A SECOND CRETACEOUS MURICID FROM THE GULF COASTAL PLAIN

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The author (Garvie, 1991) described the first Cretaceous muricid species *Poirieria (?Paziella) cretacea* in the New World, from the Kemp Clay (Maastrichtian) of Texas, so it was with particular satisfaction that a second muricid species was discovered in the Coffee Sand (Campanian) of Mississippi. The author, his wife, and David T. Dockery of the Mississippi Geological Survey collected bulk samples from the fossiliferous bed "E'"in the Tupelo Tongue of the Coffee Sand; the specimen was subsequently discovered after disaggregation and screening of the sediment. The reader is referred to Dockery (1990) and Sohl (1964b) for a discussion of the geology of the Coffee Sand. Nannoplankton and ammonites indicate the age of the fauna to be Early/Middle Campanian in the American sequence. To date *P. cretacea* and the renamed species *Poirieria (?Paziella) cenomae* Garvie, 1991, from Saxony in eastern Germany, were the only definite Cretaceous muricids known.

An examination of the Cretaceous collections in the British Museum (Nat. Hist.) has revealed one further Cretaceous muricid; this specimen (G 65579) labelled *Murex*(?) sp. is from the Providence Shales (Campanian) of Jamaica. The specimen, although very poorly preserved, shows four or five spines and is quite similar in size and shape to *P. cretacea* and should probably be assigned to the same genus s.l. If the age of the Jamaican specimen is indeed Campanian, the *Poirieria* stock is much older than previously believed and shows remarkably little change over time.

Several authors have assigned Cretaceous species to the Muricidae, particularly in the 19th century when the science of taxonomy was less discerning than it is today. Most fusoid species with spines and a denticulate inner surface of the outer lip were erroneously assigned to either *Murex, Triton,* or *Tritonium*. The majority of these would now be placed within the Cymatidae. Other genera which have been placed in the Muricidae include: *Pyrifusus* in Meek (1876), now placed in the Melongenidae: *Sargana* and *Lowenstamia* in Wade (1926), now in the Cancellariidae and Ficidae respectively; and *Triton* or *Tritonium* (Pictet and Campiche, 1858-60; Binkhorst, 1861; and Zekeli, 1852), now in the Cymatidae. In the earlier Woodbine fauna of Texas (Cenomanian), monographed by Stephenson (1952), Muricidae are absent and there are only three species in the related family Fusinidae.

The writer is indebted to David T. Dockery, III for encouragment to describe this Cretaceous muricid, particularly as he is in the process of monographing the remaining Coffee Sand molluscan fauna. Thanks also go to John Cooper, Noel Morris and Paul Jeffery at the British Museum (Natural History) for access to the collections and the use of microscopes and other facilities. Particular thanks go to Emily H. Vokes for her invaluable review.

Phylum MOLLUSCA
Class GASTROPODA Cuvier, 1797
Subclass PROSOBRANCHIA Milne-Edwards, 1848
Order NEOGASTROPODA Wenz, 1938
Superfamily MURICACEA Rafinesque, 1815
Family MURICIDAE da Costa, 1776
Subfamily MURICINAE da Costa, 1776
Genus POIRIERIA Jousseaume, 1880

Poirieria JOUSSEAUME, 1880, Le Naturaliste, Année 2, no. 42, p. 335.

Type species: *Murex zelandicus* Quoy and Gaimard, 1833, by original designation.

Subgenus PANAMUREX Woodring, 1959

Panamurex WOODRING, 1959, U.S. Geol. Surv., Prof. Paper 306-B, p. 217.

Type species: *Murex gatunensis* Brown and Pilsbury, 1913, by original designation.

POIRIERIA (? PANAMUREX) DUOCLAVUS Garvie, n. sp.
Text-figure 1

Description: Shell small, broadly fusiform, tip of spire broken, 3 1/2 strongly carinated whorls remaining. Earliest whorl with 12 ribs, body whorl with nine, the ribs diminishing in size towards impressed suture and canal. On the carina ribs developing into low transversely flattened nodes, which in two places on the body whorl become foliated spines. Spiral sculpture

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overriding the axial, consisting of four weak cords on the shoulder, one strong one on the carina, two similarly strong ones below. Body whorl with the three original cords on the shoulder, nine stronger cords below, and three additional weaker lines, two of them margining the carinal cord, one at the start of the canal. Suture impressed, moderately swollen below. Surface smooth and polished. Between carinal nodes, lines of growth abaperturally broadly U-shaped and centered on the carina; on nodes narrowly U-shaped; on larger spine behind the lip and vestigial spine on opposite side of the body whorl strongly pulled back into a narrow V. Aperture moderately large, anal sulcus broad, outer lip serrate and open into the final spine. A short distance behind the outer lip, the shoulder thickened and varix-like, however not continuing on below the carina. Labrum with six strong denticles. Labium posteriorly with two lirae and one weak denticle; anteriorly with four elongated denticles. Siphonal fasciole strong, canal short, narrow and twisted towards the left.

