West American Mollusk Types at the British Museum (Natural History) IV. Carpenter's Mazatlan Collection

BY

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(Plates 55 to 59; 171 Text figures)

It is now more than a century since the publication of Philip Carpenter's "Catalogue of the Mazatlan[1] shells in the British Museum collected by Frederick Reigen." This was a pioneering work, for Carpenter was in the forefront of those who saw potential benefits from the study of geographic distribution. He realized that here, for the first time, was a reasonably complete collection from a single locality (or at least a limited area), and he did his best to examine it in detail. He enumerated nearly 700 species of mollusks from this West Mexican station and described some 255 kinds as new. Unfortunately, the catalogue was published without illustrations, and the 60 plates of camera lucida drawings of the smaller forms that he did prepare remained (with minor exceptions) in manuscript until recently, when the Paleontological Research Institution undertook their reproduction (Brann, 1966). These plates did not include figures of the larger shells, of which there were nearly a hundred species. Brann cites published photographs of 6 of these types, and a few others were figured during the 1860's by the iconographers Reeve and Sowerby.

Carpenter's catalogue was the second of his 3 major publications that have been fundamental to all later studies of West American mollusks. However, a century had to elapse before a systematic survey of the actual type specimens that he worked with was initiated. To Dr. Katherine Palmer we owe a lasting debt for having persevered in the task of hunting out those types that had been deposited at institutions other than the British Museum. All of us had assumed that she would monograph in similar fashion the British Museum material. Therefore, when I went to England for study in 1964, I had no intention of intruding upon her domain of research. The drawings and photographs of Carpenter material that I then made were meant to be for my own use. However, now that Dr. Palmer (*in* Brann, 1966, p. 3) has indicated that with a trilogy of publications completed she plans no further research on the subject, I realize that my work may supplement the available printed material and can supply, at long last, figures of virtually all of the non-microscopic types. It can also provide some data on sizes of the specimens and an attempt to interpret the species in terms of our modern classification.

One point that I made in a foreword to Brann's paper perhaps should be repeated here, that although Carpenter referred throughout his published catalogue to the "Liverpool Collection," the material was not at any time under the care of the Liverpool Museum. Rather, Liverpool was the docking area to which the major part of Reigen's collection was shipped for sale. Reigen sent another smaller fraction to Le Havre, France. Sylvanus Hanley purchased a part of the latter stock, and some of these specimens later found their way to the British Museum. The part of the "Liverpool Collection" that Carpenter bought was worked over by him, then split into duplicate series, of which the first and best was offered to the British Museum (Natural History) under certain conditions – that the collection remain intact, that it be made available to qualified students, and that it remain as he had arranged and mounted it on glass slides numbered to correspond with the entries in his printed "Catalogue," a copy of which went with the collection. These conditions were accepted, and the collection has remained as a unit.

[1] Technically, the Mexican place-name Mazatlán should be written – as pronounced – with the final syllable accented. However, to be consistent with Carpenter's usage, I have omitted the accent mark throughout this paper. The word "mazatlán," an Amerind term, means "place above the cornfields."

Some of my initially incomplete observations were supplemented during two later brief trips to the British Museum, but there still remain some unanswered questions for future research. The reader, to make full use of the present report, should have at hand the work by Brann, and a copy of Carpenter's "Catalogue," now made available through a reprint edition by the Paleontological Research Institution. Carpenter's drawings having included details of sculpture, it would be duplication of effort if I did the same; I have therefore reduced mine to little more than simple outlines that show the shape of the shells under standard orientation (Carpenter often tilted specimens to bring out apertural features or hide defects). It is gratifying to find how closely, in general, our two sets of camera lucida sketches agree. There has been a tendency to distrust Carpenter's figures because some of the few that were published looked so amateurish. They prove, however, not grossly inaccurate, though perhaps a little distorted, and this gives us more confidence in his drawing of type specimens now lost or deteriorated.

Several problems emerge as one examines the material and the literature about it. First, the date of publication of the "Catalogue." Many workers, including my younger self, interpreted the date at the end of each printed signature as the date of publication of a separate part. Iredale (Proc. Malac. Soc. London, vol. 12, p. 36, 1916) argued that the date of the entire work must be post-June 1857 for the official edition and later for the Warrington edition issued by Carpenter. In 1961, when I was publishing a paper in the British Museum (N.H.) Bulletin series, I was reluctantly obliged to accept Iredale's conclusion, for the editor could find no evidence in the British Museum archives of any publication of the work as parts and I could produce no contemporary testimony on the point. Only recently did I notice a statement by Carpenter that should have settled the question long ago. In the bibliographic list introducing a reprint of his papers, Carpenter (1872, p. xi) cited the "Catalogue of the Reigen Collection, the first edition with preface arranged by Dr. J. E. Gray . . " and the "Second edition, with author's preface, accompanying duplicate collections of the shells, published simultaneously." Thus, the publication date for both editions must be accepted as not earlier than June, 1857.

A second problem has to do with the area covered by the collection. Did all of it come from the immediate vicinity of Mazatlan? Mr. A. M. Strong (Bull. Southern Calif. Acad. Sci., vol. 48, prt. 2, p. 73, 1949) has noticed (and my own observations are in harmony with his) that the microscopic shells seem to match up with those now taken on the west side of the Gulf of California, notably in the La Paz area. However, Major Rich, who met Reigen in Mazatlan, had evidence that Reigen did much local collecting, for he recorded that Reigen had so filled his house with decomposing mollusks that the neighbors appealed to the police (Carpenter, 1864, p. 540). The part of the collection that is now in the British Museum looks to be mainly live-taken, certainly not beach-worn. Carpenter indicated that the microscopic forms were in crevices in large *Spondylus* and *Chama*. He lamented how few of these there were, for before he got to Liverpool, most of the large shells had been sold to an innkeeper who wanted them for decoration; it was a bitter disappointment to Carpenter to learn that the washings from these were discarded, thus destroying the chance for the study of the countless small attached and nestling specimens. Whether the large shells had all been gathered at Mazatlan or whether they had been brought there from elsewhere in the Gulf is a problem for further research. Lime for mortar used in building was gotten from shells – Carpenter commented on this (1857b, p. 153). We therefore need to know something more about the distribution, past and present, of large *Spondylus* and *Chama* and the amount of commercial exploitation.

Precise measurements of the types turned out to be more of a problem than I had anticipated when I set out to photograph each larger specimen with a millimeter scale in the picture and to calibrate each microscope-lens combination by reading the resulting magnification of a millimeter scale. In his preface Carpenter stated that all his measurements were in inches and decimal parts. Later (1865a, p. 133), he described the inch as 2.53 cm. We normally take it as 2.54 cm or 25.4 mm, but this is not a critical difference. As soon as one begins converting his decimal parts to millimeters one realizes that he was dealing with very small shells, and it is remarkable that he was able to read his scale as accurately as he did. However, when I checked my readings of dimensions against his I found some disharmonies. Fortunately, I had both photographed and drawn a number of the types, and this gave a basis for a comparative analysis that showed my camera lucida readings to be about 10% too high and his to be slightly low. Because my millimeter scale was thinner than the glass slides, I would have changed focus (and therefore image size) between taking the scale reading and making the drawing. If he used the same method for getting readings and if his scale was thicker (which is likely, as plastic was not then available), this would account for the average 15% discrepancy between his readings of size and mine. In any case the discrepancy is not of a magnitude to be of real consequence in making identifications, for it is within the range of expected variations in size of specimens. In a few cases

Carpenter seems to have misread his scale, however, or there is a typographical error in his text. I have called attention to these in my discussions of species.

A minor problem has to do with the correct citation of some of the specific names. Carpenter adopted the practice – later followed by Dall in Bulletin 112 of the U. S. National Museum – of citing subgeneric names as if they were generic, making adjectival specific names agree in gender with the subgeneric rather than the generic name. This has sometimes been a source of confusion in the citations by later authors, notably for the genera *Terebra, Turbonilla,* and *Odostomia.*

FORMAT

Carpenter's catalogue was arranged according to a system, but the sequence of family and ordinal groups was markedly different from modern usage. He ranked chitons, for example, as prosobranch gastropods. Once he had arrived at his classification, he numbered the species and also the mounts or tablets, and he saw no need for further indexing. Maintaining the original material according to his scheme is convenient and desirable in the museums where it is housed, and the Brann publication was obliged to follow the same pattern. For the present report it seems preferable to attempt a fresh start. I have rearranged the species into modern systematic order insofar as possible, with an alphabetical index for cross-referencing. Each entry is given a paragraph number (in bold face numerals). The name is cited exactly as Carpenter spelled it (even to disagreement of the adjectival endings), with page reference (unless otherwise noted) to the Mazatlan Catalogue. Following an equality sign is my interpretation of the correct modern assignment. Tablet numbers are as listed by Carpenter, with number of specimens and their present type status. The entry in square brackets is the size given by Carpenter (longest dimension, whether height or diameter), converted to millimeters. The Carpenter figures now available are cited as "Brann," without repeating the date. My commentary includes notes on present condition of the specimens, on morphology, on nomenclatural problems, and on figures by other authors.

It may seem that in the inventory of type specimens I have been rather too liberal in the use of the term "syntype." The natural assumption on the part of authors who figured or cited Carpenter's material has been that when a single specimen was on a Carpenter mount in the British Museum it would automatically be the holotype, and any other distributed material would be paratype. However, Carpenter did not select type specimens in the modern sense. He only said "the specimen" when he had but a single shell. Thus, we must consider his type lots, when there were two or more shells, syntypic. It is desirable that the British Museum specimens be designated as lectotypes if they are in a good state of preservation, and I have done this for many lots.

ACKNOWLEDGMENTS

A fellowship from the John Simon Guggenheim Foundation provided my travel expenses during 1964 and 1965, for which I am grateful. I wish also to thank the officials and staff of the British Museum (Natural History) for the privilege of use of the collections. Words of high praise are due to the curators whose care of the material during the last century has kept so much of the Carpenter collection in prime condition, this in spite of two world wars and numerous museum-cabinet transfers.

I am indebted for helpful advice and suggestions especially to Leo G. Hertlein, Ronald Ives, Allyn G. Smith, Judith Terry, and Spencer Thorpe; three photographs are from color slides made in 1962 by Elaine Reeves (now Mrs. François Padovani); my camera lucida sketches were turned into finished line drawings by Perfecto Mary, artist-technician at Stanford, who was of great assistance to me in the preparation of the plates. To all of these persons and to the many others who helped in less evident ways, my thanks.

PELECYPODA

Arcidae

1. *Byssoarca vespertilio,* p. 140
= *Barbatia lurida* (Sowerby, 1833)
(Plate 55, Figure 1)

Tablet 651, holotype. [33 mm].
No distinctive characters seem to justify this as a separate form.

2. *Arca bifrons,* p. 134
=*Anadara (Cunearca) bifrons* (Carpenter, 1857)
(Plate 55; Figures 18 a-c)

Tablet 631, fragments only. [43 mm].
Two syntypes from the Cuming Collection, now in the British Museum's Type Collection, are illustrated here; the larger may be the one figured by Olsson (1961, plt. 9, fig. 3 b) as "type"; it is here chosen as lectotype.

MYTILIDAE

3. *Mytilus multiformis,* p. 118
=*Brachidontes (Scolimytilus) multiformis* (CARPENTER, 1857)
(Plate 55, Figures 5 a-b)

Tablets 540 - 552, numerous syntypes. [11.5 mm]. BRANN: plt. 15, fig. 168 (also OLSSON, 1961, plt. 17, fig. 11, with selection as lectotype).

Carpenter listed 13 tablets of syntypes; specimens from 543 and 551 are figured here; no. 546 is attached to a specimen of the next species.

4. *Mytilus palliopunctatus,* p. 118 (as of DUNKER)
=*Choromytilus palliopunctatus* (CARPENTER, 1857)
(Plate 55, Figures 4 a-b)

Tablets 528 - 539 (539 here figured). [90 mm]. BRANN: plt. 15, fig. 167 (juveniles from tablet 528).

Although the specific name was credited to Dunker, he had not validated it; thus it is to be attributed to Carpenter.

5. *Modiola ?brasiliensis* var. *mutabilis,* p. 122
=*Mytella guyanensis* (LAMARCK, 1819)
(Plate 55, Figures 20 a-b)

Tablets 559 - 565 (tablet 559, 2 adolescent syntypes figured), 11 syntypes. [63 mm]. BRANN: plt. 15, fig. 171-b (juvenile from tablet 565).

If the West American form ever proves distinct from that of the Atlantic, Carpenter's specific name would be available for use.

6. *Lithophagus aristatus gracilior,* p. 129
=*Lithophaga aristata* (DILLWYN, 1817)
(Plate 55, Figure 9)

Tablet 601, 7 valves, syntypes [29 mm]. BRANN: plt. 16, fig. 176.

None of the valves is now complete. However, they collectively show that the form falls within the range of variation of the species. Carpenter's enlarged drawing exaggerates the dorsal angle.

7. *Lithophagus aristatus tumidior,* p. 129
=*Lithophaga aristata* (DILLWYN, 1817)
(Plate 55, Figures 8 a-b)

Tablets 602 - 603, 7 syntypes. [39 mm]. BRANN: plt. 16, fig. 176 (juvenile, enlarged, from tablet 602).

Tablet 603 has one large specimen (here figured), very tumid, the incrustation wide as well as long; two smaller specimens are of the more usual form of *L. aristata.*

8. *Lithophagus calyculatus,* p. 124
=*Lithophaga (Stumpiella) calyculata* (CARPENTER, 1857)
(Plate 55, Figures 16 a-b)

Tablet 571, holotype. [9.2 mm]. BRANN: plt. 16, fig. 174.

SOOT-RYEN (1955, p. 93; plt. 10, figs. 61 - 63) seems to have identified this form correctly.

9. *Lithophagus (Leiosolenus) spatiosus,* p. 130
=*Lithophaga (Leiosolenus) spatiosa* (CARPENTER, 1857)
(Plate 55, Figures 7 a-b)

Tablet "605" [606*], syntype. [38 mm].

Carpenter (p. 131) cites tablet 605 as having a young shell and a fragment; on p. 550 he states that tablet 605 contains the original specimen presented by R. Derbyshire. A specimen with the stated dimensions is in the collection, the number on the tablet being "606*."

SOOT-RYEN (1955, plt. 10, fig. 59) has figured similar material. Carpenter's shell appears more slender because it has curled in drying and the ventral margin has bent inward.

10. *Crenella coarctata,* p. 123 (*ex* DUNKER MS)
=*Gregariella coarctata* (CARPENTER, 1857)
(Text figure 1)

Tablets 566 - 567, originally 6 syntypes. [4.5 mm]. BRANN: plt. 15, fig. 172.

Carpenter credits the name to Dunker, who had not validated it. On tablet 566 are 3 juvenile pairs about 2 mm long. One loose semi-adult 4 mm long may be from tablet 567. The other specimens are missing, represented only by glue smears on the mount. The small shell resembles *G. chenui* as to outline, with 15 radial ribs.

ISOGNOMONTIDAE

11. *Isognomon janus,* p. 151
=*Isognomon janus* CARPENTER, 1857
(Plate 55, Figure 10)

Tablets 689 - 690, 4 syntypes. [28 mm, central area only]. BRANN: plt. 17, fig. 206 (juvenile, tablet 689).

As the legend on tablet 690 states, "*Isognomon janus* on *I. chemnitzianum*" and there is but a single specimen on the mount, I assumed that the *I. janus* syntype was lost, but I photographed the tablet anyway. Later study of the picture showed that not only does the specimen have the dimensions cited by Carpenter but it has only 5 ligamental sockets, whereas *I. chemnitzianum* has 6 to 12. Therefore the shell in my figure evidently is one that had been on *I. chemnitzianum* before mounting and is a syntype of Carpenter's species.

OSTREIDAE

12. *Ostrea conchaphila,* p. 161
=*Ostrea conchaphila* CARPENTER, 1857

Tablets 715 - 734, numerous syntypes. [26 mm]. Tablet 728 here selected as lectotype.

The lectotype was figured by HERTLEIN & STRONG, (1955, plt. 3, figs. 29 - 30) as "holotype." Part of the syntype lot was figured by SOWERBY *in* REEVE, 1871 (Conch. Icon., vol. 18, plt. 28, sp. 69).

13. *Ostrea palmula,* p. 163
=*Ostrea palmula* CARPENTER, 1857
(Plate 55, Figure 6)

Tablets 735 - 737; largest syntype, no. 737, here selected as lectotype [58 mm].

The lectotype here selected was figured by HERTLEIN & STRONG, 1946 (Zoologica, vol. 31, p. 76; plt. 1, fig. 14) as "holotype."

SPONDYLIDAE

14. *Spondylus calcifer,* p. 152
=*Spondylus calcifer* CARPENTER, 1857

Tablets 692 - 699 (692, juvenile, with query). [About 180 mm].

Authors have identified this species correctly. None of the syntype specimens is in good enough condition to photograph, for they consist mostly of broken and cut fragments, what was left after Carpenter had extracted the borers and nestlers from the surface layers.

15. *Plicatula penicillata,* p. 155
=*Plicatula penicillata* CARPENTER, 1857
(Plate 55, Figures 2 a-b)

Tablet 701, two syntypes. [28 mm].

The smaller syntype shows brown pencilling on the outer layer; the larger is white, triangular, fine-ribbed, attached to a specimen of *Crepidula aculeata.* The form was figured by SOWERBY *in* REEVE (1873, Conch. Icon., vol. 19, plt. 1, fig. 3).

ANOMIIDAE

16. *Placunanomia pernoides,* p. 164
=*Pododesmus (Tedinia) pernoides* (GRAY, 1853)
(Plate 55, Figures 14 a-c)

Tablets 745 - 748, two syntypes, complete, two odd valves, one broken, all on one mount, of which the largest, no. 748, may be taken as lectotype. [46 mm].

If, as seems possible, this form proves distinct from Gray's, a new name will be needed, for Carpenter's species, named as new, seems to be conspecific with Gray's. The difference in outline between Mexican and Californian material may be only a matter of difference in habitat, for the Californian specimens, favoring pholad holes, are distorted by the cramped quarters, whereas Mazatlan specimens, not having borers as associates, have had to attach in more open sites.

17. *Placunanomia claviculata,* p. 166
=*Anomia peruviana* ORBIGNY, 1846
(Plate 55, Figures 15 a-b)

Tablet 750, syntype, both valves. [37 mm]. BRANN: plt. 17, fig. 218.

This seems to be a thin white form of *Anomia peruviana* grown on a smooth surface that had been encrusted with a few small serpulid worm tubes. As the anomiid grew out over the tubes a strong trace was left on the shell, and the supposed "clavicle" of the lower valve seems to me to be only a reflection of such a tube. Carpenter's dimensions must have been taken from the odd valve he mentions, for they are a third larger and are wider for the length than the mounted pair.

ASTARTIDAE

18. *Gouldia varians,* p. 83
=*Crassinella varians* (CARPENTER, 1857)
(Text figure 2)

Tablets 415 - 419, 22 syntypes (none now on 418). [2.2 mm]. BRANN: plt. 9, fig. 117.

Shells small, triangular, nearly smooth, with a brown stripe or spot posteriorly.

CARDITIDAE (?)

19. *Cardium lucinoides,* p. 96
?=*Cardita* sp.
Text figure 3)

Tablet 463, holotype. [1.0 mm]. BRANN: plt. 11, fig. 135 ["136" on plate].

The minute shell, a right valve, is probably too young for positive determination. There are 12 ribs with beaded sculpture and a tinge of brown color toward their ends; the hinge is not well preserved, so that details as to dentition are unclear, but it does not seem to be a cardiid.

CORBICULIDAE

20. *Cyrena olivacea,* p. 114
=*Polymesoda (Egeta) olivacea* (CARPENTER, 1857)
(Plate 55, Figures 12 a-c)

Tablets 505 - 511, 17 syntypes (2 here figured from tablet 509). [60 mm].

There is some variation in outline among the syntypes as well as in size.

PISIDIIDAE (SPHAERIIDAE of authors)

21. *Cycladella papyracea* CARPENTER, 1865 b, p. 270
=*Sphaerium* sp., cf. *S. trigonare* (SAY, 1829)
(Plate 55, Figures 3 a-b)

Tablet 119 (fragments, as cited by CARPENTER, 1865; now nearly disintegrated).

The type locality is Mazatlan, but the genus and species was not described in the Mazatlan Catalogue. Carpenter tentatively assigned the genus *Cycladella* to KELLIIDAE. The holotype had been among the Reigen material purchased by S. Hanley, and it came to the British Museum from H. Harvey, Esq.; it is registered as no. 1907.12.30. 117. I am indebted to Mr. Peter Dance, then of the British Museum staff, for the reallocation of the form as non-marine; he ably demonstrated that hinge and sculpture match those of specimens of *Sphaerium* from Mexico, and Dr. Dwight Taylor suggested that Say's species is the most likely candidate for comparison. The generic name *Cycladella* therefore may be removed from marine lists, for it falls as a synonym of *Sphaerium* SCOPOLI, 1777. The specific name is not apt to prove useful either.

BERNARDINIDAE

22. *Circe margarita,* p. 81
=*Bernardina margarita* (CARPENTER, 1857)
(Text figure 4)

Tablet 412, one odd valve and 3 entire syntypes (the largest here selected as lectotype). [1.8 mm]. BRANN: plt. 9, fig. 114.

Microscope examination of the type lot in 1964 corrects my hand-lens assignment to *Lasaea* (KEEN, 1958, p. 622). The hinge is close to that of *Bernardina bakeri* DALL, 1910, type of the genus, from southern California. This extends the range of the genus into the Panamic province, and material in the Stanford University collection taken by diving at the Tres Marias Islands and Banderas Bay in 1965 extend it further. The form proves to be ovoviviparous, the shell small, concentrically ridged, white to cinnamon brown variously tinged and rayed with pink, especially near the beak.

23. *Circe subtrigona* p. 82
=*Halodakra subtrigona* (CARPENTER, 1857)

Tablet 413, 4 syntypes. [2.8 mm]. BRANN: plt. 9, fig. 115.

HAAS (1945, Fieldiana, Zoology, vol. 31, no. 2, pp. 4 to 5), discussing a "paratype" at Chicago Museum pointed out that on account of the sunken ligament this form is neither a venerid nor petricolid as had been

Explanation of Text figures 1 to 22

Note: Stated lengths are camera lucida readings and may be as much as 1/10 too high.

Figure 1: *Crenella coarctata.* Syntype, interior left valve. Length, 4 mm (x 7).

Figure 2: *Gouldia varians.* Syntypes, a) exterior; b) interior. Height, 2.7 mm (x 8).

Figure 3: *Cardium lucinoides.* Holotype, interior of right valve. Length, 1.4 mm (x 13).

Figure 4: *Circe margarita.* Lectotype. a) interior, left valve; b) interior, right valve; c) enlarged sketch. Length, 1.5 mm (x 15).

Figure 5: *Lucina mazatlanica.* Syntypes. a) interior, left valve (x 9); b) interior, right valve (x 8); c) exterior, right valve (x 5). Length, 2 mm to 4 mm.

Figure 6: *Lepton dionaeum.* Holotype, interior of left valve. Length, 1.8 mm (x 12).

Figure 7: *Lepton umbonatum.* Syntypes, a) sketch of recrystallized adult left valve (x 9); b) and c), interior of juvenile shell (x 8). Length of adult, 2.6 mm; of small pair, 1.8 mm.

Figure 8: *Montacuta chalcedonica.* Holotype. a) enlarged sketch of hinge, right valve; b) interior, right valve (x 17); c) exterior (x 21). Length, 1.0 mm.

Figure 9: *Montacuta elliptica.* Syntype, right valve interior. Length, 4.0 mm (x 6).

Figure 10: *Montacuta obtusa.* Holotype. a) right valve; b) left valve. Length, 1.7 mm (x 1.3).

Figure 11: *Montacuta subquadrata.* Syntype. Left valve. Length, 3.8 mm (x 6).

Figure 12: *Pythina sublaevis.* Syntype. Left valve. a) exterior (x 9); b) interior (x 12). Length, 2.2 mm.

Figure 13: *Cardium alabastrum.* Holotype, exterior, left valve. Length, 3.0 mm (x 7).

