

OBSERVATIONS ON *MUREX MESSORIUS* AND *MUREX TRYONI*,  
WITH THE DESCRIPTION OF TWO NEW SPECIES  
OF *MUREX*

EMILY H. VOKES  
TULANE UNIVERSITY

There is a widespread species of *Murex* in the Caribbean area, both fossil and living, which has been referred by most authors to *M. messorius* Sowerby. However, *M. messorius* was described without locality data and consequently has been the subject of some concern to the writer. In her *Murex* monograph (Vokes, 1963, p. 103) the name *M. messorius* was used upon the advice of A. A. Olsson, who considered the form later named *M. woodringi* by Clench and Pérez Farfante to be the same. Subsequently the writer had the opportunity, while at the British Museum (Nat. Hist.), to study the specimen selected by Dr. Olsson as the lectotype of Sowerby's species. Because it so strongly resembled the West Coast species of the *M. recurvirostris* complex she concluded that *M. messorius* was probably a Pacific form after all. In 1965 (p. 197) the writer, therefore, retracted her identification of *M. messorius* as a synonym of *M. woodringi* and suggested that *M. woodringi* was the name to use for the common Atlantic form, adding that *M. nigrescens* Sowerby, although described from the Pacific coast of Colombia (perhaps in error), was probably the correct name for the form.

Since that time a search has been made for specimens which would match the lectotype of *M. messorius*. Through the agency of a generous friend, Mrs. Ruth Purdy of San Diego, California, the writer was able to examine dozens of specimens of the *M. recurvirostris* group but none was found which matched Sowerby's shell. Then during September, 1966, while in Pascagoula, Mississippi, examining mollusks collected by the U. S. Fish and Wildlife Service Research Vessel *Oregon* two specimens were discovered which compare most favorably with the lectotype and Sowerby's original illustration (see plate 1). These shells were taken at *Oregon* Station 5058, just off the northwestern coast of St. Lucia, Windward Islands, Lesser Antilles, in 9 to 13 fathoms. They have thickened varices which bear no spines, one strong node and a secondary

weaker one between each pair of varices, and a recurved spine at the base of the siphonal canal.

The species which Clench and Pérez Farfante described as *M. woodringi* is exceedingly variable. Tulane is fortunate to have a suite of over 350 specimens of this species from one locality (TU R-109), Bahías Minas, near Colon, Panama. From this collection it can be seen that the number of intervarical nodes ranges from one to five, often on the same specimen. The degree of spinosity varies from quite spinose to a total lack of spines. Some shells have recurved spines on the siphonal canal, some do not. In all, considering the wide degree of variation demonstrated by the shells from one locality (see plate 2) it seems obvious that the type of *M. messorius* falls within the range of variability of *M. woodringi*. As *M. messorius* is much the older name it must be used in place of *M. woodringi*. Unfortunately the type of *M. messorius* is a somewhat atypical variant but the rules of nomenclature must prevail.

In addition to *M. messorius* and *M. woodringi*, there are other names which have been proposed for this species. As was suggested earlier, *M. nigrescens* Sowerby is almost certainly the same. Sowerby described his species as coming from Xipixapi, Colombia, on the Pacific Coast. But more than once the labels in the Cuming Collection have proved to be erroneous and in view of the remarkable similarity of Sowerby's illustration to specimens of *M. messorius* from the vicinity of Cartagena, Colombia, his shells in all probability came from this locality. The type specimen is apparently lost but all other specimens in the British Museum (Nat. Hist.) which bear the label "*M. nigrescens*" are *M. messorius*. Likewise *M. funiculatus* Reeve is also based on a specimen like those seen from TU R-109. As this name is twice preoccupied we are saved the problem of worrying further about it.

The specimen in the British Museum

(Nat. Hist.) which bears the number 1964-349 is here designated as lectotype as Sowerby's figured specimen seems to be lost. The type locality is designated as St. Lucia, Windward Islands, Lesser Antilles. *M. messorius* is a shallow water species; Olsson (*in litt.*) reported taking specimens in but a few inches of water at Cartagena, Colombia. Bullis (1964, p. 103) reported taking the species in depths ranging from 17 to 50 fathoms off the Guianas and added, "All of the living material collected was taken in catches that contained large amounts of mud and sand."

Dimensions of specimen figured by Sowerby (1841a, pl. 194, fig. 93): height 2.4 inches, diameter .9 inch (Sowerby, 1841b, p. 138); dimensions of lectotype: height 64 mm, diameter 29 mm.

Lectotype: BMNH 1964-349 (here designated).

Type locality: St. Lucia, Windward Islands, Lesser Antilles (here designated).

*Horizon*: Pirabas Limestone, Pará, Brazil; Quebradillas Limestone, Puerto Rico; lower Miocene. Gatun Formation, Panama, Colombia, and Costa Rica; Cercado and Gurabo Formations, Dominican Republic; middle Miocene. Coatzacoalcos Formation, Mexico, upper Miocene. Unnamed formation, Barbados; Pleistocene. Recent, throughout Caribbean and southern Gulf of Mexico.

and more rounded intervarical nodes. It is here named *Murex olssoni*.

