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THE GENUS CONUS IN THE WESTERN ATLANTIC

BY
WILLIAM J. CLENCH

Conus fosteri Clench and Aguayo

Conus fosteri Clench and Aguayo 1942, *Johnsonia* 1, no. 6, p. 34, plate 12, fig. 5 (off Sagua la Grande, Santa Clara [Las Villas] Cuba).

Specimens examined. VENEZUELA: *Atlantis*, cruise 240, off Cabo Codera (N. Lat. 11°; W. Long. 66°1') in 150 fathoms (W. Athearn).

This extends considerably the range of this species. Heretofore it was known only from Cuba.

THE GENUS SCONSIA IN THE WESTERN ATLANTIC

BY
WILLIAM J. CLENCH

Sconsia striata Lamarck

Plate 172

Sconsia striata Lamarck. Clench and Abbott 1943, *Johnsonia* 1, no. 9, p. 6.

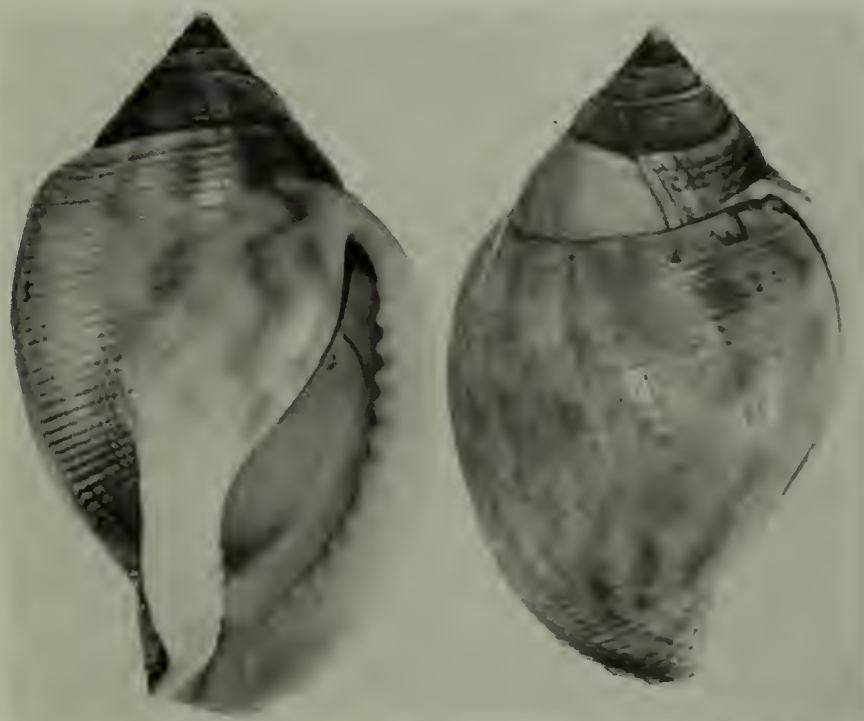


Plate 172. *Sconsia barbudensis* Higgins and Marrant (= *Sconsia striata* Lamarck). Holotype, 15 fathoms, off Barbuda, Lesser Antilles (slightly enlarged).

At the time of our original study of this genus, it was impossible to get photographs from Europe. Through the kindness of Mr. W. K. Ford, Keeper of Invertebrate Zoology of the City of Liverpool Public Museums we have obtained a photograph of the holotype of *Sconsia barbudensis* Higgins and Marrat. This species is a synonym of *Sconsia striata* Lamarek. The measurements of the holotype are: length 67 mm., width 38 mm.

THE GENUS COLUMBARIUM IN THE WESTERN ATLANTIC

BY
WILLIAM J. CLENCH

Through the kindness of Mrs. Roy C. Athearn I am privileged to describe the following species. The specimens were obtained by her son, William Athearn during a cruise of the *Atlantis* off the coast of Venezuela.

Columbarium brayi, new species

Plate 173, figs. 1-2

Description. Shell medium in size, reaching 51 mm. (2 inches) in length, imperforate, rather thin, dull and carinated. Color a dull light yellowish brown. Whorls 9 and sharply carinated. Spire somewhat depressed. Suture deeply impressed. Aperture subquadrate. Outer lip simple. Parietal wall thinly glazed. Columella long and straight, extending to the end of the long siphonal canal. Sculpture consists of numerous fine, spiral cords which are interrupted by the growth lines. Embryonic whorls two, smooth and glass-like. Periostracum thin with short axial blades. Operculum unknown.

length	width	
51.0	20 mm.	Holotype
37.5	18	Paratype

Types. Holotype, Museum of Comparative Zoology, no. 221601, from *Atlantis*, cruise 240, off Cabo Codera, Venezuela (N. Lat. 11°; W. Long. 66°1') in 150 fathoms, W. Athearn collector, Nov. 1, 1957. A single paratype from the same station.

Remarks. This species does not appear to be closely related to any other species of *Columbarium* in the Western Atlantic. Its larger size and lack of spines differentiate it from *C. atlantis* Clench and Aguayo, its larger size and depressed spire distinguish it from *C. bermudezi* Clench and Aguayo and its size and smooth carina from *C. sarissophorum* Watson. This last species has a uniformly serrated carina (see *Johnsonia* 1944, 1, no. 15, p. 3).

This species is named for Captain W. Scott Bray of the *Atlantis*.

Columbarium atlantis Clench and Aguayo

Columbarium atlantis Clench and Aguayo 1944, *Johnsonia* 1, no. 15, p. 2, pl. 1, fig. 4 off Matanzas, Cuba).

Specimens examined. CUBA: *Atlantis*, station 3434, off Sagua la Grande, Las Villas (N. Lat. 23°10'; W. Long. 79°35') in 260 fathoms.



Plate 173. *Columbarium brayi* Clench. Fig. 1. Holotype. Fig. 2. Paratype. 150 fathoms off Cabo Codera, Venezuela (2.8x).

THE GENUS MUREX IN THE WESTERN ATLANTIC

BY

WILLIAM J. CLENCH

Murex (Murex) finlayi Clench

Plate 174, figs. 1-3

Murex (Murex) finlayi Clench 1955, *Breviora*, Museum of Comparative Zoology, no. 44, pp. 1-3, text figs. 1-3 (Matanzas Bay, Cuba).