Figure 14: *Cardium rotundatum.* Holotype, interior, right valve. Length, 1.8 mm (x 13).

Figure 15: *Tapes squamosa.* Lectotype, exterior, left valve. Length, 2.8 mm (x 9).

Figure 16: *Rupellaria exarata.* Syntype, interior, right valve. Length, 5 mm (x 5).

Figure 17: *Rupellaria linguafelis.* Syntype. a) hinge, right valve; b) interior, left valve. Length, 3.1 mm (x 8); c) exterior, right valve. Length, 4 mm (x 6).

Figure 18: *Naranio scobina.* a) Holotype, left valve. Length, 3.5 mm (x 5); b) hypotype, right valve. Length, 4 mm (x 6); c) enlarged hinges.

Figure 19: *Tellina donacilla.* Holotype, right valve. Length 4 mm (x 7).

Figure 20: *Tellina lamellata.* Syntype. a) exterior. Length, 3.5 mm (x 6); b) enlarged sketch of hinge.

Figure 21: *Tellina regularis.* Holotype, right valve. Length 4 mm (x 7).

Figure 22: *Sphaenia fragilis.* Three syntypes, left valves, showing resilifer. Length of largest, 8 mm (x 3.5).


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2b
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4c
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20b
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22a
22b
22c

thought, and he suggested semelid affinities. Olsson (1961, p. 319; plt. 27, figs. 1 - 1c) proposed a generic name for it, *Halodakra,* but he was uncertain as to family placement. Although superficially *Bernardina* and *Halodakra* are not strikingly similar, they do have enough in common so that I have allocated them to the family Bernardinidae (Keen, 1963, p. 91).

The species ranges from Baja California to Peru and is readily recognizable by its chevron-shaped color markings, well shown in Olsson's figures; both Carpenter and Olsson have good figures of the hinge.

Lucinidae

24. *Lucina excavata,* p. 98
=*Lucina (Here) excavata* Carpenter, 1857
(Plate 56, Figure 23)

Tablet 468, originally 2 syntypes. [10.4 mm]. Brann: plt. 12, fig. 140.

Only a single valve remains. It is worn but recognizable and has been correctly identified by modern workers.

25. *Lucina prolongata,* p. 100
=*Lucina (Cavilinga) prolongata* Carpenter, 1857
(Plate 56, Figures 22 a-d)

Tablet 474, 7 syntypes. [4 mm]. Brann: plt. 12, fig. 145.

The species seems to have been correctly identified by modern workers. Carpenter's drawing also has been reproduced by Olsson (1961, plt. 31, fig. 10).

26. *Lucina mazatlanica,* p. 99
=*Lucina (Parvilucina) mazatlanica* Carpenter, 1857
(Plate 56, Figures 29 a-b; Text figures 5 a-c)

Tablet 472, originally 15 syntypes (now 6 pairs, 2 odd valves). [4 mm]. Brann: plt. 12, fig. 144.

The shell is thin, with a lunule longer in most syntypes than is shown in the figure in my book (Keen, 1958, fig. 193), but the form seems to have been correctly identified. Olsson (1961, plt. 31, fig. 3) reproduced Carpenter's drawing.

27. *Lucina pectinata,* p. 98 (*non* C. B. Adams, 1847)
=*Ctena mexicana* (Dall, 1901)
(Plate 56, Figure 21)

Tablet 470, holotype. [12.5 mm].

The single valve is somewhat chipped but in recognizable state.

Diplodontidae

28. *Diplodonta ?semiaspera,* var. *discrepans,* p. 103
=*Diplodonta discrepans* Carpenter, 1857
(Plate 56, Figures 30 a-d)

Tablet 481, holotype. [7.9 mm]. Brann: plt. 12, fig. 150b.

The single specimen is young but not juvenile. Carpenter's drawing was reproduced by Olsson (1961, plt. 32, fig. 7a), who considers the species distinct and extends the range south to Colombia. Carpenter was hesitant about describing this form on account of the variability he noted in a cluster of diplodontas found within a single cavity, a mixture of what might otherwise be assigned to several distinct species. The largest specimen on tablet 479, his typical "*D. semiaspera,*" is punctate and shows the wide hinge and sunken ligament of what has recently been separated out as a new genus and species, *Pegmapex phoebe* Berry, 1960 (figured by Brann on plt. 12, fig. 150 and by Olsson from Carpenter's manuscript drawings on plt. 32, fig. 3d).

Leptonacea

29. *Lepton clementinum,* p. 110
=*?Mysella clementina* (Carpenter, 1857)

Tablet 498, holotype. [0.9 mm]. Brann: plt. 14, fig. 157.

The holotype is now missing from the tablet, one of the few that is irrevocably lost. Identification must depend, therefore, on Carpenter's camera lucida drawing, which fortunately includes both the exterior and the interior views.

30. *Lepton dionaeum,* p. 111
=*?Mysella dionaea* (Carpenter, 1857)
(Text figure 6)

Tablet 499, holotype. [1.5 mm]. Brann: plt. 14, fig. 158.

The holotype consists of one valve, in poor condition; no trace of pallial line or muscle scars is now visible.

31. *Lepton umbonatum,* p. 111
=*?Mysella umbonata* (Carpenter, 1857)
(Text figure 7)

Tablet 500. [2.0 mm]. Brann: plt. 14, fig. 159.

Of the two specimens originally on the mount, the adult is now encrusted with crystals of calcite; a pair of young, later added (Carpenter, 1865 b, p. 269), are in good condition but too immature to be of any help in interpreting morphology. Thus, Carpenter's figure is the only reliable clue.

32. *Montacuta chalcedonica,* p. 531
?=*Kellia chalcedonica* (Carpenter, 1857)
(Text figure 8)

Tablet 2529, holotype. [0.7 mm]. Brann: plt. 10, fig. 694.

The single valve is a nepionic shell, thin and white, the hinge showing two teeth. Carpenter's drawing must be taken as accurate and indicates that already the valve had been damaged along the lower margin.

33. *Montacuta elliptica,* p. 113
?=*Lepton ellipticum* (Carpenter, 1857)
(Text figure 9)

Tablet 502, 2 syntypes. [3.3 mm]. Brann: plt. 10, fig. 161.

The shell is so thin that the sculpture, which is of fine incremental lines, shows through to the inside.

34. *Montacuta obtusa* Carpenter, 1865 b, p 270
=*Bornia* (?) *obtusa* (Carpenter, 1857)
(Text figure 10)

Tablet 2530, syntype. [1.5 mm]. Brann: plt. 14, fig. [706].

In 1857 (p. 550) Carpenter cited tablet 2530 as "*Crenella* sp. ind." and mentioned a "hairy epidermis on the posterior part where it lies in radiating lines, while it is concentric on the anterior, decussated towards the middle," evidently an erroneous reference intended for his *Gregariella coarctata.* My notes on the true tablet no. 2530 are: "Exterior smooth, somewhat iridescent or lustrous due to the coating of glue; there are faint radial and concentric striae near the ventral margin."

35. *Montacuta subquadrata,* p. 113
see no. 55

36. *Pythina sublaevis,* p. 112
=*Pythinella sublaevis* (Carpenter, 1857)
(Text figure 12)

Tablet 501, 2 syntypes. [2.0 mm]. Brann: plt. 14, fig. 160; figure also reproduced by Olsson, 1961, p.238; plt. 83, fig. 12.

One valve of the type material is now badly recrystallized and broken; the drawing is from the hinge of the other, which is intact. The form has recently been recognized and figured from Panama (Olsson, 1961, plt. 36, fig. 11).

37. *Lasea trigonalis,* p. 109
=*Orobitella trigonalis* (Carpenter, 1857)
(Plate 56, Figures 28 a-c)

Tablet 496, 2 syntypes, one odd valve. [7.6 mm]. Brann: plt. 14, fig. 155.

One pair of valves is more trigonal than the other. All valves lack the periostracum that probably was present. In shape the shell is somewhat similar to *Orobitella (Isorobitella) singularis* Keen, 1962 from San Quintín Bay, Baja California, but with a less massive hinge. The pair of valves in Figure 28 a-b (Plate 56) is here selected as lectotype.

38. *Lasea oblonga,* p. 109
=*Orobitella oblonga* (Carpenter, 1857)
(Plate 56, Figure 24)

Tablet 497, holotype. [5.1 mm]. Brann: plt. 13, fig. 156.

The single valve still shows a remnant of periostracum. The species is close to *Sportella stearnsii* Dall, 1899 in outline but less elongate.

Chamidae

39. *Chama ?frondosa* var. *fornicata,* p. 89
=*Chama frondosa mexicana* Carpenter, 1857
(Plate 56, Figures 31 a-b, 35 a-b)

Tablets 439 - 443, 6 syntypes.

Only two of the several syntype specimens are complete enough and in good enough condition to provide recognizable figures. The variety seems not to be morphologically valid, for the only constant feature Carpenter cited was presence of an ashy periostracum.

40. *Chama ?frondosa* var. *mexicana,* p. 87
=*Chama frondosa mexicana* Carpenter, 1857

Tablets 425 - 438, about 30 syntypes. [140 mm]. Brann: plt. 10, fig. 121.

Most of the specimens were less than perfect when collected. There has been no problem in recognition of the form from Carpenter's description. Sixteen juvenile shells are on tablets 425 - 430.

Cardiidae

41. *Cardium alabastrum,* p. 99
=*Trigoniocardia granifera* (Broderip & Sowerby, 1829)
(Text figure 13)

Tablet 461, holotype. [3.0 mm]. Brann: plt. 11, fig. 133.

The shell is juvenile, with ribs beaded on the anterior slope and with interspaces between ribs concentrically striate.

42. *Cardium rotundatum,* p. 531
=*Trachycardium (Mexicardium) panamense* (Sowerby, 1833)
(Text figure 14)

Tablet 2522, holotype. [1.6 mm]. Brann: plt. 11, fig. 687.

The valves of this juvenile shell had come loose from

the mount. Although slightly recrystallized, the shell is not yet seriously damaged, and surface details can still be made out.

VENERACEA

43. *Trigona humilis*, p. 57
= *Transennella tantilla humilis* (CARPENTER, 1857)
(Plate 55, Figures 17 a-c)

Tablet 244, 6 syntypes. [4.0 mm].

This is the southern form of *Transennella tantilla* (GOULD, 1853), from which it differs by being smaller, longer, smoother, and more brightly colored. The largest specimen (Plate 55, Figures 17 a-b) here chosen as lectotype, shows clearly the oblique grooving of the inner ventral margin.

44. *Dosinia annae*, p. 61
= *Dosinia annae* CARPENTER, 1857
"= *Dosinia (Dosinia) semiobliterata* DESHAYES, 1853"
teste FISCHER-PIETTE & DELMAS, 1967
(Plate 56, Figures 36 a-b)

Tablet 258, 2 syntypes, "A young and a full-grown specimen." [62 mm].

Authors seem to have interpreted the species correctly. An additional immature shell has subsequently been added to the lot; as Carpenter gave dimensions only for the adult, the uncertainty as to which was added may be evaded by selecting the full-grown (the largest) specimen as lectotype.

In a work received while this paper was in press, FISCHER-PIETTE & DELMAS (Mém. Mus. Nat. d'Hist. Nat., n. s., sér. A, Zool., vol. 47, fasc. 1, pp. 69 - 70, 1967), revising the genus *Dosinia*, have shown that the supposed Australian *Dosinia semiobliterata* DESHAYES, 1853 actually seems to be *D. annae* with an erroneous locality. The subgenus *Dosinia* does not occur in Australia but is confined to the tropical American region. Under Article 23 (b) of the International Code of Zoological Nomenclature, this would qualify as a *nomen oblitum* that should be brought to the attention of the International Commission. FISCHER-PIETTE & DELMAS (plt. 11, figs. 4 - 6) figure the holotype of the Deshayes species; it does indeed very closely match my photographs of the type material of *D. annae*.

45. *Clementia gracillima*, p. 54
nomen dubium

Tablet 216. [3.3 mm].

The specimen has recrystallized and is now unrecognizable. Unfortunately, Carpenter did not make a drawing, and his brief description gives little real clue as to the morphology.

Explanation of Plate 55

All specimens are in the British Museum (Natural History), Mollusca Section. They were photographed in place on glass mounts.

Generic and specific names are as cited by CARPENTER.

Figure 1: *Byssoarca vespertilio*. Holotype. a) exterior; b) interior. Length, 34 mm (x 1).

Figure 2: *Plicatula penicillata*. Syntype (smaller of two specimens). Length, 23 mm (x 1).

Figure 3: *Cycladella papyracea*. Holotype. a) interior; b) exterior. Photograph by Elaine Reeves. Length, 3.5 mm (x 8).

Figure 4: *Mytilus palliopunctatus*. Interior of one syntype, a small adult. Length, 65 mm (x 0.7).

Figure 5: *Mytilus multiformis*. Two paralectotypes. a) length 10 mm (x 3); b) length 12 mm (x 3).

Figure 6: *Ostrea palmula*. Lectotype (here selected); interior of right valve. Length, 60 mm (x 0.7).

Figure 7: *Leiosolenus spatiosus*. Syntype, adult. a) exterior; b) interior. Length, 38 mm (x 1).

Figure 8: *Lithophagus aristatus tumidior*. Syntype, interior. a) left valve; b) right valve. Length 40 mm (x 1).

Figure 9: *Lithophagus aristatus gracilior*. Interior of one of 7 broken syntype valves. Length (incomplete), 15 mm (x 3).

Figure 10: *Isognomon janus*. Syntype. Maximum diagonal length, 47 mm (x 1).

Figure 11: *Naranio scobina*. a) Holotype, left valve. Length, 3.5 mm; b) Hypotype, right valve. Length, 4.5 mm (x 3.8).

Figure 12: *Cyrena olivacea*. Two syntypes. a), b), interior, left valve and right valve. Length, 35 mm; c) exterior, left valve. Length, 50 mm (x 0.6).

Figure 13: *Tapes squamosa*. Syntype (here selected as lectotype), left valve. Length, 2.9 mm. a) (x 4); b) (x 7).

Figure 14: *Placunanomia pernoides*. Lectotype (here selected). a, b) right and left valves, interior. Length, 52 mm; c) Paralectotype, interior, left valve. Length, 52 mm (x 0.6).

Figure 15: *Placunanomia claviculata*. Syntype, maximum length 27 mm (x 1.1).

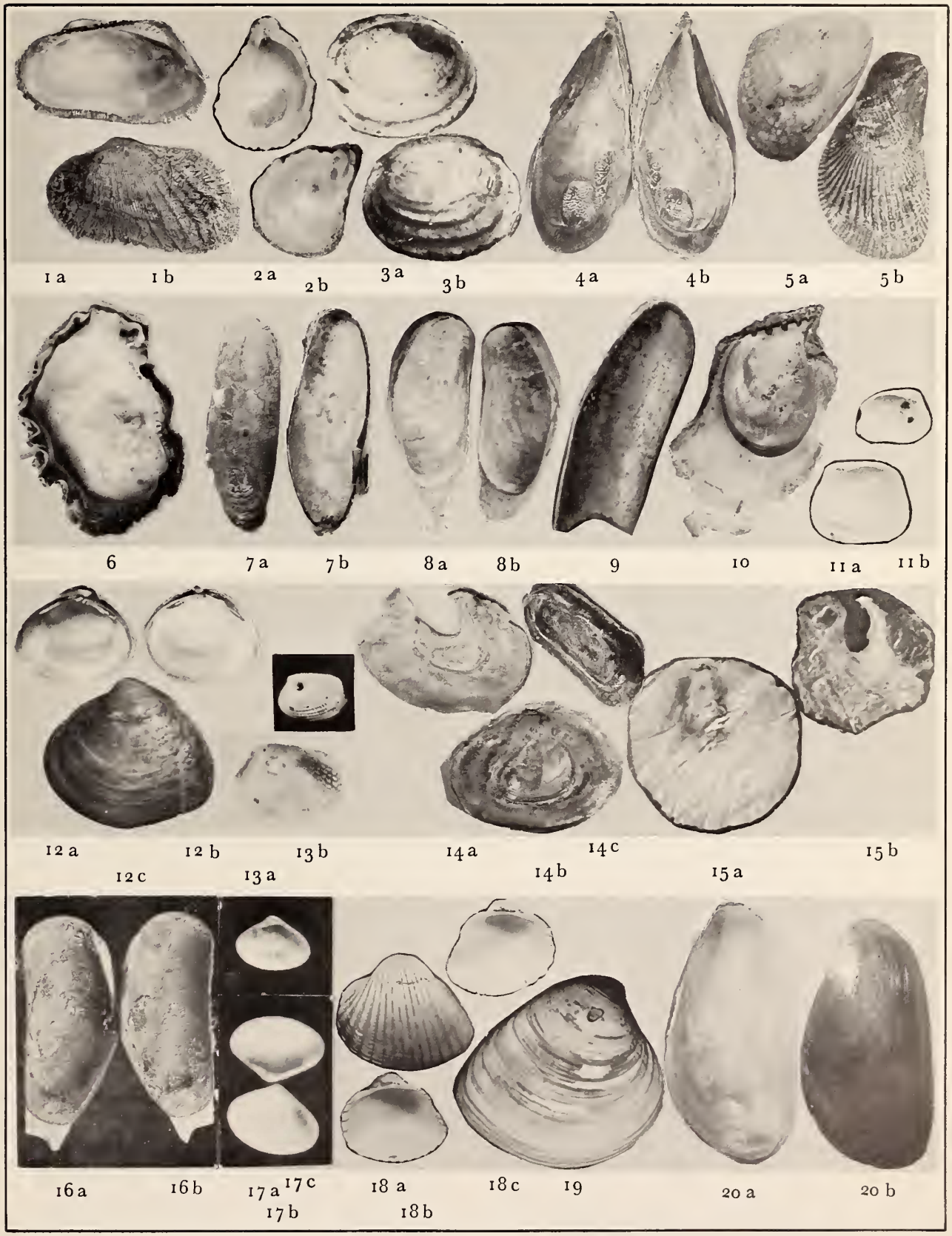
Figure 16: *Lithophagus calyculatus*. Interior of holotype. Length 8.4 mm (x 5).

Figure 17: *Trigona humilis*. a, b) lectotype, interior of paired valves. Length, 4 mm; c) lectoparatype. Length, 3.2 mm (x 4.2).

Figure 18: *Arca bifrons*. Two syntypes, Cuming collection. a) here chosen as lectotype, exterior. Length, 43 mm; b, c) interior. Length, 33 mm (x 0.6).

Figure 19: *Venus cortezi*. Holotype, from Guaymas, Mexico. Length, 61 mm (x 0.6).

Figure 20: *Modiola mutabilis*. Two syntypes, sub-adult. a) interior, left valve. Length, 44 mm; b) exterior, right valve. Length 42 mm (x 1).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46. *Tapes squamosa,* p. 78
=*Timoclea (Glycydonta) squamosa* (Carpenter, 1857)
(Plate 55, Figures 13 a-b; Text figure 15)

Tablet 372, 3 valves. [2.3 mm]. Brann: plt. 9, fig. 111.

Olsson (1961, p. 309) recognizes this small chionid as ranging from southern California to Peru. After restudying Carpenter's type and comparing my figures with material very like it in the Stanford collection, from the La Paz area, I am obliged to revise my previous suggestion (Keen, 1966, Occ. Pap. Calif. Acad. Sci. no. 59, pp. 9 - 10) and to admit that *Venus troglodytes* Mörch, 1861 is a synonym of *Tapes squamosa.* However, I feel that there are two forms on the West Coast, *Timoclea picta* (Willett, 1944), ranging north from Magdalena Bay and averaging more than 6 mm in length, with somewhat more subdued ribbing, and *Timoclea squamosa,* ranging from the Gulf of California southward to Peru, averaging less than 6 mm in length, with stronger scales on the concentric ribs. Olsson has objected to the use of the generic name *Timoclea* because the type species has a nearly smooth escutcheon; perhaps we should therefore adopt the subgeneric allocation to *Glycydonta* Cotton, 1936 (based on *Venus marica* Linnaeus, 1758), the type of which has strong scales on the posterior slope. Carpenter's largest syntype is here selected as lectotype.

Petricolidae

47. *Rupellaria exarata,* p. 20
=*Petricola (Petricola) exarata* (Carpenter, 1857)
(Text figure 16)

Tablet 73, 4 syntypes. [5.3 mm]. Brann: plt. 3, fig. 28.

Radial ribbing is somewhat developed, and the fine zigzag pattern is not as apparent as in the next species. There are a few brown color spots. One specimen was nestling in a barnacle test. Coan in 1962 (The Veliger, vol. 5, no. 2, p. 92) reported some specimens of this form taken near Mazatlan in 1961.

48. *Rupellaria linguafelis,* p. 20
=*Petricola (Petricola) linguafelis* (Carpenter, 1857)
(Text figure 17)

Tablet 72, 5 syntypes. [4.0 mm]. Brann: plt. 2, fig. 27.

The specimens are juvenile, with microscopically fine zigzag striae. With growth the shell tends to become more elongate.

49. *Naranio scobina,* p. 529
=*Petricola (Petricola) linguafelis* (Carpenter, 1857)
(Plate 55, Figures 11 a-b; Text figures 18 a-b)

Tablet 2516, holotype and hypotype. [3.3 mm]. Brann: plt. 4, fig. 680.

When he described the species, Carpenter had but a single valve, the left valve. Later he found a larger opposite (right) valve, which he added to the mount in 1858 (Carpenter, 1865 b, p. 269). His drawing, which therefore must have been made after 1858, shows both specimens, the hinge of the left (holotype), and the full interior of the right (hypotype). There seems no good basis for separation of the form as distinct.

Tellinidae

50. *Tellina donacilla,* p. 34
?=*Tellina (Moerella) donacilla* Carpenter, 1857
(Text figure 19)

Tablet 116, holotype, 1 valve. [3.5 mm]. Brann: plt. 6, fig. 53.

The shell looks like a young *Tellina amianta* Dall, 1900, but the posterior end is shorter and the lateral tooth stronger; no trace of the pallial line could be made out.

Donacidae

51. *Donax ?punctatostriatus caelatus,* p. 46
=*Donax punctatostriatus* Hanley, 1843
(Plate 56, Figure 34)

Tablet 168, 3 syntypes; 168*, two syntypes. [35 mm].

This form does not seem separable from Hanley's species.

52. *Donax culminatus,* p. 43
=*Donax carinatus* Hanley, 1843
(Plate 56, Figures 33 a-b)

Tablet 139, 2 syntypes, the smaller, from Mazatlan, here selected as lectotype. [24 mm].

Carpenter considered this a variant of *Donax carinatus* because the ridge setting off the posterior slope seemed sharper and the radial striae seemed more crowded and granular; later authors have not considered these as valid distinguishing characters.

Garidae

53. *Solecurtus politus,* p. 27
=*Tagelus (Mesopleura) politus* (Carpenter, 1857)
(Plate 56, Figure 27)

Tablet 90, 1 syntype. [37 mm].

Authors seem to have identified the species correctly. The right valve is now broken; Carpenter implied that the shell had been complete.

54. *Solecurtus violascens,* p. 27, footnote
=*Tagelus (Tagelus) violascens* (Carpenter, 1857
(Plate 56, Figure 37)

Tablet 90, holotype. [83 mm]. BRANN: plt. 17, lower right.

The original specimen was from the Cuming collection with an indefinite locality, "Southwest Mexico." All that remains now is a somewhat broken right valve. Fortunately, growth lines are well developed and enable the reconstruction of the correct outline. The pallial sinus reaches only just slightly past the intersection of a line drawn vertically through the beaks; Carpenter's drawing shows it not quite reaching this line. The pallial sinus in *Tagelus californianus* (CONRAD, 1837) is still shorter and the shell proportionately longer. The interior of the right valve of Carpenter's specimen was figured by PALMER (1963, plt. 64, fig.1), registry no. 1857.6.4.2531.

SEMELIDAE

55. *Montacuta subquadrata,* p. 113
=*Semelina subquadrata* (CARPENTER, 1857)
(Text figure 11)

Tablet 503, 2 syntypes, one broken. [3.5 mm]. BRANN: plt. 10, fig. 162.

