PALEONTOLOGY OF THE MISSISSIPPI RIVER MUDLUMPS: A REASSESSMENT OF THEIR FORAMINIFERAL FAUNA

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I. ABSTRACT

The Mississippi River Mudlumps are diapiric submarine prominences or islands, which occur within the mouths [or passes] of the Mississippi River. The foraminiferal assemblage of the Mudlumps was described by this writer in 1961 based upon the prolific faunules of Foraminiferida from these features, especially those located near the end of South Pass. This microfauna as described originally included numerous species with generic placements that are no longer valid. The new generic assignment for each of these taxa is listed herein and two new genera, *Picouella* and *Tidwellella,* are described to accommodate species that cannot be placed in existing genera.

II. INTRODUCTION

In 1961, a description of the foraminiferal assemblage of the Mississippi River Mudlumps was published as Geological Bulletin No. 35 of the Louisiana Geological Survey. These Mudlumps are diapiric submarine prominences or islands, which occur within the mouths [or passes] of the Mississippi River. The generic placements, as recognized at this early date, for many species are no longer valid. The corrected generic assignments for these species, as now recognized, are presented in Table I below. Two new genera are proposed and described herein for two species that cannot now be placed in existing available genera.

The taxonomic assignments of several decades ago were based on the best information available as viewed through the binocular microscope. Study with the Scanning Electron Microscope [an innovation developed about the time this study was completed] in subsequent years resulted in extensive modification of the classification of the Order Foraminiferida, utilizing elements of the wall structure and other features not visible with clarity under the binocular microscope. The fauna of the Mudlumps included twenty-seven species that must be reassigned, two species for which the species group names must be changed, and two species that cannot be placed in existing valid genera. These taxonomic changes are presented herein as Table I. The descriptions of the two new genera, *Picouella* and *Tidwellella*, follow below.

III. SYSTEMATIC DESCRIPTIONS

Genus PICOUELLA, new genus

Type species: *Cibicides corpulentus* Phleger and Parker, 1952.

Diagnosis: Test free, trochospiral, biconvex, eleven to thirteen chambers per volution, sutures limbate and elevated, periphery rounded; wall calcareous with granular microstructure; spiral side with secondary thickening of clear calcite concealing coils preceding final whorl; involute side with thickened, clear boss in umbilicus; both sides of test coarsely perforate; aperture interiomarginal and equatorial with lip. Known occurrence: Pleistocene and Holocene, Gulf of Mexico.

Remarks: This genus differs from *Cibicides* in being biconvex and having most of the early chambers covered by the thick mass of secondary clear calcite and from *Anomalinoides* in the larger number of chambers per volution and in the elevated and limbate sutures that thicken to produce the boss at the center of the involute side of the test.

This genus in named for Edward B. Picou, Jr., in appreciation for his friendship and contributions to my life, and in recognition of his superior knowledge in the geology and paleontology of the Gulf Coastal Plain region.

Taxonomic Note: Professor Barum K. Sen Gupta of the Geology and Geophysics Department, Louisiana State University, has directed my attention to an article in

the *Journal of Foraminiferal Research* (vol. 24, no. 4, pp. 296-304, October 1994). This article, by Stephen A. Revets, Department of Geology and Geophysics, University of Western Australia, is titled "The Status of the Genus *Anomalina* d'Orbigny, 1826," and includes an appeal to the International Commission on Zoological Nomenclature ".... to set aside *A. punctulata* as type species [of *Anomalina*] and instate *A. ariminensis* as the type species." If the ICZN, utilizing its plenary powers, accepts this proposal, the genus *Picouella*, described herein as new, will become a junior synonym of *Anomalina* d'Orbigny, 1826.

PICOUELLA CORPULENTUS
(Phleger and Parker)
Text-figure 1

Truncatulina akneriana FLINT (not d'Orbigny), 1899, U. S. Natl. Mus., Ann. Rept. for 1897, p. 333, pl. 77, fig. 5.

Cibicides robustus PHLEGER and PARKER, 1951, Geol. Soc. America, Mem. 46, pt. 2, p. 31, pl. 17, figs. 1-4; not *Cibicides robustus* Le Calvez, 1949, Mém. Explic. Carte Géol. dét. France, p. 47, pl. 4, figs. 5-7-59. [Lutetian, Paris Basin, France]

Cibicides corpulentus PHLEGER and PARKER, 1952, Cushman Found. Foram. Res., Contr., vol. 3, pt. 1, p. 14.

