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No. 59, 33 pages, 41 figures.

June 30, 1966.

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MOLLUSCAN TYPES WITH PROPOSAL
OF A NEW NAME FOR
A SPECIES OF *SEMELE*

By

A. Myra Keen

*Department of Geology,
Stanford University, California*

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The Danish malacologist Otto Andreas Lawson Mörch, who died of tuberculosis in Nice, Italy, at the early age of fifty (May 17, 1828 - January 25, 1878), displayed an unusual versatility in the scope of his publications, which amounted to some 109 titles. He is perhaps best known for his systematic work on Vermetidae and his catalogue of the Yoldi and Kjerulf collections, but he had gained a competent knowledge in other aspects of malacology also, as is shown by his review of the molluscan fauna of West Central America (1859-1861), which was cited first among his publications by the editors of the *Journal de Conchyliologie* in their review of his life.

Although Mörch's type specimens have in the main not been figured, his paper is far from being a forgotten one, and some of the specimens have been borrowed by American authors, as, for example, by Dall and Bartsch, when they were reviewing West American Pyramidellidae. Knowing this, I

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hoped, during the preparation of my book on the tropical American fauna, to have the opportunity to get the illustrations into print. However, the curators of the University of Copenhagen collection were faced with too large a task in the reorganization of their material after the vicissitudes of World War II to search for the specimens, and I was obliged to guess, as others had done, at what Mörch intended by his descriptions or to use the few figures available in the literature, hoping that identifications had been correct. In 1964, while in Europe, I visited the University of Copenhagen and found that many of the Mörch types had become available. Making what photographs I could during a short stay, I took notes on the material and thought I might be able to interpret most of the types from these. However, even with additional photographs later supplied by the Mollusk Section of the University of Copenhagen, there still remained gaps. The opportunity for another visit during the Second European Malacological Congress in August, 1965, gave me a welcome chance to re-photograph all the material and to look for some of the still missing lots. Several of these came to light. Mörch described 46 species of West Central American marine and brackish-water mollusks. Type material is discussed herein for all but four of these. Some unhappy consequences, nomenclaturally, must be pointed out, for several of Mörch's names have priority over names currently in use. Few can qualify as *nomina oblita*, not having been senior synonyms for the requisite fifty years, even though they were proposed a century ago. In another sense, they are not "forgotten" names, for authors have cited and attempted to interpret them on the basis of the descriptions.

The principal collection that Mörch had for study was made by Dr. A. S. Oersted during a trip to the Americas, June, 1846, to February, 1848. Although Oersted began his trip through the West Indies, stopping off at Jamaica for two months, he seems to have been careful to keep his collections separate, there being no evidence of the mixing of western Atlantic with eastern Pacific material that could easily have occurred. From Jamaica he sailed to San Juan del Norte, Nicaragua (also known as Greytown), journeyed up-river to Lake Nicaragua, visiting Mombacho Volcano near Grenada, then went to the West Coast at Corinto (Real Llejoes--spelled Realejo by Mörch). Here he made three dredging excursions and put out traps, baited with dead fish, in which he caught *Ficus* and other scavengers. From Corinto he went south to Puntarenas, in northern Costa Rica, with especially good collecting results on the small island of Bocorones, Gulf of Nicoya. He returned across Costa Rica, past the volcano Irazu to "Segovia," which I assume is the modern Limon. Altogether he had collected well over 300 species of West American mollusks. Mörch in his numbered list recognized 373 species. However, some of these were from Sonsonate, El Salvador, and in a foot-

note Mörch stated that Oersted had not collected this material, that it had come in from America separately, but he gave no clue as to the collector.

The paper labels Mörch had written are preserved with the extant lots of Central American material in the Copenhagen collection and their odd shade of greenish gray was an aid in distinguishing these items when one was searching for them in the general collection.

Mörch used one abbreviation in his account of material that is unusual ---"org." Authors have inferred - rightly - that the word means "fathoms"; perhaps they were aided by his use of "Klafter" in a few places, this being the German equivalent. I find that "org." is from the Greek *orgyia*, meaning the distance that is measured by a man's outstretched arms.

ACKNOWLEDGMENTS

To Dr. Henning Lemche, Curator of Mollusks in the Zoological Museum of the University of Copenhagen, I express my gratitude for courtesies received during my two visits there. I am indebted also to Dr. Jorgen Knudsen, who did most of the preliminary work of hunting out the types; without his aid this paper would have been very much less complete. Illustrations of several of the smaller forms were made by the Museum photographer, as indicated in the plate explanations. Dr. Robert Robertson made the photographs of the *Strigilla* types, while they were on loan at the U. S. National Museum.

A grant from the John Simon Guggenheim Foundation made possible my trips to Europe for museum study.

SYSTEMATIC REVIEW

EXPLANATION OF FORMAT. In the following list, the original name combination used by Mörch introduces the discussion of each species. Modern systematic order determines the sequence of genera. Type localities are cited as a part of the original reference. The synonymies given for each species include only those references considered to be essential for its interpretation and are not intended to be complete. The category "Type material" summarizes Mörch's statements as to number of specimens and dimensions, translated into English (his original descriptions were in Latin with comments in German). A registry-number system not being in use in the Zoological Museum of the University of Copenhagen, I have therefore not made a separate entry for present status but have incorporated my observations on the content of the type lots under "Remarks," with additional comments on nomenclatural matters. However, some corrections of Mörch's stated dimensions have been made, in square brackets, under "Type material." My conclusions as to the acceptable name for each recognized species are given as a final sentence in each "Remarks" section.

Class **Pelecypoda**

Superfamily ARCEAEA

Arca corculum Mörch.

Arca inaequalis Bruguière of SOWERBY, 1832. Genera of Shells, pt. 36, pl. 5, fig. 3. Not of Bruguière, 1789, from the Indo-Pacific. No locality cited.

Arca cardiiformis SOWERBY, 1833 [Not Basterot, 1825]. Proc. Zool. Soc. London, p. 22. San Blas, Mexico; from Cuming collection; length 2 poll. [i.e., about 50 mm.]

"*Arca brasiliana* Lamarck" of REEVE, 1844. Conch. Icon., vol. 2, *Arca*, pl. 3, sp. 17. Figured specimen from Cuming collection, San Blas, probably either Sowerby's holotype or from the same lot; Sowerby's species cited as synonym [Not of Lamarck, 1819, from the Caribbean].

Arca bifrons CARPENTER, 1857. Catal. Mazatlan Shells, p. 134. Mazatlan.

Arca (Scapharca) corculum MÖRCH, 1861. Mal. Bl., vol. 7, no. 5, p. 205 (Jan.). "*Arca cardiiformis* Sow. Proc. 1833, p. 22, non Bast. *A. brasiliana* Lam., Reeve sp. 17, p.p. Sow. Gen. f. 3."

REMARKS. In addition to indicating his *Arca corculum* as a new name for the preoccupied *A. cardiiformis*, Mörch cited a type locality -- Realejo -- and specimens: one entire and three separated valves. Dimensions were given: "Long. 21, alt. 20 mill." In the Copenhagen collection there are two entire specimens, both labelled as representing this species. The larger shell is marked "Panama" within and therefore probably is not one of Mörch's specimens. It is a good representative of Carpenter's form. The smaller shell comes closer to the stated dimensions. It carries the number "345" within, which is Mörch's list number for the species. It is an *Anadara (Cunearca) perlabiata* (Grant and Gale, 1931). Fortunately, under Article 72 (d) of the International Code of Zoological Nomenclature, which requires that the type of a replacement name be the type specimen upon which the original name was based, we are relieved of the necessity of displacing the Grant and Gale name, which itself was a replacement for *Arca labiata* Sowerby, 1833, preoccupied. Thus, the holotype of *A. corculum* is either the specimen figured by Reeve or one very like it in the Cuming collection. The Reeve specimen is in the type collection of the British Museum (Natural History). Mörch's specific name can continue to be regarded, as authors have correctly inferred, as a junior subjective synonym of *Anadara (Cunearca) bifrons* (Carpenter, 1857).

Arca vespertina Mörch.

(Figure 1.)

Arca brevifrons SOWERBY, 1833. Proc. Zool. Soc. London, p. 22. Tumbes, Peru.

Arca (Argina) vespertina MÖRCH, 1861. Mal. Bl., vol. 7, no. 5, p. 204 (Jan.). Realejo [Nicaragua].

TYPE MATERIAL. One left valve; length, 7.75 mm., height, 6.25 mm.

REMARKS. The holotype is a broken left valve of a juvenile specimen. The dark beak, to which Mörch called attention, is characteristic of the species, and authors have correctly synonymized the species with the form earlier described by Sowerby. Adults tend to be more elliptical-ovate, especially if somewhat worn, as in the valves I have previously figured (Keen, 1958, p. 38, fig. 66). *Lunarca brevifrons* (Sowerby, 1833).

Superfamily MYTILACEA

Dactylus carpenteri Mörch.

(Figure 2.)

Mytilus aristatus DILLWYN, 1817. Cat. Recent Shells, vol. 1, p. 303. Senegal.

Dactylus carpenteri MÖRCH, 1861. Malak. Bl., vol. 7, no. 5, p. 206 (Jan.). Puntarenas [Costa Rica], 10 fathoms.

TYPE MATERIAL. Number of specimens not stated.

REMARKS. Mörch stated neither size nor number of specimens. There are broken fragments of about 14 shells and one entire specimen 90 mm. in length, figured here as lectotype. He compared the species to *Lithophaga aristata* of authors but thought that it differed in placement of the posterior appendage. The form is now known to be variable as to this calcareous incrustation. The generic name *Dactylus* Mörch, 1861, is preoccupied by *Dactylus* Schumacher, 1817, in Gastropoda. *Lithophaga (Myoforceps) aristata* (Dillwyn, 1817).

Superfamily PTERIACEA

Malleus panamensis Mörch.

(Figure 3.)