In addition to the several fossil occurrences of this species the form is also living in the southern Caribbean Sea. It has not been recognized as a valid species by previous workers but the *Oregon* dredged numerous specimens off the coast of Panama and Colombia (*Oregon* Stations 4896, 5732, and 5737) in depths ranging from 23 to 44 fathoms. It also has been dredged by the writer off Punta San Blas, Panama, in 23 to 28 fathoms (TU R-101).

This new species occurs in fair numbers in the beds of the upper Gatun Formation at Puerto Limon, Costa Rica. This is the so-called "coralline phase" distinguished, but not named, by Olsson (1922). He considered that the type Gatun Formation in Panama represents only the lower portion of the Gatun as developed in Costa Rica and represents a different environment. Olsson stated: "These coralline limestones were formed, mainly as barrier reefs some little distance from the old Gatun shoreline. Naturally they offered very different habitat conditions from those of the typical near-shore and often lacustrine Gatun. Hence we find a fauna of deeper water affinities with Pleurotomids and thin shelled Cones, as the most important element." (1922, p. 188). This difference in ecology seems to be the key to the appearance of this new species for it does not occur with *M. messorius* which is the typical Gatun species of *Murex s.s.* *M. messorius* is a fairly shallow water form and *M. olssoni* is confined to somewhat deeper water although not what would be called "deep-water" by any means.

The beds at Puerto Limon were considered by Olsson to be upper Miocene in age and correlated directly with the Bowden

There is another species of *Murex* in the Miocene and Pliocene of the Caribbean which is not unlike the Recent *M. recurvirostris* Broderip, by which name it has been cited by authors. This species differs from the typical *M. recurvirostris* in having a higher spire, less recurved varices, prominent varical spines, and marked denticulations on the inner lip. From *M. messorius* it differs in having a much smaller aperture, more spines, a more inflated body whorl,

#### PLATE 1

Figures	Page
1. <i>Murex (Murex) messorius</i> Sowerby (X 1) ----- BMNH 1964-349 (lectotype); height 64 mm, diameter 29 mm. Locality: unknown.	81
2. <i>Murex (Murex) messorius</i> Sowerby (X 1) ----- Conchological Illustrations, pl. 194, fig. 93; height as given, 62 mm.	81
3. <i>Murex (Murex) messorius</i> Sowerby (X 1½) ----- USNM 677703; height 53 mm, diameter 29 mm. Locality: <i>Oregon</i> Station 5058, off St. Lucia, Lesser Antilles.	81

