

New Species of Tropical Eastern Pacific Turridae

BY

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(2 Plates)

INTRODUCTION

A REVISED CLASSIFICATION of the eastern Pacific members of the family Turridae has been prepared by the senior author as a contribution to the forthcoming revised edition of *Seashells of Tropical West America*, by Dr. Myra KEEN. During the course of this review, a number of new species have been recognized in the available collections. The new species are validated here for inclusion in the new edition, which is to be published during the summer of 1971.

The 53 new species plus 10 described by Donald R. Shasky (1971) comprise approximately 25% of the total of 255 shallow water species of Panamic Province turrids entered in the text. Omitting the endemic species discussed below from the Galápagos Islands, the percentage of new species in the fauna drops to 19%, still a rather high percentage. There remain, in the collections at hand, about 20 species that are obviously new, but not described at this time, for lack of a fully mature specimen in good condition, or because some were recognized too late to be included in the book. Doubtless many more are yet to be found.

Two considerations may help to explain this high percentage of new species in a faunal province that is otherwise reasonably well known. First, the difficulty until now, of identifying previously described species of turrids because of the general lack of good illustrations. With the exception of the effort by KEEN (1958) in the first edition, there are no recent attempts at compilation, the papers

dealing with the family consisting of descriptions of new species. Second, many of the species are truly rare in collections, the bulk of them occurring offshore rather than intertidally, and many of them are of seemingly limited distribution within the faunal province.

The richness of the collections available to us has alleviated the difficulty arising from scarcity of material, while solutions to the problems encountered in dealing with the older species are discussed by McLEAN (1971).

The Galápagos Islands are the type locality for 19 of the new species. One from the Gulf of California is recognized also at the Galápagos. Nine previously described species are endemic to the Galápagos and 7 are known to occur at the Galápagos in addition to the mainland. Of the total of 36 Galapagan turrids, the 28 endemics therefore represent 78% of the species.

Sources of the type lots of the new species are as follows: 20, Hancock Foundation Collection, 7 of which are from the Galápagos; 12, André and Jacqueline DeRoy, all from the Galápagos; 5, McLean on LACM field expeditions; 5, Shasky Collection; 3, Poorman Collection; 3, collection of the late George Willett in LACM; and one each from the California Academy of Sciences, Margaret Cunningham, Norman P. Currin, the late Howard Hill (collection at LACM), and Peter M. Oringer.

In this collaboration the contributions of the junior author include the taking of all the photographs, preparation of an early first draft on each of the new species, and help in the sorting of the LACM collection during the early stages of the entire project. The senior author is responsible for the generic allocations and preparation of the final draft.

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Repositories for type materials described herein are as follows: AHF, Allan Hancock Foundation, University of Southern California (gastropod collection on loan to LACM); AMNH, American Museum of Natural History, New York; ANSP, Academy of Natural Sciences, Philadelphia; CAS, California Academy of Sciences, San Francisco; LACM, Los Angeles County Museum of Natural History; MCZ, Museum of Comparative Zoology, Harvard University; SBM, Santa Barbara Museum of Natural History; SDNHM, San Diego Natural History Museum; SU, Stanford University, Paleontological Museum; USNM, United States National Museum of Natural History.

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1. *Calliclava jaliscoensis* McLean & Poorman, spec. nov.

(Figure 1)

Description of Holotype: Shell small for the genus, surface glossy, color pinkish white, most intense between the axial ribs at the periphery, back of last whorl with a faint orange flush; slender, length of aperture about $\frac{1}{4}$ the length of the shell. Protoconch of 2 whorls, with a low carination from the start; postnuclear whorls 8. Axial ribs 7 on early whorls, increasing to 9 on penultimate whorl, obsolete on the shoulder and base but forming elongate nodes at the periphery; spiral sculpture of irregularly spaced striae, approximately 9 on the penultimate whorl, more deeply incised across the base; lip preceded by a slightly more prominent axial rib $\frac{1}{3}$ turn back. Sinus deep,

U-shaped, bordered by curved parietal callus on the inside; lip edge nearly straight, stromboid notch well marked; anterior canal short, flexed to the left and deeply notched; columella slanted to the left; parietal wall and inner lip slightly raised. Height, 12.3, diameter, 4.1 mm.

Type Locality: Tenacatita Bay, Jalisco, Mexico ($19^{\circ}17' N$, $104^{\circ}50' W$), 20–40 fathoms, 18 February 1938, 8 specimens dredged by George Willett.

Type Material: Holotype, LACM 1465, 1 paratype, LACM 1466, single paratypes, AMNH, ANSP, CAS, SDNHM, SU, and USNM.

Referred Material: LACM, 7 lots, including Banderas Bay, Tenacatita Bay, Cuastecomate Bay, Mexico; Puerto Culebra, Costa Rica, 5–20 fathoms.

Discussion: Smallest of the *Calliclavas*, specimens from the same lot may be deep pink, faintly pink, or white without a trace of color. It is the only species so marked and is readily distinguished from the others. The species is evidently common off the Mexican state of Jalisco, hence the name.

2. *Calliclava lucida* McLean & Poorman, spec. nov.

(Figure 2)

Description of Holotype: Shell of medium size for the genus; surface glossy, color flesh pink with irregular chestnut mottling in the shoulder area; length of aperture about $\frac{1}{3}$ the length of the shell. Protoconch large, 2 whorled, with a low carination from the start; postnuclear whorls 8. Axial ribs 9 on the early whorls, increasing to 14 on the penultimate whorl, extending diagonally across the weakly channeled shoulder from suture to suture, nearly obsolete upon the final whorl; spiral sculpture of broadly spaced striae, more pronounced upon the base; lip preceded by an axial swelling $\frac{1}{4}$ turn back, broadly marked with chestnut color. Pillar constricted below the flat-sided profile, columella slanted to the left, callus slightly raised; sinus deep, U-shaped, bounded by curved parietal callus on the inside; lip not greatly thickened, stromboid notch of moderate depth; anterior canal short, deeply notched. Height, 16.0, diameter, 5.9 mm.

Type Locality: Off Punta Gorda, southeastern Baja California ($123^{\circ}08' N$, $109^{\circ}35' W$), 10–20 fathoms, 5 April 1966, 1 specimen dredged by James McLean on the *R/V Sea Quest*, LACM station 66-18.

Type Material: Holotype, LACM 1467.

Referred Material: LACM 66-17, 2 specimens, off Rancho

Palmilla, Baja California; LACM 66-14, 1 specimen off Cape San Lucas, Baja California, 10–20 fathoms; CAS hypotype 12257, CAS locality 17691, 45 fathoms off Arena Bank, figured as "*Clavus hecuba* Dall," (KEEN, 1958: 448; fig. 733).

Discussion: *Calliclava lucida* is less strongly shouldered than most members of the genus and readily distinguished by its color pattern of brown mottling on pink. The name is a Latin adjective, shining or bright, with reference to the high gloss of the shell.

3. *Calliclava rhodina* McLean & Poorman, spec. nov.

(Figure 3)

Description of Holotype: Shell of medium size for the genus, dark pink, subsutural band yellow-brown; slender, length of aperture about $\frac{1}{4}$ the length of the shell, suture impressed, shoulder rounded. Axial ribs 9 on early whorls, increasing to 14 on penultimate whorl, extending across the shoulder and base and becoming obsolete upon the pillar; axial sculpture of numerous fine striae, more broadly spaced and prominent upon the pillar; lip preceded by a more prominent axial rib $\frac{1}{4}$ turn back. Sinus deep, U-shaped, bounded by curved parietal callus on the inside; lip edge nearly straight, stromboid notch moderately deep; anterior canal short, slanted to the left and deeply notched; siphonal fasciole prominent, parietal wall broad, inner lip raised. Height, 20.3, diameter, 6.2 mm.

Type Locality: Isla Grande Bay, Guerrero, Mexico (17° 42' N, 101° 41' W), 5 specimens collected by W. J. Seaholm, 1940 or earlier. The type lot was given to the late Howard Hill of LACM, who retained 3 specimens and distributed 2 to CAS.

Type Material: Holotype, LACM 1468, 1 paratype, LACM 1469, 1 paratype, USNM, 2 paratypes, CAS.

Referred Material: CAS locality 17853, Tangola Bay, Oaxaca, Mexico, 13 fathoms, 2 specimens.

Discussion: *Calliclava rhodina* has a shorter aperture in relation to the length of the shell than most of the *Calliclavas* and is distinctively colored, no other species being dark pink with a yellow brown shoulder. Although a complete protoconch is lacking on all 7 specimens, the short anterior canal and thickened axial rib on the back of the last whorl suggests allocation to *Calliclava*. The specimens from Tangola Bay show more pronounced beading at the sutural termination of the axial ribs. The name is Latin, an adjective meaning prepared from roses, with reference to the characteristic color.

4. *Calliclava subtilis* McLean & Poorman, spec. nov.

(Figure 4)

Description of Holotype: Shell of medium size for the genus, white, with a faint pink tinge; length of aperture about $\frac{1}{3}$ the length of the shell. Protoconch of 2 whorls with a low carination from the start; postnuclear whorls 8. Axial ribs 9 on early whorls, increasing to 13 on penultimate whorl, extending across the swelling in the immediate subsutural area and the shallow channel below it, and extending across the base and pillar. Spiral sculpture evenly spaced, deeply incised, missing across the subsutural channel, but increasing in strength across the base and pillar; lip preceded by a massive axial swelling $\frac{1}{3}$ turn back. Sinus deep, U-shaped, bounded by curved parietal callus on the inside; lip not greatly thickened, crenulated by the incised spiral sculpture, stromboid notch shallow; anterior canal short, deeply notched; columellar callus raised. Height, 14.6, diameter, 5.3 mm.

Type Locality: Off Jicarita Island, Panama (7° 12' 30" N, 81° 47' 05" W), 24 fathoms, 20 February 1934, 5 specimens (2 immature) dredged by the R/V *Velero*, AHF station 240-34.

Type Material: Holotype, LACM-AHF 1470, 3 paratypes, LACM-AHF 1471, 1 paratype USNM.

Referred Material: AHF 451-35, 3 specimens, Secas Islands, Panama; AHF 244-34, 1 specimen, Bahía Honda, Panama, 12–35 fathoms.

Discussion: *Calliclava subtilis* is smaller than *C. craneana* (Hertlein & Strong, 1951) and has more deeply incised spiral sculpture. Only *C. alcmena* (Dall, 1919) has sculpture as deeply incised, but that species is larger and has more numerous axial ribs. Maximum length at maturity is 16 mm; minimum length, 10 mm. The name is a Latin adjective meaning fine or precise, with reference to the regular order of the sculpture.

5. *Elaeocyma amplinucis* McLean & Poorman, spec. nov.

(Figure 5)

Description of Holotype: Shell of moderate size for the genus, pale flesh colored with axial markings of brown, surface glossy; aperture about $\frac{1}{3}$ the length of the shell; suture not deeply impressed, shoulder weakly concave. Protoconch relatively large, 2 whorled, tip bulbous, slightly off center, second whorl with a low carination, postnuclear whorls 8. Axial ribs 8 on early whorls, increasing to 10 on penultimate whorl, rising to crests at

the periphery and extending weakly across the shoulder and base; spiral sculpture of a faint groove delimiting the shoulder and a more definite groove separating the body whorl and pillar. Sinus deep, U-shaped, bounded by massive, curved parietal callus on the inside, nearly constricting the opening; lip edge nearly straight, slightly thickened away from the edge, stromboid notch well marked; anterior canal short, slanted to the left and deeply notched; parietal wall broad, inner lip raised. Height, 19.9, diameter, 6.6 mm.

Type Locality: James Bay, Isla Santiago (Isla San Salvador), Galápagos Islands, Ecuador ($0^{\circ}12' S$, $90^{\circ}52' W$), 30 meters (16 fathoms), 4 February 1969, 2 specimens dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1472; 1 paratype, DeRoy Collection. The paratype measures 23.2 mm in height, 7.5 mm in diameter.

Discussion: *Elaeocyma amplinucis* is characterized by its large protoconch, distinctive color pattern and paucity of spiral sculpture. In having little spiral sculpture it suggests the genus *Cymatosyrinx* Dall, 1889, but that genus has an axial swelling in back of the lip edge, while *Elaeocyma* does not. The name means large nucleus.

6. *Elaeocyma melichroa* McLean & Poorman, spec. nov.

(Figure 6)

Description of Holotype: Shell of moderate size for the genus; pale flesh colored with irregular brown mottling on the shoulder and faint axial markings of brown across the body whorl, surface glossy; aperture about $\frac{1}{3}$ the length of the shell, suture deeply impressed, immediate subsutural area inflated. Protoconch whorls 2, first whorl bulbous with a lateral tip, second whorl with a low carination; postnuclear whorls 10. Axial ribbing broad and low, scarcely perceptible; on early whorls the shoulder is concave and the axial ribs nodulous on the lower half of the whorl; on later whorls the shoulder is inflated. Spiral sculpture of broadly spaced grooves, 1 delimiting the shoulder, 3 additional on the final whorl and 3 closely spaced, deeply incised grooves on the pillar; back of last whorl with some backward slanting crinkles especially strong at the periphery and behind the stromboid notch. Sinus deep, U-shaped, bordered by curved parietal callus on the inside; lip edge nearly straight, stromboid notch well marked, anterior canal short, deeply notched; parietal callus broad, inner lip not markedly raised. Height, 26.1, diameter, 8.7 mm.

Type Locality: North of Hood (Española) Island, Galápagos Island, Ecuador ($1^{\circ}21'55'' S$, $90^{\circ}40'05'' W$), 20–40 fathoms, 28 January 1938, 1 specimen dredged by the R/V *Velero*, AHF station 814-38.

Type Material: Holotype, LACM-AHF 1473.

Referred Material: Galápagos Islands: AHF 183-34, 1 immature specimen, 50–70 fathoms, San Salvador Island; AHF 318-35, 1 immature specimen, 45 fathoms, Santa Cruz Island; LACM, 1 specimen, 44 fathoms, northern coast of Santa Cruz Island, DeRoy.

Discussion: *Elaeocyma melichroa* differs from the Galapagan species *E. amplinucis* spec. nov. and *E. splendidula* (Sowerby, 1834) in having an inflated shoulder in mature specimens and less pronounced axial sculpture than either species. Ground color varies from nearly white to tan. The name means honey-colored, a Greek adjective.

7. *Kylis contracta* McLean & Poorman, spec. nov.

(Figure 7)

Description of Holotype: Shell of small to medium size for the genus; surface texture glossy, pinkish white, back of last whorl with a broad brown area; length of aperture plus anterior canal slightly less than $\frac{1}{3}$ the length of the shell; periphery shouldered, subsutural band slightly inflated. Protoconch of 2 whorls, first whorl bulbous with a lateral tip, second whorl with a strong carination; postnuclear whorls 9. Axial ribs 9 on early whorls, increasing to 14 on penultimate whorl, beaded in the subsutural area, sharply marked across the body whorl, fading upon the pillar; a more prominent axial swelling precedes the edge of the lip $\frac{1}{2}$ turn back, axial sculpture wanting on the back of the last whorl, except for the strong subsutural beading; spiral sculpture of regularly spaced striae not overriding the axial ribs, becoming more deeply incised upon the pillar. Sinus deep, U-shaped, bounded by curved parietal callus on the inside; lip thickened behind the edge, stromboid notch weak; anterior canal of moderate length, at an angle to the lip edge, deeply notched, inner lip not raised. Height, 15.1, diameter, 5.3 mm.

Type Locality: Puerto Guatulco, Oaxaca, Mexico ($15^{\circ} 43' N$, $96^{\circ}08' W$), 40–70 fathoms, 7 March 1938, 7 specimens dredged by George Willett.

Type Material: Holotype, LACM 1474, 1 paratype, LACM 1475, single paratypes, AMNH, ANSP, CAS, SDNHM, USNM.

