A MONOGRAPH OF WEST AMERICAN MELANELLID MOLLUSKS.

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The present monograph completes the discussion of the West American Mollusks of the superfamily Pyramidelloideae, the Gymnoglossa, of Malacological Manuals. The superfamily consists of the families Pyramidellidae, which has been previously treated,[1] and the Melanellidae, here considered.

All the members of the superfamily are small mollusks, the largest attaining a size but little more than an inch in length. By far the greater number are elongate conic, but there are some which are quite rotund and others that range between these two extremes. In sculpture they vary from smooth to axially ribbed, to spirally striate or lirate, and combinations of these elements. Anatomically the members of this superfamily are differentiated from the other Prosobranchiate mollusks by the absence or extreme depauperation of the radula.

The members of the family Pyramidellidae are readily distinguished from those of the Melanellidae by the fact that the nepionic whorls are sinistral and tilted; the axis of the early whorls usually

[1] The Pyramidellidae of the Marine Pliocene and Pleistocene Deposits of California, William H. Dall and Paul Bartsch, Mem. Cal. Acad. Sci., vol. 3, 1903, pp. 269–285.

Synopsis of the Genera, Subgenera, and section of the Family Pyramidellidae, William H. Dall and Paul Bartsch, Proc. Biol. Soc. Wash., vol. 17, 1904, pp. 1–16.

Notes on Japanese, Indo-Pacific, and American Pyramidellidae, William H. Dall and Paul Bartsch, Proc. U. S. Nat. Mus., vol. 30, pp. 321–369, pls. 17–26, May 9, 1906.

The Pyramidellid Mollusks of the Oregonian Faunal Area, William H. Dall and Paul Bartsch, Proc. U. S. Nat. Mus., vol. 33, pp. 491–534, pl. 44–48, Washington, December, 1907.

Pyramidellidae of New England and the adjacent Region, Paul Bartsch, Proc. Bost. Soc. Nat. Hist. vol. 24, pp. 67–113, pls. 11–14, February, 1909.

A Monograph of West American Pyramidellid Mollusks, William H. Dall and Paul Bartsch, Bull, U. S. Nat. Mus. No. 68, pp. I–XII and 1–258, pls. 1–30, Washington, Nov. 10, 1909.

More Notes on the Family Pyramidellidae, Paul Bartsch, The Nautilus, vol. 23, 1909, pp. 54–59.

New species of Shells collected by Mr. John Macoun, at Barclay Sound, Vancouver Islands, British Columbia, William H. Dall and Paul Bartsch, Canada Dept. of Mines, Memoir No. 14–N, 1910.

Additions to West American Pyramidellid Mollusk Fauna, with descriptions of new species, Paul Bartsch, Proc. U. S. Nat. Mus., vol. 42, May 17, 1912, pp. 261–289, pl. 35–38.

A Zoogeographic Study based on the Pyramidellid Mollusks of the West Coast of America, Paul Bartsch, Proc. U. S. Nat. Mus., vol. 42, 1912, pp. 297–349.

New species of Mollusks from the Atlantic and Pacific Coasts of Canada, William H. Dall and Paul Bartsch, Bull. No. 1, Victoria Memorial Museum, pp. 139–146, Oct. 23, 1913.

being at right angles to that of the succeeding turns, in the first of which the nuclear whorls are frequently quite strongly embedded. In the Melanellidae, on the other hand, the early whorls are dextral and never tilted or immersed. By far the greater number of the Pyramidellid mollusks are highly sculptured, a feature almost absent in the Melanellidae, where varices mark the strongest axial sculptural element and the spiral sculpture scarcely exceeds that of finely incised lines.

The first Melanellid to be reported from the west coast of America was *Stilifer astericolus* Broderip, a mollusk collected on starfish at Hood Island of the Galapagos group by Hugh Cuming. This is not only described here by Broderip [1] as a new species, but constitutes the type of the genus *Stilifer* there characterized.

Two years after this appeared G. B. Sowerby's paper on the "*Eulimas*," collected by Hugh Cuming and this describes seven new West American forms [2]. These are:

Eulima splendidula Sowerby, from Sancta Elena.
Eulima interrupta Sowerby, from the Gulf of Nocoiyo.
Eulima imbricata Sowerby, from Sancta Elena.
Eulima hastata Sowerby, from Sancta Elena.
Eulima pusilla Sowerby, from Sancta Elena.
Eulima varians Sowerby, from Xipixapi.
Eulima acuta Sowerby, from Montiji Bay.

Eight years later (1852), C. B. Adams published his catalogue of shells collected at Panama, in which he described [3] *Eulima iota*, *Eulima recta*, *Eulima solitaria*.

Two years after this Arthur Adams's Monographs of the Genera *Eulima*, *Niso* and *Leiostraca* were published.[4] Here we find the previously described species redescribed and figured, and some of them referred to other genera than those under which they were originally described:

Eulima hastata Sowerby, page 794, plate 169, figures 7, 8.
Eulima pusilla Sowerby, page 794, plate 169, figures 9, 10, 21.
Eulima iota C. B. Adams, page 798, plate 169, figure 19.
Niso interrupta Sowerby, page 801, plate 170, figure 9.
Niso splendidula Sowerby, page 801, plate 170, figure 8.
Niso imbricata Sowerby, page 802, plate 170, figure 10.
Leiostraca acuta Sowerby, page 803, plate 170, figure 11.
Leiostraca varians Sowerby, page 804, plate 170, figures 23, 24.
Leiostraca recta C. B. Adams, page 804, plate 170, figure 25.

The next to make contributions to the west coast members of this family was Philip P. Carpenter, who devotes pages 438–442 of his

[1] Proc. Zool. Soc. London, 1832, p. 60.
[2] Idem, 1834, pp. 6–8.
[3] Ann. Lyc. Nat. Hist., N. Y., 1852, pp. 198–199.
[4] Sowerby's Thes. Conch., 1854.

Catalogue of Mazatlan Shells, published in 1857, to it. Here we find the following listed:

Eulima? hastata Sowerby, page 438.
Eulima ——— sp. ind. (*a*), page 438.
Eulima ——— sp. ind. (*b*), page 438.
Leiostraca? recta C. B. Adams, page 439.
Leiostraca? solitaria C. B. Adams, page 439.
Leiostraca ——— sp. ind. (*a*), page 439.
Leiostraca ——— sp. ind. (*b*), page 440.
Leiostraca linearis Carpenter, page 440.
Leiostraca? iota, var. *retexta* Carpenter.
Leiostraca? distorta, var. *yod* Carpenter.

All of the forms attributed to C. B. Adams were later found to be distinct by Carpenter and given names by him.

In 1860 O. A. L. Mörch, in his Beiträge zur Molluskenfauna Central-Amerika's, reached the genus *Eulima* on page 120 [1] and described *Eulima bipartita* Mörch, from Sonsonate, Mexico, and discussed *Eulima distorta* Sowerby and *Eulima recta* C. B. Adams.

The next publication dealing with West American Melanellidae is P. P. Carpenter's Review of Prof. C. B. Adams's Catalogue of the Shells of Panama, from the Type Specimens.[2] Here he discusses on pages 356 and 357 the shells described by C. B. Adams and his own efforts in the Mazatlan Catalogue.

He here raises the name *Leiostraca? iota retexta* Carpenter, previously given to his Mazatlan shell [3] to specific rank. He also separates the Mazatlan shells which he listed under the name *Leiostraca recta* C. B. Adams [4] from the true *M. recta* C. B. Adams, a Panamic species, and gives to the Mazatlanic species the name *Leiostraca involuta* Carpenter, but it will be found that this has a tilted nucleus which places it in the genus *Odostomia*. The shell which he described as *Leiostraca solitaria* he now considers distinct from C. B. Adams *Eulima solitaria*, and he gives it the name *Leiostraca producta*.

The next paper to deal with these shells was also published by P. P. Carpenter. It was his Supplementary Report on the Present State of our Knowledge with Regard to the Mollusca of the West Coast of America.[5] Here, on page 659, we find the following species listed as—

Eulima micans? new species.
Eulima compacta? new species.
Eulima rutila? new species.
Eulima thersites new species.

There are only a few words of description, which would not enable even a specialist to determine the species these names were intended for. They are, however, more fully described later.

[1] Malak. Blät., vol. 6, pp. 120–121.
[2] Proc. Zool. Soc. London, 1863.
[3] Mazatlan Catalogue, 1857, pp. 440–441.
[4] Mazatlan Catalogue, 1857, p. 439.
[5] Rept. Brit. Ass. Adv. Sci. 1863 (1864).

In the following year Doctor Carpenter published his Diagnoses of New Forms of Mollusks Collected at Cape St. Lucas by Mr. J. Xantus.[1] On pages 47 and 48 is his *Eulima fuscostrigata* described as new.

The next effort was also by Carpenter. In his paper Diagnoses Specierum et Varietatum novarum Molluscorum, prope Sinum Pugetianum a Kennerlio Doctore, nuper decesso, collectorium,[2] on page 63, there is a complete description of *Eulima micans* Carpenter.

In the same year Carpenter published a paper Diagnoses of New Forms of Mollusks from the West Coast of North America first collected by Col. E. Jewett.[3] On pages 396 and 397, *Eulima thersites* Carpenter is fully described.

Still another paper by the same author, Descriptions of New Marine Shells from the Coast of California, appeared the same year.[4] On page 221 of this paper we find *Eulima* (? var.) *compacta* Carpenter and *Eulima* (? var.) *rutila* Carpenter more fully diagnosed.

In 1866 the Monographs on the genera *Leiostraca*, *Eulima*, and *Niso* appeared in Lovell Augustus Reeve's Conchologia Iconica, and while there is only a single new species, *Eulima parva* Reeve, described here, some of the previously described species are here figured. We find:

Leiostraca varians Sowerby, plate 1, figures, 1*a*, 1*b*.
Leiostraca recta C. B. Adams, plate 1, figure 3.
Leiostraca acuta Sowerby, plate 2, figure 7.
Eulima hastata Sowerby, plate 2, figure 9.
Eulima pusilla Sowerby, plate 3, figure 25.
Eulima micans Carpenter, plate 3, figure 33.
Eulima iota C. B. Adams, plate 5, figure 34.
Eulima rutila Carpenter, plate 5, figure 37.
Eulima parva Sowerby, plate 5, figure 41.
Niso imbricata Sowerby, plate 1, figure 3.
Niso splendidula Sowerby, plate 1, figure 7.
Niso interrupta Sowerby, plate 1, figures 8*a*, 8*b*.

The next year De Folin published his paper Les Meleagrinicoles, in which the following Melanellids are described:

Chemnitzia rangii De Folin.
Eulima adamantina De Folin.
Eulima proca De Folin.
Eulima gibba De Folin.
Eulima elegantissima De Folin.
Eulima elodia De Folin.
Eulima opalina De Folin.

[1] Ann. Mag. Nat. Hist., ser. 3, vol. 14, 1864.
[2] Proc. Acad. Nat. Sci. Philadelphia, vol. 17, 1865.
[3] Ann. Mag. Nat. Hist., ser. 3, vol. 15, 1865.
[4] Proc. Cala. Acad. Nat. Sci., vol. 3, 1865.

De Folin unfortunately cites as type-locality for all the shells described in this paper two places—one the environs of *Negritos* (which may mean Negros Island, Philippines), and the other Isle aux Perles—i. e., Margarita Island, Bay of Panama. In order not to miss any West American members, I have quoted all the described forms.

In 1878 G. B. Sowerby published his Monograph on the genus *Stylifer*.[1] In this he redescribes and figures plate 1, figure 3, *Stylifer astericola* Broderip.

Six years later G. B. Sowerby's Monograph on the genus *Stylifer* appeared.[2] In this we find *Stylifer astericolus* Broderip described on page 159 and figured on plate 479, figures 4 and 5.

Two years later Tryon, in his Manual, reached our family.[3] Besides giving a treatment of the superspecific groups he describes and figures all those previously figured. He also gives figures of such as he had represented in his collection and he cites all those known to him to date. From the West Coast of America the following are listed:

Eulima micans Carpenter, page 272, plate 69, figures 29, 30.
Eulima elodia De Folin, page 272.
Eulima parva Sowerby, page 272, plate 69, figures 32, 33.
Eulima adamantina De Folin, page 272.
Eulima gibba De Folin, page 272, plate 69, figure 34.
Eulima opalina De Folin, page 273, plate 69, figure 37.
Eulima proca De Folin, page 273, plate 69, figure 38.
Eulima hastata Sowerby, page 273, plate 69, figure 39.
Eulima iota C. B. Adams, page 274, plate 69, figure 42.
Eulima compacta Carpenter, page 278.
Eulima thersites Carpenter, page 278.
Eulima fuscostrigata, Carpenter, page 278.
Eulima bipartita Mörch, page 278.
Eulima varians Sowerby, page 278, plate 70, figures 65, 67.
Eulima rutila Carpenter, page 279, plate 70, figure 68.
Eulima elegantissima De Folin, page 279, plate 70, figure 69.
Eulima recta C. B. Adams, page 280, plate 70, figure 81.
Eulima acuta Sowerby, page 280, plate 70, figure 82.
Eulima rangii De Folin, page 287, plate 70, figure 20.
Niso splendidula Sowerby, page 287, plate 71, figure 24.
Niso interrupta Sowerby, page 288, plate 71, figures 22, 23.
Niso imbricata Sowerby, page 289, plate 71, figure 31.
Stylifer astericola Broderip, page 290, plate 71, figure 38.

[1] Reeve's Conch. Icon., vol. 20, 1878.
[2] Sowerby's Thes. Conch., 1884.
[3] Tryon's Man. Conch., vol. 8, 1886.

The next Melanellid to be cited is one referred to but not named by von C. Hartlaub, who in his Report on the Dredging Operations off the West Coast of Central America to the Galapagos, to the West Coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried on by the U. S. Fish Commission steamer *Albatross* during 1891, Lieut. Commander Z. L. Tanner, U. S. N., commanding,[1] calls attention (p. 147, pl. 4, fig. 25) to a "*Stylifer* (*Mucronalia*) parasitic upon a crinoid found in the Gulf of Panama." This is named by Dr. W. H. Dall in 1908.

In 1899 Edward G. Vanatta published a paper on West American *Eulimidae*[2] in which he described the following:

Eulima lowei Vanatta, page 254, plate 11, figures 9, 10.

Eulima bistorta Vanatta, pages 254–5, plate 11, figures 7, 8.

Eulima compacta Carpenter, pages 255–6, plate 11, figures 11, 12.

Eulima randolphi Vanatta, page 256, plate 11, figures 13, 14.

Eulima micans Carpenter, pages 256–7, plate 11, figures 1, 2.

Eulima rutila Carpenter, plate 11, figures 5, 6.

Nine years later the present writer published A New Parasitic Mollusk of the Genus Eulima.[3] In this *Eulima ptilocrinicola* Bartsch is characterized.

The year following Dr. William H. Dall[4] bestowed the name *Stilifer* (*Mucronalia*) *bathymetrae* upon the mollusk mentioned by Hartlaub in 1895.

In the same year he published his Descriptions of New Species of Mollusks from the Pacific Coast of the United States with Notes on other Mollusks from the same Region.[5] On page 253 of this paper he describes *Eulima* (*?*) *lomana* Dall.

The year following William H. Dall and the present writer published A Monograph of West American Pyramidellid Mollusks.[6] On page 230, *Odostomia* (*Scalenostoma*) *rangii* De Folin is described and figured. This is now transferred to the family Melanellidae.

In 1912 the present writer referred to *Odostomia* (*Scalenostoma*) *rangii* De Folin on page 342; he also described and figured *Odostomia* (*Scalenostoma*) *babylonia* Bartsch (pp. 287–288, pl. 38, fig. 3) of his paper on Additions to the West American *Pyramidellid* Mollusk Fauna, with Descriptions of New Species,[7] which must now be referred to the family here discussed.

The last paper dealing with West American *Melanellids* was published by Frank M. Anderson and Bruce Martin on Neocene Record

[1] Bull. Mus. Comp. Zool. Cambridge, vol. 27, No. 4, 1895.
[2] Proc. Acad. Nat. Sci. Philadelphia, 1908, pp. 254, 257, pl. 11.
[3] Proc. U. S. Nat. Mus., vol. 32, 1907, pp. 255–256, pl. 33.
[4] Bull. Mus. Comp. Zool. Cambridge, vol. 43, 1908, pp. 317–318.
[5] Proc. U. S. Nat. Mus., vol. 34, 1908.
[6] Bull. 68, U. S. Nat. Mus., 1909.
[7] Proc. U. S. Nat. Mus., vol. 42, 1912.

in the Temblor Basin, California, and Neocene Deposits of the San Juan District, San Louis Obispo County.[1] Here the following are described and figured: *Niso* (?) *antiselli* Anderson and Martin, p. 65, pl. 7, fig. 22, and *Eulima gabbiana* Anderson and Martin, p. 68, pl. 7, fig. 20, the last being a *Melanella.*

The group covered by the present monograph is by far the most difficult one that I have thus far treated; the characters are few and confined in the different groups chiefly to differences in outline, flexure, size, weight, and in addition to these, in the case of *Strombiformis* and *Niso*, to color patterns. Whatever there may be of merit in this study, I feel that the credit for it should fall upon the collectors and institutions that have placed all their material in my hands, for without this abundance of material, it would have been entirely impossible to reach the positive conclusions expressed in these pages. Foremost among these I wish to express my thanks to Dr. H. A. Pilsbry, of the Philadelphia Academy of Natural Sciences, for the loan of types, and to Prof. F. B. Loomis of Amherst College, for the loan of C. B. Adams's types from Panama. Also to the California Academy of Sciences for similar favors and the Stanford University for the loan of specimens. Of the private collectors, the material submitted by Mr. and Mrs. T. S. Oldroyd leads easily, both as far as number of species and specimens are concerned. These collections are followed by those of Miss J. M. Cooke; Mrs. Kate Stephens; Dr. Frank Baker; Dr. Ralph Arnold, whose collection is particularly rich in fossil material; Dr. S. S. Berry; Prof. F. W. Kelsey; Mr. F. L. Button; Mrs. Elizabeth E. Johnston; Mr. H. N. Lowe; Mrs. Paula Ball; Mrs. W. H. Eshnaur; and Mrs. Maria Baldridge. It should also be here stated that the splendid collections made by the late Mr. Henry Hemphill and the late Mr. C. W. Gripp, now in other hands, have materially added to the knowledge of these forms.

This paper would be incomplete, did I fail to express my appreciation to Dr. William H. Dall, honorary curator of the section of Mollusks, for his kindly counsel and encouragement while working on this difficult problem.

The photographs used in the illustrations were mostly made by Mr. T. W. Smillie, of the United States National Museum. A few were taken by Mr. John H. Paine, and all of them were retouched by Mrs. E. B. Decker, under my personal supervision.

KEY TO THE WEST AMERICAN GENERA AND SUBGENERA OF THE FAMILY.

Shell umbilicated.....*Niso*, p. 348.
Shell not umblilicated.
  Nuclear whorls forming a mucronate apex.
    Postnuclear whorls globular.....*Stilifer*, p. 352.
    Postnuclear whorls not globular.
      Postnuclear whorls oval.....*Lambertia*, p. 354.
      Postnuclear whorls cylindric.....*Mucronalia*, p. 353.

[1] Proc. Cala. Acad. Sci., ser. 4, vol. 4, 1914.

Nuclear whorls not forming a mucronate apex.
Shell with a strong peripheral keel.....*Scalenostoma*, p. 337.
Shell without a strong peripheral keel.
Inner lip with a twist resembling an obsolete fold.....*Haliella*, p. 336.
Inner lip without a twist resembling an obsolete fold.
Inner lip free, color bands present.....*Eulimostraca*, p. 333.
Color bands absent.....*Sabinella*, p. 333.
Inner lip not free, appressed to the attenuated base.
Shell with color markings.....*Strombiformis*, p. 339.
Shell without color markings.
Shell straight.....*Melanella*, p. 302.
Shell flexed.....*Balcis*, p. 319.

Genus MELANELLA Bowdich.

Melanella BOWDICH, Elem. Conch., vol. 1, 1822, p. 27. Type *Melanella dufresnii* Bowdich=*Eulima* Risso, Hist. Nat. Eur. Mer., vol. 4, 1826, p. 123. Type *Eulima elegantissima* Risso=*Melanella polita* (Linnaeus)=*Balcis* Leach, Syn. Moll. Grt. Brit., 1852, p. 200. Type *Balcis arcuata* Leach (=*Melanella distorta* Jeffreys, see Jeffrey Brit. Conch., vol. 4, 1867, p. 207)=*Vitrcolina monterosato*, Nom. Conch. Medit., 1884, p. 100. Type *Eulima incurva* (Renier) (=*Melania distorta* Jeffreys, see Bucquoy, Dautzenberg, and Dollfus, Mar. Rous., vol. 2, 1887, p. 769).

The genus as here constituted embraces the white polished mollusks that have the last whorl produced and the inner lip appressed for its entire length, or at least for the greater part of its length, to the attenuated base. The shells may be straight or flexed.

The large amount of material before us shows several species which completely bridge the gap between the straight and the flexed forms; the flexure in these instances being extremely slight. For this reason I have combined *Balcis* with *Melanella*. For convenience sake, however, rather than for difference in structural characters, we may retain the name *Balcis* as a group designation.

Subgenus MELANELLA Bowdich.

Melanella BOWDICH, Elm. Conch., vol. 1, 1822, p. 27. Type *Melanella dufresnii* Bowdich=*Eulima* Risso, Hist. Nat. Eur. Mer., vol. 4, 1826, p. 123. Type *Eulima elegantissima* Risso=*Melanella polita* (Linnaeus).

Molanellas with straight shells.

MELANELLA (MELANELLA) DALLI, new species.

Plate 35, fig. 5.

Shell straight, large, stout, polished, milk-white with irregularly disposed varices. (Early whorls decollated on both of our specimens), later whorls slightly rounded, appressed at the summit. Sutures slightly constricted. Base short, well rounded. Aperture oval, posterior angle acute, outer lip thin, bending slightly forward immediately after leaving the summit, then backward from the

periphery, so that the basal portion is behind the plane of the peripheral edge; inner lip short, moderately thick, curved and slightly reflected over the base, the reflected portion fusing with the thin parietal callus.

Two specimens of this species (Cat. No. 132072), are in the collection of the United States National Museum. They came from the Gulf of California. Both have lost their tips; one of these, the type, has 10½ whorls remaining, and measures—length, 20 mm.; diameter, 7.5 mm. This is the largest species so far known from the west coast of America.

MELANELLA (MELANELLA) MICANS Carpenter.

Plate 34, figs. 1–6.

Eulima micans CARPENTER, Rep. Brit. Ass. Adv. Sci. (1863) 1864, p. 659; Proc. Phila. Acad. Nat. Sci., 1865, p. 63.

Shell straight, elongate-conic, bluish-white when the animal has been removed. When the animal has been allowed to dry in the shell, it appears through the substance of the shell and gives it a mottled brownish aspect. The brownish coloration when present usually extends over the upper half of the specimen. Whorls flattened, decidedly appressed at the summit. Sutures appearing as a very fine impressed line. Base moderately long, well rounded. Aperture oval; posterior angle very acute; outer lip thin at the edge, bent back immediately below the summit, then forward to form a claw-shaped element, the center of which coincides with the periphery; there is another backward deflection of the outer lip at its junction with the inner lip which is moderately strong, curved and twisted and partly reflected over and adnate to the base; parietal wall covered with a moderately thick callus.

The type and another specimen (Cat. No. 14850, U.S.N.M.) were collected by Doctor Cooper, at San Pedro, California. The type has four whorls and measures—length, 9.5 mm.; diameter, 3 mm. An adult specimen (Cat. No. 15317, U.S.N.M.), having 15 whorls, measures—length, 12.5 mm.; diameter, 4 mm. The present form ranges over the Oregonian and Californian faunal areas, decreasing in size from the north, southward. Geologically it is known from the upper and lower San Pedro series of California.

The following specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
2[1]	U.S.N.M.	14850	San Pedro, Cal.	Fig'd, pl. 34, fig. 6.
3	do.	207775	Departure Bay, B. C.	
3	Stanford University.		False Narrows, Vancouver Island, B. C.	15 fathoms.
1	U.S.N.M.	215662	San Juan Island, Wash.	
1	do.	103640	Monterey, Cal.	
4	Button	259	do.	
1	U.S.N.M.	56458	Monterey Harbor.	8 to 10 fathoms mud bottom.

[1] Type.

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
2	Berry	3075	Monterey Bay	28 fathoms.
3	U.S.N.M.	160086	Catalina Island	
1	do	251070	Pacific Grove	
9	do	128257	San Pedro	
1	Oldroyd		do	Deep water.
3	do		do	Low tide. Sand bottom.
4	Berry	236	San Pedro Bay	3 fathoms.
3	Button		do	1 fathom.
127	Oldroyd		San Pedro	
49	do		do	
1	Johnston		do	
1	U.S.N.M.	322287	do	
15	Lowe	3499	do	
2	do		do	10 fathoms.
104	Eshnaur		Terminal Island	
1	U.S.N.M.	15317	Between San Pedro and San Diego.	Fig'd, pl. 34, fig. 5.
2	Oldroyd		Pacific Beach	Drift.
1	Baker		San Diego	12 to 30 fathoms.
15	U.S.N.M.	46509	do	
1	do	251069	do	
22	do	56765	do	
107	do	322288	do	
4	do	208503	do	
30	Baker		do	
3	do		Below Ballast Point	10 fathoms.
3	do		Outside Zuniga	Dredged.
1	do		False Bay	Do.
15	Kelsey		San Diego Flats	
12	Oldroyd		San Diego	
13	Button		do	
25	Cooke		do	
1	Mrs. Ball		Los Angeles	
20	Baldridge		California	
4	Stephens	2461	San Diego	
27	do	3010	do	
4	Johnston		do	
3	Oldroyd		Point Abreojos, L. C.	