Malleus rufipunctatus REEVE, 1858. Conch. Icon., vol. 11, pl. 3, sp. 8. West Colombia, Cuming collection.

Malleus panamensis MÖRCH, 1861. Malak. Bl., vol. 7, no. 5, p. 209 (Jan.). Puntarenas [Costa Rica] on *Pinctada*.

TYPE MATERIAL. One specimen; length, 14 mm., width, 5 mm.

REMARKS. Mörch's publication of a name adds yet another to the list of available synonyms of Reeve's species, one that I overlooked (Keen, 1958, p. 60). *Parimalleus rufipunctatus* (Reeve, 1858).

Superfamily UNIONACEA

Unio imbricatus Mörch.

Unio (Plagiola) imbricatus MÖRCH, 1861. Malak. Bl., vol. 7, no. 5, p. 205 (Jan.). San Juan de Nicaragua.

TYPE MATERIAL. One specimen; length, 31 mm., height, 28 mm.

REMARKS. The holotype, which is in the University of Copenhagen Museum, was figured by E. von Martens, 1900 (Biologia Centrali-Americana, Land and Freshwater Mollusca, p. 498, pl. 43, fig. 6 a-c). As this is not a marine form and has been illustrated, I am not reproducing my photographs here but merely am putting on record the availability of the type material.

Superfamily PECTINACEA

The name *Pecten (Argus) ventricosus coccinea* was published by Mörch (1861, p. 210), using the style of type face that was employed to signify new species, but he did not write out a description or otherwise credit the name to himself. He cited a figure (Sowerby, Thes. Conch., fig. 26), dimensions (length, 61 mm., height, 17 mm.), and type locality (Puntarenas). As, however, in the next paragraph he cited another infrasubspecific name in the polynomial form "Var. maculis albis," using the same type face, I feel that he was not intending the formal introduction of a subspecific name. In any case, it would fall as a junior synonym of *Pecten (Aequipecten) circularis* Sowerby, 1835.

Figure 1. *Arca vespertina*. Holotype, exterior $\times 4$.

Figure 2. *Dactylus carpenteri*. Lectotype, here selected $\times 3.5$. Courtesy, University of Copenhagen Zoological Museum.

Figure 3. *Malleus panamensis*. Holotype. a) interior right valve; b) exterior, left valve; c) interior left valve. $\times 3$.

Figure 4. *Hippella hippopus*. Left valve, syntype. $\times 10$. Photograph by Perfecto Mary.

Figure 5. *Polymesoda pullastra*. Holotype. $\times 1.5$. Courtesy, University of Copenhagen Zoological Museum.

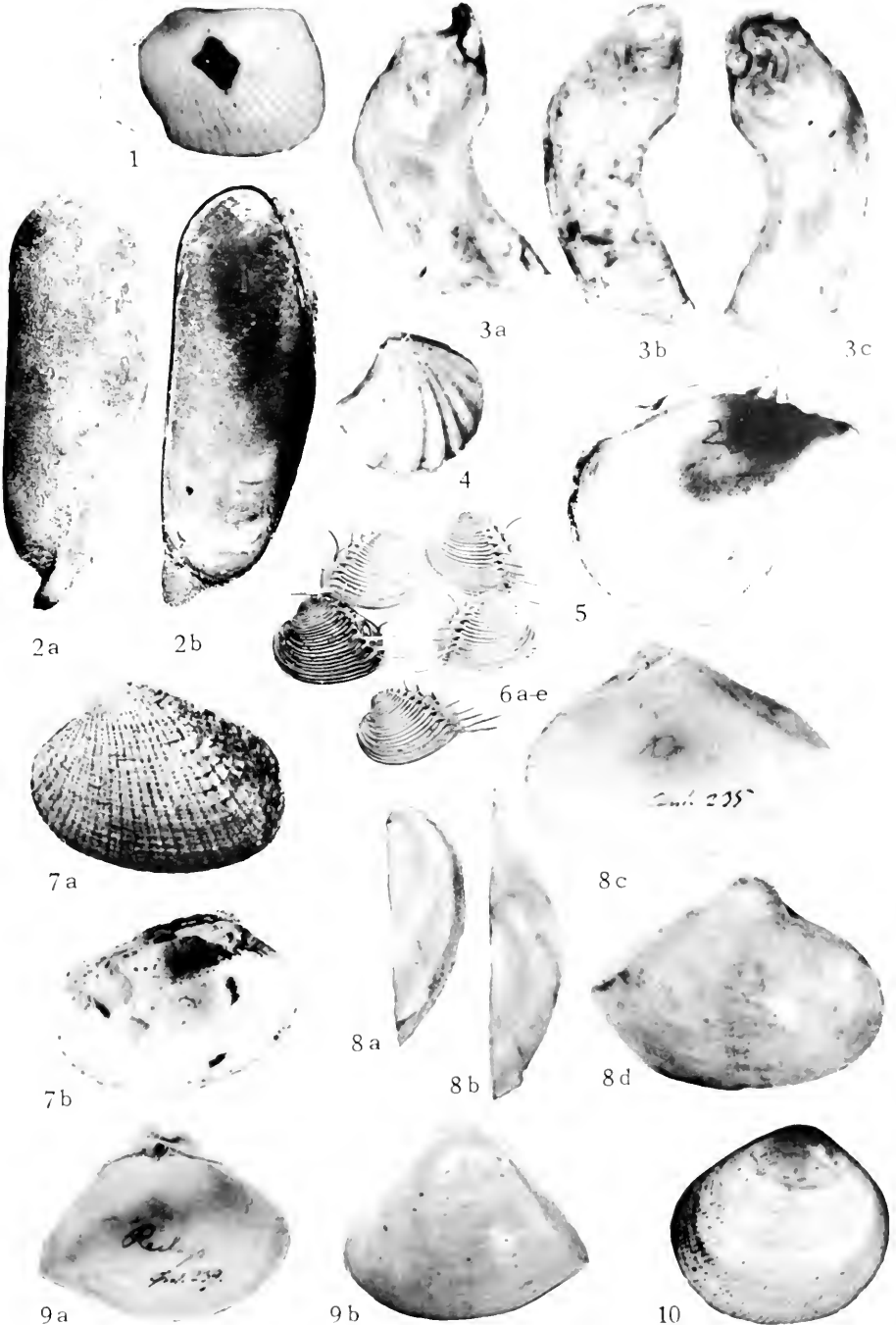
Figure 6. *Callista longispina*. Five syntypes. $\times 0.5$.

Figure 7. *Venus troglodytes*. Lectotype, here selected. Left valve. $\times 6$. Courtesy, University of Copenhagen Zoological Museum.

Figure 8. *Mactra subalata*. Holotype. a) posterior slope; b) dorsal view; c) interior; d) exterior. $\times 0.7$.

Figure 9. *Mactra bistrigata*. Holotype. $\times 0.7$.

Figure 10. *Strigilla costulifera*. Holotype. $\times 6$. Photograph by Dr. Robert Robertson.



Superfamily CARDITACEA

Hippella hippopus Mörch.

(Figure 4.3)

- Hippella hippopus* MÖRCH, 1861. Malak. Bl., vol. 7, no. 5, p. 200 (Jan.) Puntarenas Costa Rica, on pearl oysters.
- Condylocardia panamensis* OLSSON, 1942. Bulls. Amer. Paleont., vol. 27, no. 106, p. 186, pl. 3, figs. 9-10. OLSSON, 1961, Panama-Pacific Pelecypoda, p. 191, pl. 77, fig. 4 Pleistocene and Recent, Panama.

TYPE MATERIAL. Two or three specimens; length, 2 mm., height, 1.7 mm.

REMARKS. Authors have followed Dall in synonymizing *Hippella* with *Verticordia* Sowerby, 1844. However, the recent recovery of Mörch's syntypes by Dr. Knudsen confirms what I had begun to suspect--that the name is instead prior to *Condylocardia* Bernard, 1896. I have submitted a petition to the International Commission on Zoological Nomenclature to suppress *Hippella* as a *nomen oblitum*, for it fulfills the requirements of Article 23 (b) of the International Rules as having been a senior synonym of *Condylocardia* for more than 50 years. The specific name, however, has been a senior synonym only since 1942, less than 50 years. Mörch's description of the salient characters of the genus and species are readily interpretable once one has seen figures or specimens of the Panamic species. Thus, it seems only fair to invoke priority in crediting the specific name, which -- if my petition is favorably acted upon -- will be *Condylocardia hippopus* (Mörch, 1861).

Superfamily CORBICULACEA

Polymesoda pullastra Mörch.

(Figure 5)

- Cyrena notabilis* DESHAYES, 1855. Proc. Zool. Soc. London (1854), p. 21. Peru. Figured, Sowerby, 1870, Conch. Icon., vol. 20, pl. 18, fig. 107 (Payta, Peru).
- Polymesoda* (*Egetana*) *pullastra* MÖRCH, 1861. Malak. Bl., vol. 7, no. 5, p. 194 (Jan.) Realejo [Nicaragua].
- Polymesoda zeteki* PILSBRY, 1931. Nautilus, vol. 44, no. 3, p. 85, pl. 7, figs. 2, 2a. Chamé, Panama.

TYPE MATERIAL. One worn specimen; length, 30.5 mm., height 23 mm.

REMARKS. The specimen marked by Mörch as "orig." is, as he commented, worn and dead. A second valve now in the box with it may represent another species. I have compared the photograph of Mörch's shell with the holotype of *P. zeteki* at the Philadelphia Academy of Sciences, to con-

firm their synonymy. There is, however, as Olsson (1961, p. 192) has pointed out, an earlier name by Deshayes that has been overlooked by authors. Sowerby's figure does indeed seem to be of the same form. Thus, Mörch's name, based on so poor a specimen, can remain unused. Sowerby stated that the shell he figured (presumably the type) was in the British Museum (Natural History). I photographed several of the Deshayes types there, but unaware of the significance of this one, did not make a rigorous search for it. *Egetaria*, of which *P. (E.) pullastra* is type by monotypy, seems not to have utility as a subgeneric division of *Polymesoda*. Mörch gave no differential diagnosis for it and did not signalize it as new. *Polymesoda (Polymesoda) notabilis* (Deshayes, 1855).