Referred Material: 8 lots from Mexico in the combined LACM and AHF collections, including Tenacatita, Cuastecomate, Petatlan and Tangola Bays; 15–40 fathoms.

Discussion: This evidently common species varies from white to flesh colored, while the size is consistent. It has been confused with *Agladrillia pudica*, which is larger, with a noncarinate protoconch and longer canal. The anterior canal of *Kylix contracta* is relatively short, a feature emphasized by the name, meaning shortened.

8. *Kylix woodringi* McLean & Poorman, spec. nov.

(Figure 8)

Description of Holotype: Shell of medium size for the genus, white; length of aperture plus canal $\frac{1}{3}$ the length of the shell; periphery shouldered, subsutural band slightly inflated. Protoconch of 2 whorls, first whorl bulbous with a lateral tip, second whorl with a strong carination; postnuclear whorls 9. Axial ribs 11 on early whorls, increasing to 15 on penultimate whorl, beaded in the subsutural area, extending across the body whorl, fading upon the pillar; a more prominent axial swelling precedes the edge of the lip $\frac{1}{2}$ turn back, axial sculpture subdued on the back of the last whorl, subsutural beading strong; spiral sculpture of numerous, deeply incised striae or raised cords, faint on overriding the axial ribs, more broadly spaced upon the pillar. Sinus deep, U-shaped, bounded by curved parietal callus on the inside; lip thickened behind the edge, stromboid notch weak; anterior canal elongate, almost of the same length as the aperture, and at an angle to the edge of the lip, canal deeply notched; parietal wall smooth, inner lip scarcely raised. Height, 16.2, diameter, 5.5 mm.

Type Locality: Off Jicarita Island, Panama ($7^{\circ}12'30''$ N, $81^{\circ}47'05''$ W), 24 fathoms, 20 February 1934, 4 specimens (3 broken), dredged by the R/V *Velero*, AHF station 240-34.

Type Material: Holotype, LACM-AHF 1476, 3 paratypes, LACM-AHF 1477.

Referred Material: AHF 244-34, 3 specimens, Bahía Honda, Panama; AHF 224-34, 3 specimens, Gorgona Island, Colombia, 10–35 fathoms.

Discussion: Some of the specimens show a faint flesh-colored tint on the back of the last whorl. The near white coloration is shared only by *K. panamella* (Dall, 1908), a species with fewer, more deeply incised spiral striae. Of the Panamic species of *Kylix*, *K. woodringi* has the finest, most closely spaced spiral sculpture. We dedicate the spe-

cies to Dr. Wendell P. Woodring of the U.S. Geological Survey, whose 1928 monograph on the Jamaican Miocene provided a base for understanding the new world Turridae.

9. *Leptadrillia firmichorda* McLean & Poorman, spec. nov.

(Figure 9)

Description of Holotype: Shell of medium size for the genus, surface dull white, aperture and rib interspaces pink; aperture plus canal slightly more than $\frac{1}{3}$ the length of the shell; suture distinct, shoulder only slightly impressed. Protoconch of 2 whorls, first whorl large and bulbous with lateral tip, second whorl with a low but sharp carination; postnuclear whorls 7. Axial ribs 8 on early whorls, increasing to 11 on penultimate whorl; ribs angulate, extending from suture to suture, slightly impressed and curved in the subsutural area, flattened across a shallow channel at the base of the body whorl; at the base of this channel is a spiral groove, below which the ribs are bent at nearly right angles toward the inner lip; back of last whorl with a thickened axial rib $\frac{1}{3}$ turn back; spiral sculpture wanting. Sinus shallow, bounded on the inside by a curved parietal callus tubercle; lip edge thin, stromboid notch not apparent; anterior canal broad, weakly notched, inner lip raised. Height, 8.6, diameter, 3.1 mm.

Type Locality: Cupica Bay, Colombia ($06^{\circ}39'$ N, $77^{\circ}31'$ W), 12 fathoms, 26 January 1935, 1 specimen, grab sample by the R/V *Velero*, bottom sample station 548.

Type Material: Holotype, LACM-AHF 1478.

Referred Material: AHF 422-35, Port Utria, Colombia, 1 immature specimen, 20 fathoms; USNM 122800; Panama Bay, 1 specimen, 51 fathoms.

Discussion: *Leptadrillia firmichorda* has a more strongly carinate protoconch and sharper axial ribbing than *L. elissa* (Dall, 1919). The latter species lacks the flexed ribbing upon the pillar that characterizes *L. firmichorda*. The name is a Latin noun derived from *firmus*—strong, and *chorda*—rope or twine, suggested by the strong axial sculpture of the species.

10. *Syntomodrillia vitrea* McLean & Poorman, spec. nov.

(Figure 10)

Description of Holotype: Shell of medium size for the genus; surface glossy, yellowish white, darker between the

axial ribs; aperture plus canal slightly more than $\frac{1}{3}$ the length of the shell; suture deeply impressed, subsutural area not defined. Protoconch of 2 smooth whorls, first whorl bulbous with lateral tip; postnuclear whorls 7. Axial ribs 9 on early whorls, increasing to 11 on penultimate whorl, ribs rounded, extending from suture to suture but fading on the base before reaching the pillar; back of last whorl with a massive axial rib $\frac{1}{2}$ turn back; spiral sculpture of evenly spaced spiral threading upon the pillar. Sinus broad and shallow, bounded on the inside by a curved parietal callus tubercle; lip edge thin, stromboid notch shallow; anterior canal moderately elongate, unnotched; inner lip defined but not raised. Height, 6.2, diameter, 2.5 mm.

Type Locality: Taboga Bay, Taboga Island, Panama ($8^{\circ} 47' N$, $79^{\circ} 33' W$), 2–5 fathoms, 24 July 1951, 2 specimens, collected by Helen Hoyt Crouch, AHF bottom sample station 346.

Type Material: Holotype, LACM-AHF 1479, paratype, LACM-AHM 1480. The paratype is 9.2 mm in length and has 8 postnuclear whorls but does not have a mature aperture.

Discussion: *Syntomodrillia vitrea* is the only known species of this otherwise Caribbean genus in the eastern Pacific. It resembles the type species, *S. lissotropis* (Dall, 1881), but is larger and has one or two more postnuclear whorls. The name means glassy, with reference to the surface texture.

11. *Agladrillia badia* McLean & Poorman, spec. nov.

(Figure 11)

Description of Holotype: Shell of medium to moderately large size for the genus; reddish brown, lighter colored on the pillar; length of aperture plus canal about $\frac{1}{3}$ the length of the shell; suture deeply impressed, subsutural area concave, periphery shouldered. Protoconch of 3 smooth whorls, the tip small and immersed in the center; the first postnuclear whorl is carinate but nodulous with the emergent axial ribs; postnuclear whorls 8.5. Axial ribs 11 on early whorls, increasing to 15 on penultimate whorl, subdued in the subsutural area, extending diagonally across the body whorl, obsolete upon the back of the last whorl, except for the subsutural beading; lip edge preceded by an axial swelling $\frac{1}{2}$ turn back; spiral sculpture of regularly spaced, deeply incised striae that evenly override the axial ribs, more deeply incised upon the pillar. Sinus deep, U-shaped, bordered on the inside

by a parietal callus pad; lip edge not thickened, at an angle to the short, deeply notched anterior canal; inner lip slightly raised above the pillar. Height, 14.3, diameter, 4.8 mm.

Type Locality: Off southern coast of Isla Santa Cruz, Galápagos Islands, Ecuador ($0^{\circ} 47' S$, $90^{\circ} 21' W$), 170–200 meters (93–110 fathoms), 26–29 July and 5 December 1969, 11 specimens, dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1481, 2 paratypes, LACM 1482. Single paratypes, AMNH, ANSP, CAS, MCZ, SBM, SDNHM, SU, USNM.

Referred Material: LACM, 2 specimens dredged by the DeRoys off the northern coast of Isla Santa Cruz; 1 specimen off Daphne Minor Island, Galápagos, 70–80 fathoms (AHF 792-38).

Discussion: Most of the paratypes are larger than the holotype (length to 20 mm), but in the larger specimens the last whorl has been injured and repaired. The holotype is the only uninjured specimen. It may be confused with no other species, the deeply incised spiral sculpture and brown color are characteristic, hence the name, meaning brown.

12. *Agladrillia flucticulus* McLean & Poorman, spec. nov.

(Figure 12)

Description of Holotype: Shell moderately large for the genus; surface dull white, with a reddish brown band in the subsutural area and below the periphery, back of last whorl uniformly brown; length of aperture plus canal more than $\frac{1}{3}$ the length of the shell; suture impressed, whorls rounded, subsutural area concave. Protoconch of $2\frac{1}{2}$ smooth whorls with a small central tip, first postnuclear whorl carinate and nodulous with the emergent axial ribs; postnuclear whorls 10. Axial ribs 10 on early whorls, increasing to 22 on the penultimate whorl, subdued in the subsutural area, flexed across the body whorl and obsolete upon the base; back of last whorl with a massive thickening $\frac{1}{2}$ turn back, axial sculpture obsolete upon back of last whorl; spiral sculpture of numerous striae, slightly irregular in spacing, overriding the axial ribs and more pronounced upon the pillar. Sinus deep, U-shaped, bordered on the inside by curved parietal callus, lip slightly thickened away from the edge, at an angle to the moderately long, deeply notched anterior canal, inner lip slightly raised above the pillar. Height, 19.0, diameter, 7.2 mm.

Type Locality: Gulf of Tehuantepec, off Puerto Madero, Chiapas, Mexico (14°24' N, 92°34' W), 35 fathoms, 11 July 1963, 14 specimens, San Juan Expedition station W-1, collected by Donald Shasky.

Type Material: Holotype, LACM 1483, paratype, LACM 1484, single paratypes, AMNH, ANSP, CAS, SDNHM, SU, USNM, 6 paratypes, Shasky Collection.

Referred Material: Poorman Collection: 4 specimens, Rio Balsa, Sinaloa, Mexico; LACM: Banderas, Chamela, and Tenacatita Bays, Mexico, 15–40 fathoms, 5 specimens total.

Discussion: *Agladrillia flucticulus* has more numerous axial ribs than the other species and a distinctive color pattern. It could only be confused with *A. pudica* (Hinds, 1843), a uniformly white species in which the back of the last whorl is dark reddish brown. The name is a Latin noun, meaning little wave, suggested by the fine, wavy axial ribbing.

13. *Agladrillia gorgonensis* McLean & Poorman, spec. nov.

(Figure 13)

Description of Holotype: Shell small for the genus; surface glistening white, back of last whorl faintly flesh colored; length of aperture plus canal more than $\frac{1}{3}$ the length of the shell; subsutural area markedly concave, outline of whorls tabulate. Protoconch of 3 smooth whorls with a small central tip, first postnuclear whorl carinate and nodulous with the emergent axial ribs; postnuclear whorls 8.5. Axial ribs 8 on early whorls, increasing to 15 on the penultimate whorl, obsolete in the subsutural area and fading out upon the pillar; back of last whorl with a massive thickened rib $\frac{1}{2}$ turn back, axial ribbing obsolete on back of last whorl; spiral sculpture of evenly spaced, deeply incised striae, faint upon overriding the axial ribs, more pronounced upon the pillar. Sinus deep, U-shaped, bordered on the inside by curved parietal callus, lip edge thin, at an angle to the moderately long, deeply notched anterior canal, inner lip slightly raised above the pillar. Height, 11.0, diameter, 3.8 mm.

Type Locality: North of Gorgona Island, Colombia (3°01' N, 78°10'55" W), 40–60 fathoms, 24 February 1938, 3 specimens (2 immature), dredged by the R/V *Velero*, AHF station 854-38.

Type Material: Holotype, LACM-AHF 1485, 2 paratypes, LACM-AHF 1486.

Discussion: *Agladrillia gorgonensis* is the only uniformly white species and is the only one characterized by the tabulate outline to the whorls.

14. *Drillia (Drillia) cunningghamiae* McLean & Poorman, spec. nov.

(Figure 14)

Description of Holotype: Shell large for the genus; surface chalky white, colorless except for a narrow, faint brown line well below the periphery on the final whorl; aperture about $\frac{1}{3}$ the length of the shell; subsutural area markedly concave, outline strongly tabulate. Protoconch missing, postnuclear whorls 11. Axial ribs 7 on early whorls, increasing to 12 on penultimate whorl, obsolete on the shoulder, extending to the suture below on the early whorls, nodulous at the shoulder on the final whorl, but weak across the body whorl and obsolete upon the pillar; back of last whorl with an elongate rib subtending the sinus and a more massive rib $\frac{1}{2}$ turn back; spiral sculpture faint on early whorls, consisting on the final whorl of numerous, unevenly spaced threads, more pronounced upon the pillar. Sinus deep, U-shaped, strongly outward projecting, bordered on the inside by curved parietal callus; lip edge thin, stromboid notch weak; anterior canal scarcely defined, deeply notched; inner lip slightly raised above the pillar. Height, 37.9, diameter, 14.1 mm.

Type Locality: Sonora, Mexico, in the vicinity of Kino and Agiabampo Bays, 10–35 fathoms, November 1963, 6 specimens, trawled by Captain Antonio Luna of Guaymas, Sonora, received by Margaret Cunningham.

Type Material: Holotype, LACM 1487, 1 paratype, LACM 1488, 1 paratype USNM, 2 paratypes, Cunningham Collection, 2 paratypes, Poorman Collection.

Referred Material: AHF 547-36, Angel de la Guarda Island, Gulf of California, 1 specimen.

Discussion: Largest of the Drillias, characterized by the chalky surface and paucity of spiral sculpture. *Drillia roseola* (Hertlein & Strong, 1955) has similar proportions but is rose colored with a smooth surface and has fewer axial ribs. The species is named for Margaret Cunningham, now of Guaymas, Mexico, who kindly provided the type lot.

15. *Drillia (Drillia) inornata* McLean & Poorman, spec. nov.

(Figure 15)

Description of Holotype: Shell of medium size for the genus; surface chalky white, entirely colorless; aperture about $\frac{1}{3}$ the length of the shell; suture moderately impressed, undulating, immediate subsutural area swollen,

producing an inflated subsutural cord with a constricted channel below. Protoconch of $2\frac{1}{2}$ smooth whorls with small, immersed tip (paratypes), postnuclear whorls 11. Axial ribs 8 on early whorls, increasing to 10 on penultimate whorl, extending suture to suture on early whorls but stopping at the subsutural groove on mature whorls, narrowed and raised on passing from body whorl to pillar, obsolete upon pillar; back of last whorl with an axial rib subtending the sinus, preceded by a massive axial rib $\frac{1}{4}$ turn back; spiral sculpture wanting. Sinus deep, U-shaped, strongly outward projecting, bordered on the inside by curved parietal callus; lip edge thin, stromboid notch weak; anterior canal scarcely defined, notched, inner lip slightly raised above the pillar. Height, 20.7, diameter, 7.8 mm.

Type Locality: Off Puerto Refugio, Angel de la Guarda Island, Gulf of California ($29^{\circ}33'45''$ N, $113^{\circ}30'47''$ W), 54–51 fathoms, 29 January 1940, 4 specimens (3 immature), dredged by the R/V *Velero*, AHF station 1057-40.

Type Material: Holotype, LACM-AHF 1489, 3 paratypes, LACM-AHF 1490.

Referred Material: 7 AHF lots, single specimens, including Tiburon Island, Espiritu Santo Island, Gorda Point, Clarion Island, Mexico; and Gulf of Dulce, Costa Rica, 20–69 fathoms.

Discussion: *Drillia inornata* differs from the other Drillias in lacking spiral sculpture and having a swollen subsutural cord. The name is Latin, unadorned, with reference to its absence of color and spiral sculpture.

16. *Drillia (Drillia) sinuosa* McLean & Poorman, spec. nov.