Dimensions of holotype: height 49.2 mm, diameter (including spines) 30.2 mm.

Holotype: USNM 465512.

Type locality: Griffin sandpit, bed E, "Friendship Locality," east of Chapelville, Lee County, Mississippi (*fide* Nolf and Dockery, 1990).

Occurrence: Coffee Sand, Cretaceous (Campanian age).

Discussion: The strong spiral sculpture, basal denticles on the inner lip and denticles on the interior of the outer lip are all characteristic of *Panamurex*. Prior to this report the oldest known *Panamurex* was *P. macneili* Vokes, 1970, from the Oligocene of Mississippi. The lirae on the posterior end of the labium are not seen on any Tertiary species of Muricinae; this feature and the long time interval between the Campanian and the Oligocene is cause for the questionable assignment to *Panamurex*.

Just recently, Vokes (1992) has described several species of *Panamurex* from the U.S. and Caribbean area of which *Poirieria (Panamurex) gibsonsmithi* shows the strongest resemblance to *P. duoclavus*, remarkable considering the long time interval between the two.

A few Cretaceous species previously assigned to the Muricidae might be considered for a comparison with *P. duoclavus*. Pictet (1854-73) assigned four species to *Murex* and one to *Triton*. Most of his species are internal steinkerns and so impossible to assign with any confidence, and those with remaining external sculpture would be assigned today to the Cymatidae. In any case none of those species shows any resemblance to *P. duoclavus*. *Triton koninckí*, from the Maastrichtian at Limbourg, figured in Binkhorst (1861), is better placed in *Ranella*.

From the Turonian Cretaceous of Gosau, Zekeli (1852) described *Tritonium gosauicum*, a broadly fusoid species with an elongated aperture, labral denticles, a strong anal notch and a short canal. Stoliczka (1867) believed this should be assigned to *Simpulum* (= *Monoplex* Perry, 1811) but is near *Sassia*. A closer species, and possible muricid, is *Tritonium gravidum* Stoliczka, 1867, from the Arialoor Cretaceous of southern India. This species, described from imperfect material, has rounded whorls, short spines, varices spaced two-thirds of a whorl apart and a sculpture of dense striations between the stronger lines; its exact placement must await a closer examination. From California, Gabb (1864) described four species of *Tritonium* from the Cretaceous, all of which are now known to come from the Eocene. Stewart (1926) revised Gabb's species and reassigned *T. whitneyi* to *Murex* s.l., which Vokes (1971) placed questionably in *Hexaplex*. This species shows greater similarity to *P. duoclavus* than the preceeding, although it is more elongated and has a prominent doubly noded periphery.

Poirieria (?Panamurex) duoclavus does appear to have a marked similarity to *Tritonium univaricosum* Wade, 1926, known only from the Ripley Formation of Coon Creek, Tennessee. Sohl (1960) figured a hypotype and placed the species doubtfully in *Charonia*, due partially to a lack of good material. Sohl had four incomplete specimens, the largest of which he estimated at 50.0 mm; his figure, as well as Wade's original figure shows a small spine on the apertural carina. The author has a specimen that is complete except for a worn protoconch, 87.3 mm in height, where the spine is proportionately more developed. Aside from the differing whorl shapes and relative strength of the spiral sculpture the following can be observed: in *T. univaricosum* the shape of the growth lines is essentially the same whether they run over the varicose ribs, the spaces between them or over the single spine. In *P. duoclavus* however, the growth lines are abapturally pulled back from the aperture

over the two spines and to a lesser extent on all the ribs; this allows the animal to place the entire aperture very near to the ground. All species of Muricidae have this feature to a greater or lesser extent. The labral features also differ between the two species; *T. univaricosum* has a strong ridge margining the columella but *P. duoclavus* has a few short denticles, a feature also shown by *Hexaplex (H.) texanus* Vokes, 1968 and characteristic of *Panamurex* Woodring, 1959. Were the species somewhat shorter and without the spinal process, *T. univaricosum* could easily be assigned to a subgenus of *Hydrotribulus*, a genus that Sohl (1964a) assigns to the Olividae!