"Cibicides" corpulentus Phleger and Parker. ANDERSEN, 1961, Louisiana Geol. Surv., Geol. Bull. 35, pt. 2, p. 123, pl. 2, figs. 1a-c.

Diagnosis: Test low, trochospiral, nearly biconvex, eleven to thirteen chambers per volution, increasing in size as added and tapering to a rounded periphery bearing a band of clear, perforate calcite on its perimeter; chambers coarsely perforate on both sides of test; on spiral side chambers of final whorl nearly concealing the previous ones; chambers separated by limbate, elevated sutures that thicken and coalesce on proximal (inner) portion of chambers, producing a channel between coils extending into secondary thickening at center of spiral side; sutures radiating from clear boss at umbilicus, with only a slight curve at their distal ends near periphery; aperture interiomarginal and equatorial, extending to base of final one or two chambers on spiral side of test; with a small imperforate lip on equatorial portion of final chamber.

Remarks: As early as 1961, it was evident that *Cibicides* was incorrect as placement for this species. In 1988, this was confirmed by the restriction of *Cibicides* by Loeblich and Tappan to include only those species that are "planoconvex, [with] spiral side flat to concave" and with "test commonly attached to a substrate." However, no genus with generic characteristics of *Picouella corpulentus* was described by these authors. This species is abundant in Mudlump SP-5 and is widespread in the Gulf Coast region and fully worthy of recognition as a new and separate genus.

Genus TIDWELLELLA, new genus

Type species: *Planulina exorna* Phleger and Parker, 1951.

Diagnosis: Test free, trochospiral, strongly flattened or compressed, eight to ten chambers per volution; wall calcareous with granular microstructure; spiral side flat, may have secondary lamellae at center of coil; umbilical side partially or fully evolute; aperture interiomarginal with imperforate lip. Known occurrence: Pleistocene and Holocene, Gulf of Mexico.

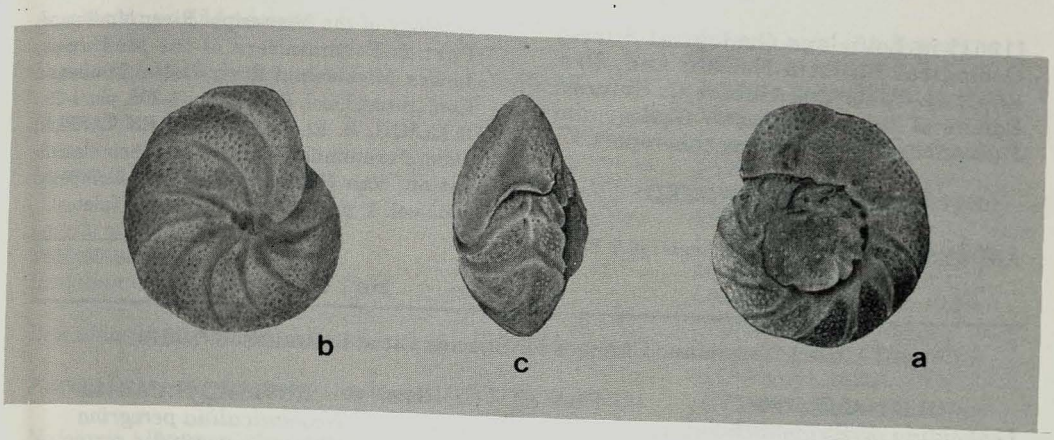
Remarks: This genus accomodates those flattened, trochospiral foraminiferal genera that are partially to entirely evolute but lacking the truncated perimeter of the genus *Planulina*. This genus is named for William L. Tidwell in appreciation for the sentiments expressed in his acknowledgments in the "Comprehensive Index of the GCAGS Transactions," published in May 1984, and for his contributions to his alma mater, Louisiana State University.