Superfamily VENERACEA

Callista longispina Mörch.

(Figure 6.)

Cytheraea multispinosa SOWERBY, 1851. Thes. Conch., vol. 2, p. 632, pl. 132, fig. 112. Tumbes, Peru, 10 fathoms. Holotype in the British Museum (Nat. Hist.).
Callista (Dione) longispina MÖRCH, 1861. Malak. Bl., vol. 7, no. 5, p. 196 (Jan.). Realejo [Nicaragua].

TYPE MATERIAL. "A number of specimens." Length, 31 mm., height, 23 mm.

REMARKS. There are 15 odd valves and two or possibly three pairs of matched valves in the type lot. Mörch compared his species to *Cytheraea lupanaria* Lesson, 1830, and to *C. multispinosa* Sowerby; he thought the concentric lamellae were more acute than in the former and the spines less dense than in the latter. Olsson (1961, p. 284) regards Sowerby's species as distinct. *Pitar (Lamelliconcha) lupanaria multispinosa* (Sowerby 1851).

Venus troglodytes Mörch.

(Figure 7.)

Venus (Omphalocentrum) troglodytes MÖRCH, 1861. Malak. Bl., vol. 7, no. 5, p. 197 (Jan.). Puntarenas [Costa Rica].

TYPE MATERIAL. "8 specimens" [Actually, 6 entire specimens and 8 unmatched valves.]. Length, 5.25 mm.; height, 4 mm.

REMARKS. Having only the description as guide, I erroneously synonymized this (Keen, 1958, p. 139) with *Irus ellipticus* (Sowerby, 1834). In 1964, when I inspected the type lot, I thought that Mörch's name would prove to be a prior one for *Chione picta* Willett, 1954. Olsson (1961, p. 309) makes the latter a synonym of *Tapes squamosa* Carpenter, 1857. Having now exam-

ined the type of the latter and having restudied in 1965 the Mörch material, I am inclined to conclude that there are probably at least three distinct species involved. *Chione (Timoclea) picta* is a more northern form (range, California Pleistocene to Gulf of California, living) that is larger, more elongate, and with stronger sculpture. The type of *Tapes squamosa* Carpenter is a broken juvenile shell of what may be a young *Chione*. Carpenter's manuscript figure recently published (Brann, 1966, pl. 9, fig. 372) exaggerates the sculpture; I plan to publish my own camera lucida drawing in a review of Carpenter's Mazatlan types. The specimen from Ecuador figured by Olsson, 1961, (pl. 49, fig. 10) is longer for the height, with more numerous and finer radial ribs and more beaded sculpture than Mörch's best specimen figured here. However, within Mörch's type lot there is some variation in shape and sculpture, so that possibly Mörch's form may be considered to range from the Central American coast to northern Peru. *Chione (Timoclea) troglodytes* (Mörch, 1861).

Superfamily MACTRACEA

Mactra subalata Mörch.

(Figure 8.)

Mactra (Mactrella) subalata MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 180 (Dec.). Realejo [Nicaragua].

TYPE MATERIAL. One right valve; length, 55 mm., height, 40 mm.

REMARKS. A single right valve has been marked with Mörch's list number 235 and is unquestionably the holotype. Mörch cited a figure in the Encyclopédie Méthodique (pl. 251, fig. 2 a-b, pl. 252, fig. 2c) that he considered a good representation of his species, but it shows a shell not as quadrate as his, and the posterior ridge bears no trace of a crest. Olsson (1961, p. 327, pl. 56, fig. 4) has synonymized Mörch's species with *Mactra alata* Spengler, 1802, an Atlantic form that Olsson considers as locally present on the Pacific Coast. However, Olsson's figure is not a close match for Mörch's form. The latter is more broadly rounded anteriorly, has a well developed crest on the umbonal ridge, remnants of which are preserved on the holotype, and a sinuous ridge on the posterior slope. Perhaps with an authentic figure now available, future authors may be able to recognize the form, which seems to me distinct. *Mactrellona subalata* (Mörch, 1860).

Mactra bistrigata Mörch.

(Figure 9.)

Mactra pallida BRODERIP and SOWERBY, 1829. Zool. Jour., vol. 4, p. 360. San Blas, Mexico.

Mactra (Mulinia) bistrigata MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 182 (Dec.). Realejo [Nicaragua].

TYPE MATERIAL. One left valve. Length, 45 mm., height, 38 mm.

REMARKS. A single left valve in the Copenhagen collection has been marked with Mörch's list number 239. The form has been correctly synonymized with *Mulinia pallida* by authors, but Mörch himself made no comparison to that species. *Mulinia pallida* (Broderip and Sowerby, 1829).

Superfamily TELLINACEA

Strigilla costulifera Mörch.

(Figure 10.)

Tellina dichotoma PHILIPPI, 1846. Zeit. f. Malak., Jahrg. 3, p. 20, Mazatlan, Mexico. *Strigilla costulifera* MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 189 (Dec.). Sonsonate [El Salvador].

TYPE MATERIAL. One right valve. Length, 5 mm., height, 5 mm.

REMARKS. The photograph of the Mörch holotype accords well with the plausible interpretation of *S. dichotoma* by Olsson, 1961, p. 389, pl. 73, fig. 2. I searched at the British Museum for syntypes of Philippi's species, having seen other of Philippi's material there, but detected no specimens of this form. The *Strigilla* illustrated as *S. costulifera* by Hertlein and Strong, 1949 (Zoologica, vol. 34, p. 95, pl. 1, fig. 15), copied by Keen, 1958 (p. 182, fig. 439), should be called *S. chroma* Salisbury, 1934, as Olsson (1961, p. 388) has shown. *Strigilla (Strigilla) dichotoma* (Philippi, 1846).

Strigilla interrupta Mörch.

(Figure 11.)

Strigilla interrupta MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 190 (Dec.). Sonsonate [El Salvador].

Strigilla (Pisostrigilla) panamensis OLSSON, 1961. Panamic-Pacific Pelecypoda, p. 390, pl. 39, figs. 8-8b. Panama.

TYPE MATERIAL. One left valve. Length, 5 mm., height, 4.7 mm.

REMARKS. The holotype, although broken, exhibits all of the features mentioned by Olsson in the description of his species from Panama. Mörch commented in his original description on the sharp flexure that is the distinguishing characteristic of Olsson's new subgenus, *Pisostrigilla*. Neither this nor the preceding species of *Strigilla* seems to be a synonym of *S. cicer-cula* as Olsson inferred from Mörch's descriptions. *Strigilla (Pisostrigilla) interrupta* Mörch, 1860.

Strigilla maga Mörch.

(Figure 12.)

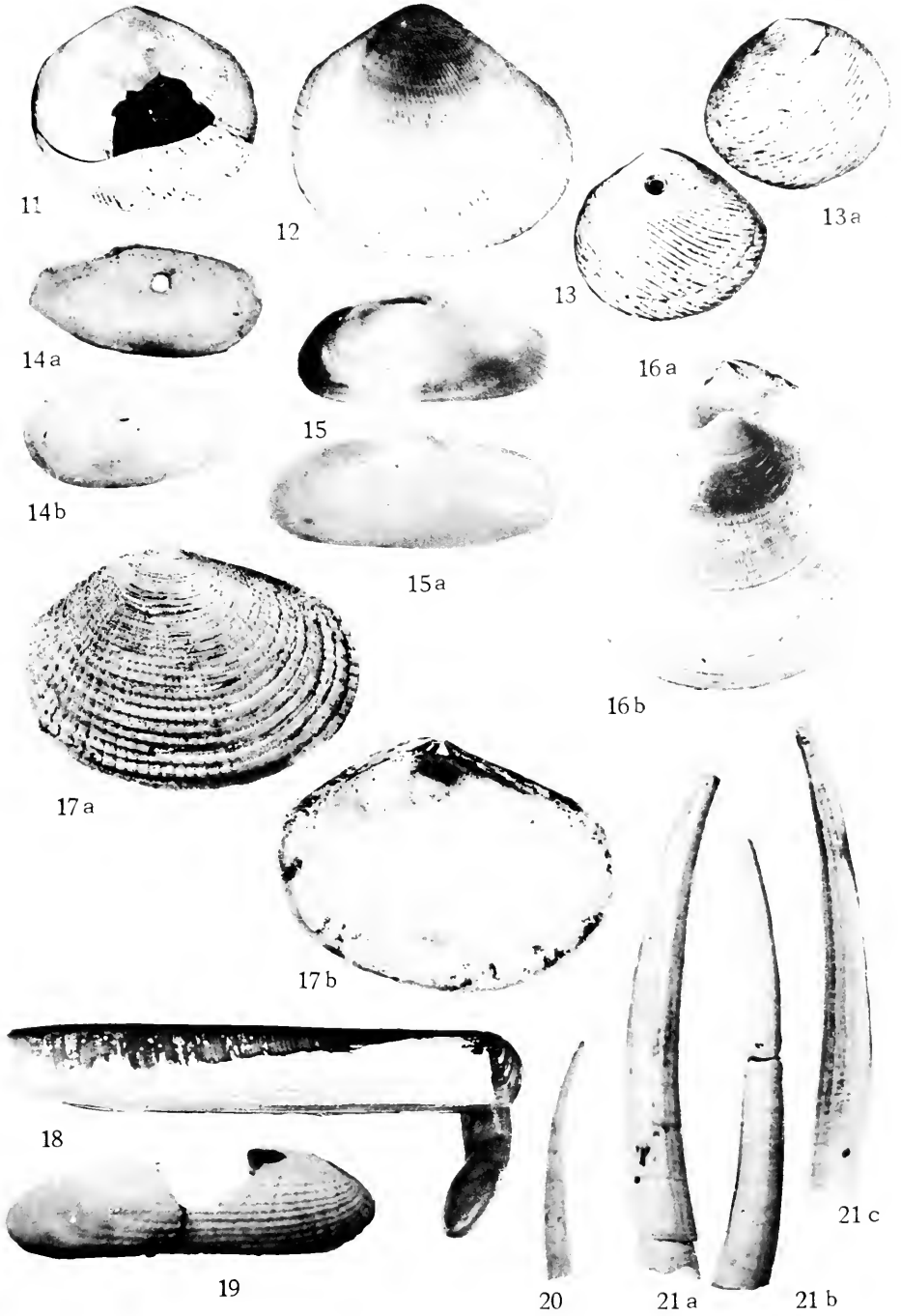
Tellina cicercula PHILIPPI, 1846. Zeit. f. Malak., Jahrg. 3, p. 19, Mazatlan, Mexico.*Strigilla maga* MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 189 (Dec.) Sonsonate [E] Salvador.?Not *Tellina (Strigilla) maga* (Mörch), of RÖMER, 1871, Conchyl. Cab., ed. 2, Bd. 10, Abt. 4, p. 189, pl. 37, figs. 4-6 (figures not based on Mörch's material).

