marshall County, Okla. 9, Lateral view of paratype from Sun-Williams No. 1 at 400 to 420 feet, Irion County, Tex. X33. (p. 174)



Lalicker and Bermúdez, Eocene Foraminifera
Peck, Cretaceous Charophytes