TIDWELLELLA EXORNA (Phleger and Parker)
Text-figure 2

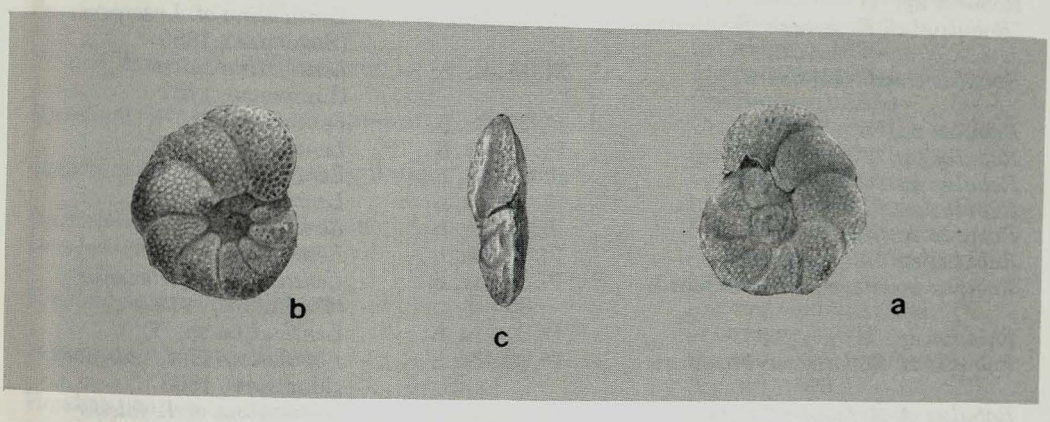
Planulina exorna PHLEGER and PARKER, 1951, Geol. Soc. America, Mem. 46, pt. 2, p. 32, pl. 18, figs. 5-8; PARKER, 1954, Museum Comp. Zool., Bull., vol. 111, no. 10, p. 504, pl. 11, figs. 28, 29.

Planulina mera Cushman. ANDERSEN, 1961, Louisiana Geol. Surv., Geol. Bull. 35, pt. 2, p. 125, pl. 29, figs. 3a-c.

Diagnosis: Test flattened, thin, eight to ten chambers per volution; wall coarsely perforate, including face of last formed chamber; sutures curved and limbate; spiral side flat to slightly



Text-figure 1. *Picouella corpulentus* (Phleger and Parker). X 40
No. 4480* a. spiral view; b. umbilical view; c. edge view.



Text-figure 2. *Tidwellella exorna* (Plhleger and Parker). X 40
No. 4478* a. spiral view; b. umbilical view; c. edge view.

depressed with secondary filling at center concealing primary coil; final two or three chambers lobate with depressed sutures; umbilical side equally as evolute as spiral side; chambers increasing in breadth with maximum thickness of last chamber nearly aligned with aperture, tapering from that point to periphery; aperture interiomarginal, equatorial, confined to last chamber of test, with a small, imperforate lip.

Remarks: The warped nature of some specimens indicates that at least some individuals were attached to the substrate like *Cibicides*.

* Numbers refer to the Dr. H. V. Howe Paleontological Collection, LSU.

IV. ACKNOWLEDGMENTS

The writer wishes to express his gratitude to the following for their contributions to this report: Dr. Gary Byerly, Chairman of the Geoscience Department, Louisiana State University (LSU), for the use of a petrographic microscope to ascertain the microstructure of the new foraminiferal genera described herein; Alvin Phillips, Jr., Curator of the Micropaleontological Collections, LSU, for assistance with the petrographic microscope; William Marsalis, State Geologist of Louisiana, for permission to use illustrations of the holotypes of the two new genera described herein, first published

[1961] in Louisiana Geological Survey Geological Bulletin No. 35; and, Drs. Emily H. Vokes and Hubert C. Skinner, Editors of *Tulane Studies in Geology and Paleontology,* for evaluating this report.

V. REFERENCES CITED

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LOEBLICH, A. R., Jr., and HELEN TAPPAN, 1988, Foraminiferal genera and their classification; Van Nostrand Reinhold Company, Inc.: vol. 1, p. 1-970; vol. 2, p. 1-847 [plates].