TYPE MATERIAL. Several unmatched valves [actually, five right valves, two left valves, and four fragments]. Length, 9 mm., height, 8 mm.

REMARKS. Mörch compared this to the Caribbean *S. pisiformis*, which is of a similar size and has pink coloration on the umbones but on the posterior slope shows zigzag flexures, whereas *S. maga* has only fine parallel radial riblets. My search for Philippi syntype material of *T. cicercula* at the British Museum was unsuccessful. Authors, however, seem to be in agreement on its identification. *Strigilla (Strigilla) cicercula* (Philippi, 1846).*Strigilla serrata* Mörch.

(Figure 13.)

Strigilla serrata MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 189. Type locality not stated.*Strigilla (Simplicistrigilla) strata* OLSSON, 1961. Panamic-Pacific Pelecypoda, p. 390, pl. 39, fig. 7. Punta Blanca, Ecuador.Figure 11. *Strigilla interrupta*. Holotype. × 6. Photograph by Dr. Robert Robertson.Figure 12. *Strigilla maga*. Syntype. × 5. Photograph by Dr. Robert Robertson.Figure 13. *Strigilla serrata*. Two syntypes. × 4. Photograph by Dr. Robert Robertson.Figure 14. *Thracia carnea*. Holotype, interior and exterior. × 1.8.Figure 15. *Amphichaena gracilis*. Two syntypes, interior and exterior. × 3.Figure 16. *Semele fucata*. Lectotype, here selected. × 3. Courtesy, University of Copenhagen Zoological Museum.Figure 17. *Semele verrucosa*. Lectotype, here selected. × 4. Courtesy, University of Copenhagen Zoological Museum.Figure 18. *Solen oerstedii*. Holotype, with soft parts preserved; foot projecting antero-ventrally. × 1. Courtesy, University of Copenhagen Zoological Museum.Figure 19. *Pholas retifer*. Holotype. × 0.5.Figure 20. *Dentalium hrulatum*. Holotype. × 3.Figure 21. *Dentalium oerstedii*. Three syntypes. × 2.5.



TYPE MATERIAL. Number of specimens not stated. Length, 7.3 mm., height, 4.5 mm.

REMARKS. The type lot consists of three valves -- two right and one left. Actual height is 6.5 mm., not 4.5 mm. The oblique and regular sulci without flexures are distinctive. Mörch's description evidently was overlooked by Olsson -- for which I offer only sympathy, not criticism, my own attempts in 1958 in interpreting Mörch's *Strigilla* descriptions proving to be wrong in three of the four species. *Strigilla (Simplicistrigilla) serrata* Mörch, 1860.

Thracia carnea Mörch.

(Figure 14.)

Tellina siliqua C. B. ADAMS, 1852. Ann. Lyceum Nat. Hist. New York, vol. 5, p. 508, 546. Figured, Turner, 1956, Occ. Papers on Moll., Mus. Comp. Zool., vol. 2, no. 20, p. 85, pl. 19, figs. 15-16. Panama.

Thracia carnea MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 180 (Dec.). Gulf of Nicoya [Costa Rica].

TYPE MATERIAL. One left valve. Length, 11.75 mm. [actually, 15 mm.]; height, 8 mm.

REMARKS. Why Mörch should have assigned this form to *Thracia* is puzzling, for his comparisons were with a *Tellina*. and he mentioned hinge teeth. A good figure of the opposite valve for this species is given by Olsson (1961, p. 415, pl. 74, figs. 9, 9a). *Macoma (Psammacoma) siliqua* (C.B. Adams 1852).

Amphichaena gracilis Mörch.

(Figure 15.)

Donax culter HANLEY, 1845. Proc. Zool. Soc. London, p. 14. Mazatlan and Acapulco, Mexico.

Donax petallina REEVE, 1854, *pars.* Conch. Icon., vol. 8, *Donax*, pl. 8, sp. 51. Locality unknown.

Amphichaena gracilis MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 192 (Dec.). Sonsonate El Salvador.

TYPE MATERIAL. Four right valves, five left valves. Length, 14.5 mm., height, 4 mm.; a variety, length 13 mm., height 4 mm.

REMARKS. At first glance I took this to be a juvenile form of *Amphichaena kindermannii* Philippi, 1847 (Archiv f. Naturg., vol. 13, p. 63, pl. 3,

fig. 7; Mazatlan). However, closer study convinces me that there are two species of striking similarity on the West Mexican coast, which have been confused by authors. Olsson, for example (1961, p. 546, pl. 59, figs. 5, 5a-b), synonymizes *A. kindermanni* with *Donax culter* and makes *Amphichaena* a subgenus of *Donax*. What he describes and figures is -- as I can demonstrate with photographs of Hanley's type material in the British Museum -- *Donax culter*. *Amphichaena kindermanni* is superficially similar but consistently different and may, rather, belong -- as most authors have considered -- in the family Garididae or Psammobiidae. Distinguishing features of *Amphichaena* are: cylindrical outline, as in *Tagelus*, the anterior end of shell not narrowed; pallial sinus relatively short, never reaching the midline; sculpture of fine radial striae, not ribs, interspaces not pitted; inner ventral margin without denticles along the sinuous part between two light color bands; hinge lacking posterior lateral tooth, anterior lateral tooth close to cardinals; cardinals compact, separated by a curved slot. The range is from Mazatlan southward to Guatemala, most common along the Guerrero-Oaxaca coast of Mexico. Largest specimen in the Stanford University collection, 37 mm. in length; the largest in the California Academy of Sciences' collection is 42 mm. In *Donax culter*, on the other hand, the shell tends to be trapezoidal, with the anterior end narrowed, especially in young specimens; the pallial sinus reaches at least to the midline or beyond; the sculpture is of strong radial riblets, with pits in the interspaces, especially at the ends; the inner margin may have weaker denticles on the ventral margin, but they can easily be detected with a lens; hinge with a posterior lateral tooth, the cardinals separated by a rounded socket, the anterior lateral tooth well separated from cardinals. The range is from Mazatlan, Mexico, to El Salvador. Largest specimen cited by Olsson, 32 mm. in length; the largest in the California Academy of Sciences' collection is 46 mm. I doubt that *Donax bellus* Reeve is, as Olsson suggests, a synonym of *D. culter*, for my photographs of the holotype indicate it is more like *D. contusus* Reeve, 1854. The type lot of *D. petallina* seems to comprise three valves of *D. culter* and two that may be *Amphichaena kindermanni*. I misinterpreted this species (Keen, 1958, p. 186, fig. 454), for my figure is probably of *D. contusus*. Mörch's specimens are juvenile and represent the southernmost end of range of *D. culter*. The characteristics cited by Mörch for distinguishing his species from *A. kindermanni* are the longer pallial sinus and elongate anterior end -- hallmarks, as shown above, of *D. culter*. It is remarkable that two species from apparently not closely related stocks should have come to be so deceptively similar and to have so nearly identical a range. The resemblance between the two is especially well developed to the south. A study of soft parts of the *Amphichaena* is much needed to demonstrate its true relationships. *Donax (Chion) culter* Hanley, 1845.

Semele fucata Mörch

(Figure 16.)

Amphidesma bicolor C. B. ADAMS, 1852. Ann. Lyceum Nat. Hist. New York, vol. 5, p. 512, 547. Figured, TURNER, 1956, Occ. Papers on Mollusks, Mus. Comp. Zool., vol. 2, no. 20, p. 35, pl. 18, figs. 7-8. Panama.

Semele fucata MÖRCH, 1860. Malak. Bl., vol. 7, pt. 4, p. 190 (Dec.). Sonsonate El Salvador

TYPE MATERIAL. Number of specimens not stated. Length 14 mm.; height, 12 mm.

REMARKS. Apparently there were at least three specimens in the type lot, for there are now in the Copenhagen Museum one pair of matched valves, here figured, and four separate valves. Mörch compared his species to *S. bicolor* but considered that the shell is larger posteriorly, a difference I fail to see. I cannot follow Olsson (1961, p. 363) in synonymizing this with *S. lenticularis* (Sowerby 1832) from Ecuador, a form with similar sculpture but with beaks that are lower and more centrally located. Olsson may well be correct in synonymizing *S. ventricosa* (C. B. Adams, 1852) with *S. lenticularis* and in stating that the photograph of Adams' supposed type of *S. striosa* (C. B. Adams, 1852) published by Turner is of a misplaced specimen of *S. pulchra* (Sowerby, 1832). These misapprehensions will need to be corrected in later printings of my book (Keen, 1958, p. 200). *Semele bicolor* (C. B. Adams, 1852).

Semele verrucosa Mörch.

(Figure 17.)

