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TWO GASTROPODS FROM THE LOWER
CRETACEOUS (ALBIAN) OF COAHUILA, MEXICO

BY

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CRETACEOUS (ALBIAN) OF COAHUILA, MEXICO

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ABSTRACT

A new species *Aporrhais mexicana* and another species related to *Pseudonerinea? presidiensis* Stanton, from a silicified zone in the Aurora limestone, are described and figured. They occur 133 feet stratigraphically below the widespread *Gryphaea mucronata* zone and are the first mollusks known to occur below that zone in the Sierra de Tlahualilo. The silicified limestone that yielded these fossils is correlated with the top of the Edwards limestone in the Fredericksburg group of Texas.

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INTRODUCTION

THE FOSSILS described in this paper are the first mollusks found in the Aurora limestone below the zone of *Gryphaea mucronata* in the Sierra de Tlahualilo, southwestern Coahuila. They occur on the north branch of Arroyo Ojo de Agua in a layer of silicified limestone, associated with layers and nodules of chert. The limestone is weathered brown and forms a prominent bench about 20 feet high at the base of a hill isolated by erosion by tributaries of Arroyo Ojo de Agua. The fossils are weathered in relief on the surface of the outcrop. Several blocks of the fossiliferous rock collected by Bob F. Perkins and the senior author in 1952 were

subsequently placed in an acid bath which dissolved the calcareous matrix and freed the siliceous fossils.

The authors have followed Taylor and Sohl (1962, pp. 10 and 11) in the familial and higher taxa of the genera *Aporrhais* and *Pseudonerinea*.

The specimens figured herein are catalogued and deposited in the collections of the University of Michigan, Museum of Paleontology.

ACKNOWLEDGMENTS

The University of Michigan, Museum of Paleontology expedition in the summer of 1952, when the fossils described herein were collected, was financed by grants from the Faculty Research Fund (Project 874) and the Michigan Memorial-Phoenix Project (No. 62). Besides the senior author the field party included Bob F. Perkins and Cecil Kersting, graduate students from the University of Michigan, Pedro Ayala from the *ejido* of Cordova as guide, Pantaleon Rodriguez also from Cordova as cook, and Julio Zertuche from Tanque Zapatero in the Laguna de Tlahualilo as *arrearo*.

The manuscript was critically read by Dr. R. V. Kesling and Dr. C. A. Arnold, members of the Editorial Board of the *Contributions from the Museum of Paleontology*. Their assistance is gratefully acknowledged. The authors are indebted to Dr. E. C. Stumm for suggestions on taxonomy. The fossils were photographed in the laboratory of the Museum of Paleontology by Mr. Karl Kutasi, the Museum's photographer; Mrs. Helen Mysyk typed the manuscript.

CORRELATION

The occurrence and stratigraphic position of this fossiliferous silicified zone in the Aurora limestone was first mentioned in a publication outlining the results of the field work in Mexico during the summer of 1952 (Kellum, 1953, p. 114). A more comprehensive description of the geology of this part of the Sierra de Tlahualilo was recently published by Kellum and Robinson (1963). The outcrop on Arroyo Ojo de Agua from which the fossils were obtained is the "locality 4" referred to in Perkins' Memoir (1960, p. 57) quoting a letter from the senior author to the effect that it is "at the top of the cliff-forming unit . . . below the *G. mucronata* zone." The interval between the two fossil-bearing zones at this locality is 133 feet.

The silicified zone is interpreted as the top of the Fredericksburg group although the faunal evidence is not compelling. Its position below the *G. mucronata* zone and above the bed of *Miliolina* limestone led to its tentative correlation with the upper part of the Edwards limestone of Texas and its designation as the top of the Middle Aurora limestone.

SYSTEMATIC DESCRIPTIONS

Phylum MOLLUSCA

Class GASTROPODA

Subclass STREPTONEURA

Order MESOGASTROPODA

Superfamily Strombacea

Family Aporrhaidae

Genus *Aporrhais* Da Costa, 1778

Type species.—By monotypy *Aporrhais quadrifidus* Da Costa. Costa, Da, E. M. 1778, p. 136, Pl. 7, Fig. 7.

A P O R R H A I S *subfuscus, anfraetibus nodosis, labro palmato quadrifido. Quadrifidus.*

Remarks.—Da Costa (1778, p. 136) placed his new genus *Aporrhais* in the family of "Murices or Rocks" . . . Turbinated univalves, whose mouths are oblong, narrow, and end in a gutter or beak. The animal is a slug.

This family subdivides into four genera, viz. 1. *Murices*, or *rocks*. 2. *Rhombi*; of a rhombic shape, or contour. 3. *Alatae*, *winged*; whose outer lip expands into a large entire flap or wing. And 4. *Aporrhaidae*, *digitated*; whose flap or wing is cut or slash'd into spikes or fingers.—Of this family, one species only, of the 4th genus, has as yet been discovered in our *British seas*.