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TABLE I. Taxonomic Changes for Species Cited in Andersen, 1961

OLD NAME [1961]	PLATE: FIGURE(s)	REVISED NAME [1997]
Lenticulina peregrina (Schwager)	Pl. 10: 7a, b	*Neolenticulina peregrina* (Schwager), 1866
Robulus lowmani Andersen	Pl. 10: 8a, b	*Lenticulina lowmani* (Andersen), 1961
Robulus sp. "H"	Pl. 10: 9a, b	*Lenticulina* sp. "H"
"Robulus" cf. *R. serpens* (Seguenza)	Pl. 10: 10a, b	*Lenticulina* cf. *L. serpens* (Seguenza), 1880
Robulus calcar (Linnaeus)	Pl. 11: 1a, b; 2a, b	*Lenticulina calcar* (Linnaeus), 1767
Robulus sp. "B"	Pl. 11: 3a, b	*Lenticulina* sp. "B"
Robulus sp. "F"	Pl. 11: 4a, b	*Lenticulina* sp. "F"
Robulus sp. "G"	Pl. 11: 5a, b	*Lenticulina* sp. "G"
Robulus sp. "D"	Pl. 12: 1a, b	*Lenticulina* sp. "D"
Robulus sp. "C"	Pl. 12: 2a, b	*Lenticulina* sp. "C"
Robulus sp. "A"	Pl. 12: 3a, b	*Lenticulina* sp. "A"
Robulus bowdenensis (Cushman)	Pl. 12: 4a, b	*Lenticulina bowdenensis* (Cushman), 1919
Robulus sp. "E"	Pl. 13: 1a, b	*Lenticulina* sp. "E"
Robulus cf. *R. cultratus* Montfort	Pl. 13: 2a, b	*Lenticulina* cf. *L. cultratus* (Montfort), 1808
Robulus cf. *R. falcifer* (Stache)	Pl. 13: 3a, b	*Lenticulina* cf. *L. falcifer* (Stache), 1864
Robulus iotus (Cushman)	Pl. 13: 4a, b	*Lenticulina iotus* (Cushman), 1923
Marginulina villa Cushman	Pl. 14: 6a, b; 7a, b	*Siphomarginulina villa* (Cushman), 1947
Marginulina obesa Cushman	Pl. 15: 2a, b	[?] *Hemirobulina obesa* (Cushman), 1923
Marginulina cf. *M. glabra* d'Orbigny	Pl. 15: 6a, b	[?] *Hemirobulina* cf. *H. glabra* (d'Orbigny), 1826
Marginulina striatula Cushman	Pl. 15: 7a, b; 8a, b	[?] *Hemirobulina striatula* (Cushman), 1923
Marginulinopsis marginulinoides (Goës)	Pl. 15: 9a, b	*Percultazonaria marginulinoides* (Goës), 1896
Marginulinopsis subaculeata glabrata (Cushman)	Pl. 15: 10a, b	*Percultazonaria subaculeata glabrata* (Cushman), 1923
Vaginulinopsis planata (Phleger & Parker)	Pl. 15: 11	*Percultazonaria planata* (Phleger & Parker), 1951
Vaginulinopsis sp.	Pl. 15: 12a, b; 13	*Percultazonaria* sp.
"Nodosaria" pyrula d'Orbigny	Pl. 16: 1	*Grigelis guttifera* (d'Orbigny), 1826