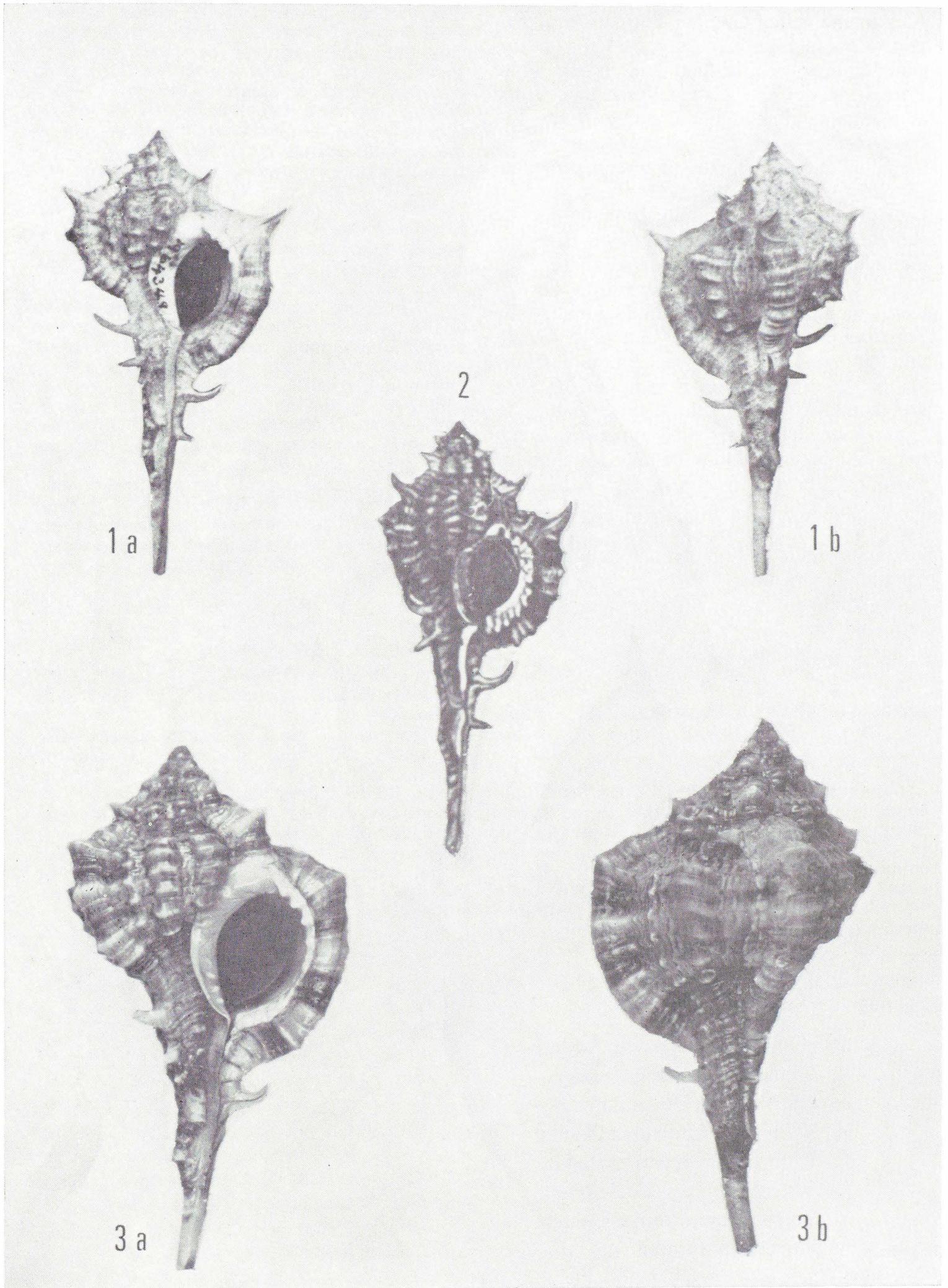


PLATE 1

Formation in Jamaica. The species also occurs in the Punta Gavilan Formation of Falcón, Venezuela, which is considered as upper Miocene or Pliocene and in the Mare Formation of Cabo Blanco, Venezuela, which is Pliocene. Although the range of the Recent members of the species seems to be confined to a small area in western Panama in past geologic time the form reached as far north as the Isthmus of Tehuantepec for there are several specimens known from the Agueguexquite Formation of southern Vera Cruz, Mexico. The Agueguexquite Formation was referred to the middle Miocene by Perrillait Montoya (1963) but both Olsson and van den Bold (personal communication) are of the opinion that it is upper Miocene and correlated with the "upper Gatun" in Costa Rica. There are also numerous specimens in the collections of the Museum of Paleontology, University of California, Berkeley, from the Tuberá Group of Punta Pua, Dept. of Bolívar, Colombia. The exact age of this latter occurrence is uncertain for the Tuberá Group includes beds of lower, middle, and upper Miocene age. It seems probable that *Murex olssoni* is confined to upper Miocene and younger beds.

MUREX (MUREX) OLSSONI E. H. Vokes,  
n. sp.

Pl. 3, figs. 1-3

*Diagnosis:* Nucleus of  $1\frac{1}{2}$  papillose, bulbous whorls, terminating at a conspicuous ridge-like varix; seven post-nuclear whorls in the adult. Axial ornamentation on the early whorls consisting of about 14 small, equal ridges; on the third post-nuclear whorl certain of these ridges are strengthened to form small varices, three to a com-

plete turn; the others remaining as small intervarical nodes, usually three between each pair of varices. Spiral ornamentation on early whorls of three or four threads, with on the fourth to fifth post-nuclear whorl a smaller threadlet intercalated between each pair of the larger threads. On the body whorl eight sets of major and minor threads with an additional seven or more threads on the extended siphonal canal. Varices prominent, rounded, and armed with sharp spines formed where the major threads cross the varices; the longest spine at the shoulder, six smaller spines anterior to it and one very small spinelet between the shoulder spine and the suture; one or two spines on the anterior prolongation of the varices along the siphonal canal. Aperture small, round; parietal lip standing free almost entire length with about six strong elongate denticles on the anterior half and a large tooth at the posterior end. Outer lip bearing seven denticles within and a crenulated edge which stands free in advance of the varix. Siphonal canal long, almost completely straight, with little trace of former canals; canal covered over by a thin lamina but always remaining open by a narrow slit which is distinctly curved at the apertural end.

Dimensions of holotype: height 52 mm, diameter (excluding spines) 23 mm.

Holotype: USNM 677704.

Type locality: Oregon Station 4896, Gulf of Morrosquillo, Colombia, in 23 to 27 fathoms.

Paratype: USNM 645429; height (incomplete) 30 mm, diameter (excluding spines) 23 mm; locality, Puerto Limon, Costa Rica; Upper Gatun Formation.

Paratype: PRI 26200; height (incomplete) 50 mm, diameter (excluding spines) 33 mm; locality, Cabo Blanco, Venezuela; Mare Formation. (Specimen figured by Weisbord, 1962, pl. 26, fig. 3, 4 as *M. recurvirostris* Broderip.)