Semele (Amphidesma) verrucosa MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 190 (Dec.). Los Bocorones, depth 20 fathoms Costa Rica.

Not *S. verrucosa* MÖRCH of authors (see Appendix).

? *Semele margarita* OLSSON, 1961. Panamic-Pacific Pelecypoda, p. 370, pl. 66, fig. 3. Panama.

TYPE MATERIAL. Two specimens. Length 11.2 mm.; height, 8.3 mm. [actually, length, 10 mm., height, 8.5 mm.].

REMARKS. The Chinese adage that a picture is worth a thousand words was never truer than in reference to this species, for Mörch's description has been misleading to authors. His two specimens have some similarities to *S. pacifica* Dall, 1915, *S. guaymasensis* Pilsbry and Lowe, 1932, and *S. jarumija* Pilsbry and Olsson, 1941, but very little resemblance to the form identified as *S. verrucosa* by authors on the basis of the wart-like sculpture. The shell in the true *S. verrucosa* is more elongate than in *S. pacifica*, with broader concentric ribs and more nodose sculpture at both ends; from *S. guaymasensis* it differs by having well developed radial ribbing posteriorly, and

from *S. jaramija* by its wider concentric ribs and more even distribution of radial ribbing. The nearest relative seems to be *S. margarita* Olsson, 1961, which may prove to be conspecific; Olsson's figure shows a shell with narrower concentric ribbing that is slightly higher for its length, with subcentral beaks. The "warty" sculpture in *S. verrucosa* (Mörch's specific name is a Latin adjective meaning "full of warts") is equally developed on both valves. Mörch described the color as yellow with reddish spots, white within. Perhaps fading has occurred since then; I would describe it as pinkish buff with darker mottling. *Semele verrucosa* Mörch, 1860.

Superfamily SOLENACEA

Solen oerstedii Mörch.

(Figure 18.)

Solen oerstedii MÖRCH, Malak. Bl., vol. 7, no. 4, p. 183 (Dec.). Puntarenas [Costa Rica].

TYPE MATERIAL. One specimen, in alcohol, Length, 69 mm.; height, 11 mm.

REMARKS. Because of the presence of the soft parts in the only available specimen, internal characters of the shell are unobserved. It is not clear, therefore, whether this belongs to *Solen*, in the strict sense, or to *S. (Solena)*. The outline seems closest to that of *S. rosaceus* Carpenter, 1864, but the posterior end is more oblique. The periostracum was described by Mörch as being rather thick; a fair amount still remains, even after a century in preservative. The red color near the umbones mentioned by Mörch has faded, and the shell is now a dull yellowish color. It apparently represents a distinct species. *Solen (?Solena) oerstedii* Mörch, 1860.

Superfamily PHOLADACEA

Pholas retifer Mörch.

(Figure 19.)

Pholas chiloensis MOLINA, 1782. Saggio sulla Storia Naturale de Chili, p. 204. Chiloe. *Pholas (Dactylina) retifer* MÖRCH, 1860. Malak. Bl., vol. 7, pt. 4, p. 177 (Dec.). Real-ejo [Nicaragua].

TYPE MATERIAL. One broken right valve. Length, 104 mm.; height, 33 mm.

REMARKS. Authors have correctly synonymized Mörch's species. He was aware of Molina's species but thought he saw differences in the sculpture -- stronger radial ribs with secondary striae, features that, however, are variably developed. *Pholas (Thovana) chiloensis* Molina, 1782.

Class **Scaphopoda***Dentalium lirulatum* Mörch.

(Figure 20.)

Dentalium semipolatum BRODERIP and SOWERBY, 1829. Zool. Jour., vol. 4, p. 369. No locality stated.

Dentalium lirulatum MÖRCH, 1860. Malak. Bl., vol. 7, pt. 4, p. 177 (Dec.). Gulf of Nicoya, 30 fathoms [Costa Rica].

TYPE MATERIAL. One specimen. Length, 8 mm.

REMARKS. AS Pilsbry surmised (Manual of Conch., vol. 17, p. 92, pl. 16, fig. 54, 1898), this seems to be a juvenile specimen of *D. semipolatum*. The surface is finely striate longitudinally. The holotype is, however, 12 mm. in length, not 8, as Mörch stated. *Dentalium (Dentalium) semipolatum* Broderip and Sowerby, 1829.

Dentalium oerstedii Mörch.

(Figure 21.)

Dentalium oerstedii MÖRCH, 1860. Malak. Bl., vol. 7, pt. 4, p. 177 (Dec.). Gulf of Nicoya, 30 fathoms [Costa Rica].

TYPE MATERIAL. Three specimens. Length, 27 mm.

REMARKS. The three specimens are in good condition. They show varying degrees of ribbing. The one with strongest sculpture has been marked "lectotype," but apparently it has not yet been so designated in print. *Dentalium (Dentalium) oerstedii* Mörch, 1860.

Class **Gastropoda**

? Superfamily NERITACEA

Lepeta puntarenae Mörch.

(Figure 22.)

Lepeta puntarenae MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 175 (Dec.). Puntarenas [Costa Rica].

TYPE MATERIAL. One specimen. Length, 6 mm.

REMARKS. Mörch compared his new species to *Lepeta caeca*, an Arctic form. AS one might well suspect, the type, when found, proved not to belong to *Lepeta*. Details as to its musculature are not easy to make out, even with a microscope, and the apex is blunted. However, one can say that there are fine and somewhat twinned radial ribs. The apex apparently is posterior rather than anterior to the midline and seems to be slightly coiled. The faint traces of muscle scars, which show better in the photograph than they did

when the specimen was being viewed under a microscope, seem to be those of *Phenacolepas* rather than of *Acmaea*. I conclude, therefore, that this is a juvenile phenacolepad and that it may represent a distinct species. ?*Phenacolepas puntarenae* (Morch, 1860).

Superfamily LITTORINACEA

Lacuna succinea Mörch.

(Figure 23.)

Lacuna (Medona?) succinea MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 70 (July). Bocorones Ins. [Gulf of Nicoya, Costa Rica].

TYPE MATERIAL. One adult and two young specimens from Puntarenas, Costa Rica. Length, 6 mm.

REMARKS. The identification of this species will probably require additional material. At first glance the photograph would suggest a decorticated *Littorina*. However, the adult specimen did not look to me to be worn. If this belongs to *Lacuna*, the chink is small and the outer lip unusually thick. The two juvenile specimens are smaller and may not represent the same species; they have a lymnaeid appearance. A specimen in the collection of Dr. Donald Shasky, which I have seen, somewhat resembles this form. It is distinct from *Lacuna succinea* Berry, 1953, from southern California.

Superfamily RISSOACEA

Alvania perlata Mörch.

(Figure 24.)

Alvania perlata MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 68 (July). Sonsonate [El Salvador].

TYPE MATERIAL. One specimen of the typical form; three specimens of a variety or color form. Length, 2.75 mm.; diameter, 1.5 mm.

REMARKS. Bartsch, 1911 (Proc. U. S. Nat. Mus., vol. 41, no. 1863, p. 347) cited the type material as consisting of a single specimen, with a color band; he may therefore be credited with selecting the specimen here figured as lectotype. Erroneously citing the date as 1868, he gave an English translation of the original description but no figure. Mörch's other color form is white and unbanded and may prove to represent a different species. These three specimens are also in the Copenhagen collection. This species resembles *Alvania clarionensis* Bartsch, 1911, but the suture is not channelled and the spiral ribs are fewer; it is not as slender as *A. effusa* (Carpenter, 1857); from *A. granti* Strong, 1938, it differs in being less slender, with narrower spiral ribs. *Alvania perlata* Mörch, 1860.

Rissoina effusa Mörch.

(Figure 25.)

Rissoina effusa MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 67 (July). Type locality not given.

TYPE MATERIAL. One specimen. Length, 4.5 mm., diameter, 2 mm.

REMARKS. The holotype, which is in the Copenhagen Museum, was borrowed and figured by Bartsch, 1915 (Proc. U. S. Nat. Mus., vol. 49, p. 54, pl. 32, fig. 7). Bartsch cited the dimensions as: length, 4.8 mm., diameter, 1.9 mm. I examined the holotype in 1964 and noted that it has oblique ribs and is a relatively thick, heavy shell; in 1965 I did not, in looking through the type collection where it is presumably housed, detect it, but having already studied the specimen. I did not make extensive search for it. *Rissoina effusa* Mörch, 1860.

Hydrobia costaricensis Mörch.

Hydrobia costaricensis MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 67 (July). Rio Torre, Costa Rica.

TYPE MATERIAL. Three specimens, in alcohol.

REMARKS. Although not a marine form, the species is mentioned here because the type lot--or, rather, the type label--was noted during my search for the othertypes. Only the label and the base of a glass vial remain. Thus, the types may be regarded as lost. A figure was given by Von Martens, 1899 (Biologia Centr. Amer., p. 435, pl. 22, fig. 6), but it was not from one of Mörch's syntypes. Von Martens cited the species under *Annicola*.

Figure 22. *Lepeta puntarenae*. Holotype, exterior and interior views. $\times 6$.

Figure 23. *Lacuna succinea*. Lectotype, here selected. $\times 6$. a) Back view. b) Apertural view, Courtesy, University of Copenhagen Zoological Museum.

Figure 24. *Alvania perlata*. Lectotype, selected by Bartsch, 1911, as "type." $\times 14$. Courtesy, University of Copenhagen Zoological Museum.

Figure 25. *Rissoina effusa*. After Bartsch, 1915. $\times 9$.