Amphorina purii Andersen	Pl. 16: 6	*Lagena purii* (Andersen), 1961
Lagena halsteadi Andersen	Pl. 16: 10	*Pytina halsteadi* (Andersen), 1961
Lagena spirata Bandy	Pl. 16: 12	*Lagena striata* (d'Orbigny), 1839
Lagena inusitata Andersen	Pl. 16: 14	*Pytina inusitata* (Andersen), 1961
Lagena striata (d'Orbigny)	Pl. 16: 15	*Lagena spirata* Bandy, 1949
Dentalina sp.	Pl. 17: 2	*Marginulina* sp.
Dentalina cf. *D. subemaciata* Parr	Pl. 17: 3	*Laevidentalina* cf. *L. subemaciata* (Parr), 1950
Dentalina filiformis (d'Orbigny)	Pl. 17: 4	*Laevidentalina filiformis* (d'Orbigny), 1829
Pseudonodosaria comatula (Cushman)	Pl. 17: 9	[?] *Pyramidulina comatula* (Cushman), 1923
Nodosaria albatrossi Cushman	Pl. 17: 11	*Dentalina cuvieri* (d'Orbigny), 1826
Nodosaria fusta Cushman and Todd	Pl. 17: 12	[?] *Pyramidulina fusta* (Cushman and Todd), 1945
Pseudononion grateloupi (d'Orbigny)	Pl. 18: 3	*Nonionides grateloupi* (d'Orbigny), 1826
"Nonion" barleeanus (Williamson)	Pl. 18: 6	*Melonis barleeanus* (Williamson), 1858
Elphidium fimbriatulum (Cushman)	Pl. 18: 9	*Cribroelphidium fimbriatulum* (Cushman), 1918
Elphidium cf. *E. translucens* Natland	Pl. 18: 10	*Cribroelphidium* cf. *C. translucens* (Natland), 1938
Praesorites orbitolitoides Hofker	Pl. 19: 1	New undescribed genus
Loxostomum gelbi (Andersen)	Pl. 19: 7	[?] *Sagrina gelbi* (Andersen), 1961
Virgulina punctata d'Orbigny	Pl. 20: 1	*Fursenkoina punctata* (d'Orbigny), 1839
Virgulina complanata Egger	Pl. 20: 2	*Fursenkoina complanata* (Egger), 1893
Virgulina pontoni (Cushman)	Pl. 20: 3	*Fursenkoina pontoni* (Cushman), 1932
Bolivina cf. *B. albatrossi* Cushman	Pl. 20: 5	*"Bolivina"* cf. *B. albatrossi* Cushman, 1922
Bolivina barbata Phleger and Parker	Pl. 20: 6	*Brizalina barbata* (Phleger and Parker), 1951
Bolivina mexicana Cushman	Pl. 20: 7	*Brizalina mexicana* (Cushman), 1922
Bolivina fragilis Phleger and Parker	Pl. 20: 8	*Brizalina fragilis* (Phleger and Parker), 1951
Bolivina spinata Cushman	Pl. 20: 11	*Bolivinellina spinata* (Cushman), 1936
Discopulvinulina bertheloti (d'Orbigny)	Pl. 21: 3	*Discorbinella bertheloti* (d'Orbigny), 1939
Streblus beccarii tepida (Cushman)	Pl. 22: 2	*Strebolides beccarii tepida* (Cushman), 1926
Neoeponides regularis (Phleger and Parker)	Pl. 23: 3	*Eponides regularis* Phleger and Parker, 1951
Neoeponides antillarum (d'Orbigny)	Pl. 23: 4, 5	*Eponides antillarum* (d'Orbigny), 1839
"Eponides" cf. *E. tumidulus* (H.B. Brady)	Pl. 24: 5	[?] gen. et sp. undet.

Cassidulina subglobosa H.B. Brady	Pl. 25: 2	*Globocassidulina subglobosa* (H.B. Brady), 1884
Cassidulinoides mexicana (Cushman)	Pl. 25: 5	*Rutherfordoides mexicana* (Cushman), 1922
Globorotalia (Turborotalia) sp.	Pl. 26: 1	*Turborotalia* sp.
Globorotalia (Truncorotalia) cf. *Globorotalia hirsuta* (d'Orbigny)	Pl. 26: 2	*Truncorotalia* cf. *T. hirsuta* (d'Orbigny), 1839
Globorotalia (Truncorotalia) truncatulinoides (d'Orbigny)	Pl. 26: 3	*Truncorotalia truncatulinoides* (d'Orbigny), 1839
Globigerina eggeri Rhumbler	Pl. 27: 2	*Neogloboquadrina dutertrei* (d'Orbigny), 1839
Globigerinoides conglobatus (H.B. Brady)	Pl. 27: 5	*Alloglobigerinoides conglobatus* (H.B. Brady), 1879
Epistomina elegans (d'Orbigny)	Pl. 28: 4	*Hoeglundina elegans* (d'Orbigny), 1826
Cibicides floridanus (Cushman)	Pl. 28: 6	*Cibicidoides floridanus* (Cushman), 1918
"Cibicides" corpulentus Phleger and Parker	Pl. 29: 1	*Picouella corpulentus* (Phleger and Parker), 1952 [new genus]
Anomalina io (Cushman)	Pl. 29: 2	[?] *Anomalinoides io* (Cushman), 1931
Planulina mera Cushman	Pl. 29: 3	*Tidwellella exorna* (Cushman), 1944 [new genus]

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