Horizon: Tuberá Group, Dept. of Bo-

## PLATE 2

### Figures

### Page

- |   |    |
|---|----|
| 1-8. <i>Murex (Murex) messorius</i> Sowerby (X 1) | 81 |
| 1. With one intervarical node.                    |    |
| 2. With two intervarical nodes.                   |    |
| 3. With three intervarical nodes.                 |    |
| 4. With four intervarical nodes.                  |    |
| 5. With five intervarical nodes.                  |    |
| 6. Very spinose (for the species).                |    |
| 7. Moderately spinose.                            |    |
| 8. Lacking spines except on siphonal canal.       |    |

All specimens from TU R-109, Bahia las Minas, near Colon, Panama.  
(Shells whitened to show details or ornamentation)

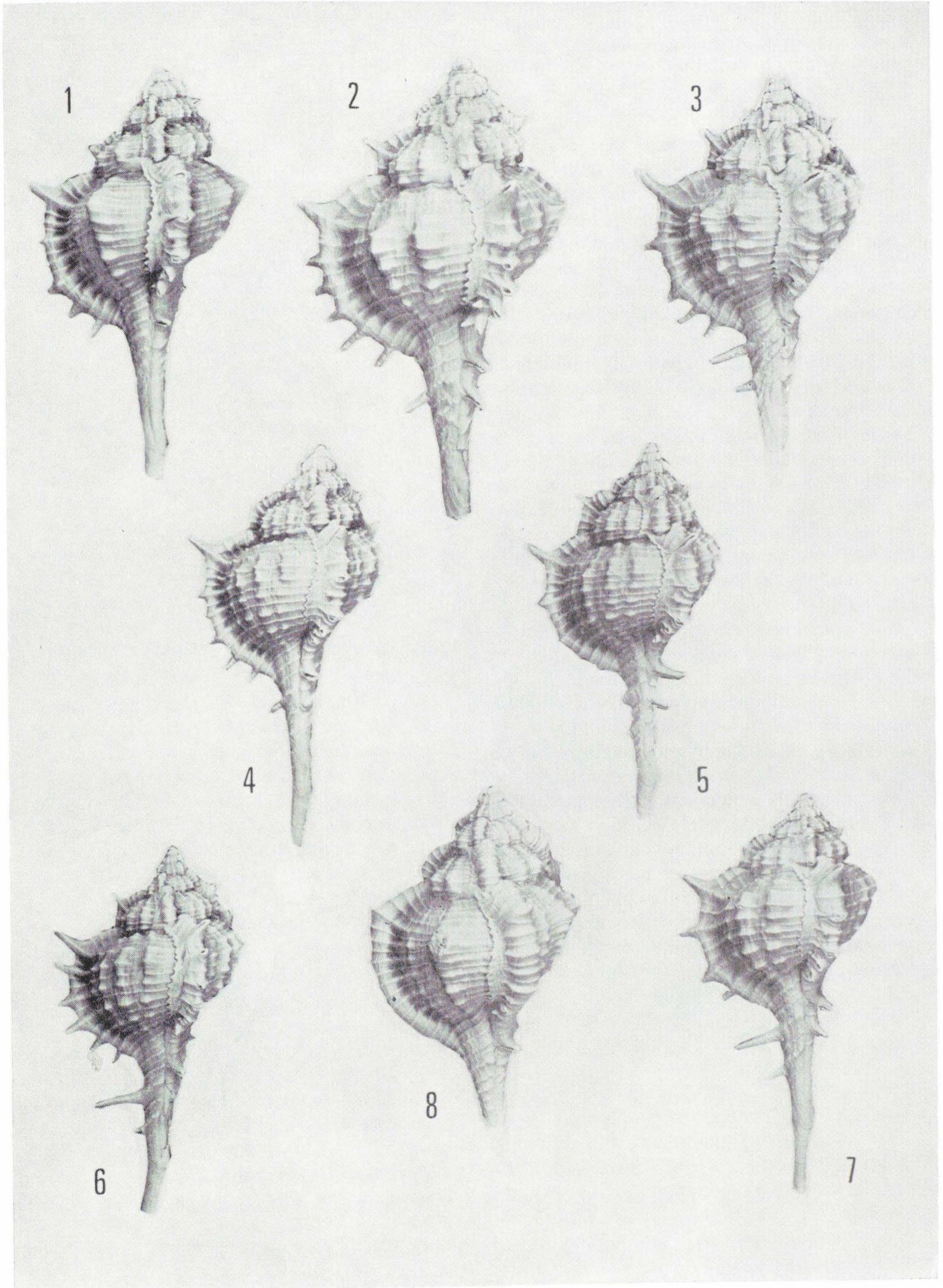


PLATE 2

ívar, Colombia; Agueguexquite Formation, Mexico; (?) upper Miocene. Upper Gatun Formation, Costa Rica; upper Miocene. Punta Gavilan Formation, Venezuela; upper Miocene or Pliocene. Mare Formation, Venezuela; Pliocene. Recent, Punta San Blas, Panama, to Gulf of Morrosquillo, Colombia.