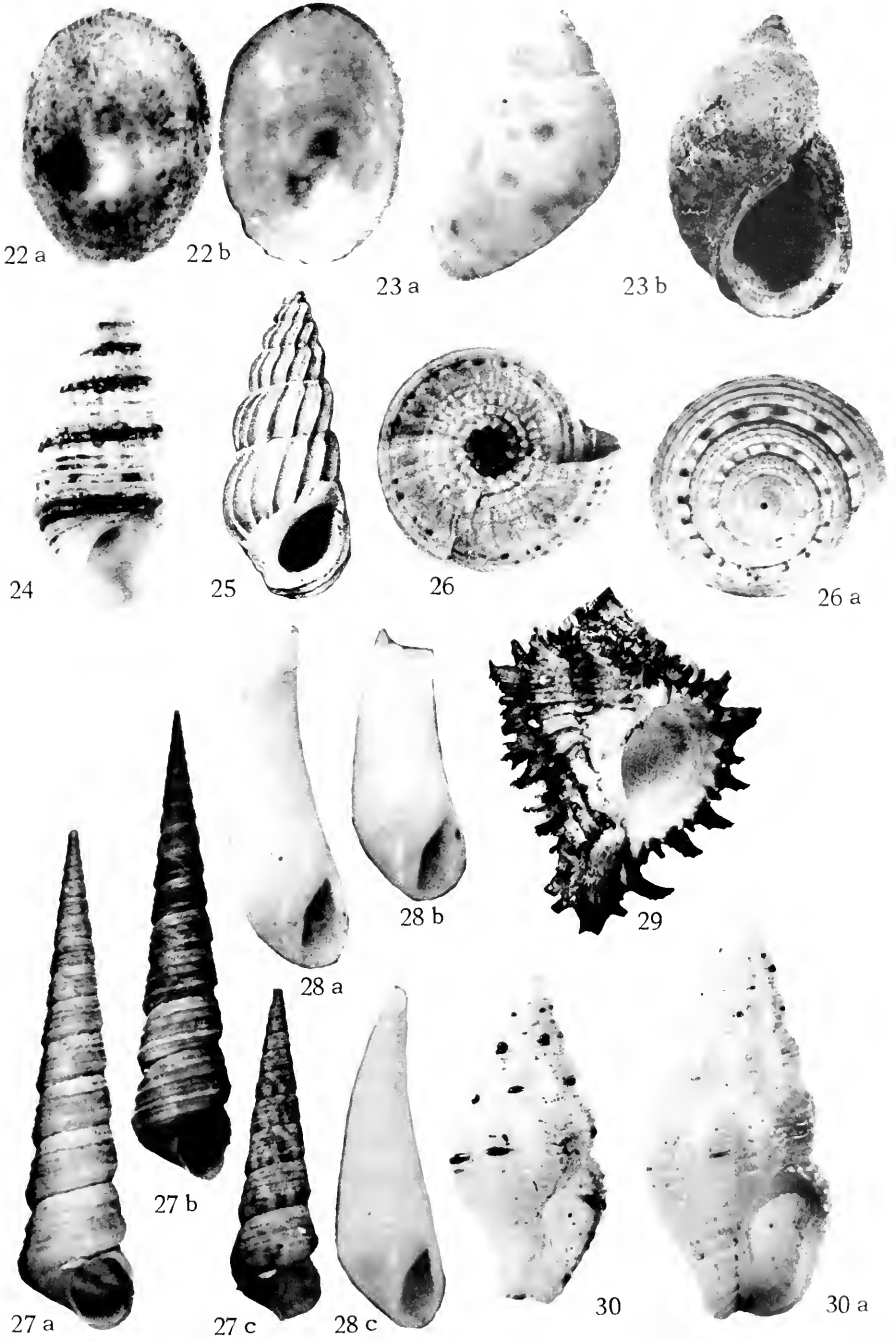
Figure 26. *Architectonica valenciennesii*. Two syntypes. $\times 1$.

Figure 27. *Turritella dura*. Three syntypes. $\times 0.8$.

Figure 28. *Eulima bipartita*. Three syntypes. $\times 6$.

Figure 29. *Murex melanoleucus*. Lectotype, here selected (larger of two specimens). $\times 0.5$.

Figure 30. *Mitrella cruentata*. Two syntypes, larger here selected as lectotype. $\times 8$. Courtesy, University of Copenhagen Zoological Museum.



Superfamily ARCHITECTONICACEA

Architectonica valenciennesii Mörch.

(Figure 26.)

? Architectomca nobilis RÖDING, 1798. Mus. Bolten., p. 78.*Solarium granosum* VALENCIENNES, 1832, in Humboldt and Bonpland, Voy. Inter. Amer. (Obs. Zool.), vol. 2, p. 269. Acapulco.*Solarium quadriceps* HINDS, 1844. Proc. Zool. Soc. London, p. 23. Panama.*Solarium verrucosum* PHILIPPI, 1849. Zeit. f. Mal., vol. 5 (for Nov. 1848), p. 172. Locality unknown.*Architectonica valenciennesii* MÖRCH, 1859. Malak. Bl., vol. 6, no. 4, p. 122 (Dec.). Realejo [Nicaragua].

TYPE MATERIAL. Six specimens. Diameter, 34 mm.; height, 14 mm.

REMARKS. Mörch compared his material to *A. nobilis* Röding but considered that significant differences were the four rows of spiral granules instead of three. radial sculpture not extending to the periphery, and a larger umbilicus. He also cited the names of Valenciennes' and Hinds' species but did not make comparisons. All six of the specimens are in the Copenhagen collection. Whether or not the form proves to be correctly synonymized with *A. nobilis*, there are three prior names applying to West Coast material, so that Mörch's name is clearly superfluous. *?Architectonica nobilis* Röding 1798.

Superfamily TURRITELLACEA

Turritella dura Mörch.

(Figure 27.)

Turritella leucostoma VALENCIENNES, 1832, in Humboldt and Bonpland, Voy. Inter. Amer. (Obs. Zool.) vol. 2, p. 276. Acapulco.*Turritella tigrina* KIENER 1843-44. Spec. Coq., vol. 10, p. 29, pl. 4, fig. 2. Locality unknown.*Turritella cumingii* REEVE, 1849. Conch. Icon., vol. 5, *Turritella*, pl. 4, sp. 13. Panama.*Turritella dura* MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 78 (July). Realejo [Nicaragua].

TYPE MATERIAL. Seven specimens. Length, 80 mm.

REMARKS. Only four specimens are now in the syntype lot in the Copenhagen Museum. Mörch evidently distributed some of the original specimens, for one syntype was figured by Dunker, 1867 (Novitates Conchyliorum, ser. 2, p. 103, pl. 34, figs. 3-4). Mörch had thought that a spiral band of lighter and darker maculations at the periphery was distinctive, but Dunker pointed out that the spots were lacking in the shell sent to him. The fact

that several names have been proposed is evidence that the species is somewhat variable. Mörch's name may now be added to the synonymy. *Turritella leucostoma* Valenciennes, 1832.

Superfamily EULIMACEA

Eulima bipartita Mörch.

(Figure 28.)

Eulima bipartita MÖRCH, 1859. Malak. Bl., vol. 6, no. 5, p. 120 (Dec.). Sonsonate El Salvador.

TYPE MATERIAL. Three specimens, all with broken apices. Length 7.5 mm.; diameter, 2.5 mm.

REMARKS. Bartsch, 1917 (Proc. U. S. Nat. Mus., vol. 53 no. 2207, p. 331) published a translation of Mörch's description, erroneously citing the date as 1860. He tentatively assigned the species to *Strombiformis*, subgenus *Balcis*. The form is apparently distinct but is close to *Balcis falcata* (Carpenter, 1865), from Acapulco, the aperture being wider above. Mörch compared it to *Eulima distorta* "Sowerby" [i.e., Deshayes in DeFrance, 1823], a species from the Tertiary of France, from which it differed by being broader and more arcuate. All three of the syntypes are extant. *Balcis bipartita* (Mörch, 1859).

? Superfamily CYPRAEACEA

Erato marginata Mörch.

Erato marginata MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 85 (July). Bocorones, 30 fathoms [Costa Rica].

TYPE MATERIAL. Number of specimens not stated. Length 4.25 mm.; diameter, 3.5 mm.

REMARKS. In spite of our determined search, both among the small Cypraeacea and also among the Marginellidae -- with which the form might have been confused, as other Eratos have -- the type lot has eluded detection. Whether Mörch's original description is of any aid in recognizing the form is doubtful except for the words "Proxime accedit *E. maugersae* [sic]." These lend strength to my previous suggestion (Keen, 1958, p. 331) that Mörch's species is a synonym of *E. maugeriae panamensis* Carpenter, 1856 (Proc. Zool. Soc. London, p. 162). I was fortunate in locating the types of Carpenter's species at the British Museum and plan to publish a figure later. Because both men compared their material to the West Indian *E. maugeriae*, it seems probably that the type lots are conspecific. ?*Erato panamensis* Carpenter, 1856.

Superfamily MURICACEA

Murex melanoleucus Mörch.

(Figure 29.)

Murex melanoleucus REEVE, 1845. Conch. Icon., vol. 3, *Murex*, pl. 13, sp. 51. Locality unknown.

Muricanthus melanoleucus MÖRCH, 1852. Catal. Yoldi, p. 96 (nomen nudum).

Murex (Polypirex) melanoleucus MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 100 (Aug.) Realejo, Nicaragua.

TYPE MATERIAL. Two specimens; dimensions not given.

REMARKS. There are three specimens in the Copenhagen lot, all numbered with the Mörch list number, 168. Because Mörch stated, "specim. 2 minora," one may conclude that the two smaller shells were in his hands and that the larger, which seems to be *Muricanthus nigrilus* (Philippi, 1845), from the Gulf of California area, has been added later. The smaller of the two is 55 mm. in height, the larger 87. My conclusions (Keen, 1958, p. 356) as to the synonymy of this form could only be confirmed by selection of the largest of the three specimens as lectotype, a course that seems unjustifiable and unnecessary. *Muricanthus ambiguus* (Reeve, 1845).

Superfamily BUCCINACEA

Mitrella cruentata Mörch.

(Figure 30.)

Mitrella (Anachis) cruentata MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 95 (July). Sonsonate, El Salvador.