(Figure 16)

Description of Holotype: Shell of medium size for the genus, surface glossy, banded with reddish brown, most intense in the subsutural area and below the periphery, rib surfaces and pillar whitish; aperture about $\frac{1}{3}$ the length of the shell, suture moderately impressed, whorls weakly inflated, subsutural area not demarked. Protoconch of 2.5 smooth whorls, tip small, postnuclear whorls 9. Axial ribs 8 on early whorls, increasing to 10 on penultimate whorl, extending from suture to suture, flexed in the subsutural area, tending to be aligned from whorl to whorl during early stages, obsolete upon the pillar; back of last whorl with a slightly more prominent axial rib $\frac{1}{4}$ turn back; spiral sculpture of numerous minute striae, visible under magnification. Sinus deep, U-shaped, not strongly projecting, bordered on the inside by curved parietal callus; lip edge thin, stromboid notch weak; anterior canal scarcely defined, notched, inner lip flush with the pillar. Height, 20.3, diameter, 6.3 mm.

Type Locality: Off southern coast of Isla Santa Cruz, Galápagos Islands, Ecuador ($0^{\circ}47'$ S, $90^{\circ}21'$ W), 150 meters (82 fathoms), 10 June 1968, 1 specimen, dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1491.

Referred Material: DeRoy collection, 1 immature specimen, 16.2 mm in length, dredged off northern coast of Isla Santa Cruz.

Plate Explanation

Note: All photographs are of the holotypes of the various new species; the authors in all cases are McLean & Poorman.

Figure 1: <i>Calliclava jaliscoensis</i>	× 3.6	Figure 14: <i>Drillia (Drillia) cunninghamae</i>	× 1.2
Figure 2: <i>Calliclava lucida</i>	× 2.7	Figure 15: <i>Drillia (Drillia) inornata</i>	× 2.1
Figure 3: <i>Calliclava rhodina</i>	× 2.1	Figure 16: <i>Drillia (Drillia) sinuosa</i>	× 2.2
Figure 4: <i>Calliclava subtilis</i>	× 2.9	Figure 17: <i>Drillia (Drillia) tumida</i>	× 3.9
Figure 5: <i>Elaeocyma amplinucis</i>	× 2.2	Figure 18a: <i>Drillia (Drillia) valida</i> , Holotype	× 1.5
Figure 6: <i>Elaeocyma melichroa</i>	× 1.7	Figure 18b: <i>Drillia (Drillia) valida</i> , Paratype	× 1.9
Figure 7: <i>Kylix contracta</i>	× 3.0	Figure 19: <i>Drillia (Clathrodrillia) berryi</i>	× 1.9
Figure 8: <i>Kylix woodringi</i>	× 2.7	Figure 20: <i>Cerodrillia asymmetrica</i>	× 7.2
Figure 9: <i>Leptadrillia firmichorda</i>	× 5.1	Figure 21: <i>Splendrillia academica</i>	× 3.2
Figure 10: <i>Syntomodrillia vitrea</i>	× 6.6	Figure 22: <i>Splendrillia arga</i>	× 4.3
Figure 11: <i>Agladrillia badia</i>	× 3.1	Figure 23: <i>Splendrillia bratcheriae</i>	× 3.6
Figure 12: <i>Agladrillia flucticulus</i>	× 2.3	Figure 24: <i>Fusiturricula andrei</i>	× 1.4
Figure 13: <i>Agladrillia gorgonensis</i>	× 4.0	Figure 25: <i>Crassispira (Dallspira) martiae</i>	× 4.1
		Figure 26: <i>Crassispira (Striospira) coracina</i>	× 3.0
		Figure 27: <i>Crassispira (Monilispira) curraei</i>	× 4.1

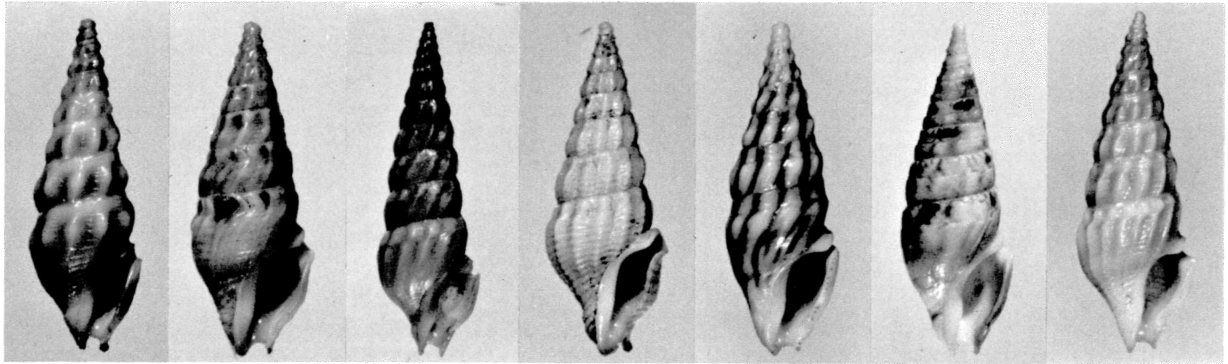


Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

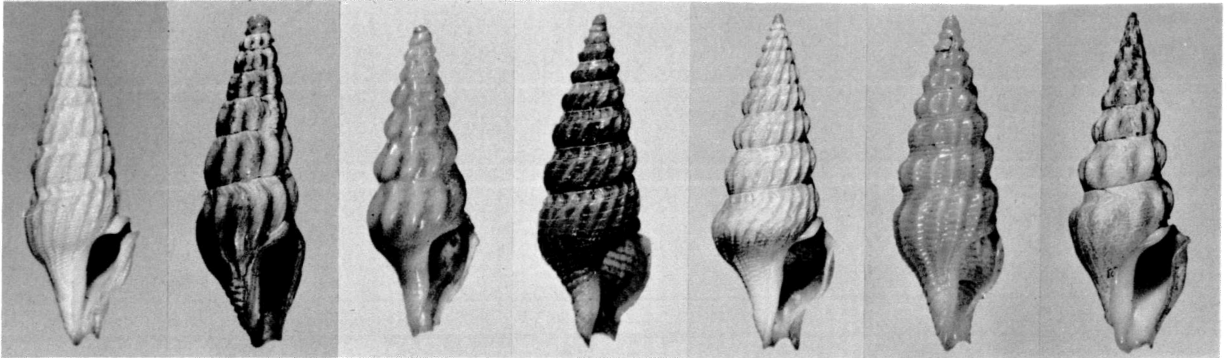


Figure 8

Figure 9

Figure 10

Figure 11

Figure 12

Figure 13

Figure 14

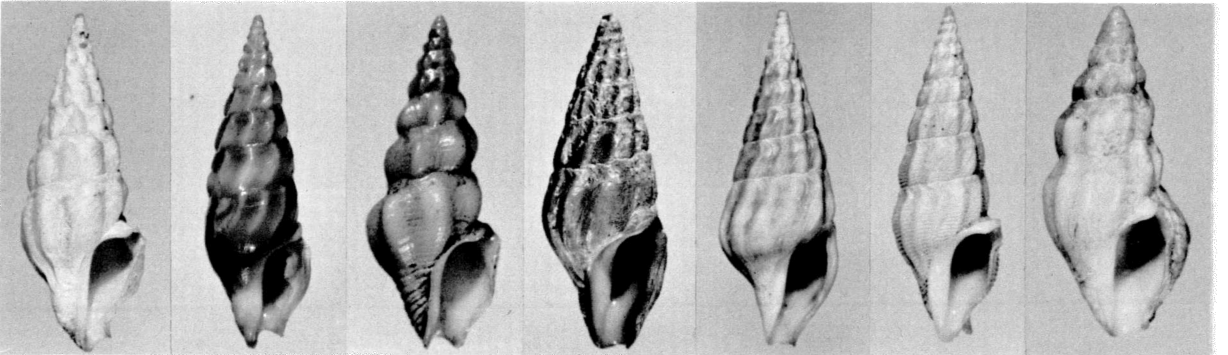


Figure 15

Figure 16

Figure 17

Figure 18a

Figure 18b

Figure 19

Figure 20

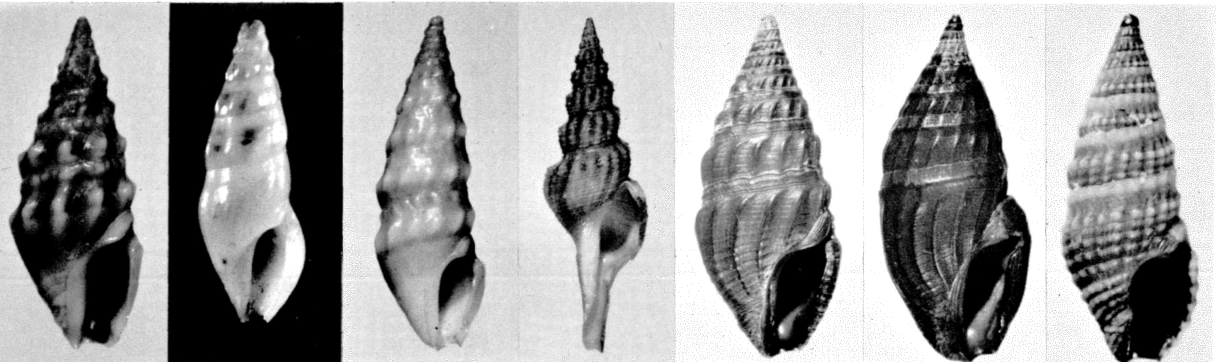


Figure 21

Figure 22

Figure 23

Figure 24

Figure 25

Figure 26

Figure 27

Discussion: *Drillia sinuosa* differs from the other *Drillias* in having a more highly polished surface, less projecting sinus, and a distinctive color pattern. The name is Latin, full of windings, with reference to the flexed axial ribbing.

17. *Drillia (Drillia) tumida* McLean & Poorman, spec. nov.

(Figure 17)

Description of Holotype: Shell small for the genus, surface dull white; aperture $\frac{1}{3}$ the length of the shell, suture impressed, undulating, subsutural area markedly concave, periphery strongly shouldered. Protoconch of $3\frac{1}{2}$ smooth whorls, tip small and immersed; postnuclear whorls $7\frac{1}{2}$. Axial ribs 6 on early whorls, increasing only to $6\frac{1}{2}$ on mature whorls, lacking in the subsutural area, strong at the shoulder and across the body whorl; back of last whorl with a more prominent axial rib $\frac{1}{4}$ turn back; spiral sculpture of evenly spaced spiral incisions, faint on early whorls, more prominent on penultimate and final whorl, deeply incised across the pillar. Sinus deep, U-shaped, strongly outward projecting, bordered on the inside by curved parietal callus; lip edge thin, stromboid notch moderately deep; anterior canal scarcely defined, deeply notched; inner lip strongly raised above the pillar. Height, 11.3, diameter, 4.4 mm.

Type Locality: Banderas Bay, Jalisco, Mexico (approximately $20^{\circ}43' N$, $105^{\circ}25' W$), 20–40 fathoms, 14 February 1938, 33 specimens dredged by George Willett.

Type Material: Holotype, LACM 1492, 24 paratypes, LACM 1493, single paratypes, AMNH, ANSP, CAS, MCZ, SBM, SDNHM, SU and USNM.

Referred Material: AHF: Mexico, off Magdalena Bay (1032-40), off Tiburon Island (566-36), Concepción Bay (682-37); Panama, Bahía Honda (248-34).

Discussion: Some specimens of *Drillia tumida* show a faint pink tinge but most are uniformly white. It has the general proportions of *D. roseola* (Hertlein & Strong, 1955), from which it differs in its much smaller size, presence of spiral sculpture, fewer axial ribs and less pronounced pink coloration. The Latin name means swollen, with reference to the massive axial ribs.

18. *Drillia (Drillia) valida* McLean & Poorman, spec. nov.

(Figures 18a & 18b)

Description of Holotype: Shell large for the genus, surface dull white, almost chalky, dark pink between the axial ribs; whorls nearly flat-sided, sutures not deeply

impressed, aperture greater than $\frac{1}{3}$ the length of the shell. Protoconch missing; early whorls with 10 axial ribs per whorl, increasing to 12 on the final whorl; ribs slightly impressed and flexed in the subsutural area, extending from suture to suture, narrowed upon the pillar and flexed toward the inner lip; lip not preceded by a thickened axial rib on the back of the last whorl; spiral sculpture of numerous fine striae, visible under magnification. Sinus deep, U-shaped, not strongly outward projecting, bordered on the inside by curved parietal callus; lip edge thin, stromboid notch shallow; anterior canal scarcely defined, deeply notched; inner lip raised above the pillar. Height, 29.3, diameter, 11.2 mm.

Type Locality: Dewey Channel, near Cedros Island, outer coast of Baja California ($27^{\circ}42'07'' N$, $115^{\circ}05'08'' W$), 49 fathoms, 27 February 1941, 1 specimen, dredged by the R/V *Velero*, AHF station 1259-41.

Type Material: Holotype, LACM-AHF 1494, paratype, LACM-AHF 1495. The paratype (Figure 18b) is from San Jaime Bank, off Cape San Lucas, Baja California, 75 fathoms, AHF station 618-37. It has 10 postnuclear whorls, lacks a mature aperture and is missing the nuclear tip, but the second nuclear whorl is smooth, with no indication of a carination.

Discussion: *Drillia valida* differs from other eastern Pacific clavine species in having nearly flat-sided whorls. It does not have a thickened axial rib back of the lip that is characteristic in the genus. If there were evidence of carination on the protoconch it would be assignable to *Elaeocyma*, but the general facies suggests *Drillia*. The Latin name means stout or powerful, suggested by the massive appearance of the shell.

19. *Drillia (Clathrodrillia) berryi* McLean & Poorman, spec. nov.

(Figure 19)

Description of Holotype: Shell of small to medium size for the subgenus; surface glistening white with a faint reddish brown band in the subsutural area and another below the periphery, the swollen axial rib on the back of the last whorl also reddish brown; whorls rounded, the subsutural area faintly concave, aperture $\frac{1}{3}$ the length of the shell. Protoconch of 3 smooth whorls, postnuclear whorls 10. Axial ribs 9 on early whorls, increasing to 12 on penultimate whorl, extending from suture to suture, but flexed in the subsutural area, strong across the body whorl and narrowed across the pillar; back of last whorl with a prominent axial swelling $\frac{1}{3}$ turn back; spiral sculp-

ture of numerous cords with slightly broader interspaces, cord surfaces glistening, interspaces dull white, cording more closely spaced in the subsutural area and more deeply incised upon the pillar. Sinus deep, U-shaped, markedly projecting, bounded by curved parietal callus; lip edge sinuous, stromboid notch shallow; anterior canal short, deeply notched; inner lip callus slightly raised above the pillar. Height, 23.3, diameter, 7.9 mm.

Type Locality: Off Tovari, Sonora, Mexico (27°22' N, 110°20' W), 26 fathoms, December 1968, 7 specimens, dredged by Captain Antonio Luna of Guaymas, received by Roy Poorman.

Type Material: Holotype, LACM 1496, 1 paratype, LACM 1497, single paratypes, CAS, ANSP, USNM, 2 paratypes, Poorman collection.

Referred Material: AHF, 3 stations near Angel de la Guarda Island, 54–90 fathoms, 4 specimens; Shasky collection, 2 specimens, Guaymas, Sonora, 40–125 fathoms; AHF: Isla Ladrones, Panama (943-39); Gorgona Island, Colombia (854-38); La Plata Island, Ecuador (212-34), 6 specimens total, 40–60 fathoms.

Discussion: The available material suggests that distribution is discontinuous; specimens from the Gulf of California are of uniform size similar to that of the holotype, while those from Panama, Colombia, and Ecuador are exact miniatures, measuring about 15 mm in height, 5 mm in diameter, but otherwise matching in every respect. Of the Panamic Clathrodrillias this has the least tabulate outline and the most numerous spiral cording. The species is dedicated to Dr. S. Stillman Berry of Redlands, California, whose contributions to the systematics of Panamic mollusks are extensive.