The shell is worn, with a chipped edge; the sculpture is strongly concentric; interior markings (pallial line and muscle scars) not being visible, Carpenter was unaware of the deep pallial sinus that is evident in fresh material. OLSSON (1961, p. 375; plt. 66, fig. 11) has figured the exterior sculpture and has discussed morphology and distribution.

56 a. *Tellina lamellata,* p. 37
=*Semele* sp., juvenile
(Text figure 20)

Tablet 121, 3 valves. [3.3 mm].

The figure in KEEN (1958, fig. 388) is fairly correct as to outline except that Carpenter's syntypes are longer anteriorly. The hinge shows the internal ligament that is characteristic of *Semele*. The shell is probably too young for a positive determination of what *Semele* is represented. Studies of growth series might give clues.

56 b. *Tellina regularis,* p. 36
= *Semele* sp., juvenile
(Text figure 21)

Tablet 120, 2 syntypes, one a fragment. [1.8 mm]. BRANN: plt. 7, fig. 57.

This resembles the "*T.*" *lamellata* in hinge and outline but has only fine concentric lines. My drawing indicates a larger size than Carpenter's cited dimensions.

57. *Sphaenia fragilis,* p. 24, "n.s."
=*Sphenia fragilis* (H. & A. ADAMS, 1854)
(Text figure 22)

Tablets 80 - 82, about 15 syntypes. [8 mm]. BRANN: plt. 6, fig. 35.

The several syntypes show variations in size and outline. Authors have correctly identified the form. Unfortunately, Carpenter chose the same specific name as had H. and A. ADAMS (Genera of Shells, vol. 2, p. 368; plt.

Explanation of Text figures 23 to 50

Note: Stated lengths are camera lucida readings and may be as much as 1/10 too high.

Figure 23: *Dentalium liratum.* Lectotype. Length, 7 mm (x 8).
Figure 24: *Dentalium corrugatum.* Holotype. Length, 1.5 mm (x 19).
Figure 25: *Rimula mazatlanica.* Syntype. Length, 4 mm (x 8).
Figure 26: *Scissurella rimuloides.* Holotype. Diameter, 0.9 mm (x 22). a) apertural view; b) and c) apical and lateral views, sketches, not to scale.
Figure 27: *Liotia carinata.* Holotype. Diameter, 1.6 mm (x 19).
Figure 28: *Liotia striulata.* Holotype. Diameter, 1.1 mm (x 21).
Figure 29: *"Phasianella perforata* PHILIPPI." Paralectotype of *Tricolia mazatlanica* (STRONG, 1928). Diameter, 2.6 mm (x 9).
Figure 30: *Phasianella perforata striulata.* Syntype. Diameter, 1.8 mm (x 15).
Figure 31: *Lunatia tenuilirata.* Syntype. Diameter, 1.6 mm (x 14).
Figure 32: *Leiostraca linearis.* Holotype. Length, 2.2 mm (x 14).
Figure 33: *Leiostraca producta.* Holotype. Length, 3.8 mm (x 10).
Figure 34: *Leiostraca iota retexta.* Syntype. Length, 2.6 mm (x 12).
Figure 35: *Leiostraca distorta yod.* Syntype. Length, 2.6 mm (x 12).
Figure 36: *Mucronalia involuta.* Holotype. Length, 3.2 mm (x 10).
Figure 37: *Aclis tumens.* Holotype. Length, 1.6 mm (x 19).
Figure 38: *Scalaria raricostata.* Holotype. Length, 3.5 mm (x 10).
Figure 39: *Scalaria suprastriata.* Syntype. Length, 12 mm (x 2.8).
Figure 40: *Cirsotrema funiculata.* Syntype. Length, 14.5 mm (x 2.6).
Figure 41: *Vitrinella orbis.* Holotype. Diameter, 1 mm (x 23).
Figure 42: *Viitrinella bifrontia.* Syntype. a) apertural view; b) base. Diameter, 1 mm (x 23).
Figure 43: *Vitrinella coronata.* Syntype. Diameter, 1 mm (x 23).
Figure 44: *Vitrinella lirulata.* Holotype. Diameter, 2 mm (x 16).
Figure 45: *Vitrinella perparva nodosa.* Holotype. Diameter, 1 mm (x 20).
Figure 46: *Vitrinella ornata.* Holotype. a) apertural view; b) base. Diameter, 1 mm (x 23).
Figure 47: *Vitrinella tenuisculpta.* Holotype. Diameter, 1 mm (x 23).
Figure 48: *Vanicoro cryptophila.* Lectotype. Diameter, 2 mm (x 15).
Figure 49: *Vitrinela planospirata.* Holotype (fragment). Radius 3.2 mm (x 11).
Figure 50: *Vitrinella cincta.* Holotype. Diameter, 1 mm (x 20).


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97, figs. 3, 3a) for their *Tyleria fragilis*. Carpenter had been skeptical of their figure and was at pains to study their type specimen, as he had seen Sphenias with somewhat similar features. He concluded (p. 527) that the form was correctly illustrated and was unique. I concur that the figure is accurate, but I feel certain that their specimen is pathologic. For some reason, shell material was either not deposited or was resorbed, leaving a few islands of solid calcium carbonate embedded in what is mostly periostracum. In shape, size, and hinge, the shell is strikingly similar to Carpenter's syntypes, as I could prove by comparing the two lots side by side. If my interpretation is correct, the generic name *Tyleria* falls as a synonym of *Sphenia*, and the specific name has priority from the Adamses, 1854.

CORBULIDAE

58. *Corbula pustulosa*, p. 22
=*Corbula nasuta* SOWERBY, 1833
(Plate 56, Figure 25)

Tablet 77, 1 syntype (here selected as lectotype). [4 mm]. BRANN: plt. 4, fig. 32.

The lectotype shows clearly the radial rows of small pustules that are the hallmark of juvenile *Corbula nasuta*. Carpenter's other syntype was from the Cuming collection, from "Panama and San Blas."

PHOLADIDAE

59. *Martesia intercalata*, p. 13
=*Penitella conradi* VALENCIENNES, 1846

Tablet 41 (sketches).

The type material consisted of two specimens in the Hanley collection, of which Carpenter made drawings. The shells are no longer available. Ruth Turner has reproduced the drawings (Johnsonia, vol. 3, no. 34, p. 75, plt. 72, figs. 1-2, 1955).

SCAPHOPODA

DENTALIIDAE

60. *Dentalium liratum*, p. 188
=*Dentalium semipolitum* BRODERIP & SOWERBY, 1829
(Text figure 23)

Tablet 879. [6 mm]. BRANN: plt. 19, fig. 244.

Carpenter cited a "perfect specimen" (here selected as lectotype), a small specimen, and a fragment. There are two juvenile shells on the tablet, one of which is probably a caecid. PILSBRY & SHARP (Manual of Conchology, vol. 17, p. 92, 1897) suggested the synonymy here accepted.

Explanation of Plate 56

All specimens are in the British Museum (Natural History), Mollusca Section. They were photographed in place on glass mounts. Generic and specific names are as cited by CARPENTER.

Figure 21: *Lucina pectinata*. Holotype, left valve. Length, 13 mm (x 3).

Figure 22: *Lucina prolongata*. Four unmatched syntype valves. a, d) interior, left valve; b) interior, right valve; c) exterior, left valve. Length, 3 mm to 3.5 mm (x 3).

Figure 23: *Lucina excavata*. Syntype, exterior, seen through glass mount (the central circular area is glue). Length 10 mm (x 3.5).

Figure 24: *Lasea oblonga*. Holotype, left valve, interior. Length, 5.7 mm (x 4.5).

Figure 25: *Corbula pustulosa*. Exterior, left valve, lectotype (here selected). Length, 4.2 mm (x 4.5).

Figure 26: *Diplodonta subquadrata*. Syntype. a) interior, left valve; b) exterior, right valve. Length 26.3 mm (x 1.3).

Figure 27: *Solecurtus politus*. Syntype, left valve. a) exterior; b) interior. Length, 32 mm (x 1).

Figure 28: *Lasea trigonalis*. a) interior, left valve; b) interior, right valve, lectotype (here selected). Length, 7.5 mm (x 3). c) exterior of paralectotype, seen through glass mount (central shiny area is glue). Length, 7.6 mm (x 4.6).

Figure 29: *Lucina mazatlanica*. Two syntypes. a) interior, right valve. Length, 3.2 mm; b) interior, left valve. Length 2 mm (x 10).

Figure 30: *Diplodonta discrepans*. Holotype. a) exterior, right valve; b) interior, right valve; c) exterior, left valve; d) interior, left valve. Length, 8 mm (x 3).

Figures 31, 35: *Chama frondosa fornicata*. Syntypes, sub-adults. 31 a) interior, left valve; 31 b) exterior, right valve; maximum length, 78 mm (x 0.6); 35a) interior, left valve; 35b) interior, right valve; maximum length, 45 mm (x 1).

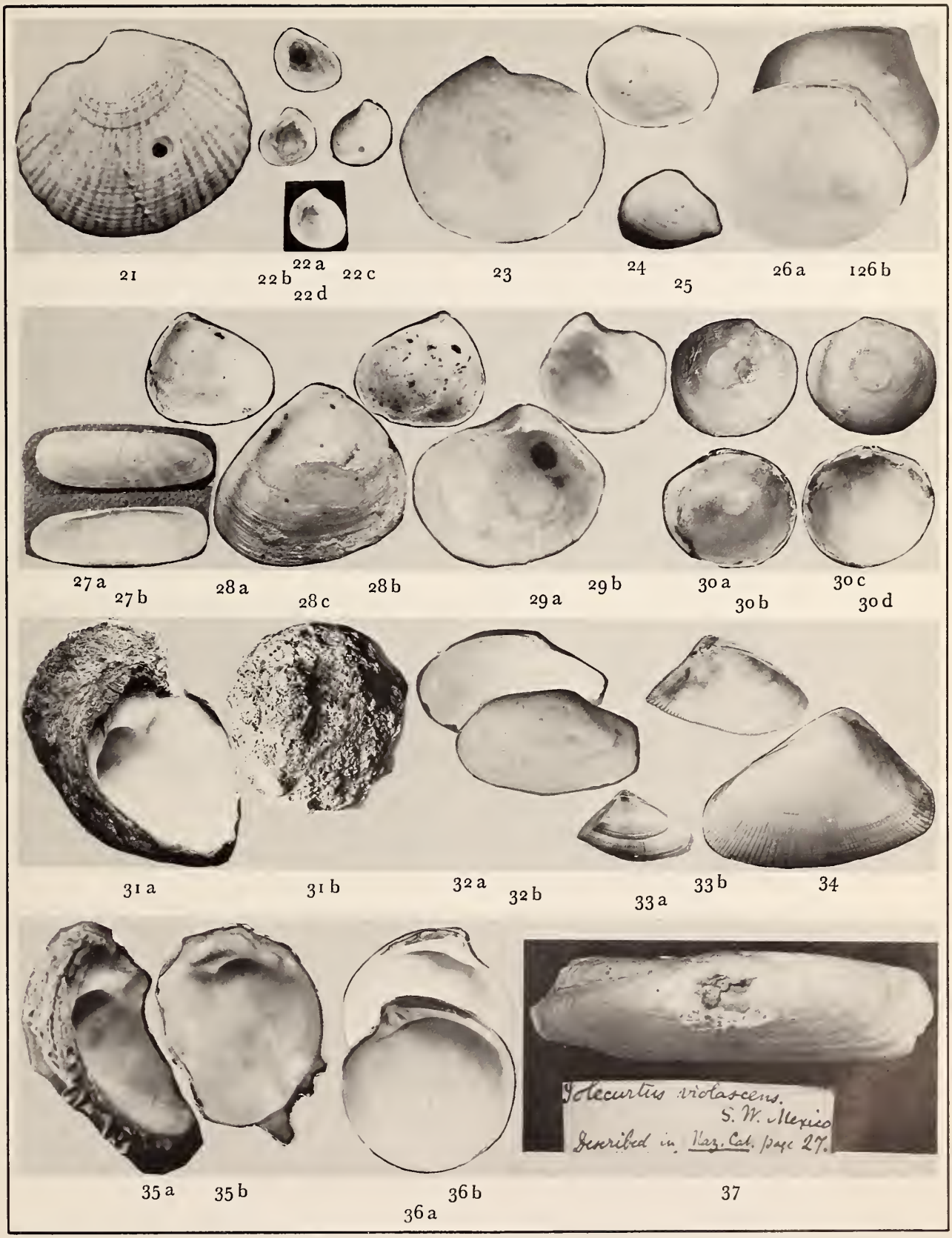
Figure 32: *Thracia squamosa*. Holotype, Cuming collection. a) interior, right valve; b) exterior, left valve. Length, 28 mm (x 1.1).

Figure 33: *Donax culminatus*. Lectotype (here selected), exterior, right valve. Length, 25 mm (x 0.8). b) Hypotype, interior, left valve of a pair from an unknown Central American locality. Length, 37 mm (x 0.8).

Figure 34: *Donax caelatus*. Exterior, left valve of a syntype, largest of three specimens. Length, 37 mm (x 1.1).

Figure 36: *Dosinia annae*. Lectotype (here selected). a) interior, right valve; b) interior, left valve. Length, 60 mm (x 0.5).

Figure 37: *Solecurtus violascens*. Holotype, with Carpenter's label, from "Southwest Mexico." Length, 83 mm (x 0.9).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35 b
36 a
36 b
Holecurtus violascens.
S. W. Mexico
Described in Nat. Cat. page 27.
37

61. *Dentalium corrugatum* CARPENTER, 1857, p. 189
(*non* HUPÉ *in* GAY, 1854)
=*Dentalium semipolitum* BRODERIP & SOWERBY, 1829
(Text figure 24)

Tablet 881, holotype. [1.2 mm]. BRANN: plt. 19, fig. 246.

The shell is probably too young for positive determination, but as the name is preoccupied, synonymizing seems the best course.

62. *Dentalium ?pretiosum* "Nutt. (teste Hinds)," p. 189
nomen nudum

Tablet 882.

The citation is based on a specimen too worn and broken for determination. Had Carpenter validated the name by giving a description, it would have taken precedence over Sowerby's usage of 1860.

GASTROPODA

FISSURELLIDAE

63. *Fissurella alba,* p. 218 (*non* PHILIPPI, 1845)
=*Fissurella gemmata* MENKE, 1847
(Plate 57, Figures 38 a-b)

Tablets 1058 - 1068, 29 syntypes (tablet 1059 photographed). [41 mm].

Carpenter had some misgivings about the identity of MENKE's species, but later authors have generally accepted the synonymy. Menke's type material, however, has not been studied.

64. *Fissurella nigrocincta* CARPENTER, 1856a, p. 234 (cited 1857b, p. 217, as "n.s.")
=*Fissurella nigrocincta* CARPENTER, 1856
(Plate 57, Figures 39 a-b)

Tablet 1056, 2 juvenile syntypes. [19 mm]. BRANN: plt. 19, fig. 274.

The species was described from adult material in the Cuming collection, locality not stated, shown in my photograph. Carpenter cited the locality in 1857 as Mazatlan, but the label says "California." The figure in BRANN is of a juvenile shell on tablet 1056, which Carpenter referred to this species with some doubt. Sowerby published an illustration of the adult in 1862 (Thesaurus Conch., vol. 3, plt. 239, figs. 61 - 63).

65. *Fissurella spongiosa,* p. 219
=*Fissurella nigrocincta* CARPENTER, 1856
(Plate 57, Figures 40 a-b)

Tablet 1070, syntype, here selected as lectotype. [18 mm].

The shell is immature and worn, which accounts for the texture.

66. *Rimula mazatlanica,* p. 222
=*Diodora* sp., juvenile
(Text figure 25)

Tablet 1080, 3 syntypes. [3.1 mm]. BRANN: plt. 22, fig. 281.

The species has also been figured by Sowerby in Reeve (Conch. Icon., vol. 19, plt. 1, sp. 5, 1873). The callus on the inside of the apex has the truncation of *Diodora,* and there are a few color spots on the shell; also, the sculpture near the margin is like that of *Diodora.* As BERRY (1964, Leaflets in Malacology, no. 24, p. 148) has surmised, this form represents the growth stage in which the orifice has not yet absorbed the pointed apex.

SCISSURELLIDAE

67. *Scissurella rimuloides* CARPENTER, 1865 b, p. 271
=*Sinezona rimuloides* (CARPENTER, 1865)
(Text figures 26 a - c)

Tablet 2532, holotype. [0.7 mm]. BRANN: plt. 22, fig. 698.

The species seems to have been correctly identified by authors.

TROCHIDAE

68. *Trochus macandreae,* p. 232
=*Calliostoma macandreae* (CARPENTER, 1857)
(Plate 57, Figure 41)

Tablet 1129, 1 syntype and some fragments. [8.7 mm].

The photographed specimen is here selected as lectotype. A specimen from the Cuming collection was figured by Reeve, 1863 (Conch. Icon., vol. 14, plt. 7, figs. 50-51), as *Ziziphinus macandreae.*

69. *Omphalius globulus,* p. 236
=*Tegula (Agathistoma) globulus* (CARPENTER, 1857)
(Plate 57, Figures 52 a-b)

Tablet 1145, 1 syntype, here selected as lectotype. [8.4 mm].

There have been some differences of opinion among collectors as to the identity of this form.

70. *Omphalius ?rugosus* var. *rufotinctus,* p. 233
=*Tegula (Omphalius) rugosa* (A. ADAMS, 1853)
(Plate 57, Figures 45 a-b)

Tablets 1130 - 1131, 3 syntypes. [30 mm]

The 3 syntypes of *Chlorostoma rugosum* A. ADAMS, 1853 are also in the type collection of the British Museum, with the locality "China." Because of this incorrect

and indefinite label, Carpenter described the Mazatlan form as a new variety. I regard the two lots as conspecific and consider Adam's locality to be in error.

LIOTIIDAE

71. *Liotia carinata,* p. 248
=*Arene carinata* (CARPENTER, 1857)
(Text figure 27)

Tablet 1164, holotype. [1.1 mm]. BRANN: plt. 25, fig. 313

As Carpenter noted, the shell is immature, but the sculpture is well developed. The spire is so depressed that it does not show in the apertural view of the shell. STRONG (1934, Trans. San. Diego Soc. Nat. Hist., vol. 7, no. 37, p. 440; plt. 28, figs. 1 - 3) was probably not justified in using a figure of the holotype of *Liotia lurida* DALL, 1913 under the name of *L. carinata.* His figure of another specimen (*ibid.*, plt. 31, figs. 1 - 3) is of a shell with a tabulate but not flattened spire. Dall's species should be reinstated as distinct. Carpenter's form has not been recorded again unequivocally, but some specimens in the Stanford University collection from the La Paz area approach his figure in flatness of spire.

72. *Liotia striulata,* p. 248
=*Arene striulata* (CARPENTER, 1857)
(Text figure 28)

Tablet 1165, holotype. [0.7 mm] BRANN: plt. 26, fig. 314.

Carpenter's shell has an unusually thick apertural margin. The spire is higher than in *Arene carinata.* His drawing is somewhat tilted, and he exaggerated the spiral sculpture. Part of the lip thickening seems to be a build-up of the mounting glue. One specimen in the Stanford University collection, dredged off La Paz, matches the figure fairly well as to size and shape, but it has a thinner apertural margin and does not have the sculpture so markedly developed.

73. *Liotia c-b-adamsii,* p. 248

Tablet 1166, holotype. [0.6 mm]. BRANN: plt. 26, fig. 315.

The holotype is now completely disintegrated by chemical alteration. Carpenter's drawing suggests the apical whorls of a juvenile shell that evidently is not liotiid. For all practical purposes it must be regarded as a *species dubia.* In a way this may be well, because under the new International Rules of Zoological Nomenclature, the name must be written without hyphens, which results in an unpronounceable vocable, *cbadamsii.*

PHASIANELLIDAE

74. "*Phasianella perforata* PHILIPPI," p. 224 (not of PHILIPPI, 1845)
=*Tricolia mazatlanica* (STRONG, 1928), "new name"
(Plate 57, Figure 46; Text figure 29)

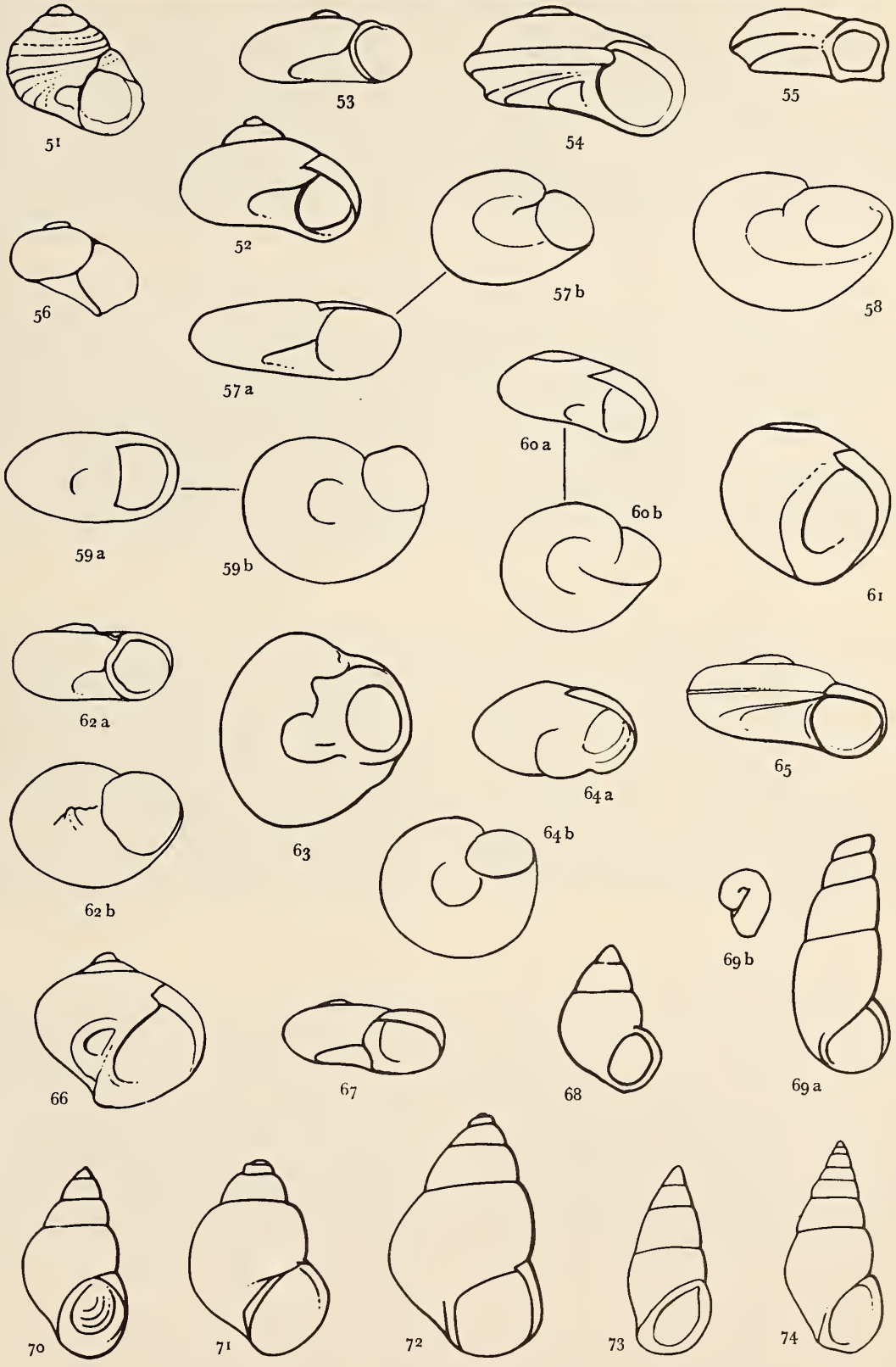
Tablet 1084, 5 syntypes. [3.3 mm]. BRANN: pl. 22, fig. 283.

The type of Philippi's species was from Peru. STRONG (1928, p. 198) reprinted Carpenter's description and cited a figure in REEVE (Conch. Icon., vol. 13; plt. 6, fig. 17, 1862), of a specimen in the Cuming collection from Mazatlan and Panama. A specimen with an operculum, mentioned by Carpenter, is now the only good specimen of the Reigen lot, and it is here selected as lectotype of Strong's species.