FOSSILS.

UPPER SAN PEDRO SERIES.

409	U.S.N.M.	324207	Santa Monica Canyon	
447	Arnold		do	
20	U.S.N.M.	148621	San Pedro	
3	do	324208	Lumber yard, San Pedro	1 fig'd, pl. 34, fig. 4.
7	Arnold		do	
1	U.S.N.M.	324210	Sand Rock, Dead Mans Island.	
4	Arnold		do	
19	do		Lumber yard, San Pedro	
2	U.S.N.M.	324209	San Diego	1 fig'd, pl. 34, fig. 3.
9	Arnold		do	
6	U.S.N.M.	7387	do	
15	do	148627	do	
22	Arnold		Spanish Bight	
109	Stephens	3014	do	
195	U.S.N.M.	148622	Spanish Bight No. 1	
21	do	148628	Spanish Bight No. 2	
32	do	148624	Spanish Bight No. 4	1 fig'd, pl. 34, fig. 1.
14	do	148623	Spanish Bight No. 2	
4	Stephens	5245	Spanish Bight	
4	do	3007	do	
2	do	3005	do	
1	do	3002	do	
4	do	5246	do	
3	do	3001	do	

LOWER SAN PEDRO SERIES.

7	U.S.N.M.	324213	Cerritos	1 fig'd, pl. 34, fig. 2.
19	Arnold		do	
3	U.S.N.M.	324212	Dead Mans Island	
7	Arnold		do	
1	Stephens	2211	San Pedro Railroad cut	

MELANELLA (MELANELLA) MICANS BOREALIS, new subspecies.

Plate 35, fig. 7.

From Vancouver north we have a race of *M. micans* which is uniformly more slender than the race to the south. This may have the subspecific name applied to it above.

The type (Cat. No. 150954, U.S.N.M.) comes from Comox, Vancouver Island. It has 12 whorls and measures—length, 11.3 mm., diameter, 3.3 mm. In addition to this I have seen four specimens: Cat. No. 214039, U.S.N.M. dredged in 13 fathoms, on mud bottom, at St. Paul, Kodiak Island, Alaska; 1, Cat. No. 160084, U.S.N.M. from Kodiak Island; 2, Cat. No. 208774, U.S.N.M. from Alert Bay, British Columbia; 1, Cat. No. 150954, U.S.N.M., from Comox, Vancouver Island, British Columbia; and 1 in Dr. Fred Baker's collection from Departure Bay, British Columbia.

MELANELLA (MELANELLA) OCHSNERI, new species.

Plate 35, fig. 1.

Shell rather large, almost straight, polished, bluish-white. The whorls are very slightly rounded; appressed at the summit, which scarcely shows at its junction with the preceding turns. The basal portion of the preceding whorls show through the substance of the succeeding turns in such a manner as to render this more conspicuous than the suture. Last turn moderately long, well rounded. Aperture very small; posterior angle pinched in, acute, outer lip thick, coming to a sharp edge; inner lip very strong, slightly oblique; the parietal wall covered by a very strong callus which is reflected over and about the columella and renders the peritreme complete.

The type and 42 specimens of this species were collected at Banks Bay, Albemarle Island, Galapagos Islands, on and near sea-cucumbers. The type has lost the nucleus and probably the first two post-nuclear turns. The 12 remaining measure—length, 9 mm.; diameter, 3 mm. The type is in the University of California collection. Four of these specimens are in the collection of the U. S. National Museum, Cat. No. 322282. Two additional specimens, also in the collection of the University of California, came from Sappho Cove, Chatham Island.

This species in a way recalls the northern *Melanella micans* Carpenter, but it differs from it by being stouter and by having a much smaller aperture with a remarkable callus, which is absent in the case of *micans*, or practically so.

MELANELLA (MELANELLA) RUTILA Carpenter.

Plate 35, figs. 2, 3, 6.

Eulima rutila CARPENTER, Rept. Brit. Ass. Adv. Sci. (1863) 1864, p. 659; Proc. Cala. Acad. Nat. Sci., vol. 3, 1865, p. 221.

Shell of medium size, elongate-conic, slender, straight, surface polished, glassy without perceptible sculpture, excepting irregularly distributed varices. Whorls appressed at the summit to such an extent that the suture is scarcely perceptible; the basal portion of the preceding whorls, shining through the substance of the succeeding turns as a false suture; the true suture appearing about one-third of the way between the summit and the false suture above the latter. Periphery of the last whorl rounded, base sloping in such a way as to lend the left outline a somewhat flattened appearance. Aperture large, oval; posterior angle acute; outer lip decidedly protracted between the base and the posterior angle, forming a clawlike extension; inner lip short, moderately stout, somewhat curved, reflected over and appressed to the base; parietal wall covered with a moderately thick callus.

Carpenter's type (Cat. No. 14928, U.S.N.M.) comes from Monterey, California; it has 13 whorls and measures—length, 6.8 mm.; diameter, 1.9 mm.

The following specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
1[1]	U.S.N.M.	14928	Monterey, Cal.	
1	do	222423	Station 2803, Gulf of Georgia, British Columbia.	67 fathoms, sand bottom, 48.5° bottom temperature.
5	Stanford University		False Narrows, Nanaimo, Vancouver, B. C.	
1	Baker		Near Orcas Islands, Wash.	
1	U.S.N.M.	224456	Station 3068, Puget Sound	135 fathoms, mud bottom.
17	do	322291	Elliott Bay, N. W. Point Seattle.	
1	do	251270	Station 2867-2868, off northwestern Washington.	31-37 fathoms, fine gray sand, 46.9° bottom temperature.
1	do	251269	Monterey, Cal.	
1	Lowe	3501	do	
7	Button		do	
2	U.S.N.M.	322292	Station 3194, off Estero Bay, Cal.	92 fathoms, gray sand bottom, 45.9° bottom temperature.
2	do	211822	Station 2901, off St. Rosa Island, Cal.	48 fathoms, mud bottom, 55° bottom temperature.
2	do	251285	Station 3664, 2 miles off Avalon, Cal.	80 fathoms, fine gray sand.
2	Oldroyd		Whites Point	Drift.
37	U.S.N.M.	251267	San Pedro, Cal.	
16	do	322289	San Pedro	
5	do	322293	Off starfish, San Pedro	Deep water.
2	S. S. Berry		San Pedro	
31	do		San Pedro Bay	15 fathoms.
9	Johnston		San Pedro	
9	H. N. Lowe	3501	do	10 fathoms.
100	Oldroyd		Off San Pedro Bay	
4	do		Off San Pedro	Berkeley dredging.
2	do		do	Deep water.

[1] Type.

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
8	Oldroyd		San Pedro	Off stones.
23	do		Off starfish, San Pedro	Deep water.
4	do		Ventral side of starfish	Sandy bottom.
1	Stephens		San Pedro, Cal	
19	Eshnaur		Terminal Island	
3	U.S.N.M	251271	Station 4322, off Point La Jolla, Cal.	110 to 199 fathoms, green mud - shell bottom, 45.4° bottom temperature.
38	do	251272	Station 4323, off Point La Jolla, Cal.	193 to 227 fathoms, soft green mud bottom, 45.8° bottom temperature.
16	do	251274	Station 4325, off Point La Jolla, Cal.	192 to 292 fathoms, green mud, fine sand bottom, 43°–46° bottom temperature.
1	do	211207	Station 4327, off La Jolla, Cal.	263 to 300 fathoms, mud bottom.
1	do	251275	Station 4369, 10 miles off Point Loma Light, Cal.	260 to 284 fathoms, green sand, green mud, rocks, bottom.
1	do	251276	Station 4362, off Point Loma Light.	100 to 159 fathoms, fine gray sand, blue specks bottom.
8	do	251277	Station 4475, 10 miles off Point Loma Light.	142 to 158 fathoms, gray mud bottom.
1	do	210100	Station 4232, off Point Loma, Cal.	62 to 183 fathoms, sand specks, rocks, bottom.
1	do	173074	Northwest of San Diego, 8 miles offshore.	50 fathoms, dark sand bottom.
1	do	251274	Station 4356, San Diego Harbor, Cal.	120 to 131 fathoms, sand, mud bottom.
2	do	211907	Station 3564, San Diego Bay, Cal.	5 fathoms, sand, mud, shell bottom.
35	do	322290	San Diego, Cal	
2	do	268503A	San Diego	
3	do	273992	do	
1	do	250631	do	15 fathoms.
3	do	274022	San Diego, foot of Broadway	Dredged.
3	do	322294	San Diego, Cal	50 fathoms.
7	Baker		San Diego, midspit	
1	do		San Diego	12 to 30 fathoms.
2	do		do	12 to 15 fathoms.
4	do		do	50 fathoms.
2	S. S. Berry		do	Do.
3	Button		do	
3	Cooke		do	
19	Kelsey		do	12 to 30 fathoms.
39	Oldroyd		do	
48	do		San Diego, Pacific beach	Drift.
1	Baker		Near Ballast Point, Cal	
2	U.S.N.M	153043	Ocean Beach, Cal	
2	Cooke		do	
7	do		Coronado Island	
2	Baker		South end South Coronado Island.	
2	do		South Coronado Island	7 to 10 fathoms.
2	U.S.N.M	193660	From *Strongylocentrotus*, station 2935, off southern California.	124 fathoms, fine gray sand bottom, 49.2° bottom temperature.
1	do	251278	Off southern California, station 2936.	359 fathoms, mud bottom, 49° bottom temperature.
3	S. S. Berry		Lower California	Drift.
1	Johnston		do	Do.
1	U.S.N.M	151935	Station 2826-7-8, Cerros Island, off Lower California.	9½ to 10 fathoms.
2	do	106515	Scammons Lagoon	Mud flats, low tide, rare.
2	Oldroyd		do	
20	U.S.N.M	322295	San Hipolito Point	
59	Cooke		do	
4	Kelsey		San Hipolito Point, Lower California.	
1	Oldroyd		do	

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
2	U.S.N.M.	322296	Point Abreojos, Lower California.	
2	Oldroyd		do	
1	U.S.N.M.	268637	Station 5678, Magdelena Bay, off Redondo Point, Lower California.	13½ fathoms.
1	Cooke		Magdalena Bay, Lower California.	
181	Baldridge		California	
1	Cooke		do	

FOSSILS.

UPPER SAN PEDRO SERIES.

2	U.S.N.M.	251279	Santa Monica	
13	Arnold		Santa Monica Canyon	
1	U.S.N.M.	324216	Cerritos Island	1 figured, pl. 35, fig. 6.
1	Arnold		do	
2	U.S.N.M.	324217	San Pedro	
4	Arnold		Lumber yard, San Pedro	
2	U.S.N.M.	148626	San Diego, Cal	
1	do	148603	Station 2127, Dosinia beds, lower stratum, railroad crossing foot Twenty-third Street, San Diego.	
1	do	148705	Dosinia beds upper stratum, railroad crossing, foot of Twenty-third Street, San Diego.	
2	Stephens		Twenty-sixth Street, San Diego, Cal.	
1	do		San Diego, Cal	
4	U.S.N.M.	324215	Spanish Bight	
4	do	251286	do	
24	Stephens		do	
1	U.S.N.M.	324214	Station 7198, San Quentin	

LOWER SAN PEDRO SERIES.

2	U.S.N.M.	324218	Sand Rock, Dead Mans Island.	1 figured, pl. 35, fig. 3.
2	Arnold		do	

MELANELLA (MELANELLA) SOLITARIA C. B. Adams.

Plate 35, fig. 4.

Eulima solitaria C. B. ADAMS, Ann. Lyc. Nat. Hist. New York, vol. 5, 1852, p. 423.

Shell of medium size, broadly elongate conic, milk-white, polished. Early whorls rather well rounded; succeeding turns flattened; marked by exceedingly fine lines of growth only. Suture poorly defined. Periphery of the last whorl somewhat inflated, well rounded. Base moderately long, well rounded. Aperture short, subcircular; posterior angle acute; outer lip decidedly drawn forward in the middle; inner lip stout, strongly curved, reflected over and appressed to the base; parietal wall covered by a thick callus.

The type in the collection of Amherst College, Amherst, Massachusetts, was collected by Prof. Adams on a large holothurian on Taboga Island, Bay of Panama. It has 12 whorls and measures—length, 4.7 mm.; diameter, 1.7 mm.

MELANELLA (MELANELLA) MONICENSIS, new species.

Plate 36, fig. 2.

Shell elongate conic, with perfectly straight-sided spire, yellowish-white, polished, marked by fine lines of growth only. Whorls decidedly flattened, suture very poorly defined. Periphery of the last whorl decidedly angulated. Base short, well rounded. Aperture rhomboid, with a decided angle at the junction of the outer and basal lip; posterior angle acute; outer lip thin, inner short, straight, revolute; parietal wall covered by a thin callus.

The type and another specimen (Cat. No. 251301 U.S.N.M.) come from the Upper San Pedro series at Santa Monica, California. The type has lost the early whorls, the 11 remaining measure—length, 8 mm., diameter, 2.9 mm. Three additional specimens from the same locality are in Mr. Arnold's collection.

MELANELLA (MELANELLA) NECROPOLITANA, new species.

Plate 36, fig. 3.

Shell moderately large, elongate-conic, slender, with perfectly straight-sided spire. First two whorls moderately rounded, separated by well marked suture, the remaining flattened, with scarcely impressed suture. Periphery of the last whorl angulated. Base moderately long, well rounded. Aperture oval; posterior angle acute; outer lip angulated at the junction of the outer and basal lip; inner lip oblique, curved, slightly revolute, reflected over and appressed to the base posteriorly; parietal wall covered with a thin callus.

The type (Cat. No. 251314, U.S.N.M.) comes from Sand Rock, Lower San Pedro Series of Dead Mans Island, California. It has 13 whorls and measures—length, 7.5 mm.; diameter, 2 mm.

MELANELLA (MELANELLA) OLDROYDI, new species.

Plate 36, figs. 5, 6, 7.

Shell rather broadly elongate-conic, bluish-white in the living form, yellowish-white in the fossil, polished, marked by exceedingly fine lines of growth only. The first three whorls well rounded, separated by a moderately impressed suture; the succeeding flattened, separated by a feebly defined suture. Periphery of the last whorl weakly angulated. Base short, well rounded. Aperture oval; posterior angle acute; outer lip angulated at the junction with the basal lip and slightly protracted at the angle; inner lip short, curved, strongly reflected and appressed to the base posteriorly; parietal wall covered with a thick callus.

The type and another specimen (Cat. No. 109641, U.S.N.M.) were collected by Mrs. Oldroyd at San Pedro, California. The type has 14 whorls and measures—length, 9.2 mm.; diameter, 3 mm.

The following specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
2[1]	U.S.N.M.	109641	San Pedro, Cal.	
3	do	251302	Station 2901, off Santa Rosa Island.	48 fathoms, gray sand mud bottom, 55.1° bottom temperature.
10	do	322298	San Pedro	
1	Johnston		do	
10	H. N. Lowe	3499	do	
1	Johnston		do	
28	Oldroyd		do	
7	Eshnaur		Terminal Island	
2	Cooke		Ocean Beach	
1	Button		La Jolla	
8	Oldroyd		Pacific Beach	
9	U.S.N.M.	322297	San Diego	
2	do	27402I	San Diego, foot of Broadway	Dredged.
2	do	160087	San Diego Bay	3 fathoms, mud bottom.
2	Cooke		San Diego	
12	Oldroyd		do	
2	Baker		Below Ballast Point	10 fathoms.
1	do		Hipolita Point	
4	Oldroyd		Abrcojos Point	
2	Baldridge		California	

FOSSILS.

UPPER SAN PEDRO SERIES.

10	U.S.N.M.	324223	Santa Monica Cañon	
34	Arnold		do	
8	U.S.N.M.	324219	Santa Monica	
1	do	324220	Lumber yard, San Pedro	1 figured, pl. 36, fig. 5.
6	Arnold		do	
1	do		San Pedro	
3	U.S.N.M.	324221	Spanish Bight	
3	Arnold		do	
18	Stephens		do	
1	U.S.N.M.	324222	Station 7495 San Quentin, Lower California, from bed on stratum of lava, west side of bay.	

LOWER SAN PEDRO SERIES.

4	U.S.N.M.	251313	Dead Mans Island, Cal.	1 figured, pl. 36, fig. 7.
3	Arnold		Sand Rock, Dead Mans Island.	

[1] 1 type.

MELANELLA (MELANELLA) LINEARIS Carpenter.

Plate 36, fig. 4.

Leiostraca linearis CARPENTER, Cat. Maz. Shells, 1858, p. 440.

Shell small, very slender, elongate-conic, yellowish-white, polished; surface marked by exceedingly fine lines of growth only. First four whorls well rounded, separated by a strongly impressed suture, the succeeding turns flattened, rather high, with a scarcely recognizable suture. Periphery of the last whorl feebly angulated. Base rather long, evenly curved. Aperture quite large, broadly oval; posterior angle acute; outer lip decidedly protracted between the posterior angle and the base; inner lip oblique, slightly curved, revolute, the

upper half appressed to the base; parietal wall covered with a thin callus.

Three specimens of this species were dredged by the United States Bureau of Fisheries steamer *Albatross* at station No. 2823 in 26½ fathoms on broken shell bottom, bottom temperature 73°, off La Paz, Lower California. Two of these we have described and figured. The smaller of these two is a young individual of 10 whorls and measures—length, 1.7 mm.; diameter, 0.5 mm. The adult has eight whorls, having lost the early turns, and measures—length, 2.6 mm.; diamater, 0.8 mm.

Carpenter's type, which is in the British Museum, Liverpool collection, Tablet 2025, is a young specimen, having nine whorls, which measure—length, 1.8 mm.; diameter, 0.55 mm.

The following additional specimens, all dredged by the United States Bureau of Fisheries steamer *Albatross*, in the Gulf of California, have been examined. 1, specimen (Cat. No. 191567, U.S.N.M.), at stations 2826 to 2828, near La Paz, in 9½ to 10 fathoms, on shell bottom; 1 (Cat. No. 251300, U.S.N.M.), off Cerralvo Island, station 2822, in 21 fathoms, on gray sand and broken shell bottom, bottom temperature 73°.

MELANELLA (MELANELLA) PANAMENSIS, new species.

Plate 36, fig. 1.

Shell small, elongate-conic, yellowish-white, polished, marked by exceedingly fine lines of growth only. The first three whorls well rounded, separated by a well-impressed suture, succeeding turns flattened, with poorly defined suture. Periphery of the last whorl decidedly angulated. Base short, well rounded. Aperture small, broadly oval; posterior angle acute; outer lip angulated at the junction with the basal lip; inner lip very oblique, stout, slightly curved, reflected over and appressed to the base posteriorly; parietal wall covered with a thick callus.

The type (Cat. No. 251312, U.S.N.M.) was dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2794, in the Bay of Panama, in 62 fathoms on gray sand and broken shell bottom, bottom temperature 59.6°. It has lost the first whorl; the nine remaining measure—length, 2.8 mm.; diameter, 1 mm.

MELANELLA (MELANELLA) RECTA C. B. Adams.

Plate 39, fig. 3.

Eulima recta C. B. Adams, Ann. Lyc. Nat. Hist. New York, vol. 5, 1852, p. 423.

Shell acicular, bluish-white. Early whorls slightly rounded, the later ones decidedly flattened, appressed at the summit, marked by exceedingly fine lines of growth only. Suture scarcely indicated. Periphery of the last whorl well rounded. Base produced, well

rounded. Aperture very elongate-ovate; posterior angle very acute; outer lip pinched immediately below the summit, and slightly protracted in the middle to form a short, claw-like element; inner lip stout, almost straight, reflected over and appressed to the attenuated base; parietal wall covered with a moderately thick callus.

Professor Adams collected five specimens at Taboga Island, in the Gulf of Panama. The type and two of these are in the collection of Amherst College, Amherst, Massachusetts. The type has lost probably the first three whorls. The 10 remaining measure—length, 10.4 mm.; diameter, 2.7 mm. A younger specimen of 12 whorls measures—length, 8.7 mm.; diameter, 2.3 mm.

MELANELLA (MELANELLA) RANDOLPHI Vanatta.

Plate 37, fig. 4.

Eulima randolphi VANATTA, Proc. Phila. Acad. Nat. Sci., 1899, p. 256, pl. 11, figs. 13, 14.

Shell moderately large, rather broadly conic, straight, polished, marked by exceedingly fine lines of growth and scarcely perceptible microscopic spiral striations; bluish white, except where the dry animal within shines through the shell, there it appears light brown. Nuclear whorls, scarcely differentiated from the succeeding turns; post-nuclear whorls, moderately well rounded, separated by a slightly impressed suture. Periphery of the last whorl, well rounded, base rather short, moderately well rounded. Aperture oval; posterior angle acute; outer lip thin, drawn slightly forward in the middle between the posterior angle and the base; parietal wall covered by a thin callus.

The type and six specimens (Cat. No. 73729), Philadelphia Academy of Natural Sciences, were collected by Mr. Randolph at Unalaska, Aleutian Islands. The type has 9 whorls and measures—length, 7 mm.; diameter, 2.6 mm.

The following specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
7[1]	Phila.Acad.Nat.Sci.	73729	Unalaska	
6	U.S.N.M.	100145	.....do	
1	.....do	100085	Kyska	
1	.....do	214036	Kyska Harbor	
2	.....do	214037	Constantine Harbor, Amchitka.	
2	Berry		Dutch Harbor, Unalaska	
36	U.S.N.M.	200300	.....do	
6	Button		.....do	
7	U.S.N.M.	151597	Unalaska	
9	.....do	251203	Station 28.2, off Vancouver Island.	238 fathoms, sand bottom, 44.7° bottom temperature.
1	Kelsey		Puget Sound	
1	Baker		.....do	
2	Oldroyd		.....do	

[1] 1 type.

MELANELLA (MELANELLA) CALIFORNICA, new species.

Plate 37, fig. 1.

Shell elongate-conic, straight, polished, marked by exceedingly fine lines of growth and scarcely perceptible microscopic spiral striations, bluish-white, except where the dry animal shines through the texture of the shell, there it lends this a rosy flush. Whorls moderately rounded, separated by a slightly constricted suture. Periphery of the last whorl well rounded. Base moderately long, well rounded. Aperture elongate oval; posterior angle acute; outer lip drawn forward between the posterior angle and the base; inner lip slightly curved and partly appressed to the base; parietal wall covered by a thin callus.

The type (Cat. No. 56911, U.S.N.M.) comes from Catalina Island, California. It has eight whorls and measures—length, 6.2 mm; diameter, 2.3 mm.

The present species resembles quite closely *M. randolphi*, but differs from it in being uniformly smaller and more slender, with the aperture proportionately longer than that species. An additional specimen is in Doctor Baker's collection from San Martin.

MELANELLA (MELANELLA) HEMPHILLI, new species.

Plate 37, fig. 6.

Shell straight, stout, elongate-conic, polished, marked by exceedingly fine lines of growth and scarcely perceptible microscopic spiral striations, the two forming an exceedingly fine and very regular incised grating on the surface; bluish white. Whorls moderately rounded, very slightly constricted at the sutures. Periphery of the last whorl well rounded. Base moderately long, but somewhat inflated, well rounded. Aperture small, oval; posterior angle acute; outer lip thin at the edge, which is scarcely at all drawn forward between the posterior angle and the base. Parietal wall covered with a thick callus.

The type and three specimens (Cat. No. 106514, U.S.N.M.) were collected by Henry Hemphill, on mossy rocks between tides, at Point Abreojos, Lower California. The type has 10 whorls and measures—length, 8.3 mm; diameter, 3 mm.

The present species is readily distinguished from the other straight West Coast forms, that have rounded whorls, by its larger size and by the fact that the spiral sculpture is much stronger than in *randolphi*, or *californica*.

The following specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.
4[1]	U.S.N.M.	127554	Point Abreojos, Lower California.
1	Oldroyd		San Diego.
1	do		Todos Santos Bay, Lower California.
10	do		Point Abreojos.
2	do		Lower California.
2	Johnston		Do.
2	Stephens		Without locality.

[1] 1 type.

MELANELLA (MELANELLA) COMPACTA Carpenter.

Plate 37, fig. 3.

Eulima compacta CARPENTER, Rept. Brit. Ass. Sci. 1863, 1864, p. 659; Proc. Cala. Acad. Nat. Sci., vol. 3, 1865, p. 221.

Shell broadly elongate-conic, straight, polished, the surface marked by exceedingly fine lines of growth and scarcely perceptible microscopic spiral striations. Whorls flattened, separated by a scarcely defined suture; in fact, the basal portion of the preceding whorl shines through the substance of the succeeding turn and causes it at this point to appear as the suture. Periphery of the last whorl well rounded. Base moderately long, well rounded. Aperture quite long, oval, posterior angle acute; outer lip thin, protracted a little anterior to the middle between the posterior angle and the base; inner lip slightly curved, rather thick, reflected over and appressed to the base; parietal wall covered by a moderately strong callus.

Carpenter's type (Cat. No. 135176, U.S.N.M.) was collected by Cooper at San Pedro, California. It has lost the first turn; the eight remaining measure—length, 6.8 mm.; diameter, 2.2 mm. Cat. No. 322300, U.S.N.M. contains another specimen from Lower California. Two additional specimens collected by Henry Hemphill, Point Abreojos, Lower California, are in Mr. Kelsey's collection, and two more collected by the same gentleman, in Lower California, are in Mrs. Oldroyd's collection.