20. *Cerodrillia asymmetrica* McLean & Poorman,
spec. nov.

(Figure 20)

Description of Holotype: Shell small for the genus, dull surfaced, uniformly brownish white; length of aperture greater than $\frac{1}{3}$ the length of the shell; subsutural area evenly sloping, periphery angulate. Protoconch of $3\frac{1}{2}$ relatively large whorls, postnuclear whorls 5. Axial ribs 9 on early whorls, increasing to 11 and terminating in a massive axial swelling that strengthens the lip $\frac{1}{8}$ turn back, ribs weak in the subsutural area, angulate at the periphery, and fading at the pillar; spiral sculpture of about 7 threads on the pillar. Sinus moderately deep, U-shaped, bordered on the inside by curved parietal callus, with an angular slot behind the callus pad directed toward

the suture; lip edge thin, anterior end of aperture only faintly notched; columella descending vertically, columellar callus not raised. Height, 6.1, diameter, 2.7 mm.

Type Locality: Tagus Cove, Albemarle (Isabela) Island, Galápagos Islands, Ecuador (0°16'08" S, 91°22'38" W), 10–18 fathoms, 15 January 1934, 6 specimens, dredged by the R/V *Velero*, AHF station 157-34.

Type Material: Holotype, LACM-AHF 1498, 2 paratypes, LACM-AHF 1499, single paratypes, CAS, ANSP, and USNM.

Referred Material: AHF, 4 additional lots from Albemarle Island, 50–100 fathoms.

Discussion: *Cerodrillia asymmetrica* has the same sized protoconch as the mainland species, *C. cybele* (Pilsbry & Lowe, 1932), which reaches twice the size, has fewer axial ribs and is more darkly colored. The straight columella and flaring terminal rib impart an asymmetrical outline to the shell, hence the name, derived from Greek.

21. *Splendrillia academica* McLean & Poorman, spec. nov.

(Figure 21)

Description of Holotype: Shell of medium size for the genus; surface dull, banded with blue gray; lip margin, subsutural cord, and peripheral nodes whitish, a darker band of brown connects the peripheral nodes; shoulder concave below a narrow subsutural swelling, aperture more than $\frac{1}{3}$ the length of the shell. Protoconch of 2 smooth whorls with central tip, postnuclear whorls 8. Axial sculpture of 8 elongate ribs on early whorls, increasing to 10 on the final whorl, indicated as blunt swellings upon the swollen subsutural collar, nodulous at the periphery but obsolete upon the shoulder sulcus and across the base; spiral sculpture of about 8 grooves upon the pillar. Sinus deep, U-shaped, bounded by a massive pad of curved parietal callus with a sutural slot behind; lip edge not greatly thickened, evenly curved, stromboid notch extremely shallow; anterior end shallowly notched, columella twisted slightly to the left, inner lip raised above the pillar. Height, 13.7, diameter, 5.3 mm (maximum height, 20 mm).

Type Locality: Academy Bay, Isla Santa Cruz, Galápagos Islands, Ecuador (0°45' S, 90°48' W), 60 meters (33 fathoms), 15 October 1965, 2 specimens, and November, 1966, 2 specimens, dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1500, single paratypes, CAS, ANSP, and USNM.

Referred Material: Galápagos Islands: LACM, 3 speci-

mens, northern coast, Isla Santa Cruz; AHF 59-33, Cormorant Bay, Isla Santa Maria; AMNH 110411, 1 specimen, Academy Bay, Isla Santa Cruz.

Discussion: *Splendrillia academica* is the only eastern Pacific clavine species banded with blue gray. The type species of the genus, the south Australian *S. woodsi* (Beddome, 1883) has a narrow subsutural cord rather than a swollen subsutural band, but the features are otherwise characteristic of this genus, which is broadly distributed in the Indo-Pacific. Generic allocation may be an academic question, but the type locality is exact, hence the name.

22. *Splendrillia arga* McLean & Poorman, spec. nov.

(Figure 22)

Description of Holotype: Shell small for the genus, surface glistening white, translucent; whorls rounded below a slight subsutural concavity, aperture greater than $\frac{1}{3}$ the length of the shell. Protoconch of 2 smooth whorls, tip immersed and lateral; postnuclear whorls 6. Axial sculpture of 9 low, rounded ribs on early whorls, becoming completely obsolete on the final whorl, last $\frac{1}{4}$ turn behind the lip evenly swollen, reinforcing the lip; spiral sculpture wanting. Sinus deep, U-shaped, bordered by a pad of curved parietal callus with a sutural slot behind; lip edge not greatly thickened, stromboid notch not apparent; anterior end shallowly notched, base of columella twisted slightly to the left, inner lip but slightly raised above the pillar. Height, 9.3, diameter, 3.2 mm.

Type Locality: Puerto Guatulco, Oaxaca, Mexico (15° 44'28" N, 96°07'51"W), 7 fathoms, 5 December 1937, 5 specimens (2 immature), collected by William Beebe and Templeton Crocker, CAS locality 17832.

Type Material: Holotype, CAS 13677, 2 paratypes, CAS 13678, 13679, 1 paratype, LACM 1501, 1 paratype, USNM.

Discussion: *Splendrillia arga* could only be confused with *S. lalage* (Dall, 1919), a species differing in having axial ribbing on mature whorls, a hump on the back of the last whorl, and a banding pattern. *Splendrillia arga* lacks a subsutural thread, but could otherwise be regarded as meeting all the criteria for *Splendrillia*. The name is a Greek adjective meaning shining or glistening.

23. *Splendrillia bratcheriae* McLean & Poorman, spec. nov.

(Figure 23)

Description of Holotype: Shell small for the genus, surface glossy; pale flesh colored with lighter peripheral

nodes and a yellow-brown band in the subsutural area and another narrow band below the peripheral nodes; shoulder concave below a weak subsutural swelling; aperture $\frac{1}{3}$ the length of the shell. Protoconch of 2 bulbous whorls, the tip small and slightly off center; postnuclear whorls 8. Axial sculpture of 10 low set nodes on early whorls, increasing to 12 on the penultimate whorl, indicated as faint swellings in the immediate subsutural area and as elongate nodes at the periphery, obsolete across the base and pillar; back of last whorl with a massive axial swelling $\frac{1}{3}$ turn back; spiral sculpture lacking. Sinus deep, U-shaped, bordered by a massive pad of curved parietal callus with a sutural slot behind; lip edge not greatly thickened, stromboid notch shallow, anterior end of aperture moderately notched, inner lip callus not strongly raised. Height, 12.3, diameter, 4.1 mm.

Type Locality: South of Tiburon Island, Gulf of California, Mexico (28°43'45" N, 112°17'50" W), 20 fathoms, 11 March 1936, 5 specimens, dredged by the R/V *Velero*, AHF station 566-36.

Type Material: Holotype, LACM-AHF 1502, 2 paratypes, LACM-AHF 1503, 1 paratype CAS; 1 paratype, USNM.

Referred Material: Poorman and Shasky collections, dredged in the vicinity of Guaymas; USNM 555706 and LACM 66-30, dredged off La Paz, Baja California.

Discussion: *Splendrillia bratcheriae* differs from *S. lalage* (Dall, 1919) in being larger, having more whorls, a greater number of less elongate peripheral nodes, and a fainter color pattern. Although the general outline resembles that of the type species of *Splendrillia*, the stout axial swelling of the back of the last whorl of *S. bratcheriae* and *S. lalage* is not found in *S. woodsi* (Beddome, 1883). The species is dedicated to Twila Bratcher (Mrs. Ford Bratcher) of Los Angeles, in recognition of her work with the Terebridae.

24. *Fusiturricula andrei* McLean & Poorman, spec. nov.

(Figure 24)

Description of Holotype: Shell of average size for the genus; pinkish brown with darker areas between the axial ribs, columella white; aperture plus canal more than $\frac{1}{2}$ the length of the shell; suture impressed, shoulder concave and smooth except for a narrow subsutural thread, whorl outline tabulate; anterior canal straight, as long as the aperture. Protoconch (of paratype) of 2 bulbous whorls with small central tip, adult axial sculpture emerging after a nodulous, carinate stage; postnuclear whorls 10. Axial ribs 10 on early whorls, increasing to 17 on final whorl, arising at the shoulder and fading upon the body

whorl; final whorl with irregularly spaced swollen axial ribs; spiral sculpture of 2 strong cords on early post-nuclear whorls, beaded on crossing the axial ribs, major spiral cords increasing to 4 on the penultimate whorl, with additional minor ribs across the base, ribbing on the back of the anterior canal fine and even. Parietal callus lacking, sinus at the suture, lip thin edged (broken back and partially repaired in holotype). Height, 32.2, diameter, 10.0 mm.

Type Locality: Off southern coast of Isla Santa Cruz, Galápagos Islands, Ecuador (0°47' S, 90°21' W), 100–200 meters (55–110 fathoms), 23–29 July 1969, 6 specimens (5 immature), dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1504, 4 paratypes, LACM 1505, 1 paratype, USNM.

Referred Material: AHF 788-38, 1 immature specimen, 55 fathoms, Daphne Major Island, Galápagos.

Discussion: *Fusiturricula andrei* differs from the mainland species *F. armilda* (Dall, 1908) in having more numerous axial ribs and spiral cords, a straighter canal, and a more tabulate shoulder. We are pleased to name the species for André DeRoy.

25. *Crassispira* (*Dallspira*) *martiae* McLean & Poorman, spec. nov.

(Figure 25)

Description of Holotype: Shell small for the subgenus, uniformly grayish black, aperture blue-gray within, surface texture waxen; subsutural area concave; suture marked by a narrow, undulating cord with another, slightly more prominent cord below. Protoconch of 2 smooth whorls, postnuclear whorls 9. Axial ribs 13 on early and final whorls, flexed to the right at the shoulder and extending across the base; back of last whorl with a stronger axial rib $\frac{1}{8}$ turn back from the lip; spiral sculpture of 3 additional grooves in the concave subsutural area and regularly spaced grooves on the upper half of the body whorl, changing to broad, straplike cording on the lower half, producing lighter colored beads on crossing the narrow axial ribs on the lower half; pillar with narrow, raised cords. Sinus deep, U-shaped, bordered on the inside by curved parietal callus showing incremental layering; lip edge moderately thick, stromboid notch faint; anterior end truncate, weakly notched, inner lip raised above the pillar. Height, 11.0, diameter, 4.7 mm.

Type Locality: Venado Island, Panama Canal Zone (8°53' N, 79°36' W), at low tide among rocks, 19 specimens

collected by James H. McLean and Donald Shasky, 8–11 March 1970, LACM station 70-15.

Type Material: Holotype, LACM 1506, 7 paratypes, LACM 1507. Single paratypes, AMNH, ANSP, CAS, SDNHM, USNM, 6 paratypes, Shasky Collection.

Discussion: Although of the same general form as *Crassispira coelata* (Hinds, 1843), with which it occurs, *C. martiae* differs in being broader with a more tabulate outline and having a less pronounced subsutural cord. Axial sculpture is stronger in these two species than in other *Dallspiras*, but the sinus is characteristic of that group. We are pleased to name the species for Ann Marti (Mrs. Ted Marti) of Balboa, Canal Zone, who was most helpful during our visit to Panama.

26. *Crassispira* (*Striospira*) *coracina* McLean & Poorman, spec. nov.

(Figure 26)

Description of Holotype: Shell of medium to small size for the subgenus; uniformly black, aperture bluish gray within, surface texture waxen; sutures weakly impressed, subsutural area swollen, subsutural cord a prominent keel. Protoconch of 2 smooth, glossy brown whorls; post-nuclear whorls 9. First postnuclear whorl with 9 slanting axial folds, second postnuclear whorl with about 18 nearly vertical ribs crossed by 3 narrow cords; the first 4 post-nuclear whorls impart a concave outline to the spire; axial ribs on final whorl 18, arising below the subsutural cord and curving across the base; spiral sculpture of fine striae, increasing in strength toward the pillar. The suture rises on the last $\frac{1}{4}$ turn, the lip massively swollen back of the edge. Sinus U-shaped, shallow and narrow, directed laterally across the thickened lip; stromboid notch slight; anterior canal broad and shallow, twisted to the right, inner lip callus layered. Height, 15.3, diameter, 6.6 mm.

Type Locality: Venado Island, Panama Canal Zone (8°52' N, 79°36' W), at low tide among rocks, 8 specimens (4 immature) collected by James H. McLean and Donald Shasky, 8–11 March 1970, LACM station 70-15.

Type Material: Holotype, LACM 1508, 2 paratypes, LACM 1509, single paratypes, ANSP, CAS, USNM, 2 paratypes, Shasky Collection.

Referred Material: AHF 253-34, Puerto Culebra, Costa Rica, 1 specimen; LACM 68-41, Cuastecomate, Jalisco, 1 specimen; LACM 71-23, Point Arena, Baja California, 4 specimens; Shasky Collection, El Pulmo, Baja California, 2 specimens.

Discussion: *Crassispira coracina* has a narrow, laterally directed sinus unlike that of any other species known to us. The other *Striospiras* have a parietal tubercle and a more upward directed sinus, but *C. coracina* is tentatively placed here because the sinus is shallow and the suture rises on the last whorl. No radula was found in 2 of the paratype specimens. Mexican specimens average several mm smaller than those from Panama and Costa Rica and have less pronounced axial ribbing. The name *coracina* means black as a raven, an appropriate designation for these shells.

27. *Crassispira (Monilispira) currani* McLean & Poorman, spec. nov.

(Figure 27)

Description of Holotype: Shell small for the subgenus; ground color gray, subsutural band and basal cords dark orange; aperture $\frac{1}{3}$ the length of the shell; shoulder concave below a broad, inflated subsutural band. Protoconch glossy black, whorls 2; postnuclear whorls 8. Axial sculpture of 22 low ribs crossed by spiral cords of nearly equal strength and spacing, producing squarish orange beads at intersections, one such row of encircling beads on early whorls, 4 on the penultimate and 12 altogether on the final whorl, more closely spaced upon the pillar; entire surface finely striate throughout. Sinus broad and shallow, bordered on the inside by curved and layered parietal callus; lip slightly thickened behind the edge; stromboid notch shallow; anterior canal broad and shallow, slightly twisted to the left; inner lip callus raised only on the pillar. Height, 11.1, diameter, 4.3 mm.

Type Locality: Sayulita, Nayarit, Mexico (20°52' N, 105°28' W), at low tide among rocks, 12 specimens (7 immature), collected by Norman P. Currin and Gale Sphon, 9–23 January 1970, LACM station 70-4.

Type Material: Holotype, LACM 1510, 1 paratype, LACM 1511, single paratypes, CAS, ANSP, USNM, 7 paratypes, Currin Collection.

Referred Material: LACM 65-15, Los Arcos, Banderas Bay, Jalisco, 3 specimens.

Discussion: *Crassispira currani* differs from *C. trimariana* Pilsbry & Lowe, 1932, in having a more concave shoulder, more numerous spiral cording and dark orange rather than dingy yellow tubercles. A red filter was used to bring out the dark orange banding in the photograph. We name the species for Norman P. Currin, of San Diego, who collected most of the specimens.

28. *Lioglyphostoma rectilabrum* McLean & Poorman, spec. nov.