Shimer and Shrock (1944, p. 499) delineate the genus *Aporrhais* as: "Like *Anchura*, but lip with posterior canal either closely adhering to spire or free from same; whorls strongly biangulate; outer lip expanded, lobed or digitate. Jura-Recent."

Aporrhais mexicana Kellum and Appelt, sp. nov.

(Fig. 1, A-D)

Description of holotype.—Shell rather large for the genus, resembling *A. brittsi* Stanton in general form; apical angle about 38 degrees; spire of five whorls, each prominently turreted by a high spiral ridge, just anterior to the middle of the whorl, and bearing spirally lengthened clavi or tubercles along the angulation; the whorl, concave above and below this ridge, is crossed by broad, low, axial undulations; faint axial crenulations are visible along the anterior suture above the body whorl; surface of the shell ornamented with fine revolving threads, about four in number above the angulation and eight below it on each whorl of the spire; last whorl

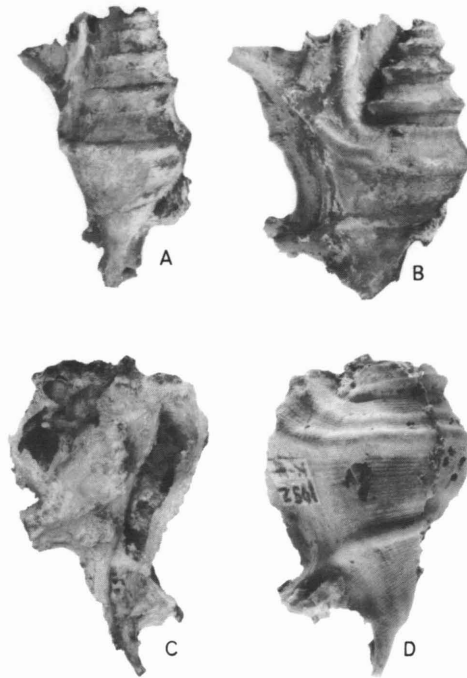


FIG. 1. *Aporrhais mexicana* Kellum and Appelt. A. Side view of holotype, UMMP 47498, showing ovate wrinkle of callous resembling a small aperture. B. Side view of holotype opposite the true aperture, showing the expanded outer lip and prominent spiral ridges extending to angles at margin of the lip. C. Apertural view of hypotype, UMMP 47497, showing the long, narrow aperture and long anterior canal curving to the right. D. Side view, opposite the aperture, same specimen as C, showing coarse spiral ridges and ornamentation of fine revolving threads. All natural size.

with three very prominent, rounded, carinae or spiral ridges which diverge anteriorly and pass out to projecting angles on the margin of the broadly expanded, thin, outer lip or wing; the middle carina continues posteriorly as the prominent spiral ridge, noted previously near the middle of the earlier whorls, the anterior or lowest carina, extends about half way around the body whorl to the inner lip or callous of the aperture, the posterior or highest carina, beginning at the last or anterior, radial, axial undulation that crosses the upper or posterior part of the body whorl, is only present near the aperture where the broad outer lip begins to flare to form the wing, that climbs nearly to the apex of the turreted spire; a broader, less prominent spiral undulation about equidistant between the two more prominent anterior spiral carinae of the body whorl, extends

from the inner lip or callous of the aperture nearly to the area where the outer lip begins to flare.

Aperture of the holotype, obscured by heavy deposit of silicified rock, has the inner lip coated with callous that extends about half way around the shell, to an outer margin directly opposite the flaired wing; the callous, thickened greatly on anterior or lower half of whorl, is firmly cemented above and below to the shell but in the middle its margin forms a broadly ovate loop or pocket resembling a small aperture; at the broken anterior end of the shell the callous, wrapped loosely around the columella, forms a pseudo-umbilical opening.

Dimensions of holotype.—The holotype, incomplete at apex and columella, measures 33.1 mm in height and 20 mm in greatest width exclusive of the expanded wing, or 34.7 mm including the wing. With the apex of the spire and the columella restored the height would be about 41 mm.

Description of hypotype.—Another specimen, UMMP 47497, from the same locality and not so well preserved as the holotype, shows certain additional features and some minor variations. The aperture long and narrow, approaching rectangularity at the top or posterior end and extended anteriorly in a long canal curving to the right; the body whorl with three very prominent, coarse carinae or spiral ridges, as in the holotype, but the posterior one, between the suture and the prominent angulation of the whorl, persists with decreasing prominence around the body whorl and is visible on the preserved fragment of the next younger whorl; a coarse spine, partly concealed by silicified rock, is present on the body whorl to the left of the aperture and below the anterior spiral ridge. The callous on the inner lip of the aperture wraps around the columella to form a pseudo-umbilical opening about 9.3 mm above the incomplete end of the anterior canal; the callous is not so thick or so well preserved as on the holotype and does not show the ovate loop or pocket of that specimen.