Explanation of Text figures 51 to 74

Note: Stated lengths are camera lucida readings and may be as much as 1/10 too high.

Figure 51: *Vitrinella decussata.* Syntype. Diameter, 1.3 mm (x 16).
Figure 52: *Vitrinella monile.* Syntype. Diameter, 1.6 mm (x 17).
Figure 53: *Vitrinella monilifera.* Syntype. Diameter, 1.2 mm (x 20).
Figure 54: *Vitrinella annulata.* Holotype. Diameter, 1.6 mm (x 17).
Figure 55: *Ethalia carinata.* Syntype. Diameter, 1 mm (x 19).
Figure 56: *Vitrinella carinulata.* Holotype. Diameter, 1 mm (x 16).
Figure 57: *Ethalia pyricallosa.* Holotype. Diameter, 1.4 mm; a) apertural view (x 23); b) base (x 18).
Figure 58: *Teinostoma amplectans.* Holotype. Diameter, 3.3 mm (x 9).
Figure 59: *Globulus amplectans.* Syntype. Diameter, 1 mm; a) apertural view (x 23); b) base (x 27).
Figure 60: *Globulus lirulata.* Syntype. a) apertural view; b) basal view. Diameter, 1 mm (x 23).
Figure 61: *Globulus pallidula.* Holotype. Diameter 1 mm (x 25).
Figure 62: *Teinostoma substriatum.* Syntype. Diameter, 1.2 mm; a) apertural view, (x 19); b) basal view (x 20).
Figure 63: *Globulus sulcatus.* Syntype. Diameter, 1 mm (x 28).
Figure 64: *Globulus tumens.* Syntype. a) apertural view; b) basal view. Diameter, 1.6 mm (x 15).
Figure 65: *Vitrinella bifilata.* Syntype. Diameter, 1.5 mm (x 19).
Figure 66: *Vitrinella naticoides.* Syntype. Diameter, 1.2 mm (x 20).
Figure 67: *Vitrinella subquadrata.* Syntype. Diameter, 1.2 mm (x 19).
Figure 68: *Alvania tumida.* Syntype. Diameter, 1.6 mm (x 10).
Figure 69: *Aclis fusiformis.* Syntype. Length, 1.8 mm; a) apertural view; b) detail of initial apical whorl from back of shell (x 18).
Figure 70: *Jeffreysia bifasciata.* Syntype. Length, 1.6 mm (x 17).
Figure 71: *Jeffreysia tumens.* Syntype. Length, 1.6 mm (x 17).
Figure 72: *Jeffreysia alderi.* Syntype. Length, 2 mm (x 18).
Figure 73: *Rissoina woodwardii.* Syntype. Length, 3.6 mm (x 8).
Figure 74: *Rissoa lirata.* Syntype. Length, 4 mm (x8).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75. *Phasianella ?perforata,* var. *striulata,* p. 225
= *Tricolia striulata* (Carpenter, 1857)
(Text figure 30)

Tablet 1085, 1 syntype, registry no. 1857.6.4.1085. [2.2 mm]. Brann: plt. 22, fig. 283b.

Strong (1928, p. 198), in proposing the name *Phasianella mazatlanica* as a replacement for Carpenter's misidentification, seems to have overlooked Carpenter's varietal name. If, as seems possible, this form is not separable from the one on tablet 1084 (the only cited difference being less apparent sculpture), then Strong's *T. mazatlanica* will fall into synonymy, having been junior to *T. striulata* less than 50 years required for the latter to become a *nomen oblitum.*

76. *Phasianella compta* "Gould MSS," p. 225
?*Phasianella, s. l.,* sp.

Tablet 1086. Brann: plt. 22, fig. 284.

It is probable that Carpenter's Mazatlan specimen is misidentified, for *Tricolia compta* (Gould, 1855) is a Californian form. A note with the specimen, by Dr. R. Robertson, 1962, suggests that this is a ballast shell from the Indo-Pacific or Caribbean and is unidentifiable.

77. *Lunatia tenuilirata,* p. 451
= *Tricolia tenuilirata* (Carpenter, 1857)
(Text figure 31)

Tablet 2052, syntype. [1.4 mm]. Brann: plt. 50, fig. 572.

Carpenter mentions two specimens, a broken older and a perfect young shell and says the mount contains the latter. However, the one on the tablet has an incomplete aperture and the dimensions are closer to those he cites for the larger specimen. This form seems very close to *Tricolia substriata* (Carpenter, 1864), from the Californian area, and only minor differences can be seen between a photograph of a Californian shell (Strong, 1928, p. 195; plt. 10, fig. 11) and the camera lucida drawings by Carpenter and myself. Possibly the record of *T. substriata* at San José Island, Gulf of California, cited by Strong, should be considered as of *T. tenuilirata* instead. The main differences seem to be that the Mazatlan syntype has stronger developed color banding of white spots (not shown in Carpenter's drawing) and a heavier inner lip on the aperture.

Phenacolepadidae

78. *Scutellina navicelloides,* p. 211
= *Phenacolepas osculans* (C. B. Adams, 1852)
(Plate 57, Figures 44 a-b)

Tablet 1016, holotype. [5.6 mm]. Brann: plt. 21, fig. 269.

The apex of the holotype is broken away. Outline, however, and sculpture seem to confirm synonymy with Adams' species.

Explanation of Plate 57

All specimens are in the British Museum (Natural History), Mollusca Section. They were photographed in place on glass mounts. Generic and specific names are as cited by Carpenter.

Figure 38: *Fissurella alba.* a) interior; b) exterior; two syntypes. Length of larger, 36 mm (x 1).

Figure 39: *Fissurella nigrocincta.* Two of 3 syntypes, Cuming collection. a) exterior; b) interior. Length of largest specimen in lot, 18 mm (x 1.5).

Figure 40: *Fissurella spongiosa.* Lectotype (here selected). a) exterior, seen through glass; b) interior. Length, 17 mm; a)(x 2.2); b) (x 1.1).

Figure 41: *Trochus macandreae.* Lectotype (here selected). Diameter, 9 mm (x 4).

Figure 42: *Hipponyx planatus.* Two syntypes, Cuming collection, from Panama. a) interior, b) exterior of specimen on which from Panama. a) interior; b) exterior of specimen on which Carpenter cited dimensions. Length, 18 mm (x 1.3).

Figure 43: *Hipponyx serratus.* Two syntypes. a) exterior; b) interior. Diameter (larger syntype). 23 mm (x 1).

Figure 44: *Scutellina navicelloides.* Holotype. a) interior (x 3.3); b) exterior, seen through glass mount (central area that appears flattened is the mounting glue) (x 5.2). Length, 5.5 mm.

Figure 45: *Omphalius rufotinctus.* Two syntypes. a) diameter, 18 mm; b) diameter, 24 mm (x 1).

Figure 46: "*Phasianella perforata* Philippi." Lectotype (here selected) of *P. mazatlanica* Strong, 1928. Height, 2.5 mm (x 8).

Figure 47: *Cerithidea mazatlanica.* Four syntypes. Length of largest, 28 mm (x 1).

Figure 48: *Cerithium alboliratum.* Lectotype (here selected). Height, 4.0 mm (x 7).

Figure 49: *Scalaria raricostata.* Holotype. Length, 3.3 mm (x 13).

Figure 50: *Cirsotrema funiculata.* a) Lectotype (here selected), largest of 3 specimens from Panama, Cuming collection. Length, 21 mm (x 1.9). b) Hypolectotype, from Mazatlan. Length, 16 mm (x 2.4).

Figure 51: *Cerithium mediolaeve.* Holotype. Length, 25.3 mm (x 1.7).

Figure 52: *Omphalius globulus.* Lectotype (here selected). a) basal view; b) apertural view. Diameter, 8.5 mm (x 4).

Figure 53: *Galerus fuscus.* Holotype, from "Gulf of California." Diameter, 15.5 mm (x 1.1).

Figure 54: *Litorina philippii.* Syntype. Length, 11 mm (x 3).

Figure 55: *Trochita ventricosa.* Holotype. a) side view; b) basal view. Diameter, 19 mm (x 1).

Figure 56: *Crepidula bilobata.* Exterior of a syntype. Diameter 9 mm (x 4).

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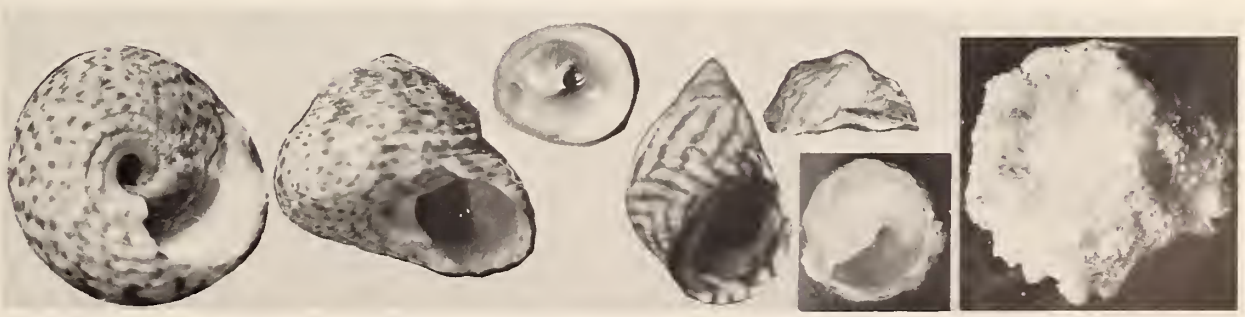

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EULIMIDAE

79. *Leiostraca linearis,* p. 440
=*Balcis linearis* (CARPENTER, 1857)
(Text figure 32)

Tablet 2025, holotype. [1.8 mm]. BRANN: plt. 48, fig. 554.

BARTSCH (1917, p. 310; plt. 36, fig. 4) did not reproduce the original figure, as he did with other of Carpenter's Mazatlan forms, but figured instead a specimen from off Baja California. His identification seems to be correct.

80. *Leiostraca producta* CARPENTER, 1864
=*Balcis producta* (CARPENTER, 1864)
(Text figure 33)

Tablet 2022, holotype. [3.1 mm]. BRANN: plt. 48, fig. 551.

Although he did not publish a formal description until 1865, Carpenter introduced the name earlier with an acceptable indication (1864 a, p. 357), in connection with discussions of the C. B. Adams types, when he decided that his identification of Mazatlan material with a Panama form had been unjustified. Carpenter's drawing seems distorted. Having made a separate one of my own from the type, I cannot reconcile the two unless he rotated the shell on account of the broken outer lip and attempted a restoration. The body whorl seems wider than in any other Panamic *Balcis* in proportion to the height of the spire.

81. *Leiostraca ?iota* var. *retexta,* p. 440
=*Balcis retexta* (CARPENTER, 1857)
(Text figure 34)

Tablet 2026, 1 syntype. [2.2 mm]. BRANN: plt. 48, fig. 555.

BARTSCH (1917, p. 317; plt. 38, fig. 1) reprinted the original discussion of Carpenter and published the camera lucida drawing now available in Brann's plates. My own drawing of the type differs in minor details but in general confirms Carpenter's accuracy.

82. *Leiostraca ?distorta,* var. *yod,* p. 441
=*Balcis yod* (CARPENTER, 1857)
(Text figure 35)

Tablet 2027, 4 syntypes. [2.0 mm]. BRANN: plt. 48, fig. 556.

Again, BARTSCH (1917, p. 330; plt. 40, fig. 9) published a Carpenter drawing, not having recognized any specimens of this form. My own drawing of the largest syntype differs only in the rendering of the inner lip.

83. *Mucronalia involuta* CARPENTER, 1865 b, p. 273
=*?Eulima involuta* (CARPENTER, 1865)
(Text figure 36)

Tablet 2021, holotype. [2.7 mm]. BRANN: plt. 48, fig. 550.

In his monograph on melanellid mollusks, BARTSCH (1917, p. 297) stated that as this form has a tilted apex, it is an *Odostomia.* However, he had not cited it as such in the pyramidellid monograph (DALL & BARTSCH, 1909), at which time it was stated that he had studied Carpenter's types at the British Museum. Thus, this species was omitted in both of the accounts and had not been figured until the publication of Carpenter's plates. My observations confirm Carpenter's statement that there is no columellar fold. I could not see the apical whorls as heterostrophic. The holotype is very worn and is brown stained. Its general shape, the form of the outer lip, the lack of a columellar fold, and the apparently simple apex seem to point to eulimid rather than pyramidellid affinities.

ACLIDIDAE

84. *Aclis tumens,* p. 438
=*?Aclis tumens* CARPENTER, 1857
(Text figure 37)

Tablet 2017, holotype. [1.3 mm]. BRANN: plt. 48, fig. 546.

Placement of the genus *Aclis* and the family ACLIDIDAE is unsettled. The shells resemble pyramidellids in many ways but lack a columellar fold; the apex is normal. They do not have the shiny texture of the EULIMIDAE, and the whorls tend to be more inflated. My notes on *Aclis tumens* indicate that the apex is minute, sunken but apparently dextral, the back of the shell seeming to show faint spiral sculpture but the front smooth. The holotype has a large break.

EPITONIIDAE

85. *Scalaria raricostata,* p. 447 [*non* WOOD, 1828]
=*Epitonium (?Nitidiscala) carpenteri* (TAPPARONE-CANEFRI, 1876)
(Plate 57, Figure 49; Text figure 38)

Tablet 2040, holotype. [3.1 mm]. BRANN: plt. 50, fig. 568.

The holotype has a slightly worn look and is greyish in color. Axial sculpture does not appear until the fourth apical whorl. The allocation to *Epitonium (Punctiscala)* in KEEN, 1958 (p. 276), following STRONG *in* BURCH, (Min. Conch. Club S. Calif. no. 52, p. 20, 1945) was

ill-advised, for there is no evidence of spiral punctations between the low varices, of which there are 7 per whorl.

Brann (1966, p. 17) cites Carpenter's specific name as available because the name given by Lamarck in 1822 that had been considered by some authors to preoccupy Carpenter's was spelled *S. raricosta*. However, Wood in 1828 used the spelling *raricostata* for what is evidently another species in the genus.

86. *Scalaria suprastriata,* p. 446
=*Epitonium (Nitidiscala) suprastriatum* (Carpenter, 1857)
(Plate 59, Figure 101; Text figure 39)

Tablet 2037, 1 syntype. [11 mm].

Although the edges of the varices on the type (which is stored in the British Museum's Type Collection) are somewhat chipped, the shell is otherwise in good condition. The dimensions seem close to those of *Epitonium roberti* Dall, 1917.

87. *Scalaria (Cirsotrema) funiculata,* p. 447
=*Opalia diadema funiculata* (Carpenter, 1857)
(Plate 57, Figure 50; Text figure 40)

Tablet 2041, 1 syntype, with broken aperture. [14.5 mm]. Three syntypes from Panama, Cuming collection.

In the annotated copy of his Catalogue, left at the British Museum, Carpenter had correctly reassigned this species to *Opalia*. The largest specimen of the 3 from Panama is more slender and high-spired than the other syntypes. Carpenter was not convinced of a distinction of the species from the Ecuadorean *O. diadema* (Sowerby, 1832). Because the largest Panama specimen is the only one differing enough in outline possibly to justify separation of the northern form, it is here selected as lectotype (Plate 57, Figure 50 a).

The ribs in this form seem more distinct than in the Californian *Opalia crenimarginata* (Dall, 1917), which it resembles.

Janthinidae

88. *Ianthina striulata,* p. 185
=*Janthina janthina* (Linnaeus, 1758)
(Plate 59, Figure 79)

Tablets 868 - 876, 37 adults (tablet 872 photographed). [20 mm].

There seems no basis for separating Pacific and Atlantic forms of this pelagic species. Reeve (1858, Conch. Icon., vol. 11, plt. 2, sp. 6) cited the Carpenter name under synonymy of *Janthina fragilis* Lamarck, 1801.

89. *Ianthina striulata,* var. *contorta,* p. 186
=*Janthina janthina* (Linnaeus, 1758)
(Plate 59, Figure 80)

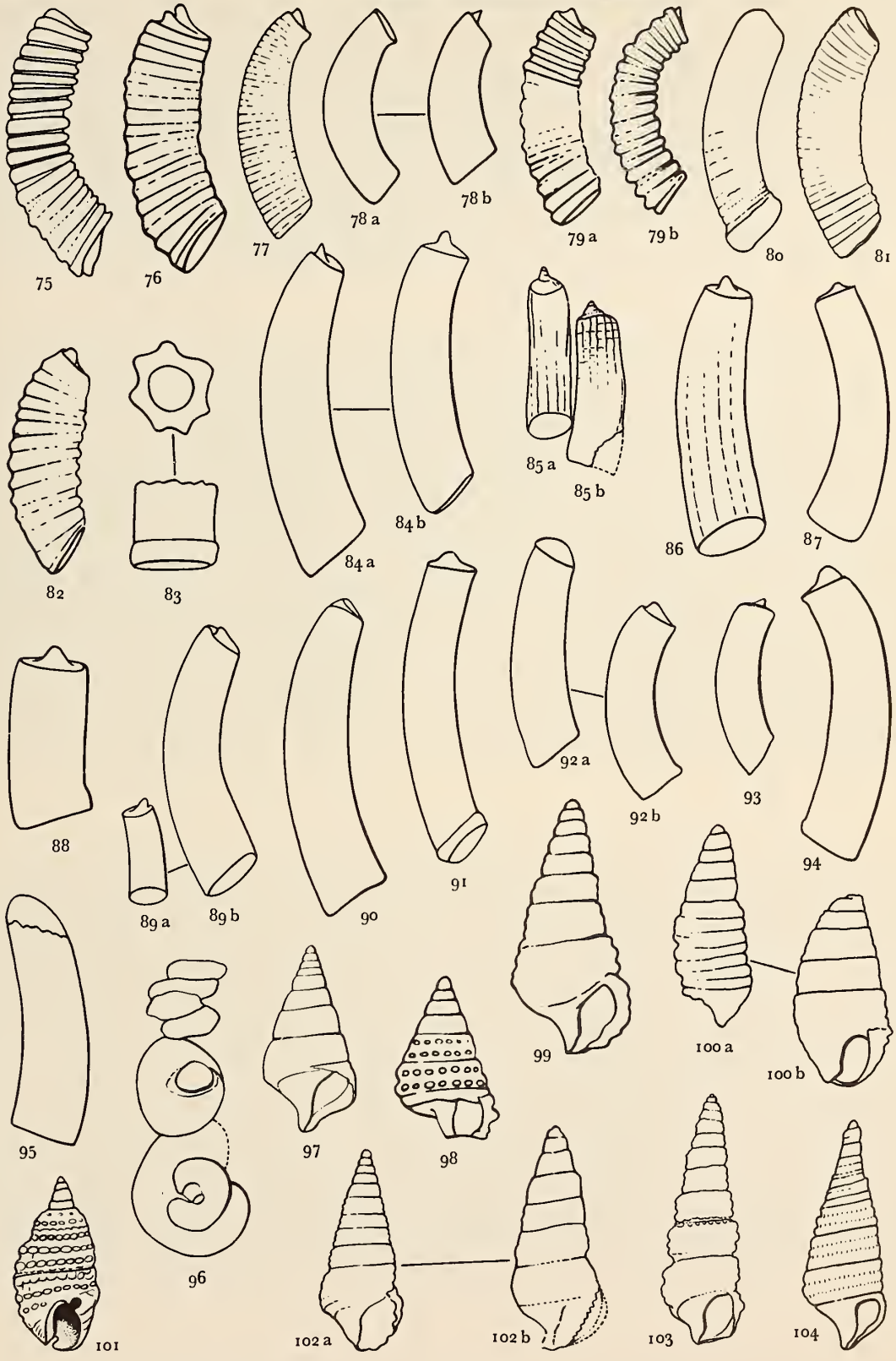
Tablet 877, 2 syntypes (only one now on the tablet). [Size not given.].

Synonymy with the Atlantic form seems justifiable. Reeve (1858, Conch. Icon., vol. 11, plt. 4, sp. 19) figured a specimen from Mazatlan said to be in the Cuming collection.

Explanation of Text figures 75 to 104

Note: Stated lengths are camera lucida readings and may be as much as 1/10 too high.

Figure 75: *Caecum clathratum.* Syntype. Length, 2.9 mm (x 14).
Figure 76: *Caecum compactum.* Syntype. Length, 2.8 mm (x 15).
Figure 77: *Caecum elongatum.* Syntype. Length, 3 mm (x 10).
Figure 78: *Caecum farcimen.* Syntypes. Length, a) 1.7 mm (x 17); b) 1.6 mm (x 16).
Figure 79: *Caecum quadratum.* Syntypes. Length, a), b) 2 mm (x 16).
Figure 80: *Caecum semilaeve.* Syntype. Length, 3.2mm (x 11).
Figure 81: *Caecum subimpressum.* Syntype. Length, 3.4 mm (x 10).
Figure 82: *Caecum undatum.* Syntype. Length, 2 mm (x 17).
Figure 83: *Caecum heptagonum.* Holotype, incomplete, side and sectional views. Diameter, 0.8 mm (x 17).
Figure 84: *Caecum liratocinctum.* Syntypes. Length, a) 4 mm (x 13); b) 3 mm (x 14).
Figure 85: *Caecum subconicum.* Syntypes. Length, a), b) 2.4 mm (x 10).
Figure 86: *Caecum subobsoletum.* Syntype. Length, 3mm (x 14).
Figure 87: *Caecum tenuiliratum.* Holotype. Length, 2.8 mm (x 14).
Figure 88: *Caecum abnormale.* Syntype. Length, 1.6 mm (x 17).
Figure 89: *Caecum insculptum.* Syntypes. a) Length, 1.5 mm (x 10); b) Length, 4 mm (x 10).
Figure 90: *Caecum obtusum.* Syntype. Length, 3.9 mm (x 12).
Figure 91: *Caecum subspirale.* Syntype. Length, 4.6 mm (x 10).
Figure 92: *Caecum dextroversum.* Syntypes. a) Length, 2.4 mm (x 14); b) Length, 2 mm (x 15).
Figure 93: *Caecum reversum.* Holotype. Length, 1.6 mm (x 17).
Figure 94: *Caecum teres.* Syntype. Length, 3.2 mm (x 14).
Figure 95: *Caecum corrugulatum.* Holotype. Length, 2.2 mm (x 17).
Figure 96: *Bivonia albida.* Syntype. Length of coil, 10 mm (x 7).
Figure 97: *Cerithium alboliratum.* Lectotype. Length, 4 mm (x 7).
Figure 98: *Cerithiopsis albonodosa.* Syntype. Length, 1.7 mm (x 14).
Figure 99: *Cerithiopsis cerea.* Holotype. Length, 3 mm (x 12).
Figure 100: *Cerithiopsis pupiformis.* Syntypes. a) juvenile; b) broken adult. Length of each, 2.2 mm (x 14).
Figure 101: *Cerithiopsis sorex.* Syntype. Length, 2 mm (x 14).
Figure 102: *Cerithiopsis tuberculoides.* Syntypes. a) Length, 2.4 mm (x 13); b) Length, 4.6 mm (x 8).
Figure 103: *Cerithiopsis convexa.* Holotype. Length, 5.6 mm (x 7).
Figure 104: *Cerithiopsis decussata.* Holotype. Length, 5.2 mm (x 7).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90. *Ianthina decollata,* "*nom. prov.*" p. 187
= *Janthina prolongata* BLAINVILLE, 1822
(Plate 59, Figures 78 a-c)

Tablet 878, 3 syntypes. [26 mm].

Carpenter had justifiable misgivings about the distinctness of this form.

LITTORINIDAE

91. *Litorina philippii,* p. 349
= *Littorina dubiosa philippii* CARPENTER, 1857
(Plate 57, Figure 54)

Tablets 1671 - 1685, 109 syntypes (tablet 1676 photographed. [10 mm].

The numerous variants were arranged by Carpenter on 15 slides, of which one was photographed that he described as "zigzag at base."