MELANELLA (MELANELLA) BALDRA, new species.

Plate 37, fig. 2.

Shell of medium size, broadly, regularly conic, bluish-white. The first two whorls well rounded, the rest almost flat. Decidedly appressed at the summit, polished, marked by exceedingly fine incremental lines only. The basal portion of the preceding whorl shines through the substance of the succeeding turn and gives this the aspect of having a double suture. Sutures faintly marked. Periphery of the last whorl feebly angulated. Base well rounded. Aperture very small, broadly oval; posterior angle acute; outer lip

thick within, thin at the edge, somewhat protracted in the middle; inner lip short, stout, reflected over and appressed to the base anteriorly; parietal wall covered with a thick callus.

The type and another specimen (Cat. No. 322299, U.S.N.M.), come from San Hipolito Point, Lower California. The type has nine and a half post-nuclear whorls and measures—length, 5.1 mm.; diameter, 2 mm.

MELANELLA (MELANELLA) MEXICANA, new species.

Plate 37, fig. 5.

Shell elongate-conic, straight, polished, marked by exceedingly fine lines of growth and scarcely perceptible microscopic spiral striations; bluish-white. Whorls flattened, separated by an ill-defined suture. The basal portion of the preceding whorl, shining through the succeeding turn, gives to this an appearance of having a false suture. Periphery well rounded. Base rather short, well rounded. Aperture moderately long, oval; posterior angle acute; outer lip thin, decidedly protracted halfway between the posterior angle and the base; inner lip oblique, slightly curved, reflected over and appressed to the base; parietal wall covered with a moderately thick callus.

The type (Cat. No. 267304, U.S.N.M.) comes from the Gulf Coast of Lower California. It has 12 whorls and measures—length, 6.4 mm.; diameter, 2 mm.

The present species is much smaller than *M. compacta* and has a much shorter aperture than that species.

The following specimens have been examined:

Number of specimens.	Collection of.	Catalogue number.	Locality.	Remarks.
1[1]	U.S.N.M.	267304	Gulf of California.	
2	do	268600	South End Angel de la Guardia.	
2	do	265936	Mulege, Gulf of California.	2 fathoms.
1	do	267837	Pichilinque Bay	
7	do	267813	do	
7	do	251280	Off Cacachitas, Gulf of California, station 2823.	26½ fathoms, broken shell bottom.
1	do	267292	Gulf Coast, Lower California.	
1	do	23759	Gulf of California	
1	do	25319	Acapulco	

[1] Type.

MELANELLA (MELANELLA) ABREOJOSENSIS, new species.

Plate 40, fig. 4.

Shell small, acicular, bluish-white, semitranslucent. Whorls rather high between the sutures, well rounded, separated by a constricted suture. Marked by extremely fine incremental lines and irregularly spaced varices. Periphery well rounded. Base rather protracted, well rounded. Aperture moderately large; posterior

angle acute; outer lip thick within, thin at the edge; inner lip somewhat curved, slightly twisted, reflected over and appressed to the base; parietal wall covered by a moderately thick callus.

The type and three specimens (Cat. No. 105578, U.S.N.M.) were collected at Point Abreojos, Lower California. The type has nine whorls, and measures—length, 3.1 mm.; diameter, 1 mm. Twelve additional specimens of the same locality are in Mrs. Oldroyd's collection.

MELANELLA (MELANELLA) TACOMAENSIS, new species.

Plate 38, fig. 5.

Shell small, straight, broadly elongate-conic, bluish-white, except where the animal shines through, there it appears golden brown; surface marked by exceedingly fine lines of growth and almost invisible microscopic spiral striations. Whorls flattened, separated by a scarcely defined suture; the basal portion of the preceding whorl shining through the substance of the succeeding turn appears as a conspicuous false suture. Periphery obscurely angulated; base short, flattened, the left margin very obliquely sloping. Aperture moderately large; posterior angle acute; outer lip very thick within, thin at the edge, decidedly protracted a little anterior to the middle between the posterior angle and the base; inner lip very stout, somewhat flexuose, reflected over and appressed to the base; parietal wall covered with a thick callus.

The type (Cat. No. 159268, U.S.N.M.) was collected by Mr. Fisher at Tacoma, Washington. It has 10 whorls and measures—length, 5 mm.; diameter, 2.1 mm. The sloping base gives the basal portion of the shell a decidedly oblique appearance, which distinguishes this form from all the other straight Melanellas from the west coast.

MELANELLA (MELANELLA) GABBIANA Anderson and Martin.

Plate 38, fig. 3.

Eulimella gabbiana Anderson and Martin, Proc. Cala. Acad. Sci., ser. 4, vol. 4, 1914, p. 68, pl. 7, fig. 20.

"Shell very small, slender, and smooth, polished, with numerous whorls; apex acute (broken in the type-specimen), whorls nearly flat, unsculptured; suture appressed, indistinct; base unflattened; aperture ovally elongated; outer lip sharply rounded anteriorly; inner lip concave, incrusted.

"*Dimensions.*—Altitude of the figured specimen, upper whorls lost, 4 mm.; maximum width, 1.3 mm.

"*Occurrence.*—Lower Miocene of Kern River, California, locality 64.

"This species is distinguished by its small size, slender and smooth form and its long narrow aperture.

"*Type.*—No. 143, Cal. Acad. Sci., in the bottom of a small canyon about 1¼ miles due north of Barker's ranch house, Kern County, California.

"Named in honor of William Gabb."

MELANELLA (MELANELLA) RETEXTA Carpenter.

Plate 38, fig. 1.

Leiostraca retexta CARPENTER, Proc. Zool. Soc. London, 1863, p. 356.
"*Leiostraca ? iota*, var. *retexta* CARPENTER, Cat. Maz. Shells, 1857, p. 440. Comp. *Eulima iota*, C. B. Adams, Pan. Shells, No. 290, pp. 198, 317.—SOWERBY, Thes. Conch. in loco.—H. and A. ADAMS, Gen. Rec. Moll., vol. 1, 1854, p. 236.

"*L.? iota, axi recta.*

"The form above indicated accords somewhat better with the Panama species than with the British, but is entirely without twist. The British specimens are also sometimes straight. The shells in this genus afford so very few distinctive characters that no species can be certainly established without an accurate knowledge of the animals. The only two specimens found vary in proportion; the smaller, with 6 normal turns, measuring long., '06; lat., '028 inches; the larger, long., '087; lat., '033 inches.

"Habitat.—Mazatlan; extremely rare, off *Spondylus;* L'pool Col.

"Tablet 2026 contains the larger specimen."

I have not seen specimens referable to this subspecies, and quote Doctor Carpenter's description and give an unpublished camera lucida drawing made by him of the type.

MELANELLA (MELANELLA) PUSILLA Sowerby.

Plate 38, fig. 2.

Eulima pusilla SOWERBY, Proc. Zool. Soc. London, 1834, p. 8.
Eulima pusilla SOWERBY, Thes. Conch., 1854, pp. 794–5, pl. 169, figs. 9, 10, 21.

"Straight, subulate, thin, white, transparent; whorls slightly convex; aperture elongate-oval, pointed posteriorly.

"Sancta Elena. (Mus. Cuming.)"

I have seen no specimens agreeing with this species and have copied Sowerby's description and figure.

MELANELLA (MELANELLA) HASTATA Sowerby.

Plate 38, figs. 4, 6.

Eulima hastata SOWERBY, Proc. Zool. Soc. London, 1834, p. 7.
Eulima hastata SOWERBY, Thes. Conch., 1854, p. 794, pl. 169, figs. 7, 8.

"Whorls flattened, the first opaque and yellowish, the last white and diaphanous, the last whorl subangular; aperture small, oval, pointed posteriorly.

"Sancta Elena. (Mus. Cuming.)"

I have not seen specimens of this species and copy Sowerby's description and figure.

MELANELLA (MELANELLA) PRODUCTA Carpenter.

Plate 39, fig. 5.

Leiostraca producta CARPENTER, Proc. Zool. Soc. London, 1863, p. 357.=*Leiostraca ? solitaria* Carpenter, Cat. Mazatlan Shells, 1857, p. 439. Not *Eulima solitaria* C. B. Adams, Ann. Lyc. Nat. Hist. New York, 1852, p. 423.

Carpenter's manuscript figure, a camera lucida sketch, shows a broadly conic young *Melanella*. I have seen nothing that agrees with it. I add from Carpenter:[1]

"One nearly perfect shell and some fragments answer to the description of this species. It differs from *L. iota* var. *retexta*, in being larger, broader, flatter, with the whorls in different proportion Long. (anfr. ix.), 123, long. spir. '08, lat. '046, div. 23°.

"Hab.—Taboga; a solitary specimen in large *Holothuria;*

"C. B. Adams.—Mazatlan; extremely rare, on *Spondylus;*

"L.'pool Col.

"Tablet 2022 contains the specimen."

And again:[2]

"*L. solitaria* M. 551, * * * agrees in shape with the unique Panama shell, whorl for whorl; but its base and labrum are much more produced anteriorly. For this reason, it may be known as *L. producta.*"

He also states under *Eulima* (? var.) *rutila* Carpenter:[3]

"Closely allied to *Leiostraca producta* Carpenter, Maz. Cat. No. 551, but displays no varices."

MELANELLA (MELANELLA) ELODIA de Folin.

Plate 39, fig. 1.

Eulima elodia DE FOLIN, Les Meleagrinicoles, 1867, pp. 66, 67, pl. 6, fig. 6.

"Shell imperforate, elongate, polished, milky-white, subopaque; spire conoidal, the apex rather obtuse. Whorls 11 to 12, slowly increasing, united by a simple suture, the last whorl approximately two-fifths as high as the entire shell. Aperture cordate, subopaque, rounded at base, the margins a little thickened; the columella feebly reflexed. Long., 0.005; diam., 0.0015.

"This species is like the other *Eulimas*, graceful and elegant in outline, and in the beauty of its luster. It is much elongated; the right side is almost rectilinear; the left is slightly convex, but that does not prevent the shell from appearing conoidal. The apex, although very slightly obtuse, may be said to be acute, because it in no way way clashes with the acuminate outline. The spire is composed of 11 or 12 whorls, which increase very slowly. The final whorl, which is imperforate, is equal to about two-fifths of the total

[1] Cat. Maz. Shells, 1857, p. 439.
[2] Proc. Zool. Soc. London, 1863, p. 357.
[3] Proc. Cala. Acad. Nat. Sci., vol. 3, 1866, p. 221.

altitude. The whorls are united by a simple suture, which may be called a very clearly and feebly impressed line. The aperture is slightly oblique, and cordate; its margins are smoothly united at the base by a curve which marks the greatest width. Though not sharp, the margins are scarcely at all thickened, the left margin enlarging a little in order to spread out over the side of the last whorl and over the columella, which is enlarged somewhat and seems to be reflected. On certain days *Eulima elodia*, which is milky-white, seems to be almost opaque. Nevertheless it is brilliantly polished and rather diaphanous, so that a certain direction of the light may make all the details of the interior structure apparent, and give to it the appearance of a double suture. It may be said that the true suture is a white ribbon, more strongly marked than that which is posterior to it, and which exactly simulates it. By following this ribbon, at the same time the suture, as far as the angle of the aperture on the final whorl, the illusion will be naturally dissipated.

"*Type locality.*—Negritos; or Margarita Island, Panama."

I have not seen specimens of this species and quote the description and figure.

Subgenus BALCIS Leach.

Balcis LEACH, Syn. Moll. Grt. Brit., 1852, p. 200. Type *Balcis arcuata* Leach. (=*Melanella distorta* Jeffreys, see Jeffrey Brit. Conch., vol. 4, 1867, p. 207.) =>*Vitreolina* Monterosato, Nom. Conch. Medit., 1884, p. 100. Type *Eulima incurva* (Renier) (=*Melania distorta* Jeffreys, see Bucquoy, Dautzenberg, and Dollfus, Mar. Rous., vol. 2, 1887, p. 769.

Melanellas with flexed shells.

MELANELLA (BALCIS) DRACONIS, new species.

Plate 39, fig. 2.

Shell short, very broadly conic, milk-white, flexed in one direction only. The tip of our shell is broken. The first two whorls remaining are slightly rounded, the rest almost flat. Suture well marked. Last whorl rather stout. Periphery decidedly angulated. Base short, somewhat tumid anteriorly, well rounded. Aperture broadly oval; posterior angle acute; outer lip decidedly sinuous, strongly protracted in the middle, to form a decidedly claw-like element; inner lip stout, strongly reflected over and appressed to the base; parietal wall covered by a rather thick callus.

The type (Cat. No. 215766 U.S.N.M.) comes from Dead Man's Island, California. It has seven and a half whorls remaining, and measures—length, 6.1 mm.; diameter, 2.7 mm. This fossil species is the stoutest of the single curved Eulimellas known from the west coast of America.

MELANELLA (BALCIS) MONTEREYENSIS, new species.

Plate 39, fig. 6.

Shell broadly conic, falcate, flexed to the right, bluish-white, with a series of opaque areas, marking varicial streaks. Early whorls well rounded, the later ones slightly rounded, a little more so on the convex than the concave side. Sutures scarcely marked. The posterior determination on the inside of the turns, shines through the substance of the shell and appears as a conspicuous false suture. Periphery weakly angulated. Base short, very strongly curved on the left side. Aperture short, broadly oval; posterior angle acute; outer lip quite strongly protracted at the periphery, inner lip oblique, curved, reflected and appressed to the base; parietal wall covered by a thick callus.

The type (Cat. No. 176623, U.S.N.M.) was dredged by Dr. S. S. Berry, at Pacific Grove, California. It has lost probably the first three turns. The eight remaining measure—length, 5 mm.; diameter, 2.2 mm.

Cat. No. 181307, U.S.N.M., contains a young specimen, collected by Mrs. Merrihew, at Monterey, California.

MELANELLA (BALCIS) PENINSULARIS, new species.

Plate 39, fig. 4.

Shell elongate-conic, very slightly curved, polished, surface marked by exceedingly fine lines of growth and exceedingly regular, very fine, microscopic, spiral striations; bluish-white, except where the animal shines through the substance of the shell, when it appears brown. Whorls separated by a very poorly defined suture, which is inconspicuous compared to the false suture caused by the base of the preceding whorl shining through the substance of the succeeding turn. The whorls are marked at irregular intervals by thickened varices, which are very prominent. Periphery of the last whorl well rounded. Base short, slightly rounded, the left sides sloping very obliquely. Aperture broadly oval; posterior angle acute, outer lip decidedly protracted half way between the posterior angle and the base; inner lip very oblique, moderately strong, slightly curved, reflected over and appressed to the base; parietal wall covered with a thick callus.

The type (Cat. No. 251264, U.S.N.M.) comes from Lower California. It has 11 whorls and measures—length, 5.2 mm.; diameter, 2.2 mm.

The following additional specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
1 [1]	U.S.N.M.	251264	Lower California	
8	do	215763	San Diego	
1	do	273993	do	
5	do	127543	San Hipolito Point	
7	do	130613	do	On *Haliotis*.
20	Baker		do	
2	Button		do	
6	Cooke		do	
2	Kelsey		do	
18	Oldroyd		do	
3	U.S.N.M.	106516	Point Abreojos	
17	Oldroyd		do	
2	Cooke		Magdalena Bay	
1	U.S.N.M.	268583	Lower California	
1	Johnston		do	
3	Oldroyd		do	

[1] Type.

MELANELLA (BALCIS) LASTRA, new species.

Plate 40, fig. 3.

Shell small, conic, only very slightly flexed; bluish-white, semi-translucent; polished, marked by exceedingly fine lines of growth only. The first three whorls well rounded, separated by a well-impressed suture, the rest very slightly rounded, with a scarcely defined suture. Periphery well rounded. Base short, well rounded. Aperture very broadly oval; posterior angle acute; outer lip decidedly protracted a little anterior to the middle; inner lip short, curved, reflected over and appressed to the base; parietal wall covered with a thick callus.

This species is similar to *M. peninsularis*, but is uniformly more slender, with the varices much less conspicuously marked.

The type and three specimens (Cat. No. 105519, U.S.N.M.) were collected by Mr. Henry Hemphill at Point Abreojos, Lower California. The type, an adult shell, which has lost probably the first two whorls, retaining eight, measures—length, 4.1 mm.; diameter, 1.6 mm, Another, an immature specimen of nine whorls, measures—length, 2.6 mm.; diameter, 1 mm.

The following additional specimens have been examined:

Number of specimens.	Collection of—	Catalogue No.	Locality.	Remarks.
5 [1]	U.S.N.M.	105519	Point Abreojos	
2	do		San Pedro	Deep water, off stones.
4	Oldroyd		do	Do.
2	Berry		San Hipolito Point	
6	U.S.N.M.	105577	Point Abreojos, Lower California.	
1	Cooke		Magdalena Bay	

[1] Type.

MELANELLA (BALCIS) ARNOLDI, new species.

Plate 40, fig. 8.

Shell broadly conic, with very slight flexure; milk-white. Early whorls well rounded, separated by a well-constricted suture, later ones almost flattened, appressed at the summit with a very poorly defined suture. Periphery weakly angulated. Base short, well rounded. Aperture broadly oval; posterior angle acute; outer lip protracted in the middle; inner lip short, slightly sinuous, reflected over and appressed to the base; parietal wall covered with a thick callus.

The type (Cat. No. 215765, U.S.N.M.) was collected at Sand Rock, Lower San Pedro Series, Dead Man's Island, California. It has 11 whorls and measures—length, 5.5 mm.; diameter, 2.1 mm. Another specimen from the same locality is in Mr. Arnold's collection; still another from San Pedro is also in Mr. Arnold's collection.

MELANELLA (BALCIS) COSMIA, new species.

Plate 40, fig. 6.

Shell very small, broadly conic, flexed to the right; bluish-white; semitranslucent; polished. The first three whorls well rounded, separated by a moderately well-constricted suture; the rest slightly rounded, with scarcely defined suture. Periphery of the last whorl weakly angulated. Base short, well rounded. Aperture very broadly ovate; posterior angle acute; outer lip strongly protracted a little anterior to the middle; inner lip curved, reflected over and appressed to the base; parietal wall covered with a moderately thick callus.

The type and three specimens of this species (Cat. No. 105580, U.S.N.M.) were collected by Mr. Henry Hemphill at Point Abreojos. The type has nine whorls and measures—length, 2.7 mm.; diameter, 1 mm. Mr. Kelsey's collection contains two from the same place, while Mrs. Oldroyd's collection has two from the same locality and two labeled Lower California, without specific locality.

MELANELLA (BALCIS) HALIA, new species.

Plate 40, fig. 2.

Shell very minute, translucent, showing the entire internal structure within, slightly flexed in one direction at the tip. Whorls very evenly rounded, separated by a rather strongly marked suture, polished, without sculpture excepting slightly impressed varicial streaks at irregular intervals. Periphery of the last whorl well rounded. Base short, slightly inflated, well rounded. Aperture small, oval; posterior angle acute; outer lip thin, slightly protracted in the middle; inner lip short, slightly curved, reflected over and appressed to the base; parietal wall covered by a moderately thick callus.

The type (Cat. No. 215767, U.S.N.M.) was collected by Mr. Hemphill at Point Abreojos, Lower California. It has eight whorls and measures—length, 1.8 mm.; diameter, 0.7 mm. Another specimen from the same locality is in Mr. Kelsey's collection, while a third, in Mrs. Oldroyd's collection, comes also from the same place.

MELANELLA (BALCIS) TOWNSENDI, new species.

Plate 40, fig. 1.

Shell small, straight, excepting the tip, which is flexed in one direction, semitranslucent, bluish-white. The first three whorls well rounded, separated by a well-impressed suture. The rest almost flat, with inconspicuous suture. Periphery of the last whorl rounded. Base rather protracted, somewhat flat on the left side, slightly tumid anteriorly. Aperture broadly oval; posterior angle acute; outer lip thick at the edge, decidedly protracted in the middle; inner lip short, curved, reflected over and appressed to the base; parietal wall covered by a moderately thick callus.

The type and another specimen (Cat. No. 267812*a*, U.S.N.M.) were collected by the author in shallow water at Pichilinque Bay, Gulf of California. The type has 13 whorls and measures—length, 3.8 mm.; diameter, 1.1 mm.

MELANELLA (BALCIS) THERSITES Carpenter.

Plate 41, figs. 1, 2, 3.

Eulima thersites CARPENTER, Rept. Brit. Ass. Adv. Sci. (1863) 1864, p. 659; Ann. Mag. Nat. Hist., ser. 3, vol. 15, 1865, pp. 396–7.
Eulima lowei VANATTA, Proc. Acad. Nat. Sci. Phila., 1899, p. 254, pl. 11, figs. 9, 10.
Eulima bistorta VANATTA, Proc. Acad. Nat. Sci. Phila., 1899, pp. 254–5, pl. 11, figs. 7, 8.

Shell broadly conic, rather stout and heavy, polished, shining, usually flexed in one direction only, though sometimes in two. Whorls rather strongly rounded, marked by exceedingly fine incremental lines and irregularly scattered varices only. Sutures strongly marked. Periphery of the last whorl somewhat inflated, well rounded. Base short, well rounded. Aperture oval; posterior angle acute; outer lip thick within, sharp at the edge, and decidedly protracted a little anterior to the middle; inner lip stout, slightly curved, the posterior half reflected over and appressed to the base. Parietal wall covered by a very thick callus which renders the peritreme complete.

Carpenter's type (Cat. No. 11795 U.S.N.M.) comes from Santa Barbara, California. It has lost the early whorls. The six and a half remaining measure—length, 5.1 mm.; diameter, 2.5 mm. An absolutely perfect specimen of 12 whorls measures—length, 6.3 mm.; diameter, 2.3 mm.

In addition to the figure of the type, we are also giving figures of Doctor Vanatta's two species, *Melanella bistorta*, and *Melanella lowei*.

The large amount of material which we have seen of this species makes it impossible for us to consider these distinct forms.

I have seen the following species:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
1 [1]	U.S.N.M.	11795	Santa Barbara	
3	do	46510	Monterey	
4	do	56893	do	
11	Button		do	
1	Eshnaur		do	12 fathoms.
1	Kelsey		do	
1	Oldroyd		do	
1 [2]	Phila.Acad.Nat.Sci.	65881	Monterey [2]	On starfish.
4	Berry		Monterey, off del Monte	12 fathoms.
1	do		Pacific Grove	
3	U.S.N.M.	215768	Off St. Cruz (off *Haliotis*)	
3	Oldroyd		do	
3	U.S.N.M.	215770	Off Santa Rosa Island, U. S. B. F station 2900.	13 fathoms, sandy bottom.
2	do	215769	Off Catalina Island	
1	Oldroyd		Catalina Island	
4	U.S.N.M.	215771	San Pedro	Deep water.
2	Lowe		do	10 fathoms.
22	Oldroyd		do	
6	do		do	Deep water.
1 [3]	Phila.Acad.Nat.Sci.	57262	Long Beach [3]	
2	Cooke		Ocean Beach	
1	Stephens	2451	Imperial Beach	
1	Cooke		La Jolla	
17	U.S.N.M.	215772	San Diego	
1	Baker		do	15 fathoms.
1	do		do	
1	Berry		do	Do.
2	Cooke		do	
2	Kelsey		do	
1	do		do	Do.
3	Oldroyd		do	
2	Baker		Ballast Point	8 fathoms.
2	U.S.N.M.	226460	Off South Coronado Island	3 fathoms.
2	Baker		South Coronado Island	6 to 8 fathoms.
2	do		do	3 fathoms.
1	do		do	
1	do		do	3 to 6 fathoms.
1	Cooke		do	
2	Oldroyd		Todos Santos	
4	U.S.N.M.	215773	San Hipolito Point	
4	Cooke		do	
4	Kelsey		do	
7	Oldroyd		do	
1	do		Point Abreojos	
1	do		Round Island, Lower California.	
1	Lowe		San Geronimo Island	
	Berry	1411A	Lower California	

[1] Type. [2] Type of *Eulima bistorta* Vanatta. [3] Type of *Eulima lowei* Vanatta.

MELANELLA (BALCIS) COLUMBIANA, new species.

Plate 41, fig. 5.

Shell large, rather stout, polished, with a double flexure; when viewed with the aperture to the front it shows the early whorls bent backward and the succeeding turns flexed to the right. Shell bluish-white, except where the dried animal shines through its substance; there it has a granular, light brown to buff appearance. First three turns well rounded, separated by a well-marked suture, the remaining turns slightly rounded with scarcely defined suture. The posterior termination of the inside of the whorl shines through the shell and

appears as a conspicuous false suture. Surface marked by fine lines of growth only. Periphery of the last whorl weakly angulated. Base strongly rounded on the left side. Aperture very oblique, ovate; posterior angle acute; outer lip decidedly protracted at the periphery; inner lip short, curved, slightly sinuous, reflected over and appressed to the base; parietal wall covered by a thick callus.

The type and four specimens (Cat. No. 207771, U.S.N.M.) were collected by Rev. G. W. Taylor, at Departure Bay, British Columbia. The type has 15 whorls and measures—length, 9.5 mm.; diameter, 3 mm. This is the largest of flexed Melanellas known from the West Coast of America.

Number of specimens.	Collection of—	Catalogue number.	Locality.
12	Taylor		Departure Bay, British Columbia.
1	Baker		Alaska.
1	U.S.N.M.	204016	Bear Bay, Baranoff Island, Peril Strait, Alaska.
3	Stephens		Do.
2	Baker		Departure Bay, British Columbia.
7	Kelsey		Do.

MELANELLA (BALCIS) COMOXENSIS, new species.

Plate 41, fig. 4.