While studying the material collected by the R/V *Oregon* the writer also determined that the shell figured and discussed by Clench and Pérez Farfante (1945, p. 5, pl. 2) as *M. tryoni* Hidalgo in Tryon is not that species. The holotype of *M. tryoni* is preserved in the Academy of Natural Sciences of Philadelphia and is a much less spinose form. It is evident from the description and discussion given by those authors that the specimens they had are the new species here named *Murex blakeanus*. The two species differ most strikingly in the nature of the nuclear whorls: *M. tryoni* has a small bulbous nucleus consisting of  $1\frac{1}{2}$  whorls and is approximately 1 mm in diameter; the nucleus of *M. blakeanus* is about twice as big, or approximately 2 mm in diameter, and consists of  $1\frac{3}{4}$  whorls. As Clench and Pérez Farfante observed, the second whorl generally develops a carina. In their discussion they noted that "*M. tryoni*" could be distinguished from the similar *M. cabritii* because the nucleus is much larger in "*M. tryoni*." The nuclear whorls of *M. tryoni* and of *M. cabritii* are almost exactly alike and both are much smaller than *M. blakeanus*.

The species *M. tryoni* was originally based on a single specimen and the figure given by Tryon (1880, pl. 70, fig. 427) is an excellent representation of that shell. It has only three spines on each varix of the body portion and one more on the siphonal canal.

Between each pair of varices there are seven small axial ridges which form small nodes where they cross each of the spiral ribs. Just how Hidalgo arrived at the figure of "eight or nine" nodes cited in his original description (*in* Tryon, 1880, p. 134) is not known. A number of specimens of *M. tryoni* were taken by the *Oregon* off the coast of British Honduras in 125 fathoms (Station 3636) and from these a better idea of the degree of variability can be obtained. The usual number of varical spines is three but one specimen is reduced to a single spine at the shoulder. On others small secondary spinelets are developed on the varices between the larger spines but not to the degree seen in *M. blakeanus*. Most of the specimens have seven axial ridges but the number varies from five to eight, often on the same specimen. There is a marked tendency to lose nodes as the shell becomes larger. The maximum size of the species is also greater than the type would indicate, several of the *Oregon* specimens are 55 mm in height. The siphonal canal is proportionally very long, over half the length of the shell. Although the type specimen is white these specimens display numerous faint brown spiral lines on the body whorl.

*M. blakeanus* lives in moderately deep water, the various depth records cited by Clench and Pérez Farfante ranging from 25 to 115 fathoms. Those authors gave localities extending from southern Florida to the Lesser Antilles. The *Oregon* dredged a number of specimens from off the Guajira Peninsula of northern Colombia, in 110 fathoms (Station 4398), extending the range considerably to the west.

The writer wishes to express her appreciation to H. R. Bullis, Jr., Base Director,

### PLATE 3

#### Figures

#### Page

- |   |    |
|---|----|
| 1-3. <i>Murex (Murex) olssoni</i> E. H. Vokes, n. sp. (X $1\frac{1}{2}$ )   | 84 |
| 1. USNM 677704 (holotype); height 52 mm, diameter (excluding spines) 23 mm.<br>Locality: <i>Oregon</i> Station 4896, Gulf of Morrosquillo, Colombia.            |    |
| 2. USNM 645429 (paratype); height (incomplete) 30 mm, diameter (excluding spines) 23 mm.<br>Locality: Puerto Limon, Costa Rica. Upper Gatun Fm., upper Miocene. |    |
| 3. PRI 26200 (paratype); height (incomplete) 50 mm, diameter (excluding spines) 33 mm.<br>Locality: Cabo Blanco, Venezuela. Mare Fm., Pliocene.                 |    |