VITRINELLIDAE

92. *Vitrinella orbis,* p. 247
= *Cyclostremella orbis* (CARPENTER, 1857)
(Text figure 41)

Tablet 1163, 1 syntype. [0.8 mm]. BRANN: plt. 25, fig. 312.

The shell is nearly smooth but shows one thin carina at the periphery and a fainter one above and below. PILSBRY & OLSSON (1952, p. 84) suggest the plausible allocation to *Cyclostremella.*

93. *Vitrinella bifrontia,* p. 242
= *Cyclostremiscus bifrontia* (CARPENTER, 1857)
(Text figure 42)

Tablet 1154, 1 syntype. [1.3 mm]. BRANN: plt. 24, fig. 303.

The allocation by PILSBRY & OLSSON (1952, p. 62), on the basis of another syntype, seems justified.

94. *Vitrinella coronata,* p. 244
= *Cyclostremiscus coronatus* (CARPENTER, 1857)
(Text figure 43)

Tablet 1157, 2 syntypes, the larger figured. [1.4 mm]. BRANN: plt. 24, fig. 306.

The allocation by PILSBRY & OLSSON (1952, p. 62) seems correct.

95. *Vitrinella lirulata,* p. 241
= *Cyclostremiscus lirulatus* (CARPENTER, 1857)
(Text figure 44)

Tablet 1151, holotype. [2.1 mm]. BRANN: plt. 23, fig. 300.

The species was allocated to *Cyclostremiscus* by PILSBRY & OLSSON (1952, p. 83). When studying the holotype I noted that it was nearest in form to their *Cyclostremiscus nummus* from Panama but lacked any peripheral carination.

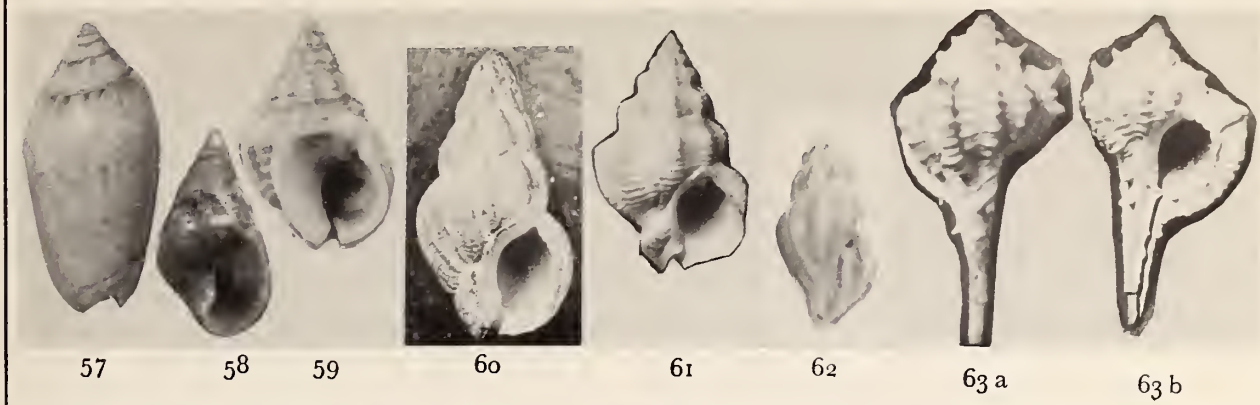
96. *Vitrinella perparva,* var. *nodosa,* p. 243
= *Cyclostremiscus nodosus* (CARPENTER, 1857)
(Text figure 45)

Tablet 1155, holotype. [0.8 mm]. BRANN: plt. 24, fig. 304.

Explanation of Plate 58

All specimens are in the British Museum (Natural History), Mollusca Section. They were photographed in place on glass mounts. Generic and specific names are as cited by CARPENTER.

Figure 57: *Oliva intertincta.* Syntype, back view. Length, 20 mm (x 2).
Figure 58: *Litiopa divisa.* Syntype, from "Cape San Francisco." Length, 2.7 mm (x 10).
Figure 59: *Nassa nodulifera.* Holotype. Length, 16 mm (x 1.9).
Figure 60: *Nassa crebristriata.* Holotype. Length, 13.5 mm (x 2.7).
Figure 61: *Nassa acuta.* Syntype. Length, 20 mm (x 1.6).
Figure 62: *Mangelia subangulata.* Holotype. Length, 4.3 mm (x 6.5).
Figure 63: *Murex lividus.* Two syntypes. a) Length, 44 mm; b) Length, 40 mm (x 1).
Figure 64: *Muricidea indentata.* Holotype. Length, 34 mm (x 1.7).
Figure 65: *Pisania elata.* Two hypotypes, without definite locality, in British Museum collection as "*P. elata,* var." a) Length, 34 mm; b) Length, 37 mm (x 1).
Figure 66: *Erato panamensis.* Syntype, from Panama. Length, 7.5 mm (x 4.4).
Figure 67: *Melampus olivaceus.* Syntype. Length, 15 mm (x 3).
Figure 68: *Siphonaria aequilirata.* Holotype. Length, 17 mm (x 2.4).
Figure 69: *Siphonaria palmata.* Two syntypes. a) Length, 21 mm; b) Length, 29 mm (x 1.3).
Figure 70: *Terebra albocincta.* Longest of 5 syntypes on tablet 1828. Length, 42 mm (x 1.5).
Figure 71: *Terebra hindsii.* Two syntypes. a) Apertural view. Length, 31.5 mm; b) Back view. (x 1.8).
Figure 72: *Terebra subnodosa.* Syntype. Length, 33 mm (x 1.8).
Figure 73: *Terebra rufocinerea.* Syntype. Length, 31 mm (x 1.8).
Figure 74: *Clathurella aurea.* Holotype. Length, 14.5 mm (x 3.5).
Figure 75: *Drillia punctatostriata.* Holotype from Panama. Length, 19 mm (x 3.5).
Figure 76: *Drillia monilifera.* Holotype. Length, 15.4 mm (x 4.2).
Figure 77: *Drillia cerithoidea.* Syntype. Length, 16 mm (x 4.2).



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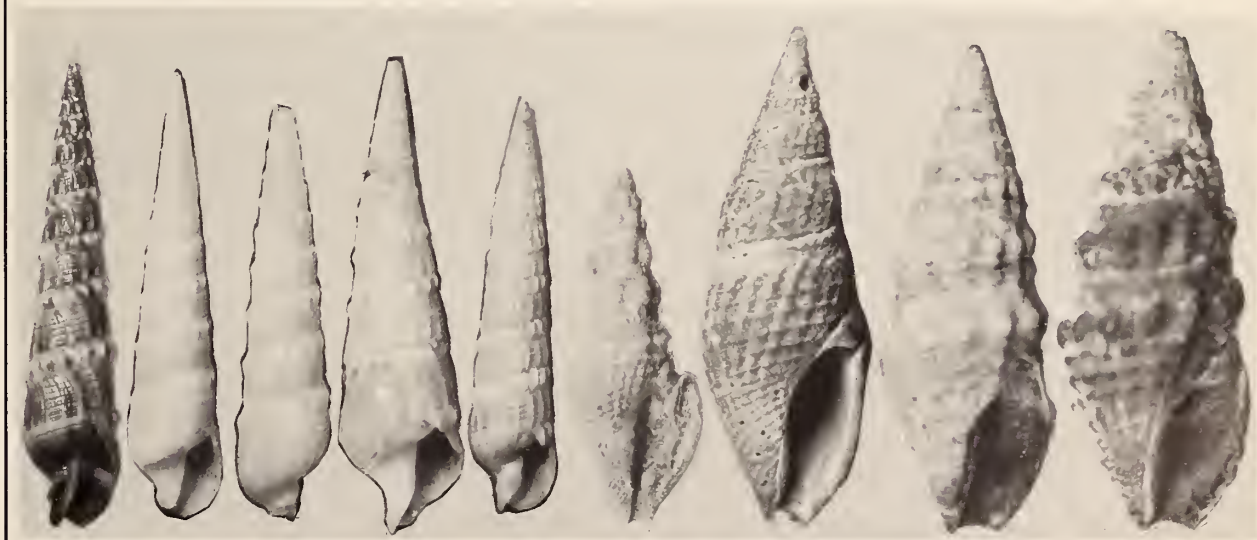


70 71 a 71 b 72 73 74 75 76 77

The allocation by Pilsbry & Olsson (1952, p. 63) seems justified, but their figure of a supposed paratype may be of a specimen that is not conspecific, for the peripheral nodes are relatively larger than in the holotype, as shown both by my drawing and that of Carpenter.

97. *Vitrinella ornata* Carpenter, 1864 b, p. 271
=*Cyclostremiscus ornatus* (Carpenter, 1864)
(Text figure 46)

Tablet 2533, holotype. [0.9 mm]. Brann: plt. 25, fig. 2535.

Although they did not have a figure for guidance, Pilsbry & Olsson (1952, p. 82) seem to have allocated this correctly. Carpenter evidently labeled his figure "2535" by error. He described no. 2535 as only a fragment of a shell, whereas the figure given is of a complete specimen and the drawing matches well the specimen mounted on tablet no. 2533.

98. *Vitrinella tenuisculpta* Carpenter, 1864 b, p. 271
=*Cyclostremiscus tenuisculptus* (Carpenter, 1864)
(Text figure 47)

Tablet 2534, holotype [0.7 mm]. Brann: plt. 25, fig. 2534.

Pilsbry & Olsson (1952, p. 83) seem to have allocated the form correctly. Carpenter's drawing somewhat exaggerates the dorsal curve and hence the outline of the shell. My own drawing suggests a more lenticular form.

99. *Vitrinella trigonata,* p. 244
=*Cyclostremiscus trigonatus* (Carpenter, 1857)

Tablet 1156, hypotype. [0.6 mm]. Brann: plt. 24, fig. 305, as *Vitrinella exigua* C. B. Adams, 1852.

Carpenter's specific name could be rejected as having been proposed in synonymy, for it was a name he had used in manuscript and merely mentioned in his discussion of *Vitrinella exigua.* Pilsbry & Olsson (1945, pp. 268 - 269), however, consider that Adams' species is a secondary homonym of *Delphinula exigua* Philippi, 1845, which also seems to be a *Cyclostremiscus.* Thus, they reject the name *exigua* and substitute *trigonata* of Carpenter. Although names proposed in synonymy are to be rejected under Article 11 of the International Code of Zoological Nomenclature, this Article has been modified in the second edition of the Code to provide that if such a name has, prior to 1961, been treated as available, it may be accepted, with its original date and authorship. Thus, *V. trigonata* may be utilized. The holotype, of course, remains that of Adams, not the figured specimen on tablet 1156.

100. *Vanicoro cryptophila,* p. 262
=*Macromphalina cryptophila* (Carpenter, 1857)
(Text figure 48)

Tablets 1313 - 1315. [4 mm]. Brann: plt. 28, fig. 330.

Carpenter's drawings show well the tilted apex (which is brown in color) and the sculpture of *Macromphalina.* I had the impression when observing some of the juvenile specimens under the microscope that one or two might be *Vanikoro.* I am therefore designating the adult in tablet 1314, shown also in my drawing, as the lectotype. The adult in tablet 1315, which will thus become a lectoparatype, is in place in a crevice of a *Spondylus* fragment; it shows fine spiral sculpture in the body whorl.

101. *Vitrinella planospirata,* p. 246
=?*Miralabrum planospiratum* (Carpenter, 1857)
(Text figure 49)

Tablet 1162, holotype. [ca. 5 mm]. Brann: plt. 24, fig. 311.

The shell is represented by a fragment only, and Carpenter's attempt at a restoration is highly fanciful. The sculpture and size suggest *Miralabrum* Pilsbry & Olsson (1945, p. 276), the type of which, also incomplete, is from Ecuador (*M. unicornis*). A specimen of *Miralabrum* has been found by Faye Howard at Cape San Lucas that may represent Carpenter's species; a photograph of this shell is given here for comparison (Plate 59, Figure 102). The size (diameter 4.7 mm) compares well with Carpenter's estimate of probable size of his holotype.

102. *Vitrinella cincta,* p. 245
=*Lydiphnis (Cymatopteryx) cincta* (Carpenter, 1857)
(Text figure 50)

Tablet 1159, holotype. [0.8 mm]. Brann: plt. 25, fig. 308.

Pilsbry & Olsson (1952, p. 83) suggest that this species should be allocated to *Cyclostremiscus,* but studying the holotype and comparing it with their figures I noted that it was closest to their figure of *Lydiphnis strongi.* Therefore, I revise their assignment.

103. *Vitrinella decussata,* p. 239
=*Parviturboides decussatus* (Carpenter, 1857)
(Text figure 51)

Tablet 1148, 6 syntypes. [1.1 mm]. Brann: plt. 23, fig. 297.

Pilsbry & Olsson (1952, p. 68; plt. 11, figs. 3, 3a-b) have correctly reallocated this species; their figure is of a "paratype" [*i. e.*, syntype].

104. *Vitrinella monile,* p. 240
=*Parviturboides monile* (CARPENTER, 1857)
(Text figure 52)

Tablet 1149, 4 syntypes. [1.4 mm]. BRANN: plt. 23, fig. 298.

Carpenter's drawing as published by Brann confirms the allocation to *Parviturboides* made by PILSBRY & OLSSON (1952, p. 84). My own drawing may not be entirely accurate as to outline, due to my faulty adjustment of the camera lucida device, and his is definitely tilted.

105. *Vitrinella monilifera,* p. 240
=?*Parviturboides monilifer* (CARPENTER, 1857)
(Text figure 53)

Tablet 1150, 1 syntype. [1 mm]. BRANN: plt. 23, fig. 299.

The allocation to *Parviturboides* has been suggested by PILSBRY & OLSSON (1952, p. 84). My notation when studying the syntype was that it might be a juvenile *Solariorbis.* The lenticular outline would be more in harmony with such an allocation, but the sculpture and evenly curved inner lip are reminiscent of *Parviturboides.*

106. *Vitrinella annulata,* p. 245
=*Solariorbis (Systellomphalus) annulatus* (CARPENTER, 1857)
(Text figure 54)

Tablet 1158, holotype. [1.3 mm]. BRANN: plt. 25, fig. 307.

It is doubtful if PILSBRY & OLSSON (1952, p. 83) had an adequate figure of Carpenter's material, else they could not have suggested an assignment to *Cyclostremiscus* for this smooth-spired form. It closely resembles the Ecuadorean Pliocene species that is the type of *Systellomphalus* but differs in the arrangement of the basal cords. PILSBRY & OLSSON described *Systellomphalus* as a genus in 1941 but by 1952 (p. 51) demoted it to a species-group rank. However, it seems to me to have sufficient distinctness to be usefully retained as a subgenus under *Solariorbis.*

107. *Globulus (Ethalia) carinata,* p. 252
=?*Solariorbis carinatus* (CARPENTER, 1857)
(Text figure 55)

Tablet 1172, 1 syntype. [0.9 mm]. BRANN: plt. 28, fig. 321.

With some hesitation I accept the allocation to *Solariorbis* of PILSBRY & OLSSON (1952, p. 83). When I was examining Carpenter's specimen and comparing it with the Pilsbry and Olsson figures, I concluded that it best matched that of *Cyclostremiscus tricarinatus* (C. B. ADAMS, 1852) but that it had a weaker upper keel, a lower spire, and a shallower umbilicus.

108. *Vitrinella carinulata,* p. 246
=*Solariorbis carinulatus* (CARPENTER, 1857)
(Text figure 56)

Tablet 1160, holotype. [0.8 mm]. BRANN: plt. 25, fig. 309.

The figure by PILSBRY & OLSSON (1952, plt. 13, figs. 4a, 4b) is a good representation of the form, but the specimen (now at Harvard) cannot be a paratype, for Carpenter cited only a single example. My drawing is a little distorted obliquely, due to my faulty adjustment of the camera lucida attachment.

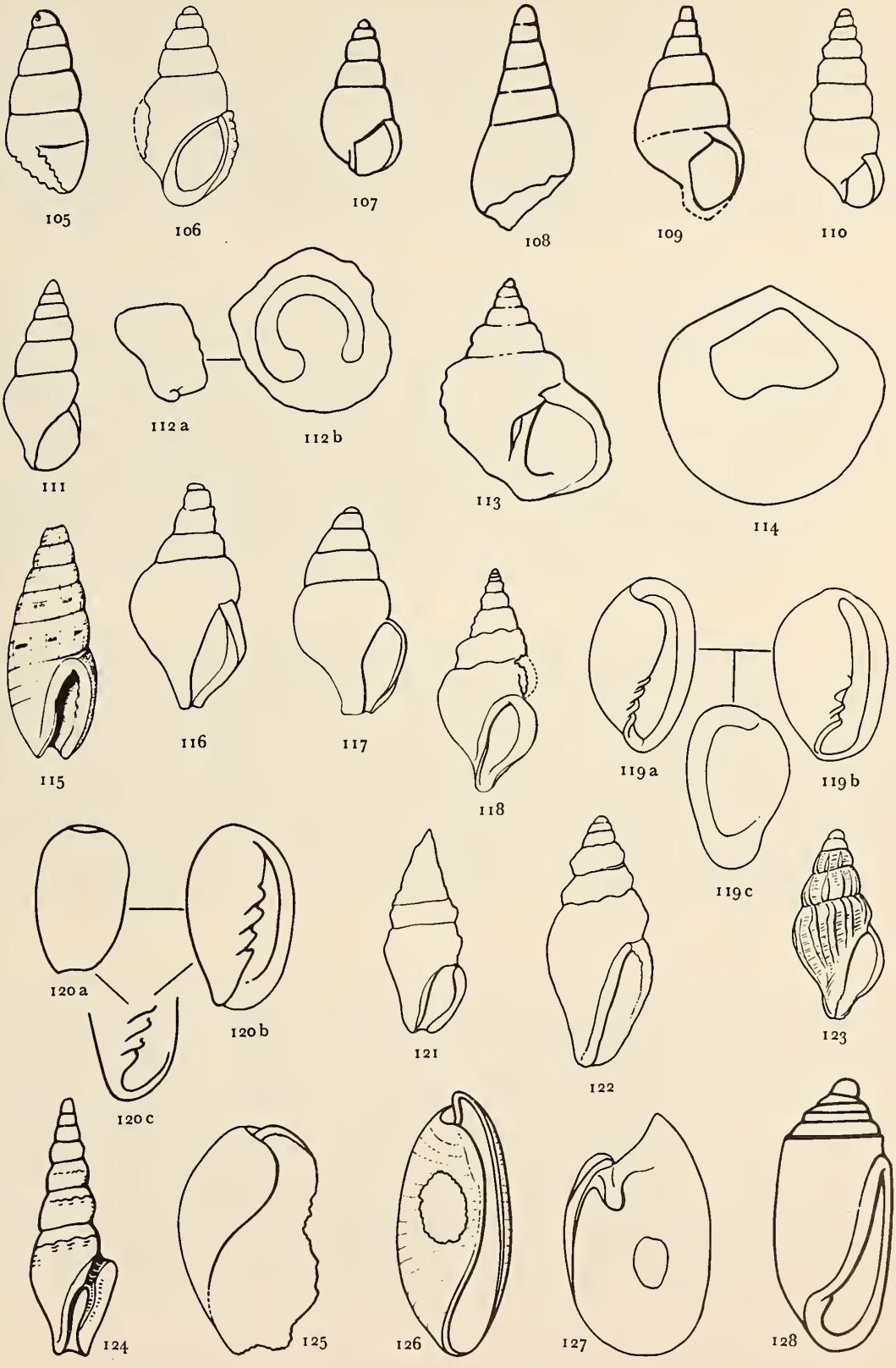
109. *Globulus (Ethalia) pyricallosa,* p. 251
=*Solariorbis pyricallosus* (CARPENTER, 1857)
(Text figure 57)

Tablet 1169, holotype. [1.2 mm]. BRANN: plt. 26, fig. 318.

Explanation of Text figures 105 to 128

Note: Stated lengths are camera lucida readings and may be as much as 1/10 too high.

Figure 105: *Alaba laguncula.* Holotype. Sketch (about x 22).
Figure 106: *Alaba mutans.* Holotype. Length, 2.6 mm (x 11).
Figure 107: *Alaba scalata.* Holotype. Length, 1 mm (x 23).
Figure 108: *Alaba terebralis.* Holotype. Length, 1.8 mm (x 19).
Figure 109: *Alaba violacea.* Holotype. Length, 1.8 mm (x 17).
Figure 110: *Alvania effusa.* Holotype. Length, 3.6 mm (x 8).
Figure 111: *Alvania excurvata.* Syntype. Length, 3.6 mm (x 8).
Figure 112: *Hipponyx planatus.* Syntypes. a) Diameter, 1.8 mm (x 8); b) Diameter, 5 mm (x 4.5).
Figure 113: *Fossarus tuberosus.* Syntype. Length, 1.5 mm (x 23).
Figure 114: *Crepidula bilobata.* Syntype. Diameter, 4 mm (x 8).
Figure 115: *Anachis gaskoini.* After Carpenter's sketch of holotype. Length, 6 mm (x 6).
Figure 116: *Anachis serrata.* Syntype. Length, 3.0 mm (x 9).
Figure 117: *Fusus apertus.* Syntype. Length, 4.6 mm (x 7).
Figure 118: *Fusus tumens.* Syntype. Length, 5 mm (x 7).
Figure 119: *Marginella margaritula.* Lectotype. a) Length, 2.2 mm (x 11); b) and c), paralectotypes, apertural and back views. Length, 2.1 mm (x 11).
Figure 120: *Marginella polita.* a) Paralectotype. Length, 0.9 mm (x 25); b) lectotype. Length, 1.1 mm (x 26); c) detail of anterior part of aperture, tilted forward.
Figure 121: *Drillia cerithoidea.* Syntype. Length, 15 mm (x 2.3).
Figure 122: *Mangelia sulcata.* Holotype. Length, 5.6 mm (x 7).
Figure 123: *Mangelia subangulata.* Holotype. Length, 4.3 mm (x 7).
Figure 124: *Clathurella aurea.* Holotype. Length, 15 mm (x 2.5).
Figure 125: *Haminea cymbiformis.* Holotype. Length, 2.7 mm (x 13).
Figure 126: *Bulla exarata.* Syntype. Length, 3.8 mm (x 10).
Figure 127: *Smaragdinella thecaphora.* Holotype. Length, 2.4 mm (x 15).
Figure 128: *Tornatina carinata.* Syntype. Length, 3.2 mm (x 13).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The allocation to *Solariorbis* by PILSBRY & OLSSON, (1952, p. 82) seems justifiable.

110. *Teinostoma amplectans,* p. 253
= *Teinostoma (Pseudorotella) amplectans* CARPENTER, 1857
(Text figure 58)

Tablet 1174, holotype. [3 mm]. BRANN: plt. 26, fig. 323 (also figured by SOWERBY *in* REEVE, 1874, Conch. Icon., vol. 19, plt. 1, figs. 1a-c, from a specimen in the British Museum).

The figure of *Teinostoma americanum* PILSBRY & OLSSON, 1945 (plt. 23, fig. 3), a southern variant of this species, is a good representation of the form except for the slightly smaller size. In 1952 (p. 41) they allocated both forms to the subgenus *Pseudorotella.*

111. *Globulus (Ethalia) amplectans,* p. 253
= ?*Teinostoma amplectans* CARPENTER, 1857
(Text figure 59)

Tablet 1173, 1 syntype. [1 mm]. BRANN: plt. 26 fig. 322.

PILSBRY & OLSSON (1952, p. 82) allocated this to *Solariorbis,* probably not having seen a good figure. Both Carpenter's drawing as published by BRANN and my own suggest the strong umbilical callus of *Teinostoma.* Carpenter himself was not sure but that this might be the young of *T. amplectans* – hence his choice of the same specific name for both. The shell is translucent and relatively thick; my notes suggest that it may be a young of *T. lirulatum.*

112. *Globulus (Ethalia) lirulata,* p. 251
= *Teinostoma lirulatum* (CARPENTER, 1857)
(Text figure 60)

Tablet 1170, 1 syntype. [1 mm]. BRANN: plt. 26, fig. 319.