Description. Shell reaching 93 mm. ($3\frac{3}{4}$ inches) in length, rather solid in structure and moderately spinose. Whorls 10 and moderately convex. Nuclear whorls glass-like and smooth. Color brownish yellow to brownish cream with a few spiral threads of a darker

brown which follow the crests of the cords. Spire moderately extended. Suture irregular and deeply indented. Aperture subcircular and slightly oblique. Parietal lip glazed, adherent to the body whorl and fairly thick. Palatal lip crenulated and slightly thickened. Siphonal canal greatly extended, sometimes nearly half the length of the shell, usually curved upward and to the left when viewed dorsally. Two or three previously formed stages of the siphonal canal remain as scale-like spines. The sculpture consists of three equidistant varices, each supporting a rather large shoulder spine and maybe two or three smaller spines between the shoulder and the base of the shell. The varices on each whorl are more or less aligned with the varices on the whorl above. Between the varices there are two to four axial ridges which are strongly nodulose, Spiral sculpture consisting of numerous thread-like cords. The varices are formed by two arched plates, the plates on the aperture side being somewhat smaller, the outer (first formed) leaving a flange or web-like ridge as a crest on the varix. This is usually broken away on the early varices or remains as a series of small blade-like spines.

length	width	whorls	
87	30	10	Holotype
93	31	10	Paratype
85	33	10	Paratype
82.5	34	10	Paratype

Types. Holotype, Museum of Comparative Zoology, no. 189939 from shell trap, Matanzas Bay, Cuba, in 100 fathoms. Paratypes from the same locality in the Museum of Comparative Zoology and the collections of C. J. Finlay and E. H. Monroe.



Plate 174. *Murex (Murex) finlayi* Clench. Figs. 1 and 3. Paratypes. Fig. 2. Holotype. 100 fathoms, Matanzas Bay, Cuba (all slightly enlarged).

Remarks. This species appears to be rather closely related to both *Murex antillarum* Hinds and *Murex beaui* Fiseher and Bernardi. From *M. antillarum* it differs by having fewer and much larger axial costae, having fewer spines, and in possessing a webbing along the varices and greatly extended siphonal canal. From *M. beaui* it differs by having fewer and much larger axial costae, shorter spines, and not having the extensive webbing which characterizes *M. beaui*. This present species may also be related to *M. aguayoi* Clench and Farfante but it differs from *aguayoi* by being larger, having the diffused brownish yellow coloration, fewer spines, larger axial costae and by having the webbing on the varices.

The development of the webbing and the greatly extended siphonal canal probably allows these mollusks to exist on a rather soft muddy bottom.

The subgenus *Murex* in which this species is included is a very complex group and of very wide distribution in nearly all tropical and south temperate seas.

***Murex (Murex) pulcher* A. Adams**

Murex (Murex) pulcher A. Adams. Clench and Farfante 1945, *Johnsonia* 1, no. 17, p. 23, pl. 12, figs. 1-4.

Specimens examined. BRASIL: *Hassler* Voyage off Salvador (Bahia) in 40 fathoms (S. Lat. 11°49'; W. Long. 37°20') (MCZ).

This record extends the range of this rare species from the Lesser Antilles to the coast of north central Brasil.

***Murex (Phyllonotus) pomum* Gmelin**

Murex (Phyllonotus) pomum Gmelin. Clench and Farfante 1945, *Johnsonia* 1, no. 17, p. 26, pl. 14, figs. 1-3.

Specimens examined. FLORIDA: St. Andrews Bay, Panama City (R. Work). TEXAS: 5 miles W of Roekport (MCZ), Port Aransas (T. Pulley).

***Murex (Phyllonotus) pomum margaritensis* Abbott**

Plate 175, figs. 1-2

Murex imperialis Swainson 1831, *Zoological Illustrations* (2) 2, pl. 67 (Island of Margarita [Venezuela]). Non *Murex imperialis* Fischer 1807.

Murex (Phyllonotus) pomum Gmelin. Clench and Farfante 1945 [in part] *Johnsonia* 1, no. 17, p. 26.

Murex margaritensis Abbott 1958, *Acad. Nat. Sci., Philadelphia, Monograph* no. 11, p. 61, pl. 1, figs. n and o. [New name for *Murex imperialis* Swainson, non Fischer].

In our *Johnsonia* number on *Murex* (1945, 1, no. 17, p. 26) we considered *Murex imperialis* to be a synonym of *Murex pomum* Gmelin. At that time we had seen no specimens so our judgment was based only upon descriptions and figures in Swainson, Reeve and Kiener, all of whom failed to show the deep pink coloration of the aperture. Abbott has mentioned several characters which distinguish this form from *pomum*. When a series of this form is examined, all of these characters, other than the pink coloration, are found in both *pomum* and *imperialis*. The number of varices on the body whorl vary in both forms, but the variation appears to be similar in both *pomum* and *imperialis*. There are two rows of spines on most specimens of *imperialis* we have seen, not one row as stated by Abbott.

Many specimens of *imperialis* lack the brown patch on the parietal area, but in others it is present. Most specimens of *imperialis* are less attenuated than *pomum*, but even this character is occasionally duplicated in large specimens of *pomum*.

length	width	
96 mm.	70 mm.	Margarita Id.
68	43.5	Erin River, Trinidad

Range. Margarita Island, Venezuela east to Trinidad.

Specimens examined. VENEZUELA: Margarita Island (MCZ). LESSER ANTILLES: near Erin River: Guayaguagare Beach; Magueripe Bay: Couva Bank, Gulf of Paria, all Trinidad (all H. G. Kugler).