Colubella humerosa CARPENTER, 1865. Proc. Zool. Soc. London, p. 281. Acapulco, Mexico.

Nassarina (Zanassarina) xeno PILSBRY and LOWE, 1932. Proc. Acad. Nat. Sci. Philadelphia, vol. 84, p. 75, pl. 5, fig. 5. Nicaragua.

TYPE MATERIAL. 23 specimens (worn). Length, 6 mm.; diameter, 3 mm.

REMARKS. Mörch's allocation to *Mitrella* and *Anachis* doubtless has been a large factor in the failure of later authors to recognize the form. He apparently miscounted the number in his type lot, for 4 specimens have been photographed and still 21 are in the main vial. As he noted, all of the specimens show wear. I have compared the photographs here reproduced with the type material of the species of *Zanassarina* described by Pilsbry and Lowe (these are at the Philadelphia Academy of Natural Sciences) and find that the one that comes closest to Mörch's material belongs to *N. (Z.) xeno* rather than *N. (Z.) atella* as I had at first judged from a study of original figures. The holotype of Carpenter's species shows the color spots, which even come out in the halftone reproduction (Keen, 1958, p. 383, fig. 438) but might be mistaken for blemishes in printing. Mörch's name *cruentata* could qualify as

a *nomen oblitum* in that it was a senior synonym of Carpenter's for more than the requisite 50 years; however, Carpenter's species was itself as much of a "forgotten name" because the holotype was not figured until 1958. The Pilsbry and Lowe name has not been in the literature as a junior synonym the necessary 50 years. It seems justifiable, therefore, to recommend that priority be allowed to operate here. *Nassarina (Zanassarina) cruentata* (Mörch, 1860).

Mitrella elegantula Mörch.

(Figure 31.)

Columbella pygmaea SOWERBY, 1832. Proc. Zool. Soc. London, p. 119. Santa Elena, Ecuador.

Mitrella (Astyris) elegantula MÖRCH, 1860. Malak. Bl., vol. 7, no. 4, p. 94 (July). Sonsonate [El Salvador].

TYPE MATERIAL. "Many" specimens.

REMARKS. There are about 50 specimens in the syntype lot, most of them beach worn, the apertures filled with sand grains. Although in the northern part of the range of *Anachis pygmaea* a separable subspecies may may eventually be recognized, Mörch's material falls within the limits of variation of the southern form; hence, the name is apparently a junior synonym of *Anachis pygmaea* (Sowerby, 1832).

Pygmaea sonsonatensis Mörch.

(Figure 32.)

Columbella festiva KIENER, 1841 (Not Laborde, 1830). Spec. Coq., vol. 9, p. 15, pl. 11, fig. 4. Locality unknown.

Columbella sonsonatensis MÖRCH, 1859. Jour. Conchyl., vol. 7, no. 3, p. 257 (*nomen nudum*).

Pygmaea sonsonatensis MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 92 (July). Sonsonate [El Salvador].

Columbella lucasana DALL, 1916 (for *C. festiva* Kiener). Nautilus, vol. 30, no. 3, p. 25 (July 14).

TYPE MATERIAL. One specimen. Length 8.4 mm.; diameter 4.5 mm.

REMARKS. The holotype is a specimen in good condition. Mörch compared the form to *Pyrene fuscata*, from which it differed by being narrower with a shorter spire, but he did not compare it to *P. festiva*, with which it seems to be conspecific, perhaps because the latter had not yet been recognized as a West American form. Under the Statute of Limitations of the International Code, this name is on the point of qualifying as a *nomen oblitum*, for it has been a senior synonym of Dall's replacement name almost the full 50 years. *Pyrene sonsonatensis* (Mörch, 1860).

Superfamily VOLUTACEA

Gibberula coniformis Mörch.

(Figure 33.)

Marginella polita CARPENTER, 1857. Catal. .. Mazatlan shells .., p. 462. Mazatlan, Mexico.

Gibberula coniformis MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 86 (July). Puntarenas [Costa Rica].

Marginella moerchi REDFIELD, 1870. American Jour. Conch., vol. 6, pt. 2, p. 244 (for *G. coniformis* Mörch, 1860, not *Marginella coniformis* Sowerby, 1850).

TYPE MATERIAL. Four specimens. Length, 2 mm.; diameter, 1 mm.

REMARKS. The adult specimen of the syntype lot has been selected by Coan and Roth, 1966 (Veliger, vol. 8, no. 4, p. 293, pl. 51, fig. 75), as lectotype. There are also three juvenile paralectotypes that are somewhat transparent and that have not yet developed the columellar teeth distinctly, one of which is figured here. The name was unnecessarily replaced by Redfield and is preoccupied only if both species are classed as *Marginella*. Coan and Roth synonymize the Mörch species with *Kogomea polita* (Carpenter, 1857).

Figure 31. *Mitrella elegantula*. Two syntypes. × 6.

Figure 32. *Pygmaea sonsonatensis*. Holotype. × 6. Courtesy, University of Copenhagen Zoological Museum.

Figure 33. *Gibberula coniformis*. a) Paralectotype, × 12; b) Lectotype, selected by Coan and Roth, 1966. × 22. Photograph of lectotype courtesy, University of Copenhagen Zoological Museum.

Figure 34. *Volvarina taeniolata*. Lectotype, selected by Coan and Roth, 1966. × 11. Courtesy, University of Copenhagen Zoological Museum.

Figure 35. *Pleurotoma granulatissima*. Holotype. × 6. Courtesy, University of Copenhagen Zoological Museum.

Figure 36. *Pleurotoma stellata*. Holotype. × 10. Courtesy, University of Copenhagen Zoological Museum.

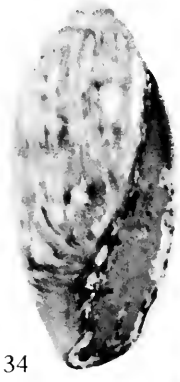
Figure 37. *Terebra pachyzona*. Two syntypes. × 1.

Figure 38. *Turbonilla cinctella*. Copied from Dall and Bartsch, 1909. × 7.

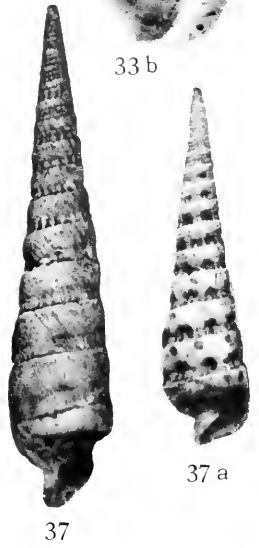
Figure 39. *Turbonilla craticulata*. Copied from Dall and Bartsch, 1909. × 6.

Figure 40. *Turbonilla subula*. Copied from Dall and Bartsch, 1909. × 7.

Figure 41. *Rissoina contabulata*. Holotype. × 20. Photograph courtesy, University of Copenhagen Zoological Museum.



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Volvarina taeniolata Mörch.

(Figure 34.)

Volvarina taeniolata MÖRCH 1860. Malak. Bl., vol. 7, no. 2, p. 86 (July). Los Bocorones Gulf of Nicoya, Costa Rica¹, 30 fathoms.

Margarella californica TOMLIN, 1916. Nautilus, vol. 29, no. 12, p. 138 (April 8). California.

TYPE MATERIAL. Four specimens. Length, 4 mm.; diameter, 2 mm.

REMARKS. Under the Statute of Limitations, International Code of Zoological Nomenclature, Article 23 (b), this form might have qualified as a *nomen oblitum*, for the name, though cited, had not been adopted in the major zoological literature during almost the requisite fifty years. However, the usage of *Volvarina taeniolata* has been recommended in a revisionary work recently -- as it happens, a few days ahead of the expiration of the time: Coan and Roth, April 1, 1966 (Veliger, vol. 8, no. 4, p. 287, pl. 50, fig. 48). They have selected one of Mörch's syntypes as a lectotype. *Volvarina taeniolata* Mörch, 1860.

Superfamily CONACEA

Pleurotoma granulatissima Mörch

(Figure 35.)

Pleurotoma (Anna) granulatissima MÖRCH, 1860. Malak. Bl., vol. 7, no. 3, p. 103 (Aug.). "El Poso," thought by Mörch to be an error for Los Bocorones [Gulf of Nicoya, Costa Rica].

TYPE MATERIAL. One specimen. Length, 7 mm.; diameter, 3 mm.

REMARKS. The holotype resembles *Clathurella rigida* (Hinds, 1843) but the whorls are more tabulate; also, the ribbing is more irregular, with the major spiral ribs separated by finer intercalary riblets. The species probably is distinct. *Clathurella granulatissima* (Mörch, 1860).

Pleurotoma stellata Mörch.

(Figure 36.)

Pleurotoma (Mangelia) stellata MÖRCH, 1860. Malak. Bl., vol. 7, no. 3, p. 103 (Aug.). Type locality, not given.

TYPE MATERIAL. Number of specimens not stated [actually, one]. Length, 5 mm., diameter, 2 mm.

REMARKS. The shell is buff-colored, banded with brown, somewhat resembling *Mangelia (Agathotoma) quadriseriata* (Dall, 1919) but with a longer canal and therefore a more slender outline anteriorly. Dall described his shell as white banded with brown, whereas Mörch characterized his as or-

ange colored. Mörch's specific name was chosen to call attention to the star-shaped cross section of the whorls caused by the continuous axial ribs, of which there are 6 to 7 on the last whorl. *Vungelia (Agathotoma) stellata* (Mörch, 1860).

Lachesis craticulata Mörch.

Lachesis craticulata MÖRCH, 1860. Malak. Bl., vol. 7, no. 3, p. 104 (Aug.). Bocorones [Costa Rica].

TYPE MATERIAL. Two specimens. Length, 8 mm.; diameter, 3 mm.