(Figure 28)

Description of Holotype: Shell moderately large for the genus; uniformly yellowish white, dull surfaced; length of aperture slightly less than $\frac{1}{2}$ the length of the shell; suture impressed, early whorls rounded, later whorls with a concave subsutural area. Protoconch of 3 smooth whorls (tip missing), developing a low carination on the third whorl; postnuclear whorls 7. Axial sculpture of 9 ribs on early whorls, increasing to 14 on final whorl, strongly developed and extending from suture to suture on early whorls, arising below the subsutural channel on final whorl, and extending weakly across the base and pillar; spiral sculpture on early whorls of 3 major cords, increasing to 6 on the penultimate, total 18 across the final whorl and pillar, with numerous intervening spiral striae, cords and striae overriding the axial ribs. Sinus U-shaped, deeply penetrating the massive varix that strengthens the lip behind its edge, bordered on the inside by parietal callus and a layered extension of the lip, nearly sealing the sinus entrance; lip edge nearly straight, stromboid notch shallow; anterior canal elongate, inner lip not raised. Operculum with terminal nucleus, radula of duplex crassispirine type. Height, 16.2 mm; diameter, 6.1 mm.

Type Locality: Off Cabo Haro, Guaymas, Sonora, Mexico (27°50' N, 110°55' W), 40–125 fathoms, 2 September 1960, 1 specimen dredged, Ariel Expedition, Donald Shasky Collection. Paratype from same locality, 15–25 fathoms, 28 August 1960, Helen DuShane Collection.

Type Material: Holotype, LACM 1512, paratype, DuShane Collection. The paratype is slightly immature, not showing the constriction of the sinus entrance.

Discussion: *Lioglyphostoma rectilabrum* is easily separable from the widely distributed *L. ericea* (Hinds, 1843) in having spiral striae, a more massive appearance, and lacking a subsutural cord, which may be weakly indicated in *L. ericea*. The name is a compound Latin noun, meaning straight lip, suggested by the massive, uncurved lip.

29. *Maesiella maesae* McLean & Poorman, spec. nov.

(Figure 29)

Description of Holotype: Shell small for the genus, tan, with lighter aperture; whorls weakly rounded, subsutural area slightly concave, bearing a narrow, raised subsutural

thread; the suture descends rapidly, exposing much of the penultimate whorl. Protoconch of 3 whorls, first 2 whorls smooth (tip missing), slightly bulging at the periphery; 6 strong diagonal ribs arise on the last $\frac{1}{2}$ of the third nuclear whorl and cease abruptly, replaced by 5 spiral cords and only faint axial ribs; postnuclear whorls 6. Axial sculpture on penultimate whorl of 16 weak ribs, nearly obsolete on final whorl, crossed by evenly spaced major spiral cords starting at the periphery and becoming stronger and more closely spaced on the pillar; entire shell with fine spiral striae throughout. Sinus deep, U-shaped, the entrance nearly sealed by downward growth of the lip on the inside; lip strengthened by a massive terminal varix, the spiral cording continuous to the narrow lip edge, stromboid notch shallow; anterior canal short, with a shallow notch, inner lip not raised above the pillar. Height, 9.2, diameter, 3.3 mm. Operculum with terminal nucleus.

Type Locality: First cove north of Saladita Cove, near Guaymas, Sonora, Mexico (27°53'15" N, 110°58' W), 30–60 feet, May 29–June 1, 1968, 4 specimens taken by diving by James H. McLean, LACM loc. 68-27.

Type Material: Holotype, LACM 1513, 3 paratypes, LACM 1514. Fourteen additional paratypes dredged by Forrest and Roy Poorman in 17 fathoms, 1 mile south of Puerto San Carlos, Guaymas, March 1964 and December 1965. Single paratypes, AMNH, ANSP, CAS, MCZ, SDNHM, SU, and USNM, 7 paratypes, Poorman Collection.

Referred Material: LACM, 1 specimen dredged by Roy Poorman at Puertecitos, Baja California.

Discussion: *Maesiella maesae* is of the same size as *M. hermanita* (Pilsbry & Lowe, 1932), but is lighter colored with more numerous, but weaker spiral cording and axial

ribbing. This is the type species of *Maesiella* McLean, 1971, both genus and species dedicated to Virginia Orr Maes, of the Philadelphia Academy of Natural Sciences.

30. *Carinodrillia lachrymosa* McLean & Poorman,
spec. nov.

(Figure 30)

Description of Holotype: Shell small for the genus, aperture $\frac{1}{3}$ the length of the shell; surface texture waxy, ground color yellow brown, axial ribs white, subsutural area with flecking of white, base more darkly colored; whorls rounded below a moderately concave subsutural area. Protoconch of 2½ smooth, dark colored whorls, followed by $\frac{1}{2}$ whorl with 7 closely spaced axial ribs, changing to the mature rib count of 7 per whorl; postnuclear whorls 8. Axial ribs strong, extending from suture to suture, but subdued across the subsutural area on the final whorl and fading across the base; spiral sculpture of microscopic striae throughout, more strongly marked across the pillar; a pair of strong spiral cords emerge on the back of the last whorl, slightly beaded on crossing the last 3 axial ribs. Lip preceded by an exceptionally strong axial rib $\frac{1}{3}$ turn back, followed by an axial rib of normal thickness. Sinus deep, U-shaped, bordered on the inside by layered parietal callus (not fully developed in holotype); lip edge thin, strengthened away from the edge by a weak rib, stromboid notch shallow; anterior canal broad, weakly notched, directed slightly to the right; columella nearly straight, inner lip defined but not raised. Height, 12.6, diameter, 4.3 mm (largest specimen, 16.9 mm in height). Operculum leaf shaped.

Type Locality: Cuastecomate Bay (NW of Barra de Navidad), Jalisco, Mexico (19°13'45" N, 104°44'53" W), 15–

Plate Explanation

Note: All photographs are of the holotypes of the various new species; the authors in all cases are McLean & Poorman.

Figure 28: <i>Lioglyphostoma rectilabrum</i>	× 2.8	Figure 40: <i>Glyphostoma (Glyphostoma) pustulosa</i>	× 1.9
Figure 29: <i>Maesiella maesae</i>	× 4.3	Figure 41: <i>Glyphostoma (Glyphostoma) scobina</i>	× 3.4
Figure 30: <i>Carinodrillia lachrymosa</i>	× 3.5	Figure 42: <i>Euclathurella acclivicallis</i>	× 3.7
Figure 31: <i>Compsodrillia gracilis</i>	× 3.4	Figure 43: <i>Acmaturris ampla</i>	× 4.4
Figure 32: <i>Compsodrillia olssoni</i>	× 2.6	Figure 44: <i>Thelecythara dushanae</i>	× 5.1
Figure 33: <i>Compsodrillia opaca</i>	× 2.1	Figure 45: <i>Kurtzia elenensis</i>	× 9.3
Figure 34: <i>Compsodrillia undatichorda</i>	× 2.8	Figure 46: <i>Kurtzia humboldti</i>	× 7.9
Figure 35: <i>Borsonella abrupta</i>	× 2.1	Figure 47: <i>Pyrgocythara angulosa</i>	× 8.1
Figure 36: <i>Borsonella galapagana</i>	× 2.8	Figure 48: <i>Daphnella gemmulifera</i>	× 3.3
Figure 37: <i>Cymakra baileyi</i>	× 8.7	Figure 49: <i>Daphnella retusa</i>	× 3.5
Figure 38: <i>Cymakra granata</i>	× 6.9	Figure 50: <i>Rimosodaphnella deroyae</i>	× 1.7
Figure 39: <i>Clathurella maryae</i>	× 6.0	Figure 51: <i>Philbertia shaskyi</i>	× 7.2
		Figure 52: <i>Kermia informa</i>	× 6.6
		Figure 53: <i>Vepracula tornipila</i>	× 9.5

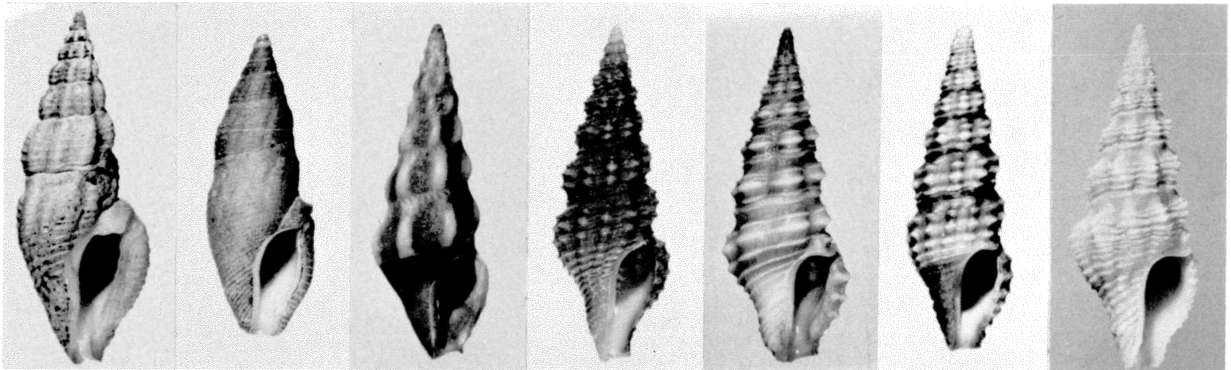


Figure 28 Figure 29 Figure 30 Figure 31 Figure 32 Figure 33 Figure 34

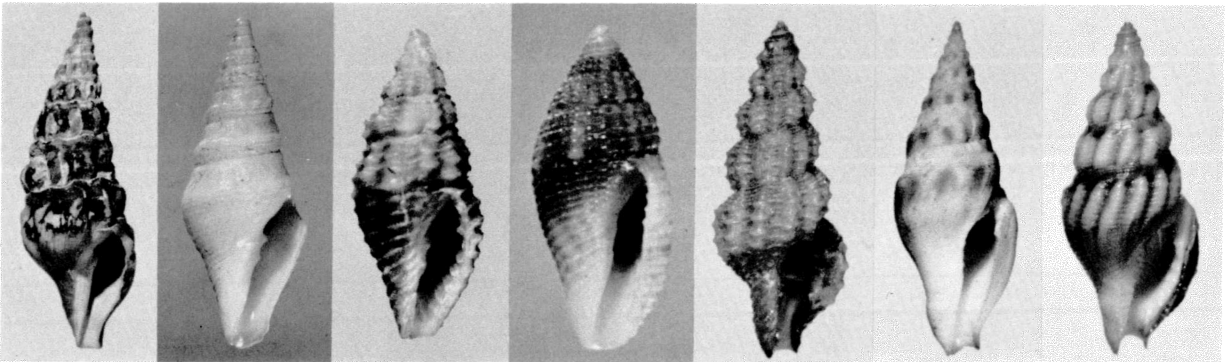


Figure 35 Figure 36 Figure 37 Figure 38 Figure 39 Figure 40 Figure 41

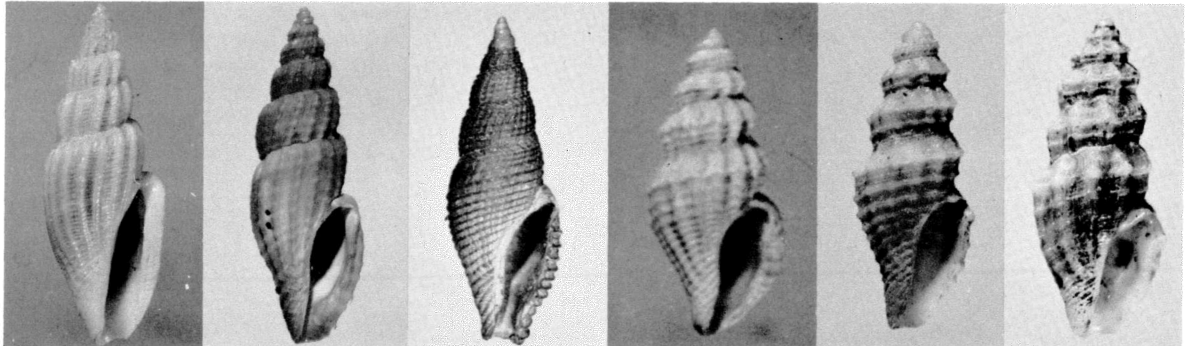


Figure 42 Figure 43 Figure 44 Figure 45 Figure 46 Figure 47

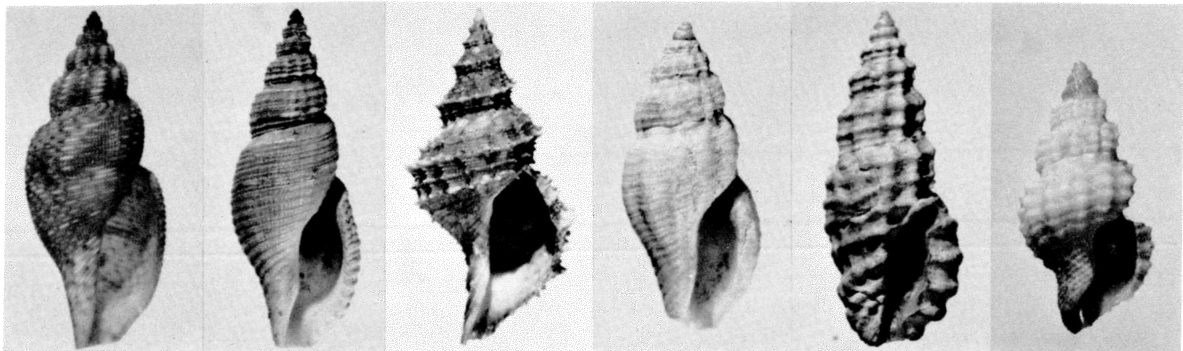


Figure 48 Figure 49 Figure 50 Figure 51 Figure 52 Figure 53

65 feet, 13–21 October 1968, 2 specimens taken by diving by James H. McLean, LACM loc. 68-41.

Type Material: Holotype, LACM 1515, paratype, LACM 1516.

Referred Material: Poorman collection, Guaymas; Shasky collection, Espiritu Santo Island, and El Pulmo, Baja California; LACM, Cerralvo Island, El Pulmo, and Cape San Lucas; USNM 128227, San Jose Island, Gulf of California, all specimens taken by shallow diving.

Discussion: *Carinodrillia lachrymosa* is smaller than *C. dichroa* (Pilsbry & Lowe, 1932) and lacks the spiral cording of that species. It is more slender and with a different color pattern than that of *C. alboangulata* (E. A. Smith, 1882). The name is Latin, full of tears, suggested by the white axial ribs on the dark ground, resembling teardrops.

31. *Compsodrillia gracilis* McLean & Poorman, spec. nov.

(Figure 31)

Description of Holotype: Shell small for the genus, fusiform, with a moderately elongate anterior canal; aperture less than $\frac{1}{3}$ the length of the shell; whorls rounded, suture impressed; color tan under a thin brown periostracum. Protoconch of 3 glossy, white whorls with deeply impressed sutures, tip small, change to mature sculpture gradual; postnuclear whorls 8. Axial sculpture of 8 narrow ribs on early whorls, increasing to 12 on final whorl, strong at the periphery, but obsolete on the pillar; spiral sculpture of a strong undulating subsutural cord close to the suture, a smooth concave channel below; 2 major peripheral cords per whorl with 2 minor cords above and below, producing strong, projecting beads on crossing the axial ribs, all spiral cords present from the earliest adult whorls; cords of the base and pillar 14, becoming less prominent upon the pillar; fine growth lines present throughout. Sinus deep, U-shaped, the opening laterally directed, bordered on the inside by triangular callus layered downward; lip edge thin, preceded by a more prominent axial rib $\frac{1}{6}$ turn back; stromboid notch shallow, anterior canal elongate, weakly notched, inner lip callus slightly raised above the pillar. Height, 12.9, diameter, 4.2 mm. Largest paratype, 16.9 mm.

Type Locality: Off southern coast of Isla Santa Cruz, Galápagos Islands, Ecuador ($0^{\circ}47' S$, $90^{\circ}21' W$), 100–200 meters (55–110 fathoms), 23–29 July and 5 December 1969, 8 specimens, dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1517, 4 paratypes, LACM 1518, single paratypes, ANSP, CAS, and USNM.