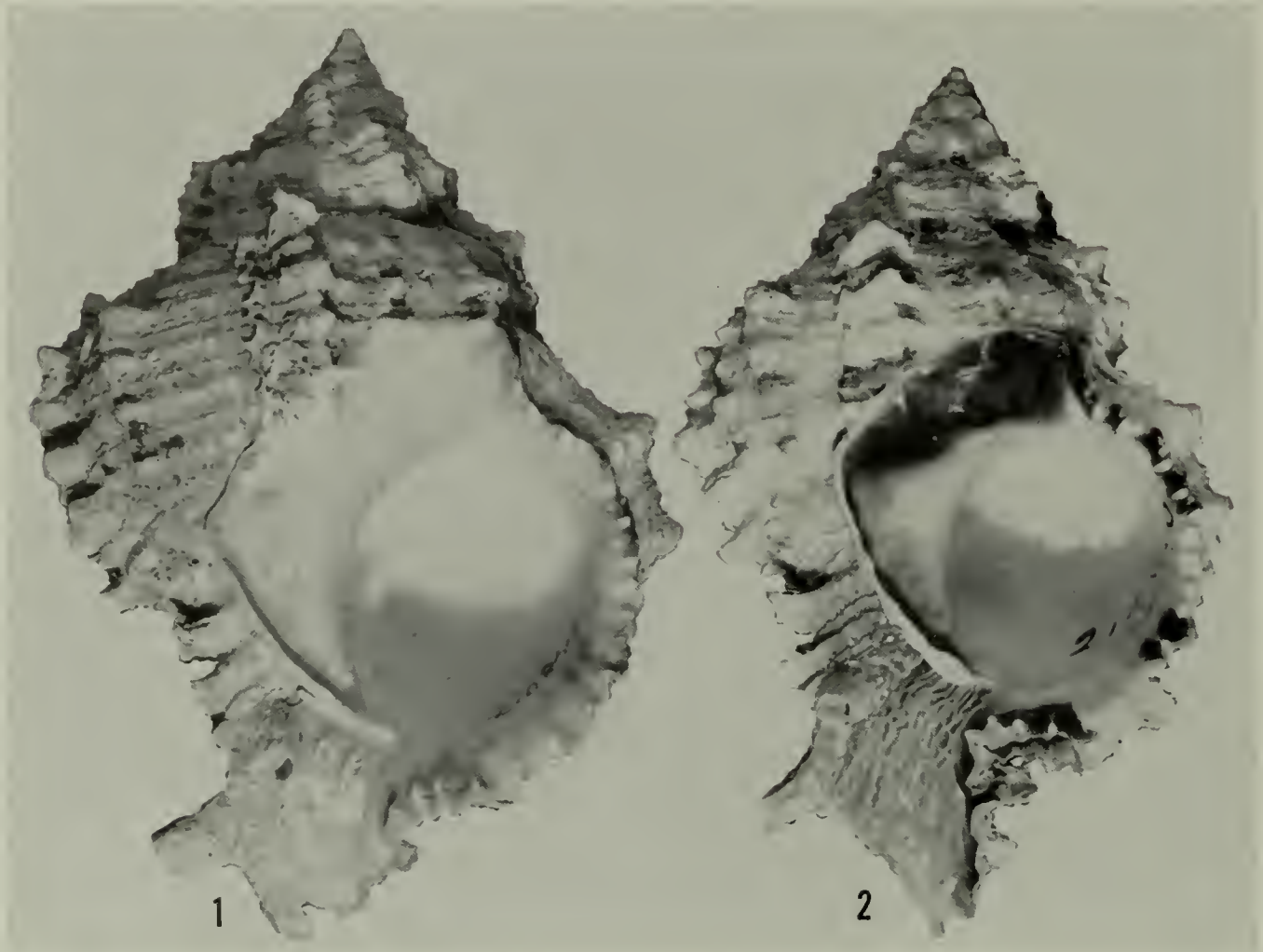


Plate 175. *Murex pomum margaritensis* Abbott. Fig. 1. With a clear pink aperture. Fig. 2. With the brown parietal spot. Margarita Island, Venezuela (about natural size).

THE GENERA HEMITOMA AND DIODORA IN THE WESTERN ATLANTIC

BY
RUTH D. TURNER

Hemitoma is a small and relatively little known genus in the Fissurellidae. It is close to *Emarginna*, but in *Hemitoma* the anal notch is reduced or lacking but there is an internal anal groove. A key to the genera and subgenera of the Fissurellidae of the Western Atlantic appeared in *Johnsonia* 2, no. 24, p. 94.

Genus *Hemitoma* Swainson

Hemitoma Swainson 1840, Treatise on Malacology, p. 356; Iredale 1915, Transactions New Zealand Institute 47, p. 433.

Submarginula Gray 1847, Proceedings Zoological Society London 15, p. 147 (type species, *Patella octoradiata* Gmelin, by monotypy).

Siphonella Issel 1869, Malacologia del Mar Rosso, p. 232 (type species, *Emarginula* (*Siphonella*) *arconatii* Issel, by monotypy).

Hemitoma 'Rafinesque' Scudder 1882, Nomenclator Zoologicus, Part I, Supplemental List. Bulletin United States National Museum, no. 19, p. 159 [error for *Hemiloma* Rafinesque].¹

Type species, *H.* [*Emarginula*] *tricostata* Sowerby [= *octoradiata* Gmelin], by monotypy.

Shell patelliform, small to medium in size, solid in structure, elliptical to broadly oval in outline, depressed to highly conic. Sculpture consisting of radial ribs and in some species both radial ribs and concentric ridges. Anterior rib usually the most prominent and often with a small notch at the ventral margin. Muscle scar horseshoe shaped with the anterior ends recurved toward the apex as triangular spurs. The scar left by the attached area of the mantle anterior to and between the spurs is probably responsible for the description of the muscle scar in this group as being trilobed. Radula with a moderately wide central tooth which has a single cusp without denticles. The first three lateral teeth are similar but much narrower. The fourth lateral is large, nearly covering the third lateral when in its normal position. At the base of this tooth and between it and the first marginal tooth there is a small squarish plate or tooth which is quite flat except for a central thickened ridge. This plate was first figured by Odhner (1932, fig. 41). This is similar to what Robertson (1958) has shown in the radula of *Tricolia* and referred to as a latero-marginal plate. It is interesting that this structure should appear in two such unrelated groups, or has it been overlooked in other families? The marginal teeth of *Hemitoma* range in number from 30 to over 60, they are long, narrow, with a single cusp and numerous denticles.

Gray 1847 gave credit to de Blainville for the name *Submarginula* with *Patella octoradiata* Gmelin as the type. However, de Blainville used this name only in the vernacular—'Les submarginules.' Though Pilsbry (1891) used *Submarginula* de Blainville 1825 with *Emarginula emarginata* de Blainville as the type species, the first acceptable use of the name is that of Gray 1847. *Hemitoma* Swainson 1840, having seven years priority, is the name generally accepted for this genus today. Iredale (1915, p. 433) has given a detailed discussion of this problem. However, he was in error in using *Submarginula* Gray for *octoradiata* alone, and considering *Hemitoma* a distinct genus with *tricostata* Sowerby as type. This species is a synonym of *octoradiata* and *Submarginula* an objective synonym of *Hemitoma*.

The oldest known American species in this genus is *Hemitoma* (*Hemitoma*) *sciara* which was described by Woodring (1928, p. 475) from the Miocene of Bowden, Jamaica. This

¹In the Preface to his book Scudder stated: "Where the entry has been furnished by an author or other correspondent his name is appended in *italics* as its sponsor; the name *Agassiz* is appended to all entries copied from his manuscript additions to the Nomenclator of 1846." Such was the case with *Hemitoma* Rafinesque. However, when checking Agassiz' Nomenclator, we find that he had not included *Hemiloma* Rafinesque and it was this to which he was referring in his manuscript and Scudder made the error in copying it.

species is very close to the recent species *H. octoradiata* Gmelin which is common throughout the West Indies. The only fossil records from the mainland are those of *Hemitoma* (*Montfortia*) *retiporosa* Dall (= *emarginata* de Blainville) from the Pliocene of Florida. Wenz (1938) records the genus as first appearing in the Eocene.

Odhner (1932) has discussed the anatomy of *Hemitoma* in relation to the other genera in the Fissurellidae and has illustrated the anatomy of *H. octoradiata*.

This genus is world wide in distribution in warm temperate and tropical seas.

Subgenus *Hemitoma* Swainson

Species in this subgenus are characterized by having the sculpture predominantly radial, with strong primary and secondary radial ribs. The concentric sculpture is weak, usually consisting only of growth lines. The anal notch is lacking except in some very young depressed forms but the internal anal groove is well marked. The apex is nearly central, usually blunt and inclined only slightly posteriorly.

There is only a single recent species in this subgenus in the Western Atlantic.

Hemitoma (*Hemitoma*) *octoradiata* Gmelin

Plates 176, 177

Patella octoradiata Gmelin 1791, Systema Naturae, ed. 13, p. 3699 (Insulas Americae mediae).

Emarginula tricostata Sowerby 1824, The Genera of Recent and Fossil Shells, no. 21, Emarginula, fig. 6 (no locality given).

Emarginula listeri Anton 1839, Verzeichniss der Conchylien, p. 27 (refers to Lister, pl. 532, fig. 11—Barbados).