As with the previous form, PILSBRY & OLSSON (1952, p. 82) allocated this to *Solariorbis.* The callus seems to me to be too well developed for that. I noted when examining the holotype that the closest figure in the PILSBRY & OLSSON monographs was their *Teinostoma ecuadorianum* (1952, plt. 3, fig. 5), but *T. lirulatum* has, as the specific name suggests, fine spiral sculpture.

113. *Globulus (Ethalia) pallidula,* p. 252
= ?*Teinostoma pallidulum* (CARPENTER, 1857)
(Text figure 61)

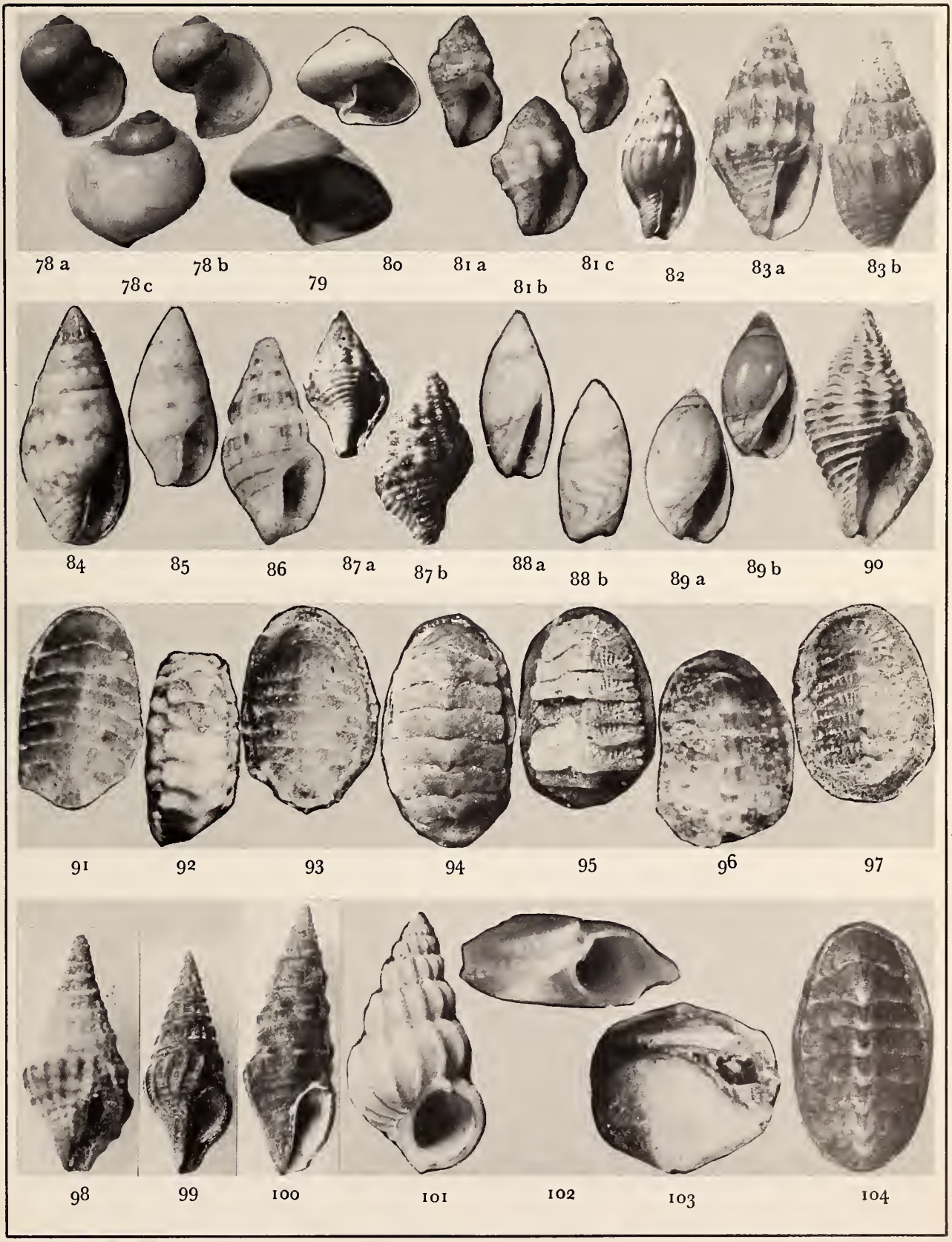
Tablet 1171, holotype. [1.1 mm]. BRANN: plt. 26, fig. 320.

The large aperture and relatively small diameter of this shell are peculiar. PILSBRY & OLSSON (1952, p. 82) considered it to be a *Solariorbis,* but it seems to me that the outline is closer to that of a *Teinostoma,* such as *T.*

Explanation of Plate 59

All specimens are in the British Museum (Natural History), Mollusca Section. They were photographed in place on glass mounts. Generic and specific names are as cited by CARPENTER.

Figure 78: *Janthina decollata.* Three syntypes. Diameter of largest, 25 mm (x 1.1).
Figure 79: *Janthina striulata.* Syntype. Diameter, 17 mm (x 1.6).
Figure 80: *Janthina contorta.* Syntype. Diameter, 21 mm (x 1.1).
Figure 81: *Sistrum rufonotatum.* Three syntypes, from Cape San Lucas, Baja California. Length of largest, 12 mm (x 2).
Figure 82: *Anachis albonodosa.* Syntype. From a color photograph by Elaine Reeves. Length, 3 mm (x 10).
Figure 83: *Anachis pachyderma.* Two syntypes. Length of larger, 16 mm (x 2.4).
Figure 84: *Columbella cervinetta.* Holotype. Length, 7.8 mm (x 5.5).
Figure 85: *Columbella obsoleta.* Syntype. Length, 6 mm (x 5.5).
Figure 86: *Anachis gaskoini.* Hypotype, from Peru. Length, 6.5 mm (x 5.5).
Figure 87: *Anachis serrata.* Two syntypes. a) Apertural view; Length, 3.1 mm; b) Back view (specimen here selected as lectotype); Length, 3.5 mm. From a color photograph by Elaine Reeves. (x 8).
Figure 88: *Olivella aureocincta.* Two syntypes. a) Apertural view; b) Back view. Length, 8.3 mm (x 3.5).
Figure 89: *Olivella glandinaria.* Two syntypes, from California, Nuttall collection. Length of larger, 25 mm (x 1.1).
Figure 90: *Pisania acquilirata.* Holotype. Length, 25.5 mm (x 1.6).
Figure 91: *Lophyrus striatosquamosus.* Holotype. Length, 4.5 mm (x 8).
Figure 92: *Acanthochites arragonites.* Syntype (here selected as lectotype). Length, 3.0 mm (x 11).
Figure 93: *Lepidopleurus macandreae.* Holotype. Length, 3.3 mm (x 11).
Figure 94: *Lepidopleurus beanii.* Syntype (here selected as lectotype). Length, 6 mm (x 7).
Figure 95: *Lepidopleurus bullatus.* Syntype (here selected as lectotype). Length, 4.5 mm (x 8).
Figure 96: *Lepidopleurus calciferus.* Holotype. Length, 3.3 mm (x 10).
Figure 97: *Lepidopleurus clathratus.* Holotype. Length, 4.4 mm (x 8).
Figure 98: *Drillia albovallosa.* Holotype. Length, 10 mm (x 4.2).
Figure 99: *Drillia hanleyi.* Holotype. Length, 10 mm (x 4).
Figure 100: *Drillia albonodosa.* Lectotype (here selected). Length, 13 mm (x 3.6).
Figure 101: *Scalaria suprastriata.* Syntype. Length, 11.5 mm (x 4).
Figure 102: *Miralabrum* sp., cf. *?M. planospirata* (CARPENTER). Hypotype from Cape San Lucas, Baja California, collected by Faye Howard. Diameter, 4.7 mm (x 8).
Figure 103: *Chiton flavescens.* Syntype. Length about 6 mm (x 10).
Figure 104: *Tonicia forbesii.* Syntype (here selected as lectotype). Length, 19 mm (x 2.4).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rarum Pilsbry & Olsson, 1945 (plt. 23, fig. 2). There is no umbilical chink, and the shell has a fine punctate spiral sculpture. The small size suggests immaturity.

114. *Teinostoma substriatum,* p. 254
= *Teinostoma substriatum* Carpenter, 1857
(Text figure 62)

Tablet 1175, syntype. [1.1 mm]. Brann: plt. 26, fig. 324 (figured also by Sowerby *in* Reeve, 1874 (Conch. Icon., vol. 19, plt. 1, fig. 4, from a specimen in the British Museum).

Pilsbry & Olsson (1952, p. 43, plt. 11, fig. 2) have illustrated a "paratype" (actually a syntype) that, although an imperfect specimen, seems to be conspecific with the specimen in the British Museum. The umbilical callus is less well developed than in other species, but there is no chink at its margin.

115. *Globulus sulcatus,* p. 250
= *Teinostoma sulcatum* (Carpenter, 1857)
(Text figure 63)

Tablet 1168-b, 1 syntype. [0.7 mm]. Brann: plt. 26, fig. 317-b.

Carpenter published this name provisionally and did not cite a separate tablet number, indicating that he had mounted one of two specimens on the card with the type of his *Globulus tumens.* The British Museum specimen now becomes secondary, for Pilsbry & Olsson (1952, p. 44; plt. 3, fig. 3) selected the other of Carpenter's two specimens as lectotype (citing it, however, as "holotype"). It was at that time in the collection of the New York State Museum but has since been transferred to the Museum of Comparative Zoology at Harvard University on permanent loan. Their figure accords well with my sketch of the British Museum specimen. Whether the furrow on the callus has any morphological significance remains to be seen.

116. ?*Globulus tumens,* p. 250
= *Teinostoma tumens* (Carpenter, 1857)
(Text figure 64 a-b)

Tablet 1168, 1 syntype. [–]. Brann: plt. 26, fig. 317.

Pilsbry & Olsson (1952, p. 43) correctly allocated this to *Teinostoma.*

117. *Vitrinella bifilata,* p. 241
= *Vitrinella bifilata* Carpenter, 1857
(Text figure 65)

Tablet 1153, 2 syntypes. [1.4 mm]. Brann: plt. 24, fig. 302.

This has been figured from a "paratype" [*i.e.* syntype] in the New York State Museum collection (now on permanent loan to Harvard University) by Pilsbry & Olsson (1952, p. 75; plt. 11, fig. 1).

118. *Vitrinella naticoides,* p. 246
= ?*Vitrinella naticoides* Carpenter, 1857
(Text figure 66)

Tablet 1161, 1 syntype. [1.2 mm]. Brann: plt. 25, fig. 310.

Pilsbry & Olsson (1952, p. 73; plt. 11, fig. 4) illustrated a "paratype" that was in the New York State Museum collection (now at Harvard University on permanent loan). It is similar in form to the syntype at the British Museum. On the basis of the spiral cord that makes the inner lip of the aperture of uneven width, I should have supposed this would be a *Solariorbis.* They, however, retain it in *Vitrinella* with a query.

119. *Vitrinella subquadrata,* p. 241
= *Vitrinella subquadrata* Carpenter, 1857
(Text figure 67)

Tablet 1152, 4 syntypes. [1 mm]. Brann: plt. 23, fig. 301.

Pilsbry & Olsson (1952, p. 76; plt. 11, fig. 5) have figured a "paratype" [*i.e.* syntype] that was then in the New York State Museum(now at Harvard University on permanent loan). The figure accords well with that of the best syntype drawn by Carpenter. My own drawing is a freehand sketch intended only to show general features.

120. *Vitrinella clathrata,* p. 238

Invalid name

This name was given in the synonymy of *Vitrinella parva* C. B. Adams, 1852. It was a manuscript name that Carpenter abandoned when he studied Adams' Panamic material, and it falls as a name proposed in synonymy.

Rissoidae

121. *Alvania tumida,* p. 360
= *Alvania (Alvinia) tumida* Carpenter, 1857
(Text figure 68)

Tablet 1711, 1 syntype. [1.4 mm]. Brann: plt. 39, fig. 414.

Bartsch (1911 d, p. 361; plt. 32, fig. 2) has given a figure of a specimen from the U. S. National Museum collection that seems to be correctly identified.

122. *Alaba mutans,* p. 369
= ?*Alvania (Lapsigyrus) mutans* (Carpenter, 1857)
(Text figure 106)

Tablet 1729, holotype. [2.2 mm]. Brann: plt. 40, fig. 431.

The back of the body whorl is broken away in the holotype, which explains Carpenter's choice of side-view for the drawing. The spiral ribs are not so strong as he would make them, and there is a channeled suture, as shown in my drawing, though he does not indicate it. The

apex is slightly sunken. I had hoped that this would provide a name that could be salvaged for the "*Alvania lirata*" of authors, but direct comparison of specimens ruled this out. No nodes develop above the suture, the aperture is more oblique, and the spire is more tapering. The shell is closer to the type species of *Lapsigyrus* BERRY, 1958 (Leaflets in Malacology, vol. 1, no. 16, p. 92), a Pleistocene form from Magdalena Bay – *Alvania contrerasi* JORDAN, 1936 (Contributions, Department of Geology, Stanford University, vol. 1, no. 4, p. 160; plt. 19, fig. 9). As compared to Jordan's figure, Carpenter's shell is smaller, the aperture is shorter, and the spiral sculpture is finer. If these differences prove to be consistent for the Recent form (the mention by Berry of fine sculpture in his report of specimens from the Sonoran coast suggests such a possibility), Carpenter's specific name may indeed have utility.

123. *Aclis fusiformis,* p. 437
=?*Onoba fusiformis* (CARPENTER, 1857)
(Text figure 69)

Tablet 2016, 2 syntypes. [1.6 mm]. BRANN: plt. 48, fig. 545.

At first glance one would take this for a pyramidellid, for the apex is sunken and folded over at the back as if heterostrophic. Bartsch evidently rejected it from Pyramidellidae, however, when he examined the types at the British Museum. Although the columella is twisted, it does not really bear a fold. The sculpture is pitted, in the manner of *Acteon,* but it lacks other characters of that genus. The outline seems nearest to that of the rissoid genus *Onoba,* and there is a first record of that group in the West American fauna as *O. fortis* PILSBRY & OLSSON, 1941 (Proc. Acad. Nat. Sci. Philadelphia, vol. 93, p. 45; plt. 8, fig. 3), from the Pliocene of Ecuador. Several specimens from beach drift taken at Salinas, Ecuador, match their figure well, so that the species may be regarded as still living there. These specimens, in the Stanford University collection, have the apical whorls in good condition; the apex is acute, not sunken as in Carpenter's Mazatlan specimens. I therefore make the allocation with considerable doubt.

RISSOELLIDAE

124. *Jeffreysia bifasciata,* p. 362
=*Rissoella bifasciata* (CARPENTER, 1857)
(Text figure 70)

Tablet 1716, 3 syntypes. [1.4 mm]. BRANN: plt. 39, fig. 419.

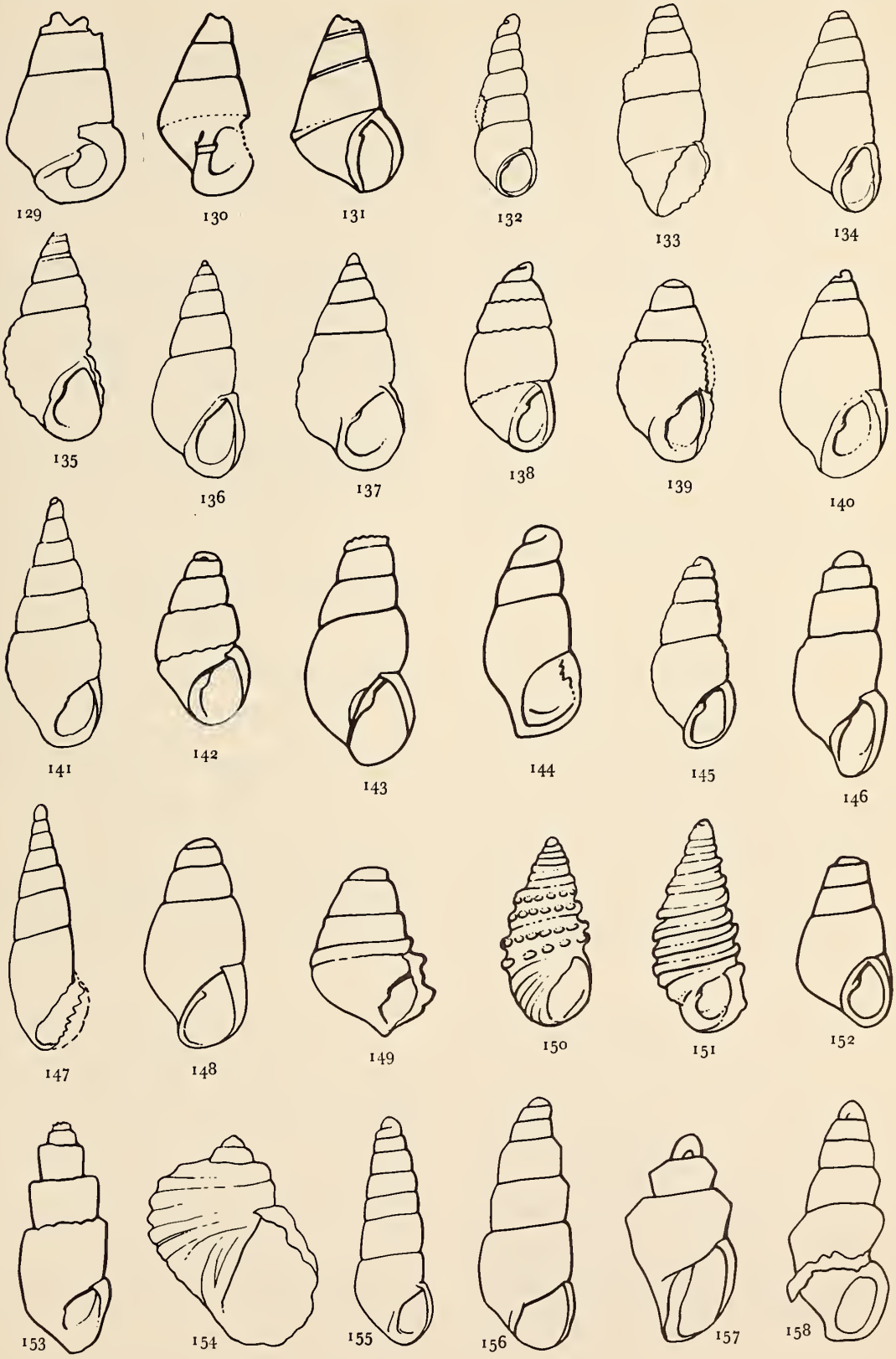
The color bands show up well, especially on the back of the largest syntype and on the two smaller shells in apertural view. BARTSCH (1920, p. 162; plt. 12, fig. 2) has figured a specimen he calls "type" (probably a syntype).

I have collected live specimens intertidally in gravelly sand at Cape San Lucas. ROBERTSON (1962, Notulae Naturae, Acad. Nat. Sci. Philadelphia, no. 352, p. 1) has shown that the generic name *Rissoella* M. E. GRAY,

Explanation of Text figures 129 to 158

Note: Stated lengths are camera lucida readings and may be as much as 1/10 too high.

Figure 129: *Odostomia lamellata.* Syntype. Length (incomplete), 2 mm (x 14).
Figure 130: *Odostomia subsulcata.* Syntype. Length, 1.4 mm (x 19).
Figure 131: *Odostomia vallata.* Syntype. Length, 1.6 mm (x 17).
Figure 132: *Odostomia convexa.* Syntype. Length, 2.3 mm (x 11).
Figure 133: *Odostomia effusa.* Holotype. Length, 2.6 mm (x 12).
Figure 134: *Odostomia fasciata.* Syntype. Length, 2.5 mm (x 11).
Figure 135: *Odostomia nodosa.* Syntype. Length, 4.9 mm (x 7).
Figure 136: *Odostomia oblonga.* Syntype. Length, 4.9 mm (x 7).
Figure 137: *Odostomia ovata.* Syntype. Length, 4.9 mm (x 7).
Figure 138: *Odostomia ovulum.* Syntype. Length, 1.7 mm (x 16).
Figure 139: *Odostomia reigeni.* Holotype. Length, 1.7 mm (x 15).
Figure 140: *Odostomia rotundata.* Syntype. Length, 2.6 mm (x 12).
Figure 141: *Odostomia telescopium.* Syntype. Length, 4 mm (x 9).
Figure 142: *Odostomia lacunata.* Syntype. Length, 1.4 mm (x 19).
Figure 143: *Odostomia tenuis.* Syntype. Length, 1.8 mm (x 19).
Figure 144: *Chemnitzia intermedia.* Syntype. Length, 1.6 mm (x 19).
Figure 145: *Odostomia photis.* Syntype. Length, 1.4 mm (x 20).
Figure 146: *Odostomia quinquecincta.* Syntype. Length, 1.8 mm (x 19).
Figure 147: *Odostomia clausiliformis.* Syntype. Length, 3.5 mm (x 10).
Figure 148: *Odostomia sublirulata.* Holotype. Length, 2.3 mm (x 14).
Figure 149: *Odostomia ziziphina.* Holotype. Length, 1 mm (x 23).
Figure 150: *Odostomia armata.* Syntype. Length, 2.5 mm (tilted) (x 11).
Figure 151: *Odostomia exarata.* Hypotype. Length, 2.9 mm (x 11).
Figure 152: *Odostomia mammillata.* Holotype. Length, 1.4 mm (x 18).
Figure 153: *Odostomia scalariformis.* Syntype. Length, 3 mm (x 11).
Figure 154: *Fossarus maculosa.* Syntype. Length, 4 mm (x 8).
Figure 155: *Chemnitzia muricata.* Syntype. Length, 2.8 mm (x 14).
Figure 156: *Chemnitzia subangulata.* Syntype. Length, 2.6 mm (x 14).
Figure 157: *Chemnitzia cancellata.* Holotype. Length, 1.2 mm (x 26).
Figure 158: *Chemnitzia paucilirata.* Holotype. Length, 2.7 mm (x 14).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March 1850, takes precedence over *Jeffreysia* Forbes & Hanley, May, 1850.

125. *Jeffreysia tumens*, p. 363
=*Rissoella tumens* (Carpenter, 1857)
(Text figure 71)

Tablet 1719, 2 syntypes. [1.2 mm]. Brann: plt. 39, fig. 421.

The specimen figured by Bartsch (1920, pp. 160 - 161; plt. 12, fig. 1) seems to be correctly identified. The shell figured by Baker, Hanna, & Strong (1930, p. 36; plt. 1, fig. 13) has a more pointed apex and a small umbilicus.

126. ?*Jeffreysia alderi*, p. 362
=*Barleeia alderi* (Carpenter, 1857)
(Text figure 72)

Tablet 1718, 3 syntypes. [1.7 mm]. Brann: plt. 39, fig. 420.

The allocation to *Barleeia* was made by Bartsch (1920, p. 175; plt. 12, fig. 6). Baker, Hanna, & Strong (1930, p. 38) also have given a figure of a specimen, neither illustration being of type material.

Rissoinidae

127. *Rissoina woodwardii*, p. 357
=*Rissoina woodwardii* Carpenter, 1857
(Text figure 73)

Tablets 1706 - 1707, 13 syntypes. [3.1 mm]. Brann: plt. 39, fig. 410 (also figured by Sowerby *in* Reeve 1878 (Conch. Icon., vol. 20, *Rissoa* plt. 11, fig. 104).

In his manuscript plates (published by Brann) Carpenter omitted the numeral for tablet 1707, which should be below the figure to the right of "410" on plate 39. There seem to be no problems with this form, of which Carpenter had 15 syntypes. There are now only 13 entire shells and two fragments. Carpenter cited one unusually large specimen as length 4.1 mm. My drawing of the largest indicated 3.6 mm.

128. ?*Rissoa lirata*, p. 358
=?*Rissoina* (*s.l.*) *lirata* (Carpenter, 1857)
(Text figure 74)

Tablet 1708, 2 syntypes. [4 mm]. Brann: plt. 39, fig. 411.