Dimensions of hypotype.—The hypotype which preserves the body whorl and most of the next whorl is 44.4 mm in height and 24.9 mm in greatest width exclusive of the expanded wing, or 27.8 mm including the incomplete wing.

Remarks.—*A. mexicana* differs from *A. brittsi* Stanton (1947, pp. 104–105, Pl. 65, Figs. 22 and 23) in having the whorls of the spire concave above and below a subcentral spiral angle, giving the spire a more turreted appearance; the surface of the whorls is ornamented with numerous, parallel, revolving threads; midway between the two coarse, widely spaced, spiral carinae, or ridges, on the body whorl is a broad, low, spiral undulation.

Types.—Holotype, UMMP 47498; hypotype, UMMP 47497.

Occurrence.—Aurora limestone, 133 ft. below the zone of *Gryphaea mucronata* at locality on north tributary of Arroyo Ojo de Agua nearly 2 miles N 40° 15' E of the well at Ojo de Agua.

SUBCLASS Euthyneura

Order ENTOMOTAENIATA Cossman 1896, emend. 1921

Superfamily Nerineacea

Family Ceritellidae

Genus *Pseudonerinea* P. de Loriol 1890

Loriol, de P., 1890, p. 81.

Type species.—*Pseudonerinea blauenensis* P. de Loriol, 1890, Pl. X, Figs. 1–5, by subsequent designation of Dietrich, 1925.

Remarks.—Smooth, without folds or in old age the folds (3) disappearing similar to *Pseudomelania*. Shell with shallow canal and flattened suture band. Aperture with deep incision (slit-like notch) at the suture. Lias—Lower Cretaceous." (Dietrich, 1925, p. 18. Translated from the original German.)

Shell elongated, conical, imperforate, smooth. Spire pointed at the summit, composed of whorls coiling at a regular angle. Aperture narrow, oval elongated, narrowing anteriorly and posteriorly, terminating anteriorly in a distinct canal, and notched posteriorly by a rather long sinus. As the shell developed this sinus closed, but it left a trace in the form of a narrow band, very apparent, running parallel to the suture. Columella cylindrical, without folds. No fold on the lip.

Similarities and differences.—Similar to *Nerinea* the *Pseudonerinea* is distinguished by the absence of teeth and of folds on the lip and the columella. They differ from *Aptyxiella* by their more conical form, their narrower aperture, narrowing anteriorly and posteriorly and terminating anteriorly in a very distinct canal, and finally in the presence of a sinus and a sutural band. They are equally close to *Pseudomelania*, particularly some species such as *Ps. clio*, which possessed a sutural band, and differ only in the presence of a well characterized anterior canal.

I know of only two species in the rauracian stage of the Berner Jurassic; a third species probably exists in England at the same horizon.

(P. de Loriol, 1890, p. 81. Translated from the original French.)

Pseudonerinea sp. aff. *P.?* *Presidiensis* Stanton

(Fig. 2, A and B)

Description.—A slender incomplete shell, preserving three whorls, that are flattened or gently convex; apical angle about 13°; suture impressed; slitband beneath the suture moderately narrow, limited below by a faint, impressed line; surface smooth; last whorl broadly rounded below; aperture ovate, narrowing posteriorly; edge of outer lip and canal broken; external part of columella, short, stout, incomplete; without internal folds.

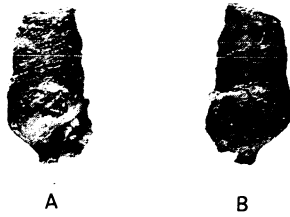


FIG. 2. *Pseudonerinea* sp. aff. *P.?* *presidiensis* Stanton, UMMP 47496, A. Apertural view; B. Side view opposite the aperture, showing slitband beneath the suture. Natural size.

Dimensions.—Height of three anterior whorls 21.8 mm; greatest width of body whorl 12.2 mm; aperture 8 mm high; complete shell probably had 8 or 9 whorls with a height of 55 to 60 mm.

Remarks.—Our specimen probably lost growth lines and most of the spiral, impressed line bordering the slit band during recrystallization. It tapers somewhat more gently than *P.?* *presidiensis* but resembles it in the nearly flat whorls and in the shape of the aperture. Stanton, 1947, p. 95, remarks that the Texas species referred to *Pseudonerinea?* show considerable latitude of variation. The type specimens of *P.?* *presidiensis* Stanton were collected in Chihuahua on the south side of the Rio Grande opposite Presidio, Texas. Stanton states that the stratigraphic position of the species was not well determined but was probably high in the Washita. Our specimen is either at the top of the Fredericksburg group or low in the Washita.

Figured specimen.—UMMP 47496.

Occurrence.—Aurora limestone, 133 ft. below the zone of *Gryphaea mucronata* at locality on north tributary of Arroyo Ojo de Agua, nearly 2 miles N 40° 15' E of the well at Ojo de Agua.

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