Emarginula clausa d'Orbigny 1842 [in] Sagra, Histoire d'île de Cuba, Mollusques 2, p. 194, pl. 24, figs. 34-36 (Cuba).

Subemarginula octoradiata Gmelin. Gray 1847, Proceedings Zoological Society London 15, p. 147; A. Adams 1851 [1852], Proceedings Zoological Society London, p. 90; Pilsbry 1891, Manual of Conchology 12, p. 273.

Emarginula depressa Sowerby 1863, Thesaurus Conchyliorum 3, p. 219, pl. 247, figs. 64, 65, 68 (no locality given).

Emarginula guadaloupensis Sowerby 1863, Thesaurus Conchyliorum 3, p. 219, pl. 247, fig. 69 (Guadeloupe Island, on basis of name).

Hemitoma octoradiata Gmelin. Woodring 1928, Carnegie Institution of Washington Publication, no. 385, p. 457.

Hemitoma rubida A. H. Verrill 1950, Nautilus 63, p. 126, pl. 9, figs. 2, 2a (Canefield Point, Dominica, B.W.I.).

Description. Shell solid, reaching 30 mm. ($1\frac{1}{4}$ inches) in length, patelliform and radially sculptured. Extremely variable in shape, ranging from nearly circular to elliptical in outline, the height varying from about $\frac{1}{4}$ to nearly the length of the shell. Apex sub-central and pointed slightly posteriorly. Anterior slope slightly to strongly convex. Posterior slope slightly concave immediately below the apex, then varying from nearly straight to rather strongly convex. Radial sculpture consisting of eight unbranched, irregularly nodulose primary ribs which extend from the apex to the basal margin. In young specimens the primary ribs are very prominent and project beyond the margin producing a stellate appearance. As the shell grows, secondary and often tertiary ribs are produced between the primary ribs, and the margin becomes finely crenulate. Concentric sculpture consisting of irregular growth lines only. Color a light tan or gray to greenish brown. Periostracum thin, medium golden brown in color and usually seen only

on young specimens. Interior of shell a glossy olivaceous green to purplish brown with a white margin and a white area at the apex. Anal groove narrow and deep, extending inward about $\frac{1}{2}$ to $\frac{2}{3}$ the length of the anterior slope.

The soft parts of this species are extraordinarily beautiful. The main portion of the mantle and foot are a medium blue-green, the base of the foot being somewhat lighter. This coloration increases to an intense turquoise near the edge of the mantle, while the edge proper is a vivid magenta. The base of the tentacles and the head are also turquoise while the ends of the tentacles and a circle around the end of the proboscis are magenta.

The radula is similar to that of *emarginata* though the central tooth is somewhat broader and there are far more marginal teeth, there being from over 45 to 60 marginals depending upon the age and size of the specimen.

length	width	height	
18.5 mm.	12 mm.	7.5 mm.	Arthurs Town, Cat Island, Bahama Ids.
23.5	20	20	“ “ “ “ “ “
19	15	13	Whitehouse, Jamaica
23	23	15.5	“ “
22	18	8	Barbados
30.5	24.5	15.2	“
24.5	20	9	Clifton Harbour, Union Island, Grenadines
29.5	25	11.5	Tortugas, Florida

Types. *Patella octoradiata* Gmelin as originally described was a composite species. Gmelin's description applies quite well to this species, but the references are certainly composite. His first reference was to Lister, plate 532, fig. 11 and this was used by A. Adams in 1852 to indicate Gmelin's species. Pilsbry followed Adams and selected



Plate 176. *Hemitoma octoradiata* Gmelin. Series of specimens selected to show variation in shape and sculpture. Fig. 1. Marina Cay, south of Great Camanoe Island, Virgin Islands. Fig. 2. Cayo Francés, Caibarién, Cuba. Fig. 3. Clifton Harbour, Union Island, Grenadines. Figs. 4-7. Cienfuegos Harbor, Cuba. Fig. 8. Dundas Town, Great Abaco, Bahama Islands. Fig. 9. Clifton Harbour, Union Island, Grenadines. Fig. 10. Santa Bárbara de Samaná, Dominican Republic. Fig. 11. Internal view, Marina Cay, south of Camanoe Island, Virgin Islands.

Figs. 1-3. Side view to show variation in height (anterior to the left). Figs. 4-10. Dorsal view to show growth series (anterior end downward). Fig. 10. A specimen with numerous radial ribs (all $1\frac{1}{2}x$).

Lister's figure as the type. As Gmelin gave a very indefinite locality for this species, the type locality is here restricted to Barbados, the locality given on Lister's figure. The type of *Emarginula clausa* d'Orbigny is in the British Museum according to Gray (1854). The types of *E. guadaloupensis* Sowerby and *E. depressa* Sowerby are also probably in the British Museum (Natural History).

Remarks. This is an extremely variable species as indicated in the description. Specimens may range from those which are quite flat and nearly circular in outline with strong ribs and deeply crenulated margins to those which are very high and conical with weak ribs and nearly smooth margins, and there may be any combination of these characters. As shown in the measurements, the length of mature specimens may vary in relation to the height from 1.15 to 2.75 and the width may vary from less than $\frac{2}{3}$ the length to equal the length. *Hemitoma rubida* Verrill is one of the flattened, broad and strongly sculptured types. The anterior rib is usually the most prominent, but this is not always so and the anal groove which follows it on the internal surface of the shell usually does not end in a notch at the margin though in occasional young specimens there may be a very small one. Young specimens are usually somewhat rectangular in outline, depressed and stellate. Specimens of this species are usually moderately to heavily encrusted with