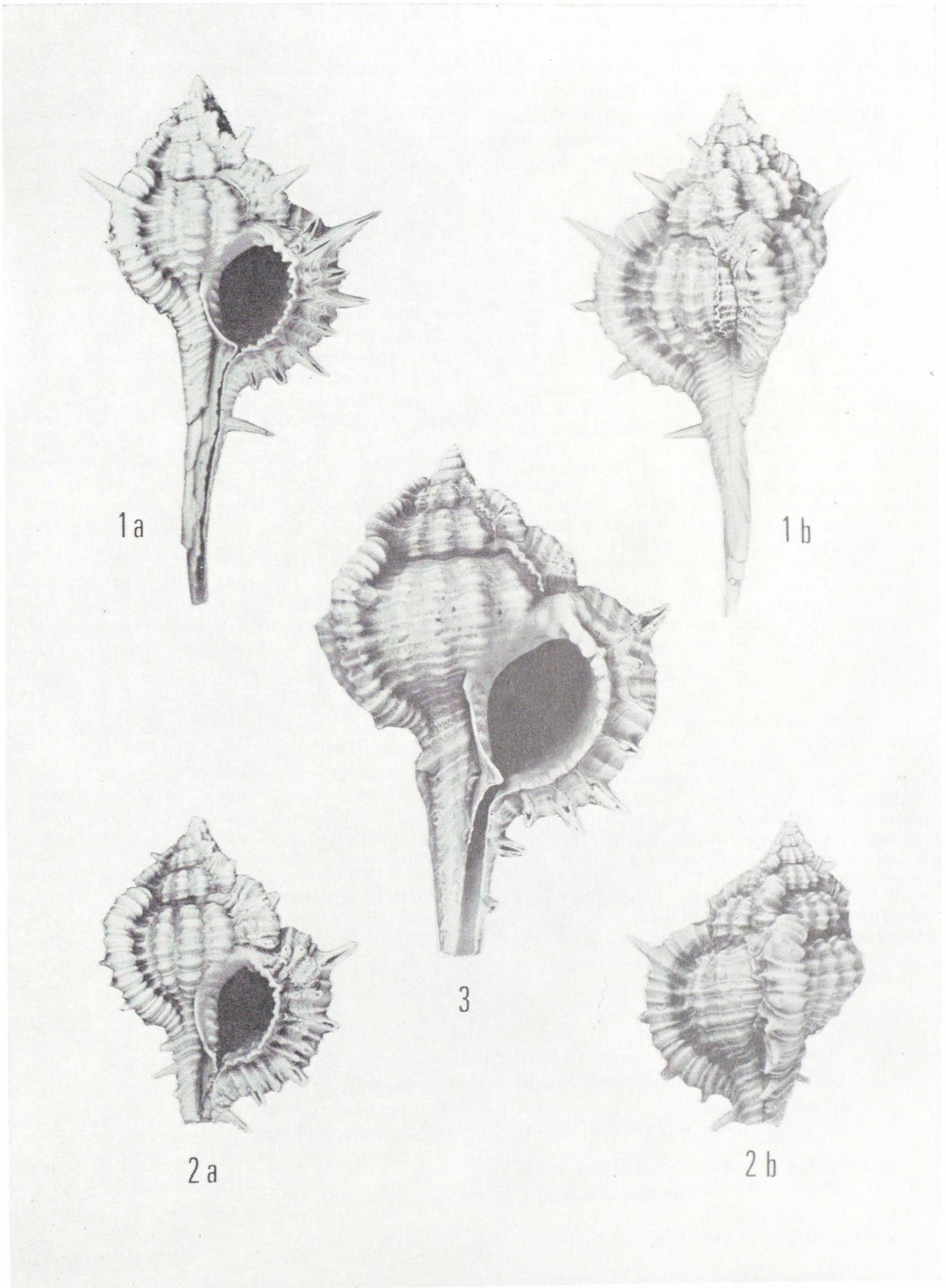


PLATE 3

Pascagoula Fishery Station, U. S. Fish and Wildlife Service, for the opportunity to study the molluscan material collected by the R/V *Oregon* upon which this paper is based. She would also like to thank Robert H. Stewart, geologist for the Panama Canal Company, who collected the material from Bahia las Minas, Panama (TU R-109).

MUREX (MUREX) BLAKEANUS

E. H. Vokes, n. sp.

Pl. 4, figs. 1a, 1b

*Murex (Murex) tryoni* Hidalgo. CLENCH and PÉREZ FARFANTE, 1945, *Johnsonia*, v. 1, no. 17, p. 5, pl. 2 (not of Hidalgo).

*Diagnosis*: "Shell thin, small, from 25 to 43 mm (about 1 to 1.75 inches) in length. Whorls six to seven. Color white to gray, without dots or other color markings. Spire acute and moderately extended. Suture deeply indented, interrupted by the varices that buttress the whorls above. Aperture small, oval and glossy white. Parietal lip thin, sharp and extended, lightly attached on its upper margin to the body whorl; no denticulations present on the specimens examined. Palatal lip thin, erect and rather finely crenulated. Siphonal canal long and varying in length from about two thirds to equal the length of the whorls above. It is straight to slightly recurved backwards. The previous siphonal canals remain as scale-like processes about midway on the new canal. Apertural opening of the latter consisting of a long narrow slit. Axial sculpture consists of three prominent and acute varices. These varices support alternating long and short spines which are closed in front and generally somewhat curved, the spines being all evolved in a single plane and not built forward as in most other species in this group. They are flat on their forward side and rather sharply keeled on their backward side. At the proximal end of the siphonal canal there

are two or three spines at the base of each varix. The intervarical ridges are low, four or five in number and rather finely nodulose, the nodules occurring more or less regularly on the spiral threads that connect the spines of one varix to those on another. The nuclear whorls large, number one and three-quarters, the first rounded, the second generally developing a carina. One and one-half post nuclear whorls sculptured with twelve equal axial ribs crossed by rather strong spiral threads. Remaining whorls as described above. Periostracum and operculum unknown. (Clench and Pérez Farfante, 1945).

Dimensions of holotype: height 43 mm, diameter (excluding spines) 17 mm.

Holotype: Harvard Mus. Comp. Zool. 7287 (specimen figured by Clench and Pérez Farfante, 1945, pl. 2).

Type locality: *Blake* Station 254, off Grenada, Lesser Antilles, in 164 fathoms.