Shell broadly conic, with a double flexure, the early portion being turned back while the later is turned to the right; bluish-white, polished. First two whorls well rounded, separated by a constricted suture, the rest slightly rounded, a little more so on the convex than the concave side, marked by exceedingly fine lines of growth and microscopic spiral striations and occasional varicial streaks, which appear as an opaque spot in the shell. Suture scarcely defined. The posterior limit of the inside of the whorls shines through the substance of the shell and appears as a false suture. Periphery of the last whorl slightly angulated. Base short, strongly rounded. Aperture broadly oval, rather short; posterior angle acute; outer lip protracted at the periphery; inner lip short, slightly curved, strongly reflected and appressed to the base; parietal wall covered with a thick callus.

The type and five specimens (Cat. No. 207773, U.S.N.M.) were collected at Comox, British Columbia, by Rev. G. W. Taylor. The type has 11 whorls and measures—length, 7.1 mm.; diameter, 3 mm.

Twenty-eight additional specimens from the same locality are in Rev. G. W. Taylor's collection.

MELANELLA (BALCIS) MACRA, new species.

Plate 41, fig. 6.

Shell of medium size, slender, with a double flexure. When viewed with the aperture to the front, it shows the early whorls bent backward and the succeeding turns flexed to the right. Shell bluish-white, except where the dried animal shines through its substance; there it has a granular light brown to buff appearance. First four whorls well rounded, with well-impressed suture, the remainder almost flattened, marked by exceedingly fine lines of growth only, and separated by a scarcely visible suture. The posterior limit of the inside of the whorls shines through the substance of the shell and appears as a conspicuous false suture. Periphery of the last whorl weakly angulated. Base somewhat prolonged, well rounded. Aperture long, ovate; posterior angle acute; outer lip considerably protracted, particularly so at the periphery; inner lip stout, curved, reflected over and appressed to the base; parietal wall covered by a thick callus.

The type and three specimens of this species (Cat. No. 207772, U.S.N.M.) were collected by Rev. G. W. Taylor at Departure Bay, British Columbia. The type has 13 whorls and measures—length, 7.5 mm.; diameter, 1.9 mm.

The present species is very similar to *Melanella columbiana*, but uniformly smaller and much more slender.

The following additional specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.
11	Taylor		Departure Bay, British Columbia.
1	Kelsey		Do.
7	Berry		Do.
2	Button		Nanaimo, British Columbia.
2	Stanford University		False Narrows, Nanaimo, Vancouver Island, British Columbia.
1	U.S.N.M.	129124	Seattle, Washington.

MELANELLA (BALCIS) BERRYI, new species.

Plate 42, fig. 3.

Shell elongate-conic, with a double flexure; the first bend when the specimen is viewed with the aperture to the front, is to the right, and the second flexure is backward. The clean shell is bluish-white, but when the animal has been allowed to dry in it, it appears brown. The first two turns well rounded, separated by a constricted suture, the remainder flattened, marked by exceedingly fine lines of growth and very fine microscopic spiral striations. Sutures scarcely perceptible. The posterior limit of the inside of the whorls appears through the

mass of the shell as a false suture. Periphery of the last whorl well rounded. Base short, somewhat inflated anteriorly. Aperture oblique, broadly oval; posterior angle very acute; outer lip strongly protracted between the base and the posterior angle, the greatest extension falling at the periphery; inner lip oblique, slightly sinuous, reflected over and appressed to the base; parietal wall covered with a strong callus.

The type (Cat. No. 216820, U.S.N.M.) was dredged in 12 fathoms off Del Monte, Monterey, California, by Dr. S. S. Berry. It has 12 whorls and measures—length, 6 mm.; diameter, 2 mm.

Cat. No., 193697, U.S.N.M., contains another specimen dredged by the United States Bureau of Fisheries steamer *Albatross*, off Catalina Island.

MELANELLA (BALCIS) PREFALCATA, new species.

Plate 42, fig. 4.

Shell elongate-conic, yellowish-white, doubly flexed, the anterior portion being turned to the right and the tip backward. Early whorls slightly rounded, separated by a well marked suture, the succeeding turns appressed at the summit, moderately rounded on the curved side of the shell and slightly so on the concave side of the spire, marked by exceedingly fine lines of growth only. Sutures scarcely indicated. Periphery slightly angulated. Base somewhat produced, well rounded. Aperture moderately large; posterior angle acute; outer lip decidedly protracted at the peripheral angle; inner lip short, curved, reflected over and appressed to the base; parietal wall covered with a thick callus.

The type (Cat. No. 215774, U.S.N.M.) comes from the Lower San Pedro Series, Sand Rock, Dead Man's Island. It has 11 whorls and measures—length, 6.9 mm.; diameter, 2 mm. Five additional specimens are entered under the same catalogue number and 16 are in Doctor Arnold's collection, by whom they were collected. Three additional specimens without locality are in Arnold's collection.

The species resembles closely *falcata*, but differs from it by its comparatively longer aperture.

MELANELLA (BALCIS) GRIPPI, new species.

Plate 42, fig. 5.

Shell elongate-conic, moderately stout, doubly flexed; the anterior portion is turned to the right, while the tip is bent backward; polished, marked by exceedingly fine lines of growth only; milk-white, except where the dried animal shines through the texture of the shell where it appears yellowish-brown, or where varices cross the whorls, behind which there is always an opaque area. First five whorls well

rounded, separated by a somewhat constricted suture, the remainder, moderately rounded, a little more so on the convex side than the concave. Summit of the whorls appressed, separated by a very ill-defined suture. The posterior termination shows conspicuously through the substance of the shell on the inside of the whorls and appears as a false suture. Last whorl somewhat inflated. Periphery moderately protracted. Base rounded. Aperture ovate; posterior angle acute; outer lip protracted at the periphery; inner lip short, slightly curved, reflected and appressed to the base; parietal wall covered by a moderately thick callus.

The varices of this species practically form a continuous oblique line from the aperture almost to the tip.

The type and five additional specimens (Cat. No. 203665, U.S.N.M.) were collected by Mr. Gripp at Newport, California. The type has 12 whorls and measures—length, 8 mm.; diameter, 2.6 mm.

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
2	U.S.N.M.	215775	Off San Pedro	Deep water.
11	Oldroyd		do	Do.
2	U.S.N.M.	215776	do	75 fathoms, on stones.
8	Oldroyd		do	Do.
7	do		San Pedro	
1	Button		San Diego	15 fathoms.
1	Kelsey		Off San Diego	Do.
9	U.S.N.M.	215777	San Diego	
1	Baker		Off south end of Coronado Island.	12 to 15 fathoms.
2	U.S.N.M.	215778	Point Abreojos	
3	Oldroyd		do	

MELANELLA (BALCIS) TARAVALI, new species.

Plate 42, fig. 2.

Shell very minute, bluish-white, doubly flexed; the anterior portion turned to the right, the tip flexed backward. The first three whorls well rounded, separated by a well impressed suture. The rest almost flat, separated by an inconspicuous suture, marked by exceedingly fine incremental lines only. The last whorl inflated. Periphery well rounded. Base short, well rounded. Aperture broadly oval; posterior angle acute; outer lip thin, slightly protracted in the middle; inner lip short, slightly curved, reflected over and appressed to the base; parietal wall covered by a rather thick callus.

The type (Cat. No. 215779, U.S.N.M.) was collected by Mr. Hemphill at Point Abreojos, Lower California. It has nine whorls and measures—length, 1.2 mm.; diameter, 0.3 mm. Two additional specimens from the same locality are in Mrs. Oldroyd's collection.

MELANELLA (BALCIS) CATALINENSIS, new species.

Plate 40, fig. 7.

Shell elongate-conic, slender, doubly flexed, the main flexure being turned to the right, while the extreme tip is slightly bent backward; bluish-white, polished. First two whorls well rounded, separated by a well-constricted suture, the rest moderately rounded on the convex, and slightly so on the concave side of the spire, separated by a scarcely defined suture. The posterior limit of the whorls shines through the substance of the shell and appears as a conspicuous false suture. Periphery of the last whorl slightly angulated. Base moderately produced, well rounded. Aperture oval; posterior angle acute; outer lip produced at the periphery; inner lip somewhat sinuous, very oblique, slightly reflected and appressed to the base; parietal wall covered with a thick callus.

The type (Cat. No. 173802, U.S.N.M.) was dredged in Catalina Channel. It has 10 whorls and measures—length, 5.2 mm.; diameter, 1.6 mm.

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
1	U.S.N.M.	211822	Off Santa Rosa Island, station 2901.	48 fathoms, mud bottom, 55° bottom temperature.
1	Oldroyd		Off San Pedro	Deep water.
1	Cooke		Off Coronado Islands	
1	Kelsey		San Hipolito Point	

MELANELLA (BALCIS) FALCATA Carpenter.

Plate 42, fig. 6.

Eulima falcata CARPENTER, Proc. Zool. Soc., 1865, p. 280.

Shell doubly flexed, the anterior portion being turned to the right and the tip backward, yellowish-white. Early whorls decollated, the succeeding turns slightly rounded, more so on the curved than the concave side of the spire, marked by exceedingly fine lines of growth only, separated by a weakly impressed suture. Periphery of the last whorl subangulated, base moderately produced, well rounded. Aperture ovate; posterior angle acute; outer lip (fractured); inner lip short, curved, reflected over and appressed to the base; parietal wall covered by a moderately thick callus.

Carpenter's type (Cat. No. 123, U.S.N.M.) was collected by Mr. Rowell at Acapulco, Mexico. It has eight whorls remaining and measures—length, 7.6 mm.; diameter, 2.2 mm.

MELANELLA (BALCIS) YOD Carpenter.

Plate 40, fig. 9.

Leiostraca yod CARPENTER, Cat. Maz. Shells, 1857, p. 441.
Melania distorta PHILIPPI, Moll. Sci., vol. 1, p. 158, pl. 9, fig. 10.
Eulima distorta DESHAYES in Lamarck An. s. Vert., vol. 8, p. 454.—PHILIPPI, Moll. Sci., vol. 2, p. 135.—FORBES and HANLEY, Brit. Moll., vol. 3, p. 232.—CLARK, Moll. Test. Mar. Brit., p. 451.
Leiostraca distorta, H. and A. ADAMS, Gen. Rec. Moll., vol. 1, 1854, 236.

"L. t. '*L. distortae*' simillima, sed minima; parte suturali paululum latiore.

"The type of *Leiostraca iota* C. B. Ad. erroneously labeled 'Jamaica' in Mus. Cuming, and very incorrectly figured by Sow. is somewhat broader and less bent than the Mazatlan shells; in other respects it exactly accords. After repeated comparison of very fresh specimens with the British dwarf variety of *L. distorta*, the characters appear exactly alike, except that the sutural portion, which (the shell being transparent) gives an appearance of a spiral line, is slightly narrower in the Scarborough specimens received from Mr. Bean. The same glossy deposit over the base, with the rather separate parietal lip, giving in some directions of light the appearance of an umbilicus, appears in each, and of the same shape. No difference can be traced in the minute vertex, nor in the varices. The colour in fresh specimens exactly accords. The specimens in Mr. Andrew's collection, grouped under *Eu. distorta*, vary extremely in size and arcuation. The Mazatlan shells are on a much smaller scale, generally more bent, and most beautifully glossy and transparent. The same form occurs in the West Indies (B. M.). According to Deshayes (Lam. An. s. Vert., vol. 3, p. 455, No. 8) it is found fossil in Grignon and other places. If it extends so far back in time, it is natural that the living shell should occupy a widely distributed space. As, however, the animals may be distinct, both in this and in *L. iota*, a name is added expressive of its (for the genus) extreme minuteness. The smallest sp. (of 3 normal whorls) measures '035 by '016. A remarkably large sp. measures long. '082, long. spir. '055, lat. '033, div. 18°.

"*Hab.*—Norway to Mediterranean, Forbes; W. Indies, B. M.

"(Var. *Yod.*) Mazatlan; 34 sp. living on *Spondylus*, dead on *Chama;* L'pool Col.

"Tablet 2027 contains 4 sp. of different ages. The largest possesses its operculum, which appears like that of *Chrysallida*, but with the rugae much coarser. Another is broken so as to show the axis of the upper whorls."

We have not seen specimens of this minute, curved species and have copied Carpenter's description and figure; the latter is a camera lucida sketch.

STROMBIFORMIS (BALCIS) BIPARTITA Mörch.

Eulima bipartita MÖRCH, Mal. Blät., vol. 6, 1860, pp. 120–121.

"Shell shining, diaphanous, flexed to the right. Whorls 10, flattened, divided by a spiral band a little below the middle; the upper band white, the lower milk-white. Last whorl subangulated at the periphery. Aperture piriform, outer lip arcuate, produced; inner lip straight, with a callus; parietal wall covered with a moderately thick callus, which renders the peritreme complete. A series of impressed varices form an oblique line on the right side. Length, 7.5 mm.; diameter, 2.5 mm. Hab.: Sansonate Mexico. Three specimens with broken apex."

The above is a translation of Mörch's description. I have so far not seen specimens agreeing with it.

MELANELLA (BALCIS) ADAMANTINA de Folin.

Plate 42, fig. 1.

Eulima adamantina DE FOLIN, Les Meleagrinicoles, 1867, p. 62, pl. 6, fig. 2.

"Shell very small, imperforate, elongate, arcuate, acuminate, very highly polished, hyaline. Whorls nine in number, flattened, with a barely perceptible suture. Altitude of body whorl equal to one-third that of the entire shell. Aperture semilunate; margins a little thickened, the left slightly reflexed. Long., 0.0025, diam., 0.0008.

"Nothing is more brilliant than this species of *Eulima*. The outline is very much elongated, although its apex, a little obtuse. The altitude of the shell makes it appear acute. It is crystalline, extremely diaphanous, with a considerable luster. The spire is composed of nine whorls, which at first increase slowly. The curvature of the spire is rather pronounced, turning the shell from right to left, so that the right side is concave and the left side convex. The whorls of the spire are united by a simple linear suture, very finely and very clearly traced. The transparency of the shell allows the base of each of the whorls to be seen, and the shell is thickened a little both above and below the suture. The final whorl is equal to about one-third of the total altitude and it is imperforate. The aperture is elongate and semicircular. Its margins are simple and joined very sharp, and the left is slightly reflected and turned back upon the columella.

"*Type locality.*—Negritos, or Margarita Island, Panama."

I have not seen specimens of this species and quote the description and figure.

MELANELLA (BALCIS) GIBBA de Folin.

Plate 43, fig. 2.

Eulima gibba De Folin, Les Meleagrinicoles, 1867, p. 64, pl. 6, fig. 4.

"Shell imperforate, ventricose, acuminate posteriorly. The apex rather obtuse, crystalline, very highly polished; whorls nine in number, increasing slowly in size, united by a simple suture. The final whorl tumid, more strongly inflated toward the left. Aperture semilunate. Margins simple; columella strongly reflected. Long., 0.003; diam., 0.0013.

"Like the preceding, this species may also be considered remarkable. It is corpulent, rather acuminate, recurved posteriorly, its apex seeming to try to unite with the aperture. It is quite as diaphanous as *adamantina* and as highly polished. The spire is composed of nine whorls. The early whorls increase slowly in diameter, but proportionately they enlarge rather rapidly; the increase takes place especially upon the left side. The final whorl, which alone constitutes one-half of the entire shell, is very much developed on this side. It is inflated and extends considerably beyond the line, which, judging from the margins of the preceding whorls, would serve as contours for it. In order to recognize the aperture when the final whorl has reached its maximum extension, it is necessary that it be oriented toward the right following a very oblique line. These abnormal conditions upon it, and consequently upon the entire shell, cause a hunchbacked outline, which serves as one of the principal diagnostics of this species. The suture is the same as that of *E. adamantina*. The aperture is cordate, elongate; its margins are well joined, and are united by a curve which represents its greatest diameter. The margins are somewhat thickened; the left, especially at the base of the aperture, is reflected, and is expanded over the final whorl in a decurrent angle, and at the same time it is reflected backwards over the columella.

"*Type locality.*—Negritos; or Margarita Island, Panama."

I have not seen specimens of this species and quote the description and figure.

MELANELLA (BALCIS) IOTA C. B. Adams.

Plate 40, fig. 5.

Eulima iota C. B. Adams, Ann. Lyc. Nat. Hist. New York, vol. 5, 1852, p. 422.

Shell very small, doubly flexed, semitranslucent, polished. Early whorls slightly rounded, the later ones flat, scarcely marked by lines of growth. Suture well marked. Periphery of the last whorl obscurely angulated. Base short, well rounded. Aperture moderately large; posterior angle acute; outer lip thin, inner lip fractured (reconstructing from the preceding whorls, we may say that it is concavely curved, reflected over and appressed to the base.)

Two specimens of this species were found at Panama by Prof. C. B. Adams. One of these, the type, is in the collection of Amherst College, Amherst, Massachusetts. This has nine whorls and measures—length, 1.7 mm.; diameter, 0.6 mm.

EULIMOSTRACA, new genus.

Melanellids in which the inner lip is not appressed to the attenuated basal portion of the preceding whorl; whorls almost flattened; outer lip of aperture not expanded; color markings present.

Type.—Eulimostraca galapagensis Bartsch.

EULIMOSTRACA GALAPAGENSIS, new species.

Plate 43, fig. 1.

Shell broadly elongate-conic, thin, translucent, showing the internal structure through the substance of the shell. Whorls rather high between the sutures, moderately well rounded, appressed at the summit; polished, marked by exceedingly fine incremental lines only. Suture lightly impressed. Periphery of the last whorl somewhat inflated; strongly angulated, marked by a narrow brownish band. Base short, well rounded. Aperture very broadly oval; posterior angle acute; outer lip thin, tinged with brown on the posterior half, decidedly protracted in the middle, to form a claw-like element; inner lip strongly curved, slightly reflected, fusing only slightly, posteriorly, with the preceding whorl; parietal wall covered by a thin callus.

The type and seven specimens (Cat. No. 251281, U.S.N.M.) were dredged off Galapagos Island, by the United States Bureau of Fisheries steamer *Albatross*, at station 2813, in 40 fathoms, on coral sand bottom, bottom temperature 80°. The type has 11 whorls and measures—length, 3.8 mm.; diameter, 1.2 mm.

Genus SABINELLA Monterosato.

Sabinella Monterosato, Natur. Sicil., 1890, p. 15. Type, *Sabinella piriformis* Brugnone.

Melanellids in which the inner lip is not appressed to the attenuated basal portion of the preceding whorl; whorls strongly rounded; aperture very large and outer lip decidedly expanded; color markings absent.

SABINELLA CHATHAMENSIS, new species.

Plate 43, fig. 4.

Shell broadly conic, yellowish-white, polished, marked by exceedingly fine protractive lines of growth only. The first two whorls well rounded, separated by a well-impressed suture, succeeding ones moderately rounded. Aperture very large, somewhat channeled

anteriorly; posterior angle acute; outer lip very strongly protracted between the posterior angle and the base, forming a decidedly claw-like element; inner lip decidedly curved, revolute with the posterior half appressed to the base; parietal wall covered with a thin callus.

The type (Cat. No. 251283, U.S.N.M.) was dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2808, off the Galapagos Islands, in 634 fathoms, on coral sand bottom, bottom temperature 40°. It has nine whorls and measures—length, 3 8 mm., diameter, 1.3 mm.

SABINELLA BAKERI, new species.

Plate 43, fig. 5.

Shell small, very broadly conic, creamy-white. All the whorls moderately rounded, excepting the last which is very strongly rounded. All marked by rather prominent lines of growth, and rather numerous irregularly disposed varices, of which there are sometimes several to a single whorl. Suture moderately constricted. Periphery of the last whorl inflated, strongly rounded. Base short, strongly rounded, marked like the spire. Aperture very large; posterior angle acute; outer lip thin at the edge, decidedly produced, and protracted in the middle to form a strong claw-like element; inner lip slender, slightly curved, somewhat revolute, free for its entire length; parietal wall glazed by a thin callus.

The unique type (Cat. No. 215786, U.S.N.M.) was collected by Dr. Fred Baker, at San Diego, California. It has nine whorls and measures—length, 2.7 mm.; diameter, 1.1 mm.

SABINELLA OPALINA de Folin.

Plate 43, fig. 7.

Eulima opalina De Folin, Les Meleagrinicoles, 1867, pp. 67, 68, pl. 6, fig. 7.

"Shell imperforate, rather elongate, opaque, shining, opaline, darkly spotted with red. Spire conic, attenuated, tapering to a subacute apex. Whorls, 10 in number, increasing slowly in diameter, united by a simple suture, final whorl equal to one-third the altitude of the entire shell, strongly depressed at the base. Aperture subquadrate, the margin slightly thickened, columella reflected. Long., 0.0035; diam., 0.0018.

"This, again, is one of the prettiest of the species. It is red, elongated, but less so than those which precede it, and for this reason its diameter is relatively greater.

"It is conspicuously conic, and for this reason appears less acuminate, although its apex is acute. The spire is made up of 10 whorls, which increase slowly in diameter, but which increase more rapidly in diameter than in altitude. The final whorl, which is almost one-third as long as the entire shell, is imperforate, and very much depressed

at the base. A simple suture, similar to that of the preceding species, unites these 10 whorls. The aperture is subquadrate, acute at the point of union of the right margin with that of the final whorl. The right margin is simple, very slightly thickened. It is feebly reflected and merges smoothly into the left margin, which, with the increasing reflection of the margin, is spread out over the final whorl, and the columella. This species is almost opaque, colored in an opaline shade, which is very pronounced on the final whorls. On the medial portion of the shell the carmine tints of the spire are lost in the background.

"*Type locality.*—Negritos; or Margarita Island, Panama."

I have not seen specimens of this species and quote the description and figure.

SABINELLA? PTILOCRINICOLA Bartsch.

Plate 44, fig. 2.

Eulima ptilocrinicola BARTSCH, Proc. U. S. Nat. Museum, vol. 32, 1907, pp. 555–556, pl. 53.

Shell elongate-conic, thin, polished, transparent, tinged with bluish-white (the dried animal showing through the upper whorls as a granular golden-yellow mass.) Whorls 11, increasing regularly in size, decidedly rounded, with the surface weakly malleated, having a few feebly developed varices which appear at irregular intervals as narrow opaque vertical bands. Summit of the whorls closely appressed to the preceding turn, the extreme edge forming a slender spiral sutural band. Last whorl quite strongly inflated basally. Periphery and base well rounded, marked like the spire. Aperture moderately large, suboval; outer lip thin, evenly curved; inner lip slender, vertical, slightly reflected; parietal wall covered by a thin callus. Operculum thin, corneous.

The type (Cat. No. 195373, U.S.N.M.) was dredged by the United States Bureau of Fisheries steamer *Albatross* at station 3342, in 1,588 fathoms, off British Columbia, and measures—length, 9.5 mm.; diameter, 3.9 mm.

SABINELLA MERIDIONALIS, new species.

Plate 43, fig. 3.

Shell small, bluish-white, polished, marked by exceedingly fine lines of growth only. Early whorls decollated, later ones well rounded, separated by a moderately compressed suture. Periphery of the last whorl well rounded; base moderately long, well rounded. Aperture very broadly oval; posterior angle acute; outer lip thin, decidedly protracted in the middle between the posterior angle and the base; inner lip slender, curved, reflected over and partly appressed to the base posteriorly; parietal wall covered by a thin callus.

The type (Cat. No. 251282, U.S.N.M.) was dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2808 off the Galapagos Islands, in 634 fathoms, on coral sand bottom, bottom temperature 40°. The last five whorls only remain in our specimen, but they are so distinct from any other that the species will readily be recognized by them. These measure—length, 3.9 mm.; diameter, 1.3 mm.

Genus HALIELLA Monterosato.

Haliella Monterosato, Enum. & Syn., 1873, p. 35, Type, *Haliella stenostoma* (Jeffreys).

Melanellids in which the inner lip is provided with a twist which gives it the appearance of having an obsolete fold.

HALIELLA ABYSSICOLA, new species.

Plate 43, fig. 8.

Shell elongate-conic, straight, semitransparent, polished, bluish-white, marked by scarcely perceptible lines of growth. Whorls slightly rounded, rather high between the sutures; the appressed portion of the summit appearing as a narrow white band, the posterior limit of which forming the suture is scarcely perceptible since it practically fuses with the preceding turn. Periphery of the last whorl well rounded. Base moderately long, well rounded. Aperture very large, ear-shaped; posterior angle acute; outer lip very thin, becoming gradually protracted from the posterior angle to the periphery, then more rapidly retractive toward the base, basal portion of the outer lip forming a broad, rounded channel; inner lip long, decidedly sigmoid, slightly reflected and partly appressed to the base, provided with a twist a little anterior to its insertion; parietal wall covered with a thin callus.

The type (Cat. No. 251266 U.S.N.M.) was dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2923, off Southern California, in 822 fathoms, on green mud bottom, bottom temperature 39°. It has 10 whorls and measures—length, 10.4 mm.; diameter, 2.9 mm. Cat. No. 251265 U.S.N.M. was also collected by the *Albatross* at station 4368, off Point Loma Light, California, in 215 to 240 fathoms, on green mud. Cat. No. 266887 U.S.N.M. contains still another specimen of this species dredged off San Pablo Point, Mexico, by the *Albatross* at station 5675, in 284 fathoms, on green mud and fine sand bottom, bottom temperature 44.8°

HALIELLA CHILENSIS, new species.

Plate 43, fig. 6.

Shell elongate-conic, slender, semitranslucent to bluish-white, polished, surface marked by exceedingly fine lines of growth only. Whorls almost flattened, separated by a scarcely defined suture. Periphery of the last whorl well rounded. Base moderately long, well rounded. Aperture ovate; posterior angle acute; outer lip mod-

erately protracted between the posterior angle and the base; inner lip slender, curved, partly reflected over and appressed to the base posteriorly; parietal wall covered with a thin callus.