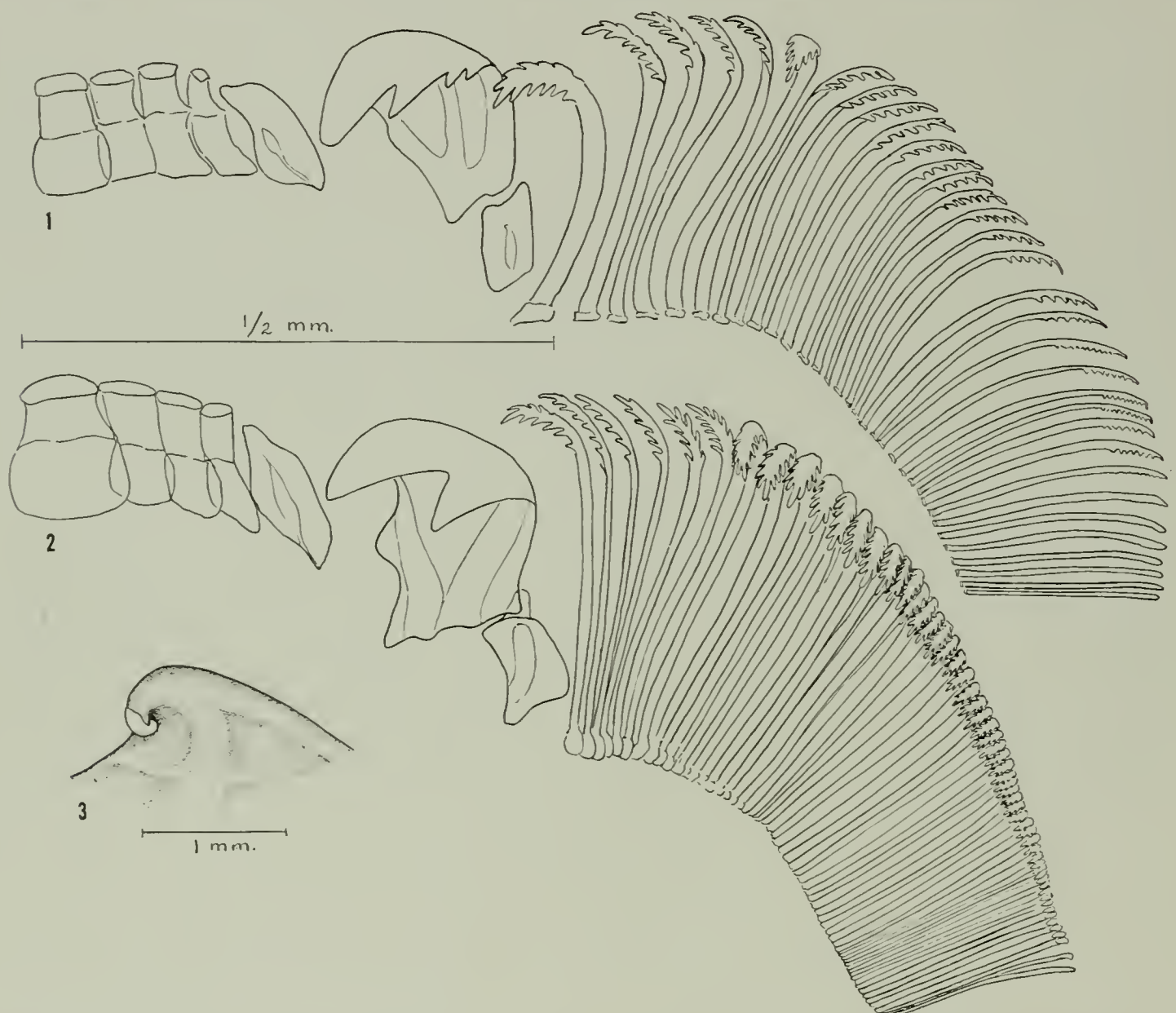


Plate 177. Radulae of *Hemitoma*. Fig. 1. *Hemitoma emarginata* de Blainville. Fig. 2. *Hemitoma octoradiata* Gmelin. Fig. 3. Embryonic whorls of *H. emarginata* de Blainville.

coralline algae and other growths and it is often necessary to clean them in order to study the sculpture. However, the muscle scar, the anal groove and the color pattern on the inner surface are usually sufficient for identification.

Robert Robertson who has spent a great deal of time collecting and studying in the Bahama Islands writes as follows concerning this species. "In the Bahama Islands *H. octoradiata* is abundant in the vicinity of Elbow Cay, Great Abaco (the windward edge of the Little Bahama Bank). It usually lives a few inches below low tide mark on exposed rocky shores. The irregular surface of the rock is covered with lithothamnium (chiefly *Porolithon*) and in these these limpets form slight depressions. They appear to be sedentary. They may also be found under slabs of dead coral (*Acropora*) in the reef northeast of Elbow Cay. Occasionally specimens were found under rocks and live corals in shallow water in sheltered areas. At Bimini, on the leeward side of the Great Bahama Bank, this limpet is scarce. The rocky shores here are not as exposed as many of those at Abaco. Feces of this *Hemitoma* studied at Bimini contained chiefly green algae but also a copepod and series of marginal teeth from its own radula."

Range. From Biscayne Bay, Florida south through the Florida Keys, Bermuda (Peile 1926), the Bahama Islands, throughout the West Indies and along the north coast of South America south to Porto Seguro, Brasil.

Specimens examined. FLORIDA: Biscayne Bay (MCZ): Pelican Shoals off Boca Chica Key (J. Schwengel); Middle Sambo Shoals, near Key West (T. McGinty); Sand Key, Key West; Dry Tortugas (both MCZ). BAHAMA ISLANDS: West End and Eight Mile Rock, Grand Bahama (both MCZ); Cooper Jacks Cays, S of Elbow Cay and Dundas Town, Great Abaco; North Rabbit Cay, Bimini Islands (all R. Robertson); Brown's Point, New Providence; Governors Harbour, Eleuthera; Cape St. Maria; Clarence Town and Simms, all Long Island; Little San Salvador and Russell Creek, Cat Island; Rum Cay; Matthew Town, Great Inagua (all MCZ). CUBA: Vedado and Playa de Jibacoa, Habana; Cayo Cruz del Padre and Peninsula de Hicacos, Matanzas (all MCZ); Cayo Francés, Caibarién, Las Villas; Santa Maria Key, off Punta Alegre, Camagüey (both R. Humes); Vita; Guarda la Vaca, Banes; Bahía de Banes; Blue Beach, Guantánamo Naval Base, all Oriente; Punta de los Colorados, Cienfuegos, Las Villas (all MCZ). JAMAICA: Runaway Bay, St. Ann's; Montego Bay (both MCZ); Whitehouse (J. K. Howard). HISPANIOLA: Gonave Island, Haiti (W. J. Eyerdam); Monte Cristi; Puerto Plata; Puerto Sosúa; Santa Bárbara de Samaná, all Dominican Republic (all MCZ). PUERTO RICO: Mata de la Gata, off La Paguera; E of Boca de Congrejos (both MCZ). VIRGIN ISLANDS: Virgin Gorda; Marina Cay and Guana Island, Tortola (all M. W. Dewey); St. John; Great St. James Island, St. Thomas (both MCZ); Ham Bay, St. Croix (M. K. Jacobson). LESSER ANTILLES: Antigua; Guadeloupe; Marigot, St. Lucia (all MCZ); Barbados (P. G. Kellett); Carriacou Island, Grenadines; Grand Anse, Grenada (both H. G. Kugler); Buccoo Reef, Tobago (MCZ); Toco, north coast of Trinidad (H. G. Kugler). CARIBBEAN ISLANDS: Southwest point; Grand Cayman, Cayman Islands (MCZ). BRITISH GUIANA: Mouth of Corentyne River (H. G. Kugler). BRASIL: Porto Seguro (MCZ).

Subgenus **Montfortia** Récluz

Montfortia Récluz 1843, Revue Zoologique par la Société Cuvierienne **6**, p. 259 and 376.

Type species, *Emarginula australis* Quoy and Gaimard, subsequent designation, Iredale 1915.

Species in this subgenus are characterized by having a pronounced radial and concentric sculpture with the three anterior ribs usually strongest and by having a small anal notch at the margin of the anterior rib in addition to the internal anal groove. The apex is prominent, subcentral and recurved posteriorly.

Hemitoma emarginata de Blainville

Plates 177, 178

Emarginula emarginata de Blainville 1825, Manuel de Malacologie, p. 501, pl. 68 bis, fig. 3 (no locality given).