Instead of publishing Carpenter's manuscript drawing, as he did for other Mazatlan forms, Bartsch (1911, p. 338; plt. 29, fig. 3) illustrated a specimen from the U. S. National Museum collection, and his figure has been the basis for the misidentification of a relatively common form as "*Alvania lirata* Carpenter." Carpenter described and his figure shows an operculum with an apophysis, like that of *Rissoina*; the operculum is still in place on the tablet. In his errata (page 552) he transferred the species to *Barleeia*. The figured syntype (here chosen as lectotype) is more slender and tapering than "*A. lirata*" of authors, with regular spiral riblets crossed by a few low, angular axial ribs; there are faint color bands, and the suture is smoothly appressed, not channeled or bordered by nodes. A specimen in the California Academy of Sciences collection from San Francisquito Bay, Gulf of California, matches the figure of Carpenter's type well.

If this form is correctly to be assigned to *Rissoina* it makes the fifth of a group of Gulf of California species having spiral sculpture predominating. The others listed by Baker, Hanna, & Strong (1930, p. 34) are: *R. lapazana* Bartsch, 1915; *R. kelseyi* Dall & Bartsch, 1902; *R. berryi* and *R. stephensae* Baker, Hanna & Strong, 1930. The group may prove to deserve a separate generic name or may turn out to be closer to *Diala*. At present we have insufficient knowledge about the type species of *Diala*.

Caecidae

129. *Caecum clathratum*, p. 322
=*Caecum clathratum* Carpenter, 1857
(Text figure 75)

Tablet 1528, 4 syntypes. [2.5 mm]. Brann: plt. 34, fig. 369.

The largest of 4 syntypes is illustrated here.

130. *Caecum* ?*quadratum*, var. *compactum*, p. 322
=*Caecum compactum* Carpenter, 1857
(Text figure 76)

Tablet 1530, 7 syntypes. [–].

I have drawn the syntype that is third from the right on the tablet. Carpenter did not prepare a camera lucida drawing, not having been convinced of the validity of the form as separate. The syntypes comprise a growth series.

131. *Caecum elongatum*, p. 319
=*Caecum elongatum* Carpenter, 1857
(Text figure 77)

Tablet 1525, 4 syntypes. [2.6 mm]. Brann: plt. 33, fig. 366.

My drawing is of the largest of 4 specimens on the tablet.

132. *Caecum farcimen*, p. 326
=?*Caecum farcimen* Carpenter, 1857
(Text figure 78)

Tablet 1544, 4 syntypes. [1.6 mm]. Brann: plt. 36, fig. 373.

There are 2 adult syntypes. Annulations are present though faint. Carpenter assigned this to his "section" *Fartulum,* which otherwise is made up of smooth forms.

133. *Caecum quadratum,* p. 322
=*Caecum quadratum* CARPENTER, 1857
(Text figure 79 a-b)

Tablet 1529, 7 syntypes. [1.8 mm]. BRANN: plt. 35, fig. 370.

I have drawn the two largest among the seven. There are about 17 somewhat flattened annulations, only the terminal ones being sketched in in my drawings.

134. *Caecum ?elongatum,* var. *semilaeve,* p. 319
=*Caecum semilaeve* CARPENTER, 1857
(Text figure 80)

Tablet 1526, 2 syntypes. [–].

I am illustrating the larger of the syntypes; the annulations are weak and irregularly developed. Carpenter did not prepare a camera lucida drawing for this form, as he was not confident of its validity.

135. *Caecum subimpressum,* p. 320
=*Caecum subimpressum* CARPENTER, 1857
(Text figure 81)

Tablet 1527, 7 syntypes. [3 mm]. BRANN: plt. 34, fig. 367.

My figure is of the largest syntype. The annulations are strong and recurved near the aperture.

136. *Caecum undatum,* p. 323
=*Caecum undatum* CARPENTER, 1857
(Text figure 82)

Tablets 1531 - 1538. [1.8 mm]. BRANN: plts. 35, 36, fig. 371.

Of the numerous syntypes, I have selected for my drawing the second from the right on tablet 1535. The shell resembles that of *Fartulum* but with low ribs, its surface otherwise shiny and smooth.

137. *Caecum heptagonum,* p. 319
=*Elephantanellum heptagonum* (CARPENTER, 1857)
(Text figures 83 a-b)

Tablet 1524, holotype. [0.5 mm]. BRANN: plt. 32, fig. 365.

This is the type species of the genus *Elephantanellum* BARTSCH, 1921. A figure of a better-preserved specimen has been given by STRONG & HERTLEIN (1939, p. 226; plt. 20, fig. 9) from Panama.

138. *Caecum liratocinctum,* p. 317
=*Elephantanellum liratocinctum* (CARPENTER, 1857)
(Text figures 84 a-b)

Tablets 1518 - 1519, 8 syntypes. [3.7 mm]. BRANN: plts. 32, 33, fig. 364.

My drawings are of the largest specimens on both tablets.

139. *Caecum liratocinctum,* var. *subconicum,* p. 318
=*Elephantanellum subconicum* (CARPENTER, 1857)
(Text figure 85)

Tablet 1522, 2 syntypes. [–]. BRANN: plt. 33, fig. 364 (part).

It may well be that this variety and the next are within the range of variation of the species. There are two specimens, one broken near the aperture, the other mounted with its convex side down.

140. *Caecum liratocinctum,* var. *subobsoletum,* p. 318
=*Elephantanellum subobsoletum* (CARPENTER, 1857)
(Text figure 86)

Tablet 1521, 2 syntypes. [–]. BRANN: plt. 33, fig. 364 (part).

141. *Caecum liratocinctum,* var. *tenuiliratum,* p. 318
=*Elephantanellum tenuiliratum* (CARPENTER, 1857)
(Text figure 87)

Tablet 1520, holotype. [–]. BRANN: plt. 33, fig. 364 (part).

One is tempted to transfer this form to *Elephantulum,* for there is little evidence of transverse sculpture. The longitudinal ribs are fine and sharply cut.

142. *Caecum abnormale,* p. 316
=*Elephantulum abnormale* (CARPENTER, 1857)
(Text figure 88)

Tablet 1516, 1 syntype. [1.2 mm]. BRANN: plt. 32, fig. 362.

143. *Caecum insculptum,* p. 315
=*Elephantulum insculptum* (CARPENTER, 1857)
(Text figures 89 a-b)

Tablet 1514, 2 syntypes. [3.3 mm]. BRANN: plt. 32, fig. 360.

The longitudinal ribs are well spaced on both syntypes, one of which Carpenter regarded as "old," the other "young."

144. *Caecum obtusum,* p. 317
=*Elephantulum obtusum* (CARPENTER, 1857)
(Text figure 90)

Tablet 1517, 2 syntypes. [3.2 mm]. BRANN: plt. 32, fig. 363.

I have drawn the larger of the two syntypes. The ribs have a worn look and are faint, more like internal lirae.

145. *Caecum subspirale,* p. 315
=*Elephantulum subspirale* (Carpenter, 1857)
(Text figure 91)

Tablet 1515, 4 syntypes. [4 mm]. Brann: plt. 32, fig. 361.

Of the syntypes mentioned by Carpenter I have drawn the adult. The longitudinal ribs are numerous and with narrow interspaces.

146. *Caecum dextroversum,* p. 328
=*Fartulum dextroversum* (Carpenter, 1857)
(Text figure 92)

Tablet 1548, 9 syntypes. [2.3 mm]. Brann: plt. 37, fig. 376.

I have drawn the two syntypes at the right of the tablet, one being an adult, the other juvenile.

147. *Caecum glabriforme,* p. 327
=*Fartulum glabriforme* (Carpenter, 1857)

Tablet 1546, originally 2 syntypes. [1.8 mm]. Brann: plt. 37, fig. 374.

The young shell mentioned by Carpenter is now missing, and the adult has so deteriorated that it is unrecognizable. The species will have to be interpreted on the basis of Carpenter's drawing and description.

148. *Caecum reversum,* p. 329
=*Fartulum reversum* (Carpenter, 1857)
(Text figure 93)

Tablet 1549, holotype. [1.2 mm]. Brann: plt. 37, fig. 377.

The specimen is glued to the tablet in such a way that the outline is hard to draw accurately.

149. *Caecum teres,* p. 329
=?*Fartulum teres* (Carpenter, 1857)
(Text figure 94)

Tablet 1550, 3 syntypes. [3 mm]. Brann: plt. 37, fig. 378.

Of the three syntypes mentioned by Carpenter, one is now unrecognizable on account of chemical deterioration; another is partly decorticated. The remaining one is the largest. It shows banding, perhaps from wear, which Carpenter well characterized as "mottling." There are also some faint and irregular growth lines and a few weak longitudinal lines. One wonders if, when the shell was fresh, it may not have been recognizable as an *Elephantanellum* rather than a *Fartulum,* which Carpenter thought it might be.

150. *Caecum corrugulatum,* p. 327
=?*Micranellum corrugulatum* (Carpenter, 1857)
(Text figure 95)

Tablet 1547, holotype. [1.9 mm]. Brann: plt. 37, fig. 375.

The specimen is now an indeterminate broken tube filled with sediment. I suggest an allocation to *Micranellum* on the basis of Carpenter's drawing and description.

Vermetidae

151. *Siphonium (Aletes) ?centiquadrus imbricatus,* p. 302
=?*Vermetus* sp., indet.

Tablet 1484, 1 syntype (?holotype). [Length, 15 mm; diameter of aperture, 3 mm].

Aware on my later visits to the British Museum that I had earlier concentrated on the Vermetidae, I was less rigorous in checking these slides, and thus I overlooked the fact that neither Carpenter nor I had sketched the specimen on slide 1484. I have therefore only the notes I made in 1958 when I decided that the shell is too immature for generic allocation. The coil has 2 to 3 whorls and is 15 mm in diameter; the sculpture is evenly striate rather than imbricate, as in *Serpulorbis.* However, were this to be allocated to *Serpulorbis* it would jeopardize the name of the well-known *S. imbricatus* (Dunker, 1860) from Japan. Because young vermetids of less than 3 whorls cannot be assigned to a genus unless the nuclear

Explanation of Textfigures 159 to 171

Note: Stated lengths are camera lucida readings and may be as much as 1/10 too high.

Figure 159: *Eulimella obsoleta.* Holotype. Length, 1.6 mm (x 19).

Figure 160: *Chemnitzia flavescens.* Holotype. Length, 3.3 mm (x 11).

Figure 161: *Chemnitzia gracillima.* Syntype. Length, 3.4 mm (x 11).

Figure 162: *Odostomia indentata.* Syntype. Length, 4.6 mm (x 7.5).

Figure 163: *Chemnitzia tenuilirata.* Syntypes. Length, a) 3 mm (incomplete) (x 12); b) 2 mm (x 16).

Figure 164: *Chemnitzia terebralis.* Holotype. Length, 2.8 mm (x 12).

Figure 165: *Chemnitzia unifasciata.* Holotype. Length, 2.6 mm (x 12).

Figure 166: *Chemnitzia c-b-adamsii.* Syntype. Length, 4.6 mm (x 7.5).

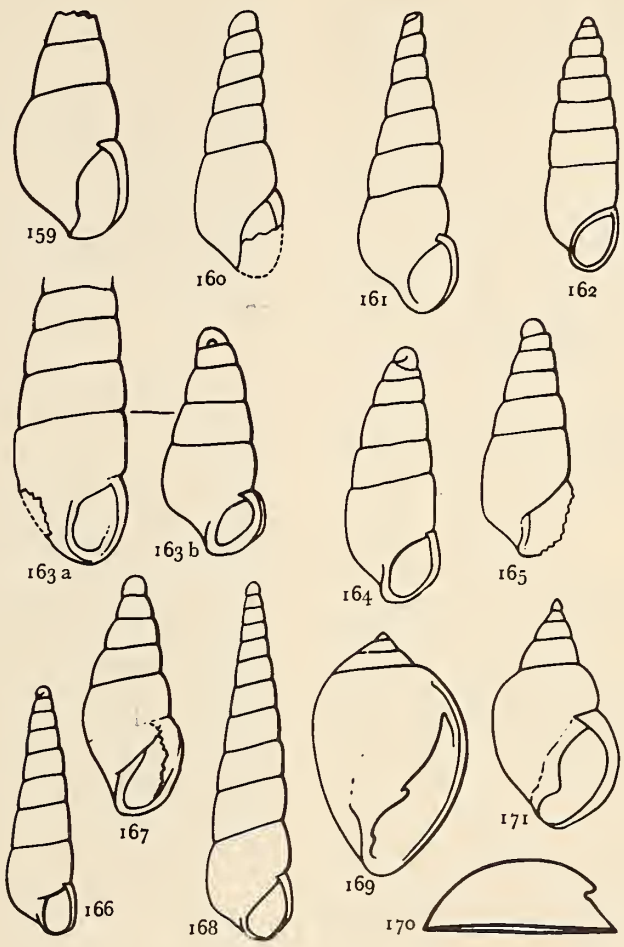
Figure 167: *Chemnitzia undata.* Syntype. Length, 2 mm (x 16).

Figure 168: *Chemnitzia prolongata.* Syntype. Length, 6.4 mm (x 7.5).

Figure 169: *Melampus olivaceus.* Syntype. Length, 12.5 mm (x 2.7).

Figure 170: *Nacella peltoides.* Hypotype. Length, 3.7 mm (x 7).

Figure 171: *Litiopa divisa.* Syntype. Length, 2.7 mm (x 11).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whorls and soft parts are preserved, it seems best to regard this variety as indeterminate.

Carpenter cited two specimens, one in good condition, the other worn. As he says that "Tablet 1484 contains the characteristic specimen," one might interpret this as holotype selection.

152. *Bivonia contorta,* p. 305
=*Vermetus (Thylaeodus) contortus* (Carpenter, 1857)

Tablets 1489 - 1493, several syntypes. [23 mm].

The specimen on tablet 1490 was figured as lectotype by Keen (1961, p. 201; plt. 55, fig. 3).

153. *Bivonia contorta,* var. *indentata,* p. 307
=*Vermetus (Thylaeodus) indentatus* (Carpenter, 1857)

Tablet 1494, 3 syntypes. [13 mm].

The best of 3 specimens on this tablet was figured as lectotype by Keen (1961, p. 202; plt. 55, fig. 4).

154. *Bivonia albida,* p. 307
Indeterminate vermetid
(Text figure 96)

Tablet 1495, 3 syntypes. [5.5 mm]. Brann: plt. 31, fig. 356.

Carpenter's drawing and my own of the nuclear whorls agree well. He thought that one of the 3 syntypes was mature, but I do not find it identifiable. Several of the tropical West American vermetids have juvenile shells with this mode of coiling.

155. *Petaloconchus macrophragma,* p. 309, "n. s."; Carpenter, 1857 a [March], p. 313
=*Petaloconchus (Macrophragma) macrophragma* Carpenter, 1857

Tablets 1499 - 1506. Brann: plt. 30, fig. 359.

Carpenter's drawing is of the shell on tablet 1499, showing the internal laminae. A specimen on tablet 1500 was selected as lectotype by Keen (1961, p. 205; plt. 55, fig. 2). There is a typographical error in Brann's citation of the registry number, which is 57.6.4.1500 (not 1494). Carpenter validated the specific name prior to the publication of the Mazatlan Catalogue but based both descriptions on the same type material.

Cerithiidae

156. *Cerithium ?famelicum, var. mediolaeve,* p. 334
=*Cerithium mediolaeve* Carpenter, 1857
(Plate 57, Figure 51)

Tablet 1587, holotype. [25 mm].

Because *Cerithium famelicum* C. B. Adams, 1852, has been ranked as a synonym of *C. uncinatum* (Gmelin, 1791), Carpenter's unillustrated variety has also been synonymized. However, the photograph shows that it is not only a smoother shell than *C. uncinatum,* with subdued color markings, but it is much more slender. The recurved canal and placement of sculptural elements relates it more closely to *C. nicaraguense* Pilsbry & Lowe, 1932, from which it differs in its slightly smaller size and more slender outline. Judging by the holotype, I conclude that this may be a distinct species and one to be watched for in West Mexican material.

157. *Cerithium alboliratum* p. 336,
=*?Cerithium maculosum* Kiener, 1841
(Plate 57, Figure 48; Text figure 97)

Tablet 1591, 4 syntypes. [3.1 mm]. Brann: plt. 38, fig. 385.

Carpenter's drawings illustrate 2 of the 4 syntypes. My drawing and photograph are of the only one now on the tablet that is unquestionably a *Cerithium,* and this specimen is here selected as lectotype. Baker, Hanna, & Strong (1938, p. 225; plt. 17, fig. 7) seem to have recognized the form correctly from Carpenter's description and from a figure by Reeve, 1866 (Conch. Icon., vol. 15, plt. 16, sp. 109) of a specimen said to be in the Cuming collection, British Museum. I am not convinced that this is a distinct species, for it seems to me to be the juvenile tip of *C. maculosum.* The other syntypes on the tablet are, I think, specimens of *Alabina* and *Bittium.*

158. *Cerithiopsis ?tuberculoides,* var. *albonodosa,* p. 443
=*Cerithiopsis tuberculoides* Carpenter, 1857
(Text figure 98)

Tablet 2029, 1 juvenile syntype and fragments. [–]. Brann: plt. 48, fig. 557-b.

This seems to be a color variant and a juvenile shell otherwise identical to *Cerithiopsis tuberculoides.* Carpenter cited no measurements.

159. *Cerithiopsis cerea,* p. 443
=*Cerithiopsis cerea* Carpenter, 1857
(Text figure 99)

Tablet 2030, holotype. [2.4 mm]. Brann: plt. 48, fig. 558.

As with other of Carpenter's species of *Cerithiopsis,* Bartsch (1911 b, p. 333; plt. 37, fig. 6) published the same camera lucida sketch later republished by Brann, and he reprinted Carpenter's description without comment. It is obvious that he was not able to recognize the species in the material he had available. Carpenter's drawing is distorted as to outline.

160. *Cerithiopsis pupiformis,* p. 443
=*Cerithiopsis pupiformis* CARPENTER, 1857
(Text figures 100 a-b)

Tablet 2031, 2 syntypes. [1.8 mm]. BRANN: plt. 48, fig. 559.

One wonders whether Carpenter had correctly matched the two specimens he mounted as syntypes, the apex of a juvenile shell and the last few whorls of an adult. Drawn to a common scale, as I have done them, they do not seem to match in contour. The young shell has strong sculpture, the upper of 3 threads being weakest. BARTSCH, as mentioned above, merely reprinted Carpenter's description (*op. cit.,* p. 337; plt. 38, figs. 1, 5).

161. *Cerithiopsis sorex,* p. 444
=?*Cerithiopsis sorex* CARPENTER, 1857
(Text figure 101)

Tablet 2032, 1 syntype. [1.6 mm]. BRANN: plt. 49, fig. 560.

Carpenter's drawing does not show, nor does he mention, the slot-like posterior notch, which gives the aperture in the holotype the semblance of a nassariid. I have not found this structure so well developed in actual specimens. One of what appears otherwise to be *Cerithiopsis sorex,* in the Stanford University collection, from near La Paz, Baja California, has a newly-mended outer lip that has not reached its full development; also, the pointed apex is broken off. A species from Panama, *C. eiseni* STRONG & HERTLEIN, (1939, p. 216; plt. 20, fig. 6) seems to have the same contours of the later whorls, but it, too, lacks apical whorls in the figured holotype. Another similar form is *C. perrini* HERTLEIN & STRONG, 1951 (Zoologica, vol. 36, no. 5, p. 106; plt. 7, fig. 6) from Port Guatulco, Mexico.

162. *Cerithiopsis tuberculoides,* p. 442
=*Cerithiopsis tuberculoides* CARPENTER, 1857
(Text figures 102 a-b)

Tablet 2028, 2 syntypes. [1.4 mm; 4 mm]. BRANN: plt. 48, fig. 557.

The younger of the two syntypes was chosen by Carpenter for his drawing. The apex in this has 3 smooth whorls. The adult has a broken aperture; its apex is somewhat imperfect but the remainder of the shell shows the sculpture well, 3 beaded cords per whorl equal in strength.

163. *Cerithiopsis convexa,* p. 444
=*Metaxia convexa* (CARPENTER, 1857)
(Text figures 103 a-b)

Tablet 2033, holotype. [4.5 mm]. BRANN: plt. 49, fig. 561.

Authors have been able to recognize this species correctly.

164. *Cerithiopsis decussata,* p. 445
=*Bittium decussatum* (CARPENTER, 1857)
(Text figure 104)

Tablet 2034, holotype. [4 mm]. BRANN: plt. 49, fig. 562.

BARTSCH (1911 c, p. 409; plt. 52, fig. 2) transferred the species to *Bittium,* reprinted Carpenter's description, and published his manuscript drawing. It is evident that Bartsch did not have material at hand.

[**Note:** Carpenter has been criticized for having bestowed names on fragmentary and unrecognizable material. His usage of *Alaba* as a generic term is especially open to such criticism. Because all but one of the species belong elsewhere and so many are unrecognizable, I have listed all of his named Alabas here, alphabetically instead of systematically. Possibly some of the forms can be matched with fresh material eventually. One can hope that the names will prove useful and do not displace later names based on more complete specimens.]

165. *Alaba alabastrites,* p. 368
?

Tablet 1726, holotype. [1.4 mm]. BRANN: plt. 40, fig. 428.

The holotype is only the apical tip of a shell, the nucleus and 3 whorls of a slender form that could be turrid, columbellid, or rissoinid; therefore, it seems generically and specifically indeterminate.

166. *Alaba conica,* p. 368
?=*Cerithium adustum* KIENER, 1841

Tablet 1728. [2 mm]. BRANN: plt. 40, fig. 430.

The species must be recognized, if it can be at all, from Carpenter's description and drawing and from 3 syntypes in other collections, for the one placed in the British Museum collection is now missing. At some time the end of the vial had broken and the specimen, having come unglued, had lost out. I found no trace of it in the box.

167. ?*Alaba laguncula,* p. 369
?*Iselica* sp.
(Text figure 105)

Tablet 1730, holotype. [1.1 mm]. BRANN: plt. 40, fig. 432.

The specimen consists of the nuclear whorls and part of one spire whorl; the apex seems to be partially immersed or tilted, and as the sculpture suggests *Iselica,* the form may be a pyramidellid. My drawing is only a sketch to show outline and is not to scale.

Alaba mutans, p. 369. *See* no. 122, under Rissoidae.

168. *Alaba scalata,* p. 368
?*Epitonium* sp., juvenile
(Text figure 107)

Tablet 1727, holotype. [0.9 mm]. BRANN: plt. 43, fig. 429.

The juvenile shell probably is specifically and subgenerically indeterminate.

169. *Alaba supralirata,* p. 366
=*Alaba supralirata* CARPENTER, 1857

Tablet 1723, 3 syntypes. [4.8 mm]. BRANN: plt. 43, fig. 425.

This is Carpenter's only *Alaba* that really qualifies for inclusion. The smallest specimen has 6 whorls, and the apex is well shown in Carpenter's drawing; the middle-sized shell shows the early post-apical sculpture that is portrayed by BARTSCH (1910, pp. 153 - 156, figs. 1 - 2). The largest specimen has obscure sculpture but strong varices, its terminal whorl shown in Carpenter's figure.

Bartsch has quoted E. A. Smith's criticism of Carpenter's overnaming in this genus.

170. *Alaba terebralis,* p. 367
?*Eulima* sp.
(Text figure 108)

Tablet 1725, holotype. [1.7 mm]. BRANN: plt. 40, fig. 427.

The tapering and loosely coiled apex that Carpenter shows now has chipped away to a single whorl that appears obliquely twisted.

171. *Alaba violacea,* p. 367
?*Eulima* sp.
(Text figure 109)

Tablet 1724, holotype. [1.5 mm]. BRANN: plt. 40, fig. 426.

The shell is broken and one must guess at the true outline.

172. *Alvania effusa,* p. 359
=*Alabina effusa* (CARPENTER, 1857)
(Text figure 110)

Tablet 1710, holotype. [3 mm]. BRANN: plt. 39, fig. 413.

BARTSCH (1911 d, p. 358; plt. 32, fig. 5), reproduced Carpenter's drawing and continued this in *Alvania* rather than *Alabina,* which he also reviewed (1911 a). It seems to me to have all the characters of *Alabina,* for no other *Alvania* is so slender and tall.