Referred Material: Galápagos Islands: AHF 190-34, 1 specimen, 55 fathoms, S end Isabela Island; AHF 788-38, 1 specimen, 55 fathoms, Daphne Major Island; AHF 792-38, 1 specimen, 70–80 fathoms, Daphne Minor Island.

Discussion: Smallest of the *Compsodrillia*, this resembles only *C. opaca*, new species, differing chiefly in having a longer canal and more numerous spiral cords upon the pillar. The name is Latin, slender or graceful.

32. *Compsodrillia olssoni* McLean & Poorman, spec. nov.

(Figure 32)

Description of Holotype: Shell of small to moderate size for the genus, high spired, but with short, truncate anterior end; periostracum in thin ridges, easily worn off; surface texture shiny, color light tan, spiral cording and pillar lighter colored. Protoconch of 3 light brown whorls (tip missing in holotype), developing a low peripheral carination on the second whorl, thin axials on the third whorl, mature sculpture appearing on the fourth, or first postnuclear whorl; postnuclear whorls 9. Axial sculpture of 7 stout ribs on early and later whorls, strong at the periphery, but obsolete across the subsutural channel and pillar; spiral sculpture of a strong undulating subsutural cord and a major peripheral cord with two cords of lesser strength above and below, the lowermost adjacent to the scarcely impressed suture; additional basal cords 10, entire shell with microscopic spiral lirae and growth lines. Sinus deep, U-shaped, entrance nearly sealed by triangular callus layered downward, strength at the top by the termination of the subsutural cord; lip edge thin, strengthened by an axial rib and a more massive rib $\frac{1}{2}$ turn back, stromboid notch shallow; anterior canal short and broad, shallowly notched, inner lip callus slightly raised. Height, 17.0, diameter, 6.4 mm. Operculum with terminal nucleus.

Type Locality: Santa Elena Bay, Ecuador ($2^{\circ}08'20'' S$, $81^{\circ}00'15'' W$), 8–10 fathoms, 9 February 1934, 13 specimens (3 immature), dredged by the R/V *Velero*, AHF station 209-34.

Type Material: Holotype, LACM-AHF 1519, 8 paratypes, LACM-AHF 1520, single paratypes, AMNH, ANSP, CAS, and USNM.

Referred Material: Poorman Collection, 2 specimens, 17 fathoms, Guaymas, Mexico; LACM 38-9, 1 specimen, 40–70 fathoms, Guatulco Bay, Oaxaca, Mexico.

Discussion: *Compsodrillia olssoni* most resembles *C. jaculum* (Pilsbry & Lowe, 1932), but is larger, less slender, lighter colored, and has few spiral cords upon the pillar.

We dedicate this species to Axel A. Olsson, of Coral Gables, Florida, author of numerous contributions on New World mollusks, living and fossil.

33. *Compsodrillia opaca* McLean & Poorman, spec. nov.

(Figure 33)

Description of Holotype: Shell of moderate size for the genus, anterior canal short, aperture $\frac{1}{3}$ the length of the shell, whorls rounded, suture impressed; color brown with a broad, yellowish white peripheral band under a thin brown periostracum. Protoconch missing (all specimens); remaining whorls 9. Axial sculpture of 9 narrow ribs on early whorls, increasing to 13 on final whorl, weak in the subsutural area and obsolete on the pillar; spiral sculpture of a strong, undulating subsutural cord adjacent to the suture, a smooth subsutural channel below; early whorls with 2 strong narrow spiral cords, a third fully emerged on the penultimate whorl, strongly beaded on crossing the narrow axial ribs; base with 9 additional spiral cords; growth striae microscopically fine. Sinus deep, U-shaped, the opening laterally directed and closely constricted by triangular callus representing the termination of the subsutural cord; lip with a weak rib back of the edge and a slightly stronger rib than normal just behind; stromboid notch shallow, anterior canal broad, weakly notched, inner lip not raised. Height, 20.6 mm; diameter, 6.8 mm. Operculum with terminal nucleus.

Type Locality: Ranger Bank off Cedros Island, Baja California ($28^{\circ}31'01''$ N, $115^{\circ}30'31''$ W), 76–77 fathoms on loose rock, 25 February 1941, 2 specimens, dredged by the R/V *Velero*, AHF station 1247-41.

Type Material: Holotype, LACM-AHF 1521, 1 paratype, LACM-AHF 1522.

Referred Material: AHF, 5 stations, Cedros Island vicinity, 49–81 fathoms, 14 specimens total; CAS 27598, Cedros Island, 3 specimens; AHF 618-37, 75 fathoms, 2 specimens, San Jaime Bank, near Cape San Lucas, Baja California; AHF 1058-40, 68–54 fathoms, 1 specimen, Angel de la Guarda Island, Gulf of California.

Discussion: *Compsodrillia opaca* is larger than *C. gracilis* new species, and has a shorter canal and fewer spiral cords on the pillar. The periostracum tends to obscure the color pattern, thereby suggesting the name, an adjective meaning shaded.

34. *Compsodrillia undaticorda* McLean & Poorman, spec. nov.

(Figure 34)

Description of Holotype: Shell of moderate size for the genus, anterior canal moderately long, aperture $\frac{1}{3}$ the length of the shell, subsutural area markedly concave, whorls tabulate; color tan under a thin brown periostracum. Protoconch of 3 whorls, first 2 smooth, third with narrow, vertical axial ribs and a peripheral bulge, changing gradually to mature sculpture; postnuclear whorls 8. Early whorls with 8 stout axial ribs, increasing to 9 on final whorl; ribs arising in the subsutural channel, strong across the body whorl and obsolete upon the pillar; spiral sculpture of a sharply projecting subsutural cord adjacent to the suture; below the smooth subsutural channel 3 sharply projecting cords on early whorls, on successive whorls 1 additional cord arising above and 2 below to make 6 such cords on the back of the penultimate whorl; body whorl and base in advance of the aperture with a total of 18 sharp cords; cords more strongly projecting on crossing the axial ribs. Sinus deep, U-shaped, the opening laterally directed, bordered on the inside by triangular callus layered downward, strengthened above by the termination of the subsutural cord; lip edge thin with a weak rib behind and a more prominent axial rib $\frac{1}{8}$ turn back; stromboid notch shallow, anterior canal moderately elongate, weakly notched; inner lip callus slightly raised above the pillar. Height, 16.2, diameter, 6.2 mm (maximum length 22 mm).

Type Locality: South of Isla Albany, Galápagos Islands, Ecuador ($0^{\circ}10'45''$ S, $90^{\circ}52'08''$ W), 50–70 fathoms, 24 January 1934, 1 specimen, dredged by the R/V *Velero*, AHF station 183-34.

Type Material: LACM-AHF 1523.

Referred Material: Galápagos Islands (none mature): AHF 324-35, 1 specimen, 45 fathoms, Tagus Cove, Isabela Island; LACM, 44–82 fathoms, northern and southern coasts of Isla Santa Cruz, 3 specimens.

Discussion: None of the other *Compsodrillias* have sharp projecting spiral cording and this species thereby stands well apart. The name is a Latin noun derived from *undatus*—wavy, and *chorda*—rope or twine, suggested by the characteristic spiral cording.

35. *Borsonella abrupta* McLean & Poorman, spec. nov.

(Figure 35)

Description of Holotype: Shell moderately large for the genus, fusiform, with elongate canal; surface texture

waxen under a thin, flaking, dark brown periostracum; color yellowish brown under the periostracum, the periphery lightest in color, the subsutural area and base slightly darker, the pillar darkest; aperture plus canal $\frac{1}{3}$ the length of the shell; suture undulating, immediate subsutural area inflated. Protoconch missing, first 2 whorls with sculpture eroded away, sculptured whorls 7. Axial ribs 9 on early whorls, 10 on final whorl; ribs massive, arising below the subsutural channel and descending vertically, obsolete upon the base and pillar. Spiral striae irregular in strength and spacing, fine growth lines present throughout, the V-shaped markings of the anal fasciole prominent. Outer lip broken in the type; inflated and depressed areas within the aperture, corresponding to axial ribbing; anterior canal moderately long, weakly notched; columella sunken, a single prominent plication emerging deep within. Height, 21.6, diameter, 7.4 mm.

Type Locality: Northwest of Charles (Santa Maria) Island, Galápagos Islands, Ecuador ($1^{\circ}09' N$, $90^{\circ}35' W$), 250 fathoms, 23 January 1938, 1 specimen, dredged by the R/V *Velero*, AHF station 802-38.

Type Material: Holotype, LACM-AHF 1524.

Discussion: No other eastern Pacific species of *Borsonella* has massive, vertical axial ribbing. The name is a Latin adjective meaning steep or broken, suggested by the abruptly terminating axial ribbing.

36. *Borsonella galapagana* McLean & Poorman, spec. nov.

(Figure 36)

Description of Holotype: Shell of moderate size for the genus, fusiform, the aperture extending nearly $\frac{1}{2}$ the length of the shell, whorls angulate, upper half of whorl slightly concave, lower half sloping inward; color light tan under a thin olive periostracum. Protoconch of 2 bulbous whorls with lateral tip, change to mature sculpture gradual, through a stage with a peripheral bulge, then a carination; postnuclear whorls 7. Early whorls with 13 peripheral nodes, persisting for 4 whorls, but becoming obsolete on final whorls; spiral sculpture on early whorls of 3 cords on the lower half of the whorl, becoming obsolete by the final whorl; final whorl in advance of the aperture with weak and irregular cords between the periphery and the siphonal fasciole. Columellar area broad, 2 strong plicae arising deep within, the uppermost the strongest; sinus broad and deep, U-shaped, occupying most of the shoulder sulcus; lip not greatly thickened, arcuate, stromboid notch absent; anterior canal broad, unnotched, columella sloping to the left. Height, 15.8, diameter, 6.1 mm. Operculum vestigial, with apical nucleus.

Type Locality: Off southern coast of Isla Santa Cruz, Galápagos Islands, Ecuador ($0^{\circ}47' S$, $90^{\circ}21' W$), 170–200 meters (93–110 fathoms), 26–27 July 1969, 5 specimens, dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1525, 3 paratypes, LACM 1526, 1 paratype, ANSP.

Discussion: No other eastern Pacific *Borsonella* having 2 columellar plicae is known, but the profile of *B. galapagana* is characteristic of that genus. Generic allocation is provisional.

37. *Cymakra baileyi* McLean & Poorman, spec. nov.

(Figure 37)

Description of Holotype: Shell small for the genus, tan with a slightly darker band below the periphery, with occasional darker flecking on the cording of the upper part of the whorl; whorls rounded, suture impressed; length of aperture nearly $\frac{1}{2}$ the length of the shell. Protoconch of $1\frac{1}{2}$ smooth, bulbous whorls, tip small and lateral; post-nuclear whorls 5. Axial ribs strong, rounded, 10 on early and later whorls, tending to be continuous from whorl to whorl and extending from suture to suture, fading on the base and obsolete upon the pillar, obsolete on the back of the last whorl; spiral cords 4 per whorl, the uppermost undulating and close to the suture, the lower 2 the most prominent, cords overriding the axial ribs; base and pillar with 11 additional cords. Columella with 2 strong plicae, the uppermost the strongest; lip not thickened (lip edge broken back on holotype), strongly lirate within; anterior canal not differentiated from aperture, unnotched. Height, 4.7, diameter, 2.1 mm.

Type Locality: Off Cape San Lucas, Baja California, Mexico ($22^{\circ}56'36'' N$, $109^{\circ}47' W$), 33 fathoms, 18 February 1936, 1 specimen, grab sample by the R/V *Velero*, AHF bottom sample station 239.

Type Material: Holotype, LACM-AHF 1527.

Referred Material: LACM 67-76, 1 specimen, 80–115 feet, Cape San Lucas; AHF 668-37, 1 specimen, 20 fathoms, Puerto Escondido, Baja California; AHF bottom sample station 290, 1 specimen, 25 fathoms, San Marcos Island, Gulf of California; Bailey collection, 1 specimen, dredged, Bahía de Los Angeles, Baja California.

Discussion: *Cymakra baileyi* has stronger axial ribbing than other eastern Pacific members of the genus. It is closest to *C. intermedia* (Arnold, 1903), a species described as a Pleistocene fossil but now known to be living off southern California, a much larger species with more

numerous and weaker axial ribs. We are pleased to name the species for James O. Bailey of Los Angeles.

38. *Cymakra granata* McLean & Poorman, spec. nov.

(Figure 38)

Description of Holotype: Shell of average size for the genus, ovate-biconic with nearly flat-sided whorls, aperture more than $\frac{1}{2}$ the length of the shell; color light brown with mottling of white, aperture and pillar white. Protoconch of 2 smooth, bulbous whorls, tip small (broken in holotype); postnuclear whorls 5. Axial ribs on early whorls 14, increasing to 28 on final whorl, ribs narrow and weak, obsolete below the periphery, crossed by narrow spiral cords, finely beaded at intersections, 3 on the first 2 postnuclear whorls, 4 on the fourth, 5 on the last whorl above the aperture, 16 additional on the base and pillar; basal cords flat-topped, with narrower interspaces. Columella excavated upon the pillar, 2 weak but distinct plicae deep within; sinus and anal fasciole not indicated, lip thick and swollen behind the edge, 10 low denticles just within; aperture long and narrow, anterior canal not differentiated or notched. Height, 6.2, diameter, 2.7 mm.

Type Locality: Off SW end Isla Monserrate, Gulf of California ($25^{\circ}34' N$, $111^{\circ}05' W$), 20–40 fathoms, 1 September 1960, 1 specimen, dredged on the Ariel Expedition, Shasky Collection.

Type Material. Holotype, LACM 1528.

Discussion: *Cymakra granata* most resembles the Californian *C. gracilior* (Tryon, 1884), but has a smaller protoconch, less inflated whorls, a longer aperture, 3 rather than 4 cords on the first and second postnuclear whorls, more numerous cords on the body whorl, and weaker columellar plicae. The name is a Latin adjective, having many grains or seeds, suggested by the sculpture of fine granular beading.

39. *Clathurella maryae* McLean & Poorman, spec. nov.

(Figure 39)

Description of Holotype: Shell of average size for the genus, with rounded whorls, deeply impressed sutures, a constricted pillar, and a moderately elongate anterior canal; color yellowish brown with a narrow brown sub-sutural band and dark bands of brown across the base and pillar, the sinus and lower margin of the lip dark brown. Protoconch of 4 whorls including a minute tip, last 2 whorls with a sharp peripheral keel and weak axial lamel-

lae on the lower half; postnuclear whorls 5. Axial ribs 9 on early whorls, increasing to 11 on final whorl, strong, rounded, running from suture to suture, becoming obsolete upon the base and pillar; spiral sculpture of at first 3, then 4, strong cords on the lower half of the whorl, overriding the axial ribs and strongly beaded at intersections; shoulder with at first 4, then 5, smaller, narrower, more closely spaced spiral cords; base and pillar with 9 additional cords; interspaces minutely pustulose throughout. Sinus deep, U-shaped, bordered on the inside by a curved pad of parietal callus; lip strengthened behind by a massive axial rib, lip with 5 denticles away from the edge, the uppermost the largest; anterior canal twisted to the left and deeply notched; columella excavated upon the pillar, 3 weak denticles extending within. Height, 7.5, diameter, 2.9 mm.

Type Locality: One mile S of E promontory at entrance to Bahía San Carlos, Guaymas, Sonora, Mexico ($27^{\circ}56' N$, $111^{\circ}05' W$), 17 fathoms on gravel bottom, December 1963, 7 specimens dredged by Forrest and Roy Poorman.

Type Material: Holotype, LACM 1529, single paratypes, CAS, ANSP, and USNM, 3 paratypes, Poorman Collection.