REMARKS. The type lot has not yet been detected. Presumably it should be in Turridae, for Mörch compared the species to *Pleurotoma sculpta* Hinds, 1843, as figured by Reeve, figure 154. Experience with other of Mörch's species has shown that attempts to recognize them without the type material in hand are apt to be futile; therefore, I shall not transcribe here the original description. Until the type material is found, this must remain a *species dubia*.

Lachesis perlata Mörch.

Lachesis perlata MÖRCH, 1860. Malak. Bl., vol. 7, no. 3, p. 104 (Aug.). Type locality not given.

TYPE MATERIAL. No information given as to number of specimens. Length, 4.75 mm.; diameter, 2 mm.

REMARKS. This lot, also, has eluded determined search. Mörch's comparisons for this form are confused (he cited "*Pleurotoma sculpta*" Reeve, figure 338, which turns out to be a smooth form recorded by Reeve as "*sculptata*," whereas Mörch's is sculptured). This, also, must remain a species of doubtful status until the type material is found.

Terebra pachyzona Mörch.

(Figure 37.)

Terebra formosa DESHAYES, 1857. Jour. Conchyl., vol. 6, p. 65, pl. 3, fig. 6. Panama.

Terebra pachyzona MÖRCH, 1860. Malak. Bl., vol. 7, no. 3, p. 105 (Aug.). Realejo [Nicaragua].

TYPE MATERIAL. Three worn specimens. Length, 72 mm.; diameter, 15 mm.

REMARKS. All three specimens are in the Copenhagen Museum lot and are, as Mörch realized, worn shells. On the basis of the discussion by Campbell, 1963 (Veliger, vol. 5, no. 3, p. 102, pl. 12, figs. 5, 8-13; pl. 13, figs. 3-6), I conclude that Mörch's species is synonymous with that of Deshayes. Mörch perhaps was unaware of the latter form, as he makes no mention of *T. formosa* in his comparisons. *Terebra (Terebra) formosa* Deshayes, 1857.

Superfamily PYRAMIDELLACEA

Turbonilla cinctella Mörch.

(Figure 38.)

Turbonilla cinctella MÖRCH, 1859. Malak. Bl., vol. 6, no. 4, p. 119 (Oct.). Sonsonate? El Salvador.

TYPE MATERIAL. One specimen. Length, 5 mm. (incomplete); diameter, 1.2 mm.

REMARKS. Mörch was uncertain as to the locality from which the holotype came. Dall and Bartsch cited it as "Sonsonate, Guatemala." The holotype was borrowed and well figured by Dall and Bartsch, 1909, U. S. Nat. Mus. Bull. 68, p. 17, pl. 10, fig. 2, as *Turbonilla (Pyrgiscus) cinctella* Mörch, 1859.

Turbonilla craticulata Mörch.

(Figure 39.)

Turbonilla craticulata MÖRCH, 1859. Malak. Bl., vol. 6, no. 4, p. 119 (Oct.). Bocorones, 30 fathoms [Costa Rica].

TYPE MATERIAL. Three specimens. Length, 8 mm.; diameter, 2 mm.

REMARKS. The three dark brown specimens are in the Copenhagen Museum. One that had been borrowed by Dall and Bartsch was figured by them as "type" which may be interpreted as selection of a lectotype (U. S. Nat. Mus. Bull. 68, p. 104, pl. 10, fig. 1). This figure is reproduced here. The length was cited as 7.8 mm. They allocated the species as *Turbonilla (Pyrgiscus) craticulata* Mörch, 1859.

Turbonilla subula Mörch.

(Figure 40.)

Turbonilla subula MÖRCH, 1859. Malak. Bl., vol. 6, no. 4, p. 120 (Oct.). Los Bocorones, 30 fathoms [Gulf of Nicoya, Costa Rica].

TYPE MATERIAL. One specimen. Length (incomplete), 5 mm.; diameter, 1.2 mm.

REMARKS. The type was borrowed and figured by Dall and Bartsch, 1909 (U. S. Nat. Mus. Bull. 68, p. 17, pl. 10, fig. 3). I examined the holotype, but because it had been well figured, I did not attempt further study. Dall and Bartsch allocated the species to *Turbonilla (Pyrgiscus)*.

Rissoina contabulata Mörch.

(Figure 41.)

Rissoina contabulata MÖRCH, 1860. Malak. Bl., vol. 7, no. 2, p. 68 (July). Sonsonate
[El Salvador].

TYPE MATERIAL. One specimen. Length (incomplete). 3 mm.; diameter. 1 mm.

REMARKS. Mörch compared his holotype to *Rissoa notabilis* C. B. Adams, 1852. The type of this was lost later by Carpenter, who noted (Proc. Zool. Soc. London for 1863, p. 15) that it was close to or identical with *Cingula turrita* C. B. Adams, 1852. The latter was declared a homonym of *Odostomia turrita* Hanley, 1844, by Dall and Bartsch, 1909 and renamed *O. (Ividella) orariana* by them (Bull. U. S. Nat. Mus. 68, p. 175, pl. 18, fig. 2). Carpenter stated that *R. notabilis* also was the same as his *Parthenia quinquecincta* Carpenter, 1857, which was figured by Dall and Bartsch from Carpenter's drawing (1857, p. 174, pl. 18, fig. 9). However, both of these have a greater number of axial ribs than Mörch's (16 and 18, respectively, as contrasted to 14). Mörch's form has fewer basal cords (only one shows), where the others have 6 and 2, respectively. Bartsch, 1915 (Proc. U. S. Nat. Mus., vol. 49, p. 51), in his review of *Rissoina* evidently did not borrow all the types, and thus he did not realize that this form is instead a pyramidelid. He reprinted Mörch's original description, in translation. So far as I am able to determine, Mörch's species is distinct. *Odostomia (Ividella) contabulata* (Mörch, 1860).

Order NUDIBRANCHIATA

Several species of nudibranchs were described by Mörch. If the types are extant, they would be in the separate collection of preserved material at Copenhagen, which I did not search. It does seem appropriate, however, to list Mörch's new species in this group:

Elysia oerstedii Mörch, 1859. Malak. Bl., vol. 6, no. 4, p. 123 (Oct.).

Pleurophyllidia (Histiomena) marginata Mörch, 1859. p. 124. N.B.: The subgenus is proposed as new, with *P. marginata* as monotype.

Doris (Actinodoris?) phyllophora Mörch, 1859. p. 125.

Doris punctatissima Mörch, 1859, p. 125.

Doto ensifer Mörch, 1859, p. 125.

Order BASOMMATOPHORA

Superfamily ELLOBIACEA

Melampus bocaronicus Mörch.

Melampus bocoronicus MÖRCH, 1859. Malak. Bl., vol. 6, no. 4, p. 118 (Oct.). Los Bocorones, under stones high in the intertidal zone [Costa Rica].

TYPE MATERIAL. Number of specimens not stated, but evidently more than three. Length, 12 mm.; diameter, 7 mm.; length of aperture, 8 mm.

REMARKS. A thorough search for the type lot was not feasible at the time of my visit to the University of Copenhagen museum. Thus, the material may yet be detected in the general collection. Mörch compared his species to *Melampus minutus* (Gmelin, 1791) as figured in Martini and Chemnitz, fig. 445. Von Martens figured a topotype in 1900 (*Biologia Central-Amer.*, pl. 43, fig. 11), and I copied this illustration (Keen, 1958, p. 507, fig. 1020). I also quoted the comments by Morrison, 1946 (*Smithsonian Misc. Coll.*, vol. 106, no. 6, p. 37) as to the relationships of the species.

APPENDIX

(Proposal of a replacement name for a misidentified species.)

Semele verruculastra Keen, new species.

Semele verrucosa Mörch, HERTLEIN and STRONG, 1949. *Zoologica*, vol. 34, pt. 4, p. 249, pl. 1, figs. 21, 24. KEEN, 1958, *Sea shells of tropical West Amer.*, p. 202, fig. 504 (copy). OLSSON, 1961. *Panamic-Pacific Pelecypoda*, p. 366, pl. 65, figs. 1-1b. HERTLEIN and EMERSON, 1964. *Trans San Diego Soc. Nat. Hist.*, vol. 13, no. 17, p. 359, figs. 3 i, j, Pleistocene, Isla Coronado, Gulf of California.

HOLOTYPE. California Academy of Sciences, Paleontology Type Collection no. 17996, one right valve.

TYPE LOCALITY. Hannibal Bank, Panama, in 64-73 meters., Lat. 7° 23' 30" N., Long. 82° 03' W.

DIMENSIONS. Length, 43 mm.; Height, 32.8 mm.; convexity (one valve) 7.1 mm.

DESCRIPTION. This shell was well described by Hertlein and Strong as elongately ovate, inequilateral, whitish blotched with purple, anterior end rounded, ventral and posterior margin broadly rounded, the latter with a gentle fold; sculpture of close concentric ribs, broken into scale-like projections posteriorly and anteriorly, the whole surface finely radiately wrinkled; hinge of right valve with two cardinal and two lateral teeth; pallial sinus broadly rounded at end and gently ascending, reaching about 5/8 the length of the shell. Olsson's description is in agreement. The peculiar scale-like sculpture seemed to exemplify what Mörch indicated in his description by his choice of specific name -- *verrucosa*, full of warts. However, as figure 17 shows, the true *S. verrucosa* has a different kind of wartiness.

The form here named as new was first taken as a single valve by a Beebe-Crocker expedition in Panama Bay. Olsson extended the range northward to the Gulf of California on the basis of a specimen in the collection of the U. S. National Museum, which he figured. This rather generalized locality might be suspect were it not that the form has been recorded from the Pleistocene in the Gulf. It has also been taken living in recent years at the Perlas Islands, Panama Bay. The size range is: length 43 to 55 mm.; height, 32 to 43 mm.; diameter (both valves), 14 to 21 mm.

The replacement name here proposed is a modification of the specific name that has, in the minds of authors, been associated with this form -- a diminutive intended to contrast its small, scale-like projections with the coarser beads of Mörch's species.

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