173. ?*Alvania excurvata,* p. 359
=*Alabina excurvata* (CARPENTER, 1857)
(Text figure 111)

Tablet 1709, 8 syntypes. [3 mm]. BRANN: plt. 39, fig. 412.

This is a prior name for *Alabina diomedeae* BARTSCH, 1911 (1911 a, p. 413; plt. 62, fig. 1), an abundant small mollusk in the Gulf of California. One wonders that Bartsch failed to recognize the form from the Carpenter drawing, which he had available. Under the Article 23(b) of the International Code of Zoological Nomenclature, Bartsch's specific name might be declared a *nomen oblitum,* for it has been a junior synonym more than the requisite 50 years, but at present the International Commission is at an impasse on the proper procedure for implementing this rule.

POTAMIDIDAE

174. *Cerithidea ?varicosa* SOWERBY, var. *mazatlanica,* p. 344
=*Cerithidea mazatlanica* CARPENTER, 1857
(Plate 57, Figures 47 a-d)

Tablets 1628 - 1637, 33 syntypes (4 on tablet 1630 figured). [25 mm].

Authors have had no problems with the identification of this form. A specimen from the Cuming collection was figured by Sowerby in REEVE, 1866 (Conch. Icon., vol. 15, *Cerithidea,* plt. 1, sp. 8).

HIPPONICIDAE

175. *Hipponyx serratus,* "n. s.", p. 296
=*Hipponix serratus* (CARPENTER, 1856)
(Plate 57, Figures 43 a-b)

Tablets 1462 - 1468, 12 syntypes. [25 mm]. BRANN: plt. 31, fig. 346.

Two syntypes on tablet 1465 are figured here. The species name was validated earlier (CARPENTER, 1856 b, p. 3) based on other British Museum as well as Reigen material.

176. *Hipponyx planatus,* p. 298
=*Hipponix planatus* (CARPENTER, 1857)
(Plate 57, Figures 42 a-b; Text figures 112 a-b)

Tablet 1470, 2 syntypes. [1.5 mm - 5 mm]. BRANN: plt. 31, fig. 348.

The Mazatlan material consisted of immature specimens. One lot of adult shells from Panama (Cuming collection) was also cited; it is now in the Type Collection, British Museum, registry no. 1966625. [19 mm].

FOSSARIDAE

177. *Fossarus angulatus,* p. 354
=*Fossarus angulatus* CARPENTER, 1857

Tablet 1701, 1 syntype. [1.8 mm]. BRANN: plt. 38, fig. 405.

The syntype originally retained at the British Museum is now almost entirely disintegrated; there appear to have been 2 carinae, a wide columellar lip, and a large aperture with a thickened rim, but Carpenter's drawing is the only real clue to identity.

178. *Fossarus tuberosus,* p. 354
=*Fossarus tuberosus* CARPENTER, 1857
(Text figure 113)

Tablet 1700, 2 syntypes. [1.1 mm]. BRANN: plt. 38, fig. 404.

Carpenter's drawing should enable the identification of this form. The smaller syntype shows 2 brown nuclear whorls and 4 carinae on the body whorl; the larger has 3 brown nuclear whorls and fine spiral intercalary ribs.

CALYPTRAEIDAE

179. *Trochita ventricosa,* p. 264
=*Calyptraea (Trochita) spirata ventricosa* (CARPENTER, 1857)
(Plate 57, Figures 55 a-b)

Tablet 1316, holotype. [19 mm].

The holotype is glued to the mount at an angle difficult for proper photography.

CREPIDULIDAE

180. *Crepidula ?dorsata* Brod., var. *bilobata,* p. 273
?=*Crepidula aculeata* (GMELIN, 1791)
(Plate 57, Figure 56; Text figure 114)

Tablet 1354, 5 syntypes. [9.5 mm]. BRANN: plt. 28, fig. 336.

Carpenter's drawings are of the 4 smallest syntypes. My photograph shows the exterior of the largest. Although covered by an incrustation, it shows a pattern of large and small spines as in *Crepidula aculeata.* Carpenter describes the deck as brown; perhaps it was, in fresh material, but to my eyes it is now white. All the specimens were immature. Possibly the name may have some use if a brown-decked variant of *C. aculeata* comes to light.

MURICIDAE

181. *Murex ?recurvirostris lividus,* p. 519
=*Murex (Murex) lividus* CARPENTER, 1857
(Plate 58, Figures 63 a-b)

Tablets 2467 - 2480, 23 syntypes (specimens from tablet 2477 here figured). [52 mm].

This form seems to be morphologically distinct from *Murex recurvirostris* BRODERIP, 1833, in which spines are obsolescent, and *M. elenensis* DALL, 1919, in which they are numerous. In *M. lividus* spines are sparsely present on spire and canal.

182. *Muricidea ?erinaceoides,* var. *indentata,* p. 527
=*Aspella indentata* (CARPENTER, 1857)
(Plate 58, Figure 64)

Tablet 2510, holotype. [34 mm].

A few months after describing *Aspella perplexa* KEEN, 1958, I had opportunity to see Carpenter's holotype and – perhaps too hastily – decided my species must fall as a synonym. Now with a photograph of the type and more Mexican material, I suspect our Aspellas all need restudy.

COLUMBELLIDAE

183. *Anachis albonodosa,* p. 512
=*Anachis albonodosa* CARPENTER, 1857
(Plate 59, Figure 82)

Tablet 2432, syntype. [3.3 mm]. BRANN: plt. 56, fig. 654.

Axial sculpture begins on the fourth whorl of the otherwise smooth spire and fades out on the base of the body whorl; the ribs are smooth and end above in white nodes. The aperture is contracted and the outer lip thin, perhaps immature. I have not as yet found among the numerous available specimens of *Anachis* of the West Mexican area in collections I have studied one that I could positively identify as *A. albonodosa.* Perhaps now that figures are published, collectors may be able to recognize the form.

184. *Anachis gaskoini,* p. 510
=*Anachis gaskoini* CARPENTER, 1857
(Plate 59, Figure 86; Text figure 115)

Tablet 2430 (sketch). [6 mm].

This form was described by PHILIPPI in 1846 as *Columbella taeniata,* a name preoccupied by *C. taeniata* LINK, 1807. Before Carpenter had accidentally smashed the type specimen of a Mazatlan form his friend Gaskoin had pronounced a new species, he had made a sketch, which is reproduced in facsimile here. Although poor, it is recognizable as the *C. taeniata* PHILIPPI of authors and is reinforced both by Carpenter's label on a specimen in the British Museum collection from Callao, Peru, registry number 79.2.26.109 (see Plate 59, Figure 86) and by his synonymizing of the two names later (CARPENTER, 1865 b, p. 273). DALL in 1918 named *Anachis bartschii,* which has remained unfigured, but photographs of the type lot show it to be identical to Carpenter's species. BAKER, HANNA, & STRONG (1938, Proc. Calif. Acad. Sci., ser. 4, vol. 23, no. 16, p. 249; plt. 24, fig. 11), working from the description alone, figured a specimen as *A. bartschii* that is a yet-undescribed species. Unfortunately,

I copied their figure (KEEN, 1958, fig. 421). GRANT & GALE (1931, p. 688; plt. 26, fig. 47) attempted to illustrate *A. gaskoini,* but their figure turns out to be of a variant that also is unnamed. Again – unfortunately – I copied the figure (KEEN, 1958, fig. 433). I plan a review of some of these West Coast Columbellidae to clarify the nomenclature. The true *A. gaskoini* is white, with golden-brown spiral lines and a few dark brown dots. The species is not uncommon but up to now has not been adequately illustrated.

185. *Anachis nigrofusca,* p. 509
=*Anachis nigrofusca* CARPENTER, 1857

Tablet 2427, 2 syntypes. [10 mm].

Authors have identified this species correctly. The syntypes show spiral striae between axial ribs more distinctly than in the specimen figured in KEEN, 1958 (p. 383; fig. 445) but the identity is obvious.

186. *Anachis ?costellata,* var. *pachyderma,* p. 507
?=*Anachis scalarina* (SOWERBY, 1832)
(Plate 59, Figures 83 a-b)

Tablets 2422 - 2423, 7 syntypes. [17 mm]. BRANN: plt. 56, fig. [646 b] (operculum).

Carpenter described this as a variant of *Anachis costellata,* but it seems closer to *A. scalarina;* perhaps this northern form may prove subspecifically distinct because of the periostracum and smaller size.

187. *Anachis rufotincta,* p. 511
=*Anachis diminuta* (C. B. ADAMS, 1852)

Tablet 2431, 3 syntypes. [3.5 mm]. BRANN: plt. 56, fig. 653.

Looking at the type material my judgment was that these were only faded specimens of *Anachis diminuta,* a wide-ranging Panamic species.

188. *Anachis serrata,* p. 509
=*Anachis (?Glyptanachis) serrata* CARPENTER, 1857
(Plate 59, Figures 87; Text figure 116)

Tablet 2428, 3 syntypes, all juvenile, the largest here selected as lectotype. [3.3 mm]. BRANN: plt. 56, fig. 650.

The two fragments on the tablet, mentioned by Carpenter, are of other species, and only the 3 specimens at the left are of this form. The relationships are still in doubt, for it may prove to be a *Nassarina* rather than an *Anachis.* I plan further work on the West American columbellids.

189. *Columbella cervinetta,* p. 493
=*Mitrella baccata* (GASKOIN, 1852)
(Plate 59, Figure 84)

Tablet 2360, holotype. [6.9 mm]. BRANN: plt. 55, fig. 618.

Carpenter was evidently unfamiliar with Gaskoin's species. His figure shows well the axial ribbing on the spire that distinguishes this and another as-yet-unnamed Gulf *Mitrella.*

190. *Columbella cervinetta obsoleta,* p. 493
=*Mitrella baccata* (GASKOIN, 1852)
(Plate 59, Figure 85)

Tablet 2361, syntype. [–]. BRANN: plt. 55, fig. 618-b.

I can see no reason for separating this form, merely a worn and faded shell.

BUCCINIDAE

191. *Fusus apertus,* p. 504
?=*Cantharus biliratus* (REEVE, 1846)
(Text figure 117)

Tablet 2414, 3 incomplete syntypes. [2.5 mm]. BRANN: plt. 53, fig. 641.

The best specimen shows 4 brown bands and nodose sculpture, suggesting young *Cantharus.* Specimens of *C. biliratus* from Guaymas, collected by D. R. Shasky, match it well as to details of apical sculpture.

192. *Pisania aequilirata,* p. 515
=*Cantharus elegans* (GRIFFITH & PIDGEON, 1834)
(Plate 59, Figure 90)

Tablet 2451, holotype. [25 mm].

Authors have correctly recognized this from Carpenter's description.

NASSARIIDAE

193. *Nassa pagodus,* var. *acuta,* p. 497 [*non* SAY, 1822]
?=*Nassarius pagodus* (REEVE, 1846), ?n. subsp.
(Plate 58, Figure 61)

Tablet 2394, 1 syntype. [21.5 mm].

The shell has finer spiral sculpture than typical *Nassarius pagodus,* and the axial ribs are fewer. If this is consistent, perhaps the form may have validity as a subspecies, but a new name will be required, Carpenter's having been preoccupied.

194. *Nassa crebristriata,* p. 499
=*Nassarius versicolor* (C. B. ADAMS, 1852)
(Plate 58, Figure 60)

Tablet 2402, holotype. [13.8 mm].

This seems to be a slender form of the variable *Nassarius versicolor.*

195. *Nassa ?tegula,* var. *nodulifera,* p. 496
ex PHILIPPI, MS
=*Nassarius luteostoma* (BRODERIP & SOWERBY, 1829)
(Plate 58, Figure 59)

Tablet 2393, holotype. [16.2 mm].

As Carpenter suspected, this is a needless name.

FUSINIDAE (?)

196. *Fusus tumens,* p. 503
?=*Fusinus cinereus* (REEVE, 1847)
(Text figure 118)

Tablet 2413, 2 syntypes. [4 mm]. BRANN: plt. 53, fig. 640.

The shell is whitish, banded at the suture and on the base with brown. It appears to be a juvenile *Fusinus.*

OLIVIDAE

197. *Oliva intertincta,* p. 465
=*Oliva spicata* RÖDING, 1798
(Plate 58, Figure 57)

Tablet 2121, 3 syntypes. [20 mm].

The two larger syntypes are in good condition; the smallest is partially decorticated.

198. *Olivella ?petiolita,* var. *aureocincta,* p. 470
=*Olivella aureocincta* CARPENTER, 1857
(Plate 59, Figures 88 a-b)

Tablet 2186, 8 syntypes. [9.5 mm].

All of these syntypes are beginning to show deterioration of the surface layer, but neatsfoot oil restores to some extent the color pattern, especially in the best-preserved two that are figured here. The shell is near *Olivella dama* (WOOD, 1828) in outline but of smaller size. The color pattern is undulating to zigzag. When the shells were fresh, according to Carpenter's description, there were two spiral color bands of a golden hue. This form probably is the basis for the records of the Caribbean *O. petiolita* (DUCLOS, 1835) in the tropical West American fauna.

MARGINELLIDAE

199. *Marginella margaritula,* p. 462
=*Cypraeolina margaritula* (CARPENTER, 1857)
(Text figure 119)

Tablet 2109, 7 syntypes (2 adult). [1.8 mm]. BRANN: plt. 49, fig. 589.

The larger adult specimen was chosen as lectotype by COAN & ROTH (1966, The Veliger, vol. 8, no. 4, p. 294).

200. *Marginella polita,* p. 462
=*Kogomea polita* (CARPENTER, 1857)
Text figures 120 a-c

Tablet 2108, 3 syntypes. [0.8 mm]. BRANN: plt. 49, fig. 588.

COAN & ROTH (1966, The Veliger, vol. 8, no. 4, p. 293) have selected the largest specimen as lectotype.

TURRIDAE

201. *Drillia albonodosa,* p. 397
=*Crassispira albonodosa* (CARPENTER, 1857)
(Plate 59, Figure 100)

Tablet 1901, 1 syntype (here chosen as lectotype). [13 mm].

This seems to be a distinct species. It comes closest to *Clathrodrillia jaculum* (PILSBRY & LOWE, 1932) as to sculpture and outline, but its sooty color puts it in *Crassispira.*

202. *Drillia albovallosa,* p. 396
=*Crassispira rudis* (SOWERBY, 1834)
(Plate 59, Figure 98)

Tablet 1900, holotype. [10.8 mm].

Someone (probably E. A. Smith, possibly J. R. leB. Tomlin) has put the notation, "*D. rudis,* jun." on the tablet. A juvenile topotype specimen of the latter in the Stanford University collection matches well my photograph of Carpenter's type; so also does a juvenile specimen from Mazatlan. Adults show a greater convexity of outline near the base of the body whorl that changes the appearance, and this probably influenced Carpenter in his decision that the form was distinct.

203. *Drillia cerithoidea,* p. 394
=*Crassispira cerithoidea* (CARPENTER, 1857)
(Plate 58, Figure 77; Text figure 121)

Tablet 1897, 1 syntype. [16 mm].

This may be a prior name for the *Crassispira pluto* PILSBRY & LOWE, 1932. Comparison of material collected and identified by Lowe with Carpenter's type showed only minor differences, such as slightly coarser nodes on the spire of *C. pluto* in some specimens.

204. *Drillia hanleyi,* p. 398
=*Crassispira hanleyi* (CARPENTER, 1857)
(Plate 59, Figure 99)

Tablet 1907, holotype. [9.8 mm].

This seems to be distinct. Although close to *Crassispira ericana* HERTLEIN & STRONG, 1951, it is proportionately wider and shorter.

205. *Drillia aterrima,* var. *melchersi* (MENKE, 1851), p. 393
=*Crassispira aterrima* (SOWERBY, 1834)

Tablets 1891 - 1896. [18 mm].

Although he used the same format that he did for proposal of new varieties, Carpenter included in his synonymy a reference to Menke's proposal of the name. The name is available for subdivision of the somewhat

variable *Crassispira aterrima,* but Menke's type would need study.

206. *Drillia monilifera,* p. 395
=*Crassispira monilifera* (Carpenter, 1857)
(Plate 58, Figure 76)

Tablet 1899, holotype. [16.4 mm].

Crassispira nymphia Pilsbry & Lowe, 1932, is very close to this. Comparison of specimens collected and identified by Lowe with Carpenter's type showed only that the peripheral nodes in *C. nymphia* are coarser and fewer. The nodes are yellow-orange, and the spiral threads on the pillar beaded with yellow.

207. *Mangelia sulcata* Carpenter, 1865 b, p. 272
=*Mangelia (Kurtzina) sulcata* Carpenter, 1865
(Text figure 122)

Tablet 2538, holotype. [5 mm]. Brann: plt. 41, fig. 702.

The shell resembles *Mangelia (Kurtzina) cymatias* Pilsbry & Lowe, 1932, but the axial ribs are wider; the upper part of the whorls shows a faint brown band.

208. *Mangelia ?acuticostata,* var. *subangulata,* p. 400
=*Mangelia (Kurtzina) subangulata* (Carpenter, 1857)
(Plate 58, Figure 62; Text figure 123)

Tablet 1914, holotype. [3.5 mm]. Brann: plt. 41, fig. 473.

This also resembles *Mangelia (Kurtzina) cymatias* Pilsbry & Lowe but has one more axial rib per whorl. The axial ribs are more sinuous, and there are faint spirals showing between them. The anterior canal of the holotype is a little broken. There is a discrepancy of nearly a millimeter between my measurement of length and Carpenter's.

209. *Clathurella aurea,* p. 400
=*Clathurella aurea* Carpenter, 1857
(Plate 58, Figure 74; Text figure 124)

Tablet 1913, holotype. [15.8 mm].

The nodes on the spiral ribs are more elongate than in *Clathurella (Lioglyphostoma) armstrongi* Hertlein & Strong, 1955, which otherwise has a strong resemblance to Carpenter's species. The outer lip is denticulate within; one wonders whether this is a reliable character for differentiating between *Clathurella* s. s. and *Lioglyphostoma.* The outline of this and other West Coast turrids now classed as *Lioglyphostoma* is closer to that of the type of *Glyphostomops* Bartsch, 1934, from deep water in the Caribbean than to the type of *Lioglyphostoma,* also Caribbean.

Terebridae

210. *Terebra (Myurella) albocincta,* p. 384
=*Terebra variegata* Gray, 1834
(Plate 58, Figure 70)

Tablets 1828 - 1835, 23 syntypes (tablet 1828 photographed). [41 mm].

A note on the back of the mount, by G. K. Robson says, "Designated type by me for Dr. Bartsch, 25/5/23," but neither Robson nor Bartsch published a lectotype selection. Campbell (1964, p. 137) has concluded, on the basis of supposed paratype and of topotype material, that this form is not separable from the widely distributed *Terebra variegata.* The type lot supports his judgment; Carpenter, however, felt that *T. armillata* Hinds was closer.

211. *Terebra (Myurella) hindsii,* p. 385
=*Terebra variegata* Gray, 1834
(Plate 58, Figures 71 a-b)

Tablet 1836, 2 syntypes. [32 mm].

As the photograph here given of the type material supports the conclusion by Campbell (1964, p. 137), we must synonymize this as part of the *Terebra variegata* complex. It is not the form from the outer coast of Baja California identified as *T. hindsii* by Grant & Gale (1931, p. 469), which is now to be known as *T. tiarella* Deshayes, 1857. Therefore, figures 955 and 964 in Keen, 1958, are incorrectly captioned.

212. *Terebra (Myurella) rufocinerea,* p. 386
=*Terebra variegata* Gray, 1834
(Plate 58, Figure 73)

Tablet 1838, 2 syntypes. [32 mm].

This, too, seems indistinguishable from *Terebra variegata.* It is a form with the axial ribs slightly stronger and straighter.

213. *Terebra (Myurella) subnodosa,* p. 386
=*Terebra intertincta* Hinds, 1844
(Plate 58, Figure 72)

Tablet 1837, 1 syntype. [32 mm].

Although, following authors, I synonymized this with *Terebra albocincta* (see Keen, 1958, p. 490), the photograph of the syntype shows a more stubby shell with decided nodes on the base, a hallmark of the species *T. intertincta.* Carpenter's specific name has one month's priority over *T. marginata* Deshayes, 1857.

Bullidae

214. *Haminea cymbiformis,* p. 174
=*Haminoea cymbiformis* Carpenter, 1857
(Text figure 125)

Tablet 793, holotype. [1.8 mm]. Brann: plt. 19, fig. 229.

Carpenter's restoration of the outline for the broken outer lip in this minute juvenile shell differs somewhat from mine. The apex is a shallow pit; there are fine and somewhat sinuate growth lines. The shell is thin and greenish-yellow in color.

215. *Bulla exarata,* p. 173
=*Atys exarata* (Carpenter, 1857)
(Text figure 126)

Tablet 791, 1 syntype. [3.2 mm]. Brann: plt. 19, fig. 227.

Carpenter's drawing does not show the irregular break in the front of the body whorl. The shell is brown, but this may be a stain. The columellar lip has no umbilical chink and no fold. There are 4 thin brown punctate spiral lines near the apex, a smooth band below this, then two wider lines, with 10 somewhat more close-set lines toward the base. Though near *Atys chimera* Baker & Hanna, 1927, this may prove to be a good species.

Juliidae

216. *Smaragdinella thecaphora,* p. 533
=*Julia thecaphora* (Carpenter, 1857)
(Text figure 127)

Tablet 2527, holotype. [2 mm]. Brann: plt. 18, fig. 692.

Olsson, 1961 (Panama-Pacific Pelecypoda, p. 142) has pointed out that Carpenter's name has priority over *Julia equatorialis* Pilsbry & Olsson, 1944. I suspect that the supposed *J. exquisita* Gould, 1862, reported by A. D. Howard from Baja California also is this species.

Acteocinidae

217. *Tornatina carinata,* p. 171
=*Acteocina carinata* (Carpenter, 1857)
(Text figure 128)

Tablet 784, 5 syntypes. [2.8 mm]. Brann: plt. 19, fig. 223.

Carpenter's drawing does not show a hole in the body whorl made by a carnivorous snail. The adult, shown both in Carpenter's drawing and mine, does not exhibit as clearly as do the younger syntypes the double ridge on the spire that is characteristic of the species; the young are relatively shorter and lower spired.

Pyramidellidae

In the introduction to their comprehensive review of West American Pyramidellidae, Dall & Bartsch (1909, p. 2) state that Bartsch had opportunity while in Britain to study Carpenter's Mazatlan types. I shall therefore rely upon their allocations for these species. They also had available and used as figures some of the manuscript drawings that have now been published in full by Brann (1966). I shall cite Brann's plates rather than the earlier version of Dall & Bartsch. Carpenter cited the generic names in his introduction to the discussion of the family but in the body of the text combined the specific names with subgeneric names. Brann correctly lists the generic and specific combination, but Dall and Bartsch utilize the subgeneric-specific name combination. When Carpenter's allocation is in complete agreement with that of Dall and Bartsch, I shall, to save space and avoid repetition, abbreviate generic and subgeneric names to the initial letters.

218. *Odostomia lamellata,* p. 411
?=*Pyramidella (Longchaeus) mazatlanica* Dall & Bartsch, 1909
(Text figure 129)

Tablet 1954, 2 fragments. [2.5 mm]. Brann: plt. 42, fig. 489.

Dall & Bartsch (1909, p. 24) cite this form as of uncertain standing and suggest that it may the young of their new species. Even the larger fragment is too broken for positive determination.

219. *Odostomia subsulcata,* p. 411
?*Pyramidella (Longchaeus)* sp.
(Text figure 130)

Tablet 1955, 2 syntypes. [1.1 mm]. Brann: plt. 43, fig. 490.

I can add nothing to Bartsch's comment that the specimens are too young and worn for specific determination.

220. *Odostomia vallata,* p. 411
Pyramidella (Longchaeus) sp.
(Text figure 131)

Tablet 1956, 3 syntypes. [1.4 mm]. Brann: plt. 43, fig. 491.

According to my notes, my drawing is of the best of the 3 specimens and there is only a faint carina. Carpenter's drawing shows a strong one. In any case, the shell seems to be unidentifiable; it is juvenile.