The type and four specimens (Cat. No. 251284, U.S.N.M.) were dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2784, off Chile, in 194 fathoms on blue mud bottom, bottom temperature 51.9°. The type has nine whorls and measures—length, 5.5 mm.; diameter, 1.3 mm.

HALIELLA LOMANA Dall.

Plate 44, fig. 1.

Eulima (?) *lomana* DALL, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 253.

Shell very large, regularly elongate-conic, creamy white. The early whorls decollated. The succeeding turns slightly rounded, very narrowly and feebly shouldered at the summit, marked by faint, retractive, incremental lines, and numerous very regularly incised equal and closely-spaced spiral striations. Suture moderately impressed. Periphery of the last whorl angulated. Base moderately long, well rounded, marked like the spire. Aperture large, broadly oval, outer lip thin, fractured at the edge; inner lip rendered slightly sinuous by a twist a little anterior to its insertion; somewhat revolute, entirely free from the base; parietal wall covered by a thin callus.

The type and another specimen of this species (Cat. No. 110652, U.S.N.M.) were dredged by the United States Bureau of Fisheries steamer *Albatross* at station 4354, 16 miles off Point Loma Light, California, in 642 to 650 fathoms, on gray mud bottom, bottom temperature 38.5° to 39°. The type has nine whorls remaining and measures—length, 20.2 mm.; diameter, 7 mm.

Genus SCALENOSTOMA Deshayes.

Scalenostoma DESHAYES, Cat. Moll. Ile de la Reunion, 1863, pp. 58–60, pl. 7, figs. 26–8, Type *Scalenostoma carinatum* Deshayes=*Subeulima* Souverbie Journ. de Conch., vol. 23, 1875, p. 296, Type *Subeulima lamberti* Souverbie.= *Amblyspira* Dall, Proc. U. S. Nat. Mus., vol. 19, 1896, p. 314, Type *Aclis*? (*Amblyspira*) *teres* Guppy.

Melanellids having an acute keel at the periphery of the whorls, which gives to the outer lip of the aperture a }-shaped appearance.

SCALENOSTOMA RANGII De Folin.

Plate 45, fig. 4.

Chemnitzia rangii DE FOLIN, Les Meleagrinicoles, 1867, pp. 61–62, pl. 6, fig. 1.
Odostomia (*Scalenostoma*) *rangii* DALL and BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 230.
Odostomia (*Scalenostoma*) *rangii* BARTSCH, Proc. U. S. Nat. Mus., vol. 42, 1916, p. 344.

"Shell imperforate, elongate-conic. Apex rather obtuse, light colored. Whorls smooth, 12 in number. The earlier whorls nor-

mal, increasing regularly in diameter; the altitude of the body whorl one-third that of the entire shell. Suture simple above, afterward keeled by the preceding whorl. Aperture quadrate; the margins simple; the left lip somewhat reflected. Alt., 0.0027; diam., 0.0011.

"It is in honor to the memory of the learned Commodore Rang that we have given his name to this odd species of *Chemnitzia* and we feel a considerable satisfaction in being able thus to give witness to our feelings of profound esteem for a leader under whose orders we have served, as well as to express our admiration for his high scholarship. This shell is somewhat elongate, yellowish in color, tending a little toward a brown. The apex is rather obtuse. The spire is made up of 12 whorls, all of them smooth. The sides of the early whorls are almost straight, and this part of the shell is regularly conic. The four or five later whorls differ from the first anteriorly in that they escape from the profile of the cone and widen on a plane with the base, thus forming a prominent keel, which is very thin, almost sharp edged, upon the periphery. This expansion of the base follows the whorls of the spire, increasing in prominence as they increase in diameter. Thus the keel terminates on the right margin of the aperture. The suture is extremely narrow, and on the whorls furnished with the keel which we have just described it occurs in front of the keel, between the keel and the succeeding whorl. The aperture is almost quadrate; the margins are simple, and the left margin is slightly reflected upon the columella.

"*Type locality.*—Negritos, or Margarita Island, Panama."

I have not seen specimens of this species, and quote the description and figure.

SCALENOSTOMA BABYLONIA Bartsch.

Plate 45, fig. 2.

Odostomia (*Scalenostoma*) *babylonia* BARTSCH, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 287, pl. 38, fig. 3.

Shell elongate-conic, light yellowish-brown, excepting the umbilical area, the extreme basal portion, and tip, which are white. Nuclear whorls very small. Postnuclear whorls flattened, separated by a scarcely impressed suture. On the last three turns the whorls are marked at the periphery by an exceedingly strong, acute, spiral keel, which is slightly bent downward. Base of the last whorl short, well rounded. Entire surface of spire and base smooth, except for exceedingly fine, incremental lines. Aperture oval; posterior angle acute; outer lip rendered }-shaped by the spiral keel; inner lip slender, evenly curved, very slightly revolute; parietal wall glazed with a thin callus.

Two specimens of this species (Cat. No. 127542, U.S.N.M.) come from San Hipolito Point, Lower California. The type has 10 postnuclear whorls and measures—Length, 3 mm.; diameter, 1.2 mm.

STROMBIFORMIS Da Costa.

Strombiformis Da Costa, Brit. Conch., 1878, p. 107. Type selected by T. Iredale (Proc. Mal. Soc. London, vol. 11, 1915, pp. 293–295) *Strombiformis glaber* Da Costa.

Very attenuated, slender Melanellids, with very narrow elongated aperture, having the inner lip appressed to the attenuated basal portion of the preceding whorls; marked with one or more spiral color bands.

STROMBIFORMIS RIVERSI, new species.

Plate 45, fig. 3.

Shell large, subulate, yellowish-white with a few faint indications of spiral bands. Early whorls decollated in all the specimens seen, those remaining slightly and evenly rounded, appressed at the summit, separated by an ill-defined suture, marked by feeble, somewhat retractive lines of growth and irregularly disposed poorly impressed varicial streaks. Suture slightly constricted. Periphery of the last whorl well rounded. Base long, gently rounded. Aperture very elongate-ovate; posterior angle acute; outer lip thin; inner lip rather long, moderately thick, well rounded, reflected over and appressed to the attenuated base throughout its entire length; parietal wall glazed with a rather thick callus.

The type and seven specimens of this species were collected by Dr. J. J. Rivers, in the upper San Pedro series, at Santa Monica Canyon, California. The type and another specimen are in the collection of the United States National Museum (Cat. No. 251390). The rest are in Doctor Rivers's collection. The type has lost the nuclear whorls. The 10 remaining measure—length, 12 mm.; diameter, 2.5 mm.

This is the largest of the West American members of the genus *Strombiformis* known.

STROMBIFORMIS ALASKENSIS, new species.

Plate 45, fig. 1.

Shell small, straight, yellowish-white, marked by exceedingly fine lines of growth only. Whorls rather high, almost flattened, appressed at the summit, separated by a scarcely impressed suture. Periphery of the last whorl well rounded, base moderately long, moderately rounded. Aperture oval; posterior angle acute; outer lip decidedly protracted between the posterior angle and the base; inner lip moderately stout, curved, reflected over and appressed to the base; parietal wall glazed with a moderately thick callus.

The type (Cat. No. 322301 U.S.N.M.) comes from Dutch Harbor, Unalaska, Alaska. It has seven whorls and measures—Length, 4.2 mm.; diameter, 1.4 mm.

STROMBIFORMIS CALIFORNICA, new species.

Plate 45, fig. 5.

Shell narrowly subulate, polished. Early whorls yellowish-white, succeeding ones light brown, marked with a dark chestnut brown band at the periphery. A second one of equal strength and size is a little anterior to the middle between the summit and the periphery; lip edged with dark brown. Early whorls rounded, separated by impressed sutures, the succeeding turns flattened with scarcely defined suture, marked by exceedingly fine lines of growth and slightly retractive, irregularly disposed pale brown varicial streaks. Periphery of the last whorl well rounded. Base produced, well rounded. Aperture elongate, oval; posterior angle acute, slightly effuse anteriorly; outer lip thin, inner lip long, curved, revolute appressed to the base, except at the very tip, where it is free; parietal wall covered with a moderately thick callus.

The type and six specimens (Cat. No. 249619, U.S.N.M.) were dredged in San Diego Bay. The type has 13 whorls and measures—Length, 11.5 mm.; diameter, 2.1 mm. This species resembles *Strombiformis townsendi* from the Gulf of California, but differs from it in being uniformly more slender, and also in the color markings.

The following additional specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
2	U.S.N.M.	203667	Off San Diego	20 fathoms.
1	Oldroyd		do	14 fathoms dredged by Mr. Gripp.
1[1]	Kelsey		do	60 fathoms.
1	U.S.N.M.	251392	Off Catalina Island	50 fathoms.
1	Lowe	3501	Catalina Island	

[1] Fragment.

STROMBIFORMIS TOWNSENDI, new species.

Plate 46, fig. 4.

Shell subulate, polished, tip white, the rest flesh colored with a broad pale zone of brown near the summit, in the middle of which is a darker line. A second pale zone of brown surrounds the middle of the whorl and is separated from the one of the summit by a clear flesh-colored band, which is about as wide as the band, separating it from a third brown zone at the periphery. This third zone extends about as far below the periphery of the last whorl as it extends above it, and is edged on both sides by a very dark, translucent brown band. The middle of the base is surrounded by another brown band, and the

lip is edged with pale brown. Early whorls moderately well rounded, separated by a well-impressed suture; succeeding turns flattened and separated by a scarcely defined suture. Surface marked by exceedingly fine retractive lines of growth and an occasional narrow varicial streak. Periphery of the last whorl well rounded. Base somewhat produced, well rounded. Aperture elongate ovate; posterior angle acute; outer lip thin; inner lip strong, curved, reflected over and appressed to the base throughout its entire length; parietal wall glazed with a thick callus.

The type and three specimens (Cat. No. 251391, U.S.N.M.) were dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2822 off La Paz, Gulf of California, in 21 fathoms on gray sand and broken shell bottom. The type has 13 whorls and measures—length, 11 mm.; diameter, 2.5 mm.

The following additional specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
6	U.S.N.M.	268591	South end of Angel de la Guardia Island, Gulf of California.	Shallow water; dredged by the author.
3	do	266359	Agua Verde Bay, Gulf of California.	2 fathoms; dredged by the author.
1	do	268592	Gulf of California	
1	Cooke		do	

STROMBIFORMIS LAPAZANA, new species.

Plate 46, fig. 3.

Shell narrowly subulate, polished, tip yellowish-white, the rest flesh-colored with a broad translucent zone of light brown, which is edged on either side by a narrow vary dark band, the anterior one of which marks the periphery, while the posterior falls a little anterior to the middle of the space between the summit and the suture. Early whorls rounded, separated by a well-marked suture, all the rest flattened, marked by feeble lines of growth and an occasional pale brown retractive varicial streak. Suture poorly defined. Periphery of the last whorl well rounded. Base produced, well rounded. Aperture elongate-ovate, slightly effuse anteriorly; posterior angle acute; inner lip short, curved, revolute, reflected over, and appressed to the base; parietal wall covered with a moderately thick callus.

The type and 43 specimens (Cat. No. 211388, U.S.N.M.) were dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2823, in 26½ fathoms off La Paz, Gulf of California, on broken shell bottom. The type has 13 whorls and measures—length, 7.8 mm.; diameter, 1.3 mm.

The following additional specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
3	U.S.N.M.	96715	Off La Paz, Gulf of California, U. S. B. F. station 2823.	26½ fathoms, broken shell bottom.
11	do	211670	Off La Paz, Gulf of California, U. S. B. F. station 2822.	21 fathoms on gray sand and broken shell bottom.
5	do	251394	Off Ceralvo Island, Gulf of California, U. S. B. F. station 2826–2828.	9½–10 fathoms, shell bottom, 74° bottom temperature.
1	do	251393	Agua Verde Bay, Gulf of California.	

STROMBIFORMIS ALMO, new species.

Plate 46, fig. 5.

Shell broadly elongate-conic, polished, bluish-white, excepting a broad band of light chestnut brown, which encircles the turns covering a little more than half the spaces between the periphery and the summit and extending for an equal distance over the base. Early whorls rounded, separated by a well-impressed suture; the succeeding turns moderately rounded, with very poorly impressed suture, marked by faint lines of growth and an occasional almost vertical varicial line, which is not accompanied by any brown marking. Periphery of the last whorl well rounded. Base produced, well rounded. Aperture broadly ovate, somewhat patulose anteriorly; posterior angle acute; outer lip thin; inner lip short, moderately stout, curved, reflected over, and appressed to the base, except at the extreme tip, where it is free; parietal wall covered with a thick callus.

The type and two specimens (Cat. No. 251395, U.S.N.M.) were dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2902, in 53 fathoms off Santa Rosa Island, California, on fine gray sand and mud bottom, bottom temperature 45°. The type has 10 whorls and measures—length, 7 mm.; diameter, 1.8 mm.

The following additional specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
2	Oldroyd		Off San Pedro	Deep water.
3	do		Off San Pedro, Cal.; dredged by University of California.	
1	U.S.N.M.	251396	Off Point Loma Light, Cal.; dredged by U. S. B. F. steamer *Albatross*, station 4318.	59–113 fathoms; fine gray sand and broken shell and mud bottom.
1	Baker		Off San Diego	60 fathoms.
1	Button		San Diego	

STROMBIFORMIS FUSCOSTRIGATA Carpenter.

Plate 46, fig. 1.

Eulima fuscostrigata CARPENTER, Ann. Mag. Nat. Hist., ser. 3, vol. 14, 1864, p. 47.

Shell broadly conic, polished, tip brown; the anterior third between the sutures of each turn and the base of the last turn, dark brown. On the last half of the last turn the brown of the basal portion splits into two bands, one a little below the periphery and the other marking the extremity. Early whorls strongly rounded, separated by a well impressed suture, the succeeding ones almost flat with an ill-defined suture. Surface marked by fine lines of growth only. Periphery of the last whorl weakly angulated. Base somewhat produced, moderately rounded. Aperture ovate; posterior angle acute; outer lip thin; inner lip moderately long, rather stout, curved, revolute, and appressed to the base; parietal wall covered by a moderately thick callus.

Carpenter's type (Cat. No. 4105, U.S.N.M.) comes from Cape San Lucas, Lower California. It has 10 whorls and measures—length, 4.7 mm.; diameter, 1.3 mm.

STROMBIFORMIS PANAMENSIS, new species.

Plate 46, fig. 2.

Shell elongate-conic, bluish-white, polished, with a narrow pale-brown band marking the appressed summit of the whorls; half of the space between this dark band and the suture is white; the rest of the whorl is suffused with pale brown; the aperture, too, is edged with pale brown, while the extremity of the base is white. Early whorls slightly rounded, separated by an impressed suture, the succeeding turns almost flattened, marked by exceedingly fine lines of growth and an occasional retractive varicial line which is not accompanied with any color markings. The appressed portion of the whorls is dark in color and the anterior limit of the appressed portion appears as a false suture, the true suture being very inconspicuous. Periphery of the last whorl well rounded. Base produced, well rounded. Aperture elongate-ovate, slightly effuse anteriorly; posterior angle acute; outer lip thin; inner lip moderately long, curved, reflected and appressed to the base for its entire length; parietal wall covered with a moderately thick callus.

The type (Cat. No. 215787, U.S.N.M.) was dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2799 in 29½ fathoms, in Panama Bay, on green mud bottom. It has 11 whorls and measures—length, 6 mm.; diameter, 1.3 mm.

STROMBIFORMIS BARTHELOWI, new species.

Plate 47, fig. 7.

Shell polished, acicular, uniformly pale brown. Early whorls well rounded, separated by a constricted suture; the succeeding turns flat, with a less conspicuous suture, marked by very fine vertical lines of growth only. Periphery of the last whorl well rounded. Base rather long, evenly rounded. Aperture very elongate-ovate; posterior angle acute; outer lip thin, not protrated in the middle; inner lip slender, slightly curved, reflected over and appressed to the base throughout its entire length; parietal wall glazed with a thin callus.

The type (Cat. No. 268622, U.S.N.M.) was collected by the author in Santa Maria Bay, Lower California. It has eleven whorls and measures—length, 5 mm.; diameter, 1.3 mm. Cat. No. 267746, U.S.N.M., contains another specimen dredged by the author in shallow water in the same place.

STROMBIFORMIS HEMPHILLI, new species.

Plate 47, fig. 4.

Shell polished, the three or four early whorls increasing slowly in size, the rest more rapidly, which lends the outline of the spire a somewhat constricted appearance near the summit. Early whorls well rounded, with moderately impressed suture. The whorls are marked with irregular, triangularly shaped streaks of brown, which are broadest at the varicial streaks and taper backward to a point, one side following the summit. Base marked by an interrupted brown band, situated a little anterior to the periphery, and the second, slightly narrower, about one-third the distance between the peripheral band and tip of the base, anterior to the peripheral band. The extreme tip of the inner lip is brown. Early whorls moderately rounded, separated by an impressed suture, the later ones very slightly rounded, separated by an inconspicuous suture, marked by exceedingly fine lines of growth and occasional varicial streaks. Periphery of the last whorl feebly rounded. Base moderately long, well rounded. Aperture rather small, ovate; posterior angle acute; outer lip thin; inner lip very oblique, somewhat sinuous, slightly reflected with posterior portion appressed to the base; parietal wall covered by a thick callus.

The type and three specimens of this species (Cat. No. 127554, U.S.N.M.) were collected by Mr. Henry Hemphill in shell drift, at Point Abreojos, Lower California. The type has 9 whorls and measures—length, 3.1 mm.; diameter, 1.1 mm.

I have seen the following additional specimens:

Number of specimens.	Collection of—	Catalogue number.	Locality.
26	Oldroyd		Point Abreojos, Lower California.
2	Button		Do.
1	Johnston		Do.
7	U.S.N.M.	215783	San Hipolito Point, Lower California
6	Oldroyd		Point Abreojos, Lower California.

STROMBIFORMIS BURRAGEI, new species.

Plate 47, fig. 5.

Shell very small, elongate-conic, polished, light yellow, with the tip light brown and with a broad brown band on the middle of the base. Early whorls well rounded, separated by a constricted suture. The succeeding turns weakly rounded, with a very feebly impressed suture, marked by exceedingly fine lines of growth only. Periphery obscurely angulated. Base rather short, well rounded. Aperture broadly oval; posterior angle obtuse; outer lip thin; inner lip short, decidedly curved, reflected and appressed to the base posteriorly; parietal wall covered by a thick callus.

The type (Cat. No. 267582, U.S.N.M.) was dredged in 3 fathoms at the head of Concepcion Bay, Gulf of California, by the United States Bureau of Fisheries steamer *Albatross* on mud bottom. It has lost the first turn; the eight remaining measure—length, 2.7 mm.; diameter, 0.9 mm.

The following additional specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
1	U.S.N.M.	264643	Head of Concepcion Bay	Dredged by U. S. B. F. steamer *Albatross*, 3 fathoms, mud bottom.
1	do	267812	Pichilinque Bay, Gulf of California.	Dredged by the author in shallow water.

STROMBIFORMIS VARIANS Sowerby.

Plate 47, figs. 6, 8.

Eulima varians SOWERBY, Proc. Zool. Soc. London, 1834, p. 8.
Leiostraca varians SOWERBY, Thes. Conch., 1854, p. 804, pl. 170, figs. 23, 24.

"Subfusiform, acuminated, thin, color various; aperture oblong. Some varieties are white, others brown, and others are marked with brown lines and are mottled.

"Xipixapi, Meridional America. (Mus. Cuming.)

"Collected in sandy mud."

I have not seen specimens of this species and copy Sowerby's description and figure.

STROMBIFORMIS PROCA de Folin.

Plate 47, fig. 1.

Eulima proca De Folin, Les Meleagrinicoles, 1867, pp. 62, 63, pl. 6, fig. 3.

"Shell imperforate, elongate, acuminate, thin, shining, milky-white above, pinkish below, and spotted along the sutures with triangular reddish dots. Whorls 10 to 11; the early ones very narrow, the later wider and more convex. The body whorl approximately equal to one-third the altitude of the entire shell. Aperture cordate; the margin slightly thickened, the left margin strongly reflected. Long., 0.0033; diam., 0.001.

"This second species of *Eulima* is also very pretty and very remarkable. The outlines elongated; the whorls of the spire very acuminate. The later whorls, on the contrary, are somewhat wide and somewhat convex. The sides of the whorls, instead of being simply straight, or describing, as is ordinarily the case, take on, in this species, a double curve. The contour is at first concave, then it becomes convex. In consequence of this difference in the margins of the whorls of the spire, the resulting outline is very peculiar, and is a very striking diagnostic. The apex is slightly obtuse; the whorls of the spire are 10 or 11 in number. They increase slowly at first, and without perceptible enlargement, which gives to the early part of the shell, including the five or six whorls, a subcylindric aspect. These whorls are slightly rounded and are united by a rather deeply impressed suture. Near the eighth whorl the diameter increases, and the suture is fainter and becomes nothing more than a simple, very feebly impressed line. The final whorl is equal to about one-third of the total altitude, and is imperforate. The aperture is cordate, and its margins are somewhat thickened. The left margin is reflected, and they are colored a flaming scarlet. The early whorls, milk-white in color, are well flattened between the sutures and the margins; the later whorls are flesh-colored, or tinged with a clear orange. A few elongated, triangular spots, rather regular, and brilliantly colored in flaming scarlet, are disposed along the sutures, and extend for a short distance in front of it. This peculiar ornamentation adds a stamp of originality to this *Eulima*.

"*Type locality.*—Negritos; or Margarita Island, Panama."

I have not seen specimens of this species and quote the description and figure.

STROMBIFORMIS ELEGANTISSIMA de Folin.

Plate 47, fig. 3.

Eulima elegantissima De Folin, Les Meleagrinicoles, 1867, p. 65, pl. 6, fig. 5.

"Shell imperforate, oblong, very highly polished, pellucid, ornamented with two oblique bands, alternated yellow and spotted.

Spire acuminate. Apex rather obtuse. Whorls 10, slowly increasing in size, flattened; the final whorl large, its altitude half of that of the entire shell. Suture simple. Aperture elongate, pyriform, the margins thickened, yellowish; the left margin strongly reflected at the base. Long., 0.005; diam., 0.0015.

"This small shell is very remarkable by reason of its elements; elongated, acuminated outline. The spire is made up of six whorls, which increase slowly in diameter, and which are joined together by a very simple suture. The sides of these whorls are straight, smooth, without convexity, and the suture appears only as a feeble line, revolving about the shell, so that the shell does not seem to be interrupted at the suture line. The final whorl occupies approximately half of the entire altitude and is imperforate, despite the fact that a slight elongated depression, covered in part by the reflected left margin of the aperture, seems to form a convexity which at first sight simulates a perforation. The acuminate outline of the entire shell attenuates slightly the half acute, half obtuse outline of the apex so that it may be considered as acute. The aperture is entirely elongate, pyriform, the two margins colored a dark brown, rounding smoothly into each other. The left is reflected upon the columella, and spreads out over the base of the last whorl. It is not only the exceedingly graceful outline of *Eulima elegantissima* which makes this shell remarkable, it is also the exceedingly high luster with which it shines, and its transparency, equal to that of pure crystal. The luster is due to its perfect polish and also to its clearness. Each of the whorls is ornamented with two yellow ribbons which follow the spire. The color is rather deep along the middle of each ribbon. It lightens toward the margins and almost merges into the crystalline background. It is the same with the elongate spots, which, bending obliquely toward the left bind the ribbons to one another. The total of these characteristics give to *Eulima elegantissima* an aspect like that of marble. The shell near the suture seems to be thicker than away from it. Along the last whorls especially it seems as if there were a little ribbon almost opaque, which makes the shell at this point seem whiter.

"*Type locality.*—Negritos; or Margarita Island, Panama."

I have not seen specimens of this species and quote the description and figure.

STROMBIFORMIS ACUTA Sowerby.

Plate 47, fig. 2.

Eulima acuta SOWERBY, Proc. Zool. Soc. London, 1834, p. 8.
Leiostraca acuta SOWERBY, Thes. Conch., 1854, p. 803, pl. 170, fig. 11.

"Acutely turreted, white; whorls 12, smooth, sutures obsolete, varices few.

"Bay of Montiji, Central America. (Mus. Cuming.)

"Found in coarse sand at a depth of 13 fathoms."

I have not seen specimens of this species and copy Sowerby's description and figure.

Genus NISO Risso.

Niso Risso, Hist. Nat. Eur. Merid., vol. 4, 1826, p. 218, p. 7, fig. 98; type *Niso eburnea* Risso=*Bonellia* Deshayes, Lamarck's Anim. sans. Vert., vol. 8, 1838, p. 286; Type *Bonellia terebellata* Deshayes (=*Bulimus terebellatus* Lamarck)= *Janella* Grateloup, Conch. Foss. Adaur., 1838, p. 12; Type *Bulimus terebellatus* Lamarck= *Volusia* A. Adams, Ann. Mag. Nat. Hist., ser. 3, vol. 8, 1861, p. 306; Type *Volusia imbricata* Sowerby.

Melanellids having the base broadly umbilicated.

NISO SPLENDIDULA Sowerby.

Plate 48, fig. 5.

Eulima splendidula Sowerby, Proc. Zool. Soc., 1834, p. 6, = *Niso splendidula* Sowerby, Thes. Conch., 1854, p. 801, pl. 170, fig. 8.

This species is described by Sowerby as acuminately pyramidal, brownish, articulated near the sutures with white and chestnut; umbilicus large. Aperture anteriorly angulated.