Paradoxically, *P. duoclavus* appears to be more closely related to *P. (Paziella) harrisi* Vokes, 1970, from the Porters Creek Formation (Paleocene) than to the similar, but Late Cretaceous *P. cretacea* from the Kemp Clay. One could easily surmise *P. duoclavus* to be the ancestor of *P. harrisi* by a reduction in its spiral ornamentation, the loss of the labial dentition and a transformation of the rounded ribs into varices.

As to a precursor of *P. duoclavus*, the similarities to species of *Buccinopsis* from the Coffee Sand and Ripley Formation are suggestive of a common but distant ancestor. The Coffee Sand species is interesting in that it suggests that the early development of the muricid varicial spines first occurred in the adult and only chronologically later in the juvenile stage.

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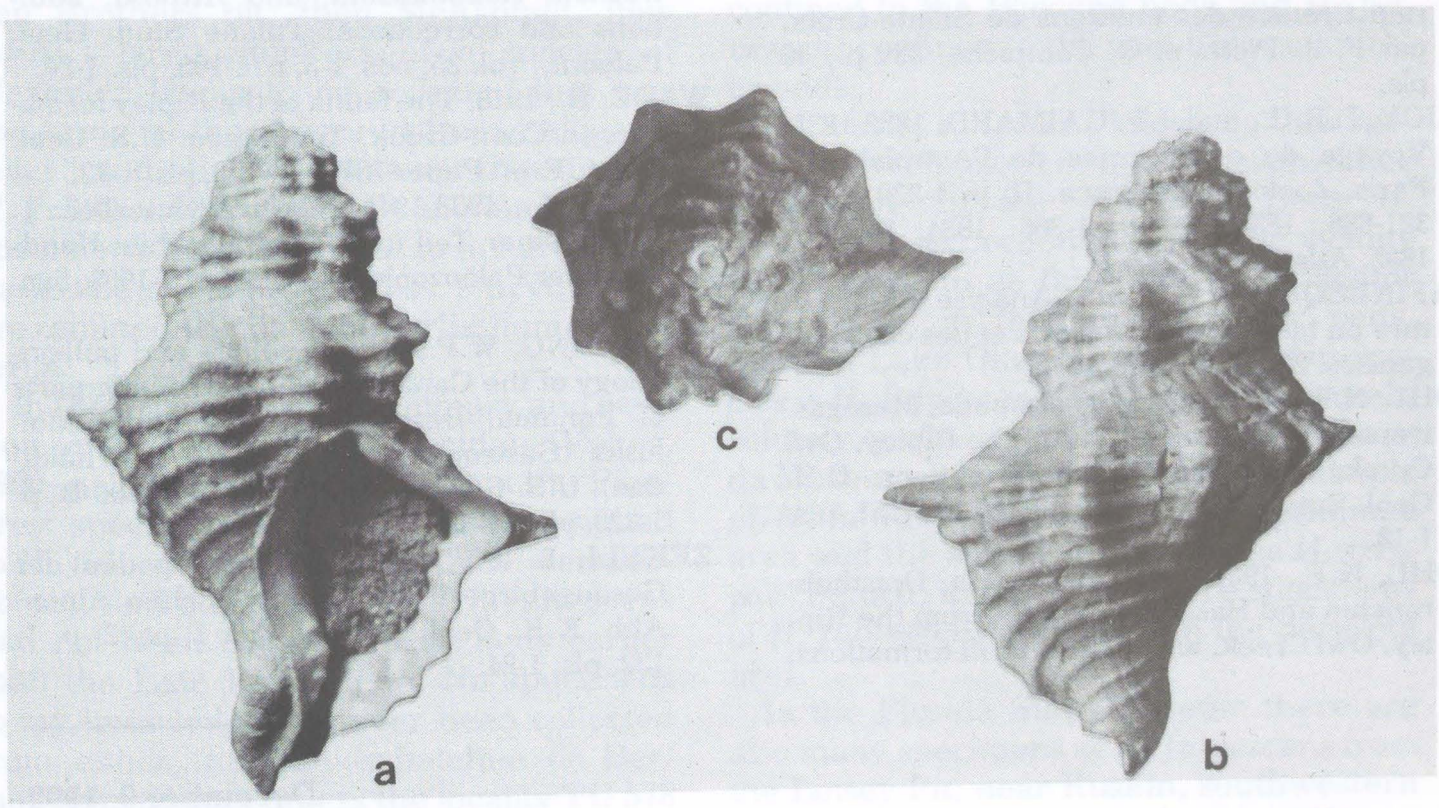

Text-figure 1. *Poirieria (? Panamurex) duoclavus* Garvie, n. sp. USNM 465512 (holotype); height 49.2 mm, diameter (including spines) 30.2 mm (X 1.2); Griffin sandpit, bed E, east of Chapelville, Lee County, Mississippi.

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