Emarginula octoradiata 'Gmelin' Sowerby 1863, Thesaurus Conchyliorum **3**, p. 219, pl. 247, fig. 66 (no locality given); non *octoradiata* Gmelin 1791.

Subemarginula retiporosa Dall 1903, Transactions Wagner Free Institute Philadelphia **3**, pt. 6, pl. 55, fig. 3; pl. 60, fig. 17 (Pliocene marl of Shell Creek, Florida). Figured but not described.

Hemitoma retiporosa Dall. Olsson and Harbison 1953, Academy Natural Sciences, Philadelphia, Monographs, no. 8, p. 360, pl. 48 [not 18], figs. 14, 14a.

Emarginula ostheimeræ Abbott 1958, Academy Natural Sciences, Philadelphia, Monographs, no. 11, p. 18, pl. 1, fig. c (Old Man Bay, north side of Grand Cayman Island, Cayman Islands).

Description. Shell solid, reaching 25 mm. (1 inch) in length, patelliform and strongly sculptured. Extremely variable in shape, the basal outline ranging from more or less quadrate to broadly oval, circular or elliptical. Height ranging from about 1/4 to over 3/5 the length of the shell. Apex subcentral, recurved posteriorly and slightly to the left. Anterior slope convex. Posterior slope concave just below the apex, then continuing nearly straight or slightly convex. Sculpture consisting of radial ribs and concentric ridges with nodules formed where the radial ribs and concentric ridges cross, producing a strong reticulate sculpture. Primary ribs 8 to 10, the anterior rib always being single, usually prominent and ending in a small notch at the margin. The remaining primary ribs may be single or compound, the compound ones made up of from 2 to 5 closely spaced ribs which give the effect of a single broad rib. The spaces between the primary ribs have from 1 to 5 low secondary ribs. Concentric sculpture consisting of more or less evenly spaced ridges, the distance between them increasing slightly as the shell grows. Margin of mature specimens usually moderately to finely crenulate. Young specimens have a strongly scalloped margin. Shell white, periostracum thin, pale yellow and usually remaining only in the pits formed by the reticulated sculpture. Interior of the shell glossy white, often with yellow patches indicating the pits. Anal groove fairly deep and narrow near the margin, ending in a small notch. It extends as a very shallow groove to near the apex. Embryonic whorls one and one half, small, smooth and with a light brown periostracum.

length	width	height	
11 mm.	7.3 mm.	3 mm.	Arenas de la Chorrera, Habana, Cuba
20	15	7	Jamaica
21.5	12	12	Fort Jefferson, Tortugas, Florida
23.5	17	8.2	St. Thomas, Virgin Islands
24.5	18.5	7.2	Off Fowey Rocks, Florida
25.2	19	8.2	Nassau, New Providence, Bahama Islands
25.5	15	12.5	Dry Tortugas, Florida

Types. The location of the type specimen of *Emarginula emarginata* de Blainville is unknown.

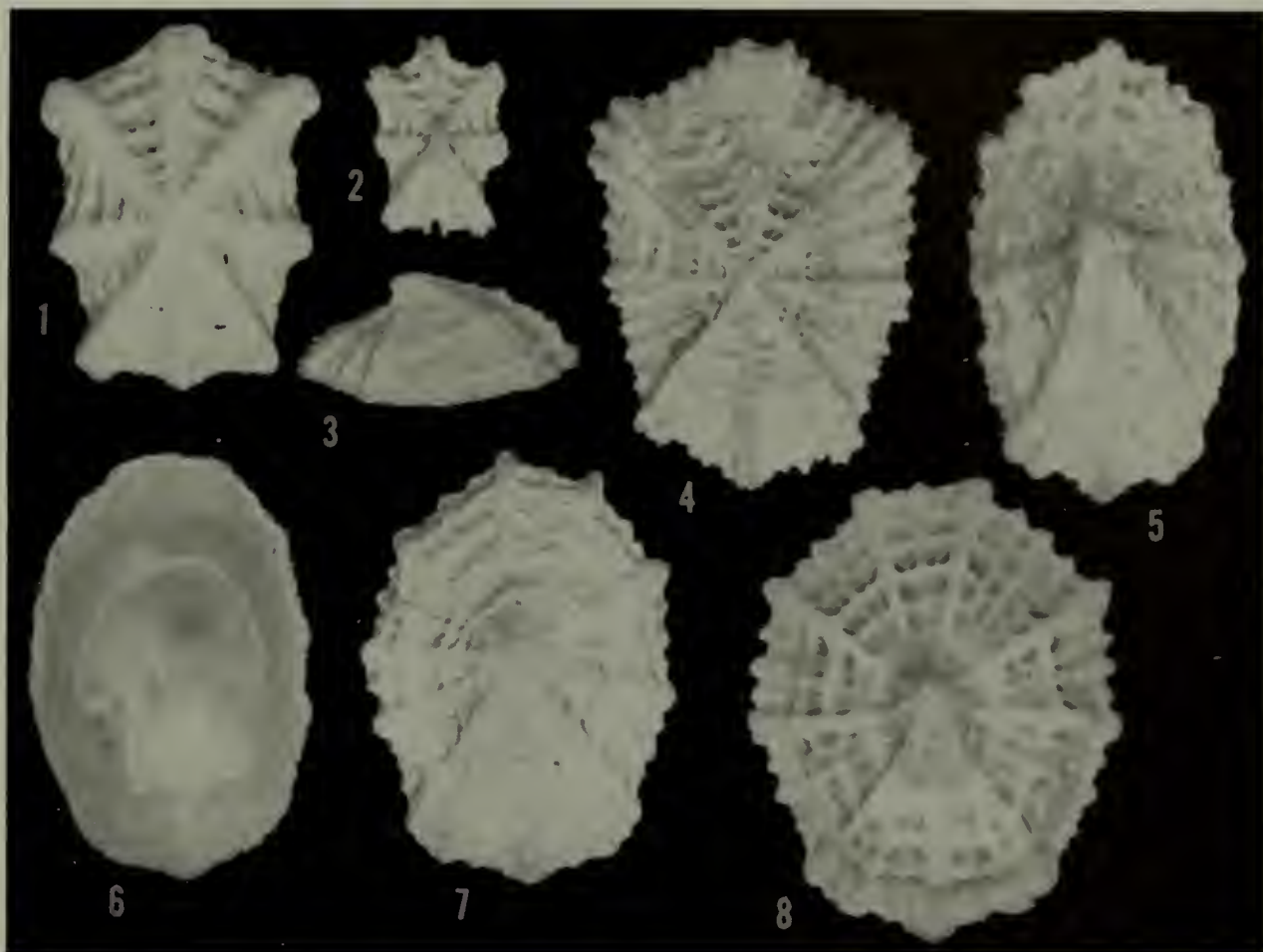


Plate 178. *Hemitoma emarginata* de Blainville. A series to show variation in shape and sculpture (anterior end downward). Fig. 1. Jamaica, a somewhat beachworn specimen. Fig. 2. Arenas de la Chorrera, Habana, Cuba. A young specimen with a distinct anal notch. Fig. 3. Tortugas, Florida, a side view to show average shape in profile (figs. 1, 2 and 4 are somewhat flatter than this; figs. 7 and 8 are about the same and fig. 5 is much higher). Fig. 4. Fowey Rocks, Florida, from an old wreck. Fig. 5. Dry Tortugas, Florida, a very high narrow form. Fig. 6. Barbados, internal view to show muscle scar and anal groove. Fig. 7. St. Thomas, Virgin Islands. Fig. 8. Nassau, New Providence, Bahama Islands, from a pier. (All about 2x.)