Sowerby's specimen was collected by Cummings at Santa Elena, Ecuador, on sandy mud in 6 to 8 fathoms. The type, figured by Sowerby, has 18 whorls and measures—length, 38 mm.; diameter, 17 mm. It is the largest known from the west coast of America to date.

Cat. No. 251334, U.S.N.M., contains a very badly worn and fragmentary specimens of this species, which was dredged by the U. S. Bureau of Fisheries steamer *Albatross* in the Bay of Panama at station 2798, in 18 fathoms on gray sand and broken shell bottom.

NISO EXCOLPA, new species.

Plate 48, fig. 4.

Shell broadly elongate-conic, widely and openly umbilicated, flesh-colored, with irregularly interrupted axial bands of brown immediately behind the varices, and faint spiral bands. The junction of these produce the intensified color markings, and the lighter areas between hem give the axial markings the interrupted aspect. Umbilicus purple, extreme tip of the shell white. Early whorls well rounded, the later ones flattened, marked by strong lines of growth only. The appressed summit of the whorls falls a little anteriorly to the periphery, and causes the preceding whorl to have an over-hanging appearance. Periphery of the last whorl strongly angulated. Base moderately long, well rounded; umbilicus about one-sixth of the greater diameter of the shell. Aperture rhomboidal, decidedly angulated at the junction of the inner and basal lip, somewhat less so, at the junction of the basal and outer lip; posterior angle

acute; inner lip strongly curved and moderately reflected; parietal wall glazed by a thin callus.

The type and 31 specimens (Cat. No. 267652, U.S.N.M.) were dredged by the U. S. Bureau of Fisheries steamer *Albatross*, in 3 fathoms, in the head of Concepcion Bay, Gulf of California. The type has lost the first whorl; the 14 remaining measure—length, 17.5 mm.; diameter, 6.5 mm.

The following specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.	Remarks.
17	U.S.N.M.	268590	South end of Angel de la Guardia Island, Gulf of California.	Shallow water.
3	do	251335	Off Ceralvo Island, Gulf of California U. S. B. F. stations 2826 to 2828, dredged by steamer *Albatross*.	9½ to 10 fathoms, shell bottom.
39	do	268073	Head of Concepcion Bay	Shallow water.
29	do	268158	Ricason Island, Concepcion Sound, Gulf of California.	Do.
1	do	106980	Espirito Santo Bay, Gulf of California, collected by W. B. Bryant.	
1	do	211389	Off La Paz, Gulf of California, U. S. B. F. station 2823, dredged by steamer *Albatross*.	26½ fathoms, broken shell bottom.
78	do	267543	Head of Concepcion Bay, Gulf of California, dredged by U. S. B. F. steamer *Albatross*.	3 fathoms, mud bottom.
1	do	46511	Mulege Bay, Gulf of California.	
1	do	46508	Gulf of California	

NISO INTERRUPTA Sowerby.

Plate 48, figs. 1, 3.

Eulima interrupta SOWERBY, Proc. Zool. Soc. London, 1834, p. 7 = *Niso interrupta* SOWERBY, Thes. Conch., 1854, p. 801, pl. 170, fig. 9.

Shell broadly elongate-conic, deeply and widely umbilicated, bluish-white, polished, marked with irregularly disposed varicial streaks of rust brown. Early whorls well rounded, later ones less rounded and slightly excurved at the appressed summit, marked by numerous lines of growth and exceedingly fine microscopic spiral striations. Summit of the whorls appressed, falling a little below the angulated periphery of the preceding whorl, thus causing the preceding whorl to appear as slightly overhanging the suture. Periphery of the last whorl angulated. Base short, well rounded, marked like the spire; umbilicus equal to about one-fifth of the greater diameter of the shell. Aperture oval, drawn out into an acute angle at the junction of the inner lip and basal lip; posterior angle acute; outer lip thin; inner lip strongly curved and slightly revolute; parietal wall covered by a thin callus.

Two specimens (Cat. No. 122793, U.S.N.M.) were dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2805

in 51½ fathoms, on green mud bottom, in the Bay of Panama. One of these is a fragment containing the perfect tip and 10 whorls; the other is an adult shell having lost the first one and a half turns and having 13 whorls remaining, which measure—length, 10.3 mm.; diameter, 4.3 mm. We have figured the larger of these two. Cat. No. 251336, U.S.N.M., contains three young specimens, dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2799, in 29½ fathoms on green mud, in the Bay of Panama.

Sowerby's type was collected by Cuming, in the Gulf of Nicoya, Costa Rica, in 11 to 13 fathoms, in coarse sand.

NISO LOMANA, new species.

Plate 49, fig. 4.

Shell large, broadly conic, yellowish-white. Early whorls well rounded, later ones flattened, separated by a decidedly channeled suture, narrowly shouldered at the summit and decidedly angulated at the periphery, marked only by feeble axial lines of growth. The summit of succeeding turns falls a little anteriorly to the angulated periphery and forms a channeled suture. Aperture of the type fractured.

The type (Cat. No. 251337, U.S.N.M.) was dredged by the United States Bureau of Fisheries at station 4310 in 71 to 75 fathoms, off Point Loma, California, on green mud and fine sand bottom, bottom temperature 49.7°. The type has lost the early whorls and the base. The nine whorls remaining measure—Length, 14.5 mm. The fragment of this large species, constituting the type, is so distinctive that there will be no difficulty in recognizing this species when found perfect. A second specimen (Cat. No. 211847, U.S.N.M.), which we believe to represent the tip of this species, has seven whorls and was dredged by the United States Bureau of Fisheries steamer *Albatross* at station 2901, in 48 fathoms, off Santa Rosa Island, California, on mud bottom, bottom temperature 55°.

NISO HIPOLITENSIS, new species.

Plate 49, fig. 5.

Shell very small, elongate-conic, narrowly umbilicated. Tip yellowish-white, base white with a broad median brown band; anterior half of aperture white. Surface polished, marked by fine lines of growth only. Suture feebly impressed. Periphery of the last whorl angulated. Base short, well rounded. Aperture broadly oval; posterior angle acute; outer lip thin, curved and slightly patulose; inner lip curved and revolute, almost covering the narrow umbilicus.

The type and another specimen (Cat. No. 127544, U.S.N.M.) were collected by Mr. Henry Hemphill in shell washings, at San Hipolito Point, Lower California. The type has 10 whorls and measures—length, 3.1 mm.; diameter, 1.2 mm.

We have seen the following additional specimens.

Number of specimens.	Collection of—	Catalogue number.	Locality.
1	U.S.N.M.		San Diego, California.
1	Oldroyd		Do.
2	Button		San Hipolito Point, Lower California, collected by Mr. Henry Hemphill.
13	Oldroyd		Do.

NISO IMBRICATA Sowerby.

Plate 48, fig. 6.

Eulima imbricata SOWERBY, Proc. Zool. Soc., 1834, p. 7=*Niso imbricata* Sowerby, Thes. Conch., 1854, p. 802, pl. 170, fig. 10.

"Acuminately pyramidal, whitish, longitudinally lineated with light red; whorls angulated below, prominent; umbilicus small; aperture anteriorly angulated.

"Sancta Elena; in sandy mud, from 6 to 8 fathoms. (Mus. Cuming.)"

I have not seen specimens of this species and quote the description and figure from Sowerby.

The type figured by Sowerby, in the Thesaurus, has 13 whorls and measures—length, 21 mm.; diameter, 7.7m.

NISO (?) ANTISELLI Anderson and Martin.

Plate 48, fig. 2.

Niso (?) *antiselli* ANDERSON and MARTIN, Proc. Cala. Acad. Sci., vol. 4, ser. 4, 1914, p. 65, pl. 7, fig. 22.

"Shell small, smooth, with six whorls; spire conical, upper whorls absent in the type-specimen; whorls nearly flat, tapering toward the apex, unsculptured; suture appressed; body-whorl sharply angulated at the periphery; base convex, with a distinct umbilicus; aperture quadrate; outer lip distinctly angulated, angle about 100°; inner lip thin, smooth; umbilical opening large but not extending to the apex of the shell.

"*Dimensions.*—Altitude, apex broken, 7.5 mm.; latitude of the last whorl, 4 mm.

"*Occurrence.*—The type-specimen was obtained from the lower Miocene of eastern San Luis Obispo County, California, locality 125.

"The living species of this genus are found in tropical and temperate seas. The placing of this species in the genus *Niso* is somewhat doubtful. The umbilical opening does not extend to the apex of the shell; it is, however, much more pronounced than in any of the Eulimidae or Pyramidellidae and has therefore been classed as a *Niso*.

"*Type.*—No. 135, Cal. Acad. Sci., on top of a hill in the southwest corner of the S. E. ¼ of sec. 29, T. 28, S., R. 15 E., San Luis Obispo County, California.

"Named in honor of Dr. Thomas Antisell, one of the early geologists of California."

I have not seen a specimen of this species and quote the published text and figure.

Genus STILIFER Broderip.

Stilifer BRODERIP, Proc. Zool. Soc. London, 1832, p. 60. Type *Stilifer astericola* Broderip.

Melanellids with a mucronate apex, globular form, and the inner lip not appressed or adnate to the attenuated base of the preceding whorl.

STILIFER ASTERICOLA Broderip.

Plate 49, fig. 2.

Stilifer astericolus BRODERIP, Proc. Zool. Soc. London, 1832, p. 60.

Shell large, globose, with a slender acuminate mucro, which is usually decollated; thin, semitransparent, bluish-white. Postnuclear whorls strongly inflated, marked by strong incremental lines which are almost threadlike and irregularly disposed. The appressed portion of the whorls appears as a bluish band. Body whorl slightly flattened in the middle. Periphery well rounded. Base short, strongly rounded, marked like the spire. Aperture large; posterior angle acute; outer lip very thin, strongly curved, and strongly protracted in the middle to form a clawlike element; inner lip slender, strongly curved; parietal wall covered by a scarcely perceptible callus. Radula absent.

I have seen 16 specimens collected in the water-vascular system of starfish by the California Academy of Science Galapagos Expedition at Tagus Cove, Albermarle, Galapagos. Two of these are Cat. No. 322286 U.S.N.M. One of these, the specimen figured, has 5½ whorls and measures—length, 8.6 mm.; diameter, 6.3 mm.

Broderip's specimens were collected by Hugh Cuming at Hood Island, Galapagos, and I find the following interesting remarks on them in the publication cited:

"The arrival in this country of the shell above recorded, with the soft parts, has afforded data for a generic character indicating a distinct family among the *Pectinibranchiata*, the form and disposition of whose mantle differs from that of any other genus in the order. This mantle (which in *Stil. Astericola* is of a green hue) is thick, fleshy, and cup-shaped, with a small aperture at its base and a free posterior margin enveloping the soft parts and the last whorls of the shell, which has thus somewhat the appearance of a small acorn set in its cup. On the ventral aspect of this mantle is the rudiment of a foot; and from the small basal aperture a retractile *proboscis* (which when exserted is as long as the whole animal) is protruded. At the base of this *proboscis* are two thick, round, somewhat pointed *tentacula;* and at the base of them are the eyes or rather ocular specks without pedicles. The *branchia* is placed on a single stem. At the base of the

proboscis is a spherical muscular stomach, and the intestine ascends into the spire of the shell, where it becomes attached to the liver, which, in the present species, is of an orange colour.

"Mr. Cuming found this elegant parasite burrowed in different parts of the rays of the oral disk of *Asterias solaris*, Gray, where it is almost hidden from sight, so deeply does the animal penetrate into the substance of the *Starfish*, in which it makes a comfortable cyst for itself, wherein it most probably turns by the aid of its rudimentary foot. All the specimens infested with *Stiliferi* appeared to be in the best health, though there is reason to believe that these *Mollusca* feed upon the juices of the *Starfish*. With that instinct of self-preservation imparted to all parasites whose existence depends upon that of their nidus, the *Stilifer*, like the *Ichneumon* among insects, appears to avoid the vital parts; for in no instance did Mr. Cuming find it embedded anywhere save in the rays, though some had penetrated at their base and very near the *pelvis*. When extracted the older shells have much the appearance of a milky, clouded, glass bubble; the younger shells are of an unclouded transparency."

Genus MUCRONALIA A. Adams.

Mucronalia A. ADAMS. Ann. Mag. Nat. Hist., ser. 3, vol. 5, 1860, p. 301. Type *Mucronalia bicincta* A. Adams.

Melanellids with mucronate apex, cylindric postnuclear spire and with the inner lip not appressed or adnate to the attenuated base of the preceding whorl.

MUCRONALIA? BATHYMETRAE Dall.

Plate 49, fig. 3.

Stilifer (*Mucronalia*) *bathymetrae* DALL, Bull. Mus. Comp. Zool., Cambridge, vol. 43, 1908, No. 6, pp. 317, 318.

"*Mucronalia*? HARTLAUB, Bull. Mus. Comp. Zool., Cambridge, vol. 27, No. 4, 1895, p. 146, pl. 4, fig. 25.

"On a species of *Bathymetra*, dredged by the U. S. S. *Albatross*, at station 3381, off Malpelo Island, Gulf of Panama, in 1,772 fathoms, mud, bottom temperature 37.2° F.

"In Hartlaub's account of the crinoids of the *Albatross* above cited, he mentions and figures a species, referred by E. von Martens to *Mucronalia*, parasitic on a species of crinoid, later referred by Clark to *Bathymetra*. The specimen has not yet been submitted to the writer, and the figure is insufficient to base a specific description upon. It resembles *Stilifer* (*Mucronalia*) *thomasiae* Sowerby, of the West Indies, and is fixed to one of the arms of the crinoid. If the species is hereafter recovered, it might appropriately take the specific name of *bathymetrae*."

I have not seen a specimen of the species and quote the published text and figure.

Genus LAMBERTIA Souverbie.

Lambertia SOUVERBIE, Journ. de Conch., 1869, p. 420. Type *Lambertia montrouzieri* Souverbie.

Melanellids with mucronate apex, pupiform outline, and with the inner lip appressed to the attenuated base of the preceding whorl.

LAMBERTIA COOKEANA, new species.

Plate 49, fig. 1.

Shell ovate, with a narrow cylindric mucro consisting of two turns, following these two turns, the whorls become decidedly gibbose and appressed at the summit. Surface of the whorls marked by exceedingly retractive lines of growth and very fine microscopic spiral striations. Periphery of the last whorl well rounded. Base moderately long, stout, curved, and revolute; parietal wall covered by a thick callus.

The type (Cat. No. 150869, U.S.N.M.) has four whorls in addition to the mucro, and measures—length, 3.7 mm.; diameter, 2 mm. It and 10 specimens were collected by Miss Cooke at San Hipolito Point, Lower California.

The following additional specimens have been examined:

Number of specimens.	Collection of—	Catalogue number.	Locality.
50	Cooke		San Hipolito Point, Lower California.
2	U.S.N.M.	215791	Point Abreojos, collected by Mr. H. Hemphill.
7	Oldroyd		Do.

EXPLANATION OF PLATES.

PLATE 34.

FIG. 1. *Melanella micans* Carpenter, Fossil, Upper San Pedro Series, length 10.6 mm.
2. *Melanella micans* Carpenter, Fossil, Lower San Pedro Series, length 10.2 mm.
3. *Melanella micans* Carpenter, Fossil, Upper San Pedro Series, length 11.2 mm.
4. *Melanella micans* Carpenter, Fossil, Upper San Pedro Series, length 12.7 mm.
5. *Melanella micans* Carpenter, a typical specimen, length 12.7 mm.
6. *Melanella micans* Carpenter, type, length 9.4 mm.

PLATE 35.

FIG. 1. *Melanella ochsneri* Bartsch, topotype, length 8.3 mm.
2. *Melanella rutila* Carpenter, type, length 6.8 mm.
3. *Melanella rutila* Carpenter, Fossil, Lower San Pedro Series, length 5.8 mm
4. *Melanella solitaria* C. B. Adams, type, length 4.7 mm.
5. *Melanella dalli* Bartsch, type, length 20 mm.
6. *Melanella rutila* Carpenter, Fossil, Upper San Pedro Series, length 6.2 mm.
7. *Melanella micans borealis* Bartsch, type, length 11.3 mm.

PLATE 36.

FIG. 1. *Melanella panamensis* Bartsch, type, length 2.8 mm.
2. *Melanella monicensis* Bartsch, type, length 8 mm.
3. *Melanella necropolitana* Bartsch, type, length 7.5 mm.
4. *Melanella lincaris* Carpenter, length 2.6 mm.
5. *Melanella oldroydi* Bartsch, Fossil, Upper San Pedro Series, length 7.8 mm.
6. *Melanella oldroydi* Bartsch, type, length 9.2 mm.
7. *Melanella oldroydi* Bartsch, Fossil, Lower San Pedro Series, length 8.1 mm.

PLATE 37.

FIG. 1. *Melanella californica* Bartsch, type, length 6.2 mm.
2. *Melanella baldra* Bartsch, type, length 5.1 mm.
3. *Melanella compacta* Carpenter, type, length 6.8 mm.
4. *Melanella randolphi* Vanatta, type, length 7 mm.
5. *Melanella mexicana* Bartsch, type, length 6.4 mm.
6. *Melanella hemphilli* Bartsch, type, length 8.3 mm.

PLATE 38.

FIG. 1. *Melanella retexta* Carpenter, type, length 2.2 mm.
2. *Melanella pusilla* Sowerby, type, length — mm.
3. *Melanella gabbiana* Anderson and Martin, type, length 4 mm.
4. *Melanella hastata* Sowerby, cotype, length — mm.
5. *Melanella tacomaensis* Bartsch, type, length 5 mm.
6. *Melanella hastata* Sowerby, cotype, length — mm.

PLATE 39.

FIG. 1. *Melanella elodia* de Folin, type, length 5 mm.
2. *Melanella* (*Balcis*) *draconis* Bartsch, type, length 6.1 mm.
3. *Melanella recta* C. B. Adams, type, length — mm.
4. *Melanella* (*Balcis*) *peninsularis* Bartsch, type, length 5.2 mm.
5. *Melanella producta* Carpenter, type, length 3 mm.
6. *Melanella* (*Balcis*) *montereyensis* Bartsch, type, length 5.8 mm.

PLATE 40.

FIG. 1. *Melanella* (*Balcis*) *townsendi* Bartsch, type, length 3.8 mm.
2. *Melanella* (*Balcis*) *halia* Bartsch, type, length 1.8 mm.
3. *Melanella* (*Balcis*) *lastra* Bartsch, type, length 4.1 mm.
4. *Melanella abreojosensis* Bartsch, type, length 3.1 mm.
5. *Melanella* (*Balcis*) *iota* C. B. Adams, type, length 1.7 mm.
6. *Melanella* (*Balcis*) *cosmia* Bartsch, type, length 2.7 mm.
7. *Melanella* (*Balcis*) *catalinensis* Bartsch, type, length 5.2 mm.
8. *Melanella* (*Balcis*) *arnoldi* Bartsch, type, length 5.5 mm.
9. *Melanella* (*Balcis*) *yod* Carpenter, type, length 0.9 mm.

PLATE 41.

FIG. 1. *Melanella* (*Balcis*) *lowei* Vanatta, type, length 6.85 mm.=*Melanella* (*Balcis*) *thersites* Carpenter.
2. *Melanella* (*Balcis*) *thersites* Carpenter, type, length 5.1 mm.
3. *Melanella* (*Balcis*) *bistorta* Vanatta, type, length 5.9 mm.=*Melanella* (*Balcis*) *thersites* Carpenter.
4. *Melanella* (*Balcis*) *comoxensis* Bartsch, type, length 7.1 mm.
5. *Melanella* (*Balcis*) *columbiana* Bartsch, type, length 9.5 mm.
6. *Melanella* (*Balcis*) *macra* Bartsch, type, length 7.5 mm.

PLATE 42.

FIG. 1. *Melanella* (*Balcis*) *adamantina* de Folin, type, length 2.5 mm.
2. *Melanella* (*Balcis*) *taravali* Bartsch, type, length 1.2 mm.
3. *Melanella* (*Balcis*) *berryi* Bartsch, type, length 6 mm.
4. *Melanella* (*Balcis*) *prefalcata* Bartsch, type, length 6.9 mm.
5. *Melanella* (*Balcis*) *grippi* Bartsch, type, length 8 mm.
6. *Melanella* (*Balcis*) *falcata* Carpenter, type, length 7.6 mm.

PLATE 43.

FIG. 1. *Eulimostraca galapagensis* Bartsch, type, length 3.8 mm.
2. *Melanella (Balcis) gibba* de Folin, type, length 3 mm.
3. *Sabinella meridionalis* Bartsch, type, length 3.9 mm.
4. *Sabinella chathamensis* Bartsch, type, length 3.8 mm.
5. *Sabinella bakeri* Bartsch, type, length 2.7 mm.
6. *Haliella chilensis* Bartsch, type, length 5.5 mm.
7. *Sabinella opalina* de Folin, type, length 9.5 mm.
8. *Haliella abyssicola* Bartsch, type, length 10.4 mm.

PLATE 44.

FIG. 1. *Haliella lomana* Dall, type, length 20.2 mm.
2. *Sabinella (?) ptilocrinicola* Bartsch, type, length 9.5 mm

PLATE 45.

FIG. 1. *Strombiformis alaskensis* Bartsch, type, length 4.2 mm.
2. *Scalenostoma babylonia* Bartsch, type, length 3 mm.
3. *Strombiformis riversi* Bartsch, type, length 12 mm
4. *Scalenostoma rangii* de Folin, type, length 2.7 mm.
5. *Strombiformis californica* Bartsch, type, length 11.5 mm.

PLATE 46.

FIG. 1. *Strombiformis fuscostrigata* Carpenter, type, length 4.7 mm.
2. *Strombiformis panamensis* Bartsch, type, length 6 mm.
3. *Strombiformis lapazana* Bartsch, type, length 7.8 mm.
4. *Strombiformis townsendi* Bartsch, type, length 11 mm.
5. *Strombiformis almo* Bartsch, type, length 7 mm.

PLATE 47.

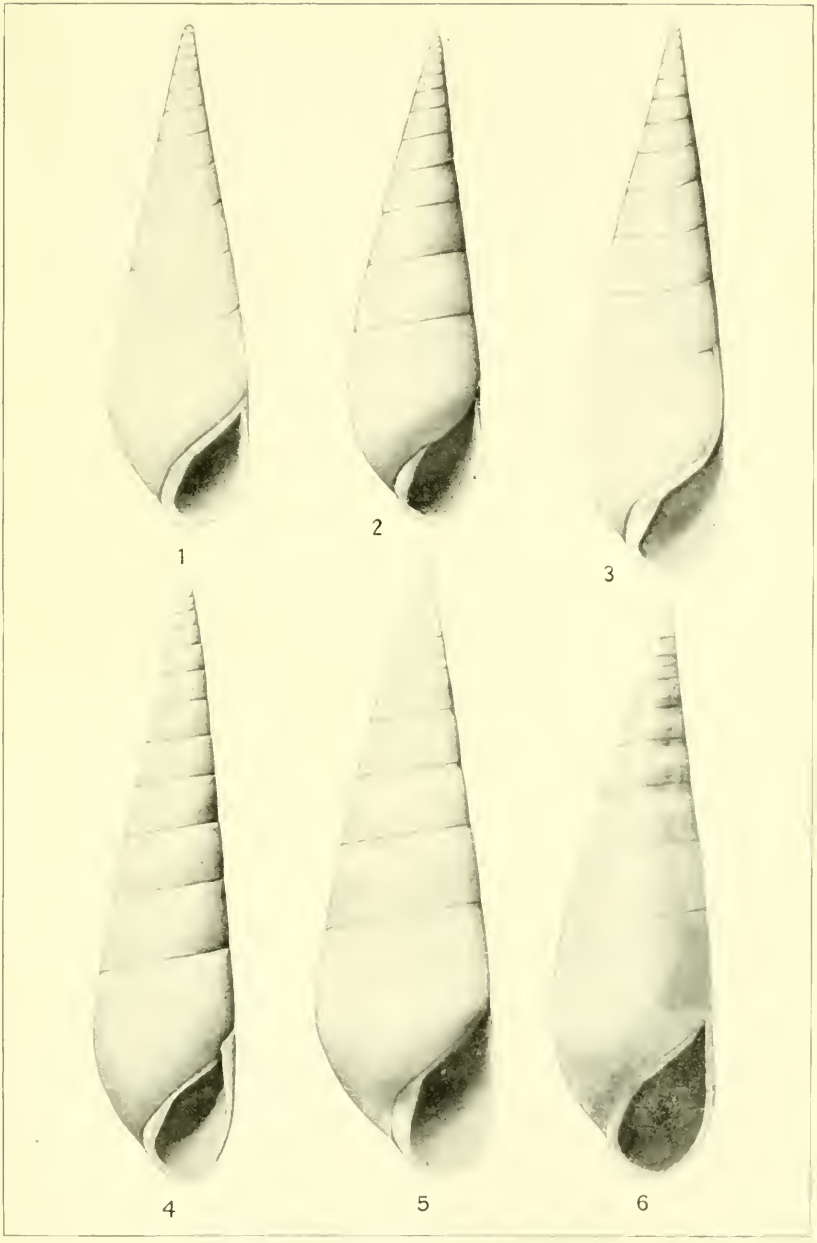
FIG. 1. *Strombiformis proca* de Folin, type, length 3.3 mm.
2. *Strombiformis acuta* Sowerby, type, length — mm.
3. *Strombiformis elegantissima* de Folin, type, length 5 mm.
4. *Strombiformis hemphilli* Bartsch, type, length 3.1 mm.
5. *Strombiformis burragei* Bartsch, type, length 2.7 mm.
6. *Strombiformis varians* Sowerby, cotype.
7. *Strombiformis barthelowi* Bartsch, type, length 5 mm.
8. *Strombiformis varians* Sowerby, cotype.