Paratype: USNM 677702; *Oregon* Station 4398, off Guajira Peninsula, Colombia, in 110 fathoms.

*Horizon*: Recent only.

LITERATURE CITED

- BULLIS, H. R., JR., 1964, Muricidae (Gastropoda) from the northeast coast of South America, with descriptions of four new species: *Tulane Stud. Zool.*, v. 11, no. 4, p. 99-107, 1 pl.
- CLENCH, W. J., and I. PÉREZ FARFANTE, 1945, The genus *Murex* in the western Atlantic: *Johnsonia*, v. 1, no. 17, p. 1-58, pls. 1-29.
- OLSSON, A. A., 1922, The Miocene of northern Costa Rica: *Bull. Amer. Paleontology*, v. 9, no. 39, p. 174-482, pls. 4-35.
- PERRILLIAT MONTROYA, M. C., 1963, Moluscos de la Formación Agueguexquite (Miocene medio) del Istmo de Tehuantepec, Mexico: *Paleontologia Mexicana*, no. 14, 45 p., 6 pls.
- SOWERBY, G. B., JR., 1841a, The Concho-

PLATE 4

Figures	Page
1. <i>Murex (Murex) blakeanus</i> E. H. Vokes, n. sp. (X 2) ..... USNM 677702 (paratype); height 34.5 mm, diameter (excluding spines) 17 mm. Locality: <i>Oregon</i> Station 4398, off Guajira Peninsula, Colombia.	88
2. <i>Murex (Murex) tryoni</i> Hidalgo (X 2) ..... ANSP 35355 (holotype); height 28 mm, diameter (excluding spines) 14 mm. Locality: Lesser Antilles.	87
3. <i>Murex (Murex) tryoni</i> Hidalgo (X 2) ..... USNM 677701; height 54 mm, diameter (excluding spines) 19 mm. Locality: <i>Oregon</i> Station 3636, south of Turneffe Island, British Honduras.	87