The holotype of *Subemarginula retiporosa* Dall is in the United States National Museum and that of *Emarginula ostheimerac* Abbott is in the Academy of Natural Sciences, Philadelphia, no. 195983.

Remarks. This is a rather rare species and specimens are seldom taken alive. Consequently we know nothing of its ecology. It apparently lives from just below low tide to depths of perhaps 100 fathoms. Specimens known to have been collected alive which we have seen, came from a wharf at Nassau, New Providence, Bahama Islands and from a wreck on Fowey Rocks, Florida. On the basis of the poorly preserved specimen available

for study, the anatomy of *emarginata* appears to be very close to that of *octoradiata* and the radula differs mainly in the width of the central tooth and the fewer marginal teeth.

Emarginula ostheimeræ Abbott appears to be a young specimen of this species, the type specimen being almost identical with figure 2 shown in the growth series on Plate 178. Dall figured but never described this species from the Pliocene marl of Shell Creek, Florida under the name of *Subemarginula retiporosa*, and Olsson and Harbison report it under *Hemitoma retiporosa* Dall as fairly common in the Pliocene of St. Petersburg, Florida.

The range of variation in this species is equally as great as that in *octoradiata*. Many of the high specimens are also laterally compressed and, as pointed out by Pilsbry (1891), the anterior and posterior ends of many specimens are slightly raised so that the specimen will rock when placed on a flat surface. However, this certainly does not hold true for all specimens. The extent of the anal groove also varies considerably and is barely visible in some specimens.

This species is not closely related to any other found in the Western Atlantic. It differs from *octoradiata* in having a pronounced reticulate sculpture and compound ribs.

Range. From Lantana, Florida south through the Florida Keys and probably throughout the West Indies.

Specimens examined. FLORIDA: off Lantana in 10 fathoms; off Hollywood in 35–60 fathoms; off Cape Florida, Biscayne Bay in 50 feet: Fowey Rocks; 5½ miles NE of Beacon D, The Elbow, Key Largo in 66–83 fathoms; 6 miles SE of Sombrero Light, off Marathon in 66 fathoms (all MCZ); Pelican Shoals, Key West in 45 fathoms (J. Schwengel); Fort Jefferson, Tortugas (MCZ). BAHAMA ISLANDS: W of Picquet Rocks, Bimini Islands in 10 fathoms (R. Robertson); Northeast shore of New Providence (D. H. Brown); Nassau, New Providence; Matthew Town, Great Inagua (both MCZ). CUBA: near Habana (MCZ). VIRGIN ISLANDS: St. Thomas (MCZ). LESSER ANTILLES: Barbados (MCZ); Fontenary Beach, Grenada (H. G. Kugler).

Genus *Diodora* Gray

Diodora Gray. Farfante 1943, *Johnsonia* 1, no. 11, pp. 1–20, pls. 1–6.

The following description of *Diodora fragilis* is basically a translation of the work of I. P. Farfante and D. L. Henríquez which appeared after *Johnsonia*, no. 11 on *Diodora* had been published.

Diodora fragilis Farfante and Henríquez

Plate 179, figs. 1–4

Diodora delicata Farfante and Henríquez 1946, *Revista de la Sociedad Malacologica 'Carlos de la Torre'* 4, p. 54 (Arenas de La Chorrera, Habana, Cuba).

Diodora fragilis Farfante and Henríquez 1947, *ibid.* 5, p. 52, figs. 1–4 (new name for *D. delicata* Farfante and Henríquez, non E. A. Smith 1889).

Description. Shell small, reaching 10 mm. in length, delicate in structure, depressed conic, and with the anterior slope considerably shorter than the posterior slope. Base oval. Anterior slope straight for its entire length, the posterior slope concave just below

the apex, the remainder straight to convex. Apex anterior of the center and pierced by the anteriorly directed orifice. Orifice small, 1 mm. in length and oval. Radial sculpture consisting of numerous rather large, rounded ribs which alternate with very fine ones. Concentric sculpture consisting of numerous lamina which cross the radial ribs forming small scales. Margin denticulate. Color grayish white. Interior of shell gray, glossy and with a series of grooves which correspond to the radial ribs. The callus around the orifice gray, sharply truncated and excavated posteriorly.

length	width	height	
20 mm.	11 mm.	5 mm.	Holotype

Types. The holotype is in the collection of Mrs. E. G. Henríquez. The type locality is from sands dredged near Habana and deposited at La Chorrera.

Range. Known only from the type locality.

Remarks. This is a very distinctive species and readily distinguished from all others known in the Western Atlantic. It belongs to the group of *D. aguayoi* and *D. wetmorei*, but is nearer to *aguayoi*. It differs from that species by having a smaller, broadly oval rather than oblong orifice and is lacking the rounded tooth on either side of the orifice. In addition, the shell of *fragilis* is more depressed, the radial ribs lower and more widely spaced than in *aguayoi*.

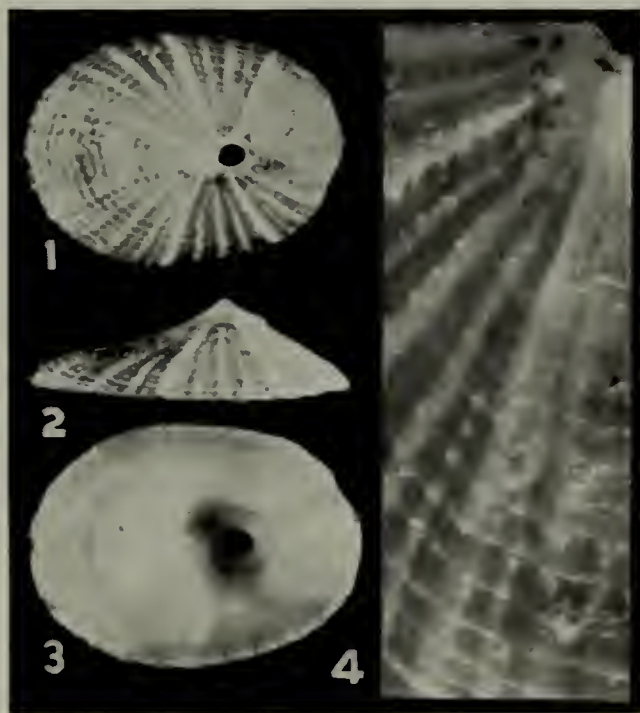


Plate 179. *Diodora fragilis* Farfante and Henríquez. Holotype. Arenas de la Chorrera, Habana, Cuba.
Figs. 1-3 ($2\frac{1}{2}x$). Fig. 4 (10x).