PLATE 48.

FIG. 1. *Niso interrupta* Sowerby, length 10.3 mm.
2. *Niso (?) antiselli* Anderson and Martin, type, length 7.5 mm.
3. *Niso interrupta* Sowerby.
4. *Niso excolpa* Bartsch, type, length 17.5 mm.
5. *Niso splendidula* Sowerby, type, length 38 mm.
6. *Niso imbricata* Sowerby, type, length 21 mm.

PLATE 49.

FIG. 1. *Lambertia cookeana* Bartsch, type, length 3.7 mm.
2. *Stilifer astericola* Broderip, length 8.6 mm.
3. *Mucronalia (?) bathymetrae* Dall, type.
4. *Niso lomana* Bartsch, type, length, 14.5 mm.
5. *Niso hipolitensis* Bartsch, type, length 3.1 mm.



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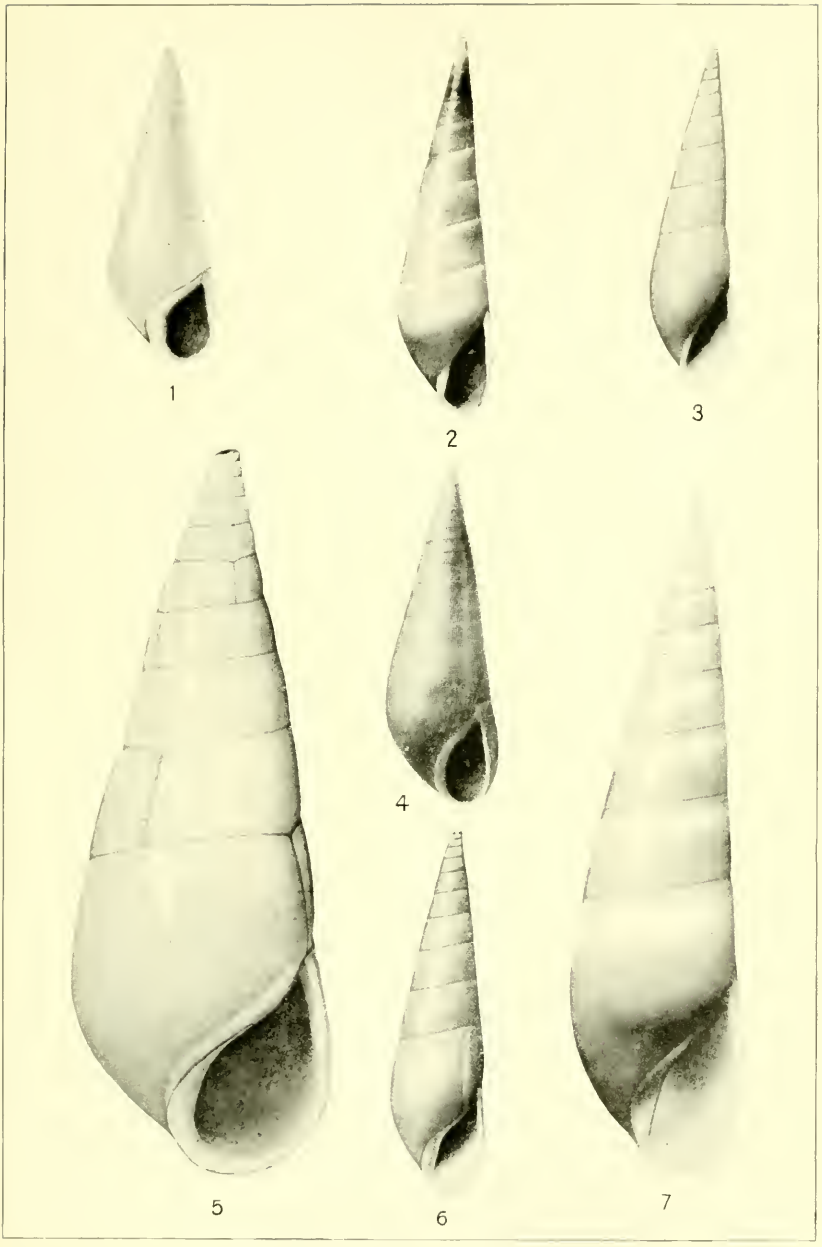

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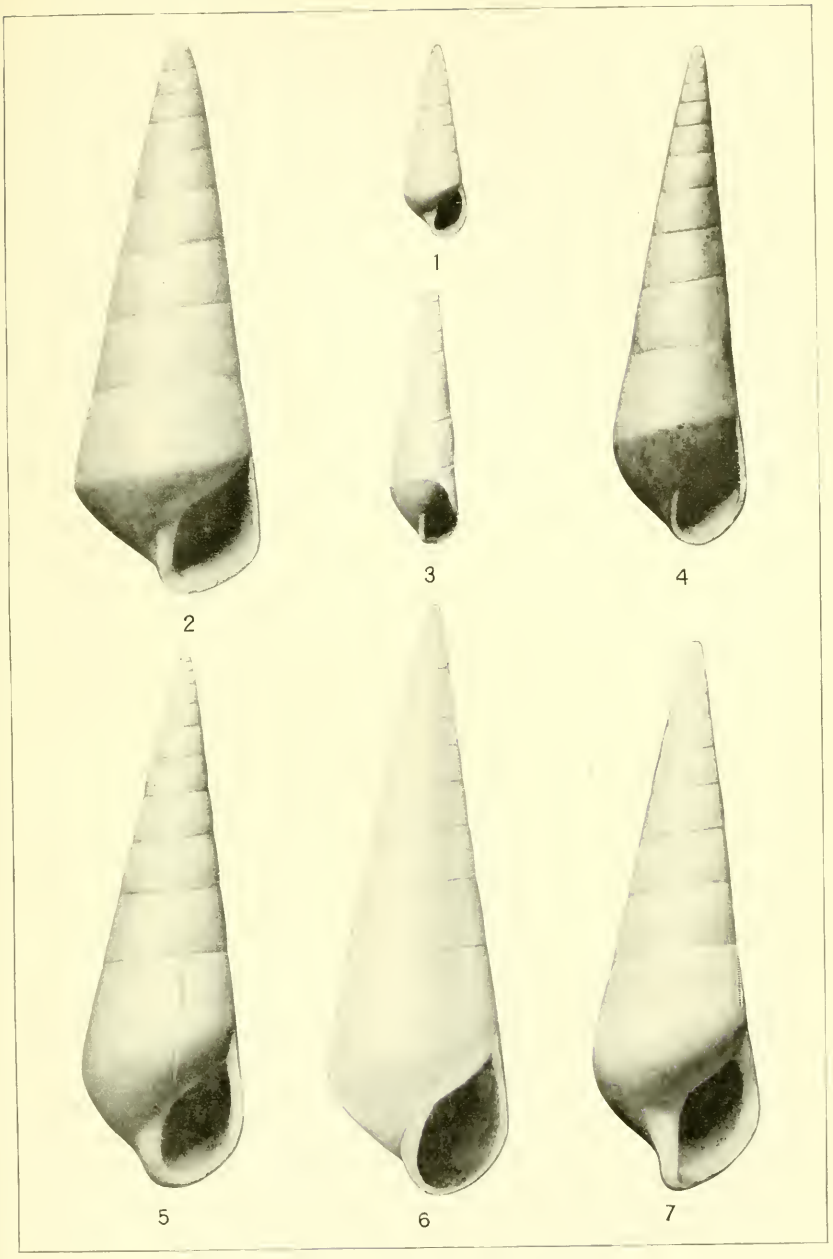

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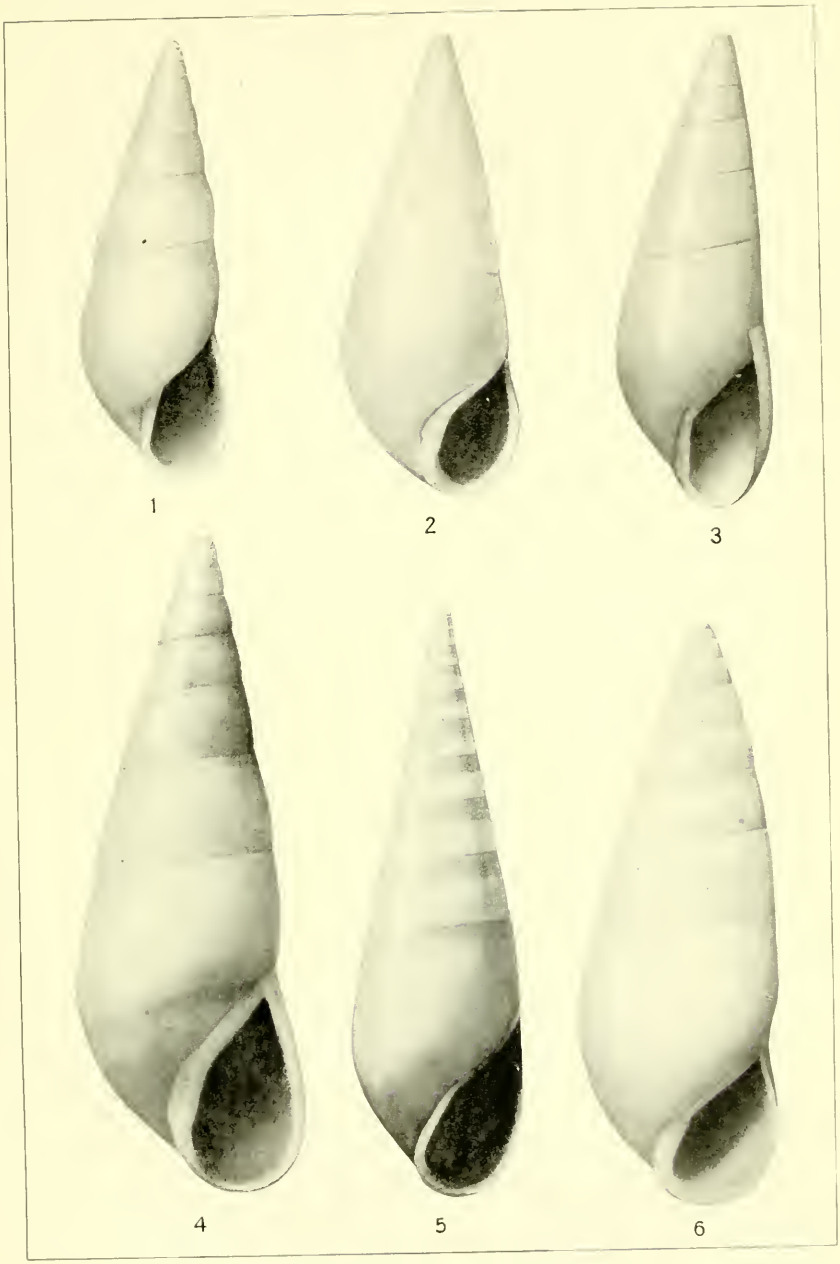

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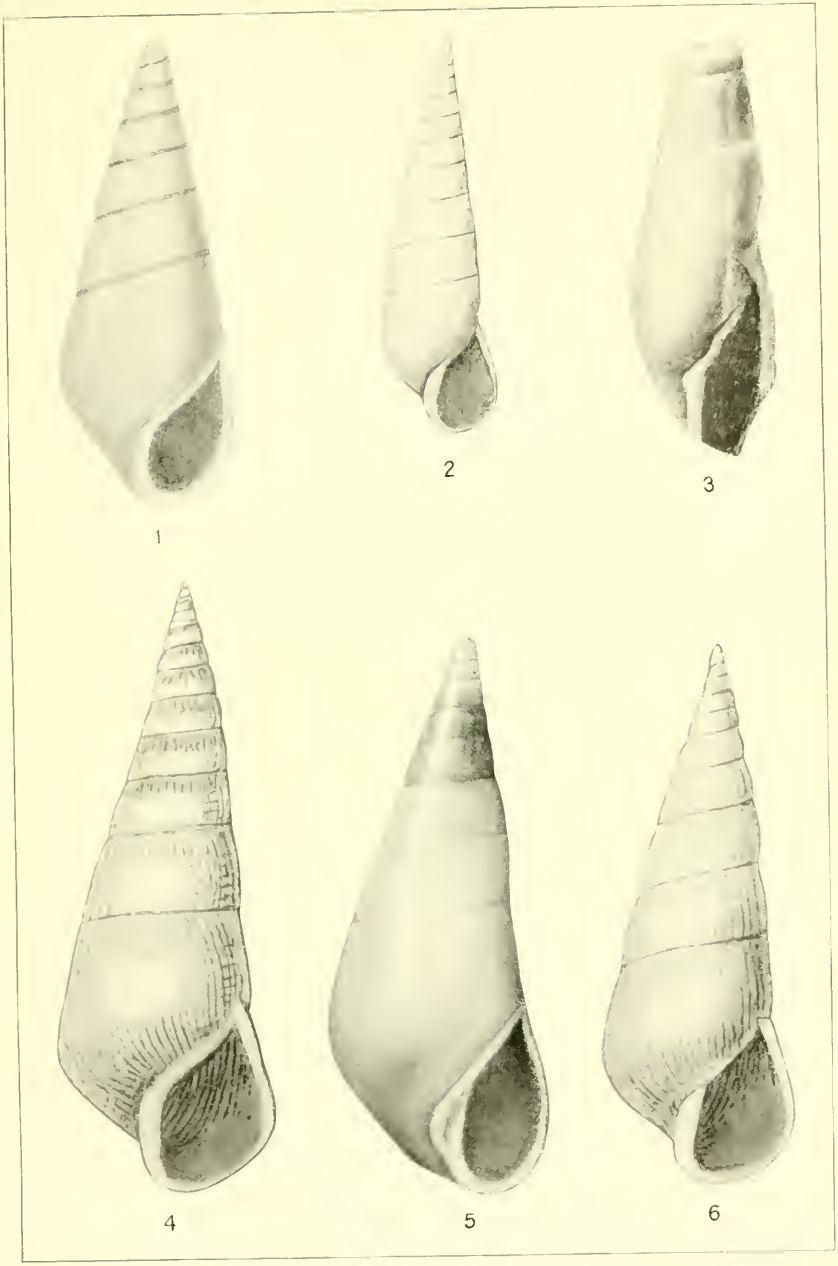

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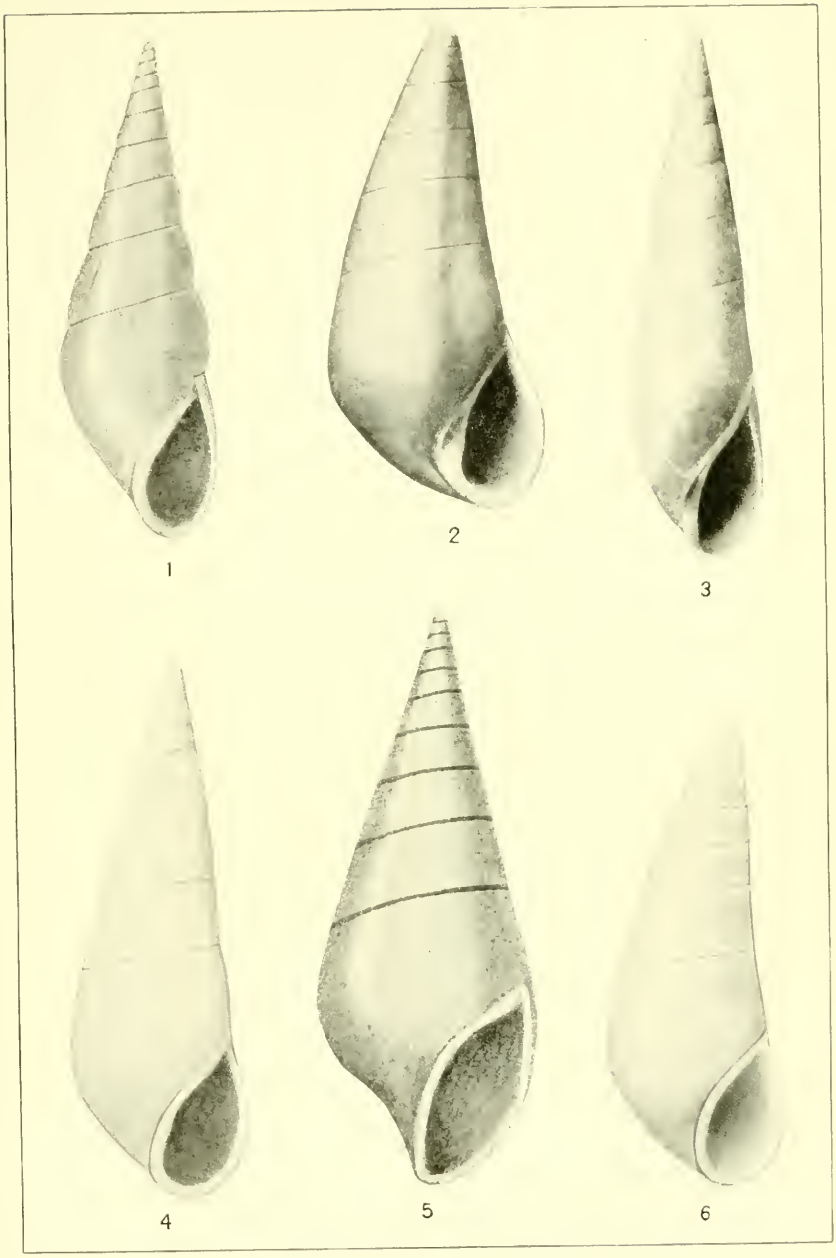

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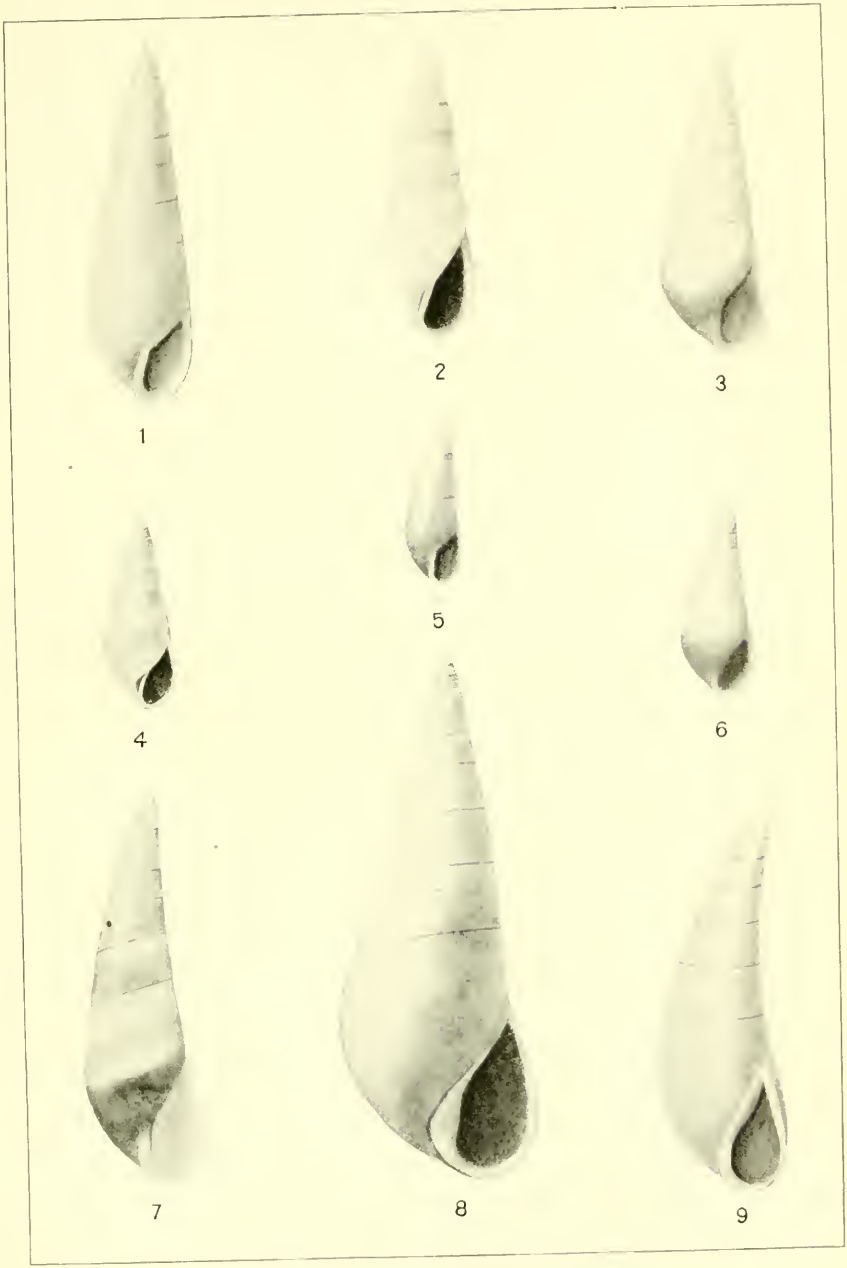

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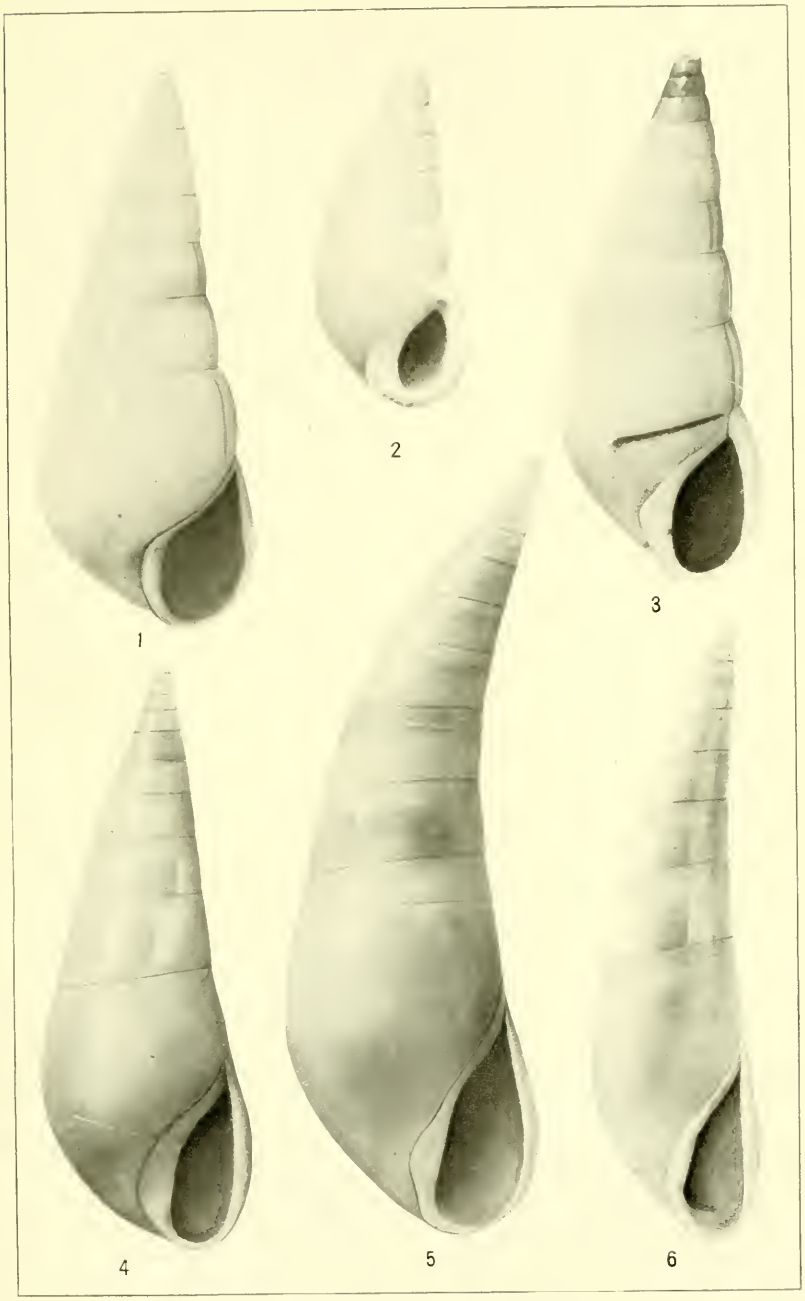