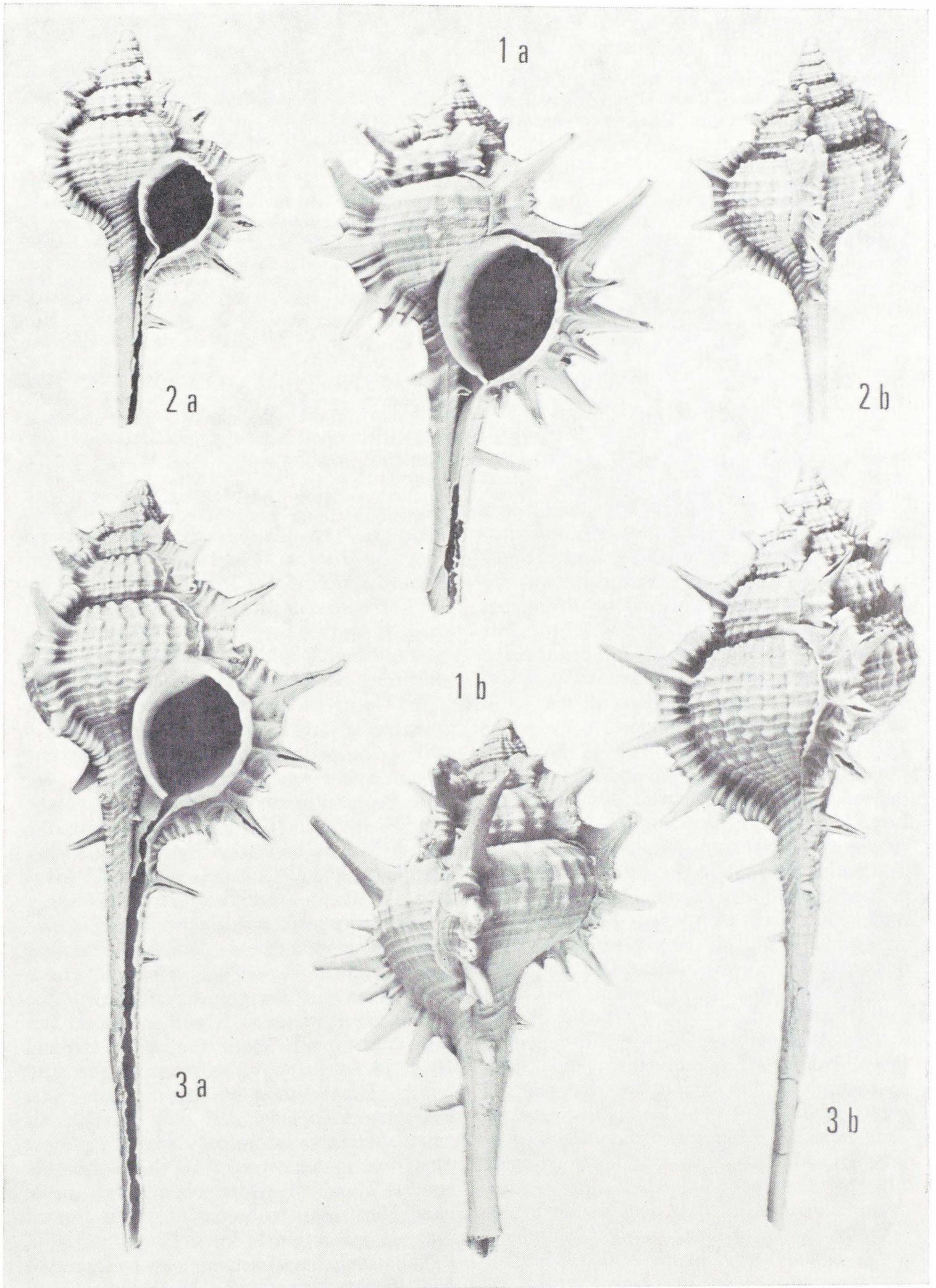


PLATE 4

- logical Illustrations. London. 200 pls. (*Murex* pls. 58-67, publ. 1834; *Murex* pls. 187-199, publ. 1841).
- SOWERBY, G. B., JR., 1841b, Description of some new species of *Murex*, principally from the collection of H. Cuming, Esq.: Zool. Soc. London, Proc. for 1840, p. 137-147.
- TRYON, G. W., JR., 1880, Manual of Conchology, structural and systematic, with illustrations of the species. V. 2, Muricinae, Purpurinae. Philadelphia, 289 p., 70 pls.
- VOKES, E. H., 1963, Cenozoic Muricidae of the western Atlantic region. Part I—*Murex* s.s.: Tulane Stud. Geol., v. 1, no. 3, p. 93-123, pls. 1-4.
- VOKES, E. H., 1965, Cenozoic Muricidae of the western Atlantic region. Part II—*Chicoreus sensu stricto* and *Chicoreus (Siratus)*: Tulane Stud. Geol., v. 3, no. 4, p. 181-204, pls. 1-3, 2 text figs.
- WEISBORD, N. E., 1962, Late Cenozoic Gastropods from northern Venezuela: Bulls. Amer. Paleontology, v. 42, no. 193, p. 1-672, pls. 1-48.

THE GENUS *VITULARIA* (MOLLUSCA: GASTROPODA) DISCOVERED  
IN THE MIOCENE OF SOUTHERN FLORIDA

EMILY H. VOKES  
TULANE UNIVERSITY

In late 1966 road work uncovered, for a tragically short time, the most fabulous fossil locality that it has ever been the writer's privilege to visit. The construction was for a toll road stretching across the Everglades from Naples, Florida, due east to Fort Lauderdale, and bearing the delightful name of "Alligator Alley." Unfortunately subsequent work completely covered the fossil locality and it is no longer in existence. "Alligator Alley" crosses Florida Highway 29 just south of Sunniland, and at this point the underlying formation is the Tamiami Limestone of late Miocene age. Traveling to the east one passes through exposures of the Buckingham facies of the Tamiami and at a point 13 miles east of Highway 29 the molluscan fauna of the upper Miocene Pinecrest Beds is well developed for about one-quarter mile in either direction. On to the east the Pinecrest is still present for several miles but the collecting was poor.

This locality was fraught with exciting fossils but for the writer the single most spectacular find was the discovery of the genus *Vitularia* in the western Atlantic. This genus first appears in the Oligocene of Europe with the distinctive *V. linguabovis* (Basterot). Grateloup (1833, p. 94) reported this species from beds as old as the "Yellow Marls" of Dax, France (Stampian), and it is widespread in the Miocene beds of western Europe. In the New World the genus *Vitularia* first appears in the middle Miocene Daule Formation of southwestern

Ecuador with the species *V. ecuadorana* Marks (1951). It also has been reported from the Pliocene Charco Azul Formation of southwestern Costa Rica by Olsson (1942, p. 170) with a form compared to the West Coast *V. salebrosa*, the only Recent species in the New World. (M. Smith named a subspecies *V. salebrosa extensa* for a low spired form of the typical species but it probably is only a variant.) All other Recent species of this genus are found in the central and western Pacific region, with there being only six known species. These are: *V. miliaris* (Gmelin), the type of the genus; *V. sandwichensis* Pease; *V. crenifer* (Montrouzier); *V. candida* Adams; *V. longmani* (Iredale); and *V. asiaticus* Kuroda.

The systematic position of the genus *Vitularia* is somewhat doubtful. Because the shells bear varices they classically have been allied with the genus *Murex*. But the operculum is purpuroid, with a lateral nucleus, and for this reason the writer (Vokes, 1964, p. 27) placed the genus in the subfamily Tritonaliinae. Since that time she has come to believe that only those shells which possess a completely sealed siphonal canal are to be referred to this subfamily and, as *Vitularia* has an open canal, placement here seems to be out of order. Swainson, in his original description (1840, p. 297), stated that "The inner lip is depressed and flattened as in the Purpurinae," and perhaps it is to this subfamily that the genus should be assigned. The writer has found