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* * * *

THE GENERA AMAEA AND EPITONIUM IN THE WESTERN ATLANTIC

BY
RUTH D. TURNER

Amaea (*Amaea*) *mitchelli*

Amaea (*Amaea*) *mitchelli* Dall. Clench and Turner 1950, *Johnsonia* **2**, p. 243, pl. 106, figs. 5-7.

Specimens examined. TEXAS: Mustang Island, 1 mile S of Port Aransas (Doil Turner).

Epitonium (*Asperiscala*) *sericifilum* Dall

Epitonium (*Asperiscala*) *sericifilum* Dall. Clench and Turner 1952, *Johnsonia* **2**, p. 317, pl. 152.

Mrs. G. R. Hettick has kindly donated a specimen of this rare species to the Museum of Comparative Zoology. Dall (1889, p. 124) in his list of the Marine Mollusks of the Southeastern Coast lists this species with a question as occurring on the Texas Coast. The specimen collected by Mrs. Hettick is from 10 miles south of Port Aransas, Texas. It has 10 whorls and measures 6.5 mm. in length and 1.9 mm. in width.

THE FAMILY PHASIANELLIDAE IN THE WESTERN ATLANTIC

BY
ROBERT ROBERTSON

Some additional observations on *Tricolia* made at the Lerner Marine Laboratory, Bimini, Bahama Islands in June and July, 1958, are included in this supplement, as well as some new records from Cuba. Previously there were no records of *Tricolia* on the south coast of Cuba west of Guantánamo. The specimens were sent by Dr. C. G. Aguayo, Museo Poey, Universidad de la Habana and Dr. Cortez Hoskins, Jersey Production Research Co., Tulsa, Oklahoma.

Tricolia affinis affinis C. B. Adams

Tricolia affinis affinis C. B. Adams. Robertson 1958, *Johnsonia* **3**, no. 37, p. 262.

Specimens examined. CUBA: Cayo Inés de Soto; Playa Manimaní, both Pinar del Río; Vedado; Arenas de la Chorrera, both Habana; Gibara, Oriente (all Museo Poey); W of Cayo Tablones, Archipiélago de los Canarreos, Habana; Cayo Perro, Cayos de San Felipe (both C. Hoskins); Pta. de la Yana, both Pinar del Río (Museo Poey).

Tricolia adamsi Philippi

Tricolia adamsi Philippi. Robertson 1958, *Johnsonia* 3, no. 37, p. 268.

Specimens examined. CUBA: Vedado, Habana (Museo Poey).

Tricolia thalassicola Robertson

Tricolia thalassicola Robertson 1958, *Johnsonia* 3, no. 37, p. 271.

Remarks. The median longitudinal furrow is present at the anterior end of the under side of the foot only. Hence the waves of progression are only partially ditaxic. There are irregular yellowish olive-green spots, somewhat as on the shell, on the upper surface of the foot. The left cervical lobe is pedunculate and digitate, with four digits in two specimens and three in another. The lobe on the right side is entire.

This species lives on Manatee Grass (*Cymodocea manatorum* Ascherson) as well as on Turtle Grass (*Thalassia*) at Bimini. It was seen to feed on fine filamentous and crustose calcareous red algae.

Specimens examined. CUBA: Cayo Inés de Soto: Playa Manimaní, both Pinar del Río; S coast Camagüey Province (subfossil; all Museo Poey); Cayo Perro, Cayos de San Felipe (C. Hoskins); Pta. de la Yana, both Pinar del Río (Museo Poey).

Tricolia bella M. Smith

Tricolia bella M. Smith. Robertson 1958, *Johnsonia* 3, no. 37, p. 274.

Remarks. There is no median longitudinal furrow on the under side of the foot in this species, as was previously stated to be characteristic of the whole genus (p. 250) and the waves of progression are monotaxic, not ditaxic (see also *Remarks* above on *T. thalassicola*). The earlier observation (p. 249) that there is no cervical lobe on the right side was based on a single abnormal specimen. Normally there is an entire lobe, as in *T. thalassicola*. The left lobe had three digits in the specimens examined. The feces are U-shaped, as in *T. pullus*.

Four young specimens (the largest 1.8 mm. long) were collected from floating *Sargassum* west of Bimini. This species usually lives in mats of filamentous green algae. Sometimes it may be found in the red alga *Bostrychia* [= "*Amphibia*"] *tenella* (Vahl) Agardh on mangrove roots.

Specimens examined. CUBA: Vedado, Habana (Museo Poey); Cayo Perro, Cayos de San Felipe, Pinar del Río (C. Hoskins).

Tricolia tessellata Potiez and Michaud

Tricolia tessellata Potiez and Michaud. Robertson 1958, *Johnsonia* 3, no. 37, p. 277.

Range. This species was previously believed not to occur on the coast of Cuba. It has, however, been collected on the south coast in a subfossil state. A record of this species at Grand Cayman (Abbott 1958, Academy of Natural Sciences of Philadelphia Monograph 11, p. 32) is based on a specimen collected alive of the banded form of *T. thalassicola* (see Plate 146, fig. 3, p. 272).

Specimens examined. CUBA: S coast Camagüey Province (subfossil: Museo Poey).

ADDITIONS AND CORRECTIONS

Page 280. The Carpenter specimens of *Tricolia compta* (Gould) are now at the United States National Museum, Washington, D.C.

Page 280. *Phasianella concolor* C. B. Adams is probably a synonym of *Assiminea succinea* (Pfeiffer) [*Paludina succinea* Pfeiffer 1840]. *Paludestrina auberiana* d'Orbigny is not an *Assiminea* as was believed by Dall, but a *Littoridina*.

Page 280. A. Heilprin 1893 (The Bermuda Islands, Philadelphia, p. 175) reports "*Phasianella Kochi*, Phil." from Bermuda. He evidently had some other species of *Tricolia*, for *T. kochii* (Philippi) is restricted to South Africa (and possibly parts of the Indo-Pacific). There are three separate records of *Tricolia* from Bermuda published during the last half of the nineteenth century and there is only one specimen of *T. bella* in the Haycock Collection, Bermuda Government Museum (*teste* Richard W. Foster). None of the species appear to have been collected in recent years. Evidently the genus is sporadic there.

* * * *

Notes

Since the publication of *Distorsio* in this volume (pp. 235-242) we have obtained two additional records of note.

Distorsio (*Rhysema*) *clathrata* Lamarck

Specimen examined. NORTH CAROLINA: *Combat*, station 381, about 15 miles SE of Cape Hatteras (N. Lat. 34°59'; W. Long. 75°33') in 45 fathoms.

Distorsio (*Rhysema*) *mcgintyi* Emerson and Puffer

Specimen examined. BERMUDA: $\frac{3}{4}$ mile S of Castle Rock in 80-100 fathoms (Bermuda Biological Station).

This record extends the range considerably to the north.

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BY

MERRILL E. CHAMPION

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book reviews, voyages, and contributors.

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