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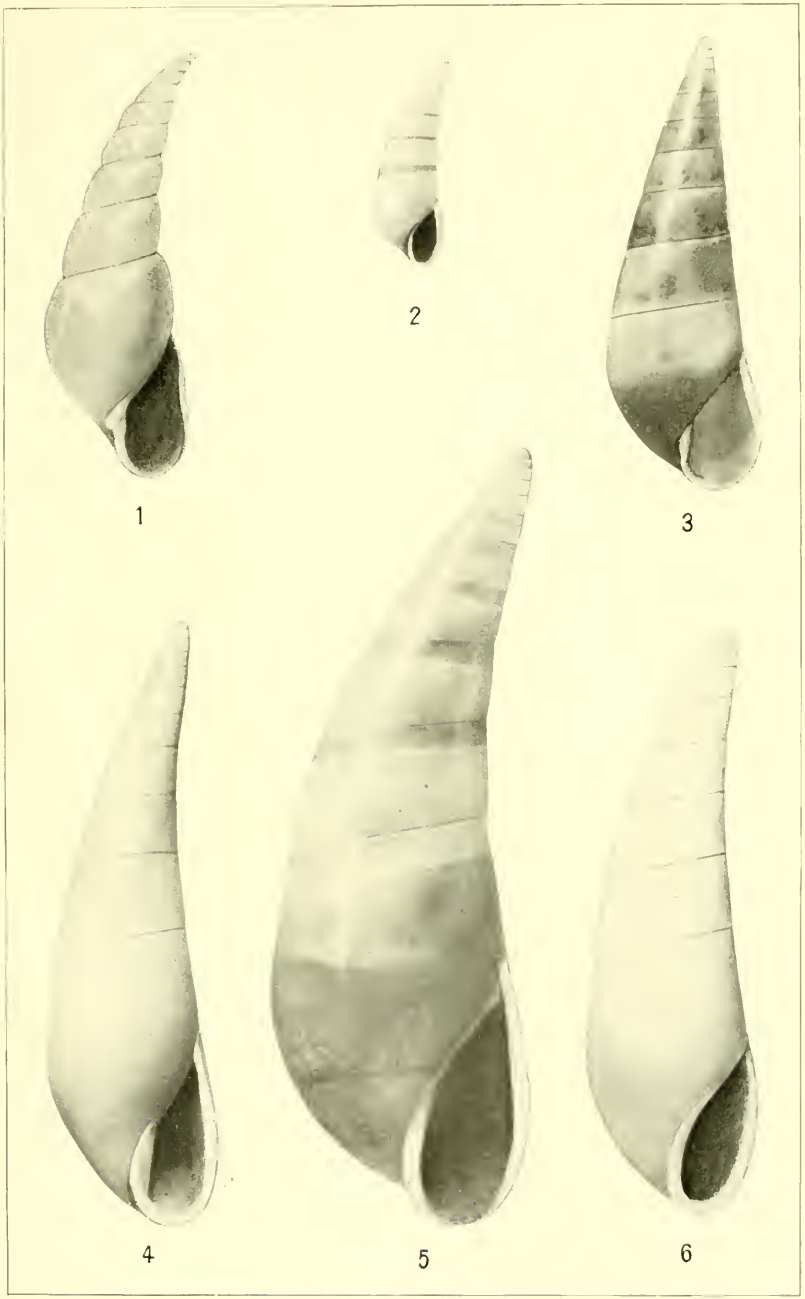

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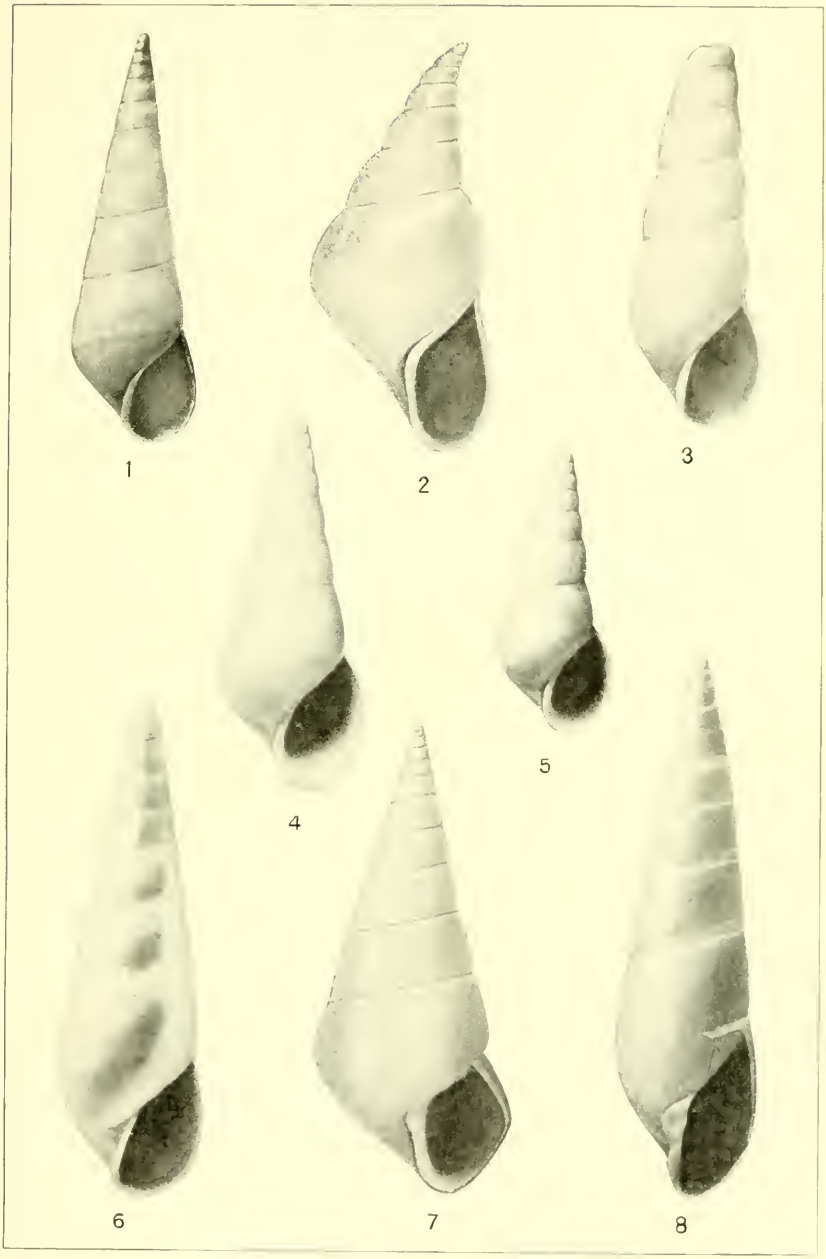

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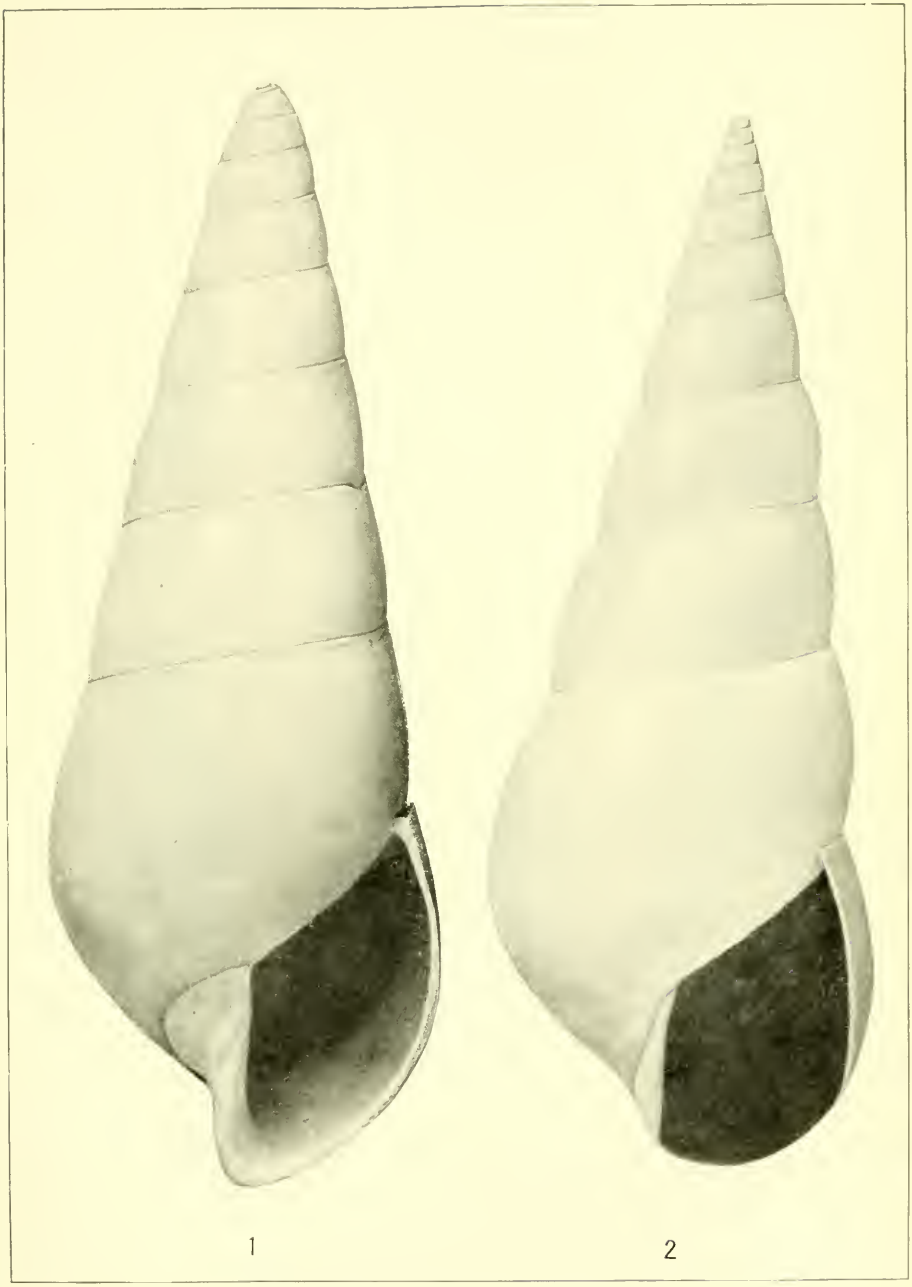

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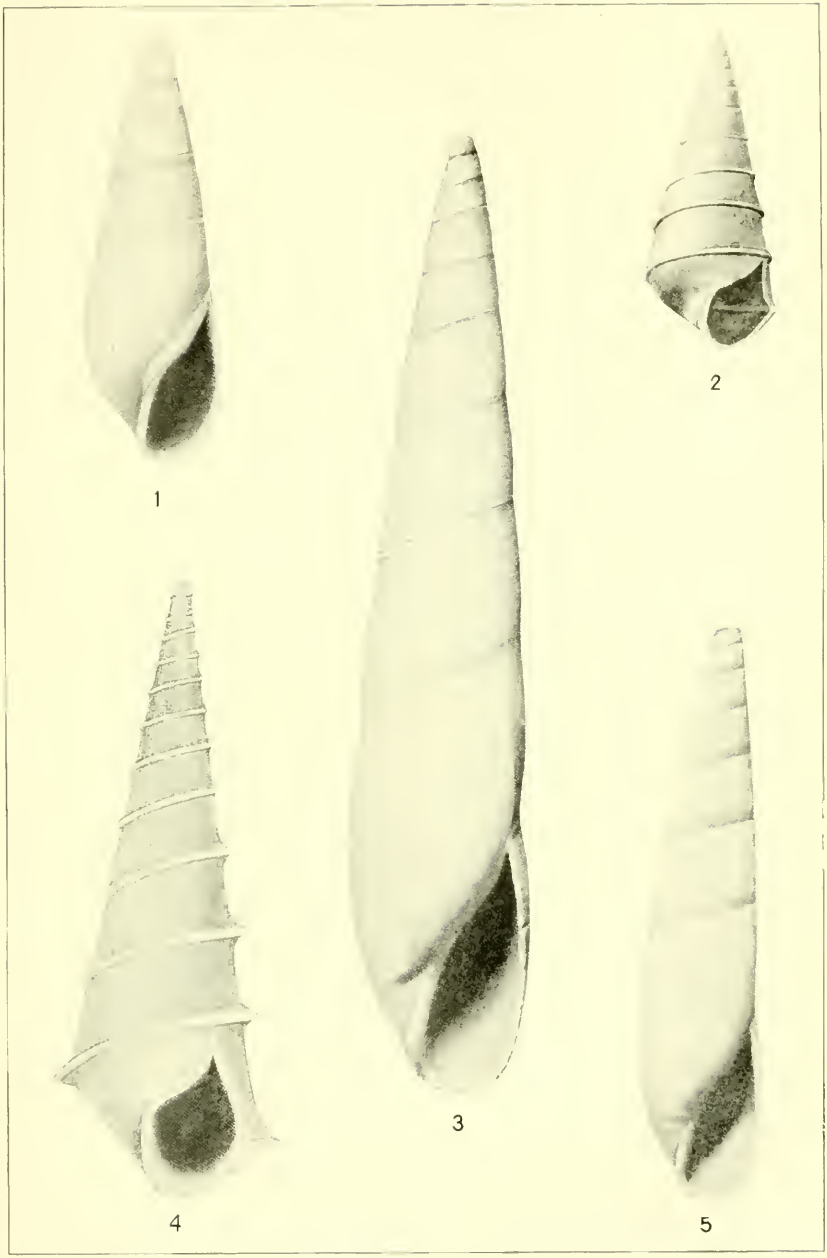

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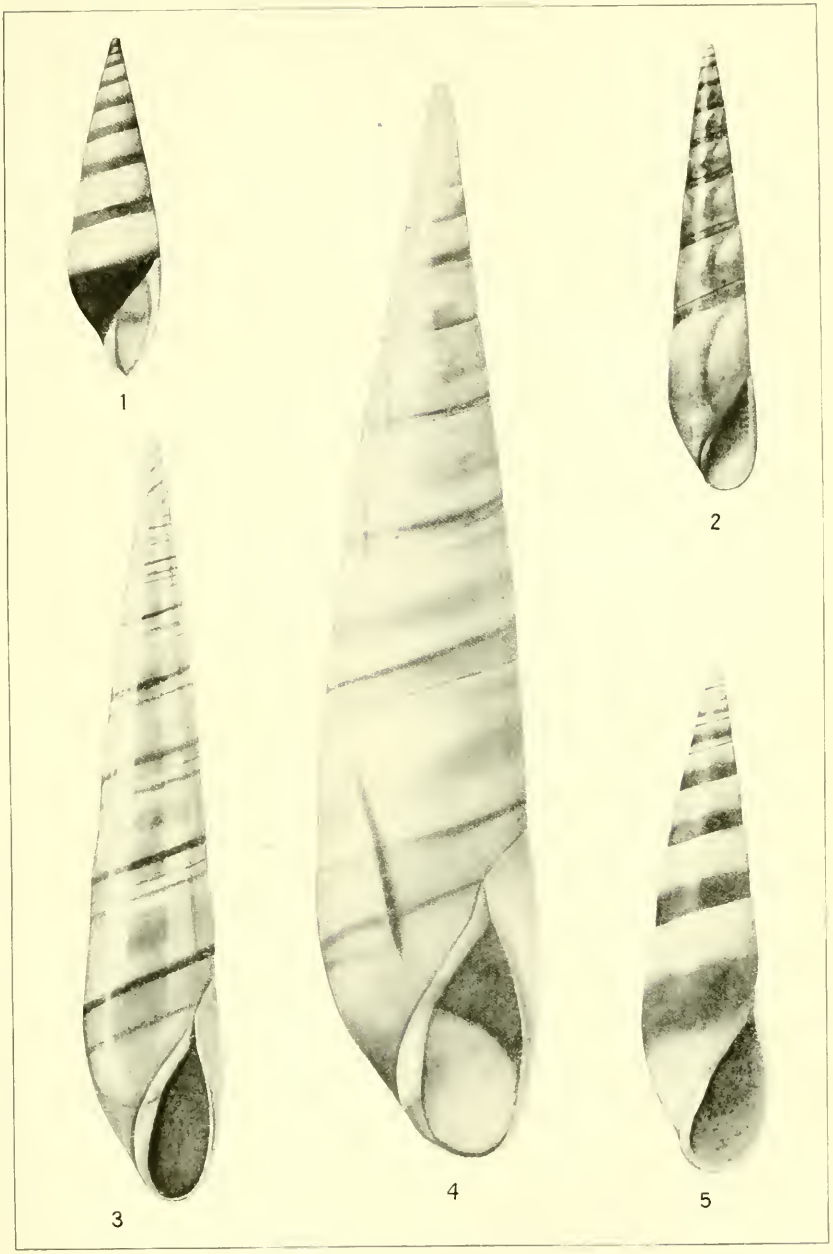

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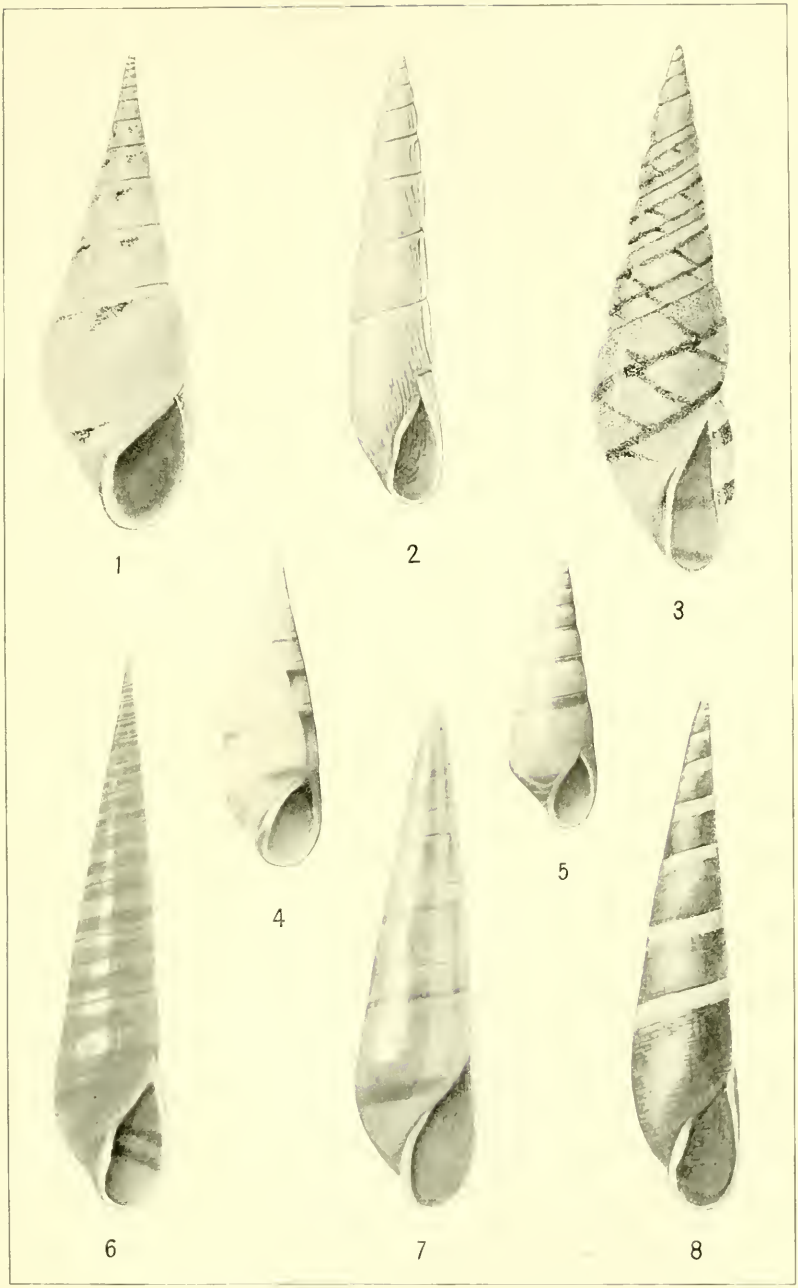

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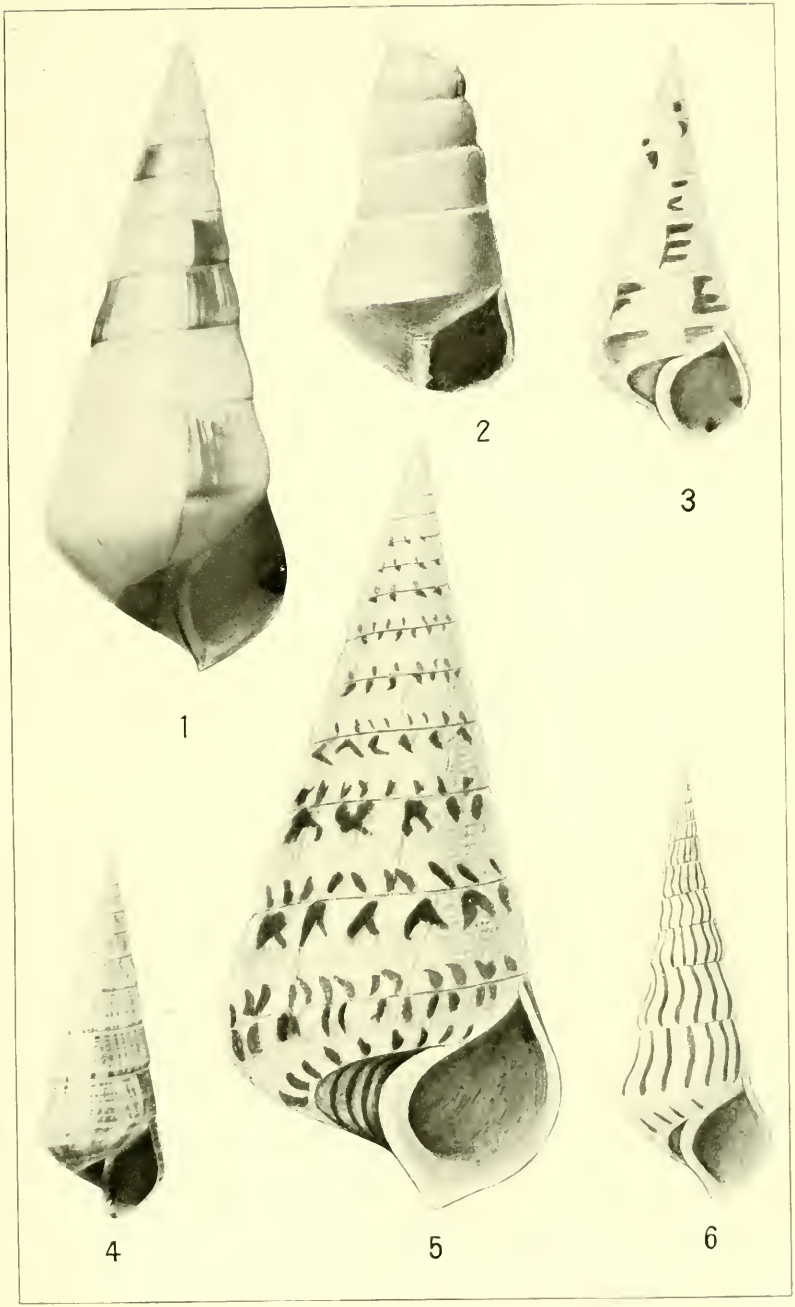

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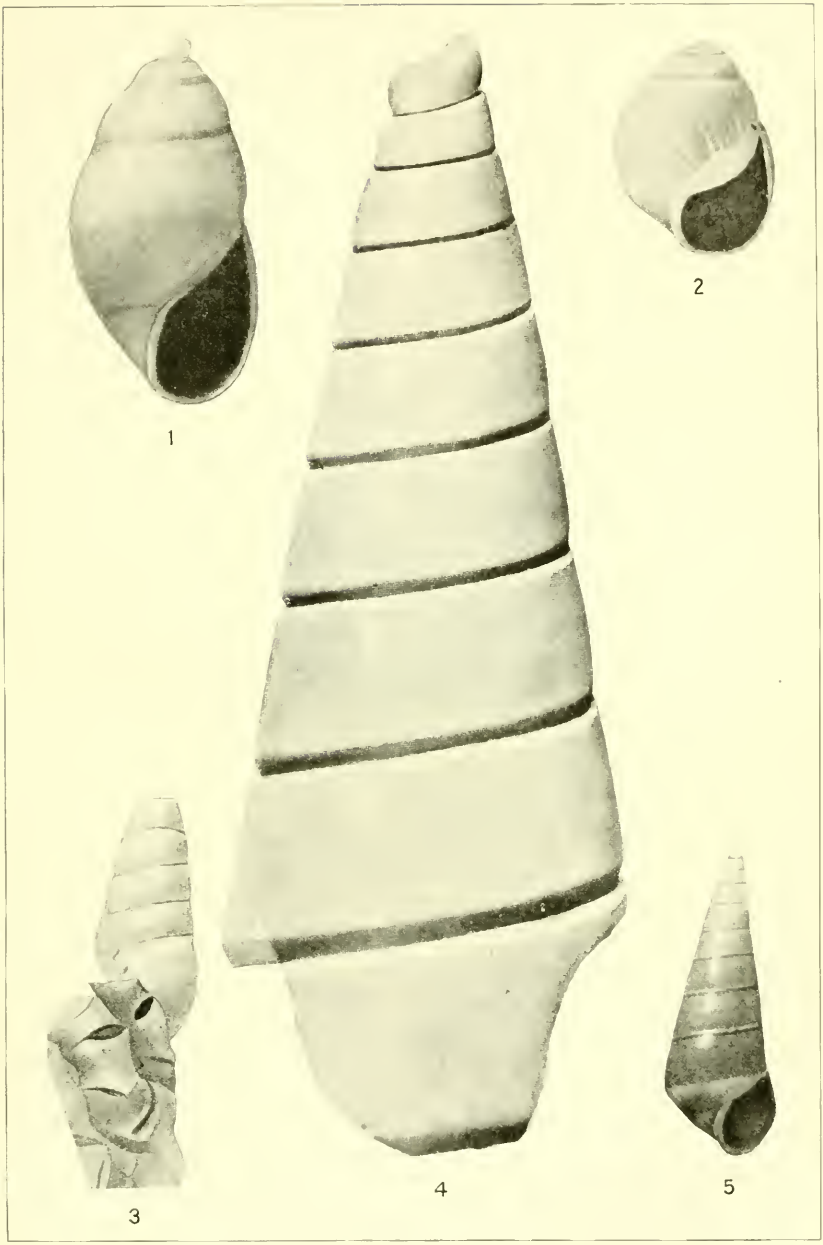

WEST AMERICAN MELANELLID MOLLUSKS.

FOR EXPLANATION OF PLATE SEE PAGE 356.