Referred Material: AHF 1261-41, 1 specimen, 24 fathoms, near Cedros Island, Baja California. Gulf of California: LACM, 1 specimen dredged off Puertocitos; AHF 712-37, 1 specimen, 50–75 fathoms off Angel de la Guardia Island; Shasky Collection, 2 specimens, 20–40 fathoms off Monserrate Island; LACM 66-22, 1 specimen, 10–30 fathoms, Muertos Bay, Galápagos Islands: AHF bottom sample station 415, 1 specimen, 55 fathoms, Duncan Island.

Discussion: *Clathurella maryae* differs from *C. rava* (Hinds, 1843) and *C. rigida* (Hinds, 1843) in color pattern and proportions and in having a moderately long anterior canal rather than a truncate anterior end. The specimen from the Galápagos Islands has one less mature whorl but otherwise agrees with those from the Gulf of California. We are pleased to name the species for Señora Mary Ricaud of Guaymas, Mexico.

40. *Glyphostoma (Glyphostoma) pustulosa*
McLean & Poorman, spec. nov.

(Figure 40)

Description of Holotype: Shell large for the genus, sculptured with weak peripheral nodes below a shallow sub-sutural channel, length of aperture $\frac{1}{2}$ the length of the shell; color creamy white with diffuse blocks of yellowish

brown between the peripheral nodes. Protoconch relatively small, 3 whorls, third whorl with a sharp peripheral carination on the lower third; postnuclear whorls 8. Axial sculpture of 9 low peripheral nodes on early and final whorls; spiral sculpture of 3 fine cords on the lower half of early whorls, additional cords gradually taking shape in the subsutural channel and becoming very numerous and regular on the final whorl, about 60 on the final whorl in front of the aperture; entire surface densely packed with microscopic pustules. Sinus deep, U-shaped, not outward projecting, bordered on the inside by a parietal callus pad bearing 4 lirations; lip thin edged, arcuate, with an even thickening behind; lip with 10 denticles away from the edge, the uppermost the strongest; anterior canal broad, deeply notched, flexed to the right; columella with 8 weak denticles. Height, 22.9, diameter, 8.3 mm.

Type Locality: Off Jarvis Island, Galápagos Islands, Ecuador (0°23' S, 90°43' W), 10–20 fathoms, May 1964, 1 specimen dredged by André and Jacqueline DeRoy.

Type Material: Holotype AMNH 157263.

Referred Material: AHF, single specimens from Tagus Cove, Isabela Island, 10–20 fathoms (66-33, 157-34, 323-35); LACM, 6 specimens from James Bay, Santiago Island, Galápagos, dredged by the DeRoys at 30 meters, 4 February 1969. The holotype is the only fully mature specimen examined.

Discussion: We know of no other species of *Glyphostoma* having sculpture as weak as that of *G. pustulosa*. The name means full of pustules, suggested by the surface texture, an exaggeration of the pustular surface that is usual in the genus.

41. *Glyphostoma (Glyphostoma) scobina*
McLean & Poorman, spec. nov.

(Figure 41)

Description of Holotype: Shell small for the genus, surface shiny, microscopically pustular or pitted; color whitish with a brown subsutural band, the dark color extending down into the channels between the axial ribs, particularly strong on the back of the last whorl; base broadly banded with brown below the periphery, lip edge brown, pillar and aperture white. Protoconch relatively large, whorls 4, developing by the second whorl a sharp peripheral carination on the lower third; postnuclear whorls 6. Axial sculpture on early whorls 11, increasing to 16 strong, rounded, slanted ribs, arising below the subsutural channel, extending across the body whorl and

fading on the base; spiral sculpture of low rounded cords, irregular in width and spacing, overriding the axial ribs, 8 on the whorl directly above the anal sinus, 24 additional on the base and pillar. Sinus deep, U-shaped, bordered on the inside by a parietal callus pad having 2 large inner and 2 small outer denticles; lip edge crenulated by extensions of the spiral cords, thickened within and just behind on the outside by a massive rib; lip with 9 denticles inside, the uppermost the strongest; anterior canal short, broad and deeply notched; columella slightly sunken below the pillar, bearing 11 denticles decreasing in size anteriorly. Height, 12.9, diameter, 5.2 mm.

Type Locality: Off southern coast of Isla Santa Cruz, Galápagos Islands, Ecuador (0°47' S, 90°21' W), 170–200 meters (93–110 fathoms), 25 July and 5 December 1969, 7 specimens, dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1530, 3 paratypes, LACM 1531, single paratypes, CAS, ANSP, and USNM.

Referred Material: AHF 199-34, 2 intertidal crab specimens, Isla Santa Maria, Galápagos Islands; AHF bottoms sample station 328, 1 immature specimen, 14 fathoms, Chatham Bay, Cocos Island, Costa Rica.

Discussion: *Glyphostoma scobina* is unlike any other eastern Pacific species in sculpture and color pattern. Its distribution at the Galápagos and Cocos Islands suggests that it may have been more widely distributed in the Panamic Province in the past. The name is a Latin noun meaning file or rasp, suggested by the pustular surface of the spiral cording.

42. *Euclathurella acclivicallis* McLean & Poorman,
spec. nov.

(Figure 42)

Description of Holotype: Shell of moderate size for the genus; aperture $\frac{1}{2}$ the length of the shell, sutures deeply impressed, whorls sharply tabulate; surface translucent, color creamy white. Protoconch of $2\frac{1}{2}$ whorls, tip small, smooth at first, then developing fine axial ribs after 2 whorls and making a smooth transition to mature axial ribbing; postnuclear whorls $6\frac{1}{2}$. Axial ribs 11 on early whorls, increasing to 15 on final whorl, extending from suture to suture, undulating the suture, strong and flexed at the shoulder, extending across the body whorl and fading upon the pillar; spiral sculpture on first postnuclear whorl of 4 weak cords, on later whorls of fine, unevenly spaced striae, not deeply incised, dull surfaced rather than shiny, overriding the axial ribs, changing on the pillar to raised cording with narrower, dull surfaced inter-

spaces. Sinus moderately deep, bordered on the inside by a slight deposition of callus; lip thickened behind the edge by a massive rib, rising above the suture when viewed from the side, stromboid notch shallow; anterior canal broad, not differentiated from the elongate aperture, unnotched; inner lip not raised. Height, 11.8, diameter, 4.2 mm.

Type Locality: Tagus Cove, Isabela Island, Galápagos Islands, Ecuador (0°16'08" S, 91°22'38" W), 75–100 meters (41–55 fathoms), 21 January 1968, 1 specimen, dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1532.

Referred Material: LACM, 3 specimens (immature or broken), 82 fathoms off southern coast Isla Santa Cruz, dredged by the DeRoys.

Discussion: This differs from *E. carissima* (Pilsbry & Lowe, 1932) in having a less constricted sinus and stronger tabulation of the shoulder. Species allocated to *Tenaturris* Woodring, 1928, have a concave shoulder and less parietal callus. The type species of *Euclathurella* Woodring, 1928 (*Clathurella vendryesiana* Dall, 1896), has a larger nuclear tip, but otherwise the two species fit well in the genus. The name is a Latin noun derived from *acclivis*—ascending, and *callis*—narrow foot path, suggested by the strikingly tabulate shoulder.

43. *Acmaturris ampla* McLean & Poorman, spec. nov.

(Figure 43)

Description of Holotype: Shell moderately large for the genus; sutures deeply impressed, whorls rounded and somewhat shouldered; color reddish brown, the pillar a darker shade and the shoulder of lighter intensity. Protoconch of 3 whorls, first 2 smooth with impressed sutures, third bulging or keeled at the periphery and having narrow axial riblets; postnuclear whorls 6. Axial ribs 11 on early whorls, increasing to 16 on final whorl, ribs narrow, extending from suture to suture, flexed at the shoulder and slanted protractively across the body whorl, terminating at one of the strong spiral cords on the pillar; spiral sculpture of 5 major cords per whorl, beaded on crossing the axial ribs, interspaces with fine spiral striae that override the ribs; base with 4 additional major cords, the lowermost strongly beaded at the terminations of the axial ribs; pillar with 2 major and 2 minor spiral cords below, uncrossed by the axial ribs. Sinus broad and shallow, bounded on the inside by a parietal extension of the lip; lip edge thin, strengthened behind by a varix or massive rib, stromboid notch shallow; anterior canal

broad and unnotched, inner lip not raised. Height, 9.9, diameter, 3.2 mm.

Type Locality: Gulf of Guayaquil, Ecuador (3°08' S, 80°49' W), 35 fathoms, 1 specimen, 7 February 1934, AHF bottom sample station 508. The specimen has a hole in the back of the last whorl, a broken columella internally, and a flaking texture, suggesting that it may be subrecent.

Type Material: Holotype, LACM-AHF 1533.

Discussion: This is the first Recent member of a genus otherwise known from three species from the Caribbean Miocene, differing from all in having more rounded whorls, more deeply impressed sutures and a less constricted pillar. The name is a Latin adjective meaning large or great.

44. *Thelecythara dushanae* McLean & Poorman, spec. nov.

(Figure 44)

Description of Holotype: Shell moderately large for the genus, suture not deeply impressed, whorls evenly convex, aperture slightly less than ½ the length of the shell; color uniformly reddish brown. Protoconch whorls 3, evenly convex, shiny, light tan; the axial ribbing of mature whorls emerging weakly at first, followed by spiral sculpture; postnuclear whorls 6. Axial sculpture of 14 narrow ribs on early whorls, increasing to about 34 on penultimate whorl, becoming nearly obsolete on final whorl, crossed by spiral cords of equal strength on early whorls, far greater strength on later whorls, beaded at intersections and producing squarish cancellations; on the final whorl the cording above the periphery is nearly obsolete, except for the narrow subsutural cord; 16 strong cords upon the base and pillar in advance of the aperture. Sinus deep, U-shaped, bordered on the inside by triangular callus layered downward, lip edge rendered serrate by terminations of the strong spiral cords, thickened behind by a massive varix; stromboid notch shallow but distinct; anterior canal short, differentiated from the rest of the aperture, weakly notched, inner lip callus slightly raised. Height, 8.4, diameter, 2.9 mm.

Type Locality: One mile S of E promontory at entrance to Bahía San Carlos, Guaymas, Sonora, Mexico (27°56' N, 111°05' W), 17 fathoms on gravel bottom, April 1962, 6 specimens (3 immature) dredged by Forrest and Roy Poorman.

Type Material: Holotype, LACM 1534, single paratypes, ANSP, USNM; 3 paratypes, Poorman Collection.

Referred Material: Poorman Collection: 4 specimens dredged, 2 miles W of Bahía San Carlos; 1 specimen dredged, Candeler Bay, Guaymas; Shasky Collection: 2 specimens, 20 fathoms, Isla Blanca, Guaymas; CAS loc. 27229, 2 specimens, Bahía Honda, Panama.

Discussion: *Thelecythara dushanae* differs from *T. floridana* Fargo, 1953, a species described from the Pliocene of Florida but now known to be represented in the Panamic Province, in having more prominent spiral sculpture than axial, and a more defined anterior canal. We are pleased to name the species for Helen DuShane (Mrs. Joseph DuShane), of Whittier, California, in recognition of her work with the Eastern Pacific Epitoniidae.

45. *Kurtzia elenensis* McLean & Poorman, spec. nov.

(Figure 45)

Description of Holotype: Shell small for the genus, whorls angulate at the periphery; color uniformly tan, darker in the aperture. Protoconch of 4 whorls, the first 2 smooth, tip small and elevated, third whorl developing faint axial riblets and spiral rows of pustules that gradually emerge as beads at intersections of fine cancellate sculpture, peripheral cord becoming more prominent and emerging as the main peripheral keel of the mature sculpture; postnuclear whorls 4. Axial ribs 11 on early whorls, increasing to 13 on final whorl, ribs narrow, extending from suture to suture, terminating on reaching the closely spaced spiral cords of the pillar, crossed by a major cord comprising the peripheral keel and two additional major cords below, base and pillar with 14 additional cords, strongly nodular on crossing the narrow axials; secondary cording numerous and with a frosted surface, having fine, elevated, rounded pustules in even rows. Sinus broad and shallow, directed laterally on the shoulder, bordered on the inside by a parietal extension of the lip and with a small tubercle just below the sinus on the lip; lip edge thin but strengthened behind by a large terminal varix; aperture elongate, the anterior canal not differentiated, directed to the left, unnotched; columella slightly sunken below the pillar. Height, 4.4, diameter, 1.9 mm.

Type Locality: Gulf of Guayaquil, Ecuador (3°08' S, 80°49' W), 35 fathoms, 2 specimens, 7 February 1934, AHF bottom sample station 508.

Type Material: Holotype, LACM-AHF 1535, paratype, LACM-AHF 1536.

Discussion: Smallest of the Kurtzias, this is relatively broad and has more numerous axial ribs and major spiral cords than the others. The type locality, the Gulf of Guayaquil, is just to the south of the Santa Elena Peninsula, hence the name, *elenensis*.

46. *Kurtzia humboldti* McLean & Poorman, spec. nov.

(Figure 46)

Description of Holotype: Shell small and relatively slender for the genus, whorls angulate at the periphery; color uniformly yellowish tan. Protoconch of 4 whorls, first 2 smooth with a microscopically granular surface, third whorl with 5 rows of pustules that gradually emerge as beads at the intersections of fine axial ribs and spiral cords, the peripheral cord more prominent and becoming the main peripheral keel of the mature sculpture; postnuclear whorls 4. Axial ribs 11 on early and final whorls, narrow, extending from suture to suture, terminating on reaching the strong spiral cords of the pillar; crossed by a major cord comprising the peripheral keel with another below on early whorls; base and pillar with 11 additional cords, strongly nodular on crossing the narrow axials; secondary spiral cording numerous and with a frosted surface, having fine, elevated, rounded pustules in even rows. Sinus relatively deep, with a narrow entrance, directed laterally on the shoulder, bordered on the inside by a parietal extension of the lip, a small tubercle just below the sinus on the lip; lip edge thin but strengthened behind by a weak rib and by a slightly larger than normal rib preceding it; aperture elongate, the anterior canal not differentiated, directed slightly to the left, unnotched; columella slightly sunken below the pillar. Height, 5.2, diameter, 2.1 mm.

Type Locality: Tagus Cove, Albemarle (Isabela) Island, Galápagos Islands, Ecuador (0°16'08" S, 91°22'38" W), 10–18 fathoms, 15 January 1934, 4 specimens dredged by the R/V *Velero*, AHF station 157-34.

Type Material: Holotype, LACM-AHF 1537, 2 paratypes, LACM-AHF 1538, 1 paratype, USNM.

Referred Material: Galápagos Islands: AHF 187-34, 2 specimens, 8–10 fathoms, Cartago Bay, Isabela Island; AHF bottom sample 408, 9 specimens, 13 fathoms, Albemarle Point, Isabela Island.

Discussion: Most slender of the Kurtzias, this also has the narrowest and deepest sinus. We name it for Alexander Humboldt, 18th century naturalist. The Humboldt Current cools the waters of the Galápagos, greatly affecting the fauna of these islands.

47. *Pyrgocythara angulosa* McLean & Poorman, spec. nov.

(Figure 47)

Description of Holotype: Shell relatively small for the genus, whorl outline angulate; color yellowish white with brown markings between axial ribs at the periphery, pil-

lar and aperture white. Protoconch of 2 whorls, tip small and central, first whorl smooth and round, last half of second whorl developing fine axial riblets and a peripheral carination, gradually changing to mature sculpture; postnuclear whorls 6. Axial ribs strong and broad, 8 on early and final whorls, extending from suture to suture but reaching their crests at the periphery, extending across the base until meeting the strong cording on the pillar; spiral sculpture of a major peripheral cord, a second major cord emerging on the second whorl, cords becoming broad and straplike on the final whorl, interspaces with fine spiral striae; base with 3 additional major cords, pillar with 10 strong, closely spaced cords; growth striae throughout, strong upon the shoulder. Sinus shallow, directed laterally, bordered on the inside with thickened parietal callus and a tubercle or denticle just below the sinus on the inside of the lip; lip thickened behind the edge by a terminal varix; anterior canal undifferentiated from the aperture, broad, unnotched; columella not raised above the pillar. Height, 5.2, diameter, 2.1 mm.

Type Locality: Bahía Guasimas, Sonora, Mexico (27°50' N, 110°33' W), intertidal mudflat, 10 April 1968, 15 specimens, collected by Peter M. Oringer, LACM locality 68-12.

Type Material: Holotype, LACM 1539, 9 paratypes, LACM 1540, single paratypes, AMNH, ANSP, CAS, SDNHM, USNM.

Discussion: *Pyrgocythara angulosa* has a shorter, less slender shell than *P. melita* (Dall, 1919), which has brown markings on the shoulder and pillar, while *P. angulosa* has brown markings at the periphery and a white pillar. The name is a Latin adjective meaning full of corners, suggested by the angulate profile.

48. *Daphnella gemmulifera* McLean & Poorman,
spec. nov.

(Figure 48)

Description of Holotype: Shell of moderate size for the genus, characterized by its tabulate shoulder, constricted pillar and broadly flaring aperture; aperture more than $\frac{1}{2}$ the length of the shell; color yellowish brown with broad areas of light and dark mottling, with white flecking upon the spiral cords. Protoconch of 4 dark brown whorls with deeply impressed sutures, the first faintly spirally lirated, others with narrow axials descending vertically across the shoulder, diagonally reticulate at the periphery and below; postnuclear whorls 5. Axial ribs swollen and massive, 11 on first postnuclear whorl, increasing to 13 on the penultimate, completely obsolete

upon the final whorl; ribs arising at the shoulder and extending diagonally to the suture below, crossed by 6 narrow spiral cords on the first postnuclear whorl, increasing by intercalation to 14 on the final whorl above the sinus; base and pillar with numerous additional ribs, slightly uneven in thickness because of continual increase in number by intercalation; the concave shoulder weakly spirally lirated; last whorl with minute axial riblets, finely beaded at intersections with the spiral ribs. Sinus deep, reversed L-shaped, parietal callus wanting, end of sinus rounded, lower edge of sinus produced straight forward; lip edge thin (possibly immature), arcuate, anterior end of aperture broadly open, not differentiated into an anterior canal; columellar area slightly sunken on the pillar. Height, 13.3, diameter, 5.4 mm.

Type Locality: Off southern coast of Isla Santa Cruz, Galápagos Islands, Ecuador (0°47' S, 90°21' W), 200 meters (110 fathoms), 5 December 1969, 2 specimens dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1541, 1 paratype, DeRoy Collection. The paratype measures: height, 12.2, diameter, 4.8 mm.

Discussion: Of the Eastern Pacific species, *Daphnella gemmulifera* is the most tabulate at the shoulder and has the broadest, most flaring aperture. The name is Latin—of or pertaining to gems.

49. *Daphnella retusa* McLean & Poorman, spec. nov.

(Figure 49)

Description of Holotype: Shell of moderate size for the genus, whorls rounded, characterized by a thickened mature lip, constricted pillar, and short anterior canal; aperture slightly more than $\frac{1}{2}$ the length of the shell; color yellowish white with faint brown markings, early whorls with a prominent white spiral cord. Protoconch of 4 dark brown whorls with deeply impressed sutures, tip small, faintly spirally lirated, the rest with narrow axials descending vertically across the shoulder, diagonally reticulate at the periphery and below; postnuclear whorls 5. Axial ribs narrow, strongly projecting on early whorls, 7 on first postnuclear whorl, increasing to 14 on penultimate whorl, obsolete upon the final whorl; ribs arising at the shoulder below a concave but sloping subsutural channel, extending to the suture below, crossed by 3 strong spiral cords on first postnuclear whorl, increasing by intercalation to 10 above the aperture on final whorl, base and pillar with 15 additional cords, stronger and more evenly spaced on the pillar; last whorl with fine axial riblets, faintly overriding the spiral cords and pro-

ducing beading at intersections. Sinus L-shaped, termination rounded, parietal callus lacking; lip thickened behind the edge, anterior canal short, directed toward the left; columellar area slightly sunken on the pillar. Height, 12.4, diameter, 4.7 mm.

Type Locality: Off Loreto, Baja California, Mexico (26° 02' N, 116° 16' W), 20–40 fathoms, 29 August 1960, 1 specimen dredged by the Ariel Expedition, Shasky Collection.

Type Material: Holotype, LACM 1542.

Referred Material: Shasky Collection: Punta Final, Baja California. LACM: Mexico: Guaymas; Punta Arena, Baja California; Espiritu Santo Island; Cuastecomate, Jalisco; Guatulco Bay, Oaxaca. Panama: Tortola Island, Panama Bay.

Discussion: *Daphnella retusa* is not uncommon in collections, usually misidentified as *D. allemani* (Bartsch, 1931), from which it differs in having fewer spiral cords upon the final whorl, a more constricted pillar, and a short anterior canal, rather than having a widely flaring lip. It has also been misidentified as *D. panamica* Pilsbry & Lowe, 1932, which proves to be a synonym of *D. mazatlanica*, Pilsbry & Lowe, 1932, a species with an unconstricted pillar and widely flaring lip.

50. *Rimosodaphnella deroyae* McLean & Poorman,
spec. nov.
(Figure 50)

Description of Holotype: Shell relatively large, early whorls with a strong spinose peripheral carination, later whorls rounded; anal fasciole sculptured only with curved growth lines; anterior canal elongate, twisted to the left; length of aperture $\frac{1}{2}$ the length of the shell; color uniformly tan. Protoconch small, whorls 3, the tip immersed, first $1\frac{1}{2}$ whorls spirally lirate and punctate, changing to diagonally reticulate, last half whorl developing a low peripheral carination that rises to median position and becomes the main carination of mature sculpture; post-nuclear whorls 7. Axial sculpture of 11 narrow ribs on early whorls, increasing to 18 on the final whorl, arising below the anal fasciole and fading on the base; the axial ribs intersected by equally narrow spiral cords, producing strong spines at intersections, with 2 major spinose spiral cords above the periphery and 2 more below, base with 5 additional weakly spinose cords; all interspaces between major cords with finely beaded, not spinose, cords; the constricted pillar with twisted spiral ridges continuous around the columella. Sinus L-shaped, deep, parietal

callus lacking; lip edge thin, arcuate, leading into the elongate, unnotched anterior canal, canal twisted to the left; aperture with a thin glaze of blue callus, but otherwise translucent and excavated by the outward directed spines. Height, 26.2, diameter, 13.1 mm.

Type Locality: Academy Bay, Isla Santa Cruz, Galápagos Islands, Ecuador (0°45' S, 90°48' W), 200 meters (110 fathoms), 5 December 1969 and 15 January 1970, 4 specimens (3 immature and broken), dredged by André and Jacqueline DeRoy.

Type Material: Holotype, LACM 1543, 3 paratypes, LACM 1544.

Referred Material: LACM, 1 specimen from the southern coast of Isla Santa Cruz, dredged by the DeRoys.

Discussion: *Rimosodaphnella deroyae* is unlike any other daphnelline species known to us. The type species of the genus, *R. textilis* (Brocchi, 1814), from the Italian Pliocene, has rounded whorls and there is no indication of spinose sculpture, but the elongate canal is twisted to the left and the anal fasciole lacks spiral cording, exhibiting only raised growth lines. We provisionally refer *R. deroyae* to the genus. It is a pleasure to name this, the most spectacular of the new Galapagan turrids, for Jacqueline DeRoy (Mrs. André DeRoy), of Isla Santa Cruz, Galápagos Islands.

51. *Philbertia shaskyi* McLean & Poorman, spec. nov.
(Figure 51)

Description of Holotype: Shell small for the genus, characterized by massive axial ribs that undulate the sutures; whorls evenly rounded, length of aperture $\frac{1}{2}$ the length of the shell; color creamy white. Protoconch of 4 dark brown whorls, the first spirally lirate and faintly punctate, the rest diagonally reticulate, changing abruptly to mature sculpture; postnuclear whorls 5. Axial ribs massive, 9 on early whorls, 10 on final whorl, arising below the subsutural channel and becoming obsolete upon the pillar; spiral cords narrow and low, increasing by intercalation so that interspaces do not exceed the width of the cords, 5 on the penultimate whorl; body whorl and pillar with about 24 cords in advance of the aperture. Sinus sutural, relatively shallow, parietal callus lacking, lip thickened (edge broken in holotype), with an internal denticle below the sinus; anterior canal indicated by a deposition of callus at the base of the lip, canal short (tip broken in holotype), columella slightly sunken on the pillar. Height, 5.7, diameter, 2.5 mm.

Type Locality: Off SW end Isla Monserrate, Gulf of California (25°34' N, 111°05' W), 20–40 fathoms, 1 September 1960, 1 worn specimen, dredged on the Ariel Expedition, Shasky Collection.

Type Material: Holotype, LACM 1545.

Referred Material: LACM 68-27, 5 immature specimens, from siftings, rocky bottom, first cove north of Saladita Cove, Guaymas, Sonora, Mexico.

Discussion: *Philbertia shaskyi* may not be confused with other daphnelline species. The genus *Philbertia* is characterized by a diagonally cancellate protoconch, coarse clathrate sculpture, thickened lip with internal denticles, and a short anterior canal. *Philbertia doris* Dall, 1919, qualifies in all respects except for the internal lip dentition, although a trace of it may be indicated. *Philbertia shaskyi* lacks lip denticles and also does not have the coarse clathrate sculpture, but is tentatively placed in *Philbertia*. *Daphnella*, s. s., is larger, lacks an anterior canal and axial sculpture is usually obsolete upon the final whorl. We are pleased to name this species for Donald Shasky, M.D., of Redlands, California, whose extensive collection has filled in many gaps in the turrids.

52. *Kermia informa* McLean & Poorman, spec. nov.

(Figure 52)

Description of Holotype: Shell small for the genus, elongate cylindrical; chalky white, aperture glossy, translucent white. Protoconch of 4 translucent white whorls, tip small, the rest with low, narrow and sinuous axial riblets, gradually developing a peripheral bulge, the onset of mature sculpture marked by the appearance of a peripheral carination and broader spacing of the axial ribs; post-nuclear whorls 5. Axial ribs 10 on early and later whorls, ribs narrow, extending from suture to suture, but reaching their crests on crossing the two equally narrow spiral cords on each whorl, beaded at intersections, and producing deep squarish pits between; faint intercalary cords are present below the 2 main peripheral cords; base with 2 additional spiral cords; pillar with 3 massive spiral cords, the uppermost the largest; lip thickened by a massive varix, the spiral cording extending around it to the lip edge. Sinus moderately deep, entrance narrow, bordered on the inside by a parietal extension of the lip; lip faintly denticulate within, corresponding to the external cording; anterior canal differentiated from the aperture by a constriction produced by lip callus, columella slightly sunken on the pillar. Height, 6.7, diameter, 2.5 mm.

Type Locality: Cartago Bay, Albemarle (Isabela) Island, Galápagos Islands, Ecuador (0°36'18" S, 90°57'11" W), 8–10 fathoms, 25 January 1934, 5 specimens dredged by the R/V *Velero*, AHF station 187-34.

Type Material: Holotype, LACM-AHF 1546, 2 paratypes, LACM-AHF 1547, single paratypes, ANSP, USNM.

Discussion: This is the first Eastern Pacific representative of this otherwise Indo-Pacific genus, differing from typical members in having coarser sculpture and not having spiral threading on the lower half of the protoconch whorls as indicated in the generic diagnosis. The name is Latin, misshapen or deformed.

53. *Vepracula tornipila* McLean & Poorman, spec. nov.

(Figure 53)

Description of Holotype: Shell small for the genus, characterized by tabulate whorls and a markedly twisted anterior canal; color yellowish brown, the base and pillar brown. Protoconch relatively large, dark brown, whorls 4, first whorl smooth, the rest with thin axial riblets and minute spiral threads, not overriding the riblets; post-nuclear whorls 4. Axial ribs strong, projecting, with slightly broader interspaces, arising below the concave subsutural channel, fading on the base before reaching the tightly constricted pillar, 11 on first postnuclear whorl, 12 on final whorl, crossed by 3 strong spiral cords per whorl; cords overriding the axial ribs, beaded, almost spiny at intersections, base with 2 additional major cords; fine intercalary cords arise on the final whorl and are well developed on the back of the last whorl; pillar with 8 narrow, closely spaced cords. Sinus sutural, deep; lip thin-edged, anterior canal nearly as long as the aperture (apparently chipped in the holotype), twisted to the left and reflexed. Height, 3.8, diameter, 1.8 mm.

Type Locality: Tagus Cove, Albemarle (Isabela) Island, Galápagos Islands, Ecuador (0°16' S, 91°22' W), 80–100 fathoms, 15 January 1934, 1 specimen, grab sample by the R/V *Velero*, AHF bottom sample station 432.

Type Material: Holotype, LACM-AHF 1548.

Discussion: This is the first Eastern Pacific representative of *Vepracula*, an otherwise Indo-Pacific genus. The specimen may not be fully mature; illustrations of other species of *Vepracula* show 5–6 whorls, while *V. tornipila* has but 4 postnuclear whorls. The name is a Latin compound noun meaning twisted pillar.

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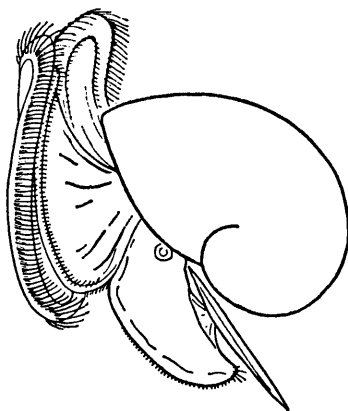
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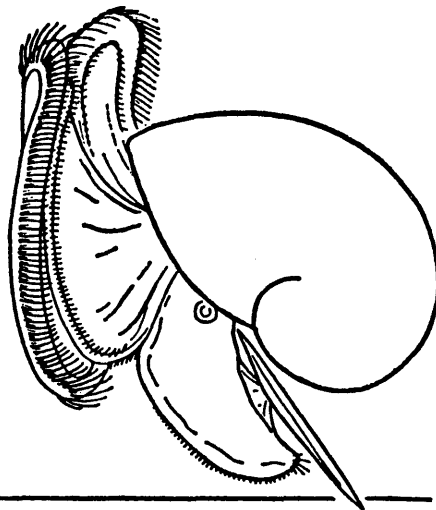
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Note: The various taxa above species are indicated by the use of different type styles as shown by the following examples, and by increasing indentation.

ORDER, Suborder, **DIVISION**, Subdivision, **SECTION**,
SUPERFAMILY, FAMILY, Subfamily, *Genus*, (*Subgenus*)
New Taxa

THE VELIGER is open to original papers pertaining to any problem concerned with mollusks.

This is meant to make facilities available for publication of original articles from a wide field of endeavor. Papers dealing with anatomical, cytological, distributional, ecological, histological, morphological, physiological, taxonomic, etc., aspects of marine, freshwater or terrestrial mollusks from any region, will be considered. Even topics only indirectly concerned with mollusks may be acceptable.

It is the editorial policy to preserve the individualistic writing style of the author; therefore any editorial changes in a manuscript will be submitted to the author for his approval, before going to press.

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Manuscripts should be typed in final form on a high grade white paper, not exceeding 8½" by 11", at least double spaced and accompanied by a clear carbon or photo copy. A pamphlet with detailed suggestions for preparing manuscripts intended for publication in **THE VELIGER** is available to authors upon request. A self-addressed envelope, sufficiently large to accommodate the pamphlet (which measures 5½" by 8½"), with double first class postage, should be sent with the request to the Editor.

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